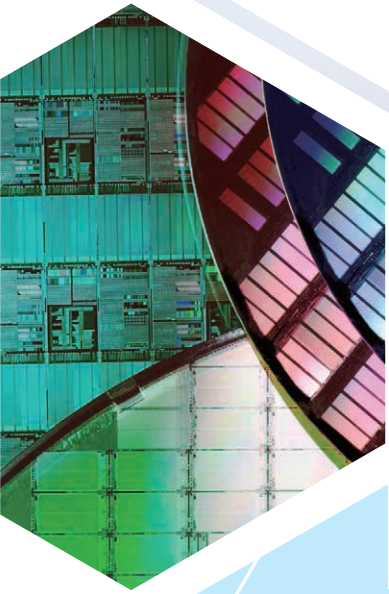
CREATING CUSTOMER SATISFACTION









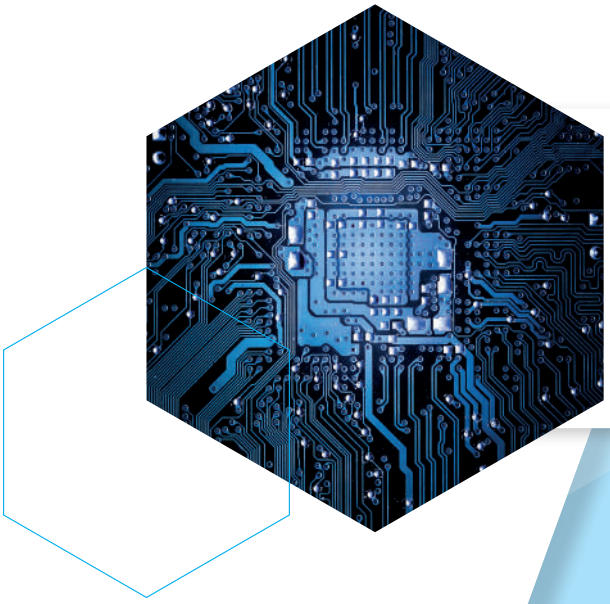
2020

LIGHTING SOLUTION

WORLD'S HIGHEST STANDARD OF LED LIGHTING TECHNOLOGY

LET OUR EXPERTISE WORK FOR YOU

SOLUTIONS IN
MACHINE VISION LIGHTING



SOLUTION & TECHNOLOGY

CCS has a high focus on solution - our customers are continuously assured the best technology, enabling them to operate at optimum performance levels and to compete at the leading edge.

R&D

- Extensive research facilities including the CCS Lighting Institute and AI Laboratories; more than 50 R&D engineers and over 245 global patents

Technology Leadership

- Innovative technology covering all aspects of machine vision lighting from core photonics and spectral illumination, OLED, natural LED (full spectrum), through to specialized lighting control and integration to imaging systems



WORLD-CLASS QUALITY

CCS set the standard for excellence in illumination; consistently developed over 26 years, our quality and manufacturing processes ensure optimum performance, uniformity, accuracy and repeatability.

Manufacturing & Quality

- ISO9001 Quality Management and the optimum in manufacturing processes; CCS products have full compliance with International standards and environmental regulations such as CE, PSE, RoHS, REACH

Customisation

- In addition to an extensive standard line-up, CCS also accepts custom orders - whether that be for a specific application or bespoke machine requirements. We listen to your needs and create the “optimal, custom light” for you



MARKET-LEADING PRODUCTS

Industry's largest range of illumination for machine vision, addressing all solution types - including the Precision, Flood (Plug & Play) and Specialist sectors.

Precision

- Industry's widest product range with over 2,461 models covering Area, Linescan and Specialised precision illumination requirements; includes FASTUS Intelligent Lighting with consistent intensity and Industry 4.0 compatibility

Flood

- Comprehensive Plug & Play lighting systems including built-in power supplies, controllers and IP rating. Wide range of spectral options, easy set-up and connectivity to Industrial and Smart Cameras

Specialist

- Advanced lighting systems incorporating emerging technologies such as Hyperspectral, high power SWIR, 3D Structured Light projectors, and illumination systems for Computational (multi-shot) imaging



GLOBAL, LOCALIZED SUPPORT

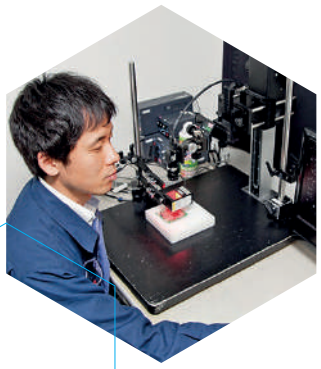
CCS has the global infrastructure and localized services to ensure support for machine vision projects, systems and machines - wherever it is needed.

Support Services

- Providing support reassurance with 15 global sales offices and 26 testing rooms throughout Asia, Europe and America. Services include free testing of your work-pieces, and efficient trial & loan systems

Application Knowhow

- Centralised and local customer access to advice from experienced application engineers; CCS illumination is set-up with typical camera and software configurations to prove realistic solutions for customers



QUALITY / SOLUTION / SUPPORT

New Products BRAND-NEW

Flat Dome Lights LFXV Series

Expanded Lineup

- Bright and clear field of view using new light-guiding plate
- Available in 10 sizes, for a total lineup of 40 models
- Large sizes up to 300 mm and rectangular sizes now available
- Select from four LED colors: red, white, blue, and infrared

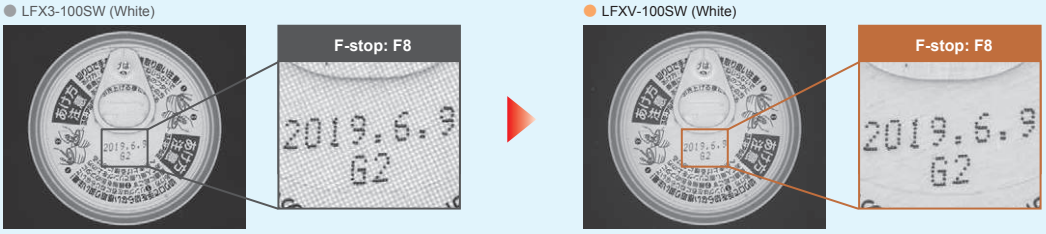
For details, refer to P.107

Total of 40 Models



Reduces image irregularities and moire due to the surface dot pattern.

For details about "moire due to the surface dot pattern", refer to *How to Use the LFX3 to Capture a Perfect Image* on P.114.



For information including imaging conditions refer to the product pages.

Coaxial Lights for High-Resolution Cameras LFV3-G Series

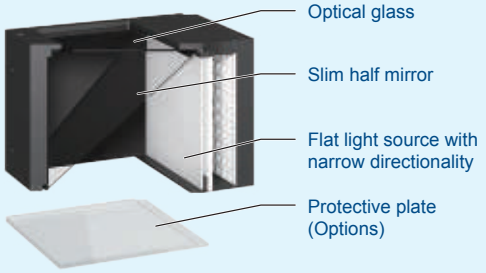
NEW

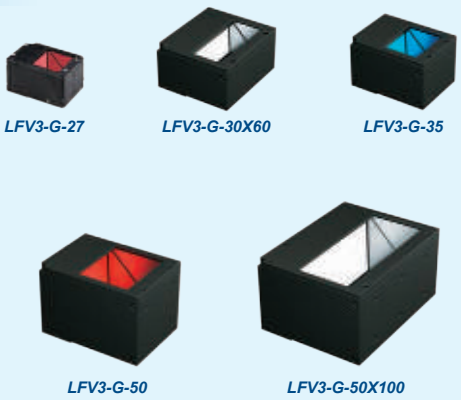
- Equipped with a slim half mirror to support imaging using high-resolution cameras
- Achieves up to 2.5 times* higher output compared to LFV3
- Available in five sizes, for a total of 15 models
- Available in three LED colors: red, white, and blue

For details, refer to P.127

* For detailed information, refer to the product pages.

● LFV3-G Series Structure (example)





The data included is for reference only. Actual values may vary.

High-Power Strobe Light Source Units PFBR-600SW-LL-XF/LLCF-XF

- Next-generation light sources with a maximum brightness of 38 million lux*
- Maintenance free (lamp replacement not required)
- Strobe lighting mode (internal trigger mode, external trigger mode) can be selected
- External control via EtherNet, parallel or serial communication
- Dimming setting in up to 1,024 levels (10 bit: 1,024 levels / 8 bit: 256 levels)
- Can be used with current light guides

* For detailed information, refer to the product pages.

For details, refer to P.203

For replacing xenon light sources

NEW



PFBR-600SW-LLCF-XF
(Filter Changer Model)

PFBR-600SW-LL-XF

Constant-Voltage Analog Control Unit PSB4-60024-2-PEI

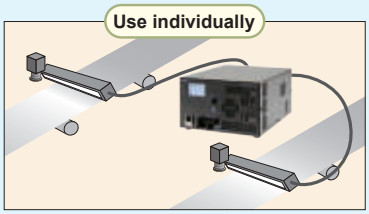
Expanded Lineup

- Equipped with 2 channels. Independent operation possible
- Up to 300 W per channel, for 600 W total of connected lights
- Compatible with a wide range of CCS lights
- External control via EtherNet / parallel communication

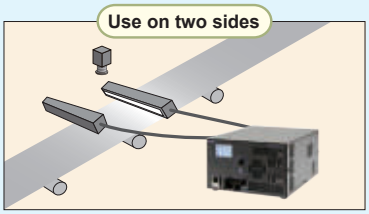
For details, refer to P.351



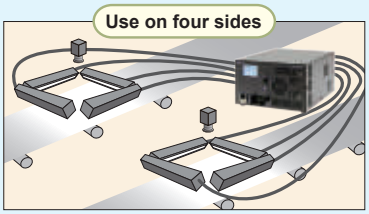
PSB4-60024-2-PEI
(2 channel model)



Individually control lights for each inspection line



Can be dimmed individually to adjust variations in brightness



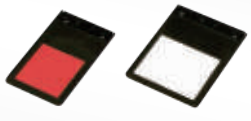
Surround from four directions for individual line light control

CCS LT Organic LED Lights for Machine Vision

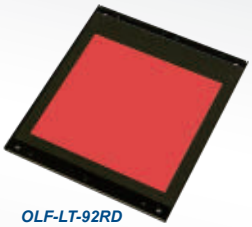
For details, refer to P.277

NEW

Brightness required for machine vision applications



OLF-LT-25RD *OLF-LT-40X30SW*



OLF-LT-92RD

Unprecedented thin design!

3 mm



Innovation in Illumination Technologies

CCS Group Synergy

The CCS Group continuously strives to deliver *best in class* technology for all sectors of Illumination solutions for Machine Vision - from industry leading Precision lighting to innovative Flood and Specialist systems. This is underpinned by high performance lighting control, networking, and integration of lighting within Imaging software. Each area of CCS Group technology is fully complementary - resulting in users having the industry's widest choice, performance and quality for their Machine Vision illumination needs.



CCS

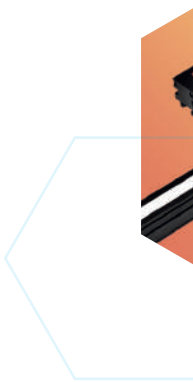
Precision Illumination & Photonics

Leading the industry for precision illumination & optimum quality, and solution in core spectral technology and photonics

Effilux

Flood Lighting, Plug & Play

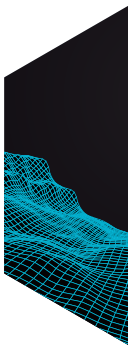
Comprehensive range of Flood illumination which combines both performance and flexibility within plug & play format, including built-in control



CCS Fastus

Specialist Illumination

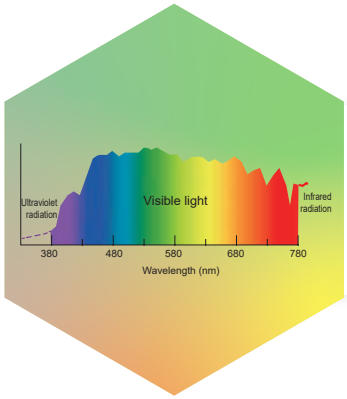
For applications which demand the highest levels of illumination control, with guaranteed intensity through unique lighting feedback



triniti

Intelligent Lighting Control & Networking

Industry 4.0 compatible lighting control system - based on GenICam, constant-current controllers and easy to set-up lighting with lifetime recording



SPECTRAL

Significant advances in Spectral developments include novel, tuneable, single LED illumination source for visible-NIR hyperspectral, unique high power SWIR, and Natural Light LED

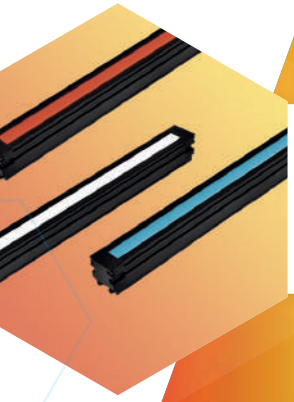
P.7



OLED

Measuring only 3mm in thickness, the newly developed OLED technology enables a multi-layer design for flat lights - providing unique intensity and uniformity

P.277



LINESCAN

CCS offers a broad selection of unique line light series, which are available in a wide range of different wavelengths and can be manufactured at longer lengths to suit your application needs

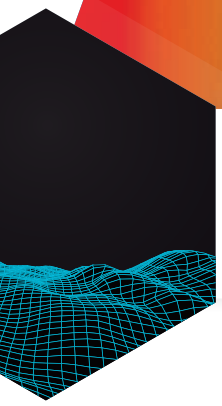
P.209



INDUSTRY 4.0

GigE Vision/GenICam compatible lighting systems which provide plug and play set-up and easy integration with Imaging software, along with lighting data for Industry 4.0

P.15



3D STRUCTURED PROJECTORS

Includes EFFILUX structured LED lighting - designed for 3D reconstruction, stereovision and alignment applications. It projects powerful and accurate patterns such as : line, cross, cloud of dots

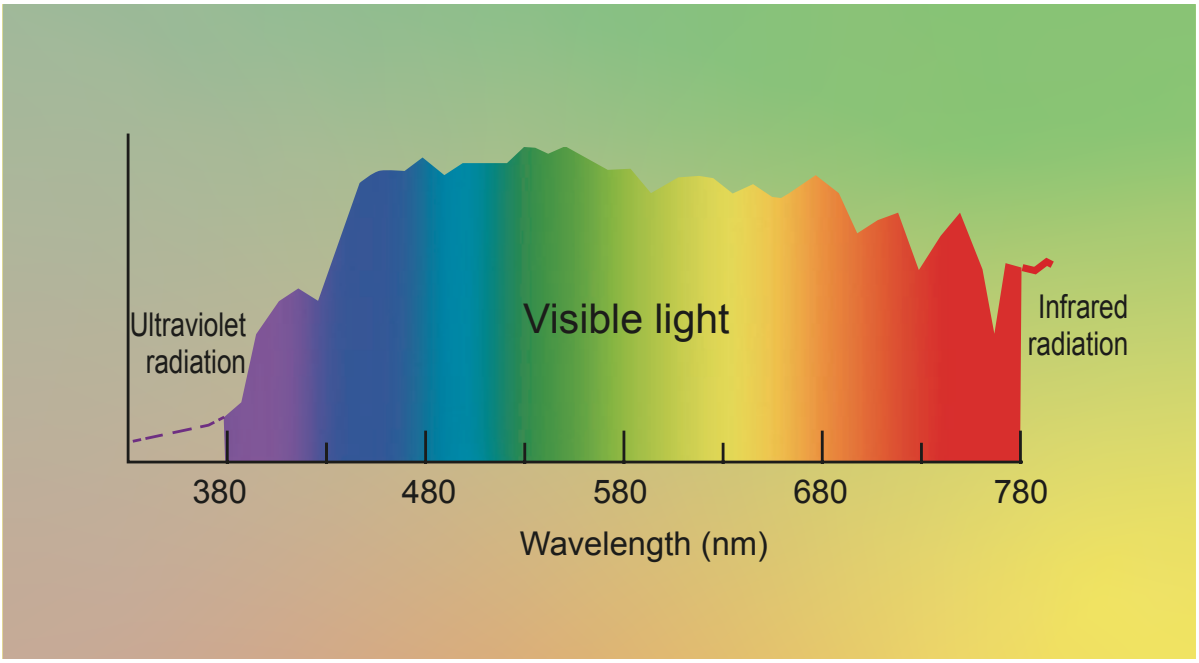
P.304



COMPUTATIONAL ILLUMINATION

Computational Illumination from CCS provides lighting in a structured and open-architecture format - enabling high quality multi-shot image capture in a controlled fashion

P.287



Hyperspectral & SWIR

Innovations in Spectral Illumination Technologies

CCS and its subsidiary EFFILUX are combining their extensive expertise to develop leading edge technologies. In particular, this partnership has led to significant advances in hyperspectral and Short-Wave InfraRed (SWIR) illumination that will expand the application possibilities for these two rapidly-growing technologies.

Novel Illumination for Visible-NIR Hyperspectral Imaging

A new LED illumination source is based on a single proprietary LED with a tuneable continuous spectrum from 400 to 900 nm. The point source design of the CCS-EFFILUX hyperspectral light provides exceptional spatial and spectral uniformity and enables lights to be produced in any form factor, including projector, bar, ring and backlight. This will allow for an enormous range of new applications for hyperspectral imaging in the visible-NIR region of the spectrum.

The benefits of hyperspectral imaging

Hyperspectral imaging is a powerful approach that combines conventional imaging with spectroscopy. Organic materials selectively absorb light at specific wavelengths depending on their composition and these distinctive ‘fingerprints’ can be used to uniquely identify them. In hyperspectral imaging, a series of images can be acquired by sequentially allowing narrow wavelength bands of light from the sample to fall on the camera sensor.

By selecting the appropriate wavelengths, hyperspectral images allow the assessment of product quality, and the detection of contaminants and foreign material based on chemical composition, which is not possible using traditional machine vision. Another major benefit of hyperspectral imaging is that packaging materials are usually transparent to NIR light, meaning that the technique can be used to examine products inside their packaging.

Hyperspectral illumination requirements

As with all machine vision techniques, using an appropriate illumination source is absolutely critical in delivering high quality results. The key requirement for hyperspectral illumination is to have as homogeneous of emission as possible over the entire wavelength range of interest from a point source to ensure that all wavelengths are generated from the same physical location. For visible-NIR hyperspectral imaging the wavelength range is 400 – 900 nm. The ideal illumination source would be sunlight, but this is not a practical solution for machine vision, so a black body radiation source in the form of a tungsten halogen light source has been the most commonly used solution to date.

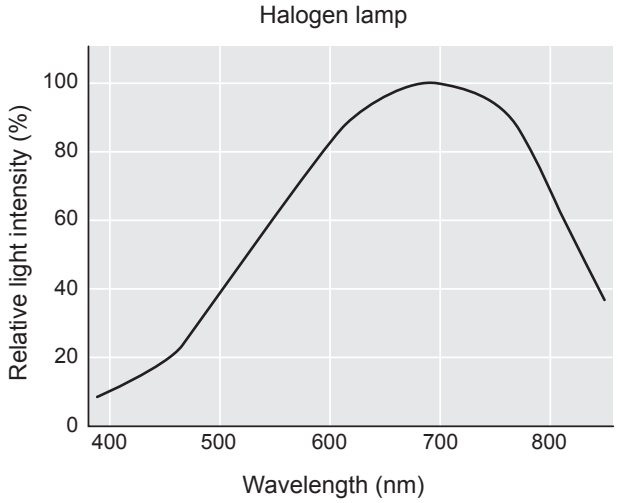


Figure 1 – Sample Spectrums for Tungsten Halogen

While this generally has good uniformity of emission over the wavelengths of interest, it has a relatively poor emission in the blue spectral range (Figure 1). However, a large proportion of the energy emitted lies outside the wavelength region of interest. This energy is wasted and generates excessive heat, which means the lamps must be cooled or equipped with suitable heat sinks. This adds cost, complexity and can lead to significant integration challenges in production line applications due to the bulky size of the enclosures.

There are also issues related to stability (an essential requirement for reproducibility of measurements in machine vision) and short lifetimes which have implications on operating and maintenance costs. In addition, EU environmental regulations may result in these types of lamps being banned going forward. Many industrial imaging applications also require the illumination to be strobed to eliminate the effects of product movement, but halogen lamps cannot be pulsed.

LED hyperspectral imaging

LED illumination has largely replaced any other illumination method in most machine vision applications, but for hyperspectral imaging, the source must cover the entire spectrum between 400 and 900 nm and provide uniform illumination across the wavelength range. Although white light LEDs are available, they have a large peak in the blue region of the spectrum, a 'hole' around 480 nm and only operate up to just over 700 nm, as shown in Figure 2.

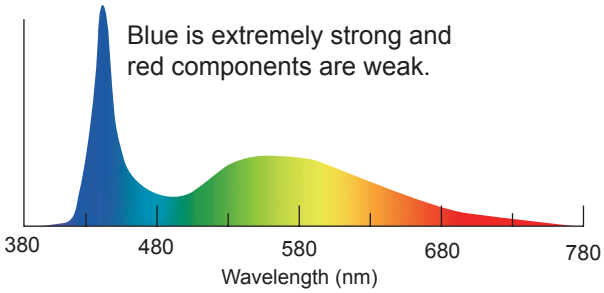


Figure 2 – Spectrum for Conventional White Light LED

This offers neither the uniformity required nor the full wavelength range to utilise the sensitivity up to 1000 nm provided by the CMOS camera sensors used in Visible-NIR hyperspectral imaging.

An alternative approach is to use multiple monochromatic LEDs in a single illuminator to cover the required wavelength range. Dealing with multiple LED sources, however, always brings a compromise between spectrum and uniformity because the bandwidths of classic monochromatic LEDs are narrow, making it nearly impossible to produce a homogeneous high-performance area hyperspectral light using the number of narrow-band LEDs required. In fact, this is actually just a multispectral solution, where the available wavelengths are limited to those of the LEDs chosen. Until now, the only practical way to integrate enough LEDs for hyperspectral lighting was to combine them into a line scan illuminator. This, however, creates spatial inhomogeneity since the light from the individual LEDs arrives at the sample from different angles, depending on the position of the LED in the line.

The new LED solution

CCS Inc. and EFFILUX have addressed these issues in the form of a proprietary, tuneable single LED illumination source that overcomes the limitations of halogen or multiple LED based hyperspectral lighting solutions. It provides a nearly flat spectrum between 400 and 900 nm, as shown in Figure 3.

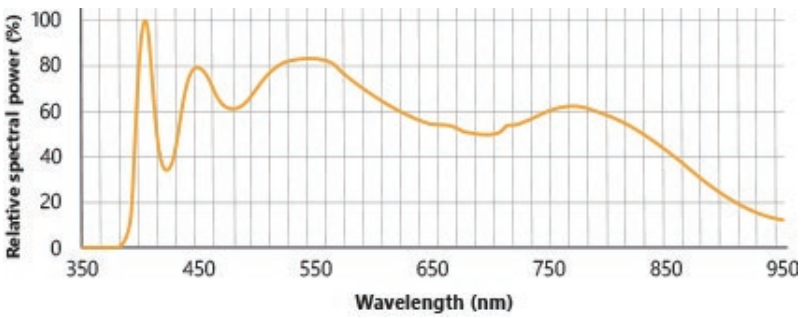


Figure 3 – CCS/EFFILUX Visible-NIR Hyperspectral LED

This innovative new approach provides spatial and spectral uniformity in a point-source hyperspectral illuminator. These illuminators are based on a single broadband LED that was both developed and is manufactured in-house. They are therefore completely compatible with existing mechanical enclosures, meaning that any of the company's standard products can be produced in a hyperspectral imaging format. Users can therefore benefit both from unlimited form factors, including bar lights, line lights, back lights, ring lights, projectors, etc. to suit the particular application, and from greatly simplified integration into existing inspection processes. Since this LED is a single point source, all wavelengths come from the same spatial origin, meaning there are no wavelength-dependent angular absorption effects.

Crucially, for added versatility, the spectrum can be tuned within the available spectral range in order to tailor the light output to the specific application requirements – the system is not limited to fixed output wavelengths as is the case for multi-spectral imaging. In addition, the hyperspectral LED can be strobed if required and multiple LEDs can be mounted on a single PCB if increased output intensity is needed. Of course, another major benefit is the longevity associated with LEDs.

Extending the wavelength range

Many organic materials have important absorption bands in the NIR region of the spectrum, and CMOS sensors still have sensitivity to 1000 nm. Light output from the new hyperspectral LED falls away quite rapidly past 900 nm (Figure 3), but this can be compensated for through the addition of two further LEDs with output at 930 and 970 nm respectively to give increased output intensity between 900 and 1000 nm, as shown in Figure 4.

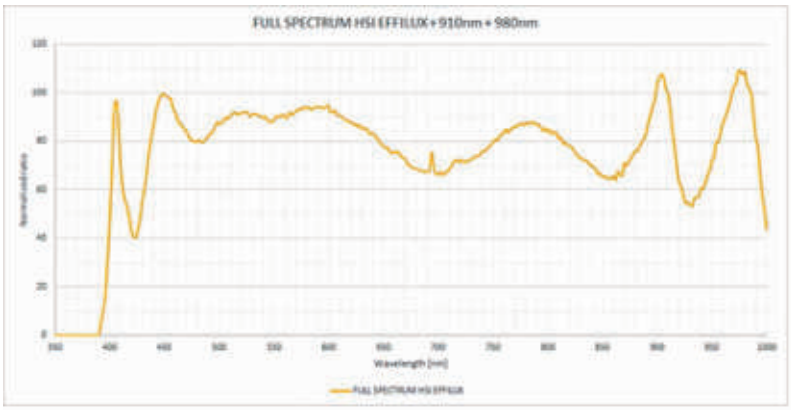
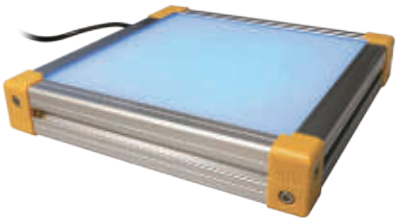


Figure 4 – Extended Range Visible-NIR Hyperspectral Solution

This flexible solution featuring just 3 LEDs could be accommodated in a variety of enclosures, as shown in Figure 5.



Collimated line light bar for linescan hyperspectral cameras



Backlight for area scan sensors



"Spot" concept for area scan sensors

Figure 5 – Sample Visible-NIR Hyperspectral Illuminators

Both the standard and extended hyperspectral LED lights are expected to expand the overall market for hyperspectral imaging as well as to replace existing solutions.

Practical applications

Since existing tungsten halogen hyperspectral illumination sources have considerable operational challenges, such as heat dissipation, poor energy efficiency and continuous only output, together with difficulty in achieving high spatial uniformity due to lamp size and optics, it is often not possible to build these lights in the form factors most frequently needed for automated hyperspectral imaging.

The availability of the new hyperspectral LEDs in a variety of form factors will open up new opportunities across many applications and industries, including: medical imaging and diagnostics, environmental monitoring, forensics, food and pharmaceutical analysis, food sorting and quality grading, biotechnology, recycling, bank note inspection and chemical analysis.

Please refer to P.377 and P.299 for further information about CCS natural-light LED lighting and EFFILUX's hyperspectral product range.

Unique Light Source for High-Power SWIR Illumination

CCS's subsidiary, EFFILUX, developed a novel LED SWIR source - SWIR H.O.P. (High Optical Power) Technology, based on a proprietary material that emits SWIR light, which is designed to deliver high output power. This technology leads the way to new applications in machine vision and scientific imaging.

Emerging SWIR imaging for machine vision

Machine vision is currently dominated by visible imaging. Indeed, similarities with the human eye perception and the technological advances in lighting power, camera resolution, and computer processing have made these technologies inevitable. However, there is an intrinsic and impassable limit: the visibility itself! Only what can be seen by the naked eye is visible.

In this context, a new generation of sensors has emerged in the machine vision market: Short-Wave InfraRed (or SWIR) cameras.

Occupying the boundary between visible and thermal imaging, this light field has the capability to reveal phenomena and elements invisible to standard CMOS/CCD cameras. The SWIR imaging market is rapidly growing due to the range of applications made possible using SWIR-range wavelengths:

- See through opaque materials (plastics, silicon, glass, etc.)
- Reveal chemical elements (water, lipids, collagen, etc.)
- Offer visibility in harsh conditions (through smoke, dust, etc.)

Until now, SWIR imaging has been severely limited by the illumination. With the exception of halogen sources, there are no light sources powerful enough for most applications in the SWIR spectrum. However, halogen sources for SWIR imaging have many drawbacks, such as high radiated heat, very short lifetime, low efficiency and non-tunable spectrum, and they are difficult to couple with optics to control coverage area and power density.

Using laser sources is also a possible solution, but only for applications which require point sources. Managing the luminous flux of a laser source is complicated and brings an undesirable speckle effect. Furthermore, it is not easy to integrate into a machine vision system and is very dangerous for eyes.

About SWIR H.O.P. Technology

The H.O.P. (High Optical Power) Technology from EFFILUX changes the SWIR market, providing high output power and the ability to address a new class of applications. H.O.P. is more than just a good integration of LEDs − it is a new type of powerful light source, based on a proprietary material that emits its own SWIR light, making it possible to reveal invisible phenomena to SWIR cameras that usual LED systems could not.

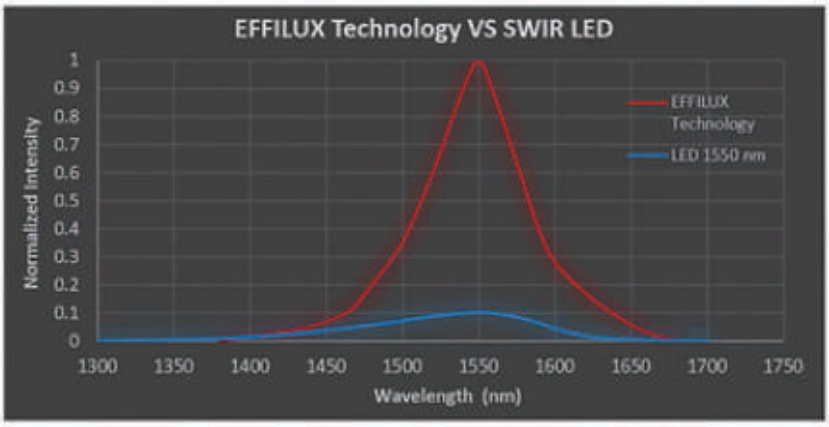


Figure 6 – Intensity comparison between EFFILUX technology and SWIR LED 1550 nm

Now, there is no need to drastically increase the camera's integration time to get a good image. This combination of SWIR sensor and the EFFILUX H.O.P. Technology provides greatly enhanced contrast – the key in all machine vision applications, even for high-speed inspection tasks.

Better yet, to achieve the same output power, many expensive SWIR LEDs can be replaced by a single H.O.P. "chip", resulting in lower costs for system builders using SWIR illumination.

Advantages of H.O.P. Technology

The H.O.P. Technology retains all the advantages of LEDs compared to halogen or laser sources, with a huge improvement in power and the flexibility to create both highly focused SWIR beams as well as large area uniform SWIR illumination. In fact, one “chip” of the H.O.P. Technology emits a luminous flux comparable to a 50 W halogen source.

These properties make it very easy and convenient to integrate into a machine vision system:

- This technology has a great lifetime, around 50000 hours
- No excessive warm up
- Using an adequate cooling system, the H.O.P. Technology offers a perfect stability and reliability, which is crucial for repetitive tasks and measurements, and especially for calibration systems.
- Its LED-based technology makes this source speckle-free
- Quick pulse is also possible thanks to its quick response time, unlike the long wait needed to switch the light on again with halogen sources
- This technology is very compact - so it can be integrated into very compact products
- Its energy efficiency allows a low power consumption
- Fully safe for human eyes
- Adjustable to extreme conditions: thermal, vibration, humidity…

Although conventional SWIR LEDs still offer the benefits of LED technology, they are usually weaker and can only achieve output power in the mW range. Increasing the number of LEDs is a potential solution but is expensive and still does not compare to halogen in terms of power.

Practical applications

SWIR illumination is an emerging technology that requires different thinking than for visible light sources. A thorough understanding of the fundamental optical challenges and new methods for developing effective light sources, including the use of novel materials and processes, is essential.
The H.O.P. Technology can be integrated into all EFFILUX standard illumination systems, offering an extensive range of SWIR lighting solutions, including area & line scan imaging, backlight, dome light, ring light, bar light, and any other LED lighting systems commonly used in SWIR camera applications.
As one example, this powerful SWIR light engine has been combined into a complex optical projector, resulting in the most powerful, sharp and homogenous SWIR pattern projector on the market.



Figure 7 – SWIR H.O.P. pattern projector

This is a very unique product because of its optical performance and its flexibility. Users can project any pattern they want and illuminate objects from short working distances (focused light) to far working distances (5 meters).

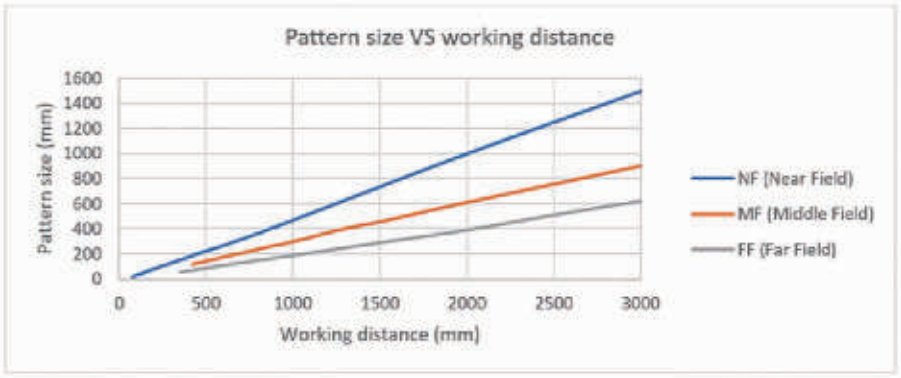


Figure 8 – Spot pattern size and related working distance

Here is a comparison between a projector with a standard LED and H.O.P. Technology. This clearly demonstrates the advantages of the H.O.P. Technology vs. any design based around SWIR LEDs only.

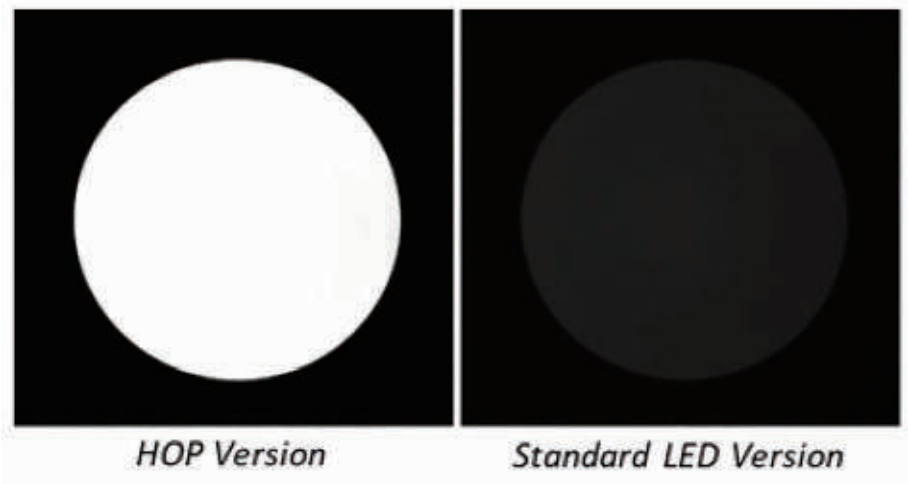


Figure 9 – Comparison of spot pattern based on H.O.P. Technology, made with an InGaAs Camera at the same exposure time

This novel technology opens up new opportunities across many applications and industries, including: Water detection for agriculture, F&B, medical and biotech industry, opaque materials inspection (plastics, silicon, solar cells etc), fill level, security, imaging in harsh environments such as smoke, fog, and dust, and many more.

For further information on H.O.P. Technology, please contact your local CCS representative.



INTELLIGENT LIGHTING FOR INDUSTRY 4.0

Intelligent lighting (smart lighting) brings benefits to various machine vision applications by enabling lighting, cameras and imaging software to be integrated within an easy, plug & play platform and process. They also provide the necessary lighting data which is important for Industry 4.0 systems - indicating factors such as lighting status, performance and lifetime information.
Thanks to advanced CCS technology, lighting solutions for machine vision image processing have become even simpler, flexible and efficient. Allowing for the significant variety of different application demands in machine vision, CCS has developed levels of intelligent lighting functions from which users can choose - from easy connection to automation systems for basic lighting connectivity and data, through to GenICam compatible systems with intensity feedback for high precision applications.

Why use Intelligent Lighting?

Intelligent lighting functionality provides the essential ease of use for the implementation and development of lighting within machine vision systems. Along with the need for machine vision systems to offer ever increasing inspection performance, the demands on lighting technology are also developing at a rapid pace – in parallel to this, intelligent lighting functions are making the use of this increased illumination capability very accessible and straightforward to implement. The key advantages of intelligent lighting can therefore be summarised as:

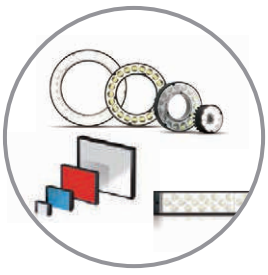
- **Integration of camera and lighting within one machine vision environment**
  One environment, with open technology, for set-up and development of Lighting, Cameras and Imaging Software
- **Ease of use, Plug & Play**
  Easy connectivity and safe implementation of advanced lighting control functions such as strobing and overdriving
- **Lighting data for Industry 4.0**
  Essential lighting data such as intensity levels and lifetime for predictive maintenance and diagnostics



One development environment for Lighting, Cameras and Imaging



Open network standards for ease and flexibility of implementation



Easy connectivity of lighting and safe development of advanced control

3 levels of lighting integration from CCS
aligned to users application requirements

01 **CCS Fastus**
GenICam compatible illumination with intensity feedback for high precision applications

02 **triniti**
Open protocol lighting & control system for easy camera and software integration

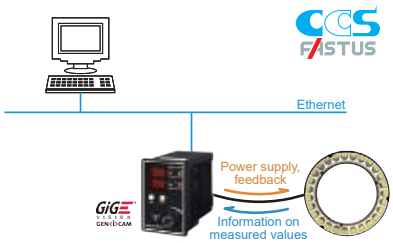
03 **CN Series**
Easy connection in automation systems for lighting setup, control and maintenance

CCS FASTUS

GenICam compatible illumination with intensity feedback for high precision applications

For specialist applications requiring guaranteed illumination levels, CCS FASTUS technology offers a whole new level of machine vision lighting solutions with sensing, monitoring and feedback functions - realizing stable and reliable inspection. It also guarantees lighting intensity and integrates with GenICam for Industry 4.0 maintenance and performance data.

- **Optimum uniformity**
- **Precise accuracy & stability**
- **Consistent intensity over time**

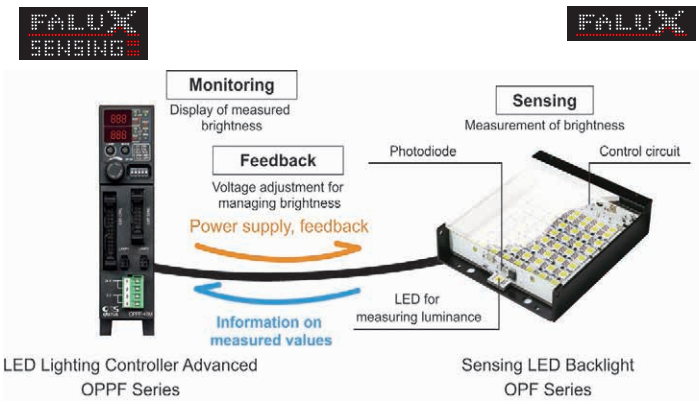


This technology is ideal for applications which demand minimal variance in illumination levels over time, for example in the Glass, Semiconductor, Pharmaceutical and Microscopy sectors. Brightness can be monitored using the built-in photodiodes by connecting a CCS FASTUS Series LED lighting controller, and this allows for accurate measurement of LED brightness even with short period illumination (monitoring of internal temperatures is also possible) - all information being seamlessly available via GenICam for integration with Cameras, Imaging Software and diagnostic systems.

How CCS FASTUS intelligent lighting technology delivers guaranteed illumination intensity

At the heart of CCS FASTUS intelligent LED lighting is FALUX and FALUX Sensing technology – unique, patented lighting control and illumination feedback functions which provide the necessary intelligence to drive the high performance, accuracy and stability of CCS FASTUS illumination systems for Machine Vision.

- **Feedback-Brightness maintenance**
  Brightness is automatically adjusted to maintain initial settings.



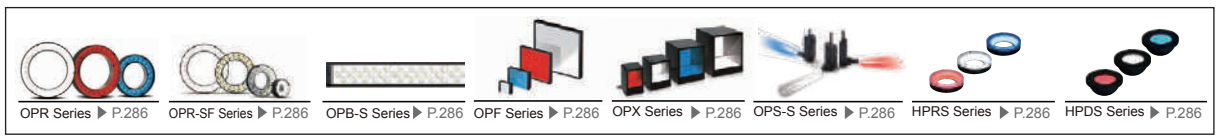
Built-in FALUX circuit to correct variations in brightness

Using constant current circuitry dependent on the input voltage, variations in the forward current of individual LEDs are corrected for uniform brightness. Meanwhile, the temperature compensation circuit compensates for fluctuations in brightness due to increases in operational or ambient temperature.

Equipped with FALUX Sensing for monitoring light brightness and temperature

LED brightness sensing is performed using multiple built-in photodiodes. This allows for accurate measurement of LED brightness not only during continuous illumination but also with short period illumination.

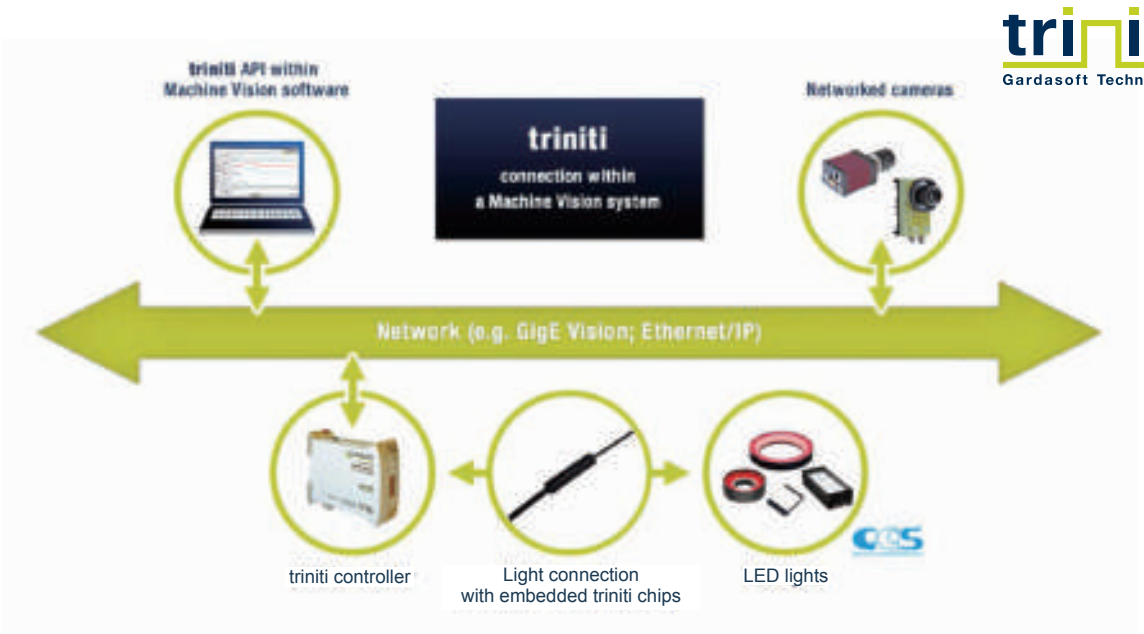
CCS FASTUS lighting models



triniti

Open protocol lighting & control system for easy camera and software integration

For high precision lighting applications, triniti™ is a new, enabling technology from our group company Gardasoft, which provides expert control, operational intelligence and full integration of Machine Vision Lighting, all within a 'plug-&-play' environment.
With triniti, Machine Vision systems with LED Lighting are now much easier to create, configure and commission, while at the same time offering increased functionality. This is because complex control techniques have now been made very easy to implement.



Key benefits at a glance:
- **Enables non-expert users to use expert Machine Vision lighting techniques**
- **Revolutionises the integration of lighting parameters right through to application level software**
- **Addresses the industry's identified need for a highly flexible system that is also readily 'plug-&-play'**
- **Provides a long-term stability of brightness that helps to enhance the reliability of Machine Vision systems over many years**

Compatible CCS lighting models for triniti

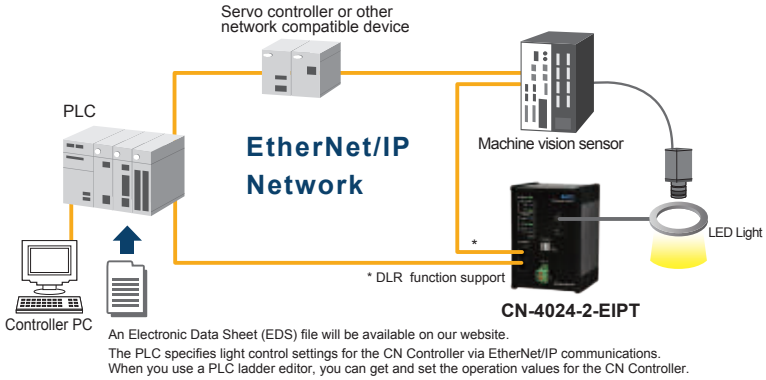
CCS Intelligent Lighting systems can be easily selected. The following CCS lighting ranges have the triniti Intelligent Lighting functionality available as standard (other CCS models can have this added as a 'custom fit' option).



CN Controllers

Easy connection in automation systems via Ethernet/IP for lighting set-up, control and maintenance

Where the user requires easy connection between their automation and inspection systems, the CCS CN Controllers provide the ideal connectivity via EtherNet/IP networks. Conforming to ODVA Composite Conformance Test Revision CT15, these controllers provide a true smart device for the IoT era.
The following lighting values are available via the Ethernet/IP network for either set-up, operational or diagnostic purposes:



An Electronic Data Sheet (EDS) file will be available on our website.
The PLC specifies light control settings for the CN Controller via EtherNet/IP communications.
When you use a PLC ladder editor, you can get and set the operation values for the CN Controller.

Accumulated trigger count, accumulated lighting duration, and error status
In addition, users can set and check the following values:

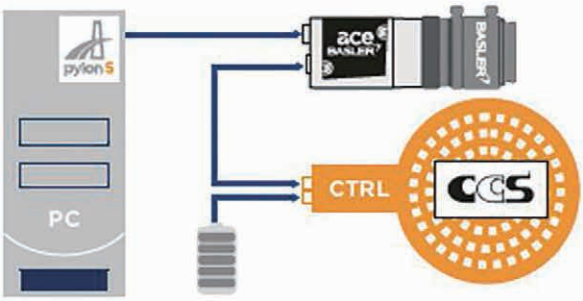
- Lighting mode, trigger logic, ON/OFF setting for the Light Unit, light intensity, strobe time, and lighting delay

The CN Controller also provides TCP/IP commands for the same operations.

CameraLight

OEM plug & play system for easy integration of lighting and cameras in one environment

The Basler Camera Light system is a new intelligent lighting system, powered by CCS. It provides easy camera synchronization, light strobing and overdrive.



BASLER powered by CCS

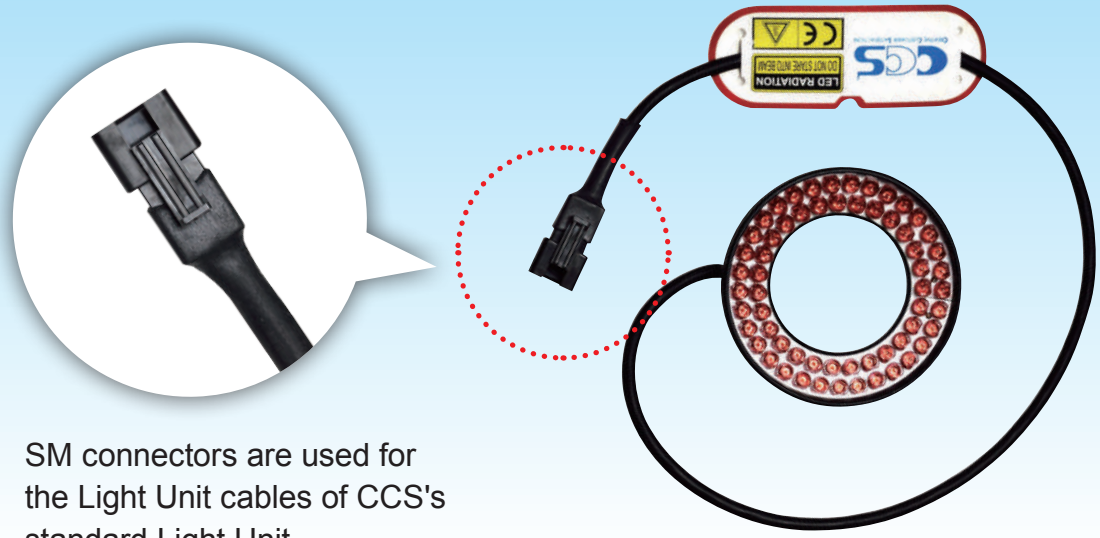
Simple and cost-optimized

- **Ease of use**
- Plug & Play thanks to harmonized components (camera + light + cables)
- 1 software for configuration via Basler pylon Camera Software Suite
- 1 power supply only
- **Illumination inclusive LED controller**
- Communication between lighting and camera via **Basler SLP feature**
- Parameterization of light and camera via just one interface
- Automatic timing for strobing operation

It consists of a comprehensive series of lighting which is compatible with the Basler SLP intelligent lighting concept. Jointly developed by both Basler and CCS, the world's leading camera and lighting manufacturer for machine vision applications, it offers the maximum ease of use and great cost performance.
In addition, the Basler pylon Camera Software Suite provides one configuration environment for both camera and lighting, and all parameterization of lights and camera is done via just one interface - including automatic timing for strobing and overdriving.

Light Unit Cables

M12 Connector and Flying Leads Light Unit Cables Are Now Available



SM connectors are used for the Light Unit cables of CCS's standard Light Unit.

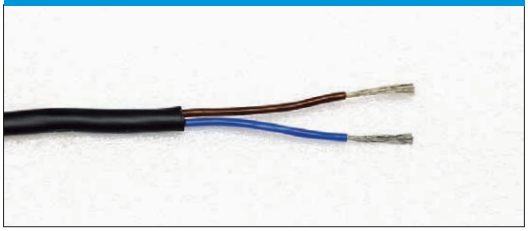
Now You can choose

4-pin M12 Socket Connectors



Note: This connector cannot be used for the Light Units with a power consumption of more than 65 W.

Flying Leads



These specifications are provided for custom production. Please order with the model name notation given below.

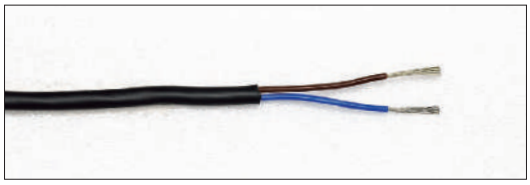
Specifications

4-pin M12 Socket Connectors



Model	Standard model name + " **-M12** "
Cable Length	300 mm
Polarity & Signal	1: (+ 24 VDC) 2: No Connection 3: (- GND) 4: No Connection

Flying Leads



Model	Standard model name + " **-FL** "
Cable Length	2,000 mm
Polarity & Signal	Anode(+)Brown / Cathode(-)Blue

For example, to order LDR2-32RD2 with an **M12** connector attached, specify the model name as "LDR2-32RD2-**M12**".

Applicable Products

These specifications are applicable to the standard products shown below.

▶P.31
Ring Lights
LDR2



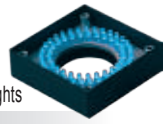
▶P.35
Low-angle Ring Lights
LDR2-LA



▶P.39
Low-angle Ring Lights
LDR-LA1



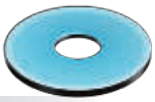
▶P.43 ▶P.44
Ring Lights / Low-angle Ring Lights
SQR / SQR-TP



▶P.45
Ring Lights
HPR2



▶P.49
Ring Lights
LFR



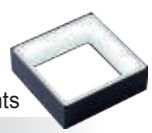
▶P.51
Ring Lights
LKR



▶P.53
Low-angle Ring Lights
FPR



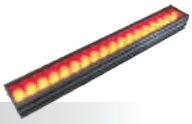
▶P.55
Low-angle Square Lights
FPQ3



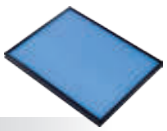
▶P.59
Bar Lights
LDL2



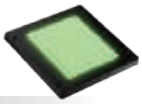
▶P.75
Bar Lights
HLDL2



▶P.79
Flat Lights
TH2



▶P.95
Flat Lights
LFL



▶P.99
Dome Lights
HPD2



▶P.103
Dome Lights
LDM2



▶P.105
Dome Lights
LAV



▶P.106
Dome Lights
PDM



▶P.107 ▶P.113 ▶P.119
Flat Dome Lights
LFXV / LFX3 / LFX3-PT



▶P.121
Coaxial Lights
LFV3



▶P.131
Coaxial Lights
MSU



▶P.163 ▶P.169
Ultraviolet Lights
UV2 / UV



▶P.175
Infrared Lights
IR2



▶P.193
Spot Lights
LV



▶P.194
Spot Lights
LSP



▶P.231
▶P.232
Line Lights
LN / LN-HK



▶P.237
Line Lights
LND2



▶P.251
Line Coaxial Lights
LNV



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LED Lights

Direct Lighting

Ring Lights — P.31
Provides direct light from an angled emitting part

LDR2 Series
For character recognition, visual inspection, and inspection for damage or stains
- Applications: Character recognition, visual inspection, inspection for damage or stains, and reading 2-dimensional code, etc.
- 31 models
- LED colors: ● ○ ● ●



Low-Angle Ring Lights — P.35
Provides direct light at a low angle from an angled emitting part

LDR2-LA Series
For edge extraction, inspection for engraved characters, damage or stains
- Applications: Inspection for engraved characters on metal surfaces, inspection for damage or stains, inspection for mixed foreign materials, etc.
- 24 models
- LED colors: ● ○ ● ●



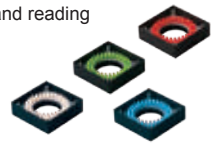
Low-Angle Ring Lights — P.39
Provides direct light at a low angle from an emitting part directed horizontally

LDR-LA1 Series
For edge extraction, inspection for engraved characters, damage, or stains
- Applications: Inspection for engraved characters on metal surfaces, inspection for damage or stains, inspection for mixed foreign materials, etc.
- 20 models
- LED colors: ● ○ ● ●



Ring Lights — P.43
Provides direct light from the upper section

SQR Series
For character recognition, visual inspection, and inspection for damage or stains
- Applications: Character recognition, visual inspection, inspection for damage or stains, and reading 2-dimensional code, etc.
- 5 models
- LED colors: ● ○ ● ●



Low-Angle Ring Lights — P.44
Provides direct light at a low angle from an angled emitting part

SQR-TP Series
For edge extraction, inspection for text or damage
- Applications: Visual inspection of metal parts and inspection for damage or stains, etc.
- 2 models
- LED color: ●



LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

LED Lights

Diffused Lighting

Ring Lights
Achieves a uniform region with a high degree of freedom by using a unique illuminating mechanism

P.45

HPR2 Series
For inspection for damage or stains, visual inspection, and color determining inspection

- Applications: High angle uniform illumination and inspection via feature extraction on low-angle, etc.
- 28 models
- LED colors: ● ○ ● (Full color: ● ● ●)

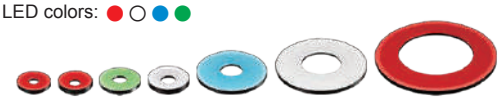


Ring Lights
Diffused illumination from a flat emitting surface

P.49

LFR Series
For character recognition, text inspection, and color determining inspection

- Applications: Inspection for parts mounted on circuit boards and surface inspection for metal parts, etc.
- 23 models
- LED colors: ● ○ ● ●

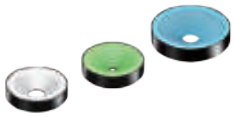


Ring Lights
Provides diffused light from an angled emitting surface

P.51

LKR Series
For character recognition and inspection for stains or dents

- Applications: Soldering inspection, mixed models inspection in color determination, and inspection for stains on a glossy surface, etc.
- 12 models
- LED colors: ● ○ ● ●



Low-Angle Ring Lights
Provides diffused light at a low angle from an angled emitting surface

P.53

FPR Series
For edge extraction, inspection for engraved characters, and character recognition

- Applications: Edge extraction of metal parts and character recognition on electronic parts, etc.
- 12 models
- LED colors: ● ○ ● ●

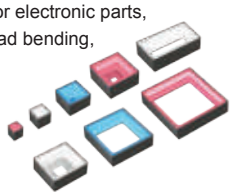


Low-Angle Square Lights
Provides diffused light at a low angle from four directions

P.55

FPQ3 Series
For visual inspection, character recognition, and inspection for fragments or stains

- Applications: Visual inspection for electronic parts, character recognition, pin and lead bending, and inspection for stains, etc.
- 24 models
- LED colors: ● ○ ●



LED Lights

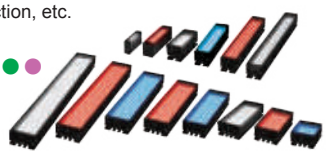
Direct Lighting

Bar Lights
Provides direct light from an emitting part equipped with LEDs in straight lines

P.59

LDL2 Series
For damage and visual inspection, and text reading

- Applications: Damage inspection of metal with hairline finishing, and foreign material and detection inspection, etc.
- 141 models
- LED colors: ● ○ ● ● ●

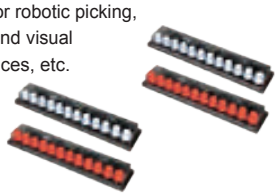


Bar Lights
Bar Light with built-in Controller, perfect even for large workpieces

P.71

LDLB Series <Lineup with Waterproof Types>
For inspection for mixed different models, visual inspection

- Applications: Light source for robotic picking, mixed models inspection, and visual inspection for large workpieces, etc.
- 4 models
- LED colors: ● ○

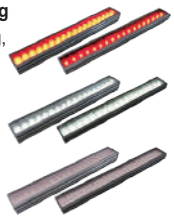


Bar Lights
Provides direct light perfect for large workpieces

P.75

HLDL2 Series
For inspection for mixed different models, visual inspection and dimension measuring

- Applications: Light source for robotic picking, visual inspection for large workpieces, and mixed models inspection, etc.
- 48 models
- LED colors: ● ○ ●



Diffused Lighting

Flat Lights
Diffused illumination from a flat emitting surface

P.79

TH2 Series High-Luminance Type
For dimension measuring and foreign material inspection

- Applications: Liquid surface inspection, pinhole inspection, visual inspection, and burr inspection for metal parts, etc.
- 33 models
- LED colors: ● ○ ●

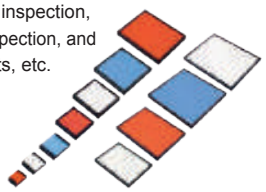


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LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

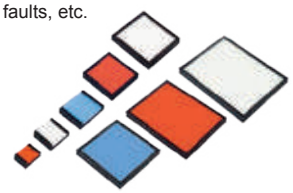
The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

LED Lights

Diffused Lighting

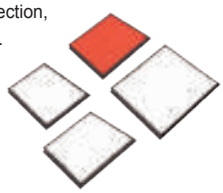
Flat Lights — P.83
Provides a diffused light of high-directivity

TH2-PM Series High-Directivity Type
For dimension measuring and visual inspection
- Applications: Dimension measuring, visual inspection, and inspection for stains and faults, etc.
- 24 models
- LED colors: ● ○ ●



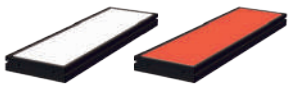
Flat Lights — P.87
Ideal for inspecting large workpieces

TH2 Series Large Type
For visual inspection and foreign material inspection
- Applications: Inspection of liquid surface level in large workpiece, visual inspection, and foreign material inspection, etc.
- 8 models
- LED colors: ● ○



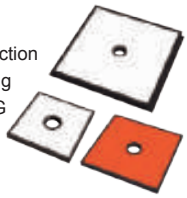
Flat Lights — P.89
Applicable to inspection of rectangular workpieces and imaging with a line sensor camera

TH2 Series Rectangular Type
For visual inspection and foreign material inspection
- Applications: Visual inspection of rectangular and fault inspection of sheet-shaped workpieces, etc.
- 2 models
- LED colors: ● ○



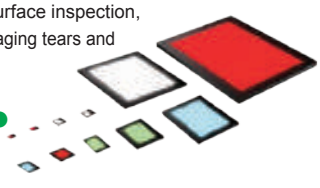
Flat Lights — P.91
A flat emitting surface provides a light from the same axis as the camera

TH2-CR Series Camera-Window Type
For visual inspection and foreign material inspection
- Applications: Visual inspection, inspection for foreign material and stains, reading engraved text, and inspection of FIPG material on metal components, etc.
- 6 models
- LED colors: ● ○



Flat Lights — P.95
Diffused illumination from a flat emitting surface

LFL Series
For dimension measuring, visual inspection, and foreign material inspection
- Applications: Liquid surface inspection, visual inspection, packaging tears and stain inspection, etc.
- 43 models
- LED colors: ● ○ ● ●



LED Lights

Diffused Lighting

Dome Lights — P.99
Provides diffused light evenly through the dome-shaped reflective panel

HPD2 Series
For visual inspection, color determination inspection, and inspection for stains
- Applications: Visual inspection for glossy surfaces, curved surfaces or uneven surfaces, text inspection, color determination inspection, engraved character inspection, inspection for damage or stains, etc.
- 30 models
- LED colors: ● ○ ● ● (Full color: ● ● ●)



Dome Lights — P.103
Provides diffused light from a cone-shaped emitting surface

LDM2 Series
For visual inspection, color determination inspection, and text inspection
- Applications: Visual inspection for glossy surfaces, curved surfaces or uneven surfaces, text inspection, color determination inspection, soldering inspection, etc.
- 8 models
- LED colors: ● ○ ● ●



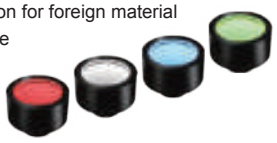
Dome Lights — P.105
Provides diffused light evenly using a mechanism that combines a diffused lighting and a coaxial lighting

LAV Series
For character recognition, text inspection, and dimension measuring
- Applications: Inspection for faulty plating, inspection of a sealed target, and inspection for foreign material attached to a glossy surface
- 4 models
- LED colors: ● ○ ● ●



Dome Lights — P.106
Mechanism that combines a diffused lighting, coaxial lighting, and low-angle lighting

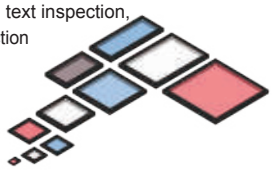
PDM Series
For character recognition, text inspection, and dimension measuring
- Applications: Inspection for faulty plating, inspection of a sealed target, and inspection for foreign material attached to a glossy surface
- 4 models
- LED colors: ● ○ ● ●



Flat Dome Lights — P.107
Recreates the effect of a Dome Light with a thin case design

New

LFXV Series
For visual inspection, text inspection, mixed foreign materials inspection, and character recognition
- Applications: Visual inspection of metal surfaces, curved surfaces or uneven surfaces, text inspection, mixed foreign materials inspection of food and medicine, etc.
- 40 models
- LED colors: ● ○ ● ●



LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

LED Lights

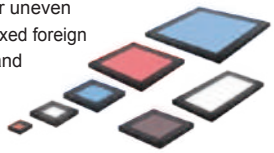
Diffused Lighting

Flat Dome Lights
Recreates the effect of a Dome Light with a thin case design

P.113

LFX3 Series
For visual inspection, text inspection, mixed foreign materials inspection, and character recognition

- Applications: Visual inspection of metal surfaces, curved surfaces or uneven surfaces, text inspection, mixed foreign materials inspection of food and medicine, etc.
- 28 models
- LED colors: ● ○ ● ●

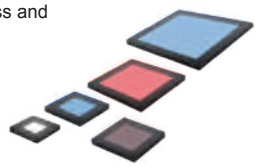


Line Pattern Lights
A cutting-edge method for inspecting bumps on a reflective surface

P.119

LFX3-PT Series
For inspecting bumps on a reflective surface

- Applications: Inspection for bumps on a mirror, metal sheets, films, glass and liquid crystal, etc.
- 40 models
- LED colors: ● ○ ● ●

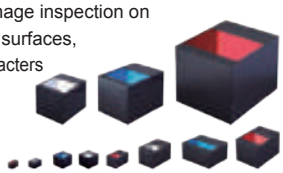


Coaxial Lights
Provides diffused light evenly from the same axis as the camera

P.121

LFV3 Series
For faults or damage inspection, engraved character inspection, and dimension measuring

- Applications: Faults or damage inspection on glossy surfaces and mirror surfaces, inspection for engraved characters and dents, etc.
- 33 models
- LED colors: ● ○ ●



Coaxial Lights
Provides diffused light evenly from the same axis as the camera

P.127

New

LFV3-G Series
For faults or damage inspection, engraved character inspection, and dimension measuring

- Applications: Faults or damage inspection on glossy surfaces and mirror surfaces, inspection for engraved characters and dents, etc.
- 15 models
- LED colors: ● ○ ●



LED Lights

Collimated Lighting

Coaxial Lights
Provides diffused light with high parallelism using original lighting technology

P.131

MSU Series
For damage inspection, character recognition, inspection for dents or stain

- Applications: Inspection for fine damage on glossy surfaces, etc.
- 13 models
- LED colors: ● ○ ● ●



Coaxial Lights
Provides diffused light with high parallelism using original lighting technology

P.133

MFU Series
For visual inspection and dimension measuring

- Applications: Detailed visual inspection and dimension measuring, etc.
- 2 models
- LED color: ●



Strobe Lighting

High Power Strobe Lights
Extremely powerful strobe lighting

P.135

PF Series
For inspection of fast moving production lines

- Applications: Visual inspection using extremely powerful strobe lighting for minuscule chip components, etc.
- 48 models
- LED colors: ● ○

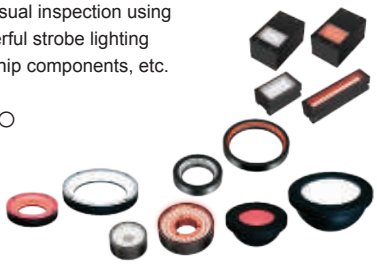


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LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

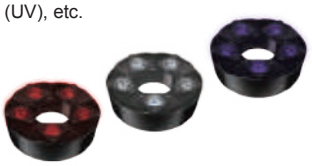
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LED Lights

Waterproof

IP67 Lights (Waterproof Type) P.155
Waterproof Lights for use in harsh environment

HLDR-IP Series
For fault inspection and visual inspection
- Applications: Fault inspection for metal parts, visual inspection for rubber parts, and adhesive application inspection (UV), etc.
- 3 models
- LED colors: ● ○ ●



HSL-PCL Series
For fault inspection and visual inspection
- Applications: Fault inspection and visual inspection, etc.
- 4 models
- LED colors: ● ○ ● ●



Ultraviolet Lighting

Ultraviolet Lights P.163
UV Lights that use high output UV-LEDs

UV2 Series
For fluorescent observation
- Applications: Inspection for detecting seal material through fluorescent excitation, etc.
- 16 models
- LED color: ●



Ultraviolet Lights P.169
Varied Light Unit lineup using original UV-LEDs

UV Series
For fluorescent observation
- Applications: Reading invisible codes, etc.
- 31 models
- LED color: ●



Ultraviolet Lights P.171
UV Line Lights that use high-output UV-LEDs

LNSP-UV-FN Series
For fluorescent observation
- Applications: Inspection for detecting seal material through fluorescent excitation, etc.
- 6 models
- LED color: ●

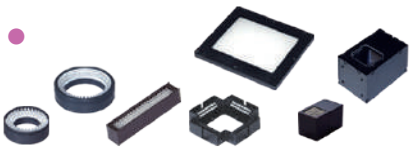


LED Lights

Infrared Lighting

Infrared Lights P.175
Varied Light Unit lineup using IR-LEDs

IR2 Series
For visual inspection and mixed foreign materials inspection
- Applications: Inspection of targets through liquid, etc.
- 36 models
- LED color: ●



Intensity Control

Light Units with Intensity Control Unit P.181
Light intensity and light ON/OFF control can be performed without an external controller

IU Series
For fault inspection and visual inspection
- Applications: Fault inspection and visual inspection, etc.
- 117 models
- LED colors: ● ○



Spot Lighting, Etc.

Spot Lights P.183
Provides high output spot lighting using an original optical design

HLV3 Series
As a light source for a telecentric lens
- Applications: Light source for dimension measuring and light source for spot lights, etc.
- 29 models
- LED colors: ● ○ ● ● ●



Spot Lights P.189
Provides high output spot lighting using an original optical design

HLV2 Series
As a light source for a telecentric lens
- Applications: Light source for dimension measuring and light source for spot lights, etc.
- 20 models
- LED colors: ● ○ ● ●



Spot Lights P.193
Provides spot lighting using original converging technology

LV Series
As a light source for a telecentric lens
- Applications: Light source for dimension measuring and light source for spot lights, etc.
- 4 models
- LED colors: ● ○ ● ●



LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

Spot Lighting, Etc.

Spot Lights
Provides spot lighting from an emitting surface of Φ33 mm
P.194

LSP Series
For character recognition, visual inspection, and position inspection
- Applications: Light source for spot lights, etc.
- 1 model
- LED color: ●



Micro Fiber Heads
LED Fiber Light system that uses original converging technology
P.195

HFS / HFR Series
For visual inspection, character recognition, and dimension measuring
- Applications: Alignment mark imaging, etc.
- 1 model (straight) / 3 models (ring type)
- LED color: Depends on the light source color





Micro Fiber Head Dedicated Light Sources
Provides high output spot lighting using an original optical design
P.197

HLV3-22-4-NR Series
Allows for easy installation and removal
- Usage: Dedicated Light Source for the Micro Fiber Head
- 4 models
- LED colors: ● ○ ● ●



Micro Fiber Head Dedicated Light Sources
Provides high-output spot lighting using an original optical design and converging technology
P.198

HLV3-3M-RGB-4
Can perform stepless independent intensity control for red, blue, and green light sources
- Usage: Dedicated Light Source for the Micro Fiber Head
- 1 model
- LED color: Depends on the light source color



Micro Fiber Head Dedicated Light Sources
Provides high output spot lighting using an original optical design
P.199

HLV2-22-NR-3W Series
Allows for easy installation and removal
- Usage: Dedicated Light Source for the Micro Fiber Head
- 4 models
- LED colors: ● ○ ● ●



Spot Lighting, Etc.

Micro Fiber Head Dedicated Light Sources
Provides high-output spot lighting using an original optical design and converging technology
P.200

HLV2-3M-RGB-3W
Can perform stepless independent intensity control for red, blue, and green light sources
- Usage: Dedicated Light Source for the Micro Fiber Head
- 1 model
- LED color: Depends on the light source color



High-Power Light Sources
Next-generation light sources delivering high output and a fast response
P.201

New

PFBR-600 Series
LED light source that can replace a xenon flash light source
- Applications: Used connected to various light guides
- 4 models
- LED color: ○



LED Light Sources
Provides light output that exceeds that of a 250 W metal halide light source
P.205

PFBR-150 Series
LED light source that can replace a 250 W metal halide light source
- Applications: Used connected to various light guides
- 1 model
- LED color: ○



LED Light Sources
Provides light output that exceeds that of a 100 W halogen light source
P.207

PFB3 Series
LED light source that can replace a 100 W halogen light source
- Applications: Used connected to various light guides
- 64 models
- LED color: ○



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LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

LED Lights

Convergent Lighting

Line Lights
1,000,000 lx or more in illuminance despite being fan-less
P.211

LNLP Series
For visual inspection, damage or dent inspection, and foreign material inspection
- 10 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



Line Lights
Achieved optimum Light Unit shape at the site of inspection
P.215

LNSP2 Series
For visual inspection, scratch inspection, foreign material inspection, and stain inspection
- 20 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



Line Lights
Uses original converging technology to achieve illumination with reduced diffusion
P.221

LNSP Series
For visual inspection, scratch inspection, and alignment inspection
- 10 models
- Emitting surface: Up to 1,000 mm in 100 mm units.
- LED color: ○



LNSP2/LNSP Dedicated Coaxial Units
Used as a Coaxial Light installed to the Line Light
P.225

CU-LNSP2 / CU-LNSP Series
Dedicated Coaxial Units those are designed for use with the LNSP2/LNSP series
- CU-LNSP2 (5 models)
- CU-LNSP (5 models)
- Emitting surface: Up to 500 mm in 100 mm units.



Line Lights
Uses original converging technology to achieve illumination with reduced diffusion
P.227

LNSP-FN Series
For visual inspection, scratch inspection, and alignment inspection
- 15 models
- Emitting surface: Up to 1,500 mm in 100 mm units.
- LED color: ○

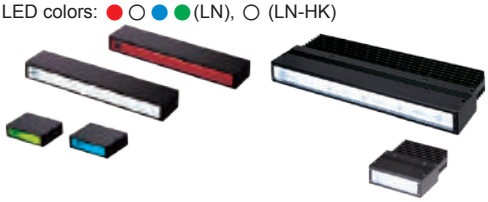


LED Lights

Convergent Lighting

Line Lights
Uses original converging technology to achieve illumination with reduced diffusion
P.231

LN / LN-HK Series
For visual inspection and fault inspection
- 8 models (LN), 2 models (LN-HK)
- Emitting surface: 60 mm, 200 mm
- LED colors: ● ○ ● ● (LN), ○ (LN-HK)



LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

Diffused Lighting

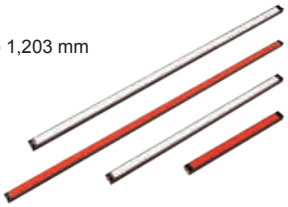
Line Lights
Provides diffused light from an emitting surface equipped with LEDs in a straight line
P.233

LNSD Series (High luminance and high uniformity types)
For fish eye, damage, or dent inspection, foreign material inspection, and stain inspection
- 180 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED colors: ● ○ ●



Line Lights
Provides diffused light from an emitting surface equipped with LEDs in straight lines
P.237

LND2 Series
For damage or dent inspection, and foreign material inspection
- 24 models
- Emitting surface: Up to 1,203 mm in 100 mm units.
- LED colors: ● ○



Line Lights
Provides diffused light from an emitting surface equipped with LEDs in a straight line
P.241

HLND Series (Transmission and reflection types)
For foreign material inspection and stain inspection
- 108 models
- Emitting surface: Up to 2,700 mm in 100 mm units.
- LED colors: ● ○



Line Lights
Provides diffused light evenly using an original optical design
P.247

LT Series
For fish eye inspection and scratch inspection
- 18 models
- Emitting surface: Up to 1,800 mm in 100 mm units.
- LED color: ○



Line Coaxial Lights
Provides diffused light from the same axis as the camera
P.251

LNV Series
For fault inspection and stain inspection
- 4 models
- Emitting surface: 300 mm
- LED colors: ● ○ ● ●



LED Lights

Oblique Angled Lighting

Line Lights (Oblique Angled Light)
Achieves angled illumination using an original optical design
P.253

LNDG Series
Vertical wrinkles or striations inspection, folding and bumps inspection, and moving-direction scratch inspection
- 28 models
- Emitting surface: Up to 3,000 mm in 100 mm units.
- LED color: ○



Line Lights (Bi-Directional Angled Light)
Achieves bi-directional angled illumination using an original optical design
P.257

LNIS2 Series
Streak inspection, scratch inspection, and moving-direction scratch inspection
- 10 models
- Emitting surface: Up to 1,000 mm in 100 mm units.
- LED color: ○



Line Lights (Bi-Directional Angled Light)
Achieves bi-directional angled illumination using an original optical design
P.261

LNIS Series
Streak inspection, scratch inspection, and moving-direction scratch inspection
- 10 models
- Emitting surface: Up to 1,000 mm in 100 mm units.
- LED color: ○



Line Lights (Bi-Directional Angled Light)
Best for finding moving-direction scratches
P.265

LNIS-FN Series
Streak inspection, scratch inspection, and moving-direction scratch inspection
- 15 models
- Emitting surface: Up to 1,500 mm in 100 mm units.
- LED color: ○



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LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

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LED Lights

Computational Imaging

Computational Imaging
Digital image capture and processing techniques that combine computation and optical encoding.
P.287

Computational Imaging
We describe the principle of operation, product information, and application examples including the following:

Computational Imaging

- High resolution color (RGB)
- Extended Depth of Field (EDOF)
- Bright field + dark field
- High Dynamic Range (HDR)
- Photometric Stereo (PMS)

triniti-enabled LED Lights

triniti-enabled LED Lights
Users benefit from having expert control techniques for their lighting systems readily available.
P.295

triniti-enabled LED Lights
For fault inspection and visual inspection

- Applications: Fault inspection and visual inspection, etc.
- 65 models
- LED colors: ● ○ ●

triniti™ Gardasoft Technology CCS Creating Customer Satisfaction

Lenses

Lenses



High-Resolution Telecentric Lenses
SE-65-M / SE-110-M Series
» P.269



Telecentric Lenses
SE-65 / SE-110 Series
» P.273



Macro Lenses
SE-16 / SE-18 Series
» P.275

Control Units / Controllers

Control Units / Controllers



Digital Control Units
PD3 Series
» P.311



Digital Control Units
PD2 Series
» P.319



Analog Control Units
PSB Series
» P.323



Strobe Overdrive Control Units
POD Series
» P.325



Strobe Overdrive Control Units
PTU2 Series
» P.329



High Power Strobe Control Units
PF Series
» P.331



PoE Enabled Controller
CN-EPOE Series
» P.335



Controller with EtherNet/IP™ Interface
CN-4024-2-EIPT
» P.337

"EtherNet/IP" is a trademark of ODVA, Inc.



Analog Controller
PB-2430-1
» P.339



Compact Controller
CC-ST-1024
» P.341

LED color: ●Red, ○white, ●blue, ●green, ●UV, ●IR

The type and model numbers for each LED Light do not include special orders. Products of some types do not support the listed properties or functions.

Control Units / Controllers

Control Units / Controllers



Spot Light Dedicated Control Unit
PJ2 Series » P.343



Spot Light Dedicated Control Unit
PJ Series » P.345



Spot Light Dedicated Controller
CC-PJ-0707 » P.347



Analog Control Units (Constant Current)
PSCC Series » P.349



New
Analog Control Unit (Constant Voltage)
PSB4 Series » P.351



Analog Control Unit (Constant Voltage)
PSB3-30024 » P.353

Options

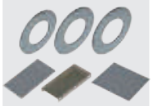
Options



Lens Filters » P.355



Diffusion Plates » P.359



Polarizing Plates » P.360



Light Control (LC) Films » P.361



Protective Plates / Adapters
Fixtures Brackets » P.362



Extension Cables » P.365

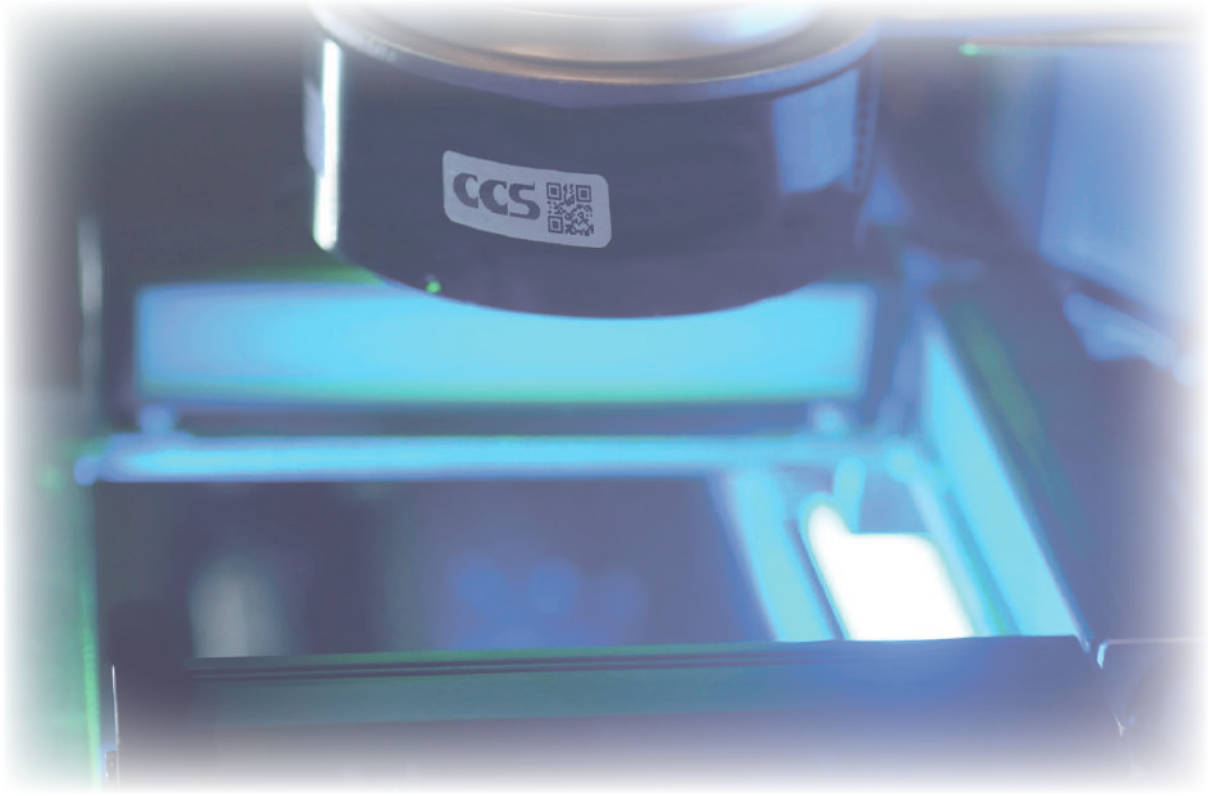


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Ring Lights
LDR2 Series

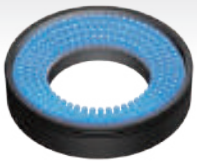
Refer to our website for product details.
CCS LDR2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides direct light from an angled emitting part




LDR2-120SW2


LDR2-90-30RD2


LDR2-90BL2


LDR2-70RD2


LDR2-50GR2


LDR2-42SW2


LDR2-32RD2

Applications	Character recognition, visual inspection, inspections for damage or stains, reading 2-dimensional code, inspecting parts on boards, etc.

Standard Ring Lights

Uses a flexible circuit board to achieve the functions needed for a Ring Light. It can illuminate workpieces at an angle and can illuminate the whole workpiece. This alleviates the influence of slight position or inclination deviations in the workpiece and enables stable imaging.

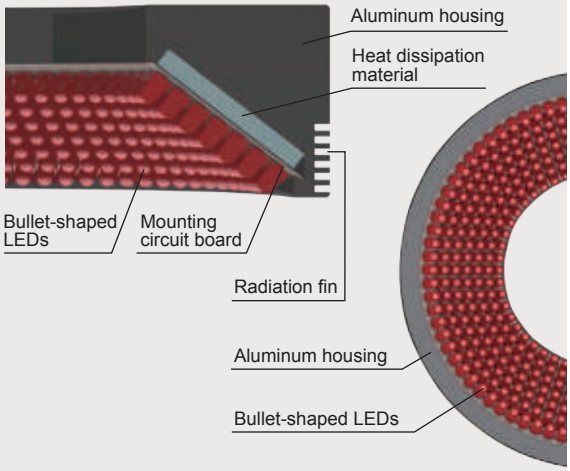
Flexible circuit board



Succeeds in Greatly Reducing LED's Heat

Heat dissipation material is used between the board and the aluminum housing, absorbing heat produced by the LEDs. This succeeds in greatly reducing the creation of heat, which causes the LEDs to deteriorate.

Cross-section image of the LDR2-120

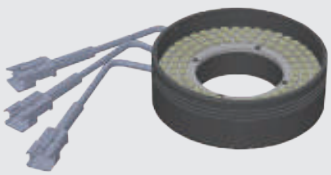


Custom Orders

Please contact your CCS sales representative.

E.g.: Different color

Wavelength/ Color — Creating a full color (RGB) Light Unit



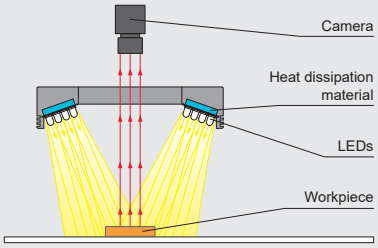
Customizable items

External/internal diameter | Wavelength/ Color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Example Configuration

Bend the flexible circuit board to any shape necessary and mount LEDs with high density. Illuminates the workpiece so that direct light is concentrated in the center.

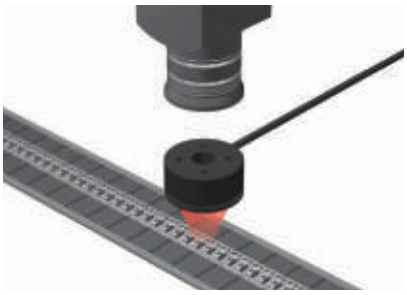
LDR2-90



Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

LDR2 — Direct Lighting
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2 — Diffused Lighting
LFR
LKR
FPR
FPQ3
LDL2 — Direct Lighting
LDLB
HLDL2
TH2 (5 types) — Diffused Lighting
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU — Collimated Lighting
MFU
PF — Strobe Lighting
HLDR-IP/ HSL-PCL — Water-proof
UV2 — Ultraviolet Lighting
UV
LNSP-UV-FN
IR2 — Infrared Lighting
IU — Intensity Control
HLV3 — Spot Lighting, Etc.
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP — Convergent Lighting
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD — Diffused Lighting
LND2
HLND
LT
LNV
LNDG — Oblique Angled Lighting
LNIS2
LNIS
LNIS-FN
Telecentric Lens — Lenses
Macro Lens

Imaging Example: Imaging Electrodes of Electronic Parts



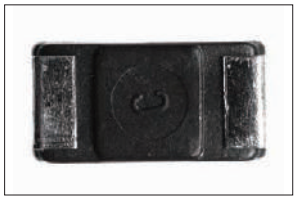
Description	Visual inspection
Workpiece	Electronic parts
Conventional lighting	LED Bar Light
New lighting	LDR2-32RD2
Result	Improved uniformity

■ Workpiece image



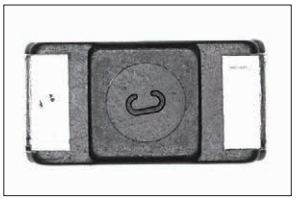
Electronic parts

■ LED Bar Light



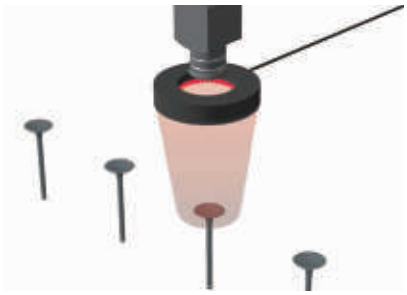
It's difficult to make an image of the electrode part using a Bar Light.

■ LDR2-32RD2



A Ring Light can illuminate the electrode part evenly and make an image.

Imaging Example: Imaging Text on Intake Valves



Description	Character recognition
Workpiece	Intake valves (automobile parts)
Conventional lighting	LED Ring Light
New lighting	LDR2-50RD2
Result	Emphasized characters

■ Workpiece image



Intake valves

■ LED Ring Light



It's difficult to clearly recognize the text due to the inner indentation.

■ LDR2-50RD2



Allows for image that makes the character edges stand out.

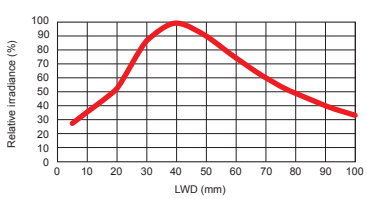
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

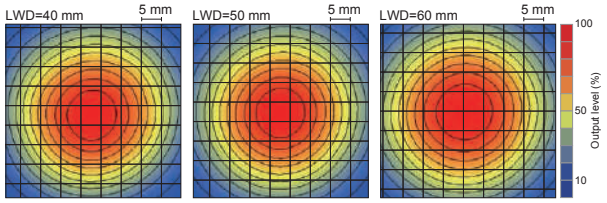
LDR2-50RD2

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



You can inquire using our website.

Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2 Series



Refer to our website for product details.

CCS LDR2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

End of the model name: -WD: Wide type

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LDR2-32RD2	Red	24 V / 1.6 W	630 nm	Diffusion plate, Polarizing plate, Adapter, Lens attachment ring	FCB*2 Straight Cable, FCB-W*3 2-branch Cable, FCB-F 4-branch Cable, FRCB Robot Cable	PD3, CC-ST-1024, PSB, POD*1	30 g
LDR2-32SW2	White	24 V / 1.9 W	5,500 K				
LDR2-32BL2	Blue		470 nm				
LDR2-32GR2	Green		525 nm				
LDR2-42RD2	Red	24 V / 2.1 W	630 nm	Diffusion plate, Polarizing plate, Adapter			50 g
LDR2-42SW2	White	24 V / 2.7 W	5,500 K				
LDR2-42BL2	Blue		470 nm				
LDR2-42GR2	Green		525 nm				
LDR2-50RD2	Red	24 V / 3.1 W	630 nm	Diffusion plate, Polarizing plate, Adapter, Lens attachment ring			50 g
LDR2-50RD2-WD							
LDR2-50SW2	White	24 V / 3.8 W	5,500 K				
LDR2-50BL2	Blue		470 nm				
LDR2-50GR2	Green		525 nm				
LDR2-70RD2	Red	24 V / 6.1 W	630 nm	Diffusion plate, Polarizing plate			110 g
LDR2-70RD2-WD							
LDR2-70SW2	White	24 V / 7.6 W	5,500 K				120 g
LDR2-70BL2	Blue		470 nm				
LDR2-70GR2	Green		525 nm				
LDR2-90RD2	Red	24 V / 11 W	630 nm	Diffusion plate, Polarizing plate, Adapter			170 g
LDR2-90RD2-WD							
LDR2-90SW2	White	24 V / 14 W	5,500 K				
LDR2-90BL2	Blue		470 nm				
LDR2-90GR2	Green		525 nm				
LDR2-90-30RD2	Red	24 V / 14 W	630 nm	–		PD3, PSB, POD*1	220 g
LDR2-90-30SW2	White	24 V / 18 W	5,500 K				
LDR2-90-30BL2	Blue	24 V / 17 W	470 nm				
LDR2-90-30GR2	Green		525 nm				
LDR2-120RD2-WD	Red	24 V / 24 W	630 nm	Diffusion plate, Polarizing plate, Adapter			510 g
LDR2-120SW2	White	24 V / 28 W	5,500 K				500 g
LDR2-120BL2	Blue	24 V / 26 W	470 nm				
LDR2-120GR2	Green		525 nm				

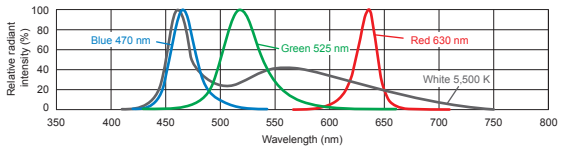
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

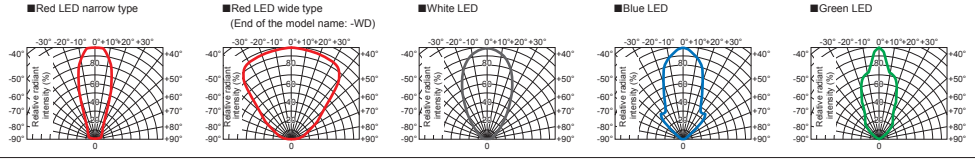
LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Directional characteristics



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Options



Can prevent glare, which is a problem when making images of glossy workpieces.

Diffusion plate

An adapter is required when installing a diffusion plate.

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-32	LDR2-32
DF-LDR-42	LDR2-42
DF-LDR-50	LDR2-50
DF-LDR-70*	LDR2-70
DF-LDR-90	LDR2-90
DF-LDR-120-45	LDR2-120

* DF-LDR-70 does not require an adapter. Directly affix it to the Light Unit.

▶ P.359



Use with a polarizing filter to remove the light's surface reflection.

Polarizing plate

An adapter is required when installing a polarizing plate.

Model name	Applicable Light Unit (Common for all colors)
PL-LDR-32	LDR2-32
PL-LDR-42	LDR2-42
PL-LDR-50	LDR2-50
PL-LDR2-70*	LDR2-70
PL-LDR-90	LDR2-90
PL-LDR-120-40	LDR2-120

* PL-LDR2-70 includes an adapter for attachment.

▶ P.360



Use when installing a diffusion plate or polarizing plate to the Light Unit.

Adapter

Model name	Applicable Light Unit (Common for all colors)
AD-LDR-32	LDR2-32
AD-LDR-42	LDR2-42
AD-LDR-50	LDR2-50
AD-LDR-90	LDR2-90
AD-LDR-120	LDR2-120

▶ P.362



Can directly install the Light Unit to the screw section for the lens filter. Perfect for environments with narrow installation spots.

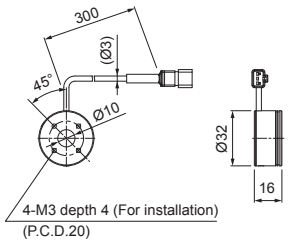
Lens attachment ring

Model name	Note	Applicable Light Unit (Common for all colors)
MR-LDR-32-M25	M25.5 P0.5	LDR2-32
MR-LDR-32-M27	M27.0 P0.5	
MR-LDR-32-M30	M30.5 P0.5	
MR-LDR-50-M25	M25.5 P0.5	LDR2-50
MR-LDR-50-M27	M27.0 P0.5	
MR-LDR-50-M30	M30.5 P0.5	

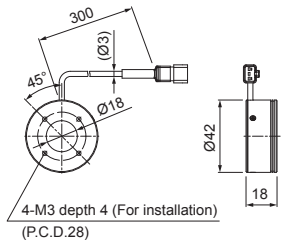
▶ P.362

Dimensions (mm)

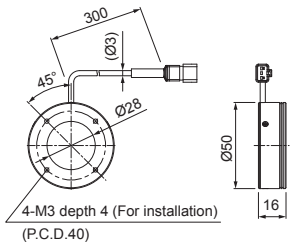
LDR2-32RD2/SW2/BL2/GR2



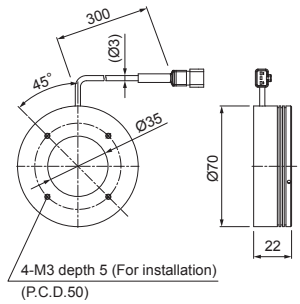
LDR2-42RD2/SW2/BL2/GR2



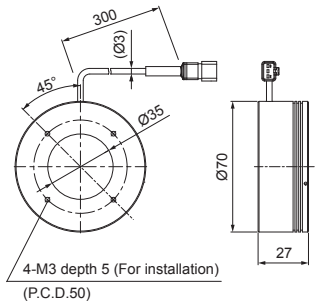
LDR2-50RD2/RD2-WD/SW2/BL2/GR2



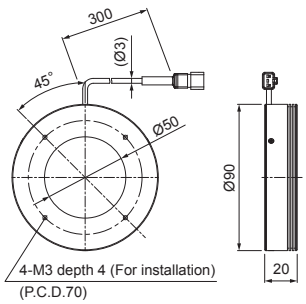
LDR2-70RD2/RD2-WD



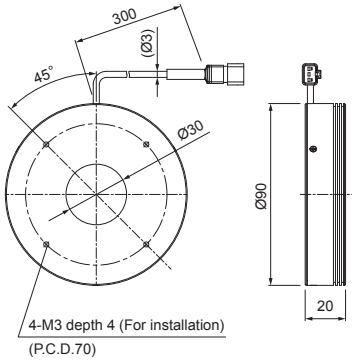
LDR2-70SW2/BL2/GR2



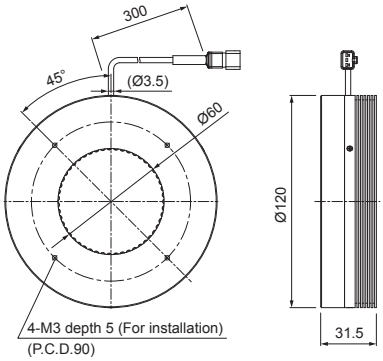
LDR2-90RD2/RD2-WD/SW2/BL2/GR2



LDR2-90-30RD2/SW2/BL2/GR2



LDR2-120RD2-WD/SW2/BL2/GR2



The cable diameter of LDR2-90-30SW2/BL2/GR2 is Ø3.5.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Direct Lighting

Low-Angle Ring Lights
LDR2-LA Series

Refer to our website for product details.
CCS LDR2-LA ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides direct light at a low angle from an angled emitting part

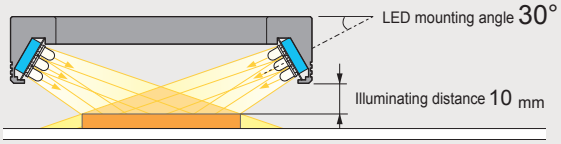


Applications Inspection for engraving, damage, or stains on metal surfaces; edge extraction; inspection for foreign material mixed with medicine; inspection for damage to glass edges; visual inspection for O-rings; etc.

Extraction of Uneven Damage or Engravings

Providing direct light from a low angle to the center section allows for an image that emphasizes the workpiece's characteristic features.

Imaging example for the LDR2-100RD2-LA: Imaging the appearance of coins



LDR2-90RD2



Edge extraction is difficult with illumination from a high angle.

LDR2-100RD2-LA

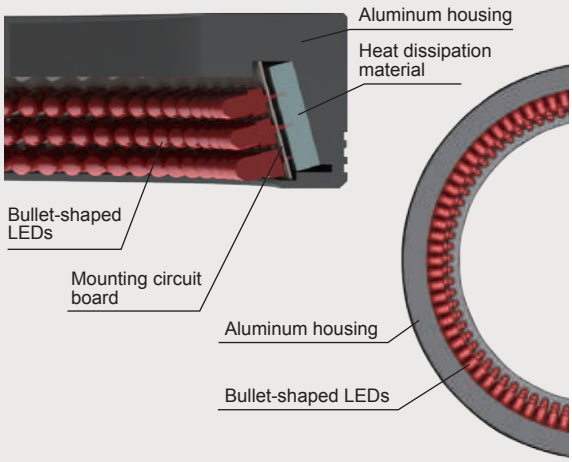


Illuminating from a low angle allows for imaging that emphasizes the edges.

Illuminating from a Low-Angle at a Steep Slope

By mounting LEDs on a flexible circuit board in a steep angle, it becomes possible to converge light in the center section from a low position.

Cross-section image of the LDR2-132-LA



Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format/ material

Changed the format to a semicircle



Customizable items

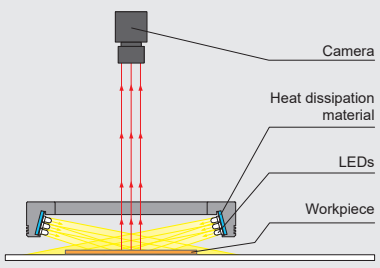
- External/internal diameter
- Wavelength/ Color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

Using a flexible circuit board to create any angle needed. Emits direct light to the center of the workpiece from a low angle.

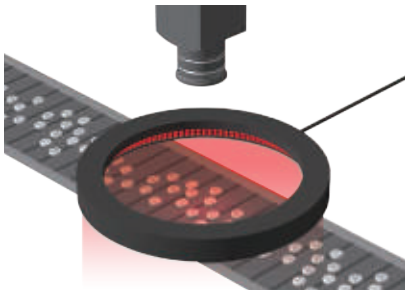
LDR2-132-LA



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging Text on Tablets and Their Appearance



Description	Text, visual inspection
Workpiece	Tablets
Conventional lighting	Interior lamp
New lighting	LDR2-170RD2-LA
Result	Emphasizes text and edge of the exterior

■ Workpiece image



Tablets

■ Interior lamp



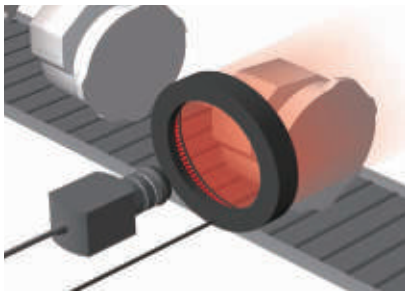
It is difficult to take an image that emphasizes the text or exterior.

■ LDR2-170RD2-LA



Possible to take an image that emphasizes the text or exterior.

Imaging Example : Imaging Engraved Text on Metal Blocks (Stain Finishing)



Description	Character recognition
Workpiece	Metal blocks
Conventional lighting	LED Dome Light
New lighting	LDR2-132RD2-LA
Result	Extracts only the engraved text

■ Workpiece image



Metal blocks (stain finishing)

■ LED Dome Light



The whole thing is illuminated, making it difficult to emphasize only the characters.

■ LDR2-132RD2-LA



Reduces effects from the stain finishing, making it possible to emphasize the characters.

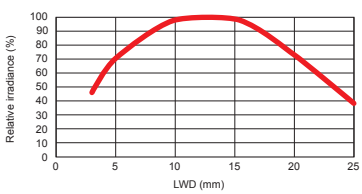
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

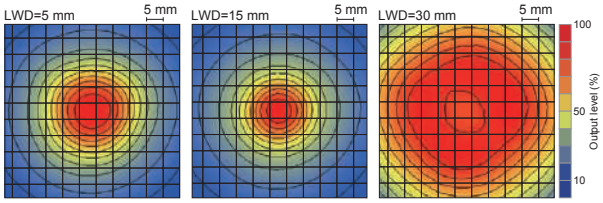
LDR2-74RD2-LA

Relative irradiance graph (LWD characteristics)*2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



You can inquire using our website.

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Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2-LA Series

Refer to our website for product details.
CCS LDR2-LA ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LDR2-48RD2-LA	Red	24 V / 2.1 W	630 nm	Diffusion plate, Bracket	FCB*2 Straight Cable, FCB-W*3 2-branch Cable, FCB-F 4-branch Cable, FRCB Robot Cable	PD3, CC-ST-1024, PSB, POD*1	50 g
LDR2-48SW2-LA	White		5,500 K				
LDR2-48BL2-LA	Blue		470 nm				
LDR2-48GR2-LA	Green		525 nm				
LDR2-74RD2-LA	Red	24 V / 4.6 W	630 nm				90 g
LDR2-74SW2-LA	White	24 V / 5.7 W	5,500 K				
LDR2-74BL2-LA	Blue		470 nm				
LDR2-74GR2-LA	Green		525 nm				
LDR2-100RD2-LA	Red	24 V / 9.1 W	630 nm				170 g
LDR2-100SW2-LA	White	24 V / 12 W	5,500 K				
LDR2-100BL2-LA	Blue		470 nm				
LDR2-100GR2-LA	Green		525 nm				
LDR2-132RD2-LA	Red	24 V / 13 W	630 nm				270 g
LDR2-132SW2-LA	White	24 V / 16 W	5,500 K				
LDR2-132BL2-LA	Blue		470 nm				
LDR2-132GR2-LA	Green		525 nm				
LDR2-170RD2-LA	Red	24 V / 18 W	630 nm			PD3, PSB, POD*1	350 g
LDR2-170SW2-LA	White	24 V / 22 W	5,500 K				
LDR2-170BL2-LA	Blue		470 nm				
LDR2-170GR2-LA	Green		525 nm				
LDR2-208RD2-LA	Red	24 V / 22 W	630 nm				380 g
LDR2-208SW2-LA	White	24 V / 28 W	5,500 K				
LDR2-208BL2-LA	Blue		470 nm				
LDR2-208GR2-LA	Green		525 nm				

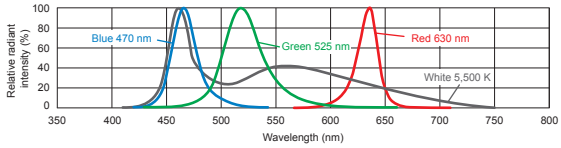
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

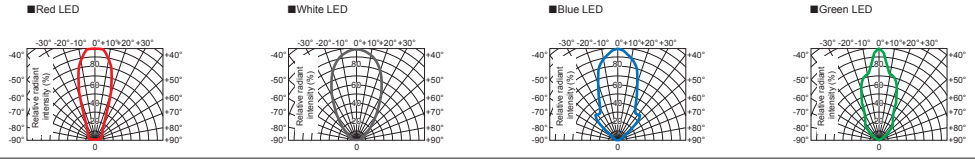
LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Directional characteristics



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options

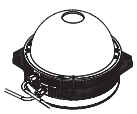


Can prevent glare, which is a problem when making images of glossy workpieces.

Diffusion plate

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-48LA	LDR2-48-LA
DF-LDR-74LA	LDR2-74-LA
DF-LDR-100LA	LDR2-100-LA
DF-LDR-132LA	LDR2-132-LA
DF-LDR-170LA	LDR2-170-LA
DF-LDR-208LA	LDR2-208-LA

▶ P.359



Combine with the Dome Light HPD2 series to achieve imaging by light switching and simultaneous lighting.

Light joint bracket

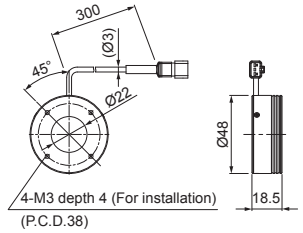
Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	LDR2-100-LA	HPD2-75
BK-100-JO	LDR2-132-LA	HPD2-100
BK-150-JO	LDR2-170-LA	HPD2-150
BK-200-JO	LDR2-208-LA	HPD2-200

▶ P.363

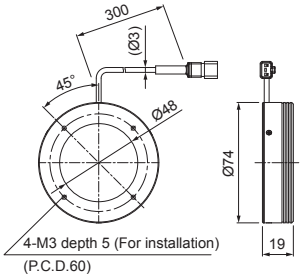
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Dimensions (mm)

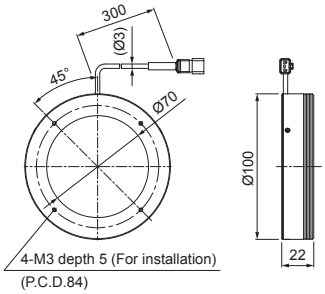
LDR2-48RD2-LA / SW2-LA / BL2-LA / GR2-LA



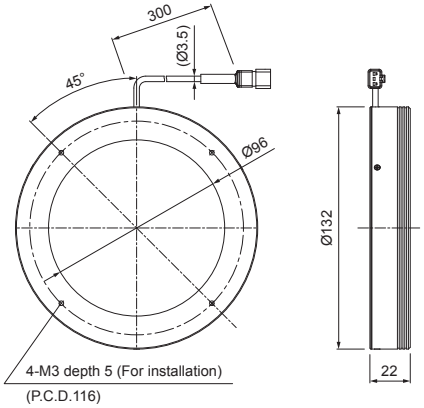
LDR2-74RD2-LA / SW2-LA / BL2-LA / GR2-LA



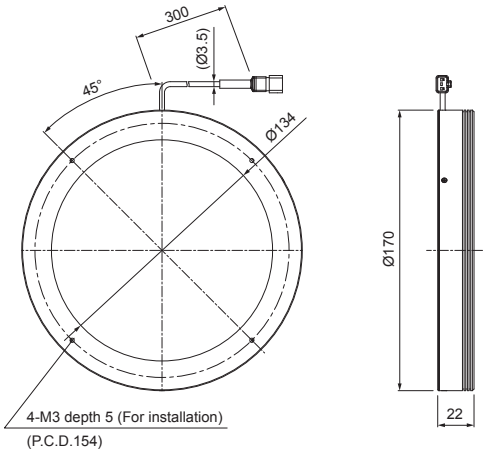
LDR2-100RD2-LA / SW2-LA / BL2-LA / GR2-LA



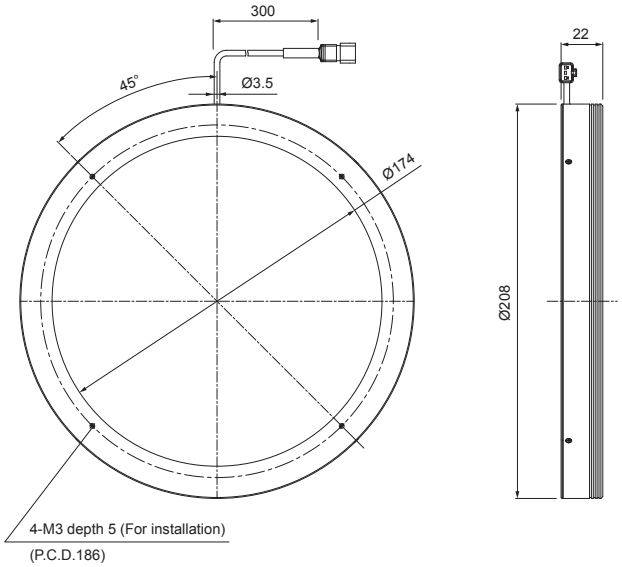
LDR2-132RD2-LA / SW2-LA / BL2-LA / GR2-LA



LDR2-170RD2-LA / SW2-LA / BL2-LA / GR2-LA



LDR2-208RD2-LA / SW2-LA / BL2-LA / GR2-LA



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Direct Lighting

Low-Angle Ring Lights
LDR-LA1 Series

Refer to our website for product details.
CCS LDR-LA1 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides direct light at a low angle from an emitting part directed horizontally




LDR-206SW2-LA1


LDR-176BL2-LA1


LDR-146RD2-LA1


LDR-96GR2-LA1

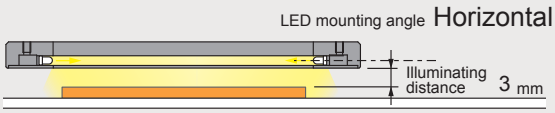

LDR-75RD2-LA1

Applications Edge detection; inspection for engraving, damage, or stains on metal surfaces; inspection for foreign material on wafers; inspection of bonding on shrink film; engraved character recognition for rubber; etc.

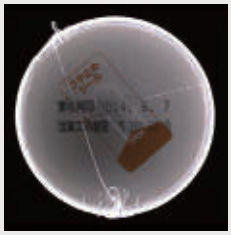
Illuminating Closest to the Workpiece

Allows for illuminating closer to the workpiece than the LDR2-LA series. Perfect for imaging of minute unevenness, damage, or engraved characters.

Imaging example for the LDR-206SW2-LA1: Imaging the appearance of food containers

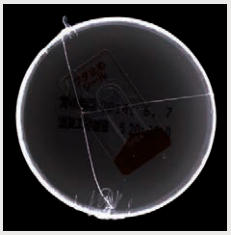


LDR2-208SW2-LA



The seal and engraved text affect the image, and the shrink seal cannot be sufficiently detected.

LDR-206SW2-LA1

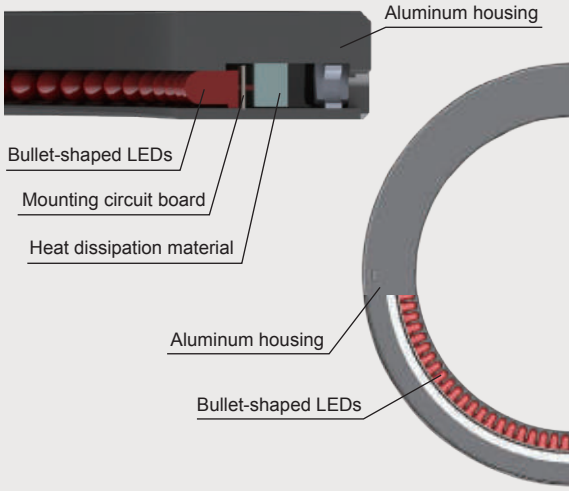


Only the shrink seal clearly stands out.

LEDs Mounted Horizontally

Achieved a thin device that is 10 mm thick by mounting LEDs horizontally in one line. Helps save space because it can be installed near the workpiece.

Cross-section image of the LDR-146-LA1



Custom Orders

Please contact your CCS sales representative.

E.g.: Changed the format to take measures against interference with the device

Format/ material

Created a Light Unit with a shape to match the purpose



Cut to match the purpose

Customizable items

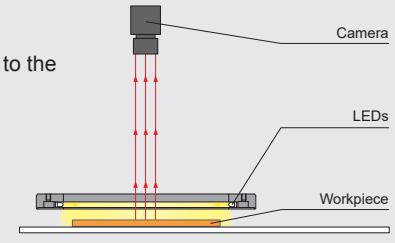
- External/internal diameter
- Wavelength/ Color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

LEDs are arranged facing horizontally in a ring shape. It can be used extremely close to the workpiece.

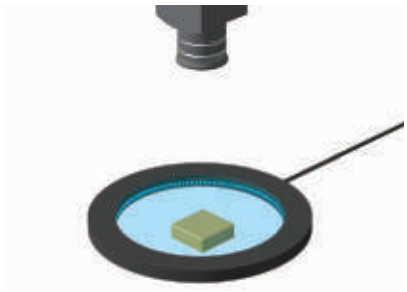
LDR-146-LA1



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging the Appearance of Plastic Case Surfaces



Description	Visual inspection
Workpiece	Plastic cases
Conventional lighting	Interior lamp
New lighting	LDR-146BL2-LA1
Result	Extracting the damage

■ Workpiece image



Plastic cases

■ Interior lamp



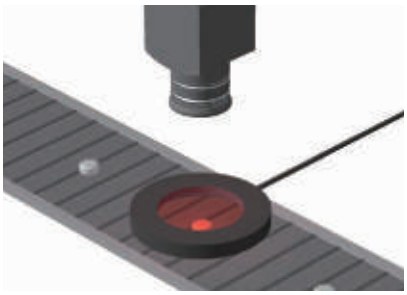
The whole thing is evenly illuminated, making it difficult to detect the damage.

■ LDR-146BL2-LA1



It is possible to clearly get an image of the outside and damage on the surface.

Imaging Example: Imaging the Appearance of Button Cell Batteries



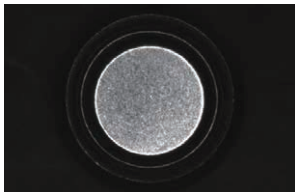
Description	Visual inspection
Workpiece	Button cell batteries
Conventional lighting	LED Ring Light
New lighting	LDR-75RD2-LA1
Result	Extracting the damage

■ Workpiece image



Button cell batteries

■ LED Ring Light



It is difficult to get an image of the button cell battery outside or damage on the surface.

■ LDR-75RD2-LA1



It is possible to clearly get an image of the outside and damage on the surface.

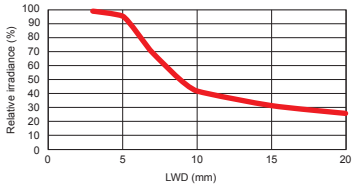
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only and does not guarantee the quality of this product.

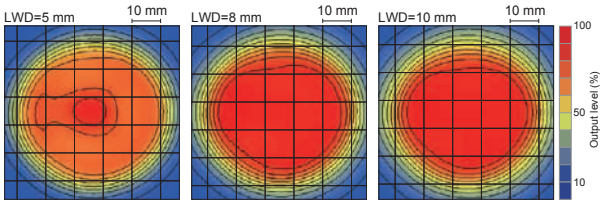
LDR-75RD2-LA1

Relative irradiance graph (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LDR-LA1 Series

Refer to our website for product details.
CCS LDR-LA1 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Lineup

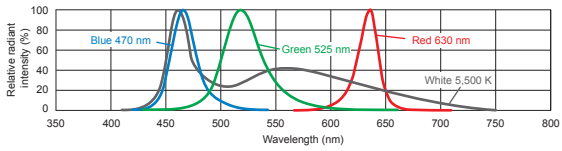
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LDR-75RD2-LA1	Red	24 V / 2.6 W	630 nm	Bracket	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 PSB / POD*1	55 g
LDR-75SW2-LA1	White	24 V / 3.8 W	5,500 K				
LDR-75BL2-LA1	Blue		470 nm				
LDR-75GR2-LA1	Green		525 nm				
LDR-96RD2-LA1	Red	24 V / 3.1 W	630 nm				100 g
LDR-96SW2-LA1	White	24 V / 3.8 W	5,500 K				
LDR-96BL2-LA1	Blue		470 nm				
LDR-96GR2-LA1	Green		525 nm				
LDR-146RD2-LA1	Red	24 V / 4.6 W	630 nm				170 g
LDR-146SW2-LA1	White	24 V / 6.0 W	5,500 K				160 g
LDR-146BL2-LA1	Blue	24 V / 6.1 W	470 nm				
LDR-146GR2-LA1	Green		525 nm				
LDR-176RD2-LA1	Red	24 V / 6.1 W	630 nm				210 g
LDR-176SW2-LA1	White	24 V / 7.6 W	5,500 K				205 g
LDR-176BL2-LA1	Blue		470 nm				
LDR-176GR2-LA1	Green		525 nm				
LDR-206RD2-LA1	Red	24 V / 7.1 W	630 nm				250 g
LDR-206SW2-LA1	White	24 V / 9.1 W	5,500 K				220 g
LDR-206BL2-LA1	Blue		470 nm				
LDR-206GR2-LA1	Green		525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

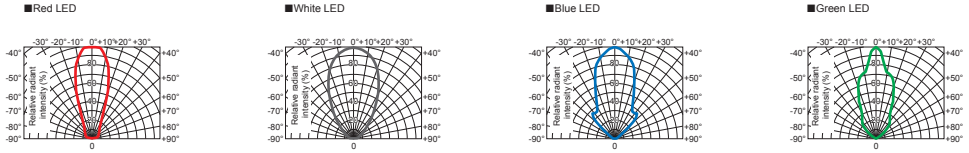
LED Properties

Spectral distribution



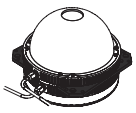
CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Directional characteristics



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Combine with the Dome Light HPD2 series to achieve imaging by light switching and simultaneous lighting.

Light joint bracket

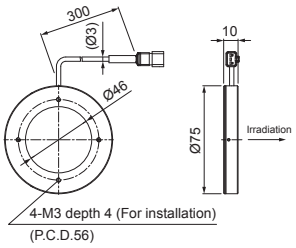
Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	LDR-96-LA1	HPD2-75
BK-100-JO	LDR-146-LA1	HPD2-100
BK-150-JO	LDR-176-LA1	HPD2-150
BK-200-JO	LDR-206-LA1	HPD2-200

▶ P.363

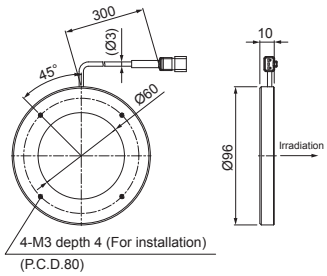
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Dimensions (mm)

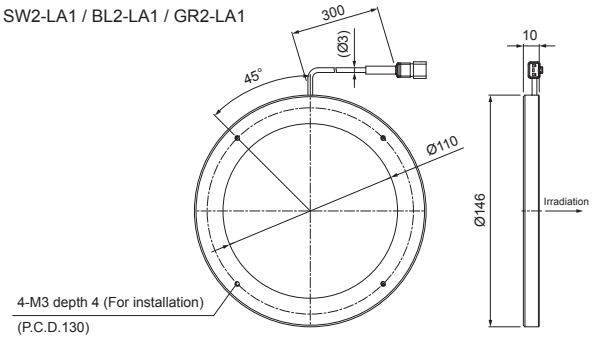
LDR-75RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



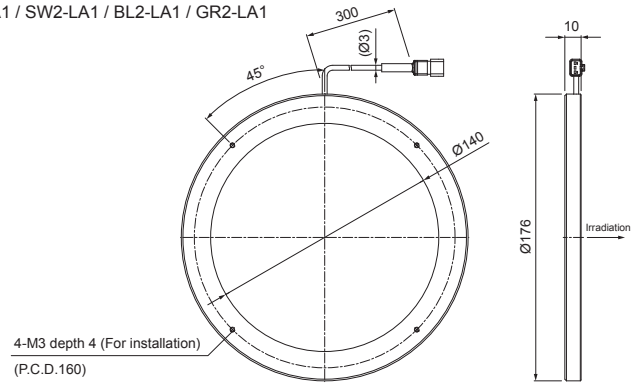
LDR-96RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



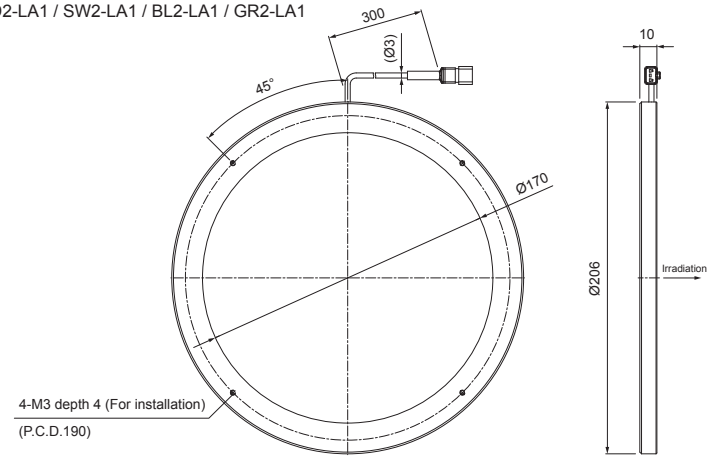
LDR-146RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



LDR-176RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



LDR-206RD2-LA1 / SW2-LA1 / BL2-LA1 / GR2-LA1



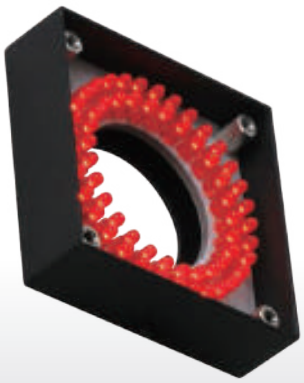
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

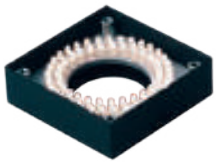
Direct Lighting

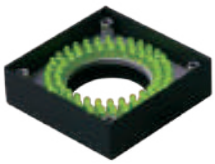
Ring Lights
SQR Series

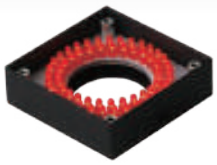
Refer to our website for product details.
CCS SQR ▶ Search
For quick access.
You can also use your smartphone or cell phone.

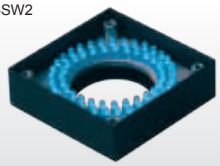
Provides direct light from the upper section

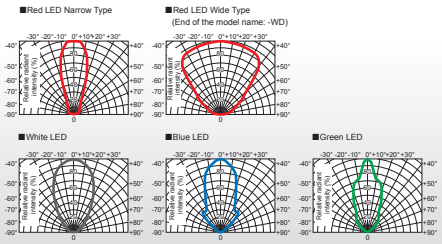



SQR-56SW2


SQR-56GR2


SQR-56RD2


SQR-56BL2



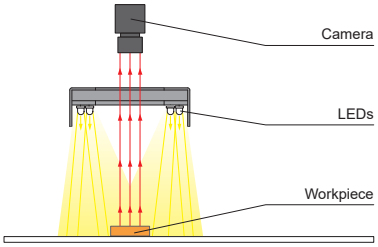
Applications Character recognition, visual inspection, inspections for damage or stains, reading 2-dimensional code, inspecting parts on boards, etc.

Features

Rings of bullet-shaped LEDs mounted on a square case.
LEDs are mounted on a flat circuit board and emit direct light onto the workpiece from above.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

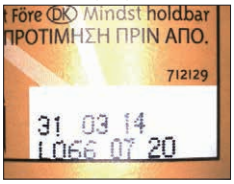
Example configuration (SQR-56)



Imaging example: Imaging text on paper labels


Workpiece: Beverage bottles

■LED Ring Light



Converged light in the center interferes with stable inspection.

■SQR-56SW2



The whole thing is evenly and brightly illuminated, making it possible to take an image of the label text.

Lineup

End of the model name: -WD: Wide type

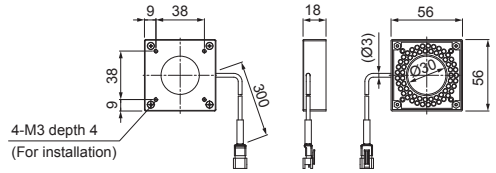
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
SQR-56RD2	Red	24 V / 3.1 W	630 nm	Diffusion plate Polarizing plate	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3, CC-ST-1024 PSB, POD*1	75 g
SQR-56RD2-WD							
SQR-56SW2	White	24 V / 3.8 W	5,500 K				
SQR-56BL2	Blue		470 nm				
SQR-56GR2	Green		525 nm				

LED Properties: Spectral Distribution ▶ P.384 | Options ▶ P.355 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

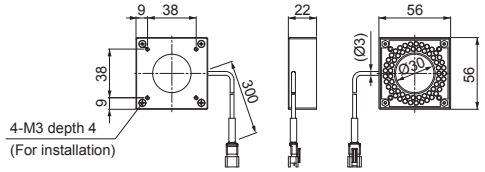
*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

SQR-56RD2 / RD2-WD



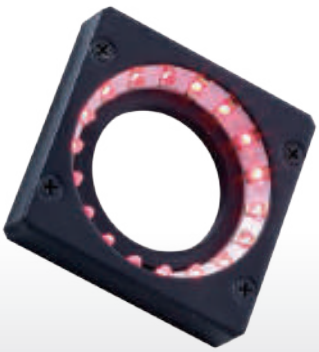
SQR-56SW2 / BL2 / GR2



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

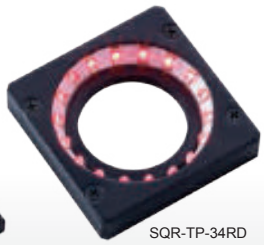
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Provides direct light at a low angle from an angled emitting part

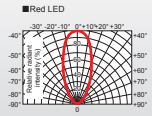




SQR-TP-28RD



SQR-TP-34RD



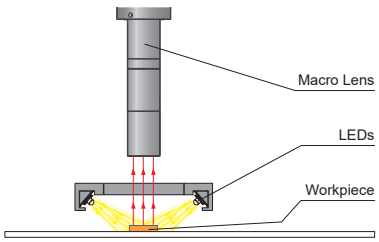
Applications Visual inspections for metal parts; inspection for damage or stains on electronic parts; inspection for damage to resin parts; inspection for damage to glass edges; inspection for damage to stain finishing; etc.

Features

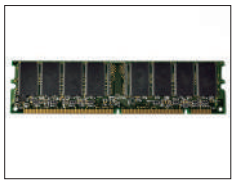
Rings of surface-mounted LEDs mounted on a square case.
Provides direct light at a low angle from an angled emitting part.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (SQR-TP-34RD)



Imaging example: Imaging text on circuit boards



Workpiece: circuit boards

■ Macro lens + LED Spot Light



It is difficult to recognize the surface status using coaxial illumination.

■ SQR-TP-34RD



Can make an image of the text on the circuit board, the text on the chip, and the soldering plating.

Lineup

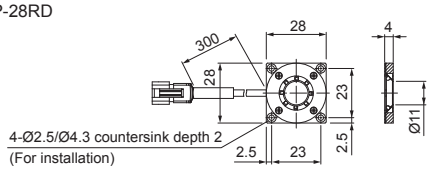
Model name	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
SQR-TP-28RD	Red	24 V / 0.5 W	638 nm	–	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 / CC-ST-1024 PSB / POD*1	15 g
SQR-TP-34RD		24 V / 0.9 W					16 g

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

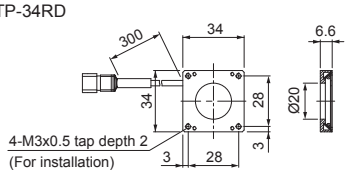
*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

SQR-TP-28RD



SQR-TP-34RD



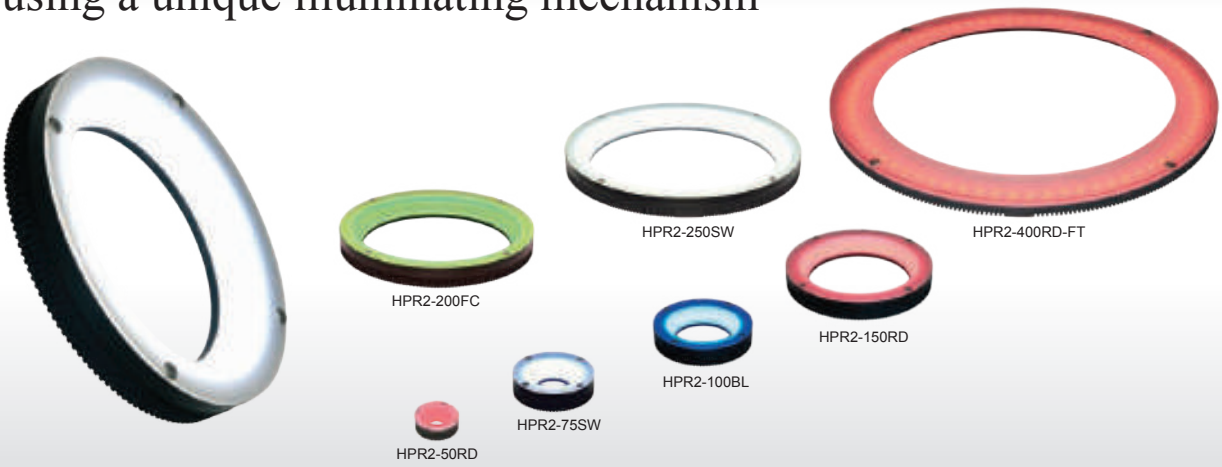
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Ring Lights
HPR2 Series

Refer to our website for product details.
CCS HPR2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Achieves a uniform region with a high degree of freedom by using a unique illuminating mechanism

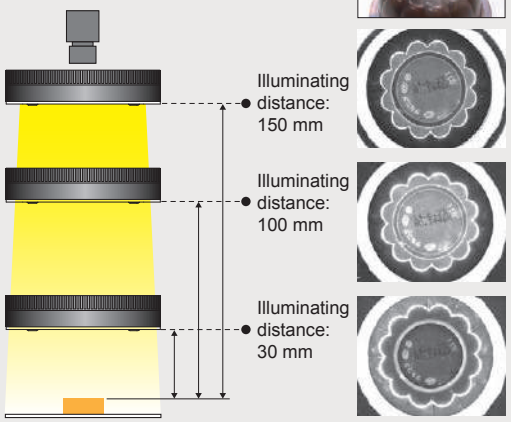


Applications Inspection for damage or stains, visual and color determination inspections, character recognition, text inspection, high angle uniform illumination, characteristic extraction at low angle, etc.

Supports from Low Angles to High Angles

Provides diffused light from the LEDs without waste using a unique illuminating mechanism. Even if the distance from the workpiece to the Light Unit is changed, there is little variation in the uniform region and it can therefore be used for a wide variety of uses.

Achieves a uniform region with a high degree of freedom

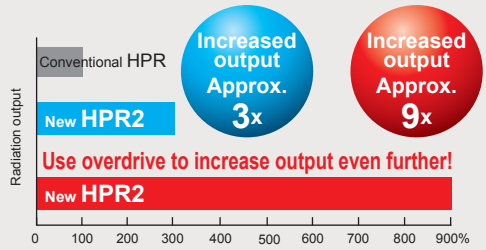


Provides Diffused Light at High Output

It achieves uniform illumination of diffused light at high output using surface-mounted LEDs and a specially processed diffusion plate.

Achieved higher output than the conventional product

■ Output comparison with the conventional product



- This is a comparison between the HPR-100 and HPR2-100 Light Units, using red and white colors.
- It can be combined with a Strobe Control Unit for even brighter emission than continuous emission.
- The data included is for reference only. Actual values may vary.

Added two sizes and a full color (RGB) type

We added the HPR2-75 and HPR2-200 models. Also, we added a full color (RGB) type to the lineup as variation for wavelengths, increasing the applications of our products.

Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format/ material

Changed the format to a semicircle to match the workpiece.



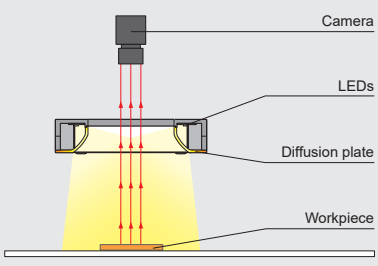
Customizable items

External/internal diameter | Wavelength/ Color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Example Configuration

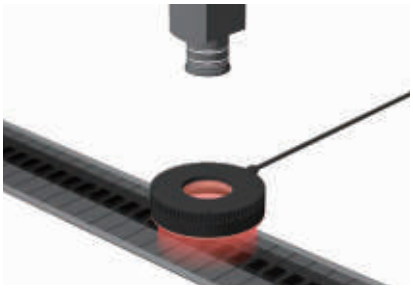
Uses a unique illuminating mechanism and emits diffused light at high output.

HPR2-100



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Imaging Example: Imaging Text on Electronic Parts



Description	Printing inspection
Workpiece	Electronics parts in embossed tapes
Conventional lighting	LED Ring Light
New lighting	HPR2-75RD
Result	Improved uniformity

■ Workpiece image



Electronics parts in embossed tapes

■ LED Ring Light



Stable inspection is difficult due to surface reflection.

■ HPR2-75RD



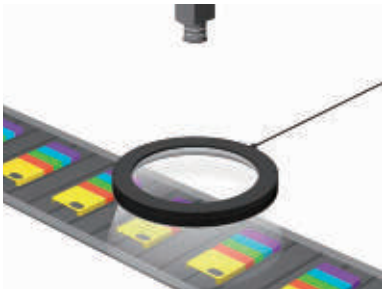
Surface reflection is reduced and an image of the text can be made.

Imaging Example: Imaging the Appearance of Multi-Colored Workpieces

■ Workpiece image

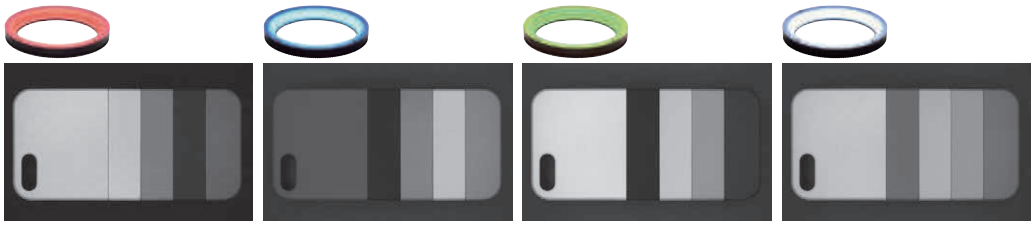


Smartphone cases



Description	Visual inspection
Workpiece	Smartphone cases
Conventional lighting	–
New lighting	HPR2-200FC: full color (RGB) type
Result	Allows for color determination.

■ HPR2-200FC: full color (RGB) type



Imaging with red illumination | Imaging with blue illumination | Imaging with green illumination | Imaging with white illumination

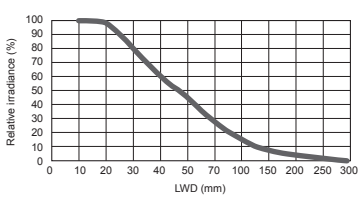
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

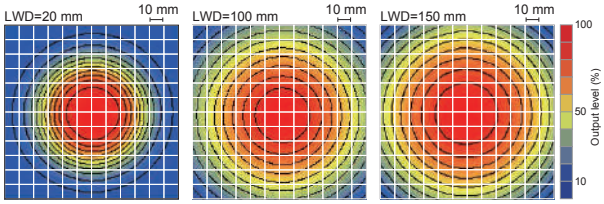
HPR2-75SW

Relative irradiance graph *1 (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



HPR2 Series



Refer to our website for product details.

CCS HPR2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
HPR2-50RD	Red	24 V / 7.6 W	635 nm	Bracket	FCB*3 Straight Cable / FCB-W*4 2-branch Cable / FCB-F 4-branch Cable / FRCB Robot Cable	PD3 / CC-ST-1024 / PSB / POD*2 / PD3*1	46 g
HPR2-50SW	White	24 V / 9.1 W	6,000 K				
HPR2-50BL	Blue		470 nm				
HPR2-50FC	Red/Green/Blue	24 V / 3.8 W	622 nm / 525 nm / 470 nm				
HPR2-75RD	Red	24 V / 17 W	635 nm			PD3 / PSB / POD*2 / PD3*1	160 g
HPR2-75SW	White	24 V / 16 W	6,000 K				
HPR2-75BL	Blue		470 nm				
HPR2-75FC	Red/Green/Blue	24 V / 6.0 W	622 nm / 525 nm / 470 nm				
HPR2-100RD	Red	24 V / 17 W	635 nm			PD3 / PSB / POD*2 / PD3*1	170 g
HPR2-100SW	White	24 V / 23 W	6,000 K				
HPR2-100BL	Blue		470 nm				
HPR2-100FC	Red/Green/Blue	24 V / 11 V	622 nm / 525 nm / 470 nm				
HPR2-150RD	Red	24 V / 27 W	635 nm			PD3 / PSB / POD*2 / PD3*1	250 g
HPR2-150SW	White		6,000 K				
HPR2-150BL	Blue		470 nm				
HPR2-150FC	Red/Green/Blue	24 V / 15 W	622 nm / 525 nm / 470 nm				
HPR2-200RD	Red	24 V / 34 W	635 nm			PD3*1 / POD*2 / PD3*1	380 g
HPR2-200SW	White	24 V / 41 W	6,000 K				
HPR2-200BL	Blue		470 nm				
HPR2-200FC	Red/Green/Blue	24 V / 19 W	622 nm / 525 nm / 470 nm				
HPR2-250RD	Red	24 V / 45 W	635 nm			PD3*1 / POD*2 / PD3*1	510 g
HPR2-250SW	White	24 V / 46 W	6,000 K				
HPR2-250BL	Blue		470 nm				
HPR2-250FC	Red/Green/Blue	24 V / 24 W	622 nm / 525 nm / 470 nm				
HPR2-400RD-FT	Red	24 V / 45 W	635 nm	–		PD3*1 / POD*2 / PD3*1	1,050 g
HPR2-400SW-FT	White	24 V / 46 W	6,000 K				
HPR2-400BL-FT	Blue		470 nm				
HPR2-400FC-FT	Red/Green/Blue	24 V / 30 W	622 nm / 525 nm / 470 nm				

*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*4 The cables with a model name that ends with "-EL2" are not included.

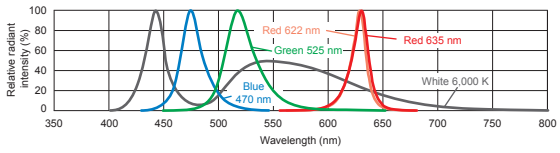
*1 Use a 3-channel Control Unit for a full color (RGB) type.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

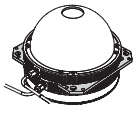
Spectral distribution



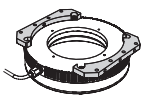
CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Combine with the Dome Light HPD2 series to achieve imaging by light switching and simultaneous lighting.



Achieves installation using installation holes with a larger gap than the Light Unit body installation holes, or installation on a vertical surface.

Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-75-JO	HPR2-75 series	HPD2-75 series
BK-100-JO	HPR2-100 series	HPD2-100 series
BK-150-JO	HPR2-150 series	HPD2-150 series
BK-200-JO	HPR2-200 series	HPD2-200 series
BK-250-JO	HPR2-250 series	HPD2-250 series

▶ P.363

Expansion mounting bracket

Model name	Applicable Light Unit (Common for all colors)
BK-50-CI	HPR2-50 series
BK-75-CI	HPR2-75 series
BK-100-CI	HPR2-100 series
BK-150-CI	HPR2-150 series
BK-200-CI	HPR2-200 series
BK-250-CI	HPR2-250 series

▶ P.364

- Example of the expansion mounting bracket in use



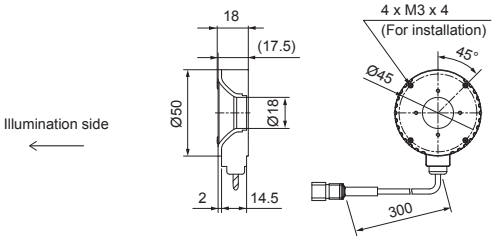
Ring Light: Image of usage with the HPR2-200RD

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

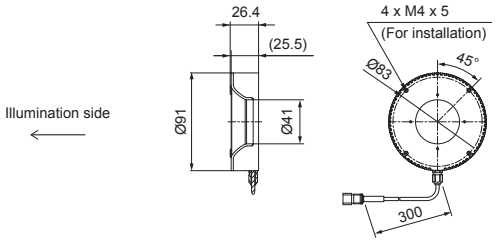
Register to use them.

Dimensions (mm)

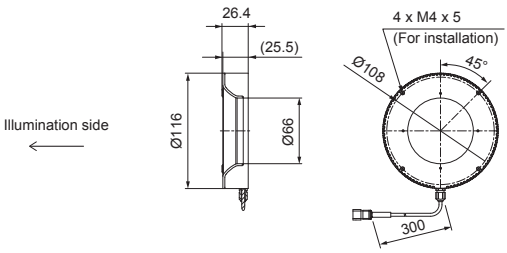
HPR2-50RD/SW/BL/FC



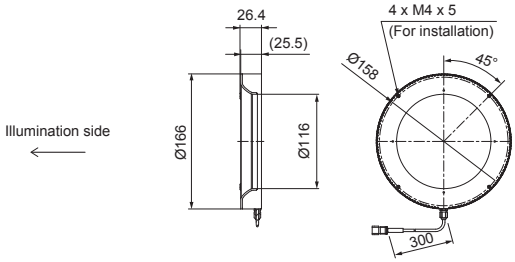
HPR2-75RD/SW/BL/FC



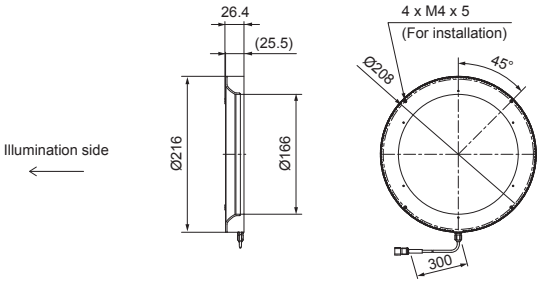
HPR2-100RD/SW/BL/FC



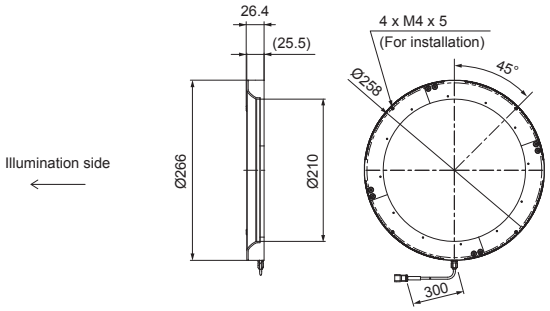
HPR2-150RD/SW/BL/FC



HPR2-200RD/SW/BL/FC

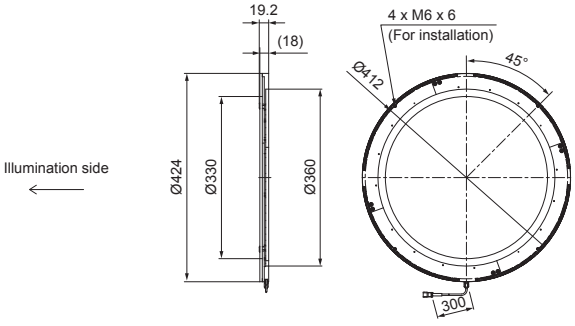


HPR2-250RD/SW/BL/FC

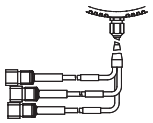


The HPR2-250 model has a curved diffusion plate.
Be aware this differs from the conventional product.

HPR2-400RD-FT / SW-FT / BL-FT / FC-FT



The HPR2-400-FT has a flat diffusion plate.



The full color type (HPR2-□□FC, HPR2-400FC-FT) has three connectors.
Use a 3-channel Control Unit if controlling intensity separately for each color.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/ HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Diffused Lighting

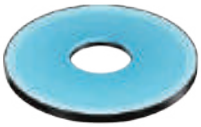
Ring Lights
LFR Series

Refer to our website for product details.
CCS LFR ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Diffused illumination from a flat emitting surface




LFR-250SW2


LFR-200BL2


LFR-330RD2


LFR-130KSW2


LFR-130GR2


LFR-100RD2-K

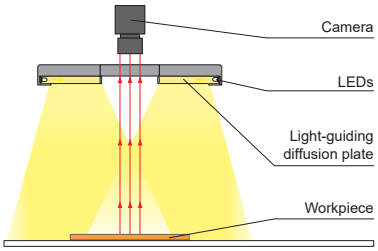

LFR-100RD2

Applications Inspection for parts mounted on circuit boards, surface inspection for metal parts, inspection for faults on bottle tops, character recognition, text inspection, printing inspection, color determination inspection, etc.

Features

LEDs embedded around a circular light-guiding diffusion plate.
Uniformly diffused light emitted from a flat emitting surface.

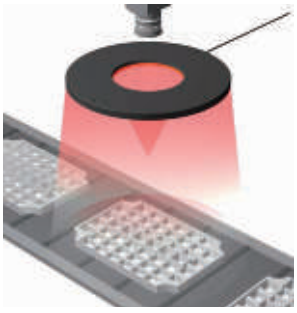
Example configuration (LFR-100)



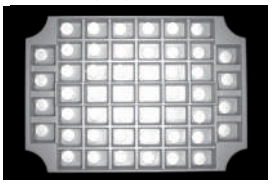
We accept custom orders.
Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging for detecting content in trays


Workpiece: Content in trays

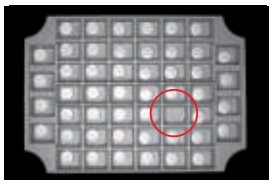


■LED Ring Light


Converged light in the center interferes with stable inspection.

⇒

■LFR-250RD2


The whole thing is illuminated evenly, allowing for detection of present contents.

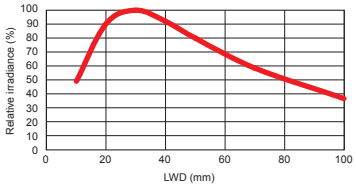
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

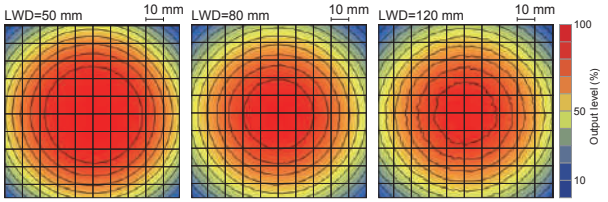
LFR-130RD2

Relative irradiance graph (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Lineup

End of the model name: -K: Type with angled emitting surface

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFR-100RD2	Red	24 V / 3.6 W	630 nm	–	FCB*3 Straight Cable; FCB-W*4 2-branch Cable; FCB-F 4-branch Cable; FRCB Robot Cable	PD3, CC-ST-1024, PSB, POD*1	120 g
LFR-100SW2	White	24 V / 4.6 W	5,500 K				170 g
LFR-100BL2	Blue		470 nm				
LFR-100GR2	Green		525 nm				
LFR-100RD2-K	Red	24 V / 3.6 W	630 nm				140 g
LFR-100KSW2	White	24 V / 4.6 W	5,500 K				
LFR-100BL2-K	Blue		470 nm				190 g
LFR-100GR2-K	Green	24 V / 4.5 W	525 nm				
LFR-130RD2	Red	24 V / 4.6 W	630 nm				250 g
LFR-130SW2	White	24 V / 5.7 W	5,500 K				
LFR-130BL2	Blue		470 nm				
LFR-130GR2	Green		525 nm				
LFR-130RD2-K	Red	24 V / 4.6 W	630 nm				190 g
LFR-130KSW2	White	24 V / 5.7 W	5,500 K				200 g
LFR-130BL2-K	Blue		470 nm				190 g
LFR-130GR2-K	Green		525 nm				
LFR-200RD2	Red	24 V / 8.1 W	630 nm			PD3, CC-ST-1024*2, PSB, POD*1	490 g
LFR-200SW2	White	24 V / 11 W	5,500 K				
LFR-200BL2	Blue		470 nm				
LFR-250RD2	Red	24 V / 11 W	630 nm			PD3, PSB, POD*1	1,080 g
LFR-250SW2	White	24 V / 13 W	5,500 K				1,090 g
LFR-250BL2	Blue		470 nm				1,080 g
LFR-330RD2	Red	24 V / 14 W	630 nm			PD3, PSB, POD*1	1,500 g

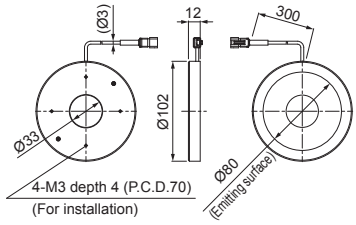
*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*4 The cables with a model name that ends with "-EL2" are not included.
*2 Can only use red.

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

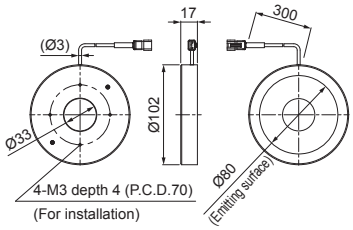
Dimensions (mm)

LFR-100RD2/SW2/BL2/GR2



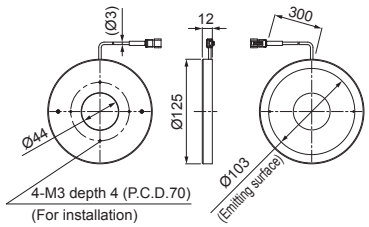
The emitting surface for the LFR-100SW2/BL2/GR2 is Ø77.

LFR-100RD2-K / KSW2 / BL2-K / GR2-K

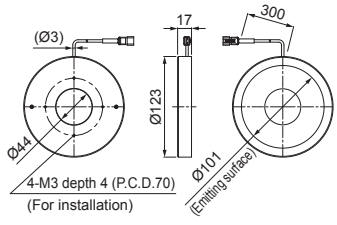


The emitting surface for the LFR-100KSW2/BL2/GR2 is Ø78.

LFR-130RD2/SW2/BL2/GR2

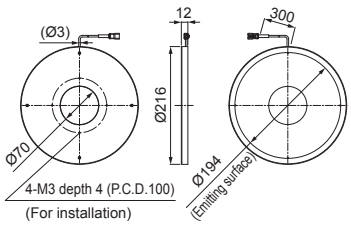


LFR-130RD2-K / KSW2 / BL2-K / GR2-K



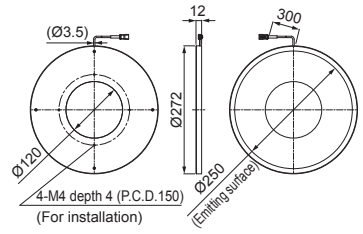
The emitting surface for the LFR-130KSW2 is Ø99.

LFR-200RD2/SW2/BL2



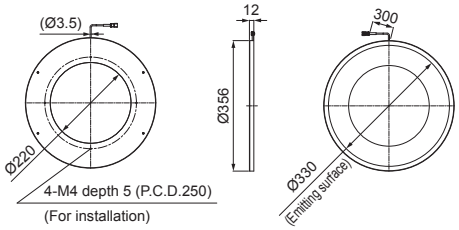
The emitting surface for the LFR-200SW2/BL2 is Ø193.

LFR-250RD2/SW2/BL2



The emitting surface for the LFR-250SW2/BL2 is Ø246.

LFR-330RD2



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/ HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

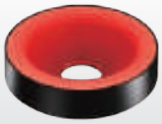
Diffused Lighting

Ring Lights
LKR Series

Refer to our website for product details.
CCS LKR ▶ Search
For quick access.
You can also use your smartphone or cell phone.

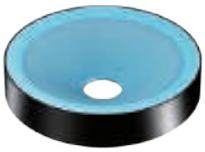
Provides diffused light from an angled emitting surface




LKR-70RD2


LKR-70SW2


LKR-70-8GR2


LKR-125BL2

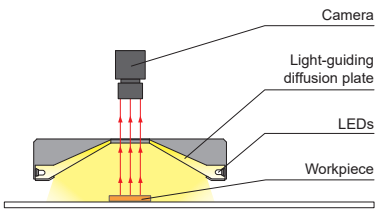
Applications Soldering inspection, parts identification with color, inspection for stains on glossy surfaces, character recognition on metal parts, dent inspection on metal parts, etc.

Features

LEDs embedded around a circular light-guiding diffusion plate.
Uniformly diffused light from an emitting surface angled with respect to the workpiece.

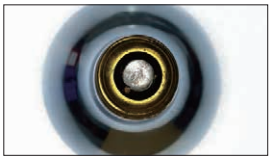


Example configuration (LKR-125)

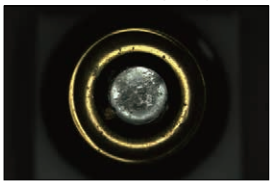


We accept custom orders.
Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging soldering parts on the cap of light bulbs

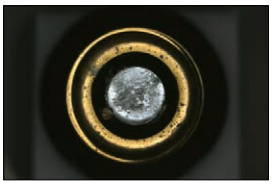

Workpiece: Light bulbs

■LED Diffused Lighting


It is difficult to evenly illuminate the whole solder.

⇒

■LKR-125SW2


It is possible to evenly illuminate the whole solder, including the cap.

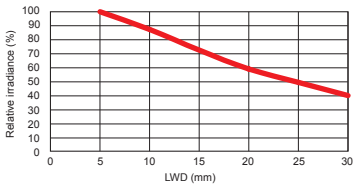
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

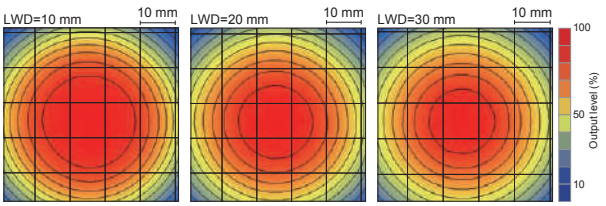
LKR-70RD2

Relative irradiance graph (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Lineup

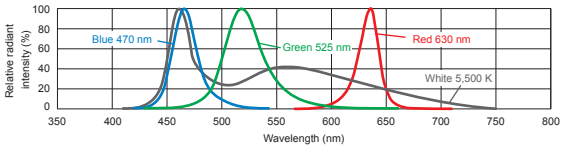
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LKR-70RD2	Red	24 V / 2.6 W	630 nm	–	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 PSB / POD*1	125 g
LKR-70SW2	White	24 V / 3.8 W	5,500 K				130 g
LKR-70BL2	Blue		470 nm				125 g
LKR-70GR2	Green		525 nm				
LKR-70-8RD2	Red	24 V / 2.6 W	630 nm				140 g
LKR-70-8SW2	White	24 V / 3.8 W	5,500 K				
LKR-70-8BL2	Blue		470 nm				
LKR-70-8GR2	Green		525 nm				
LKR-125RD2	Red	24 V / 4.6 W	630 nm				295 g
LKR-125SW2	White	24 V / 5.7 W	5,500 K				300 g
LKR-125BL2	Blue		470 nm				490 g
LKR-125GR2	Green		525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

Spectral distribution

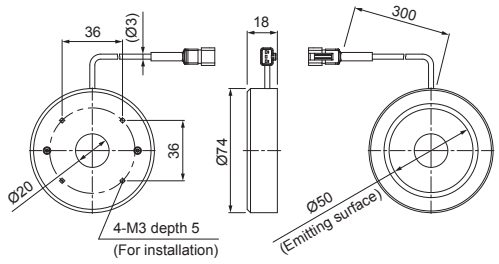


CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

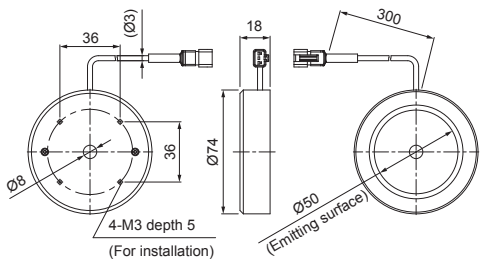
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Dimensions (mm)

LKR-70RD2/SW2/BL2/GR2

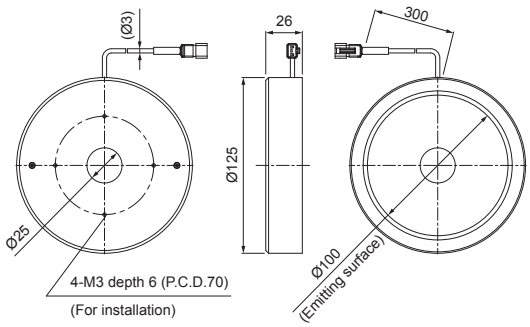


LKR-70-8RD2/SW2/BL2/GR2



The emitting surface for the LKR-70-8SW2/BL2/GR2 is Ø49.2.

LKR-125RD2/SW2/BL2/GR2



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Low-Angle Ring Lights
FPR Series

Refer to our website for product details.
CCS FPR ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light at a low angle from an angled emitting surface




FPR-100RD2


FPR-100GR2

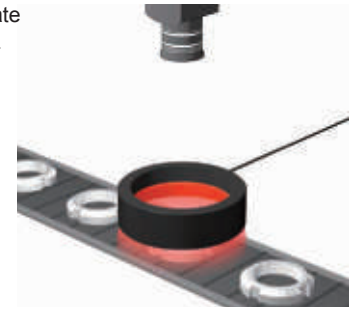

FPR-136BL2


FPR-180SW2

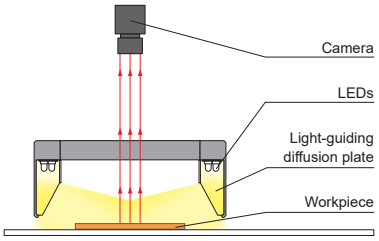
Applications Edge extraction of metal parts, character recognition for electronic parts, inspection for parts on circuit boards, label inspections, imaging of alignment marks, etc.

Features

Light from the vertically-arranged LEDs is transmitted through the light-guiding diffusion plate and uniformly diffused light is concentrated on the center of the workpiece from a low angle.



Example configuration (FPR-100)



We accept custom orders.
Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the appearance of metal parts


Workpiece: Nut for bearings

■LED Ring Light


It is difficult to evenly illuminate the slanted exterior.

⇒

■FPR-136RD2


It is possible to evenly illuminate the slanted exterior.

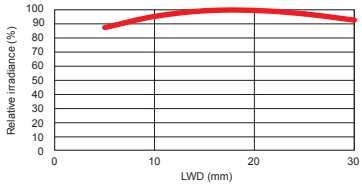
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

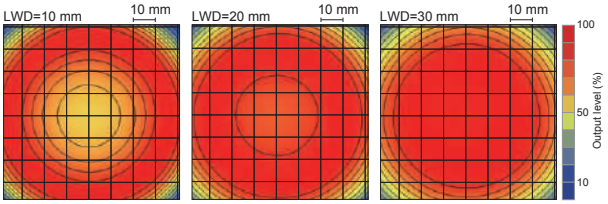
FPR-100RD2

Relative irradiance graph (LWD characteristics) *1 *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Lineup

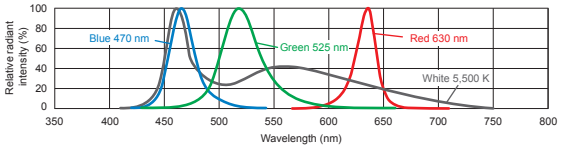
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
FPR-100RD2	Red	24 V / 6.1 W	630 nm	–	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 / PSB / POD*1	220 g
FPR-100SW2	White		5,500 K				
FPR-100BL2	Blue		470 nm				
FPR-100GR2	Green		525 nm				
FPR-136RD2	Red	24 V / 9.1 W	630 nm				300 g
FPR-136SW2	White	24 V / 12 W	5,500 K			PD3 / CC-ST-1024*2 / PSB / POD*1 *2 Can only use red.	280 g
FPR-136BL2	Blue		470 nm				300 g
FPR-136GR2	Green		525 nm				
FPR-180RD2	Red	24 V / 13 W	630 nm				400 g
FPR-180SW2	White	24 V / 16 W	5,500 K			PD3 / PSB / POD*1	380 g
FPR-180BL2	Blue		470 nm				400 g
FPR-180GR2	Green		525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

Spectral distribution

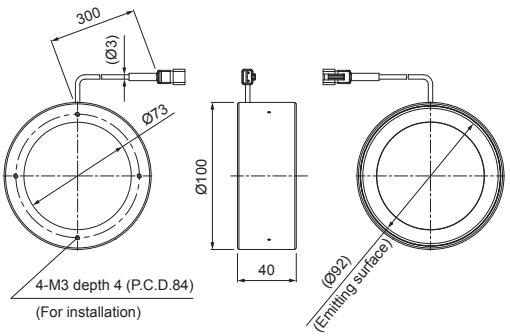


CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

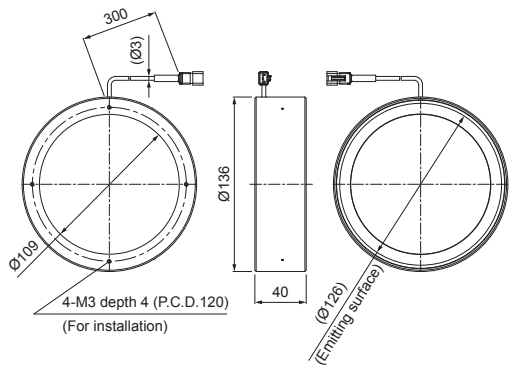
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Dimensions (mm)

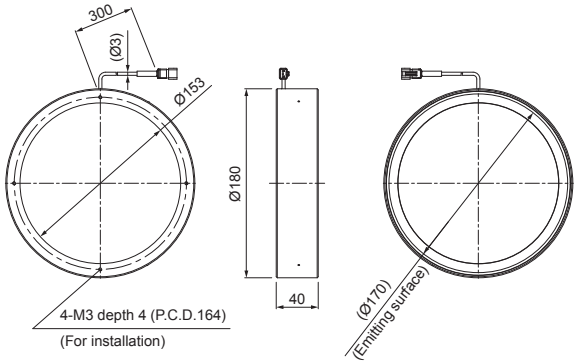
FPR-100RD2/SW2/BL2/GR2



FPR-136RD2/SW2/BL2/GR2



FPR-180RD2/SW2/BL2/GR2



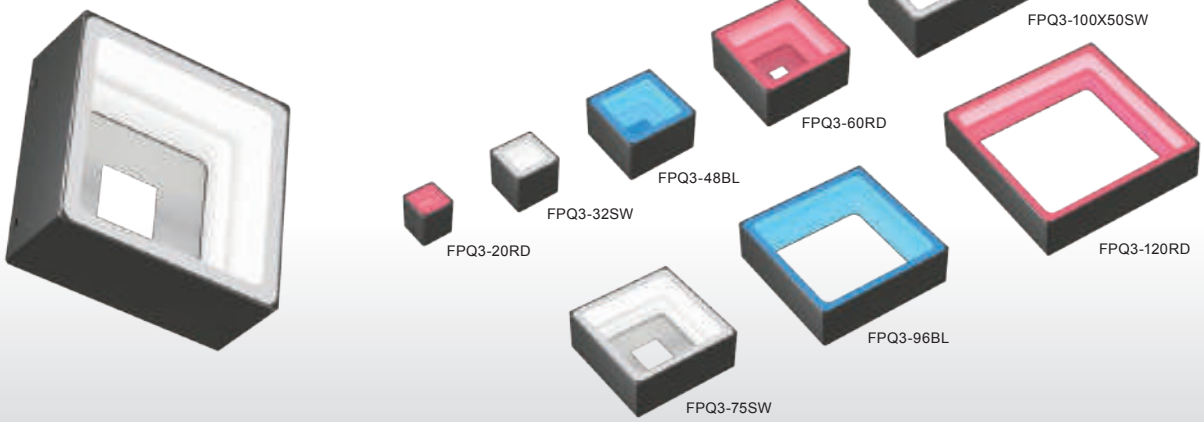
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Low-Angle Square Lights
FPQ3 Series

Refer to our website for product details.
CCS FPQ3 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light at a low angle from four directions

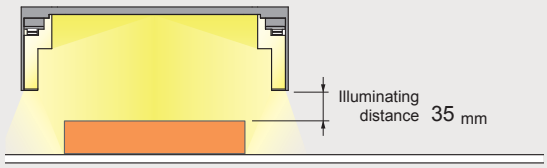


Applications Visual inspection for electronic parts; character recognition; inspection for bending, slipping, and staining of pins or leads; visual and pattern inspections for circuit boards; fault inspection for LCDs; IC lead inspection; etc.

Perfect for Square Workpieces

The FPQ3 series is a low angle Light Unit perfect for square workpieces. It can detect the outline of corners and prevents glare, which are difficult with Ring Lights.

Imaging example for the FPQ3-48RD: Imaging for detecting electronics parts

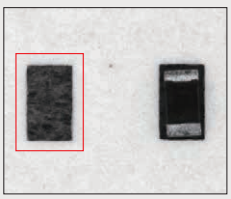


LED Ring Light



There is glare from the surface film and it is difficult to determine if the part is there.

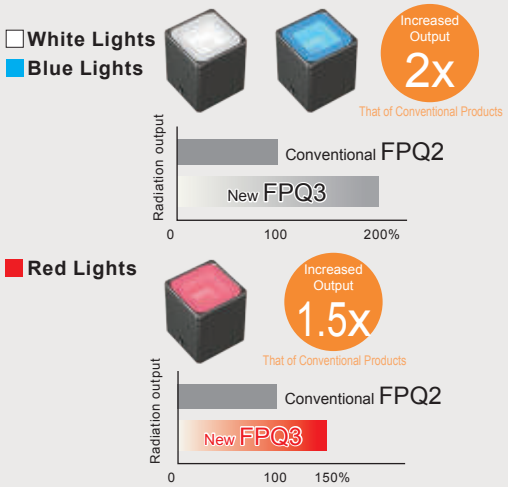
FPQ3-48RD



Film glare is removed, making it possible to determine if the part is there.

High-Output, 2x Conventional Products

Output has been increased by 2x for white and blue, 1.5x for red Light Units. Furthermore, output is more than doubled when used with a POD-series Strobe Overdrive Control Unit.

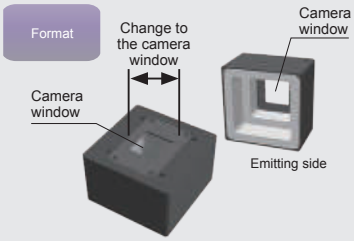


Comparison of the conventional products of the same color.
The data included is for reference only. Actual values may vary.

Custom Orders

Please contact your CCS sales representative.

E.g.: Changed format so that the Light Unit does not overlap with the field of view.



Customizable items

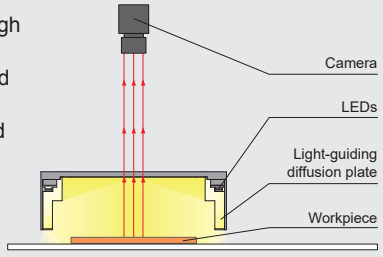
- External/internal diameter
- Wavelength/ color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

Light illuminated from the LEDs is transmitted through the light-guiding diffusion plate and uniform diffused light is illuminated centrally on the workpiece from a low angle.

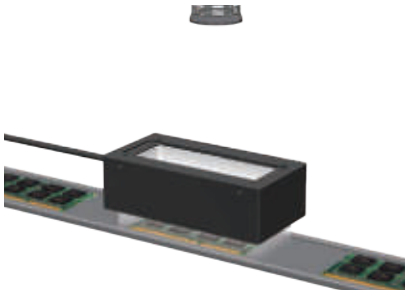
FPQ3-96



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging the Appearance of PC Memory Boards



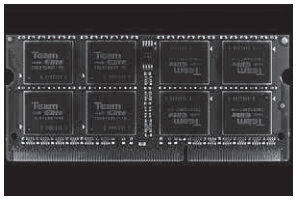
Description	Visual inspection
Workpiece	PC memory boards
Conventional lighting	FPQ2-120SW
New lighting	FPQ3-100X50SW
Result	Improved uniformity

■ Workpiece image



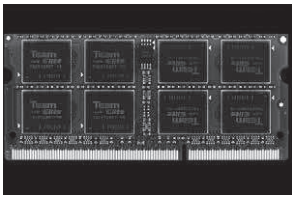
PC memory boards

■ FPQ2-120SW



It is difficult to evenly illuminate and capture the apperance of the memory boards.

■ FPQ3-100X50SW



It is possible to evenly illuminate and capture the apperance of the memory boards.

Imaging Example: Imaging the Appearance of Electronic Components



Description	Visual inspection
Workpiece	Electronic components
Conventional lighting	Without reflection panel
New lighting	With a reflection panel
Result	Improved uniformity

■ Workpiece image



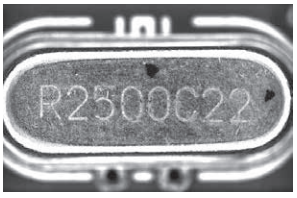
Electronic components

■ Without Reflection Plate



Illuminating from a low angle allows you to observe the engraved characters.

■ With a Reflection Plate



Illuminating from above and a low angle allows you to observe the characters and blots.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

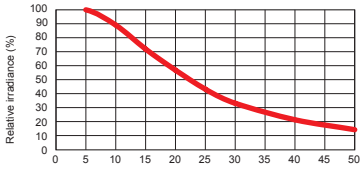
The data included is for reference only. Actual values may vary.

FPQ3-48RD

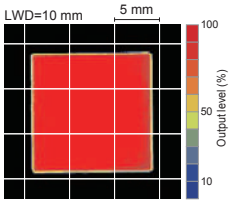
Relative irradiance graph*1 (LWD characteristics)*2

*1 Irradiance on the optical axis

*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)

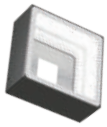


You can inquire using our website.

Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

FPQ3 Series



Refer to our website for product details.

CCS FPQ3 ▶ Search

You can also use your smartphone or cell phone.

For quick access.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
FPQ3-20RD	Red	24 V / 1.3 W	630 nm	–	FCB*4 Straight Cable FCB-W*5 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 CC-ST-1024 PSB POD*1	25 g
FPQ3-20SW	White	24 V / 3.1 W	6,000 K				
FPQ3-20BL	Blue	24 V / 2.6 W	465 nm				
FPQ3-32RD	Red	24 V / 3.8 W	630 nm	Reflection plate			50 g
FPQ3-32SW	White	24 V / 7.1 W	6,000 K				
FPQ3-32BL	Blue	24 V / 5.1 W	465 nm				
FPQ3-48RD	Red	24 V / 5.1 W	630 nm	–		PD3 CC-ST-1024*2 PSB POD*1 *2 Can only use red and blue.	90 g
FPQ3-48SW	White	24 V / 11 W	6,000 K				
FPQ3-48BL	Blue	24 V / 7.6 W	465 nm				
FPQ3-60RD	Red	24 V / 7.6 W	630 nm			PD3 CC-ST-1024*3 PSB POD*1 *3 Can only use red.	120 g
FPQ3-60SW	White	24 V / 15 W	6,000 K				
FPQ3-60BL	Blue	24 V / 11 W	465 nm				
FPQ3-75RD	Red	24 V / 12 W	630 nm				155 g
FPQ3-75SW	White	24 V / 22 W	6,000 K				
FPQ3-75BL	Blue	24 V / 16 W	465 nm				
FPQ3-96RD	Red	24 V / 13 W	630 nm	Reflection plate		PD3 PSB POD*1	170 g
FPQ3-96SW	White	24 V / 25 W	6,000 K				
FPQ3-96BL	Blue	24 V / 18 W	465 nm				
FPQ3-120RD	Red	24 V / 16 W	630 nm				220 g
FPQ3-120SW	White	24 V / 27 W	6,000 K				
FPQ3-120BL	Blue	24 V / 21 W	465 nm				
FPQ3-100×50RD	Red	24 V / 11 W	630 nm				135 g
FPQ3-100×50SW	White	24 V / 18 W	6,000 K				
FPQ3-100×50BL	Blue	24 V / 13 W	465 nm				

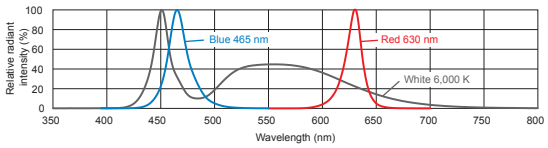
*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*5 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

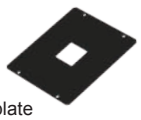
Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



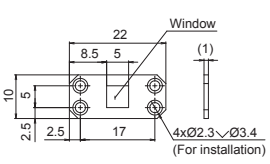
Reflection plate

Installing the reflection plate on the Light Unit enhances the dome effect, which enables highly-uniform and diffused illumination.

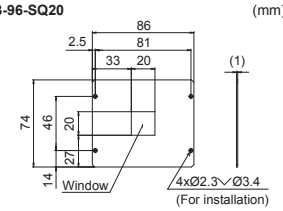
Model name	Applicable Light Unit (Common for all colors)
RP-FPQ3-32-SQ5	FPQ3-32
RP-FPQ3-96-SQ20	FPQ3-96
RP-FPQ3-120-SQ20	FPQ3-120
RP-FPQ3-100X50-SQ10	FPQ3-100X50

Accessories: Flat countersunk head screws, JCIS #0 type 1, M2 (4 mm) x 5 pieces
The FPQ3-48-, FPQ3-60-, and FPQ3-75-series Light Units have a factory-installed reflection plate.

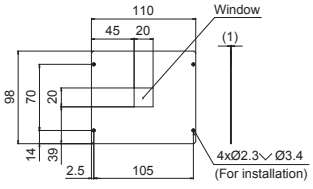
RP-FPQ3-32-SQ5



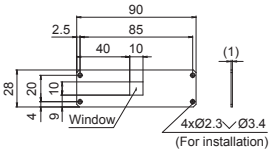
RP-FPQ3-96-SQ20 (mm)



RP-FPQ3-120-SQ20



RP-FPQ3-100X50-SQ10

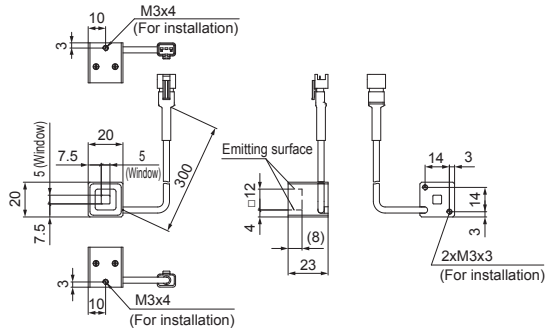


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

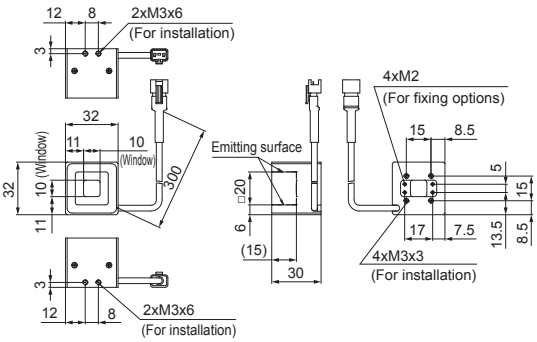
Register to use them.

Dimensions (mm)

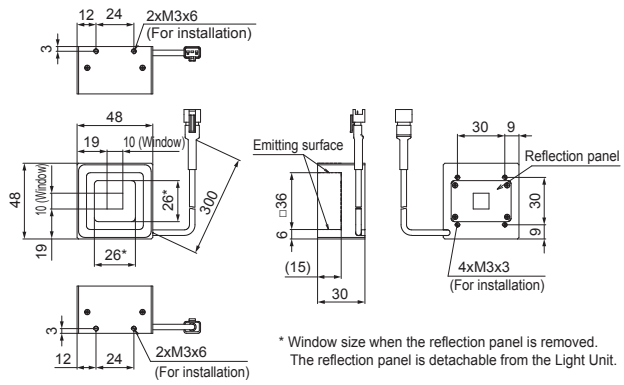
FPQ3-20RD/SW/BL



FPQ3-32RD/SW/BL

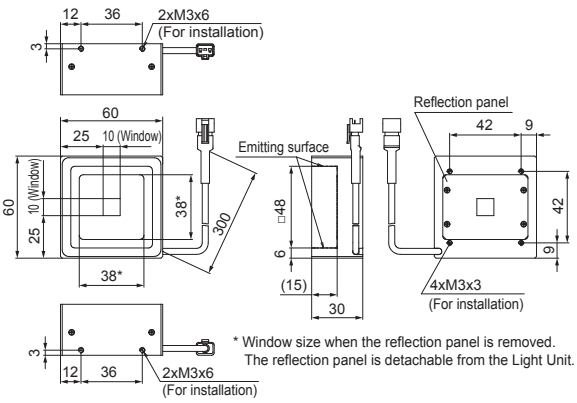


FPQ3-48RD/SW/BL



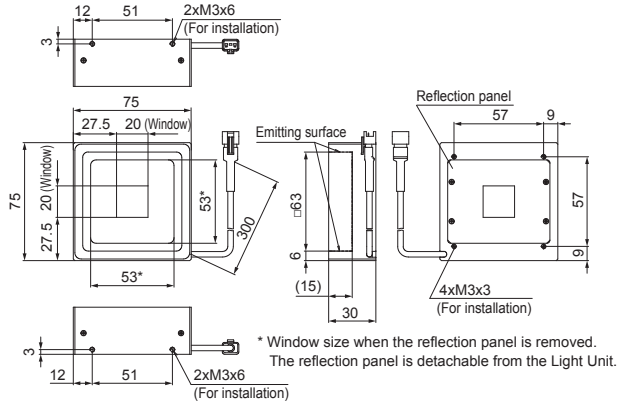
* Window size when the reflection panel is removed.
The reflection panel is detachable from the Light Unit.

FPQ3-60RD/SW/BL



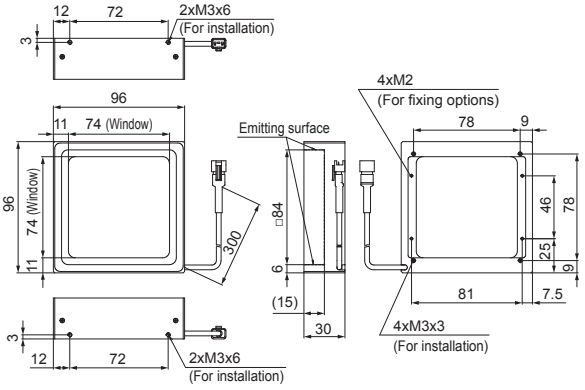
* Window size when the reflection panel is removed.
The reflection panel is detachable from the Light Unit.

FPQ3-75RD/SW/BL

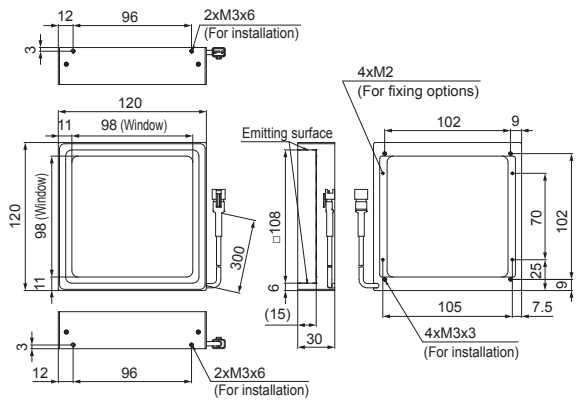


* Window size when the reflection panel is removed.
The reflection panel is detachable from the Light Unit.

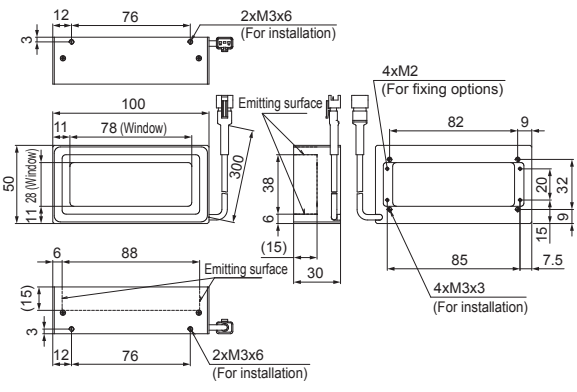
FPQ3-96RD/SW/BL



FPQ3-120RD/SW/BL



FPQ3-100×50RD/SW/BL



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

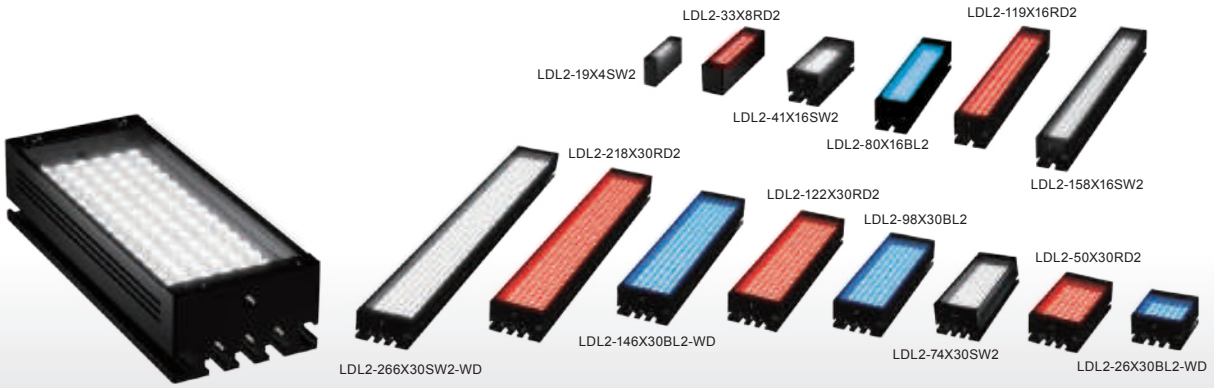
Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Direct Lighting

Bar Lights
LDL2 Series

Refer to our website for product details.
CCS LDL2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides direct light from an emitting part equipped with LEDs in straight lines



Applications Various inspections for reading text, visual inspection for damage on long and thin workpieces, damage inspection for metal with hairline finishing, light source for a line sensor camera, various inspections to detect foreign material, etc.

Rich Lineup with 141 Models*

We have a lineup of 141 models*, such as combinations of the size and emitting width of the emitting surface, directional characteristics, and the emitted color.

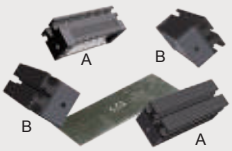
* Total number of models of the conventional products and high-power type products.

Compatible with a wide range of uses

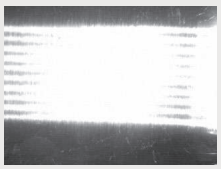
You can freely adjust the illuminating direction and angle for use in a wide range of uses.



Because Bar Lights can freely adjust their illuminating direction and angle to match the workpiece, they can provide the optimal image.



Illuminating image from direction A



Illuminating image from direction B



Bar Lights That Use Surface-Mounted LEDs

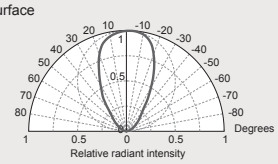
These are Bar Lights that use surface-mounted LEDs. We provide the narrow type, which performs convergent illumination for a narrow space, and the wide type (-WD) which illuminates a wide space.

Select the directional characteristics of a narrow type or wide type

■ Directional characteristics of the Narrow Type (White)

Zoomed-in view of the emitting surface

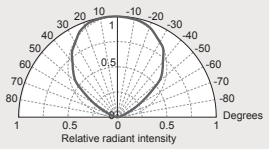




■ Directional characteristics of the Wide Type (White)

Zoomed-in view of the emitting surface



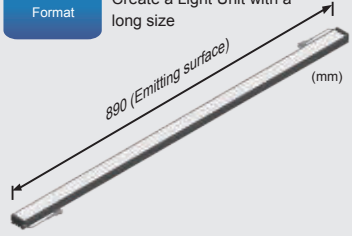


Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format — Create a Light Unit with a long size



Customizable items

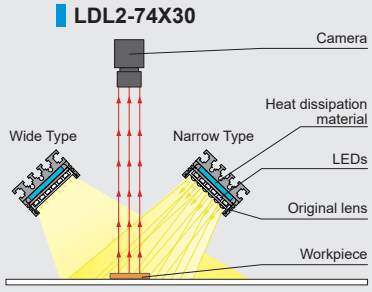
- External/internal diameter
- Wavelength/ color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

Achieved light with a narrow directionality using the original lens located in front of the LEDs. Illuminates direct light from any angle.

LDL2-74X30



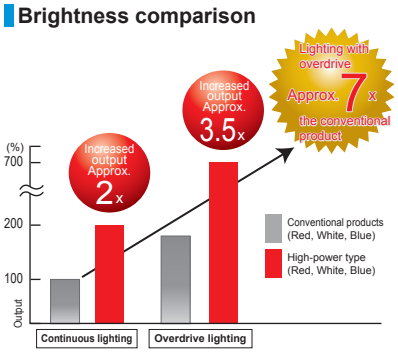
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Increased Brightness and Rich Variety of Sizes

For detailed information on the overdrive, refer to P.388.

The data included is for reference only. Actual values may vary.

Brightness comparison





Shutter speed: 1/10,000
Amount of light: 100% intensity



Shutter speed: 1/10,000
Amount of light: 100% intensity

Shutter speed: 1/18,000
Continuous lighting: 100% intensity



Shutter speed: 1/18,000
Lighting with overdrive: 100% intensity

Standard product lineup

The same applies to Wide Types (End of the model name: -WD).

Conventional product			High-power type		
Model name	LED color	Emitting surface size	Model name	LED color	Emitting surface size
–	–	–	LDL2-19X4RD2/SW2/BL2	Red/White/Blue	19 x 4 mm
LDL2-33X8RD/SW/BL/GR/IR850	Red/White/Blue/Green/Infrared	33 x 8 mm	LDL2-33X8RD2/SW2/BL2		33 x 8 mm
LDL2-41X16RD/SW/BL/GR	Red/White/Blue/Green	41 x 16 mm	LDL2-41X16RD2/SW2/BL2		41 x 16 mm
LDL2-80X16RD/SW/BL/GR		80 x 16 mm	LDL2-80X16RD2/SW2/BL2		80 x 16 mm
LDL2-119X16RD/SW/BL/GR		119 x 16 mm	LDL2-119X16RD2/SW2/BL2		119 x 16 mm
–	–	–	LDL2-158X16RD2/SW2/BL2		158 x 16 mm
–	–	–	LDL2-26X30RD2/SW2/BL2		26 x 30 mm
–	–	–	LDL2-50X30RD2/SW2/BL2		50 x 30 mm
LDL2-74X30RD/SW/BL/GR	Red/White/Blue/Green	74 x 30 mm	LDL2-74X30RD2/SW2/BL2		74 x 30 mm
–	–	–	LDL2-98X30RD2/SW2/BL2		98 x 30 mm
–	–	–	LDL2-122X30RD2/SW2/BL2		122 x 30 mm
LDL2-146X30RD/SW/BL/GR	Red/White/Blue/Green	146 x 30 mm	LDL2-146X30RD2/SW2/BL2		146 x 30 mm
LDL2-218X30RD/SW/BL/GR		218 x 30 mm	LDL2-218X30RD2/SW2/BL2		218 x 30 mm
LDL2-266X30RD/SW/BL/GR		266 x 30 mm	LDL2-266X30RD2/SW2/BL2		266 x 30 mm

Shortest Bar Light in the series

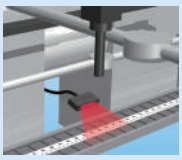
LDL2-19X4 series



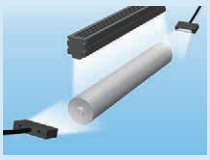
Applications:
Visual inspection of extremely small parts, etc.



Use it for installations in narrow devices or to save space on your manufacturing line.



Narrow spaces inside devices



As assistance lighting for other lights

Differences between conventional products and high-power types

Changes	Conventional product	High-power type
Peak emitting wavelength	Red 635 nm / Blue 470 nm	Red 634 nm / Blue 467 nm
Correlated color temperature	White 6,600 K	White 7,800 K
Power consumption	Refer to the Lineup table. (P.63 to 68)	
Spectral distribution	Refer to the LED properties. (P.68)	
Directional characteristics		

Model name

Conventional product	High-power type
(Example) LDL2-41X16SW LDL2-41X16SW-WD	(Example) LDL2-41X16SW2 LDL2-41X16SW2-WD

Power consumption values are different between the conventional products and high-power type products. Before use, make sure that the total power consumption of the Light Units is within the output power capacity of the Control Unit. Optional accessories are applicable to the new products as well as to the conventional products of the same size. For details on the optional accessories that are applicable to the Light Units with the newly added size, refer to the lineup tables under "Options."

LDR2 Direct Lighting
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2 Diffused Lighting
LFR
LKR
FPR
FPQ3
LDL2 Direct Lighting
LDLB
HLDL2
TH2 (5 types) Diffused Lighting
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU Collimated Lighting
MFU
PF Strobe Lighting
HLDR-IP/HSL-PCL Waterproof
UV2 Ultraviolet Lighting
UV
LNSP-UV-FN
IR2 Infrared Lighting
IU Intensity Control
HLV3 Spot Lighting, Etc.
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP Convergent Lighting
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD Diffused Lighting
LND2
HLND
LT
LNV
LNDG Oblique-Angled Lighting
LNIS2
LNIS
LNIS-FN
Telecentric Lens Lenses
Macro Lens

LDL2 Series



Refer to our website for product details.

CCS LDL2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Imaging Example: Imaging of Damage in Sheet Metals (Hairline Finishing)



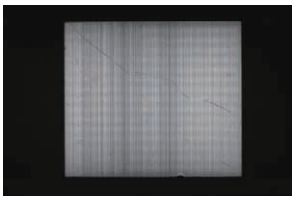
Description	Visual inspection
Workpiece	Aluminum sheets (hairline finishing)
Before the proposal	LED Bar Light
After the proposal	LDL2-74X30RD Proposed the optimal illuminating angle and illuminating direction
Result	Extracts only the damage

Workpiece image



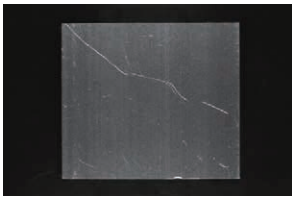
Aluminum sheets (hairline finishing)

LED Bar Light



Due to reflection from the hairline finishing surface, it is difficult to form an image of the damage.

LDL2-74X30RD



Surface reflection is reduced and a clear image of the damage can be made.

Imaging Example: Imaging the Appearance of Confectionery Packaging

Workpiece image



Confectionery packaging

LED Ring Light



Due to reflection from the surface, it is difficult to form an image of the appearance.

LDL2-119X16SW



Surface reflection is removed and a clear image of the appearance can be made.

Imaging Example: Imaging Engraved Characters on Plastic Surfaces

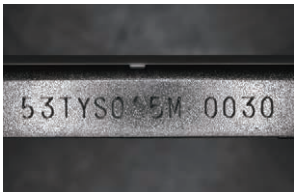


Workpiece image



Digital video cassettes

LED Ring Light + Diffusion plate



It is difficult to observe the engraved characters due to uneven illumination.

LDL2-80X16RD2 + Diffusion plate

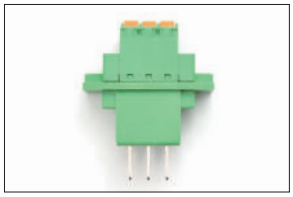


When you attach the diffusion plate to the Bar Light and illuminate the workpiece, the engraved characters are evenly and brightly captured.

Imaging Example: Imaging the Appearance of Connector Pins



Workpiece image



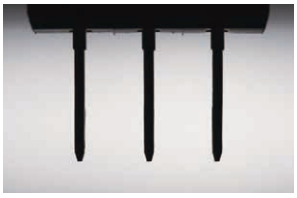
Connectors

LDL2-74X30SW2-WD



Illumination from the front of the workpiece allows you to observe the surface state of the connector.

LDL2-74X30SW2-WD + Diffusion plate



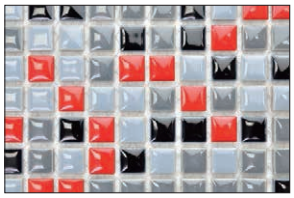
Illumination using a diffusion plate from behind the workpiece allows you to observe the appearance of the connector.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

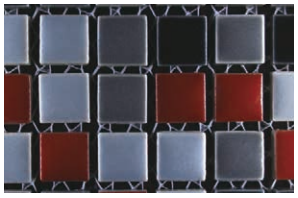
Imaging Example: Imaging the Surface and Appearance of Tiles

Workpiece image



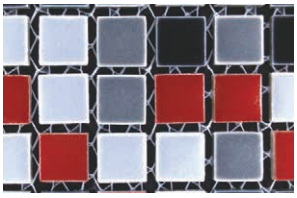
Tiles

LDL2-119X16SW2 (double use)



It is difficult to observe the surface and appearance of the tiles with a double use of the Bar Lights due to uneven illumination.

LDL2-119X16SW2 (quadruple use) + bracket



The Bar Lights which are mounted on the four sides of the bracket illuminate the surface and appearance of the tiles, so that they are captured brightly and evenly.

Data: Relative Irradiance Graph/Uniformity (Representative Example)

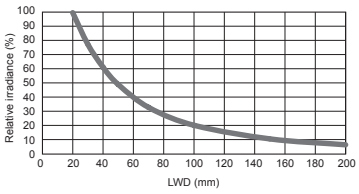
The data included is for reference only. Actual values may vary.

Conventional products

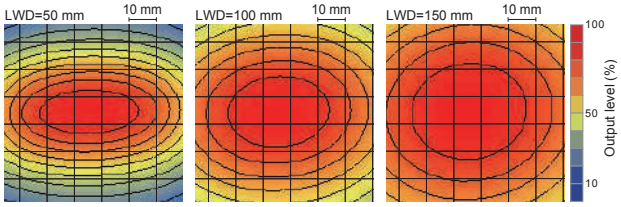
LDL2-74X30SW (Narrow type)

Relative irradiance graph *1 (LWD characteristics) *2

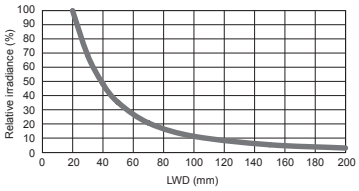
*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece

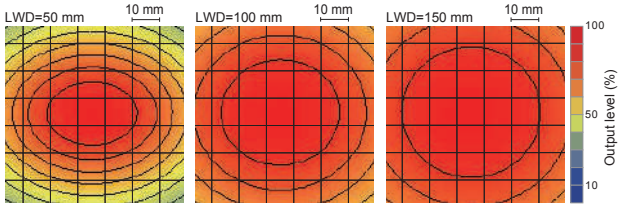


Uniformity (Relative irradiance)



LDL2-74X30SW-WD (Wide type)



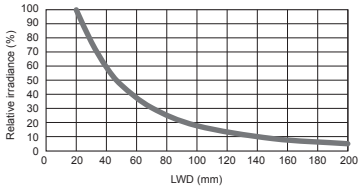


New products

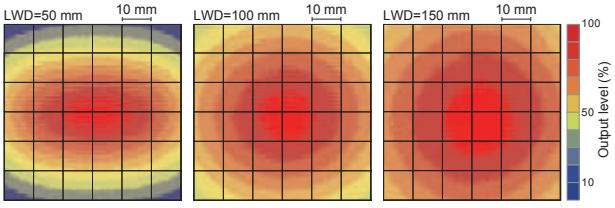
LDL2-74X30SW2 (Narrow type)

Relative irradiance graph *1 (LWD characteristics) *2

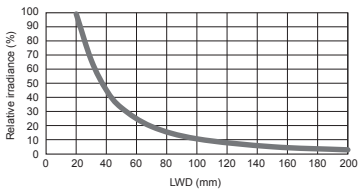
*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece

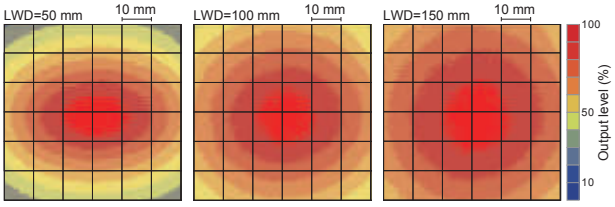


Uniformity (Relative irradiance)



LDL2-74X30SW2-WD (Wide type)





Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDL2 Series



Refer to our website for product details.

CCS LDL2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup (Standard Products · Conventional Products)

"-WD" at the end of the model name: Wide type

	Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
Emitting width: 8 mm	LDL2-33X8RD*1	Red	33×8 mm	24 V / 1.3 W	635 nm	Diffusion plate Polarizing plate Bracket	FCB*5 Straight Cable FCB-W*6 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *5 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *6 The cables with a model name that ends with "-EL2" are not included.	PD3 CC-ST-1024 PSB POD *3 *4 *4 Not applicable to the infrared lights.	20 g
	LDL2-33X8SW*1	White		24 V / 0.8 W	6,600 K				
	LDL2-33X8BL*1	Blue			470 nm				
	LDL2-33X8GR*1	Green			525 nm				
	LDL2-33X8IR850*1*2	Infrared		24 V / 1.3 W	850 nm				
Emitting width: 16 mm	LDL2-41X16RD(-WD)	Red	41×16 mm	24 V / 1.9 W	635 nm				50 g
	LDL2-41X16SW(-WD)	White			6,600 K				
	LDL2-41X16BL(-WD)	Blue			470 nm				
	LDL2-41X16GR(-WD)	Green			525 nm				
	LDL2-80X16RD(-WD)	Red	80×16 mm	24 V / 3.8 W	635 nm				75 g
	LDL2-80X16SW(-WD)	White			6,600 K				
	LDL2-80X16BL(-WD)	Blue			470 nm				
	LDL2-80X16GR(-WD)	Green			525 nm				
	LDL2-119X16RD(-WD)	Red	119×16 mm	24 V / 5.7 W	635 nm			PD3 CC-ST-1024 PSB POD*3	95 g
	LDL2-119X16SW(-WD)	White			6,600 K				
	LDL2-119X16BL(-WD)	Blue			470 nm				
	LDL2-119X16GR(-WD)	Green			525 nm				
Emitting width: 30 mm	LDL2-74X30RD(-WD)	Red	74×30 mm	24 V / 5.7 W	635 nm	Diffusion plate Polarizing plate Protective plate Bracket			100 g
	LDL2-74X30SW(-WD)	White			6,600 K				
	LDL2-74X30BL(-WD)	Blue			470 nm				
	LDL2-74X30GR(-WD)	Green			525 nm				
	LDL2-146X30RD(-WD)	Red	146×30 mm	24 V / 12 W	635 nm				170 g
	LDL2-146X30SW(-WD)	White			6,600 K				
	LDL2-146X30BL(-WD)	Blue			470 nm				
	LDL2-146X30GR(-WD)	Green			525 nm				
	LDL2-218X30RD(-WD)	Red	218×30 mm	24 V / 18 W	635 nm			PD3 PSB POD*3	240 g
	LDL2-218X30SW(-WD)	White			6,600 K				
	LDL2-218X30BL(-WD)	Blue			470 nm				
	LDL2-218X30GR(-WD)	Green			525 nm				
	LDL2-266X30RD(-WD)	Red	266×30 mm	24 V / 21 W	635 nm				280 g
	LDL2-266X30SW(-WD)	White			6,600 K				
	LDL2-266X30BL(-WD)	Blue			470 nm				
	LDL2-266X30GR(-WD)	Green			525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 All LEDs of the LDL2-33X8 have wide type directional characteristics.
*2 Please inquire if you want to use in combination with a Strobe Control Unit (overdrive type).
*3 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup (Standard Products · High-Power Type)

"-WD" at the end of the model name: Wide type

	Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
E.W.: 4 mm	LDL2-19X4RD2*1	Red	19×4 mm	24 V / 1.3 W	634 nm	Diffusion plate, Polarizing plate, Bracket* (* We accept custom orders.)	FCB*3 Straight Cable, FCB-W*4 2-branch Cable, FCB-F 4-branch Cable, FRCB Robot Cable (*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.)	PD3, CC-ST-1024, PSB, POD*2	12 g
	LDL2-19X4SW2*1	White			7,800 K				
	LDL2-19X4BL2*1	Blue		24 V / 1.1 W	467 nm				
E.W.: 8 mm	LDL2-33X8RD2*1	Red	33×8 mm	24 V / 2.6 W	634 nm	Diffusion plate, Polarizing plate, Bracket			20 g
	LDL2-33X8SW2*1	White		24 V / 2.1 W	7,800 K				
	LDL2-33X8BL2*1	Blue		24 V / 1.5 W	467 nm				
Emitting width: 16 mm	LDL2-41X16RD2(-WD)	Red	41×16 mm	24 V / 3.8 W	634 nm				50 g
	LDL2-41X16SW2(-WD)	White			7,800 K				
	LDL2-41X16BL2(-WD)	Blue			467 nm				
	LDL2-80X16RD2(-WD)	Red	80×16 mm	24 V / 7.6 W	634 nm				75 g
	LDL2-80X16SW2(-WD)	White			7,800 K				
	LDL2-80X16BL2(-WD)	Blue			467 nm				
	LDL2-119X16RD2(-WD)	Red	119×16 mm	24 V / 12 W	634 nm				95 g
	LDL2-119X16SW2(-WD)	White			7,800 K				
	LDL2-119X16BL2(-WD)	Blue			467 nm				
	LDL2-158X16RD2(-WD)	Red	158×16 mm	24 V / 16 W	634 nm				120 g
	LDL2-158X16SW2(-WD)	White			7,800 K				
	LDL2-158X16BL2(-WD)	Blue			467 nm				
Emitting width: 30 mm	LDL2-26X30RD2(-WD)	Red	26×30 mm	24 V / 3.8 W	634 nm				55 g
	LDL2-26X30SW2(-WD)	White			7,800 K	Diffusion plate, Polarizing plate, Protective plate, Bracket* (* We accept custom orders for the brackets that can install four the Bar Lights.)			
	LDL2-26X30BL2(-WD)	Blue			467 nm				
	LDL2-50X30RD2(-WD)	Red	50×30 mm	24 V / 7.6 W	634 nm				80 g
	LDL2-50X30SW2(-WD)	White			7,800 K				
	LDL2-50X30BL2(-WD)	Blue			467 nm				
	LDL2-74X30RD2(-WD)	Red	74×30 mm	24 V / 12 W	634 nm				100 g
	LDL2-74X30SW2(-WD)	White			7,800 K				
	LDL2-74X30BL2(-WD)	Blue			467 nm				
	LDL2-98X30RD2(-WD)	Red	98×30 mm	24 V / 16 W	634 nm				125 g
	LDL2-98X30SW2(-WD)	White			7,800 K				
	LDL2-98X30BL2(-WD)	Blue			467 nm				
	LDL2-122X30RD2(-WD)	Red	122×30 mm	24 V / 19 W	634 nm				150 g
	LDL2-122X30SW2(-WD)	White			7,800 K				
	LDL2-122X30BL2(-WD)	Blue			467 nm				
	LDL2-146X30RD2(-WD)	Red	146×30 mm	24 V / 23 W	634 nm				170 g
	LDL2-146X30SW2(-WD)	White			7,800 K				
	LDL2-146X30BL2(-WD)	Blue			467 nm				
	LDL2-218X30RD2(-WD)	Red	218×30 mm	24 V / 35 W	634 nm				240 g
	LDL2-218X30SW2(-WD)	White			7,800 K				
	LDL2-218X30BL2(-WD)	Blue			467 nm				
	LDL2-266X30RD2(-WD)	Red	266×30 mm	24 V / 42 W	634 nm				280 g
	LDL2-266X30SW2(-WD)	White			7,800 K				
	LDL2-266X30BL2(-WD)	Blue			467 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 All LEDs of the LDL2-19X4 and LDL2-33X8 have wide type directional characteristics.
*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LDL2 Series



Refer to our website for product details.

CCS LDL2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup (Special Orders · Conventional Products)

"-WD" at the end of the model name: Wide type

	Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
Emitting width: 16 mm	LDL2-158X16RD(-WD)	Red	158×16 mm	24 V / 7.6 W	635 nm	Please inquire for more information.	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 CC-ST-1024 PSB POD*1	120 g
	LDL2-158X16SW(-WD)	White			6,600 K				
	LDL2-158X16BL(-WD)	Blue			470 nm				
	LDL2-158X16GR(-WD)	Green			525 nm				
	LDL2-197X16RD(-WD)	Red	197×16 mm	24 V / 9.5 W	635 nm				145 g
	LDL2-197X16SW(-WD)	White			6,600 K				
	LDL2-197X16BL(-WD)	Blue			470 nm				
	LDL2-197X16GR(-WD)	Green			525 nm				
	LDL2-236X16RD(-WD)	Red	236×16 mm	24 V / 12 W	635 nm				170 g
	LDL2-236X16SW(-WD)	White			6,600 K				
	LDL2-236X16BL(-WD)	Blue			470 nm				
	LDL2-236X16GR(-WD)	Green			525 nm				
	LDL2-275X16RD(-WD)	Red	275×16 mm	24 V / 14 W	635 nm				195 g
	LDL2-275X16SW(-WD)	White			6,600 K				
	LDL2-275X16BL(-WD)	Blue			470 nm				
	LDL2-275X16GR(-WD)	Green			525 nm				
	LDL2-314X16RD(-WD)	Red	314×16 mm	24 V / 16 W	635 nm				220 g
	LDL2-314X16SW(-WD)	White			6,600 K				
	LDL2-314X16BL(-WD)	Blue			470 nm				
	LDL2-314X16GR(-WD)	Green			525 nm				
	LDL2-353X16RD(-WD)	Red	353×16 mm	24 V / 18 W	635 nm				245 g
	LDL2-353X16SW(-WD)	White			6,600 K				
	LDL2-353X16BL(-WD)	Blue			470 nm				
	LDL2-353X16GR(-WD)	Green			525 nm				
	LDL2-392X16RD(-WD)	Red	392×16 mm	24 V / 19 W	635 nm				270 g
	LDL2-392X16SW(-WD)	White			6,600 K				
	LDL2-392X16BL(-WD)	Blue			470 nm				
	LDL2-392X16GR(-WD)	Green			525 nm				
	LDL2-431X16RD(-WD)	Red	431×16 mm	24 V / 21 W	635 nm				295 g
	LDL2-431X16SW(-WD)	White			6,600 K				
	LDL2-431X16BL(-WD)	Blue			470 nm				
	LDL2-431X16GR(-WD)	Green			525 nm				
	LDL2-470X16RD(-WD)	Red	470×16 mm	24 V / 23 W	635 nm				320 g
	LDL2-470X16SW(-WD)	White			6,600 K				
	LDL2-470X16BL(-WD)	Blue			470 nm				
	LDL2-470X16GR(-WD)	Green			525 nm				
	LDL2-509X16RD(-WD)	Red	509×16 mm	24 V / 25 W	635 nm				345 g
	LDL2-509X16SW(-WD)	White			6,600 K				
	LDL2-509X16BL(-WD)	Blue			470 nm				
	LDL2-509X16GR(-WD)	Green			525 nm				
Emitting width: 30 mm	LDL2-26X30RD(-WD)	Red	26×30 mm	24 V / 1.9 W	635 nm				55 g
	LDL2-26X30SW(-WD)	White			6,600 K				
	LDL2-26X30BL(-WD)	Blue			470 nm				
	LDL2-26X30GR(-WD)	Green			525 nm				
	LDL2-50X30RD(-WD)	Red	50×30 mm	24 V / 3.8 W	635 nm				80 g
	LDL2-50X30SW(-WD)	White			6,600 K				
	LDL2-50X30BL(-WD)	Blue			470 nm				
	LDL2-50X30GR(-WD)	Green			525 nm				
	LDL2-98X30RD(-WD)	Red	98×30 mm	24 V / 7.6 W	635 nm				125 g
	LDL2-98X30SW(-WD)	White			6,600 K				
	LDL2-98X30BL(-WD)	Blue			470 nm				
	LDL2-98X30GR(-WD)	Green			525 nm				
	LDL2-122X30RD(-WD)	Red	122×30 mm	24 V / 9.5 W	635 nm				150 g
	LDL2-122X30SW(-WD)	White			6,600 K				
	LDL2-122X30BL(-WD)	Blue			470 nm				
	LDL2-122X30GR(-WD)	Green			525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup (Special Orders · Conventional Products)

"-WD" at the end of the model name: Wide type

Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LDL2-170X30RD(-WD)	Red	170×30 mm	24 V / 14 W	635 nm	Please inquire for more information.	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 PSB POD*1	200 g
LDL2-170X30SW(-WD)	White			6,600 K				
LDL2-170X30BL(-WD)	Blue			470 nm				
LDL2-170X30GR(-WD)	Green			525 nm				
LDL2-194X30RD(-WD)	Red	194×30 mm	24 V / 16 W	635 nm				225 g
LDL2-194X30SW(-WD)	White			6,600 K				
LDL2-194X30BL(-WD)	Blue			470 nm				
LDL2-194X30GR(-WD)	Green			525 nm				
LDL2-242X30RD(-WD)	Red	242×30 mm	24 V / 19 W	635 nm				275 g
LDL2-242X30SW(-WD)	White			6,600 K				
LDL2-242X30BL(-WD)	Blue			470 nm				
LDL2-242X30GR(-WD)	Green			525 nm				
LDL2-290X30RD(-WD)	Red	290×30 mm	24 V / 23 W	635 nm				325 g
LDL2-290X30SW(-WD)	White			6,600 K				
LDL2-290X30BL(-WD)	Blue			470 nm				
LDL2-290X30GR(-WD)	Green			525 nm				
LDL2-314X30RD(-WD)	Red	314×30 mm	24 V / 25 W	635 nm				350 g
LDL2-314X30SW(-WD)	White			6,600 K				
LDL2-314X30BL(-WD)	Blue			470 nm				
LDL2-314X30GR(-WD)	Green			525 nm				
LDL2-338X30RD(-WD)	Red	338×30 mm	24 V / 27 W	635 nm				375 g
LDL2-338X30SW(-WD)	White			6,600 K				
LDL2-338X30BL(-WD)	Blue			470 nm				
LDL2-338X30GR(-WD)	Green			525 nm				
LDL2-362X30RD(-WD)	Red	362×30 mm	24 V / 29 W	635 nm				400 g
LDL2-362X30SW(-WD)	White			6,600 K				
LDL2-362X30BL(-WD)	Blue			470 nm				
LDL2-362X30GR(-WD)	Green			525 nm				
LDL2-386X30RD(-WD)	Red	386×30 mm	24 V / 31 W	635 nm				425 g
LDL2-386X30SW(-WD)	White			6,600 K				
LDL2-386X30BL(-WD)	Blue			470 nm				
LDL2-386X30GR(-WD)	Green			525 nm				
LDL2-410X30RD(-WD)	Red	410×30 mm	24 V / 33 W	635 nm				450 g
LDL2-410X30SW(-WD)	White			6,600 K				
LDL2-410X30BL(-WD)	Blue			470 nm				
LDL2-410X30GR(-WD)	Green			525 nm				
LDL2-434X30RD(-WD)	Red	434×30 mm	24 V / 35 W	635 nm				475 g
LDL2-434X30SW(-WD)	White			6,600 K				
LDL2-434X30BL(-WD)	Blue			470 nm				
LDL2-434X30GR(-WD)	Green			525 nm				
LDL2-458X30RD(-WD)	Red	458×30 mm	24 V / 37 W	635 nm			PD3 POD*1	500 g
LDL2-458X30SW(-WD)	White			6,600 K				
LDL2-458X30BL(-WD)	Blue			470 nm				
LDL2-458X30GR(-WD)	Green			525 nm				
LDL2-482X30RD(-WD)	Red	482×30 mm	24 V / 38 W	635 nm				525 g
LDL2-482X30SW(-WD)	White			6,600 K				
LDL2-482X30BL(-WD)	Blue			470 nm				
LDL2-482X30GR(-WD)	Green			525 nm				
LDL2-506X30RD(-WD)	Red	506×30 mm	24 V / 40 W	635 nm				550 g
LDL2-506X30SW(-WD)	White			6,600 K				
LDL2-506X30BL(-WD)	Blue			470 nm				
LDL2-506X30GR(-WD)	Green			525 nm				

Emitting width: 30 mm

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here. https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDR2 Direct Lighting
LDR2-LA Direct Lighting
LDR-LA1 Direct Lighting
SQR Direct Lighting
SQR-TP Direct Lighting
HPR2 Diffused Lighting
LFR Diffused Lighting
LKR Diffused Lighting
FPR Diffused Lighting
FPQ3 Diffused Lighting
LDL2 Direct Lighting
LDLB Direct Lighting
HLDL2 Direct Lighting
TH2 (5 types) Diffused Lighting
LFL Diffused Lighting
HPD2 Diffused Lighting
LDM2 Diffused Lighting
LAV Diffused Lighting
PDM Diffused Lighting
LFXV Diffused Lighting
LFX3 Diffused Lighting
LFX3-PT Diffused Lighting
LFV3 Diffused Lighting
LFV3-G Diffused Lighting
MSU Collimated Lighting
MFU Collimated Lighting
PF Strobe Lighting
HLDR-IP/HSL-PCL Waterproof
UV2 Ultraviolet Lighting
UV Ultraviolet Lighting
LNSP-UV-FN Ultraviolet Lighting
IR2 Infrared Lighting
IU Intensity Control
HLV3 Spot Lighting, Etc.
HLV2 Spot Lighting, Etc.
LV Spot Lighting, Etc.
LSP Spot Lighting, Etc.
HFS/HFR Spot Lighting, Etc.
HLV3-NR Spot Lighting, Etc.
HLV3-3M-RGB-4 Spot Lighting, Etc.
HLV2-NR Spot Lighting, Etc.
HLV2-3M-RGB-3W Spot Lighting, Etc.
PFBR-600 Spot Lighting, Etc.
PFBR-150 Spot Lighting, Etc.
PFB3 Spot Lighting, Etc.
LNLP Convergent Lighting
LNSP2 Convergent Lighting
LNSP Convergent Lighting
Coaxial Units Convergent Lighting
LNSP-FN Convergent Lighting
LN/LN-HK Convergent Lighting
LNSD Diffused Lighting
LND2 Diffused Lighting
HLND Diffused Lighting
LT Diffused Lighting
LNV Diffused Lighting
LNDG Oblique-Angled Lighting
LNIS2 Oblique-Angled Lighting
LNIS Oblique-Angled Lighting
LNIS-FN Oblique-Angled Lighting
Telecentric Lens Lenses
Macro Lens Lenses

LDL2 Series



Refer to our website for product details.

CCS LDL2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup (Special Orders · High-Power Type)

"-WD" at the end of the model name: Wide type

	Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
Emitting width: 16 mm	LDL2-197X16RD2(-WD)	Red	197×16 mm	24 V / 19 W	634 nm	Please inquire for more information.	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.		145 g
	LDL2-197X16SW2(-WD)	White			7,800 K				
	LDL2-197X16BL2(-WD)	Blue			467 nm				
	LDL2-236X16RD2(-WD)	Red	236×16 mm	24 V / 23 W	634 nm			PD3 PSB POD*1	170 g
	LDL2-236X16SW2(-WD)	White			7,800 K				
	LDL2-236X16BL2(-WD)	Blue			467 nm				
	LDL2-275X16RD2(-WD)	Red	275×16 mm	24 V / 27 W	634 nm				195 g
	LDL2-275X16SW2(-WD)	White			7,800 K				
	LDL2-275X16BL2(-WD)	Blue			467 nm				
	LDL2-314X16RD2(-WD)	Red	314×16 mm	24 V / 31 W	634 nm				220 g
	LDL2-314X16SW2(-WD)	White			7,800 K				
	LDL2-314X16BL2(-WD)	Blue			467 nm				
	LDL2-353X16RD2(-WD)	Red	353×16 mm	24 V / 35 W	634 nm				245 g
	LDL2-353X16SW2(-WD)	White			7,800 K				
	LDL2-353X16BL2(-WD)	Blue			467 nm				
	LDL2-392X16RD2(-WD)	Red	392×16 mm	24 V / 38 W	634 nm			PD3 POD*1	270 g
	LDL2-392X16SW2(-WD)	White			7,800 K				
	LDL2-392X16BL2(-WD)	Blue			467 nm				
	LDL2-431X16RD2(-WD)	Red	431×16 mm	24 V / 42 W	634 nm				295 g
	LDL2-431X16SW2(-WD)	White			7,800 K				
	LDL2-431X16BL2(-WD)	Blue			467 nm				
	LDL2-470X16RD2(-WD)	Red	470×16 mm	24 V / 46 W	634 nm				320 g
	LDL2-470X16SW2(-WD)	White			7,800 K				
	LDL2-470X16BL2(-WD)	Blue			467 nm				
	LDL2-509X16RD2(-WD)	Red	509×16 mm	24 V / 50 W	634 nm			PD3-10024-8 POD*1	345 g
	LDL2-509X16SW2(-WD)	White			7,800 K				
	LDL2-509X16BL2(-WD)	Blue			467 nm				
Emitting width: 30 mm	LDL2-170X30RD2(-WD)	Red	170×30 mm	24 V / 27 W	634 nm			PD3 PSB POD*1	200 g
	LDL2-170X30SW2(-WD)	White			7,800 K				
	LDL2-170X30BL2(-WD)	Blue			467 nm				
	LDL2-194X30RD2(-WD)	Red	194×30 mm	24 V / 31 W	634 nm				225 g
	LDL2-194X30SW2(-WD)	White			7,800 K				
	LDL2-194X30BL2(-WD)	Blue			467 nm				
	LDL2-242X30RD2(-WD)	Red	242×30 mm	24 V / 38 W	634 nm			PD3 POD*1	275 g
	LDL2-242X30SW2(-WD)	White			7,800 K				
	LDL2-242X30BL2(-WD)	Blue			467 nm				
	LDL2-290X30RD2(-WD)	Red	290×30 mm	24 V / 46 W	634 nm				325 g
	LDL2-290X30SW2(-WD)	White			7,800 K				
	LDL2-290X30BL2(-WD)	Blue			467 nm				
	LDL2-314X30RD2(-WD)	Red	314×30 mm	24 V / 50 W	634 nm			PD3-10024-8 POD*1	350 g
	LDL2-314X30SW2(-WD)	White			7,800 K				
	LDL2-314X30BL2(-WD)	Blue			467 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

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Lineup (Special Orders · High-Power Type)

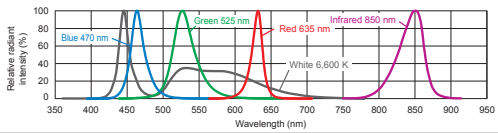
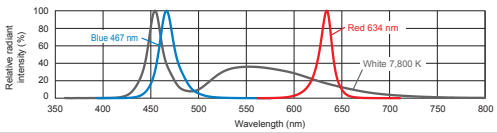
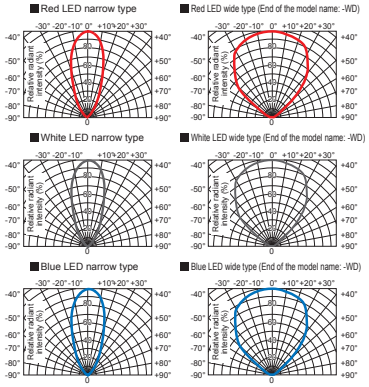
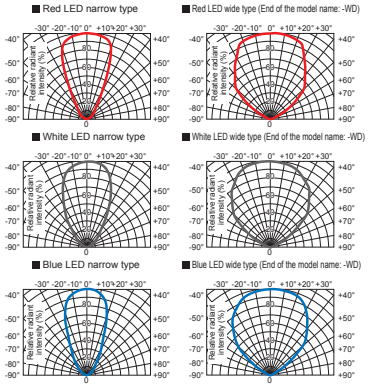
"-WD" at the end of the model name: Wide type

	Model name	LED color	Emitting surface size	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
Emitting width: 30 mm	LDL2-338X30RD2(-WD)	Red	338×30 mm	24 V / 53 W	634 nm	Please inquire for more information.	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included. FCB-EL2 Straight Cable FCB-W-EL2 2-branch Cable	PD3-10024-8 POD*2 PD3-10024-8 POD-22024-4-PEI*2 PD3-10024-8 POD-22024-4-PEI*2 PSB4-30024-PEI	375 g
	LDL2-338X30SW2(-WD)	White			7,800 K				
	LDL2-338X30BL2(-WD)	Blue			467 nm				
	LDL2-362X30RD2(-WD)	Red	362×30 mm	24 V / 57 W	634 nm				400 g
	LDL2-362X30SW2(-WD)	White			7,800 K				
	LDL2-362X30BL2(-WD)	Blue			467 nm				
	LDL2-386X30RD2(-WD)*1	Red	386×30 mm	24 V / 61 W	634 nm				425 g
	LDL2-386X30SW2(-WD)*1	White			7,800 K				
	LDL2-386X30BL2(-WD)*1	Blue			467 nm				
	LDL2-410X30RD2(-WD)*1	Red	410×30 mm	24 V / 65 W	634 nm				450 g
	LDL2-410X30SW2(-WD)*1	White			7,800 K				
	LDL2-410X30BL2(-WD)*1	Blue			467 nm				
	LDL2-434X30RD2(-WD)*1	Red	434×30 mm	24 V / 69 W	634 nm				475 g
	LDL2-434X30SW2(-WD)*1	White			7,800 K				
	LDL2-434X30BL2(-WD)*1	Blue			467 nm				
	LDL2-458X30RD2(-WD)*1	Red	458×30 mm	24 V / 72 W	634 nm				500 g
	LDL2-458X30SW2(-WD)*1	White			7,800 K				
	LDL2-458X30BL2(-WD)*1	Blue			467 nm				
	LDL2-482X30RD2(-WD)*1	Red	482×30 mm	24 V / 76 W	634 nm				525 g
	LDL2-482X30SW2(-WD)*1	White			7,800 K				
	LDL2-482X30BL2(-WD)*1	Blue			467 nm				
	LDL2-506X30RD2(-WD)*1	Red	506×30 mm	24 V / 80 W	634 nm				550 g
	LDL2-506X30SW2(-WD)*1	White			7,800 K				
	LDL2-506X30BL2(-WD)*1	Blue			467 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 These Light Units have an EL connector (ELP-02V, 1: +Brown, 2: -Blue). Use the Control Unit that has EL connectors.
*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

	Conventional products	High-power type
Spectral distribution		
	CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to, refer to P.355.	
Directional characteristics (Typical examples)		

Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information.
The data included is for reference only. Actual values may vary.

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LDL2 Series



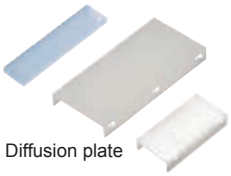
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You can also use your smartphone or cell phone.

Options

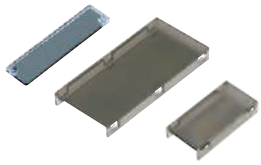


Can prevent glare, which is a problem when making images of glossy workpieces.

Diffusion plate

Model name	Applicable Light Unit (Conventional product / High-power type) (Common for all colors)
DF-LDL2-19X4	LDL2-19X4
DF-LDL2-33X8	LDL2-33X8
DF-LDL2-41X16	LDL2-41X16 (-WD)
DF-LDL2-80X16	LDL2-80X16 (-WD)
DF-LDL2-119X16	LDL2-119X16 (-WD)
DF-LDL2-158X16	LDL2-158X16 (-WD)
DF-LDL2-26X30	LDL2-26X30 (-WD)
DF-LDL2-50X30	LDL2-50X30 (-WD)
DF-LDL2-74X30	LDL2-74X30 (-WD)
DF-LDL2-98X30	LDL2-98X30 (-WD)
DF-LDL2-122X30	LDL2-122X30 (-WD)
DF-LDL2-146X30	LDL2-146X30 (-WD)
DF-LDL2-218X30	LDL2-218X30 (-WD)
DF-LDL2-266X30	LDL2-266X30 (-WD)

▶ P.359



Use with a polarizing filter to remove the light's surface reflection.

Polarizing plate

Model name	Applicable Light Unit (Conventional product / High-power type) (Common for all colors)
PL-LDL2-19X4-HO	LDL2-19X4
PL-LDL2-19X4-VE	
PL-LDL2-33X8-HO	LDL2-33X8
PL-LDL2-33X8-VE	
PL-LDL2-41X16	LDL2-41X16 (-WD)
PL-LDL2-41X16-VE	
PL-LDL2-80X16	LDL2-80X16 (-WD)
PL-LDL2-80X16-VE	
PL-LDL2-119X16	LDL2-119X16 (-WD)
PL-LDL2-119X16-VE	
PL-LDL2-158X16	LDL2-158X16 (-WD)
PL-LDL2-158X16-VE	

▶ P.360

There are two kinds of polarizing plates: the HO and the VE.
For details, refer to P. 360.

Model name	Applicable Light Unit (Conventional product / High-power type) (Common for all colors)
PL-LDL2-26X30	LDL2-26X30 (-WD)
PL-LDL2-26X30-VE	
PL-LDL2-50X30	LDL2-50X30 (-WD)
PL-LDL2-50X30-VE	
PL-LDL2-74X30	LDL2-74X30 (-WD)
PL-LDL2-74X30-VE	
PL-LDL2-98X30	LDL2-98X30 (-WD)
PL-LDL2-98X30-VE	
PL-LDL2-122X30	LDL2-122X30 (-WD)
PL-LDL2-122X30-VE	
PL-LDL2-146X30	LDL2-146X30 (-WD)
PL-LDL2-146X30-VE	
PL-LDL2-218X30	LDL2-218X30 (-WD)
PL-LDL2-218X30-VE	
PL-LDL2-266X30	LDL2-266X30 (-WD)
PL-LDL2-266X30-VE	



Protects the emitting part of the Light Unit.

Not intended to protect against dust or water.

Protective plate

Model name	Applicable Light Unit (Conventional product / High-power type) (Common for all colors)
CV-LDL2-41X16	LDL2-41X16 (-WD)
CV-LDL2-80X16	LDL2-80X16 (-WD)
CV-LDL2-119X16	LDL2-119X16 (-WD)
CV-LDL2-158X16	LDL2-158X16 (-WD)
CV-LDL2-26X30	LDL2-26X30 (-WD)
CV-LDL2-50X30	LDL2-50X30 (-WD)
CV-LDL2-74X30	LDL2-74X30 (-WD)
CV-LDL2-98X30	LDL2-98X30 (-WD)
CV-LDL2-122X30	LDL2-122X30 (-WD)
CV-LDL2-146X30	LDL2-146X30 (-WD)
CV-LDL2-218X30	LDL2-218X30 (-WD)
CV-LDL2-266X30	LDL2-266X30 (-WD)

Not applicable for the LDL2-19X4 and LDL2-33X8 series.

▶ P.362



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

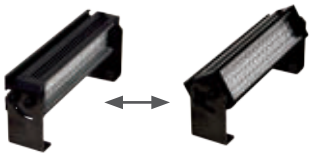
Bracket

Model name	Note (Conventional product / High-power type)
BK-LDL2	Angle adjustment bracket common for the LDL2 series (x2)

Not applicable for the LDL2-19X4 and LDL2-33X8 series.

▶ P.363

Usage example of the BK-LDL2



Adjustable illuminating angle between 0 to 90°



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

Bracket

Model name	Note (Conventional product / High-power type)
BK-LDQ2-33X8	Bracket that can install four of the Bar Lights.

▶ P.363

We accept custom orders for the brackets that are applicable for the following products.
Contact your CCS sales representative for details.

Applicable Light Unit (High-power type)	BK-LDQ2
LDL2-19X4	Bracket that can install four Bar Lights. (Custom orders)
LDL2-26X30	
LDL2-50X30	



You can freely adjust the illuminating angle when affixing the Bar Light. Various kinds of illumination are possible depending on the affixing method, such as illumination from two or four directions.

Bracket

Model name	Note (Conventional product / High-power type)
BK-LDQ2-41X16	Bracket that can install four of the Bar Lights.
BK-LDQ2-80X16	
BK-LDQ2-119X16	
BK-LDQ2-158X16	
BK-LDQ2-74X30	
BK-LDQ2-98X30	
BK-LDQ2-122X30	
BK-LDQ2-146X30	
BK-LDQ2-218X30	
BK-LDQ2-266X30	

▶ P.363

Optional accessories for the high-power type Light Units

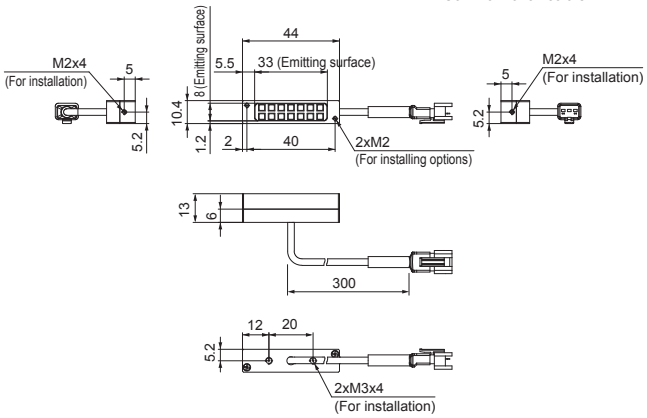
Optional accessories are applicable to the high-power type products as well as to the conventional products of the same size.
For details on the optional accessories that are applicable to the Light Units of the newly added size, refer to the tables under "Options."

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Dimensions (mm)

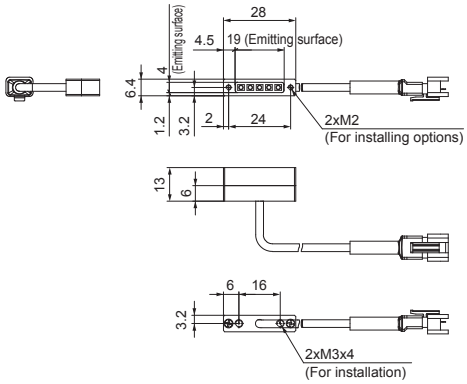
LDL2-33X8 Standard products (Conventional products / High-power type)

Common for all colors



LDL2-19X4 Standard products (High-power type)

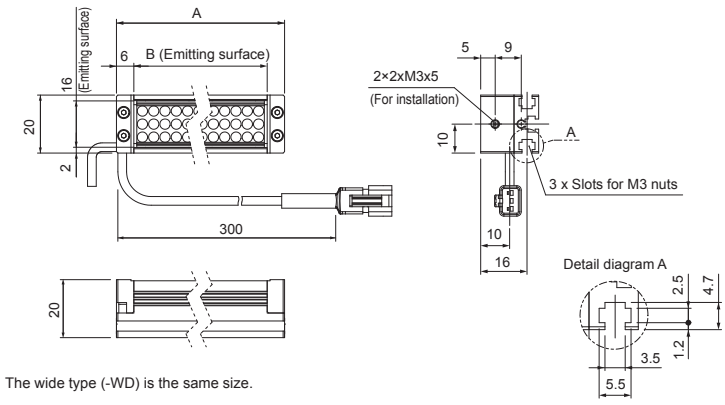
Common for all colors



LDL2-nnnX16 Standard products (Conventional products / High-power type)
Special orders (Conventional products / High-power type)

nnn=B (Emitting surface)

Common for all colors



The wide type (-WD) is the same size.

Standard products
(Conventional products / High-power type)

Applicable Light Unit	A	B
LDL2-41X16 (-WD)	53	41
LDL2-80X16 (-WD)	92	80
LDL2-119X16 (-WD)	131	119
LDL2-158X16 (-WD)	170	158

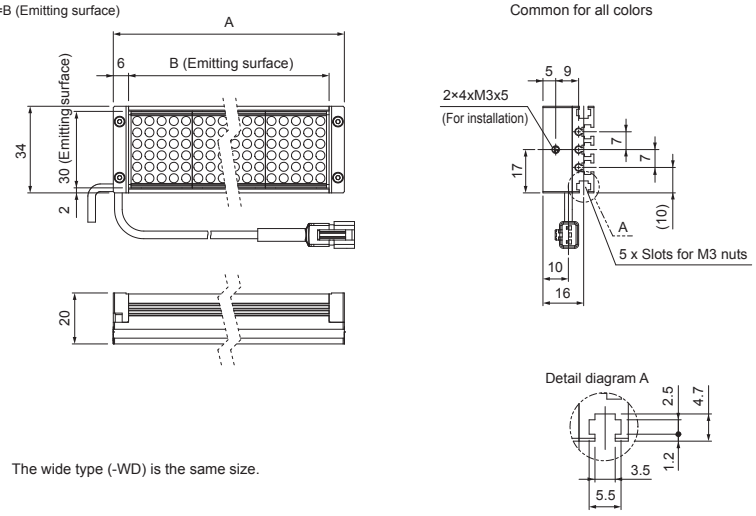
Special orders
(Conventional products / High-power type)

Applicable Light Unit	A	B
LDL2-197X16 (-WD)	209	197
LDL2-236X16 (-WD)	248	236
LDL2-275X16 (-WD)	287	275
LDL2-314X16 (-WD)	326	314
LDL2-353X16 (-WD)	365	353
LDL2-392X16 (-WD)	404	392
LDL2-431X16 (-WD)	443	431
LDL2-470X16 (-WD)	482	470
LDL2-509X16 (-WD)	521	509

LDL2-nnnX30 Standard products (Conventional products / High-power type)
Special orders (Conventional products / High-power type)

nnn=B (Emitting surface)

Common for all colors



The wide type (-WD) is the same size.

*1 For the conventional products: SM connector (SMR-03V-B, 1: +Brown, 2: NC, 3: -Blue)
For the high-power type: EL connector (ELP-02V, 1: +Brown, 2: -Blue).
Use the Control Unit which has EL connectors.

Standard products
(Conventional products / High-power type)

Applicable Light Unit	A	B
LDL2-26X30 (-WD)	38	26
LDL2-50X30 (-WD)	62	50
LDL2-74X30 (-WD)	86	74
LDL2-98X30 (-WD)	110	98
LDL2-122X30 (-WD)	134	122
LDL2-146X30 (-WD)	158	146
LDL2-218X30 (-WD)	230	218
LDL2-266X30 (-WD)	278	266

Special orders
(Conventional products / High-power type)

Applicable Light Unit	A	B
LDL2-170X30 (-WD)	182	170
LDL2-194X30 (-WD)	206	194
LDL2-242X30 (-WD)	254	242
LDL2-290X30 (-WD)	302	290
LDL2-314X30 (-WD)	326	314
LDL2-338X30 (-WD)	350	338
LDL2-362X30 (-WD)	374	362
LDL2-386X30 (-WD)*1	398	386
LDL2-410X30 (-WD)*1	422	410
LDL2-434X30 (-WD)*1	446	434
LDL2-458X30 (-WD)*1	470	458
LDL2-482X30 (-WD)*1	494	482
LDL2-506X30 (-WD)*1	518	506

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Bar Lights
LDLB Series

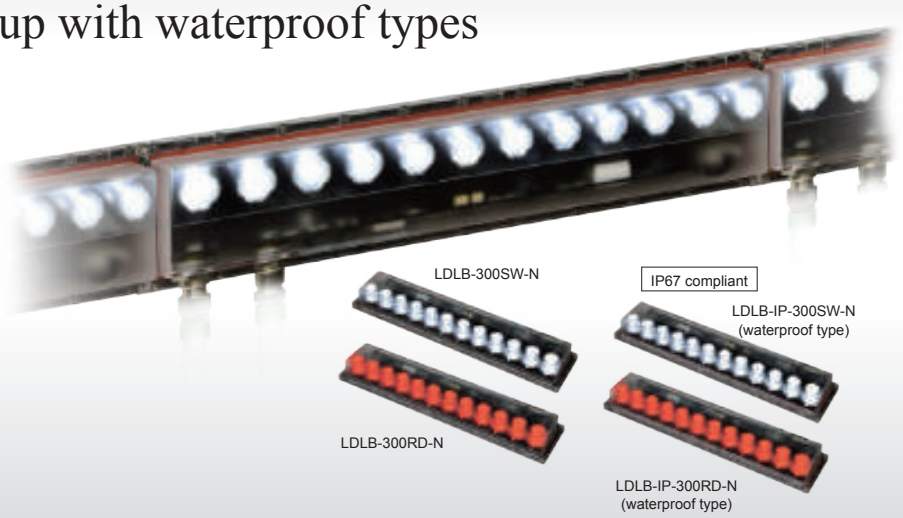
Refer to our website for product details.
CCS LDLB ▶ Search
For quick access.
You can also use your smartphone or cell phone.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/ HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens

Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Bar Light with built-in Controller and lineup with waterproof types

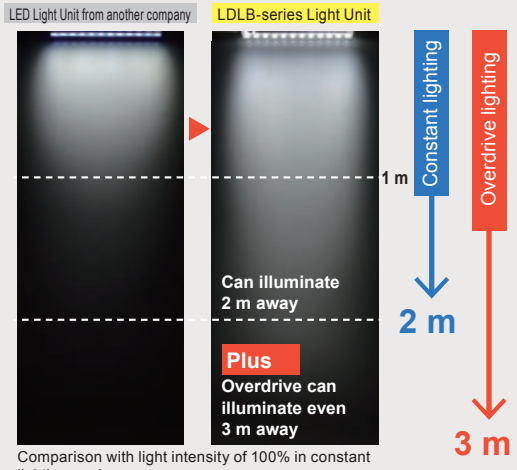
Overdrive Specifications



Applications Light source for robotic picking, visual inspection for beverage packages, mixed models inspection for various parts, inspection for missing mounted parts, visual inspection for large workpieces, etc.

Overdrive Can Illuminate Even 3 m Away

Just one Light Unit provides both constant lighting and overdrive lighting.



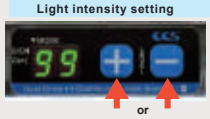
Comparison with light intensity of 100% in constant lighting mode

Built-In Controller, 24 VDC Input

The Controller is built-in, so you don't need a Control Unit for light control. You can set intensity values and switch modes by panel operations.



Light intensity setting



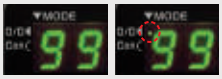
+: Increases the light intensity.
-: Decreases the light intensity.
You can set the light intensity to any of 100 levels.

or

Mode switching



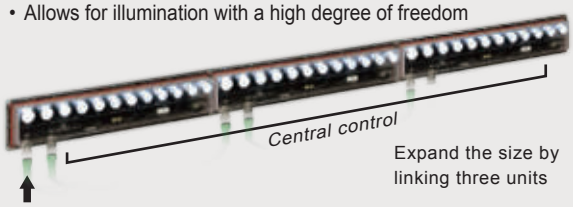
Constant lighting mode | Overdrive mode



Hold down two buttons to change the operating mode between constant lighting and overdrive lighting.

Can Be Connected in a Daisy-Chain

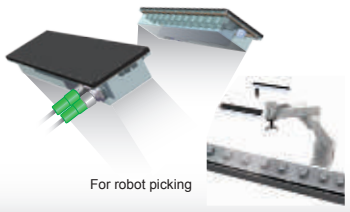
- Connect up to three units
- Centrally control the chain externally
- Allows for illumination with a high degree of freedom



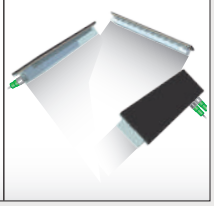
Expand the size by linking three units

- 24 VDC input
- External signal input

Example connection 1
Simultaneous illumination with 2 units



Example connection 2
Simultaneous illumination with 3 units

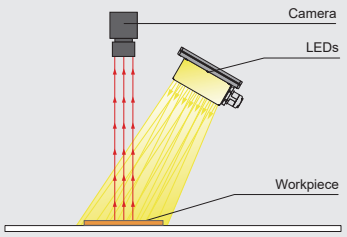


(Conceptual image)

Example Configuration

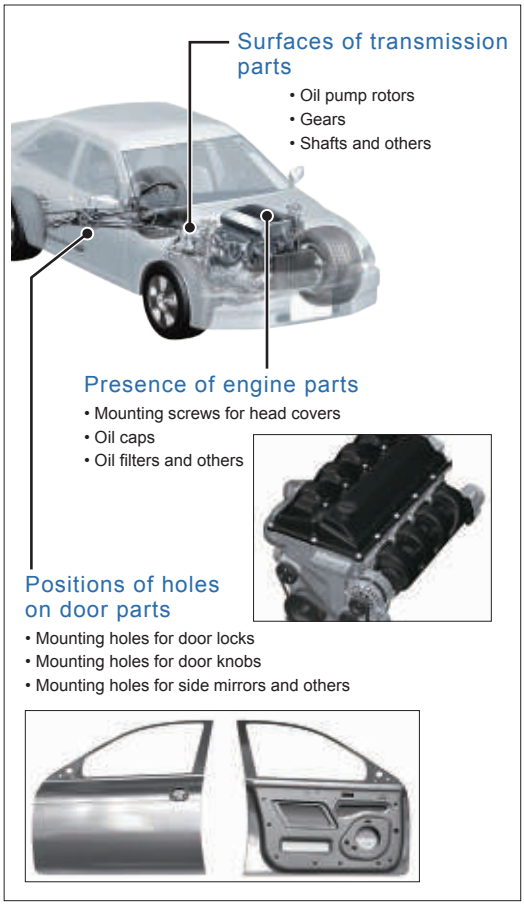
Bar Light with built-in Controller. Allows for long-distance illumination perfect for large workpieces. Switch to overdrive for even brighter illumination.

LDLB series

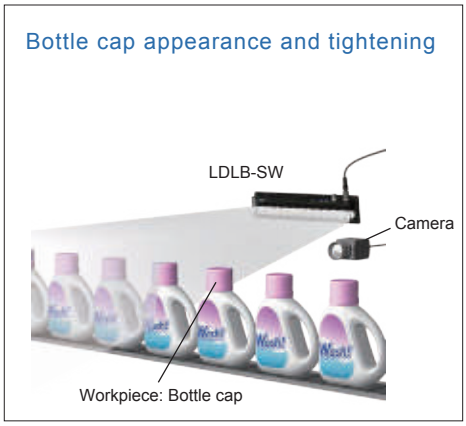


Applications

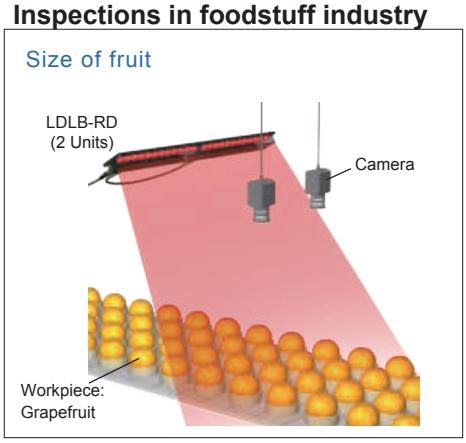
Inspections in automotive industry



Inspections in packaging industry



Inspections in foodstuff industry



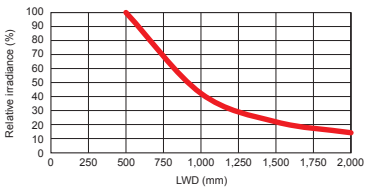
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

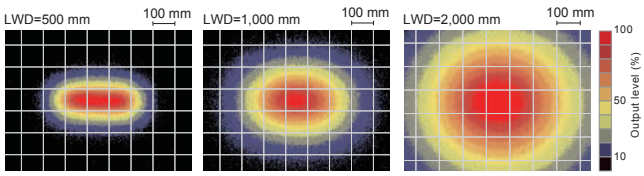
LDLB-300RD-N (Red)

Relative irradiance graph (LWD characteristics) *2 *1

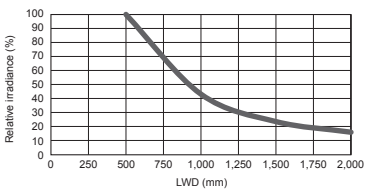
*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece

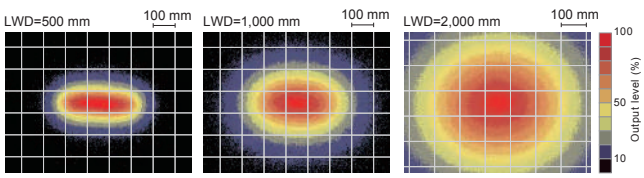


Uniformity (Relative irradiance)



LDLB-300SW-N (White)





LDLB Series



Refer to our website for product details.

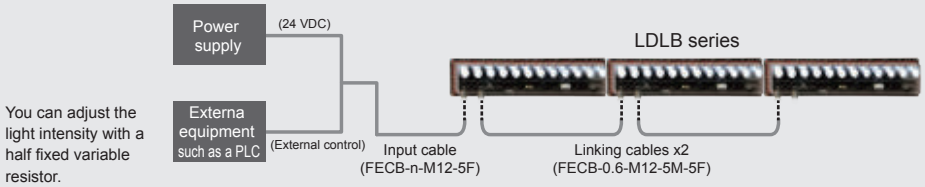
CCS LDLB ▶ Search

For quick access.

You can also use your smartphone or cell phone.

System Configuration Example

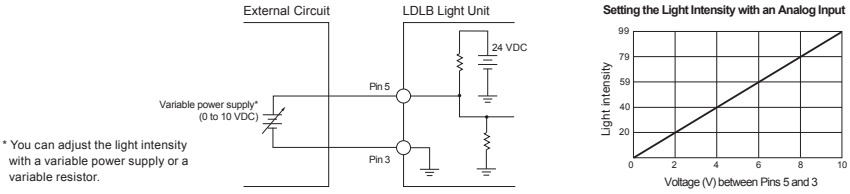
Example: Daisy-chaining three Light Units



Connection Example

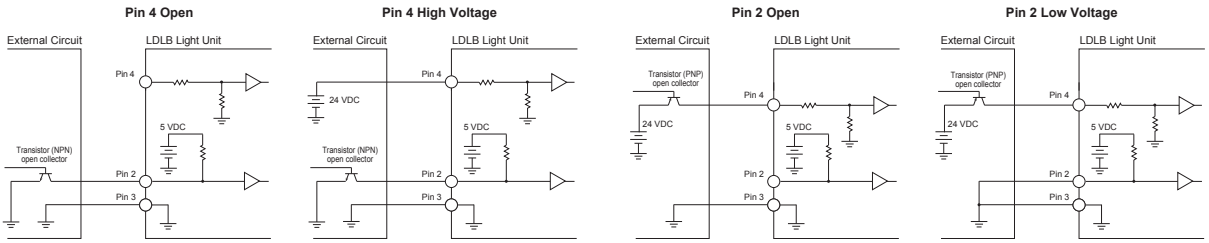
Refer to the Instruction Guide for details.

External control of light intensity



ON/OFF Inputs

With these Light Units, you can use a sink type input (NPN) or a source type input (PNP).



Logic Table

Logic switching	Pin 4	Open		High voltage	
Signal input	Pin 2 (NPN)	Open	Low voltage	Open	Low voltage
Operating mode	Constant Lighting Mode	Lit.	Not lit.	Not lit.	Lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

Pin	Signal input status	Range
Pin 2 (NPN)	Low voltage	0 to 1.1 VDC
Pin 4	High voltage	20.7 to 26.4 VDC

Logic Table

Logic switching	Pin 2	Open		Low voltage	
Signal input	Pin 4 (PNP)	Open	High voltage	Open	High voltage
Operating mode	Constant Lighting Mode	Lit.	Not lit.	Not lit.	Lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

Pin	Signal input status	Range
Pin 2	Low voltage	0 to 1.1 VDC
Pin 4 (PNP)	High voltage	20.7 to 26.4 VDC

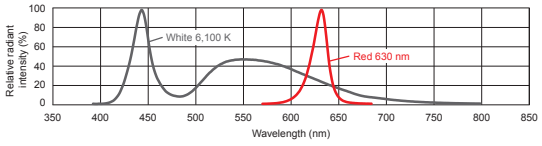
Lineup

Model name	Protective structure	LED color	Power consumption	Input voltage (rated)	Input voltage (range)	Peak wavelength / correlated color temperature	Input/output connectors	Optional cables	Weight
LDLB-300RD-N	—	Red	24 W	24 VDC	22.8 to 26.4 VDC	630 nm	M12 connector	FECB-M12-5F Input Cable FECB-0.6-M12-5F Link Cable	500 g
LDLB-300SW-N		White	31 W			6,100 K			
LDLB-IP-300RD-N	IP67 compliant (JIS C 0920)	Red	24 W			630 nm			
LDLB-IP-300SW-N		White	31 W			6,100 K			

Optional Cables ▶ P.74

Common Specifications

Spectral distribution



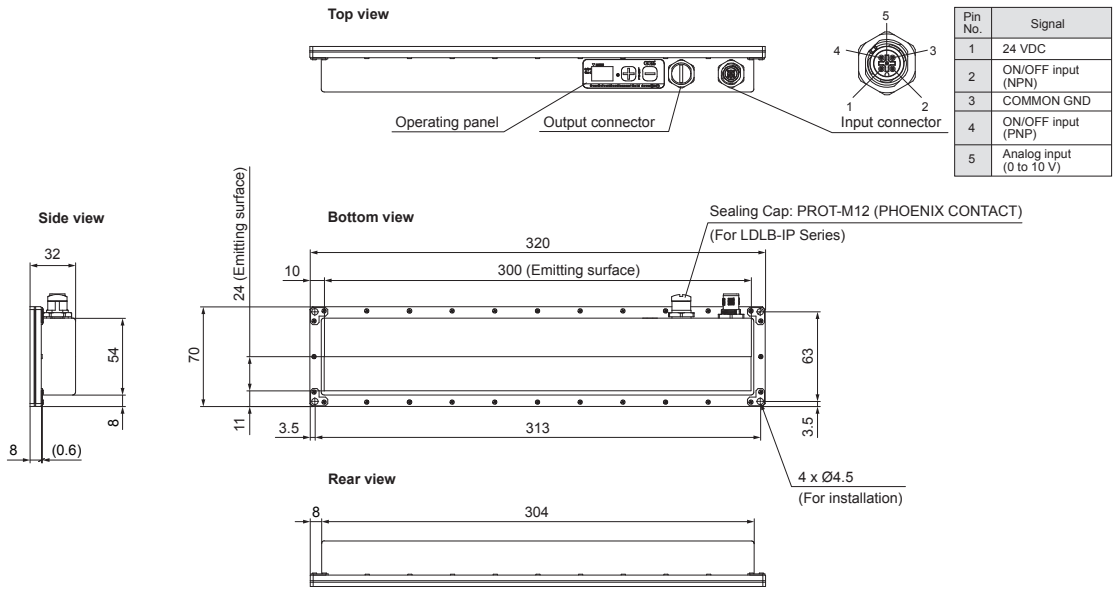
CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Dimensions (mm)



Pin No.	Signal
1	24 VDC
2	ON/OFF input (NPN)
3	COMMON GND
4	ON/OFF input (PNP)
5	Analog input (0 to 10 V)

Optional Cables

Input cable

Model name	Length	Weight
FECB-1-M12-5F	1 m	55 g
FECB-2-M12-5F	2 m	90 g
FECB-3-M12-5F	3 m	130 g
FECB-5-M12-5F	5 m	210 g

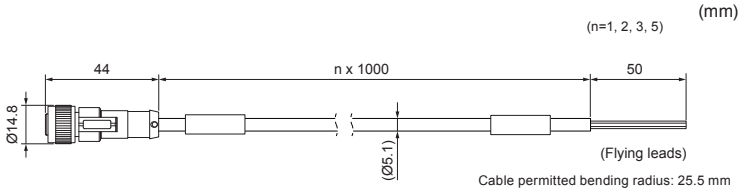
This cable supplies power to the Light Unit and inputs signals for light intensity control or to turn the light ON and OFF.

Link cable

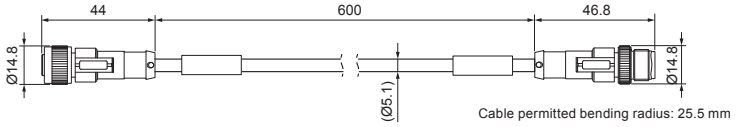
Model name	Length	Weight
FECB-0.6-M12-5M-5F	0.6 m	50 g

This cable is used to daisy-chain Light Units.

(mm)



Cable permitted bending radius: 25.5 mm



Cable permitted bending radius: 25.5 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Maximum Length of Optional Cables

Number of Light Units connected in Constant Lighting Mode		
1	2	3
10 m	7 m	4.5 m

Number of Light Units connected in Overdrive Mode		
1	2	3
3 m	1 m	Cannot be used.

Number of Light Units	1	The table gives the maximum length of the Input Cable.
	2 or 3	The table gives the maximum total length of the Input Cable and Link Cables.

The wire diameter is AWG 22 for the optional cables.
If the maximum length given above is exceeded, shorten the Input Cable or contact CCS. For details, refer to the "Instruction Guide".

Cautionary Information regarding Waterproofing

- Handle the Light Unit and connectors with care. Do not deform or damage the connectors.
- Connect the cables correctly to the Light Units.
- Connect a Sealing Cap to any output connectors to which a cable is not connected to maintain water resistance. The Sealing Cap is connected to the output connector when the Light Unit is shipped.
- If the Light Unit is not used for a long period of time with the cable disconnected, attach the Cap to the connector.
- After cleaning manufacturing lines, be sure to wipe away any moisture remaining on the emitting surface. Imaging can be affected by moisture on the emitting surface.
- Use water to wash away any cleaning agent adhered to this product.
- Use water to wash away any oils or chemicals adhered to this product.

Note

"IP67" indicates the level of protection against foreign material entering electrical instruments

The 1st numeral “6” indicates the following level of protection:

- No dust inside the instrument. (dustproof)

The 2nd numeral “7” indicates the following level of protection:

- No damage when submerged in water at the rated pressure for the rated time. (watertight type)
- Can be submerged in water to a depth of 1 m (for instruments with a height of less than 850 mm) for 30 minutes.

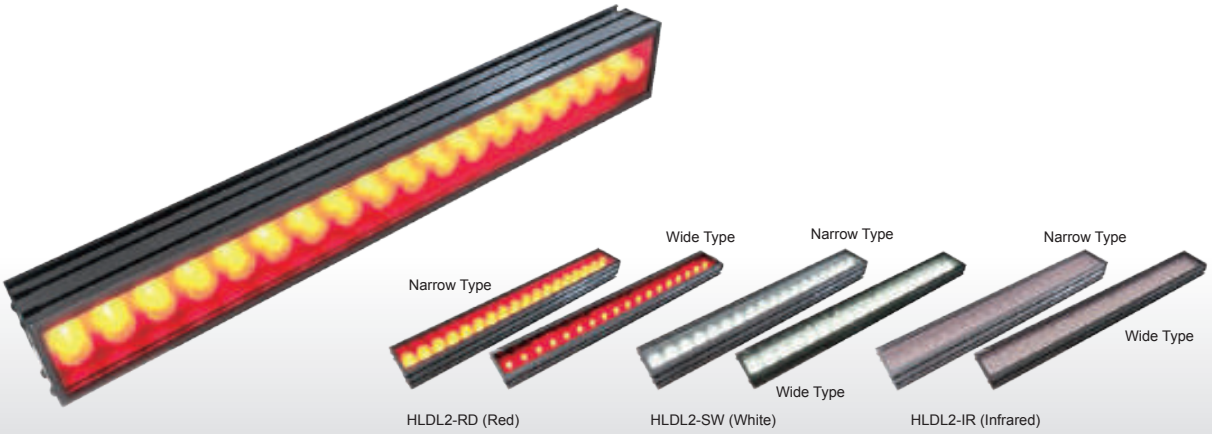
You can inquire using our website.
Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here.
https://www.ccs-grp.com/contact/

Direct Lighting

Bar Lights
HLDL2 Series

Refer to our website for product details.
CCS HLDL2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides direct light perfect for large workpieces



Applications Light source for robotic picking, inspection for parts identification, inspection for missing parts, visual inspection for large workpieces, measuring stamp dimensions for press products, etc.

Bar Lights That Are Perfect for Large Workpieces

By using lenses, we provide the narrow type, which allows for convergent illumination, and the wide type, which uses diffused illumination over a wide area.

Emitting surface length

From 150 mm to 1,200 mm Can be made in units of 150 mm

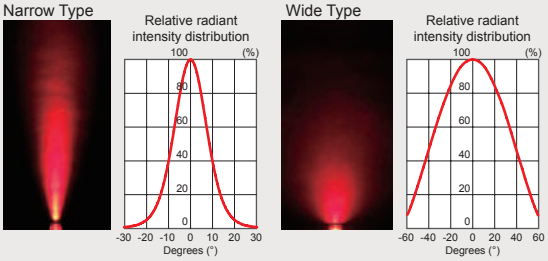
LED color

For emitted LED color, we have a lineup consisting of:

Red, White, and Infrared

We support a wide range, from visible light to infrared, depending on the contents of the inspection.

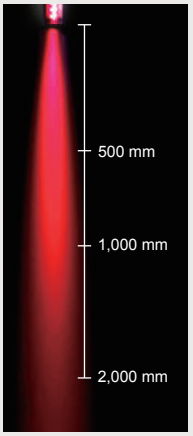
Selectable directional characteristics



Allows for Long-Distance Illumination for 2,000 mm

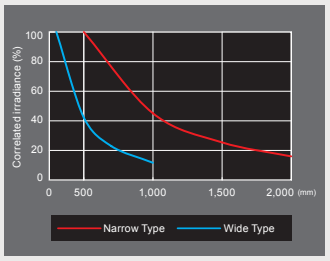
The narrow type, which allows for long-distance illumination, can illuminate even 2,000 mm away.
We also provide the wide type, which uses diffused illumination over a wide area.

Image of the illumination of the HLDL2-450X45RD-DF-N (Narrow type)

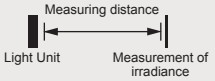


The illumination is a conceptual image.

Graph of correlated irradiance by type (Red)



Narrow Type: HLDL2-450X45RD-DF-N
Wide Type: HLDL2-450X45RD-DF-W

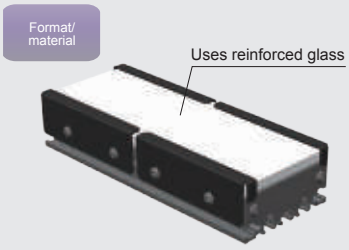


Measurement conditions: Intensity 100%

Custom Orders

Please contact your CCS sales representative.

E.g.: Improved protection of emitting surface



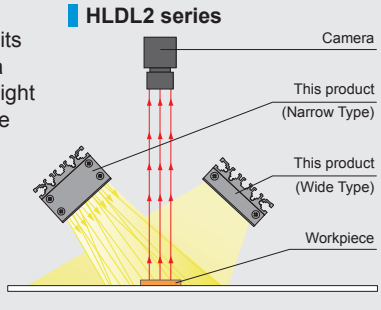
Customizable items

External/internal diameter | Wavelength/ color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Example Configuration

Supports various applications with its perfect size. It's a high output Bar Light that can illuminate even 2,000 mm away.

HLDL2 series

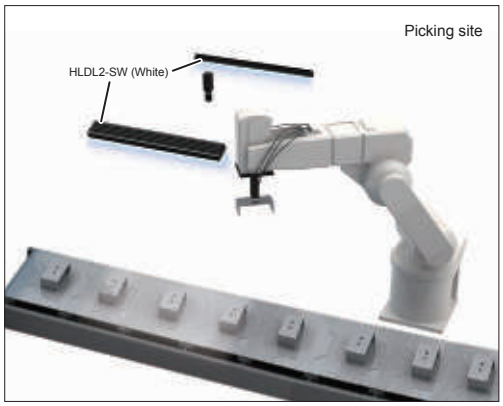


Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

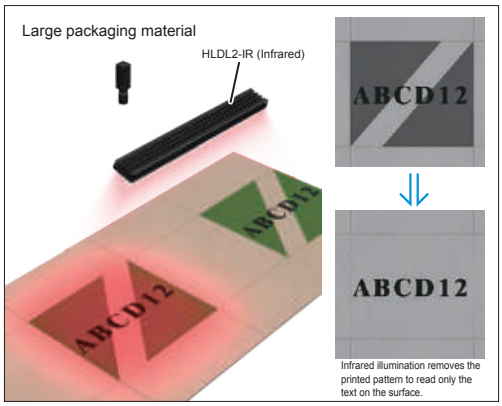
Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Applications

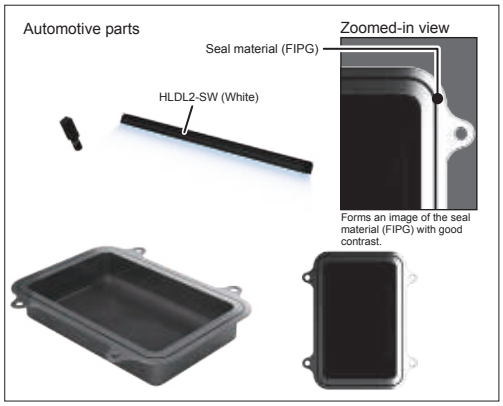
Picking work performed by robots



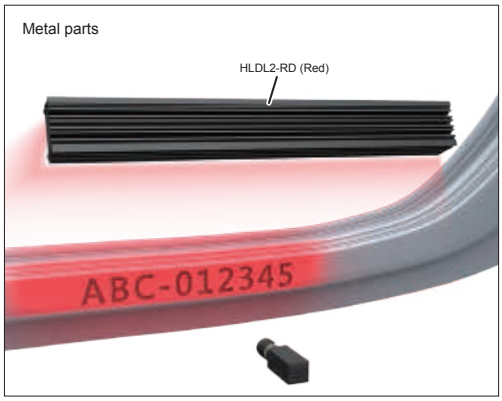
Reading text on cardboard



Inspection detecting the application of seal material (FIPG)



Reading vehicle model numbers



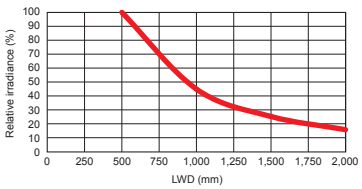
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

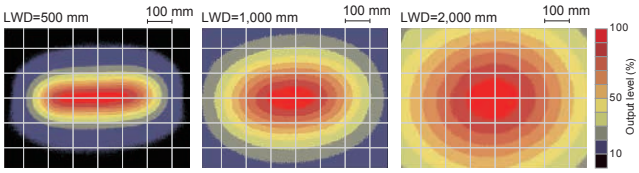
HLDL2-450X45RD-DF-N (Narrow Type)

Relative irradiance graph (LWD characteristics) *2

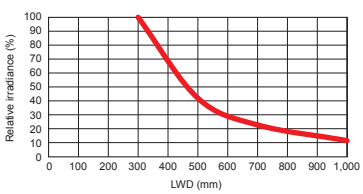
*1 Irradiation strength on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece

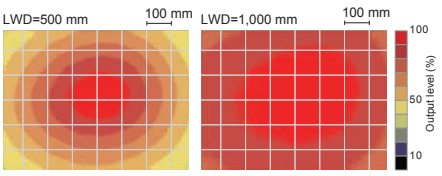


Uniformity (Relative irradiance)

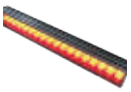


HLDL2-450X45RD-DF-W (Wide Type)





HLDL2 Series



Refer to our website for product details.

CCS HLDL2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

"-N" at the end of the model name: Narrow Type, "-W" at the end of the model name: Wide Type

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Connector	Extension cables	Recommended Control Units	Weight
HLDL2-150X45RD-DF-N	Red	24 V / 14 W	640 nm	SM Connector	FCB*1 Straight Cable FCB-W*2 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *1 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *2 The cables with a model name that ends with "-EL2" are not included.	PD3 PSB	390 g
HLDL2-150X45RD-DF-W							300 g
HLDL2-150X45SW-DF-N	White	24 V / 16 W	5,600 K				390 g
HLDL2-150X45SW-DF-W							300 g
HLDL2-150X45IR-DF-N	Infrared	24 V / 12 W	860 nm				390 g
HLDL2-150X45IR-DF-W							300 g
HLDL2-300X45RD-DF-N	Red	24 V / 28 W	640 nm				770 g
HLDL2-300X45RD-DF-W							590 g
HLDL2-300X45SW-DF-N	White	24 V / 31 W	5,600 K			PD3	770 g
HLDL2-300X45SW-DF-W							590 g
HLDL2-300X45IR-DF-N	Infrared	24 V / 24 W	860 nm			PD3 PSB	770 g
HLDL2-300X45IR-DF-W							590 g
HLDL2-450X45RD-DF-N	Red	24 V / 42 W	640 nm				1,160 g
HLDL2-450X45RD-DF-W							880 g
HLDL2-450X45SW-DF-N	White	24 V / 46 W	5,600 K			PD3	1,160 g
HLDL2-450X45SW-DF-W							880 g
HLDL2-450X45IR-DF-N	Infrared	24 V / 36 W	860 nm				1,160 g
HLDL2-450X45IR-DF-W							880 g
HLDL2-600X45RD-DF-N	Red	24 V / 56 W	640 nm	EL Connector	FCB-EL2 Straight Cable FCB-W-EL2 2-branch Cable		1,540 g
HLDL2-600X45RD-DF-W							1,170 g
HLDL2-600X45SW-DF-N	White	24 V / 61 W	5,600 K				1,540 g
HLDL2-600X45SW-DF-W							1,170 g
HLDL2-600X45IR-DF-N	Infrared	24 V / 48 W	860 nm				1,540 g
HLDL2-600X45IR-DF-W							1,170 g
HLDL2-750X45RD-DF-N	Red	24 V / 70 W	640 nm				1,930 g
HLDL2-750X45RD-DF-W							1,460 g
HLDL2-750X45SW-DF-N	White	24 V / 76 W	5,600 K			PD3 PSB4-30024-PEI	1,930 g
HLDL2-750X45SW-DF-W							1,460 g
HLDL2-750X45IR-DF-N	Infrared	24 V / 60 W	860 nm				1,930 g
HLDL2-750X45IR-DF-W							1,460 g
HLDL2-900X45RD-DF-N	Red	24 V / 84 W	640 nm				2,310 g
HLDL2-900X45RD-DF-W							1,750 g
HLDL2-900X45SW-DF-N	White	24 V / 91 W	5,600 K				2,310 g
HLDL2-900X45SW-DF-W							1,750 g
HLDL2-900X45IR-DF-N	Infrared	24 V / 72 W	860 nm				2,310 g
HLDL2-900X45IR-DF-W							1,750 g
HLDL2-1050X45RD-DF-N	Red	24 V / 98 W	640 nm				2,700 g
HLDL2-1050X45RD-DF-W						PSB4-30024-PEI	2,040 g
HLDL2-1050X45SW-DF-N	White	24 V / 106 W	5,600 K				2,700 g
HLDL2-1050X45SW-DF-W							2,040 g
HLDL2-1050X45IR-DF-N	Infrared	24 V / 84 W	860 nm			PD3 PSB4-30024-PEI	2,700 g
HLDL2-1050X45IR-DF-W							2,040 g
HLDL2-1200X45RD-DF-N	Red	24 V / 111 W	640 nm				3,080 g
HLDL2-1200X45RD-DF-W							2,330 g
HLDL2-1200X45SW-DF-N	White	24 V / 121 W	5,600 K			PSB4-30024-PEI	3,080 g
HLDL2-1200X45SW-DF-W							2,330 g
HLDL2-1200X45IR-DF-N	Infrared	24 V / 96 W	860 nm				3,080 g
HLDL2-1200X45IR-DF-W							2,330 g

Please inquire if you want to use the Light Unit in combination with a Strobe Control Unit (overdrive type).

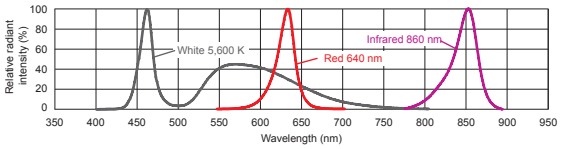
Extension Cables ▶ P.365
Control Unit Selection Guide ▶ P.307
List of Control Unit Specifications ▶ P.309

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Common Specifications

Spectral distribution



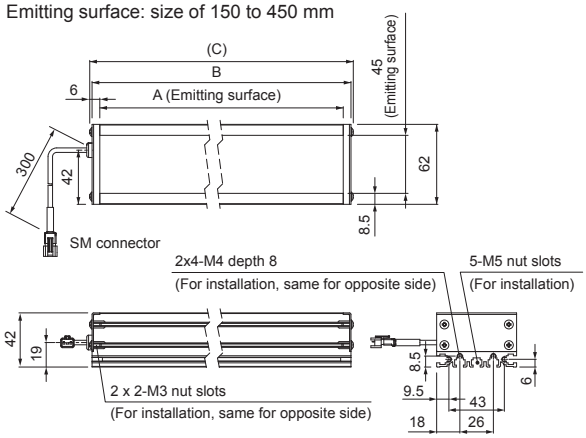
CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

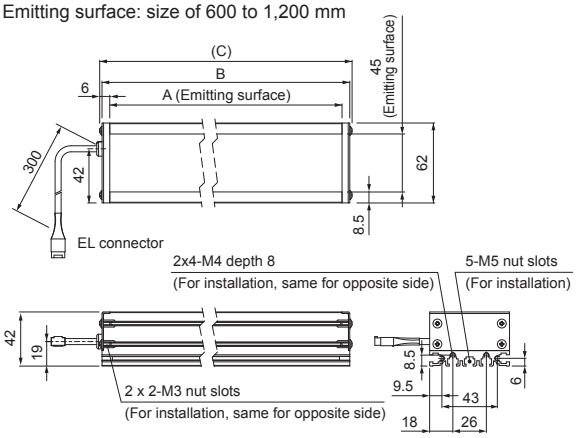
Dimensions (mm)

Narrow Type

Emitting surface: size of 150 to 450 mm

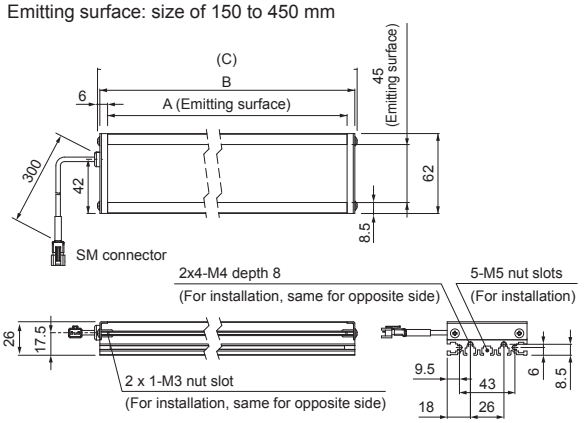


Emitting surface: size of 600 to 1,200 mm

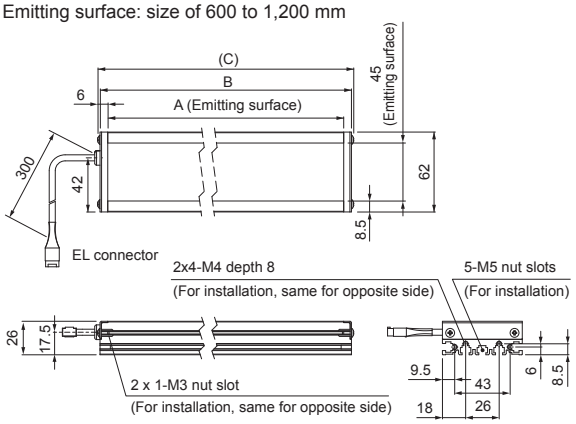


Wide Type

Emitting surface: size of 150 to 450 mm



Emitting surface: size of 600 to 1,200 mm



Model name (Narrow Type)	A	B	C	Model name (Wide Type)	A	B	C
HLDL2-150X45RD-DF-N / SW-DF-N / IR-DF-N	150	162	165.6	HLDL2-150X45RD-DF-W / SW-DF-W / IR-DF-W	150	162	165.6
HLDL2-300X45RD-DF-N / SW-DF-N / IR-DF-N	300	312	315.6	HLDL2-300X45RD-DF-W / SW-DF-W / IR-DF-W	300	312	315.6
HLDL2-450X45RD-DF-N / SW-DF-N / IR-DF-N	450	462	465.6	HLDL2-450X45RD-DF-W / SW-DF-W / IR-DF-W	450	462	465.6
HLDL2-600X45RD-DF-N / SW-DF-N / IR-DF-N	600	612	615.6	HLDL2-600X45RD-DF-W / SW-DF-W / IR-DF-W	600	612	615.6
HLDL2-750X45RD-DF-N / SW-DF-N / IR-DF-N	750	762	765.6	HLDL2-750X45RD-DF-W / SW-DF-W / IR-DF-W	750	762	765.6
HLDL2-900X45RD-DF-N / SW-DF-N / IR-DF-N	900	912	915.6	HLDL2-900X45RD-DF-W / SW-DF-W / IR-DF-W	900	912	915.6
HLDL2-1050X45RD-DF-N / SW-DF-N / IR-DF-N	1,050	1,062	1,065.6	HLDL2-1050X45RD-DF-W / SW-DF-W / IR-DF-W	1,050	1,062	1,065.6
HLDL2-1200X45RD-DF-N / SW-DF-N / IR-DF-N	1,200	1,212	1,215.6	HLDL2-1200X45RD-DF-W / SW-DF-W / IR-DF-W	1,200	1,212	1,215.6

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Flat Lights

TH2 Series High-Luminance Type

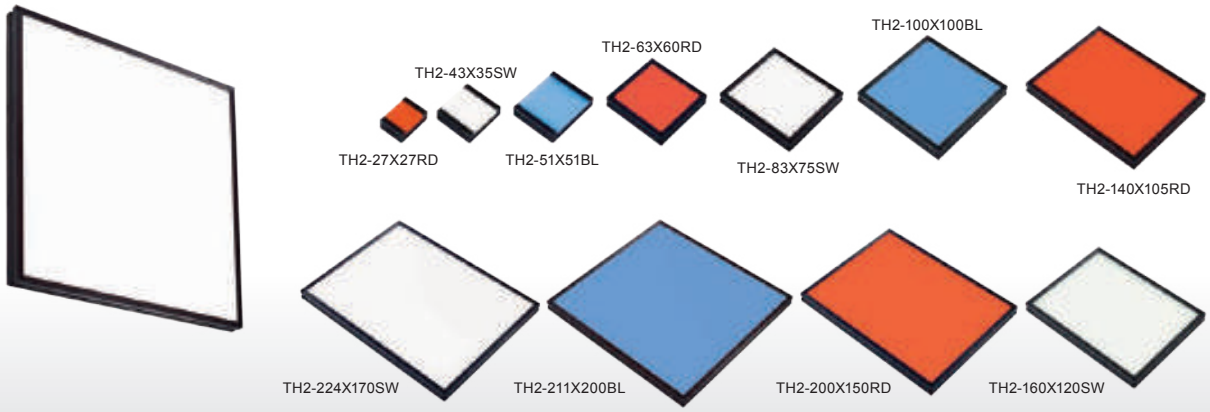
Refer to our website for product details.

CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Diffuse illumination from a flat emitting surface



Applications Inspection of liquid surface level in PET bottles, inspection of the appearance of electronic or automobile components, inspection of pinholes, inspection for burr of metal components, etc.

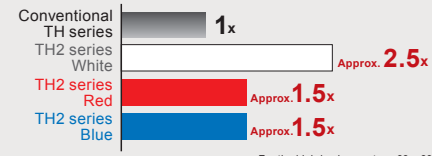
Achieved Further-Higher Luminance

With their increased brightness, these Flat Lights are available at high-speed production lines.

Increased output greater than that of the conventional products



Graph of the radiance comparison

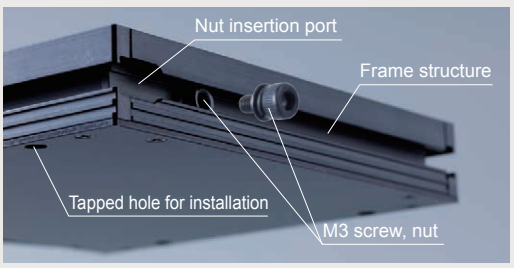


For the high-luminance type 63 x 60 models

The data included is for reference only. Actual values may vary.

Install freely to match your environment

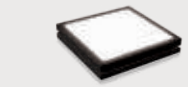
Uses installation method by frame structure. Tapped holes for installation are included not only on the unit side but also on the bottom.



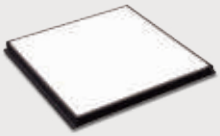
Rich Product Lineup

Our abundant product lineup can meet a wide range of needs. A total of 73 models of different types of Flat Lights.

For transmission purpose



High-directivity type ▶ P.83
High-directivity of light.
Ideal for dimension measurements.

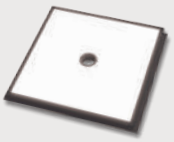


Large type ▶ P.87
Good for inspecting large workpieces.
Expands the region of inspection.



Rectangular type ▶ P.89
Optimum for use with sheet shaped workpieces.
Applicable to imaging with a line sensor camera.

For reflection purpose

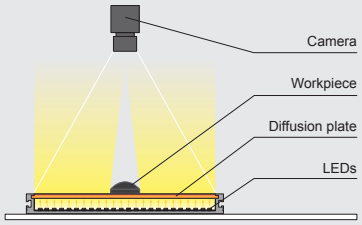


Camera-window type ▶ P.91
Provide a light from the same axis as the camera and a wide range of uniform illumination.
Available for reflection purpose.

Example Configuration

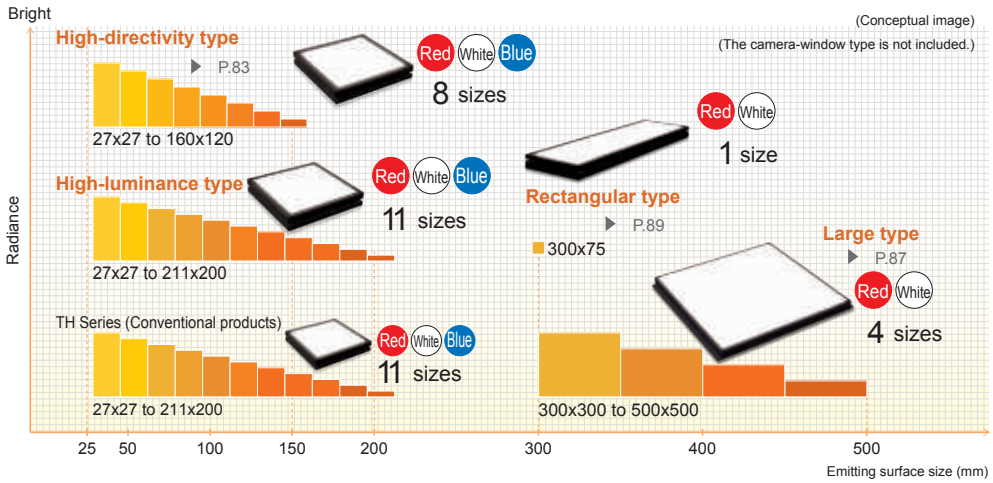
Achieved high output with a flat shape. Light from the LEDs is transmitted through the diffusion panel and illuminated on the rear of the workpiece.

TH2-140X105



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Brightness and Size of Each Light Unit Type



Imaging Example: Imaging the Liquid Surface Level in PET Bottles



Workpiece image



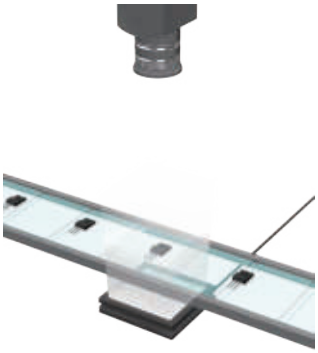
PET bottles

TH2-140X105SW

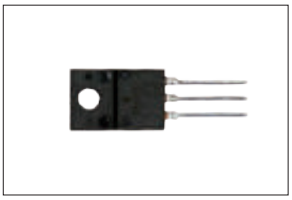


Liquid surface level and the printed text are clearly imaged.

Imaging Example: Imaging the Appearance of Electronic Components

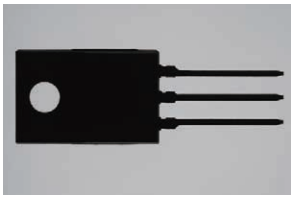


Workpiece image



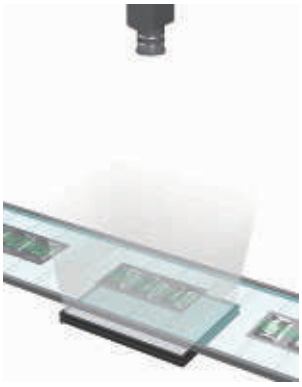
Electronic components

TH2-63X60SW

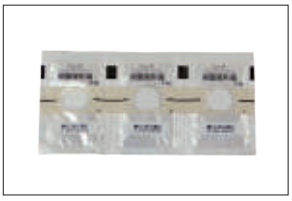


The appearance of the resin part and pins are clearly imaged.

Imaging Example: Imaging the Appearance of Medicines (Individual Packaging)



Workpiece image



Medicines (individual packaging)

TH2-200X150SW



The state of the cutting edge and perforations are clearly recognized.

TH2 Series

High-Luminance Type



Refer to our website for product details.

CCS TH2 ▶ Search

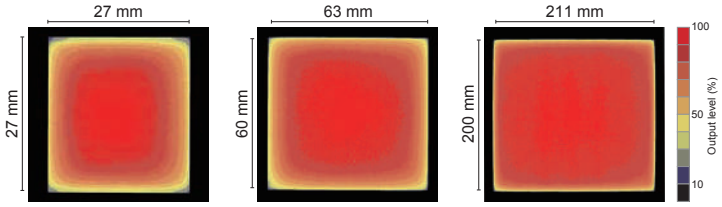
Use a search engine.

You can also use your smartphone or cell phone.

Data: Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

Uniformity (Relative radiance)



TH2-27X27SW　TH2-63X60SW　TH2-211X200SW

Lineup

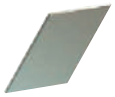
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature *4	Options	Extension cables	Recommended Control Units	Weight
TH2-27X27RD	Red	24 V / 2.3 W	635 nm	Light control film Bracket	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 + CC-ST-1024 PSB + POD*1	30 g
TH2-27X27SW	White	24 V / 2.9 W	5,800 K				
TH2-27X27BL	Blue	24 V / 2.7 V	465 nm				
TH2-43X35RD	Red	24 V / 4.9 W	635 nm				40 g
TH2-43X35SW	White	24 V / 4.8 W	5,800 K				
TH2-43X35BL	Blue		465 nm				
TH2-51X51RD	Red	24 V / 6.5 W	635 nm				60 g
TH2-51X51SW	White	24 V / 8.2 W	5,800 K				
TH2-51X51BL	Blue		465 nm				
TH2-63X60RD	Red	24 V / 9.9 W	635 nm				100 g
TH2-63X60SW	White	24 V / 9.7 W	5,800 K				
TH2-63X60BL	Blue		465 nm				
TH2-83X75RD	Red	24 V / 15 W	635 nm				140 g
TH2-83X75SW	White	24 V / 16 W	5,800 K				
TH2-83X75BL	Blue		465 nm				
TH2-100X100RD	Red	24 V / 26 W	635 nm			PD3 PSB + POD*1	200 g
TH2-100X100SW	White	24 V / 25 W	5,800 K				
TH2-100X100BL	Blue		465 nm				
TH2-140X105RD	Red	24 V / 28 W	635 nm				260 g
TH2-140X105SW	White		5,800 K				
TH2-140X105BL	Blue		465 nm				
TH2-160X120RD	Red	24 V / 35 W	635 nm				310 g
TH2-160X120SW	White		5,800 K				
TH2-160X120BL	Blue		465 nm			PD3 + POD*1	
TH2-200X150RD	Red	24 V / 45 W	635 nm				440 g
TH2-200X150SW	White	24 V / 44 W	5,800 K				
TH2-200X150BL	Blue		465 nm				
TH2-224X170RD	Red	24 V / 66 W	635 nm		FCB-EL2 Straight Cable FCB-W-EL2 2-branch Cable	PD3-10024-8 POD-22024-4-PEI*1 PSB4-30024-PEI	540 g
TH2-224X170SW	White		5,800 K				
TH2-224X170BL	Blue		465 nm				
TH2-211X200RD	Red	24 V / 67 W	635 nm				580 g
TH2-211X200SW	White	24 V / 65 W	5,800 K				
TH2-211X200BL	Blue		465 nm				

LED Properties: Light Spectrum ▶ P.384　Extension Cables ▶ P.365　Control Unit Selection Guide ▶ P.307　List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

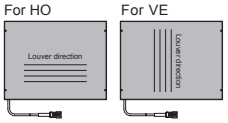
*4 The correlated color temperature is the same as that of the conventional product. TH2: 5,800 K (A value for the Light Unit), Conventional products TH: 6,600 K (A value for individual LEDs)

Options



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

Light control film



There are two types of light control films: the HO and the VE. For details, refer to P.361.

Model name	Applicable Light Unit (Common for all colors)
LC-TH-27X27-HO	TH2-27X27
LC-TH-27X27-VE	
LC-TH-43X35-HO	TH2-43X35
LC-TH-43X35-VE	
LC-TH-51X51-HO	TH2-51X51
LC-TH-51X51-VE	
LC-TH-63X60-HO	TH2-63X60
LC-TH-63X60-VE	

Model name	Applicable Light Unit (Common for all colors)
LC-TH-83X75-HO	TH2-83X75
LC-TH-83X75-VE	
LC-TH-100X100-HO	TH2-100X100
LC-TH-100X100-VE	
LC-TH-140X105-HO	TH2-140X105
LC-TH-140X105-VE	
LC-TH-160X120-HO	TH2-160X120
LC-TH-160X120-VE	

Model name	Applicable Light Unit (Common for all colors)
LC-TH-200X150-HO	TH2-200X150
LC-TH-200X150-VE	
LC-TH-224X170-HO	TH2-224X170
LC-TH-224X170-VE	
LC-TH-211X200-HO	TH2-211X200
LC-TH-211X200-VE	

▶ P.361



This is a dedicated bracket for affixing the TH2 series Light Units. The TH2 series can be affixed in four points.

Bracket

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

▶ P.363

Various technical documents available.

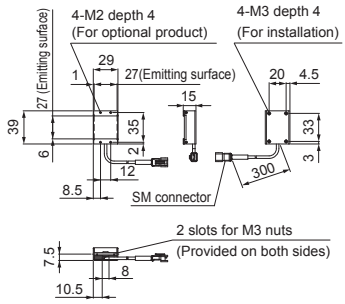
PDF Drawings　DXF Drawings　Product Brochures　Instruction Guides　3D CAD　Data Sheets　Imaging Examples　Digital Catalogs

Register to use them.

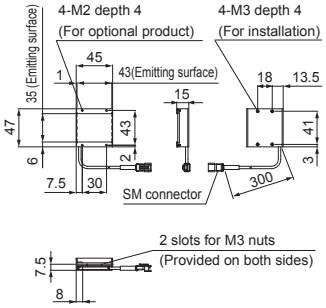
Dimensions (mm)

Even for the Light Units of the same emitting surface size, the thickness and other dimensions of the product differ between the high-luminance and high-directivity type Light Units. Be sure to check the dimension diagrams before installing the Light Units.

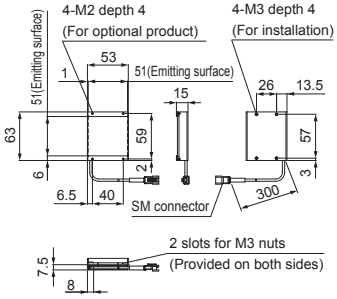
TH2-27X27RD/SW/BL



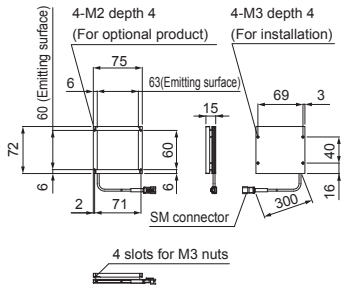
TH2-43X35RD/SW/BL



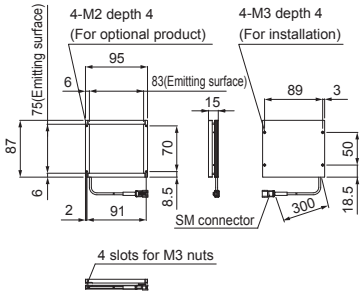
TH2-51X51RD/SW/BL



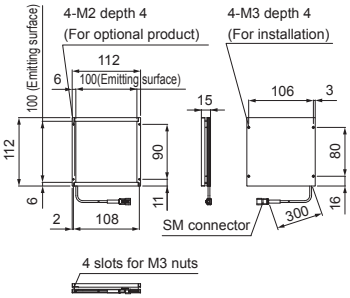
TH2-63X60RD/SW/BL



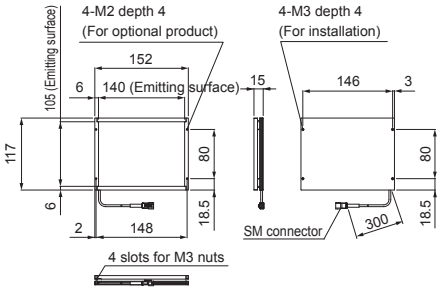
TH2-83X75RD/SW/BL



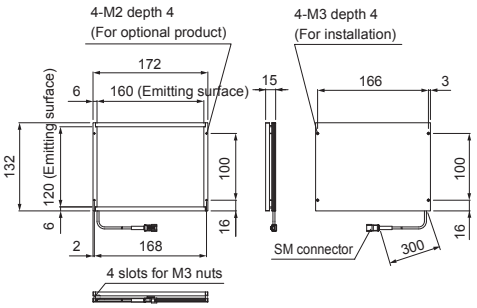
TH2-100X100RD/SW/BL



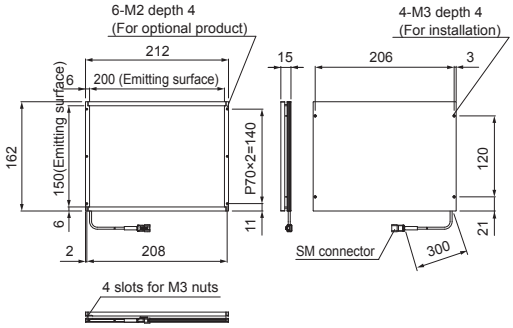
TH2-140X105RD/SW/BL



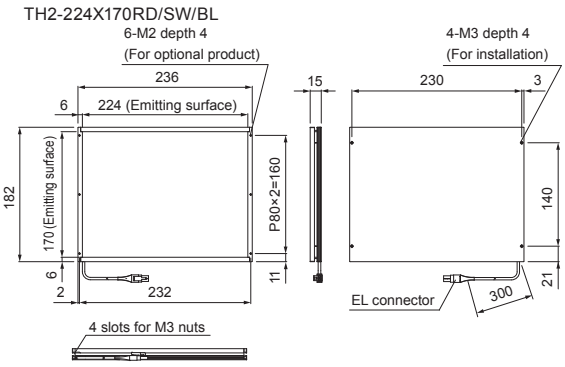
TH2-160X120RD/SW/BL



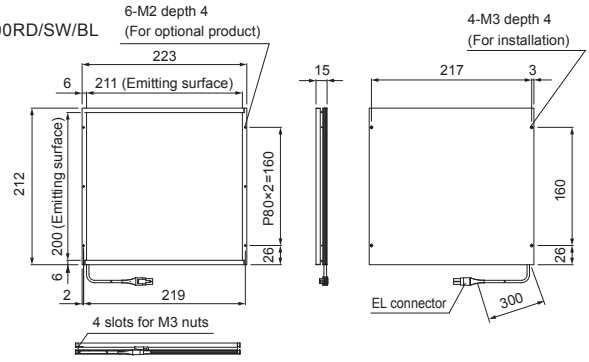
TH2-200X150RD/SW/BL



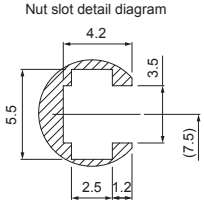
TH2-224X170RD/SW/BL



TH2-211X200RD/SW/BL



Nut slot detail diagram



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Diffused Lighting

Flat Lights

TH2-PM Series High-Directivity Type

Refer to our website for product details.

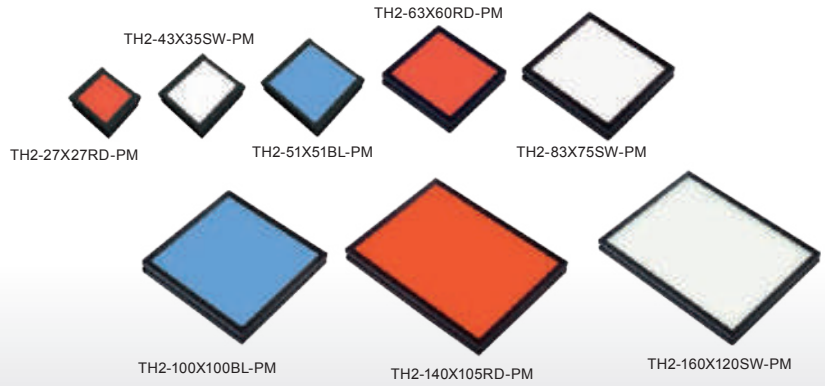
CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Provides a light of high-directivity





Applications Inspection of the appearance of screws; dimension measurement of automobile components, end mills, and other objects; inspection of the appearance of pillar-shaped objects; etc.

Achieved High Directivity of Light

These high-output Flat Light Units are equipped with improved light directivity. This makes them ideal for dimension measurements and other inspections that require outline extraction of the workpiece.

Comparison of light directivity

High-directivity type

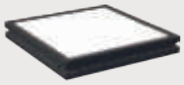


TH2-100X100SW-PM



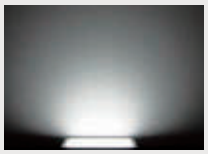
Illuminates with high directivity.

High-luminance type



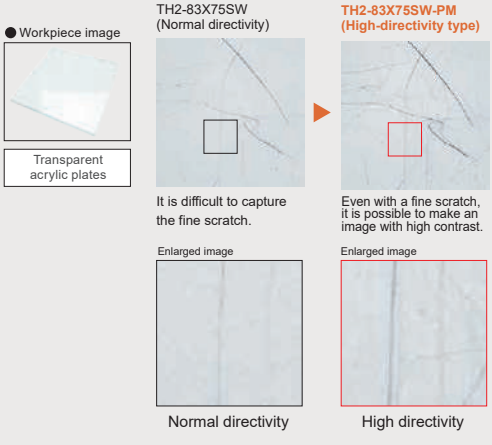
TH2-100X100SW

▶ P.79



Illuminates a wide space. (normal directivity)

Comparison of images



Abundant Emitting Surface Sizes

Abundant product lineup allows you to select the optimum size that will match your workpiece.

Emitting surface size (mm)



27x27, 43x35, 51x51, 63x60, 83x75, 100x100, 140x105, and 160x120

LED colors

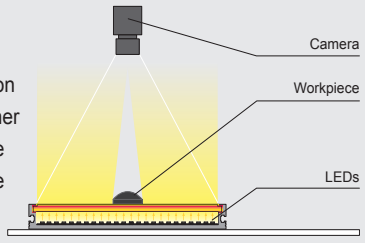
The product lineup includes white, red, and blue Light Units, which can deal with a wide variety of inspection contents.

The rich lineup consists of 24 models, with 8 sizes in each color.

Example Configuration

These high-output Flat Light Units are equipped with improved light directivity. This makes them ideal for dimension measurements and other inspections that require outline extraction of the workpiece.

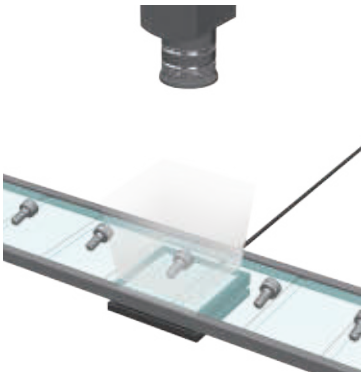
TH2-140X105-PM



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging the Appearance of Screws

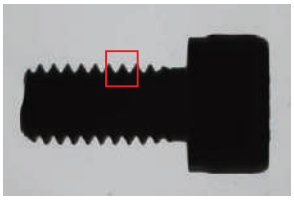


Workpiece image



Screws

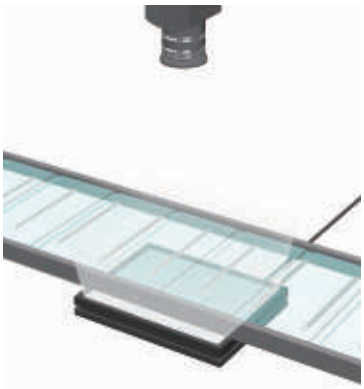
TH2-63X60SW-PM



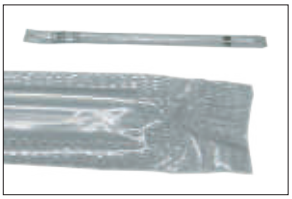


The outline of the screw threads is clearly imaged.

Imaging Example: Imaging the Appearance of Transparent Straw Bags

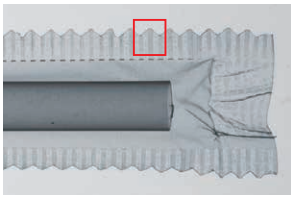


Workpiece image



Straws

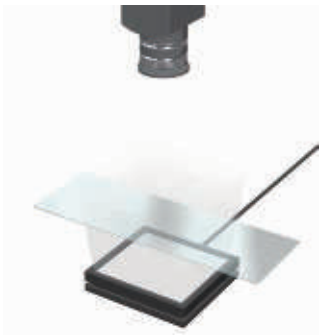
TH2-140X105SW-PM



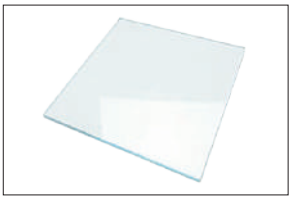


The glued portions are clearly imaged.

Imaging Example: Imaging the Appearance of Acrylic Plates



Workpiece image



Transparent acrylic plates

TH2-83X75SW-PM



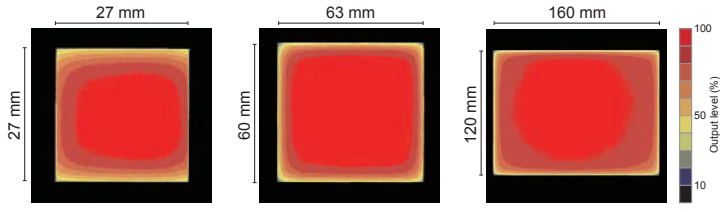
Even with a fine scratch, it is possible to make an image with high contrast.

This workpiece was processed by CCS for sample imaging.

Data: Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

Uniformity (Relative radiance)



TH2-27X27SW-PM TH2-63X60SW-PM TH2-160X120SW-PM

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

TH2-PM Series

High-Directivity Type



Refer to our website for product details.

CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Lineup

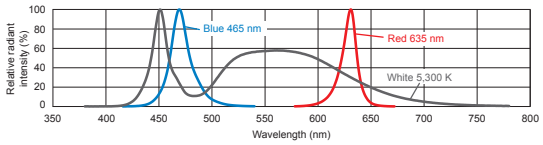
Model name	LED color	Power consumption	Peak wavelength/ correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
TH2-27X27RD-PM	Red	24 V / 2.5 W	635 nm	Bracket	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.	PD3 + CC-ST-1024 PSB + POD*1	40 g
TH2-27X27SW-PM	White	24 V / 3.1 W	5,300 K				
TH2-27X27BL-PM	Blue		465 nm				
TH2-43X35RD-PM	Red	24 V / 5.7 W	635 nm				60 g
TH2-43X35SW-PM	White	24 V / 5.5 W	5,300 K				
TH2-43X35BL-PM	Blue		465 nm				
TH2-51X51RD-PM	Red	24 V / 7.3 W	635 nm				80 g
TH2-51X51SW-PM	White	24 V / 9.9 W	5,300 K				
TH2-51X51BL-PM	Blue		465 nm				
TH2-63X60RD-PM	Red	24 V / 9.9 W	635 nm				120 g
TH2-63X60SW-PM	White	24 V / 9.7 W	5,300 K				
TH2-63X60BL-PM	Blue		465 nm				
TH2-83X75RD-PM	Red	24 V / 15 W	635 nm				170 g
TH2-83X75SW-PM	White	24 V / 16 W	5,300 K				
TH2-83X75BL-PM	Blue		465 nm				
TH2-100X100RD-PM	Red	24 V / 26 W	635 nm			PD3 PSB + POD*1	240 g
TH2-100X100SW-PM	White	24 V / 25 W	5,300 K				
TH2-100X100BL-PM	Blue		465 nm				
TH2-140X105RD-PM	Red	24 V / 28 W	635 nm				320 g
TH2-140X105SW-PM	White		5,300 K				
TH2-140X105BL-PM	Blue		465 nm				
TH2-160X120RD-PM	Red	24 V / 34 W	635 nm			PD3 POD*1	390 g
TH2-160X120SW-PM	White	24 V / 35 W	5,300 K				
TH2-160X120BL-PM	Blue		465 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



This is a dedicated bracket for affixing the TH2 series Light Units. The TH2 series can be affixed in four points.

Bracket

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

▶ P.363

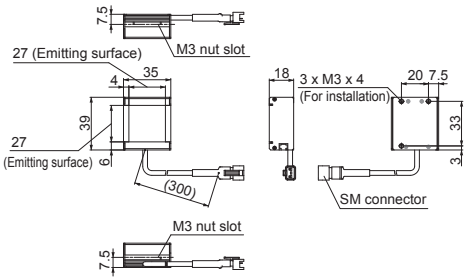
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

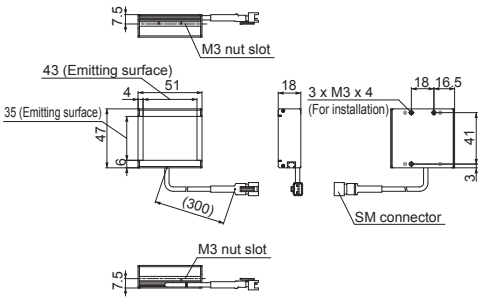
Dimensions (mm)

Even for the Light Units of the same emitting surface size, the thickness and other dimensions of the product differ between the high-luminance and high-directivity type Light Units. Be sure to check the dimension diagrams before installing the Light Units.

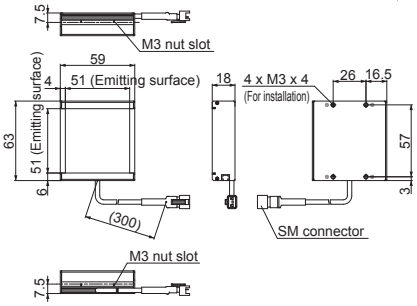
TH2-27X27RD-PM / SW-PM / BL-PM



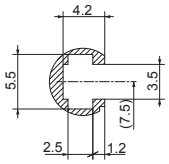
TH2-43X35RD-PM / SW-PM / BL-PM



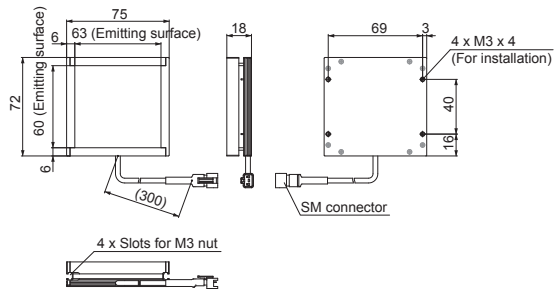
TH2-51X51RD-PM / SW-PM / BL-PM



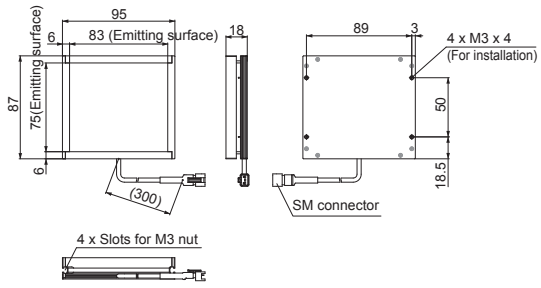
Nut slot detail diagram



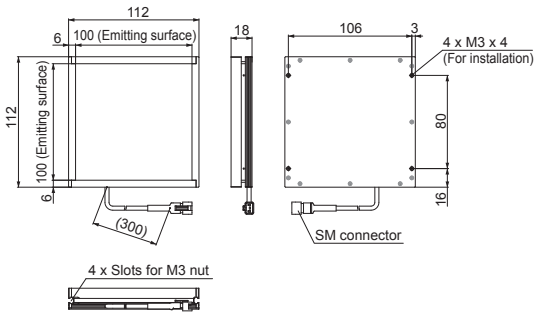
TH2-63X60RD-PM / SW-PM / BL-PM



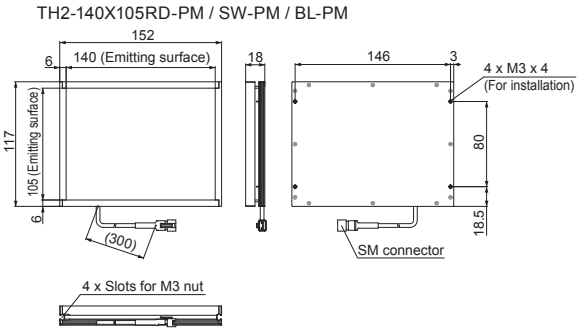
TH2-83X75RD-PM / SW-PM / BL-PM



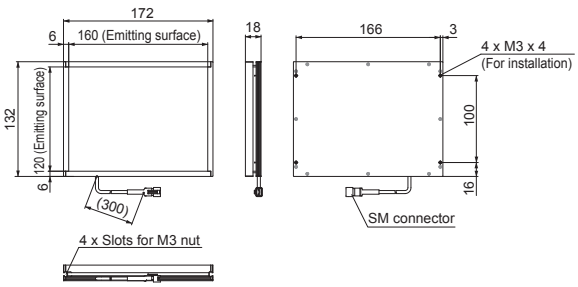
TH2-100X100RD-PM / SW-PM / BL-PM



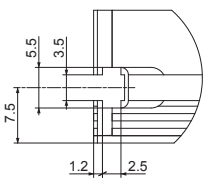
TH2-140X105RD-PM / SW-PM / BL-PM



TH2-160X120RD-PM / SW-PM / BL-PM



Nut slot detail diagram



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Diffused Lighting

Flat Lights

TH2 Series Large Type

Refer to our website for product details.

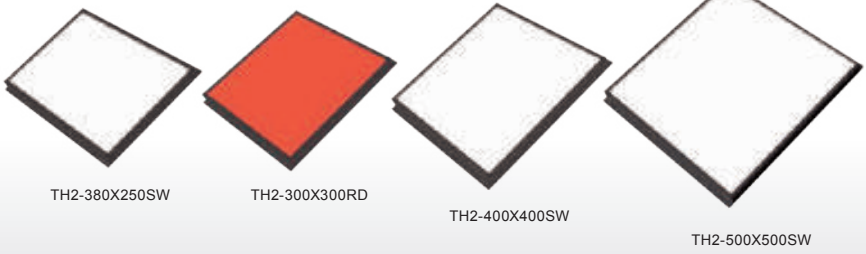
CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Ideal for inspecting large workpieces





TH2-380X250SW　TH2-300X300RD　TH2-400X400SW　TH2-500X500SW

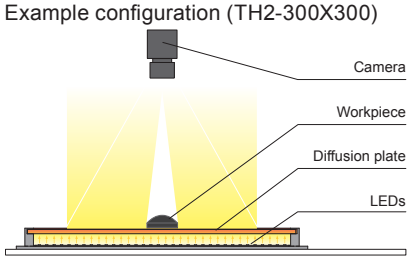
Applications Inspection of liquid surface level in large bottles and infusion bags, inspection of the appearance of wafers and automobile components, light source embedded in conveyors, etc.

Features

Flat Light Units with an emitting surface of up to 500 x 500 mm. They are ideal for inspecting large workpieces and available to inspect a wide area.



Example configuration (TH2-300X300)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the liquid surface level in large bottles



Height: 400 mm
Capacity: 1.8 L

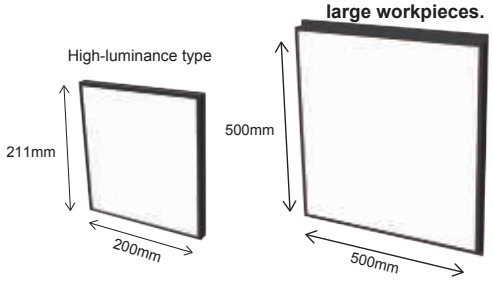
TH2-500X500SW



The liquid surface level and the label position are clearly imaged.

Comparison of Emitting Surface Sizes

Ideal for inspecting large workpieces.

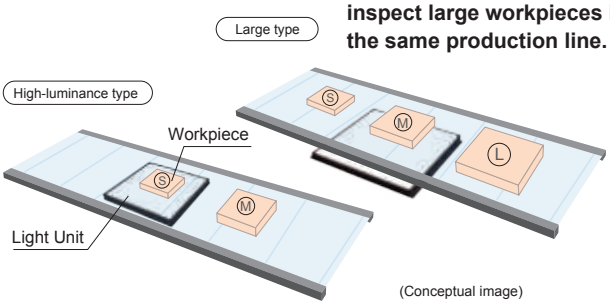


TH2-211X200SW　TH2-500X500SW

The emitting surface size is up to 211 x 200 mm.
▶ P.79

Sizes up to 500 x 500 mm are available.

Comparison of the maximum workpiece size in a production line



(Conceptual image)

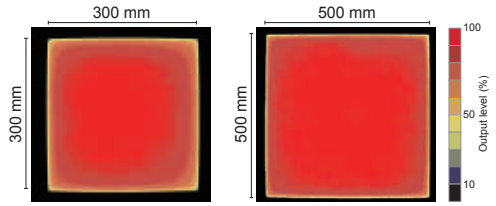
The large type lets you expand the inspection region so that you can inspect large workpieces in the same production line.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Data (Representative Example)

Uniformity (Relative radiance)

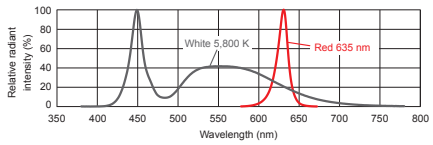


TH2-300X300SW TH2-500X500SW

The data included is for reference only. Actual values may vary.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
TH2-300X300RD	Red	24 V / 85 W	635 nm	—	FCB-EL2 Straight Cable / FCB-W-EL2 2-branch Cable	PD3-10024-8 / POD-22024-4-PEI*1 / PSB4-30024-PEI	2,700 g
TH2-300X300SW	White	24 V / 86 W	5,800 K				
TH2-380X250RD	Red	24 V / 90 W	635 nm				2,900 g
TH2-380X250SW	White	24 V / 93 W	5,800 K				
TH2-400X400RD	Red	24 V / 130 W	635 nm				5,400 g
TH2-400X400SW	White	24 V / 153 W	5,800 K		FCB-1.25SQ-ME7	PSB4-30024-PEI	
TH2-500X500RD	Red	24 V / 202 W	635 nm		FCB-20-2.0SQ-ME7		7,800 g
TH2-500X500SW	White	24 V / 239 W	5,800 K				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Extension Cables (Metal Connectors)

Necessary when connecting the Light Unit to the recommended Control Unit, PSB4-30024-PEI.

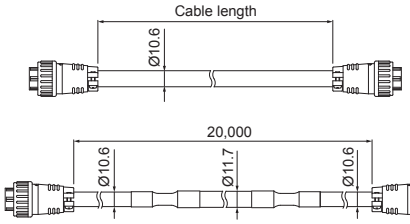
FCB-1.25SQ-ME7

Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g

FCB-20-2.0SQ-ME7

Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g

(mm)



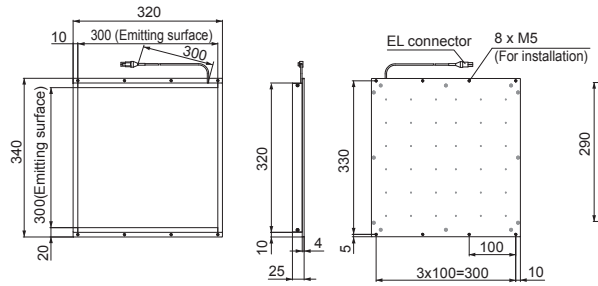
Cable permitted bending radius: 63.6 mm

Cable permitted bending radius: 63.6 mm

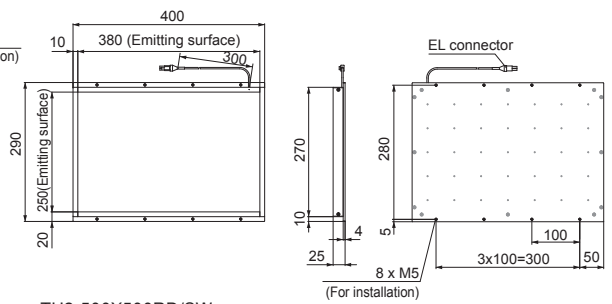
The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)

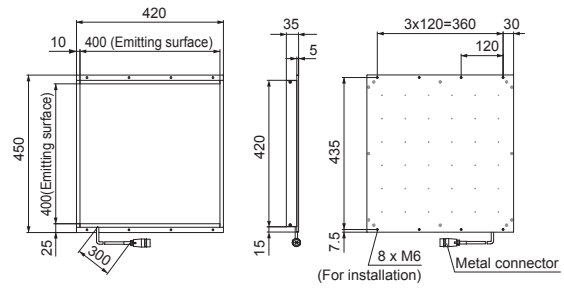
TH2-300X300RD/SW



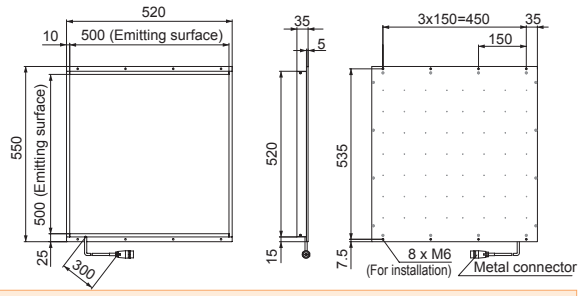
TH2-380X250RD/SW



TH2-400X400RD/SW



TH2-500X500RD/SW



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Diffused Lighting

Flat Lights

TH2 Series Rectangular Type

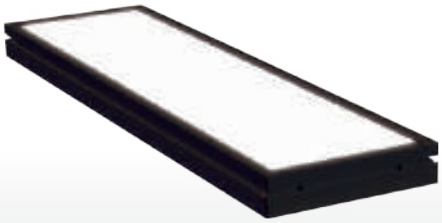
Refer to our website for product details.

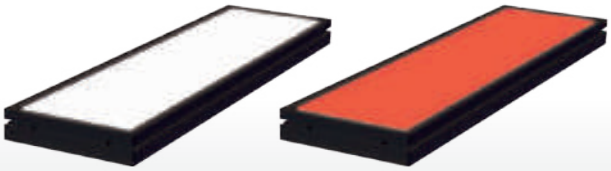
CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Flat Light Units with a 300 x 75 mm emitting surface. Applicable to inspection of rectangular workpieces and imaging with a line sensor camera.





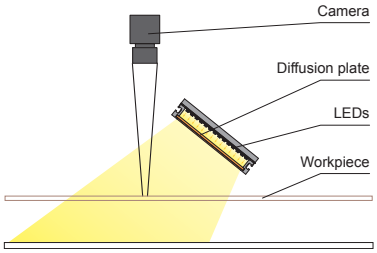
TH2-300X75SW TH2-300X75RD

Applications Inspection of the appearance of cylindrical containers or square-shaped workpieces, inspection for stains and foreign material on non woven fabrics, fault inspection of films, inspection of the appearance of glass, etc.

Features

These Flat Lights are optimum for inspecting rectangular workpieces.
Also applicable to inspections with a line sensor camera.

Example configuration (TH2-300X75)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.



Inspection with a line sensor camera

Imaging example:
Imaging the appearance of cylindrical containers



Workpiece:
Cylindrical containers
(cosmetics)

TH2-300X75SW

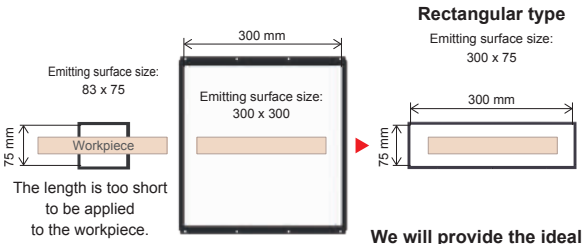


The state of the surface can be images. Also the printed text is clearly recognized.

Comparison of Emitting Surface Sizes

Ideal for inspecting rectangular workpieces.

(For use with area sensor cameras)

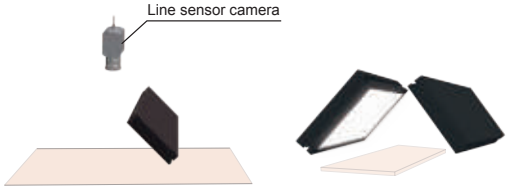


The length is too short to be applied to the workpiece.

The length is suitable, but there are large unused areas.

We will provide the ideal size for the workpiece to help you save space.

Also applicable to inspection with a line sensor camera



Sheet-shaped workpieces which are easy to flap

Reproducing the effect of Dome Lights

Can be used for a wide range of applications.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

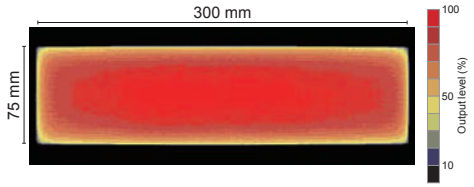
Register to use them.

Data (Representative Example)

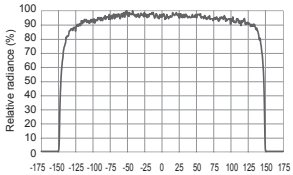
The data included is for reference only. Actual values may vary.

TH2-300X75SW

Uniformity (Relative radiance)

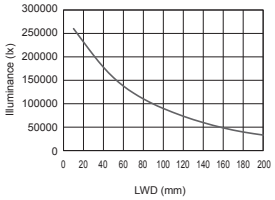


Relative radiance distribution



Illuminance graph (LWD characteristics)

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Characteristic of the illumination distribution

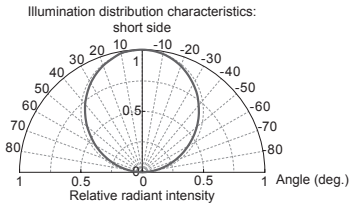
Measuring direction: long side



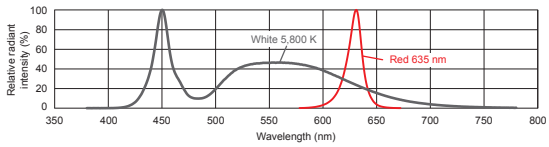
Measuring direction: short side



Illumination distribution characteristics:



LED Properties

Spectral distribution	

CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Lineup

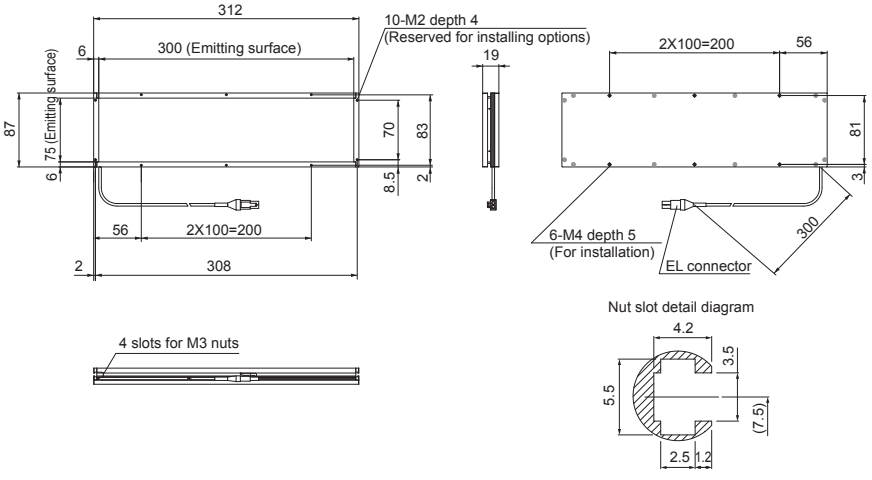
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
TH2-300X75RD	Red	24 V / 54 W	635 nm	–	FCB-EL2 Straight Cable FCB-W-EL2 2-branch Cable	PD3-10024-8 POD-22024-4-PEI*1 PSB4-30024-PEI	650 g
TH2-300X75SW	White	24 V / 68 W	5,800 K				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Dimensions (mm)

TH2-300X75RD/SW



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

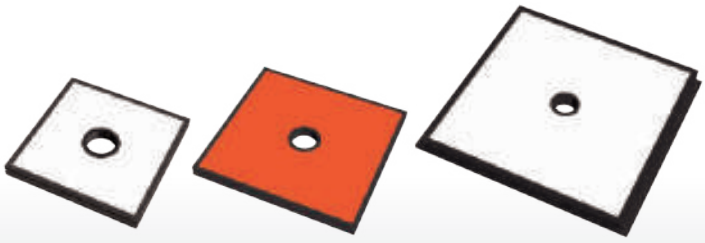
Diffused Lighting

Flat Lights
TH2-CR Series Camera-Window Type

Refer to our website for product details.
CCS TH2 ▶ Search
Use a search engine.
You can also use your smartphone or cell phone.

Provide a light from the same axis as the camera





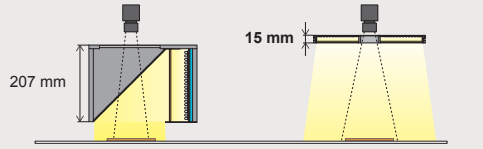
TH2-150X150SW-CR35 TH2-211X200RD-CR35 TH2-300X300SW-CR35

Applications Inspection of FIPG sealing material on metal components, inspection for stains and foreign materials in disposable diapers, reading engraved text on piston ring, robot picking, etc.

Illumination from the Same Axis as the Camera

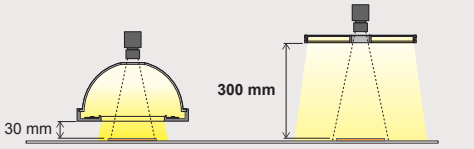
Flat Lights with a camera window at the center of the emitting surface. They do not serve as a back light but provide a light from the same axis as the camera in the way the Dome Lights and Coaxial Lights do.

Comparison of structures



The field of view is relatively narrow. The housing is large and heavy.

The field of view is wide. The housing with a thickness of 15 mm is light-weighted.



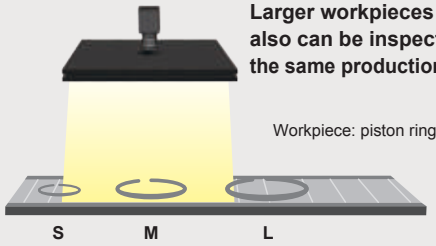
The narrow space between the Light Unit and the workpiece interferes with picking by robots.

The ample space between the Light Unit and the workpiece do not interfere with picking by robots.

Uniform Illumination of a Wide Range

These Light Units have a wider emitting surface compared to that of the Coaxial Lights and Dome Lights. This enables uniform illumination of a wide range.

Applicable to a wide range of workpiece sizes



Larger workpieces also can be inspected in the same production line.

Product lineup

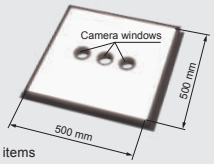
The available LED color is white or red.
Three sizes of emitting surface: 150 x 150 mm, 211 x 200 mm, and 300 x 300 mm.
These Light Units can deal with a wide variety of inspection contents.

Custom Orders

Please contact your CCS sales representative.

E.g.: Large size of 500 x 500 mm

Format/ material → Creating a large size Light Unit



Other customizable items
- Changes in the shape of the camera window
- Changes in the LED color (blue, infrared, or other color)

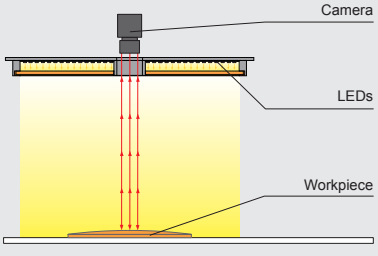
Customizable items

External/internal diameter | Wavelength/ Color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Example Configuration

Flat Lights with a camera window at the center of the emitting surface. They provide a light from the same axis as the camera.

TH2-300X300-CR35



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Imaging Example: Imaging FIPG Sealing Material on Metal Components



Workpiece image



FIPG sealing material on metal components

TH2-300X300SW-CR35



The state of FIPG sealing material can be imaged.

The above sample workpiece has been made specifically for sample imaging and is not the one for actual inspection.

Imaging Example: Imaging Stains and Foreign Materials in Disposable Diapers

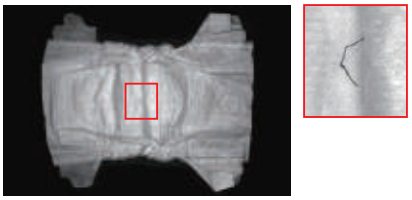


Workpiece image



Disposable diapers

TH2-300X300SW-CR35



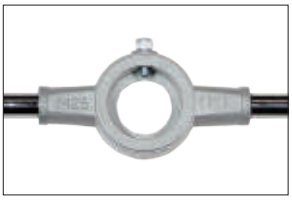
The foreign material on the surface is imaged.

The above sample workpiece has been made specifically for sample imaging.

Imaging Example: Imaging Engraved Text on Textured Metal Surfaces



Workpiece image



Textured metal

TH2-150X150SW-CR35



The engraved text is clearly imaged.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

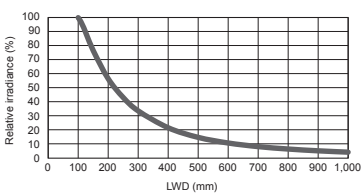
The data included is for reference only. Actual values may vary.

TH2-300X300SW-CR35

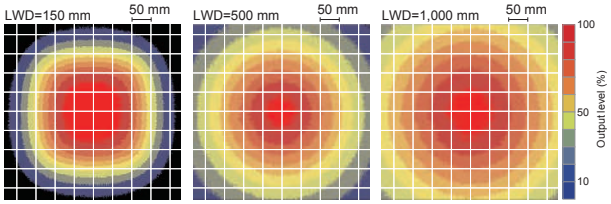
Relative irradiance graph (LWD characteristics) *1 *2

*1 Irradiance on the optical axis

*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

TH2-CR Series

Camera-Window Type



Refer to our website for product details.

CCS TH2 ▶ Search

Use a search engine.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
TH2-150X150RD-CR35	Red	24 V / 30 W	635 nm	Bracket	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 / POD*1	350 g
TH2-150X150SW-CR35	White	24 V / 30 W	5,800 K				
TH2-211X200RD-CR35	Red	24 V / 63 W	635 nm		FCB-EL2 Straight Cable FCB-W-EL2 2-branch Cable	PD3-10024-8 POD-22024-4-PEI*1 PSB4-30024-PEI	550 g
TH2-211X200SW-CR35	White	24 V / 62 W	5,800 K				
TH2-300X300RD-CR35	Red	24 V / 83 W	635 nm	–			2,700 g
TH2-300X300SW-CR35	White	24 V / 84 W	5,800 K				

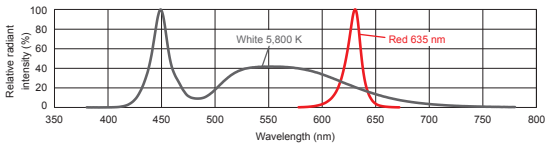
Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Light Units with a 500 x 500 mm emitting surface are available for custom orders.
We also accept custom orders for the size of the camera window, LED color (blue, infrared, or other color), etc.
Please feel free to contact your CCS sales representative for details.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



This is a dedicated bracket for affixing the TH2 series Light Units. The TH2 series can be affixed in four points.

Bracket

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	Installation bracket common to all TH2 models (includes 4)

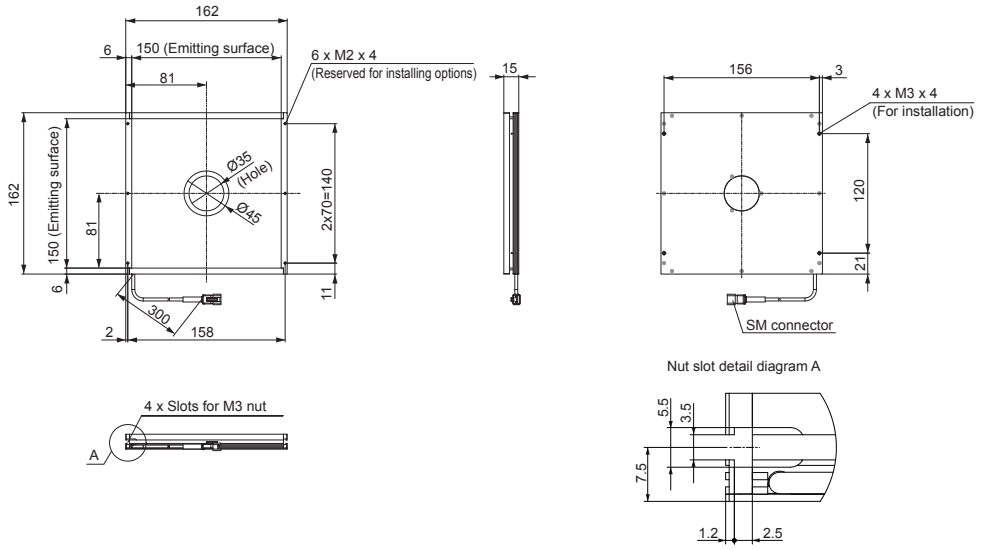
▶ P.363

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

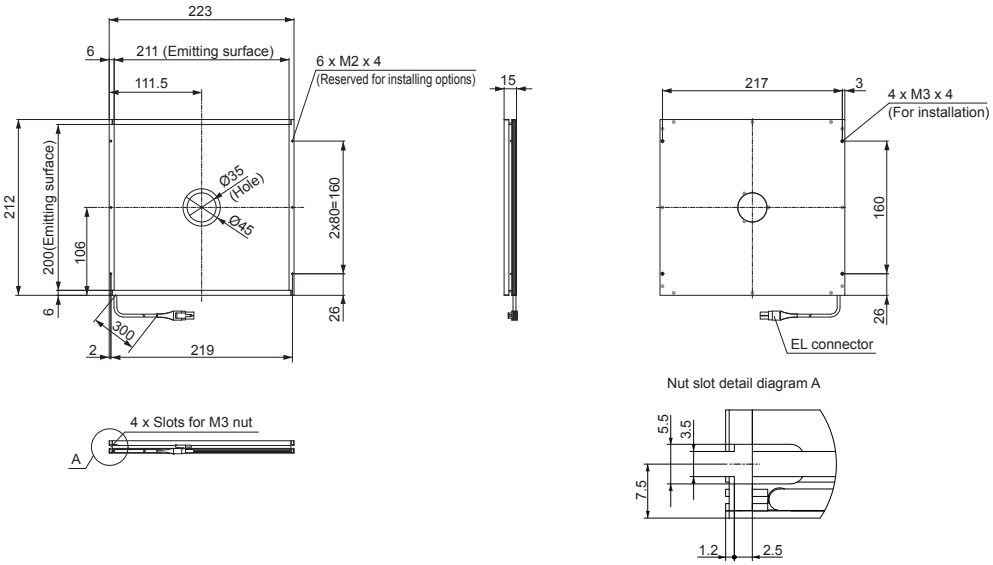
Register to use them.

Dimensions (mm)

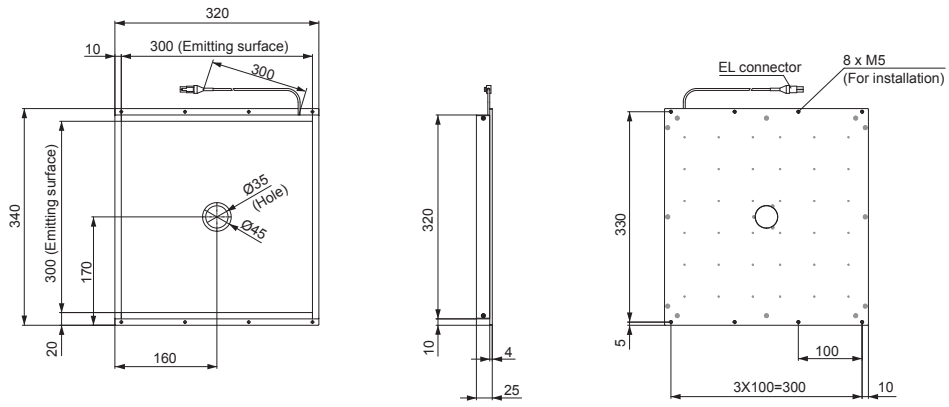
TH2-150X150RD-CR35 / SW-CR35



TH2-211X200RD-CR35 / SW-CR35



TH2-300X300RD-CR35 / SW-CR35



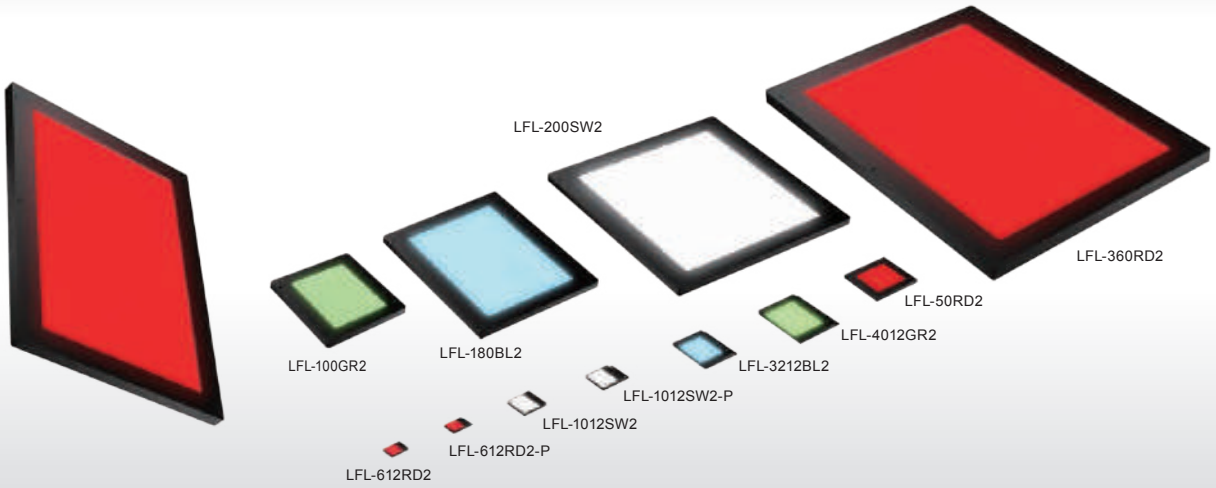
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Flat Lights
LFL Series

Refer to our website for product details.
CCS LFL ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Diffused illumination from a flat emitting surface



Applications Dimension measuring, visual inspection, foreign material inspections, liquid level inspection, burr inspection of metal parts, inspection for tears or stains on packaging, etc.

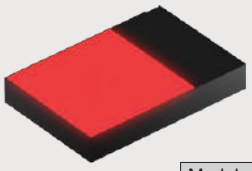
Rich Lineup with 43 Models

Rich lineup

The lineup consists of 35 models, with 9 sizes of emitting surfaces from 25 x 25 mm to 360 x 250 mm in each color. The rich lineup has a total of 43 models, including the LFL-612-P and LFL-1012-P, which add a plate for installation to the housing.

Energy-saving type that is light-weight and thin

The Light Unit's thin design, with a minimum thickness of 6 mm, allows for space-saving installation.

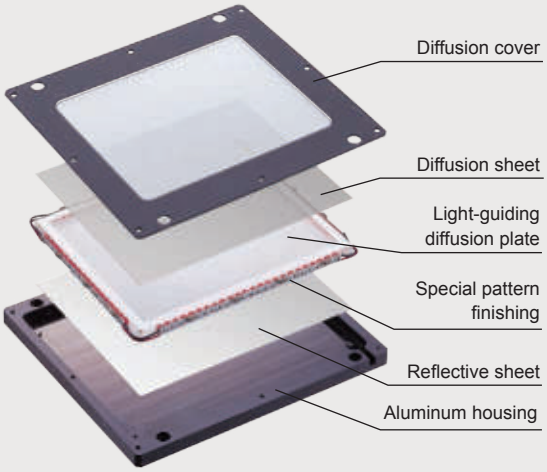


Model name	LFL-612RD2
Power consumption	24 V / 0.6 W
Weight	25 g

Uses a Unique Method of Light Guidance

LEDs are placed around the light-guiding diffusion plate. The special pattern finishing achieves illumination with even greater diffusion.

Cross-section image of the LFL-100



Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format — Allows you to create a Light Unit with a hole in it and pass things through the center

Can also be used as a camera window



Customizable items

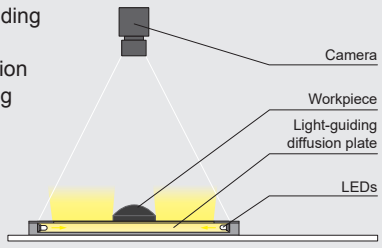
- External/internal diameter
- Wavelength/ color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

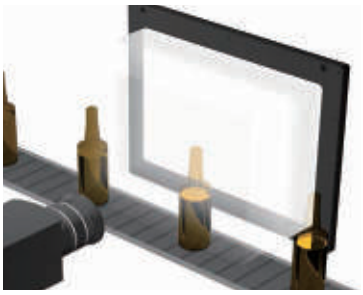
LEDs embedded around the outside of a square light-guiding diffusion plate. Diffused illumination from a flat emitting surface.

LFL-100



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Imaging Example: Imaging the Liquid Level in Glass Containers



Description	Liquid volume inspection
Workpiece	Glass containers
Conventional lighting	LED Ring Light
New lighting	LFL-180SW2
Result	Emphasizes the level of the liquid

■ Workpiece image



Glass containers

■ LED Ring Light



It is difficult to form an image of the liquid level due to surface reflection.

■ LFL-180SW2



It is possible to form an image of the liquid level without surface reflection.

Imaging Example: Imaging the Liquid Level in Plastic Containers



Description	Liquid volume inspection
Workpiece	Plastic containers
Conventional lighting	LED Ring Light
New lighting	LFL-180SW2
Result	Emphasizes the level of the liquid

■ Workpiece image



Plastic containers

■ LED Ring Light



It is difficult to form an image of the liquid level due to surface reflection.

■ LFL-180SW2



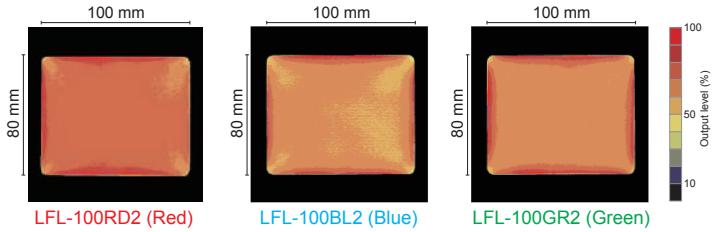
It is possible to form an image of the liquid level without surface reflection.

Data: Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

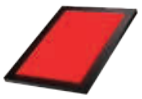
LFL-100

Uniformity (Relative radiance)



LFL-100RD2 (Red) LFL-100BL2 (Blue) LFL-100GR2 (Green)

LFL Series



Refer to our website for product details.

CCS LFL ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

"-P" at the end of the model name: Type with an affixing plate

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFL-612RD2*1	Red	24 V / 0.6 W	630 nm				25 g
LFL-612SW2	White		5,500 K				20 g
LFL-612BL2	Blue	24 V / 0.4 W	470 nm				25 g
LFL-612GR2	Green		525 nm			PD3*1 CC-ST-1024	
LFL-612RD2-P*1	Red	24 V / 0.6 W	630 nm			PSB POD*2	
LFL-612SW2-P	White		5,500 K				25 g
LFL-612BL2-P	Blue	24 V / 0.4 W	470 nm				
LFL-612GR2-P	Green		525 nm				
LFL-1012RD2	Red	24 V / 0.6 W	630 nm				35 g
LFL-1012SW2	White		5,500 K				30 g
LFL-1012BL2	Blue	24 V / 0.8 W	470 nm				35 g
LFL-1012GR2	Green		525 nm				
LFL-1012RD2-P	Red	24 V / 0.6 W	630 nm				35 g
LFL-1012SW2-P	White		5,500 K				30 g
LFL-1012BL2-P	Blue	24 V / 0.8 W	470 nm				35 g
LFL-1012GR2-P	Green		525 nm				
LFL-3212RD2	Red	24 V / 1.6 W	630 nm				80 g
LFL-3212SW2	White		5,500 K				
LFL-3212BL2	Blue	24 V / 2.3 W	470 nm				
LFL-3212GR2	Green		525 nm				
LFL-4012RD2	Red	24 V / 2.1 W	630 nm				105 g
LFL-4012SW2	White		5,500 K			PD3 CC-ST-1024	110 g
LFL-4012BL2	Blue	24 V / 2.7 W	470 nm			PSB POD*2	105 g
LFL-4012GR2	Green		525 nm				
LFL-50RD2	Red	24 V / 2.1 W	630 nm				50 g
LFL-50SW2	White	24 V / 3.1 W	5,500 K				
LFL-50BL2	Blue	24 V / 3.0 W	470 nm				
LFL-50GR2	Green		525 nm				
LFL-100RD2	Red	24 V / 5.1 W	630 nm				215 g
LFL-100SW2	White		5,500 K				220 g
LFL-100BL2	Blue	24 V / 5.3 W	470 nm				215 g
LFL-100GR2	Green		525 nm				
LFL-180RD2	Red	24 V / 7.1 W	630 nm				375 g
LFL-180SW2	White		5,500 K				370 g
LFL-180BL2	Blue	24 V / 9.1 W	470 nm				375 g
LFL-180GR2	Green		525 nm				
LFL-200RD2	Red		630 nm				500 g
LFL-200SW2	White		5,500 K			PD3	
LFL-200BL2	Blue	24 V / 12 W	470 nm			PSB POD*2	495 g
LFL-200GR2	Green		525 nm				
LFL-360RD2	Red	24 V / 30 W	630 nm				2,360 g
LFL-360SW2	White	24 V / 37 W	5,500 K			PD3	
LFL-360BL2	Blue	24 V / 38 W	470 nm			PSB*3 POD*2	2,320 g

– (Options)

FCB*4 Straight Cable
FCB-W*5 2-branch Cable
FCB-F 4-branch Cable
FRCB Robot Cable

*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*5 The cables with a model name that ends with "-EL2" are not included.

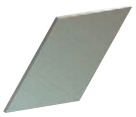
*3 Can only use red.

Light control film

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 These red lights cannot be used with the PD3-5024-4-SI or PD3-5024-4-ET Control Unit.
*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Options



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

Light control film

Model name	Applicable Light Unit (Common for all colors)
LC-LFL-100	LFL-100
LC-LFL-180	LFL-180
LC-LFL-200	LFL-200

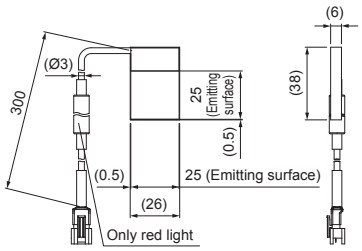
▶ P.361

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

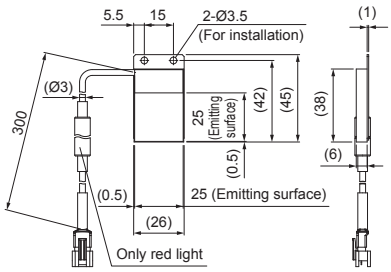
Register to use them.

Dimensions (mm)

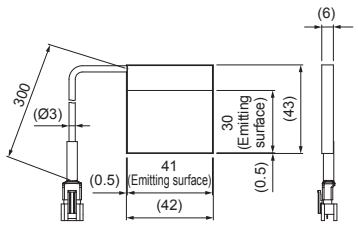
LFL-612RD2/SW2/BL2/GR2



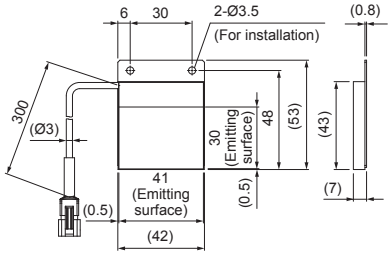
LFL-612RD2-P / SW2-P / BL2-P / GR2-P



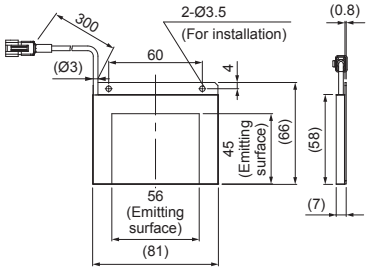
LFL-1012RD2/SW2/BL2/GR2



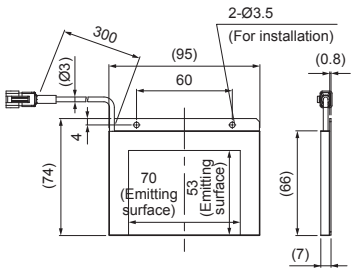
LFL-1012RD2-P / SW2-P / BL2-P / GR2-P



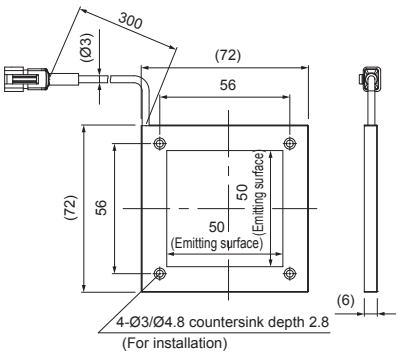
LFL-3212RD2/SW2/BL2/GR2



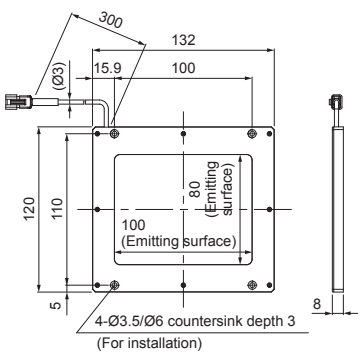
LFL-4012RD2/SW2/BL2/GR2



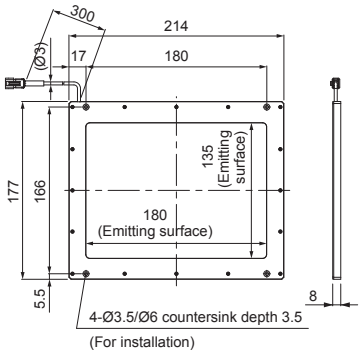
LFL-50RD2/SW2/BL2/GR2



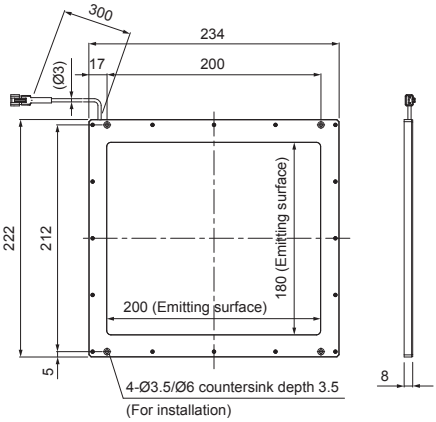
LFL-100RD2/SW2/BL2/GR2



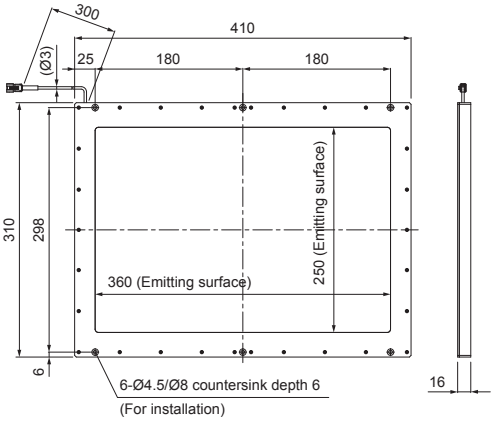
LFL-180RD2/SW2/BL2/GR2



LFL-200RD2/SW2/BL2/GR2



LFL-360RD2/SW2/BL2



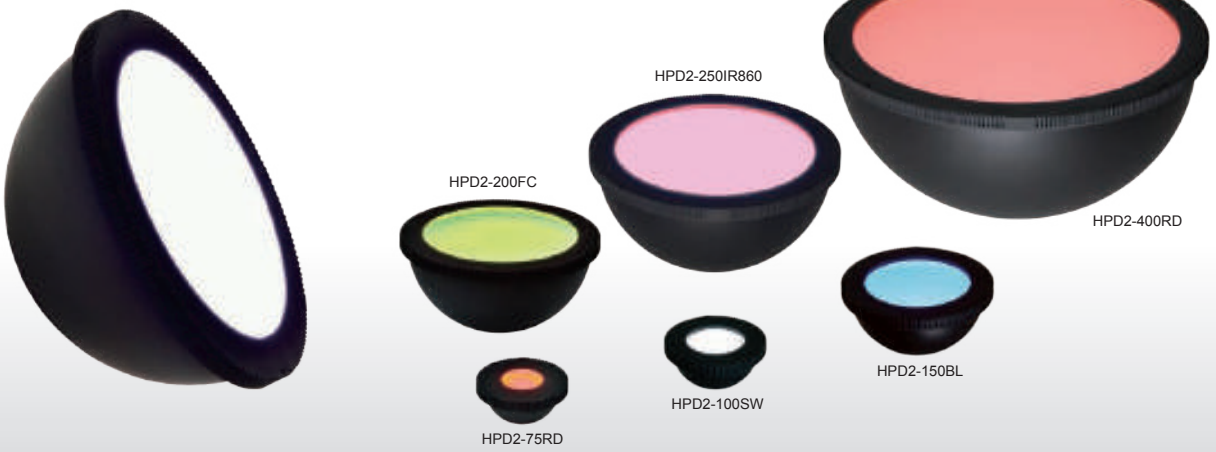
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Dome Lights
HPD2 Series

Refer to our website for product details.
CCS HPD2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light evenly through the dome-shaped reflective panel



Applications Visual, text, or color determination inspections on glossy surfaces, curved surfaces, or uneven surfaces; inspection for engraving, damage, or stains on stain finishing; visual inspection of metal with hairline finishing; inspection of parts on circuit boards; etc.

Applicable to a Wide Variety of Industries

It is bright and even if the distance from the workpiece to the Light Unit is changed, there is little change in the uniform region. Therefore, it can be used in a wide range of industries.

Semiconductor industry (Circuit board)



HPD2-100SW (White)

Electronic parts industry (Capacitor)



HPD2-150SW (White)

Food industry (Chocolate)



HPD2-250SW (White)

Packaging industry (Top of a drink container)



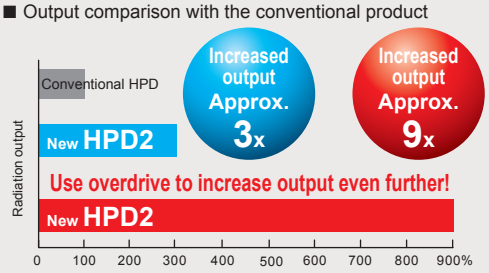
HPD2-150SW (White)

Diffused Light at High Output

Light from the surface-mounted LEDs is diffused inside the dome-shaped reflective panel. This uniformly illuminates a wide range of region.

Achieved higher output than the conventional product

■ Output comparison with the conventional product



- This is a comparison between the HPD-100 and HPD2-100 Light Units, using red and white colors.
- It can be combined with a Strobe Control Unit for even brighter emission than continuous emission.
- The data included is for reference only. Actual values may vary.

Added two sizes and an infrared and full color (RGB) type

We added the HPD2-75 and HPD2-200 models. Also, we added infrared (860 nm) and full color (RGB) types to the lineup as variation for wavelengths, increasing the applications of our products.

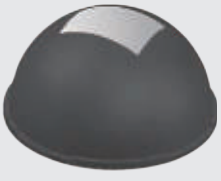
Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format/ material

Changed the camera aperture to a rectangle



Customizable items

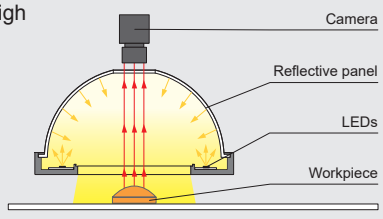
- External/internal diameter
- Wavelength/ color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Example Configuration

Uses a unique illuminating mechanism and emits diffused light at high output.

HPD2-150



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Imaging Example: Imaging Foreign Materials Mixed in Food



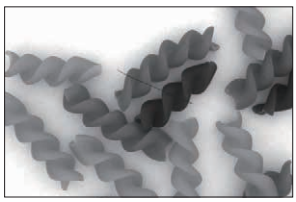
Description	Mixed foreign materials inspection
Workpiece	Macaroni
Conventional lighting	HPD2-200SW
New lighting	HPD2-200IR860: Infrared type
Result	Emphasizes the foreign material

■ Workpiece image



Macaroni

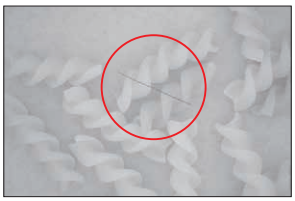
■ HPD2-200SW



It is difficult to form an image of the foreign material using white light.

⇒

■ HPD2-200IR860



It is possible to form an image of the foreign material using infrared light.

This workpiece was processed by CCS for sample imaging.

Imaging Example: Imaging the Appearance of Multi-Colored Workpieces for Color Determination

■ Workpiece image

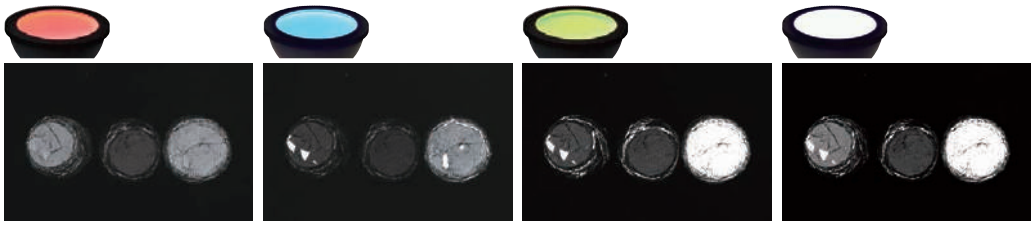


Chocolate



Description	Visual inspection
Workpiece	Chocolate
Conventional lighting	–
New lighting	HPD2-200FC: Full color (RGB) type
Result	Allows for multi-color determination

■ HPD2-200FC: Full color (RGB) type



Imaging with red illumination | Imaging with blue illumination | Imaging with green illumination | Imaging with white illumination

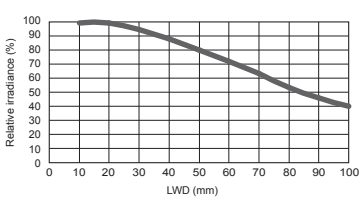
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

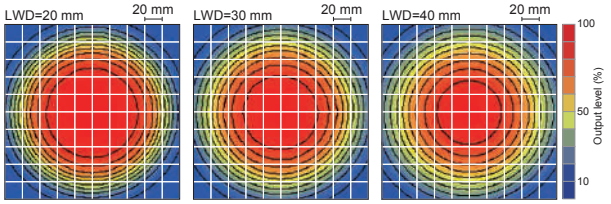
HPD2-200SW

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



HPD2 Series



Refer to our website for product details.

CCS HPD2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
HPD2-75RD	Red	24 V / 17 W	635 nm	Bracket	FCB*4 Straight Cable FCB-W*5 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 PSB POD*2 PD3*1	140 g
HPD2-75SW	White	24 V / 16 W	6,500 K				
HPD2-75BL	Blue		470 nm				
HPD2-75IR860	Infrared	24 V / 12 W	860 nm				
HPD2-75FC	Red/Green/Blue	24 V / 6.0 W	622 nm / 525 nm / 470 nm				
HPD2-100RD	Red	24 V / 17 W	635 nm			PD3 PSB POD*2 PD3*1	160 g
HPD2-100SW	White	24 V / 23 W	6,500 K				
HPD2-100BL	Blue		470 nm				
HPD2-100IR860	Infrared	24 V / 23 W	860 nm				
HPD2-100FC	Red/Green/Blue	24 V / 11 W	622 nm / 525 nm / 470 nm				
HPD2-150RD	Red	24 V / 27 W	635 nm			PD3 PSB*3 POD*2 PD3*1	285 g
HPD2-150SW	White		6,500 K				
HPD2-150BL	Blue		470 nm				
HPD2-150IR860	Infrared	24 V / 35 W	860 nm				
HPD2-150FC	Red/Green/Blue	24 V / 15 W	622 nm / 525 nm / 470 nm				
HPD2-200RD	Red	24 V / 34 W	635 nm			PD3 POD*2 PD3*1	460 g
HPD2-200SW	White	24 V / 41 W	6,500 K				
HPD2-200BL	Blue		470 nm				
HPD2-200IR860	Infrared	24 V / 46 W	860 nm				
HPD2-200FC	Red/Green/Blue	24 V / 19 W	622 nm / 525 nm / 470 nm				
HPD2-250RD	Red	24 V / 45 W	635 nm			PD3 POD*2 PD3*1	650 g
HPD2-250SW	White	24 V / 46 W	6,500 K				
HPD2-250BL	Blue		470 nm				
HPD2-250IR860	Infrared	24 V / 46 W	860 nm				
HPD2-250FC	Red/Green/Blue	24 V / 24 W	622 nm / 525 nm / 470 nm				
HPD2-400RD	Red	24 V / 45 W	635 nm	–		PD3 POD*2 PD3*1	1,300 g
HPD2-400SW	White	24 V / 46 W	6,500 K				
HPD2-400BL	Blue		470 nm				
HPD2-400IR860	Infrared	24 V / 46 W	860 nm				
HPD2-400FC	Red/Green/Blue	24 V / 30 W	622 nm / 525 nm / 470 nm				

*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*5 The cables with a model name that ends with "-EL2" are not included.

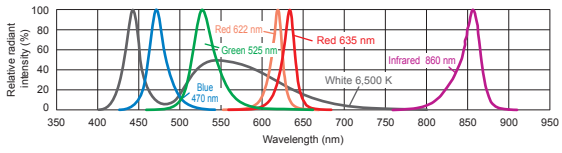
*3 Cannot use infrared.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 Use a 3-channel Control Unit for a full color (RGB) type.
*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

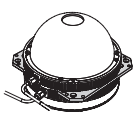
Spectral distribution



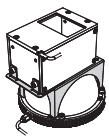
CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Combine with a Ring Light to achieve imaging by light switching and simultaneous lighting.



Combine with a Coaxial Light to solve uneven illumination and achieve uniform illumination from all directions.



Achieves installation using installation holes with a larger gap than the Light Unit body installation holes, or installation on a vertical surface.

Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)		
BK-75-JO	HPD2-75	HPR2-75	LDR2-100-LA	LDR-96-LA1
BK-100-JO	HPD2-100	HPR2-100	LDR2-132-LA	LDR-146-LA1
BK-150-JO	HPD2-150	HPR2-150	LDR2-170-LA	LDR-176-LA1
BK-200-JO	HPD2-200	HPR2-200	LDR2-208-LA	LDR-206-LA1
BK-250-JO	HPD2-250	HPR2-250	–	–

▶ P.363

Coaxial Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-HPD2-75-LFV	HPD2-75	LFV3-35
BK-HPD2-100-LFV	HPD2-100	LFV3-50
BK-HPD2-150-LFV	HPD2-150	
BK-HPD2-200-LFV	HPD2-200	LFV3-70
BK-HPD2-250-LFV	HPD2-250	

▶ P.364

Expansion mounting bracket

Model name	Applicable Light Unit (Common for all colors)
BK-75-CI	HPD2-75
BK-100-CI	HPD2-100
BK-150-CI	HPD2-150
BK-200-CI	HPD2-200
BK-250-CI	HPD2-250

▶ P.364

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

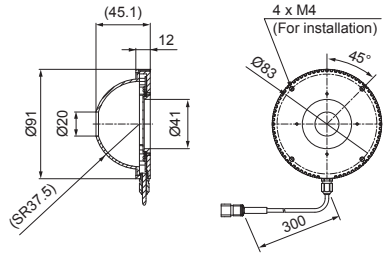
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

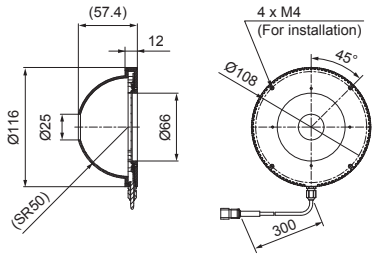
Dimensions (mm)

M4 and M6 installation holes are tapped and perforated holes.

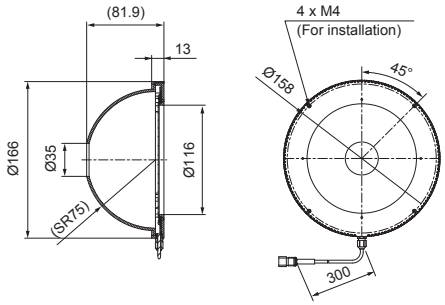
HPD2-75RD/SW/BL/FC/IR860



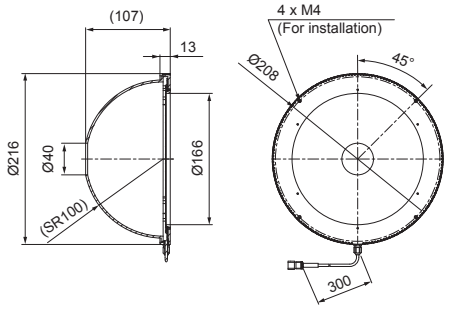
HPD2-100RD/SW/BL/FC/IR860



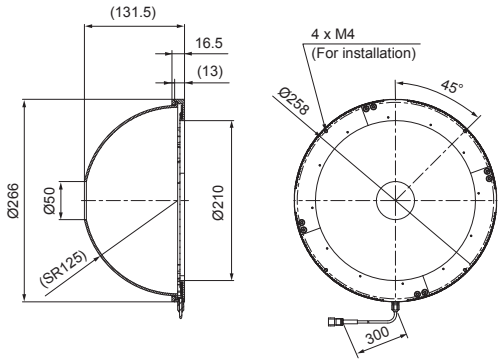
HPD2-150RD/SW/BL/FC/IR860



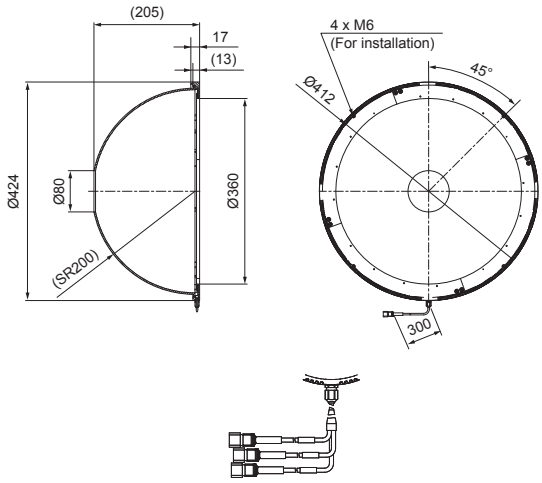
HPD2-200RD/SW/BL/FC/IR860



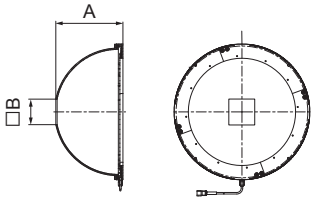
HPD2-250RD/SW/BL/FC/IR860



HPD2-400RD/SW/BL/FC/IR860



- The camera aperture can be changed to a square.



- Special order

Model	Dimension A	Dimension B
HPD2-75□-SQ20	45.1	20
HPD2-100□-SQ30	56.7	30
HPD2-150□-SQ40	81.3	40
HPD2-200□-SQ50	105.8	50
HPD2-250□-SQ60	130.3	60
HPD2-400□-SQ80	205	80

□ is a placeholder for letters that indicate the color of the emitted light.
Dimensions are subject to change.

The full color type (HPD2-□□FC, HPD2-400FC-FT) has three connectors.
Use a 3-channel Control Unit if controlling intensity separately for each color.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

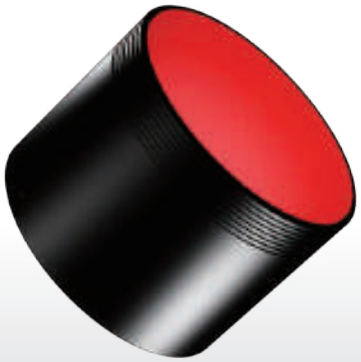
LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
LNSP-UV-FN
Ultraviolet Lighting
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Diffused Lighting

Dome Lights
LDM2 Series

Refer to our website for product details.
CCS LDM2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light from a cone-shaped emitting surface




LDM2-50RD2


LDM2-50SW2


LDM2-90BL2


LDM2-90GR2

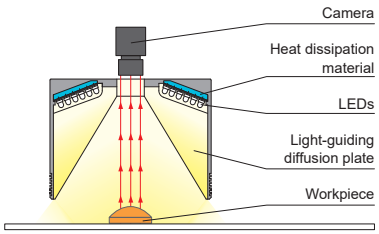
Applications Inspection for the visual, text, or color determination on glossy surfaces, curved surfaces, or uneven surfaces; soldering inspection; surface inspection for metal parts; text inspection for can bottoms; character recognition for glossy workpieces; etc.

Features

Light emitted from the LEDs is transmitted through the light-guiding diffusion plate and the uniformly diffused light from a wide emitting surface surrounds the whole workpiece.



Example configuration (LDM2-90)



We accept custom orders.
Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging text on aluminum bottle cans


Workpiece: Aluminum bottle cans

■LED Bar Light


It is difficult to form an image of the text due to the influence of uneven illumination.

⇒

■LDM2-90RD2



It is possible to illuminate the whole thing evenly to form an image of the text.

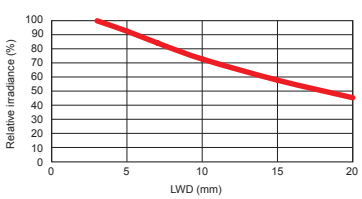
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

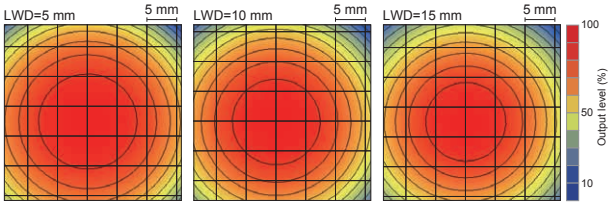
LDM2-50RD2

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

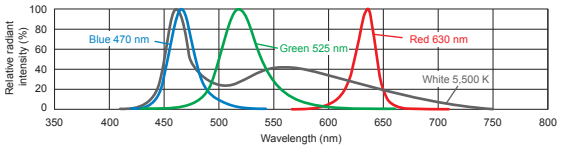
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LDM2-50RD2	Red	24 V / 3.6 W	630 nm	–	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3, CC-ST-1024, PSB, POD*1	100 g
LDM2-50SW2	White		5,500 K				
LDM2-50BL2	Blue		470 nm				
LDM2-50GR2	Green		525 nm				
LDM2-90RD2	Red	24 V / 14 W	630 nm			PD3, PSB, POD*1	500 g
LDM2-90SW2	White	24 V / 18 W	5,500 K				
LDM2-90BL2	Blue		470 nm				
LDM2-90GR2	Green		525 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

LED Properties

Spectral distribution

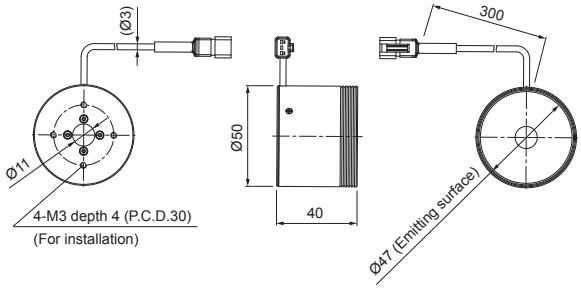


CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

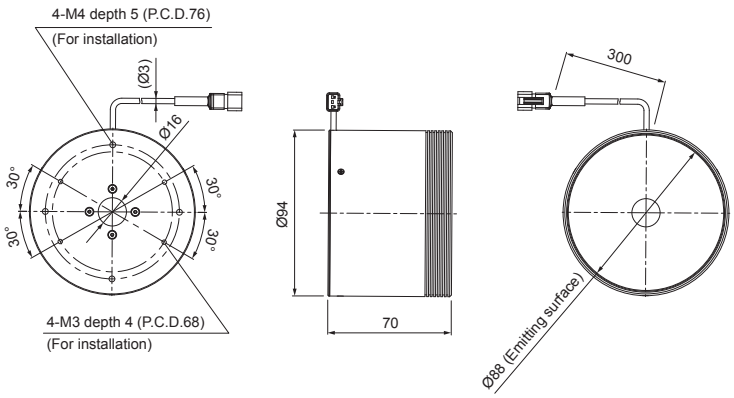
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Dimensions (mm)

LDM2-50RD2/SW2/BL2/GR2



LDM2-90RD2/SW2/BL2/GR2



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Dome Lights
LAV Series

Refer to our website for product details.
CCS LAV ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light evenly using a mechanism that combines a diffused lighting and a coaxial lighting




LAV-80RD2


LAV-80SW2


LAV-80BL2

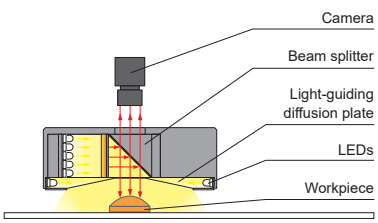

LAV-80GR2

Applications Faulty plating inspection, inspection of a sealed target, inspection for foreign material attached to a glossy surface, character recognition and text inspection of glossy surfaces, dimension measuring of electronic parts, etc.

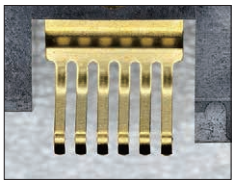
Features

Combines diffused lighting and a coaxial lighting.
Used for uniformly illuminating glossy, curved workpieces.

Example configuration (LAV-80)

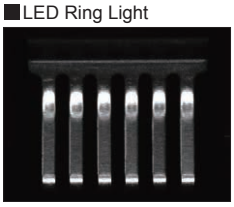


Imaging example: Imaging the appearance of connector pins


Workpiece: Connector pins

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

■LED Ring Light


It is difficult to illuminate the whole thing evenly to form an image of the exterior.

■LAV-80RD2


It is possible to illuminate the whole thing evenly to form an image of the exterior.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LAV-80RD2	Red	24 V / 3.6 W	630 nm	–	FCB*2 Straight Cable / FCB-F 4-branch Cable / FCB-W*3 2-branch Cable / FRCB Robot Cable	PD3 / POD*1	190 g
LAV-80SW2	White	24 V / 5.0 W	5,500 K				
LAV-80BL2	Blue		470 nm				
LAV-80GR2	Green		525 nm				

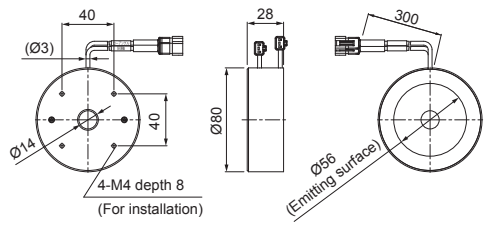
Use a 2-channel Control Unit.

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *3 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

LAV-80RD2/SW2/BL2/GR2



The emitting surface for the LAV-80SW2/BL2/GR2 is Ø54.

Illumination part	Power consumption
Coaxial illumination part	Red: 1.0 W White/Blue/Green: 1.6 W
Diffused illumination part	Red: 2.6 W White/Blue/Green: 3.4 W

If adjusting the intensity for each part separately, use a 2-channel Control Unit.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Provides diffused light evenly using a mechanism that combines a diffused lighting, coaxial lighting, and low-angle lighting





PDM-150-15GR2

PDM-150-15BL2



PDM-150-15SW2

PDM-150-15RD2

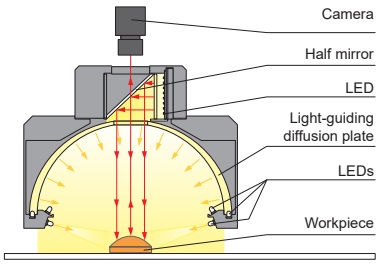
Applications Faulty plating inspection, inspection of a sealed target, inspection for foreign material attached to a glossy surface, character recognition and text inspection of glossy surfaces, dimension measuring of electronic parts, etc.

Features

This Light Unit combines the three types: dome lighting, low-angle lighting, and coaxial lighting. It illuminates the workpiece with uniform diffused light.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (PDM-150-15)

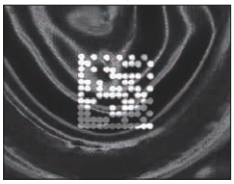


Imaging example: Imaging 2-D codes



Workpiece: Contact lens packages

■LED Ring Light



It is difficult to determine the 2-D code due to the glossy and wavy surface.

■PDM-150-15RD2



It is possible to determine the 2-D code by evenly illuminating the surface.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Unit	Weight
PDM-150-15RD2	Red	24 V / 18 W	630 nm	–	FCB*1 Straight Cable / FCB-F 4-branch Cable	PD3	1,140 g
PDM-150-15SW2	White	24 V / 22 W	5,500 K				1,170 g
PDM-150-15BL2	Blue		470 nm		FCB-W*2 2-branch Cable / FRCB Robot Cable		1,140 g
PDM-150-15GR2	Green		525 nm				

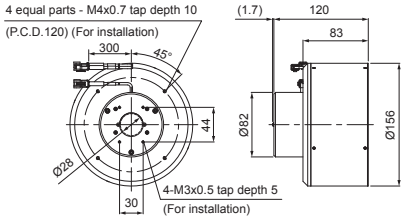
Use a 3-channel Control Unit.

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*2 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

PDM-150-15RD2/SW2/BL2/GR2



Illumination part	Power consumption
Coaxial illumination part	Red: 3.1 W, White: 2.2 W, Blue/Green: 2.7 W
Dome illumination part	Red: 10.2 W, White: 14 W, Blue/Green: 13 W
Low-angle illumination part	Red: 4.6 W, White/Blue/Green: 6.1 W

If adjusting the intensity for each part separately, use a 3-channel Control Unit.

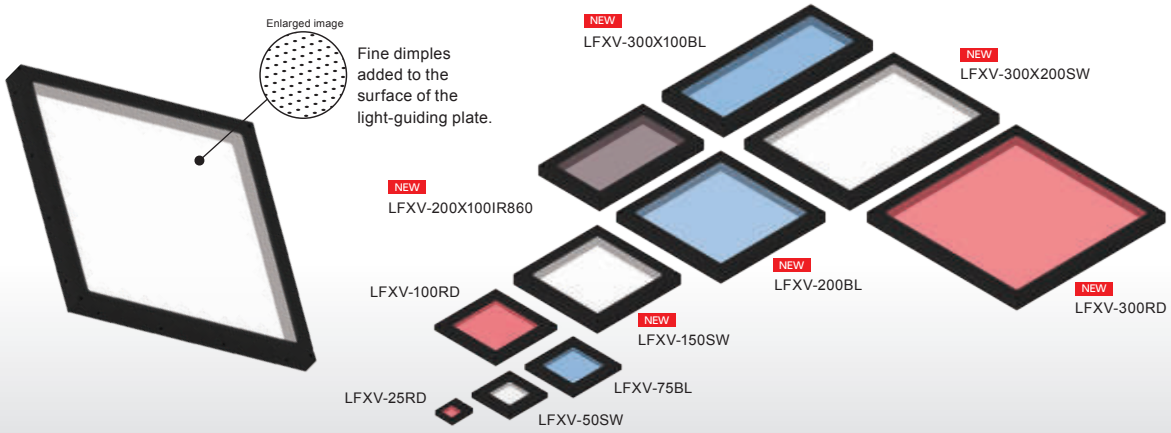
You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Flat Dome Lights
LFXV Series

Refer to our website for product details.
CCS LFXV ▶ Search
You can also use your smartphone or cell phone.
For quick access.

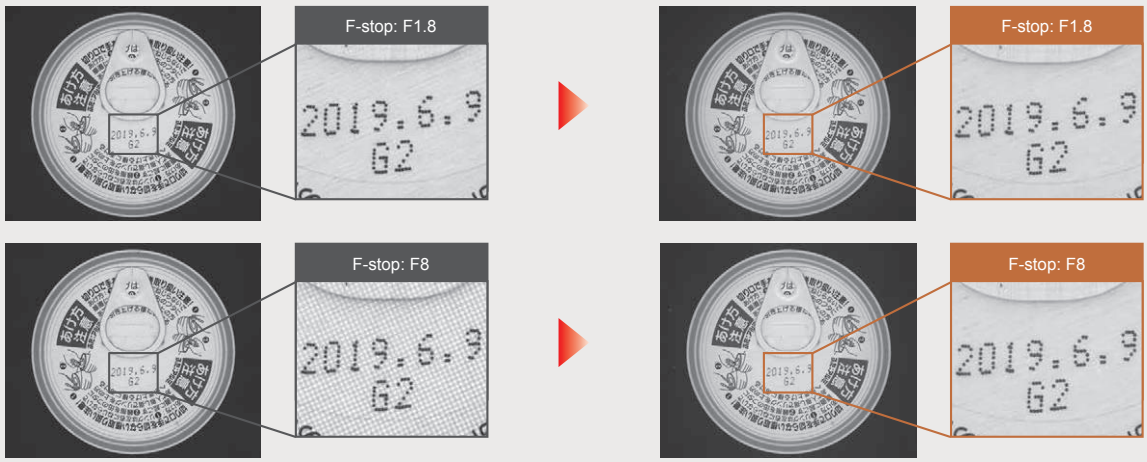
Recreates the effect of dome lights using thin case design



Applications Appearance or text inspection on metal surfaces, curved surfaces, or uneven surfaces; mixed foreign material inspection of food and medicine; character recognition of packaging; inspection of text on can surfaces; etc.

Bright and Clear Field of View Using New Light-Guiding Plate

Reduces image irregularities and moire due to the surface dot pattern.
For details about “moire due to the surface dot pattern”, refer to *How to Use the LFX3 to Capture a Perfect Image* on P.114.



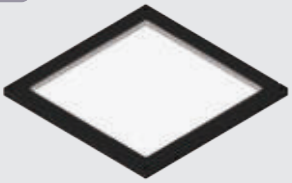
Note: Image irregularities and moire may occur, depending on the capture conditions and the type of the image processing.
Imaging environment: 5-megapixel camera (effective pixels: 2448x2048, 3.45x3.45 µm, 2/3 inch), 5M-compatible lens (focal length: 25 mm, F1.8-16), Distance between the camera and the workpiece: 290 mm, Distance between the Light Unit and the workpiece: 20 mm
The data included is for reference only. Actual values may vary.

Spots of light may appear due to foreign objects in the light-guiding plate, but this falls within our testing standards and is not a product defect.

Custom Orders

E.g: Different shape

Format/ material — Created a Light Unit that has an enlarged emitting surface.



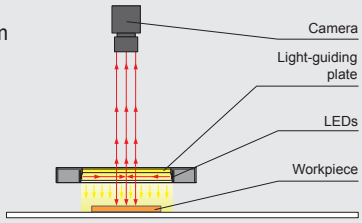
External/ internal diameter | Wavelength/ color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Please contact your CCS sales representative.

Example Configuration

Fine dimples added to the surface of the light-guiding plate enable the uniform illumination of workpieces.

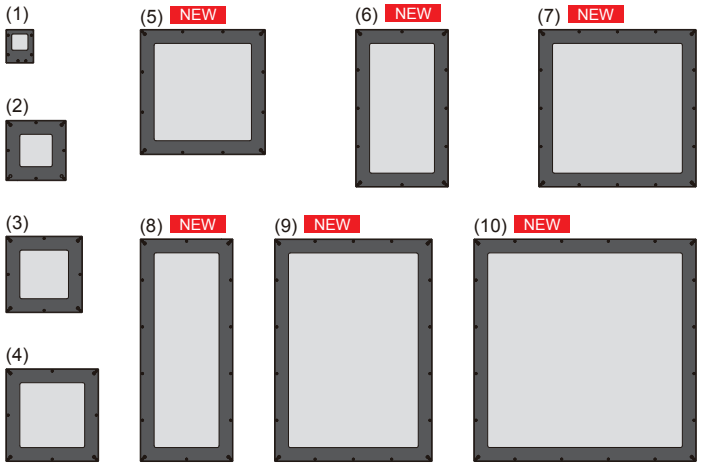
LFXV-100



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Total of 40 Models in 10 Different Sizes

Total of 40 models with a lineup of four different light colors in 10 different light emitting surface sizes.
Large sizes and rectangular sizes now available.



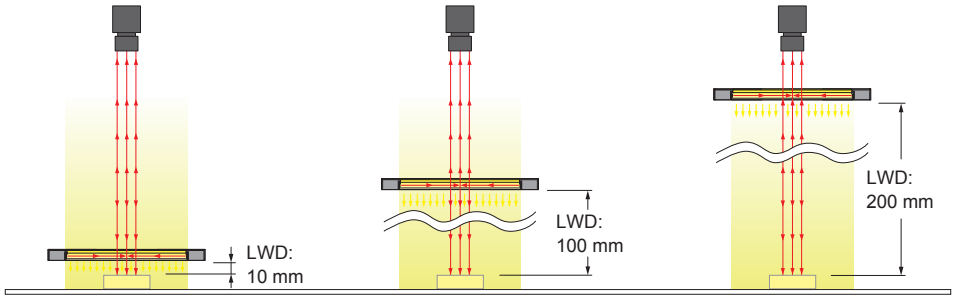
NO.	Series	Light emitting surface size (mm)	LED color
(1)	LFXV-25	25x25	Red/White/ Blue/Infrared
(2)	LFXV-50	50x50	
(3)	LFXV-75	75x75	
(4)	LFXV-100	100x100	
(5)	NEW LFXV-150	150x150	
(6)	NEW LFXV-200X100	200x100	
(7)	NEW LFXV-200	200x200	
(8)	NEW LFXV-300X100	300x100	
(9)	NEW LFXV-300X200	300x200	
(10)	NEW LFXV-300	300x300	

Suitable for a Wide Range of Applications

Recreates the effect of Dome Lights when used close to the workpiece.
Recreates the effect of Coaxial Lights when used further from the workpiece.

Imaging Comparison

Changing the distance between the light and the workpiece (LWD) highlights different parts of the workpiece.



Workpiece



Cans



At LWD of 10 mm, the whole surface of the workpiece is illuminated uniformly. The bumps are eliminated from the image.



At LWD of 100 mm, the bumps and pull tab are captured.



At LWD of 200 mm, the bumps and pull tab are emphasized.

Workpiece



Plastic containers



At LWD of 10 mm, the whole surface of the workpiece is illuminated uniformly. This allows the outer edge of the container and the printed text to be imaged.



At LWD of 100 mm, the printed text and shrink film are captured.



At LWD of 200 mm, the shrink film is emphasized.

LWD is the distance between the lighting fixture and the workpiece. The data included is for reference only. Actual values may vary.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LFXV Series



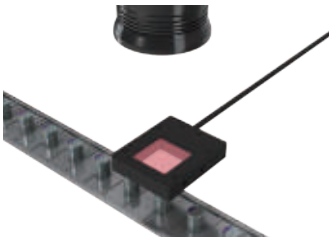
Refer to our website for product details.

CCS LFXV ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Imaging Example: Imaging the Appearance of Capacitors



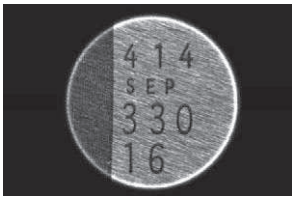
Description	Visual inspection
Workpiece	Capacitors
Conventional light	LED Diffusion Ring Light
New light	LFXV-25RD
Result	Improves the uniformity

Workpiece image



Capacitors

LED Diffusion Ring Light



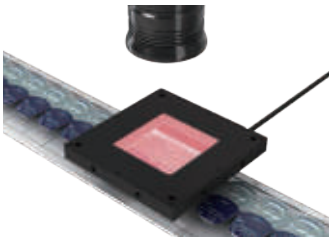
Hairline finishing on the surface makes it difficult to read the printed text.

LFXV-25RD



The hairline finishing is no longer visible, making it possible to read the printed text.

Imaging Example: Imaging the Appearance of Contact Lens Packages



Description	Visual inspection
Workpiece	Contact lens packages
Conventional light	LED Ring Light
New light	LFXV-50RD
Result	Improves the uniformity

Workpiece image



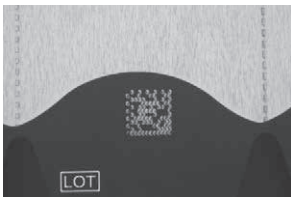
Contact lens packages

LED Ring Light



It is difficult to determine the 2-D code due to the glossy and wavy surface.

LFXV-50RD



It is possible to determine the 2-D code by evenly illuminating the surface.

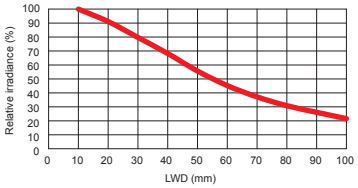
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

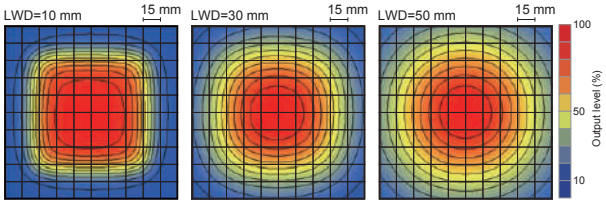
LFXV-100RD

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



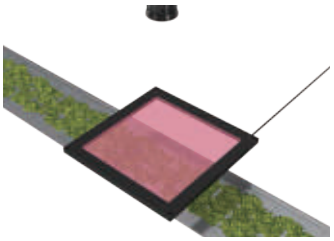
Uniformity (Relative irradiance)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging of Foreign Materials in Tea Leaves



Description	Foreign materials inspection
Workpiece	Tea leaves
Conventional light	LED Dome Light
New light	LFXV-200IR860: Infrared Type
Result	Emphasizes foreign material

Workpiece image



Tea leaves

LED Dome Light



It is difficult to image foreign objects using white light.

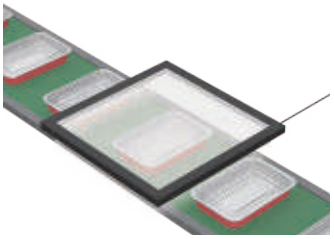
LFXV-200IR860



Foreign objects can be imaged using infrared light.

The foreign object was intentionally added for image sampling purposes.

Imaging Example: Imaging the Appearance of Food Packages



Description	Visual inspection
Workpiece	Food package
Conventional light	LED Dome Light
New light	LFXV-300SW
Result	Improves the uniformity

Workpiece image



Food packages

LED Dome Light



Shadows from the lighting aperture obscure the center of the container, making imaging difficult.

NEW LFXV-300SW (White)



Uniformly lights the container all the way to the bottom, enabling imaging of the container appearance.

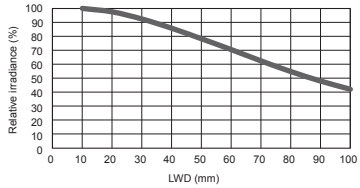
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

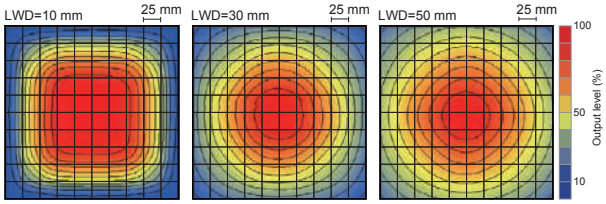
LFXV-200SW

Relative irradiance graph (LWD characteristics) *1 *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LFXV Series



Refer to our website for product details.

CCS LFXV ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFXV-25RD	Red	24 V / 1.2 W	630 nm	–	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 CC-ST-1024 PSB POD*1	80 g
LFXV-25SW	White	24 V / 1.3 W	5,500 K				
LFXV-25BL	Blue	24 V / 1.2 W	465 nm				
LFXV-25IR860	Infrared	24 V / 1.2 W	855 nm				
LFXV-50RD	Red	24 V / 9.1 W	630 nm			PD3 CC-ST-1024 PSB POD*1	190 g
LFXV-50SW	White	24 V / 9.9 W	5,500 K				
LFXV-50BL	Blue	24 V / 9.3 W	465 nm				
LFXV-50IR860	Infrared	24 V / 5.7 W	855 nm				
LFXV-75RD	Red	24 V / 14 W	630 nm			PD3 PSB POD*1	290 g
LFXV-75SW	White	24 V / 15 W	5,500 K				
LFXV-75BL	Blue	24 V / 14 W	465 nm				
LFXV-75IR860	Infrared	24 V / 12 W	855 nm				
LFXV-100RD	Red	24 V / 16 W	630 nm			PD3 PSB POD*1	400 g
LFXV-100SW	White	24 V / 20 W	5,500 K				
LFXV-100BL	Blue	24 V / 19 W	465 nm				
LFXV-100IR860	Infrared	24 V / 12 W	855 nm				
LFXV-150RD	Red	24 V / 28 W	630 nm			PD3 PSB POD*1	870 g
LFXV-150SW	White	24 V / 30 W	5,500 K				
LFXV-150BL	Blue	24 V / 28 W	465 nm				
LFXV-150IR860	Infrared	24 V / 17 W	855 nm				
LFXV-200X100RD	Red	24 V / 23 W	630 nm			PD3 PSB POD*1	870 g
LFXV-200X100SW	White	24 V / 30 W	5,500 K				
LFXV-200X100BL	Blue	24 V / 28 W	465 nm				
LFXV-200X100IR860	Infrared	24 V / 17 W	855 nm				
LFXV-200RD	Red	24 V / 31 W	630 nm			PD3 PSB*2 POD*1 *2 Only infrared can be used.	1,300 g
LFXV-200SW	White	24 V / 40 W	5,500 K				
LFXV-200BL	Blue	24 V / 38 W	465 nm				
LFXV-200IR860	Infrared	24 V / 23 W	855 nm				
LFXV-300X100RD	Red	24 V / 31 W	630 nm			PD3 PSB*2 POD*1 *2 Only infrared can be used.	1,300 g
LFXV-300X100SW	White	24 V / 40 W	5,500 K				
LFXV-300X100BL	Blue	24 V / 38 W	465 nm				
LFXV-300X100IR860	Infrared	24 V / 23 W	855 nm				
LFXV-300X200RD	Red	24 V / 38 W	630 nm			PD3 PSB*2 POD*1 *2 Only infrared can be used.	1,600 g
LFXV-300X200SW	White	24 V / 50 W	5,500 K				
LFXV-300X200BL	Blue	24 V / 47 W	465 nm				
LFXV-300X200IR860	Infrared	24 V / 29 W	855 nm				
LFXV-300RD	Red	24 V / 46 W	630 nm			PD3 POD*1	2,000 g
LFXV-300SW	White	24 V / 60 W	5,500 K				
LFXV-300BL	Blue	24 V / 56 W	465 nm				
LFXV-300IR860	Infrared	24 V / 34 W	855 nm				

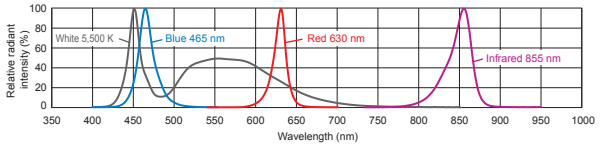
*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*4 The cables with a model name that ends with "-EL2" are not included.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Precautions for Use

Imaging may be affected by dirt or dust on the Light Unit's surface.
Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the Light Unit.

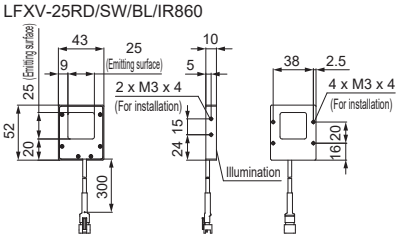
- Do not touch dirt or dust by hand. Remove by blowing air.
- If finger prints get on the Light Unit, wipe them off using a fine soft cloth.
- If the Light Unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- Do not use chemicals such as alcohol to wipe the emitting surface.

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

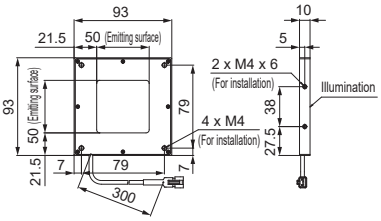
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Dimensions (mm)

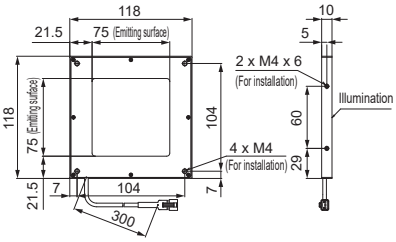
LFXV-25RD/SW/BL/IR860



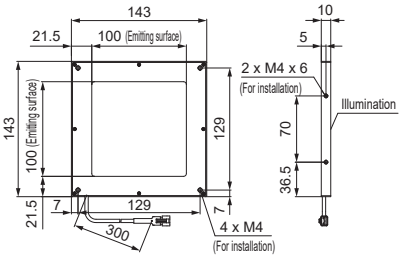
LFXV-50RD/SW/BL/IR860



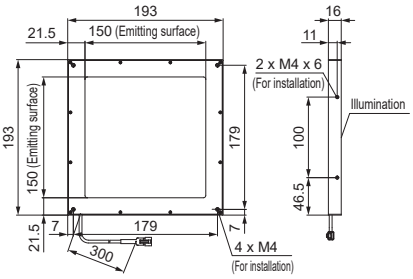
LFXV-75RD/SW/BL/IR860



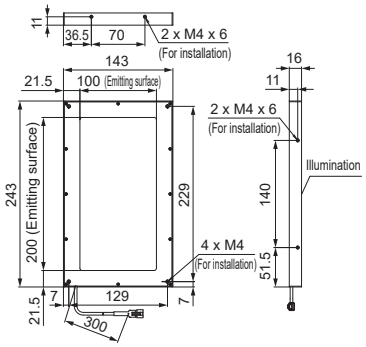
LFXV-100RD/SW/BL/IR860



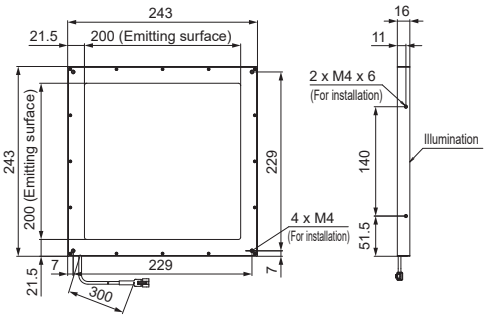
LFXV-150RD/SW/BL/IR860



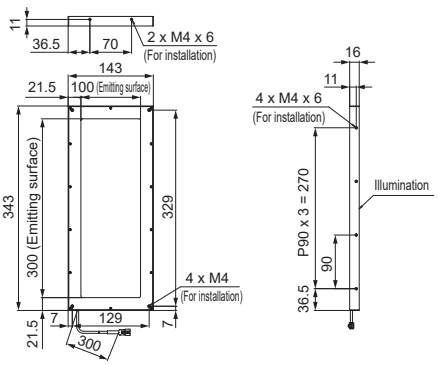
LFXV-200X100RD/SW/BL/IR860



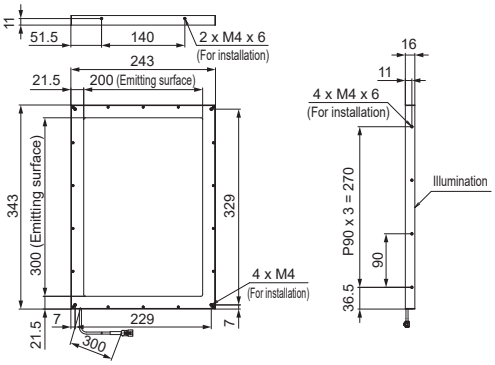
LFXV-200RD/SW/BL/IR860



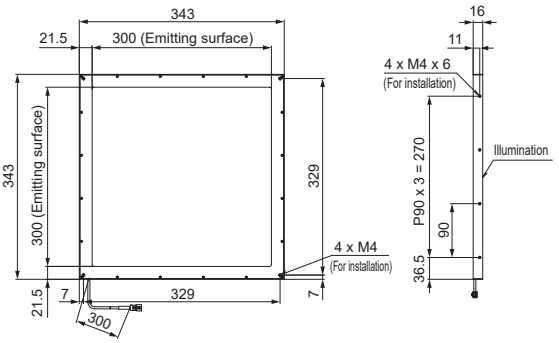
LFXV-300X100RD/SW/BL/IR860



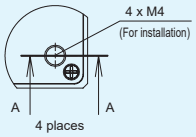
LFXV-300X200RD/SW/BL/IR860



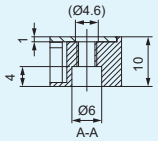
LFXV-300RD/SW/BL/IR860



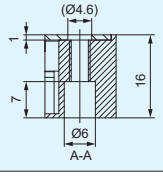
■ Diagrams for 4 x M4 Installation Holes



● LFXV-50/75/100



● LFXV-150/200X100/200/300X100/300X200/300*



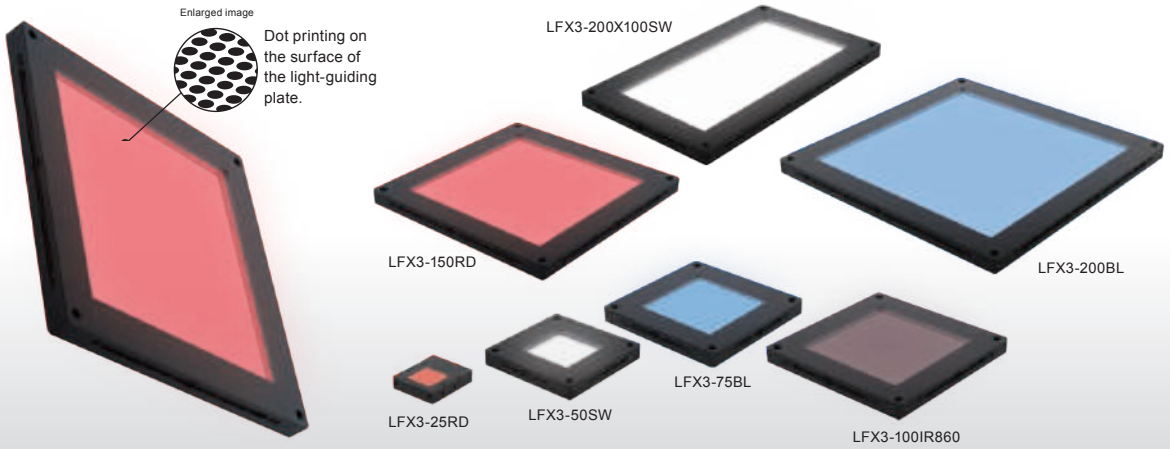
* Use together with the M4 mounting holes on the sides if securing a heavy lighting fixture.

Diffused Lighting

Flat Dome Lights
LFX3 Series

Refer to our website for product details.
CCS LFX3 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

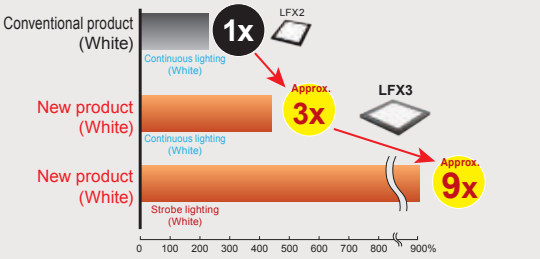
Recreates the effect of a Dome Light with a thin case design



Applications Appearance or text inspection on metal surfaces, curved surfaces, or uneven surfaces; mixed foreign material inspection of food and medicine; character recognition of packaging; inspection of text on can surfaces; etc.

High Output to Match High-Speed Inspection

The LFX3-series Light Units are high-power Flat Dome Lights perfect for fast-moving production lines. The brightness of the white lights has been tripled.





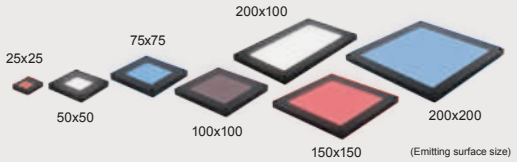
Shutter speed: 1/24,000

Measurement condition: Intensity setting: 100%

Brightness comparison between the LFX2-100SW and LFX3-100SW Light Units.
The data included is for reference only. Actual values may vary.

Expanded Product Lineup: 28 Models in Total

The Light Unit is available in 7 sizes and 4 LED colors: red, white, blue, and infrared.



Series	Emitting surface size (mm)	LED color
LFX3-25 series	25 x 25	Red/White/Blue/IR
LFX3-50 series	50 x 50	
LFX3-75 series	75 x 75	
LFX3-100 series	100 x 100	
LFX3-150 series	150 x 150	
LFX3-200X100 series	200 x 100	
LFX3-200 series	200 x 200	

Designed to prevent falling screws

No worries of screws* loosening and falling. Cover screws are not used on the light projection side of the Light Unit.

* The screws that are used to install the Light Unit are not considered.

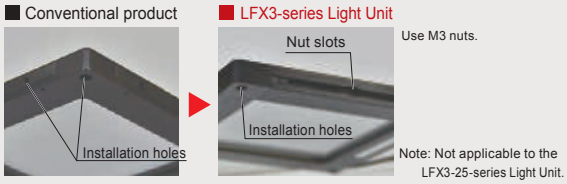
Light projection side



Cover screws are not used on this surface.

Installation Using Nut Slots

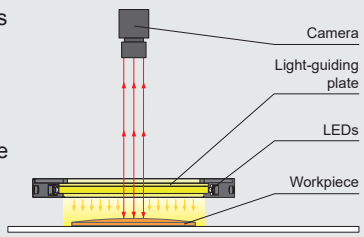
Nut Slots are provided on the sides of the Light Unit for a high degree of freedom in installation to match the environment.



Example Configuration

The dot pattern on the surface of the light-guiding plate controls the diffusion and transmission of light, making it possible to emit uniformly diffused light onto the workpiece.

LFX3-100



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Light-Weight Compact Design, Space-Saving Installation, and Wide Field of View

Comparison of images of printed text

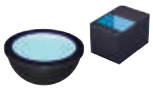
Workpiece: Medicine (Individual packaging)





Flat Dome Light
LFX3-200BL



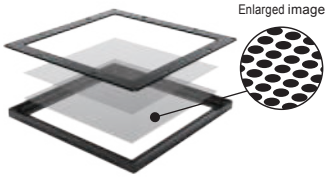


Dome Light HPD2-250BL + **Coaxial Light** LFV3-70BL



Comparison of structures

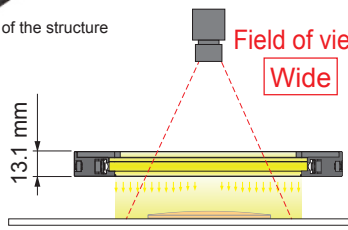
Flat Dome Light (LFX3-200)



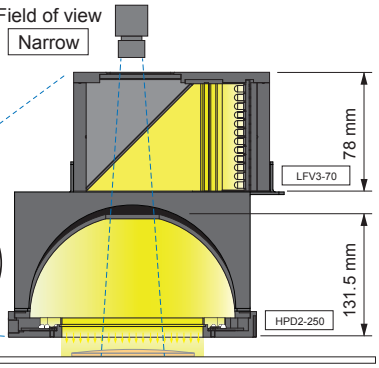
The dot pattern on the surface of the light-guiding plate controls the diffusion and transmission of light.

Conceptual image of the structure

Weight **910g**



Dome Light (HPD2-250) + Coaxial Light (LFV3-70)



Recreating the effect of Dome Lights with a thin case design

How to Use the LFX3 to Capture a Perfect Image

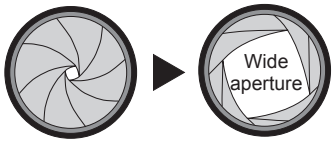
Uneven imaging may occur due to the dot pattern on the emitting surface



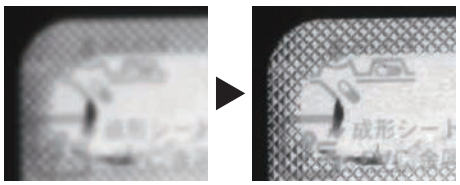
Workpiece: Pharmaceutical product (Blister pack)

Reducing image unevenness caused by the dot pattern

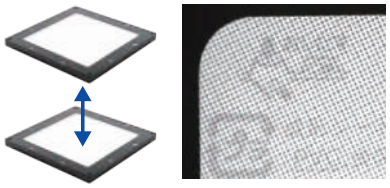
1. Widen the lens aperture slightly more than usual.



2. Focus the lens on the target workpiece.



3. If the dot pattern is visible, adjust the position of the Light Unit.



An example of the dot pattern in an image

4. Finely adjust the light intensity.



Complete!

If there is too much light, increase the camera's shutter speed.

Ambient light may reflect off the Light Unit surface or workpiece surface, affecting the imaging

To prevent effects from ambient light:

- Equip a lens filter to the lens.
- Prevent ambient light from entering with a hood or cover.
- Increase the shutter speed, or slightly increase the light intensity.

You can inquire using our website.
Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here.
https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LFX3 Series



Refer to our website for product details.

CCS LFX3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

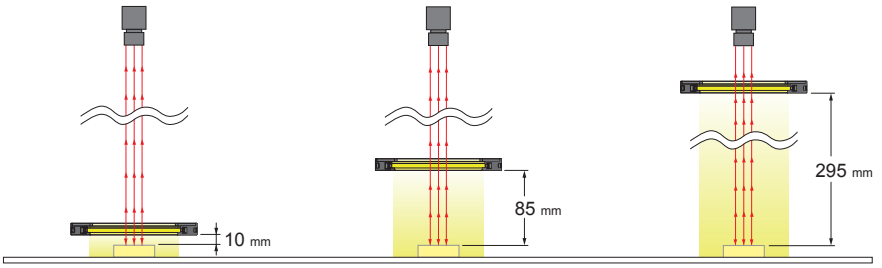
Supports a Wide Variety of Applications from Low Angles to High Angles

Imaging comparison: top of a can
Changing the distance between the Light Unit and the workpiece (LWD) allows for imaging to fit your purpose.

■ Workpiece image



Canned food





With illumination from LWD 10 mm, the whole surface of the workpiece can be illuminated evenly and the bumps are erased from the image.



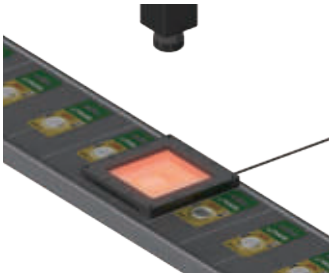
With illumination from LWD 85 mm, the bumps of the pull tab alone can be emphasized in the image.



With illumination from LWD 295 mm, all of the bumps on the workpiece surface can be emphasized in the image.

Imaging environment: LFX3-100RD, f25 lens, WD 365 mm, field of view: 69 mm

Imaging Example: Imaging Characters on Button Cell Batteries



Description	Character recognition
Workpiece	Button cell batteries
Conventional lighting	LED Dome Light
New lighting	LFX3-100RD
Result	Emphasizes the characters

■ Workpiece image



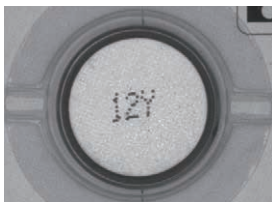
Button cell batteries

■ LED Dome Light



The textured surface makes it impossible to read the printed characters.

■ LFX3-100RD

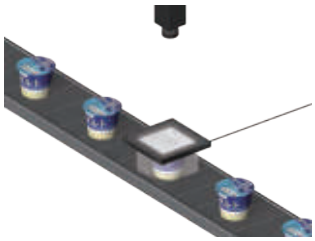


Effects from the textured surface are suppressed so that the characters stand out clearly.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging the Appearance of Containers



Description	Visual inspection
Workpiece	Food (Yogurt containers)
Conventional lighting	LED Ring Light
New lighting	LFX3-100SW
Result	Improves the uniformity

Workpiece image



Food containers

LED Ring Light



It is difficult to image the surface evenly.

LFX3-100SW



The printed patterns on the surface are clearly captured.

Imaging Example: Imaging the Appearance of Cans (Top Surface)

Workpiece image



Cans (Top surface)

LED Flat Dome Light (Blue)



It is difficult to capture the texture of the top surface.

LFX3-100IR860 (Infrared)



The printed ink transmits infrared light so that the texture of the top surface is evenly captured.

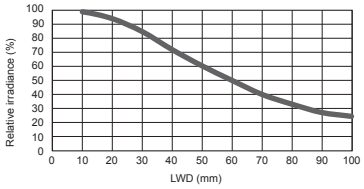
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

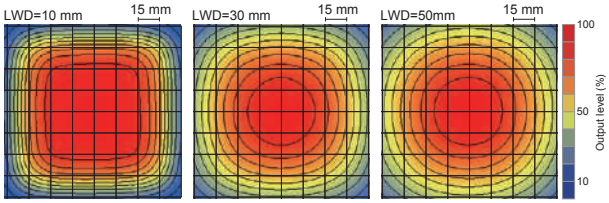
LFX3-100SW

Relative irradiance graph (LWD characteristics) *1 *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LFX3 Series



Refer to our website for product details.

CCS LFX3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

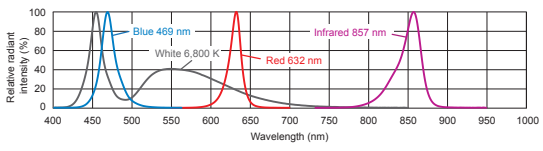
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFX3-25RD	Red	24 V / 1.6 W	632 nm	–	FCB*6 Straight Cable FCB-W*7 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *6 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *7 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 / PSB / POD*1	80 g
LFX3-25SW	White	24 V / 1.5 W	6,800 K				
LFX3-25BL	Blue	24 V / 0.8 W	469 nm				
LFX3-25IR860	Infrared	24 V / 1.4 W	857 nm				
LFX3-50RD	Red	24 V / 13 W	632 nm			PD3 / CC-ST-1024*2 / PSB / POD*1 *2 Can only use blue and infrared.	230 g
LFX3-50SW	White	24 V / 12 W	6,800 K				
LFX3-50BL	Blue	24 V / 6.1 W	469 nm				
LFX3-50IR860	Infrared	24 V / 6.6 W	857 nm				
LFX3-75RD	Red	24 V / 13 W	632 nm			PD3 / CC-ST-1024*3 / PSB / POD*1 *3 Can only use blue.	320 g
LFX3-75SW	White	24 V / 18 W	6,800 K				
LFX3-75BL	Blue	24 V / 9.1 W	469 nm				
LFX3-75IR860	Infrared	24 V / 14 W	857 nm				
LFX3-100RD	Red	24 V / 19 W	632 nm			PD3 / PSB / POD*1	400 g
LFX3-100SW	White	24 V / 23 W	6,800 K				
LFX3-100BL	Blue	24 V / 13 W	469 nm				
LFX3-100IR860	Infrared	24 V / 14 W	857 nm				
LFX3-150RD	Red	24 V / 25 W	632 nm			PD3 / PSB*4 / POD*1 *4 Cannot use white.	620 g
LFX3-150SW	White	24 V / 35 W	6,800 K				
LFX3-150BL	Blue	24 V / 19 W	469 nm				
LFX3-150IR860	Infrared	24 V / 20 W	857 nm				
LFX3-200X100RD	Red	24 V / 28 W	632 nm				620 g
LFX3-200X100SW	White	24 V / 35 W	6,800 K				
LFX3-200X100BL	Blue	24 V / 19 W	469 nm				
LFX3-200X100IR860	Infrared	24 V / 20 W	857 nm				
LFX3-200RD	Red	24 V / 37 W	632 nm			PD3 / PSB*5 / POD*1 *5 Can only use blue and infrared.	910 g
LFX3-200SW	White	24 V / 46 W	6,800 K				
LFX3-200BL	Blue	24 V / 25 W	469 nm				
LFX3-200IR860	Infrared	24 V / 27 W	857 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Precautions for Use

Imaging may be affected by dirt or dust on the Light Unit's surface

Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the Light Unit.

- Do not touch dirt or dust by hand. Remove by blowing air.
- If finger prints get on the Light Unit, wipe them off using a fine soft cloth.
- If the Light Unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- Do not use chemicals such as alcohol to wipe the emitting surface.

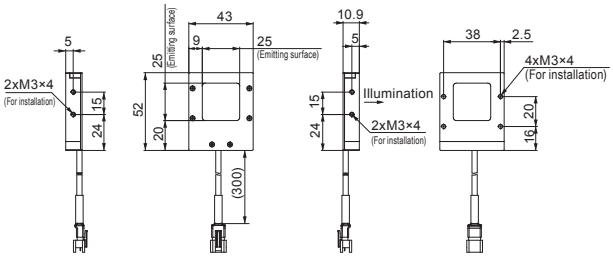
Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

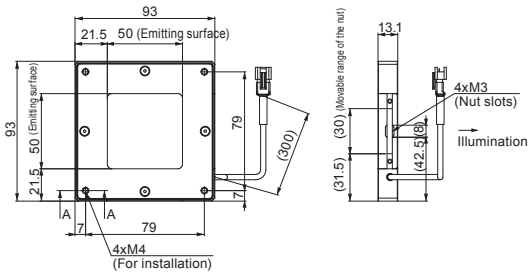
Dimensions (mm)

LFX3-25RD/SW/BL/IR860

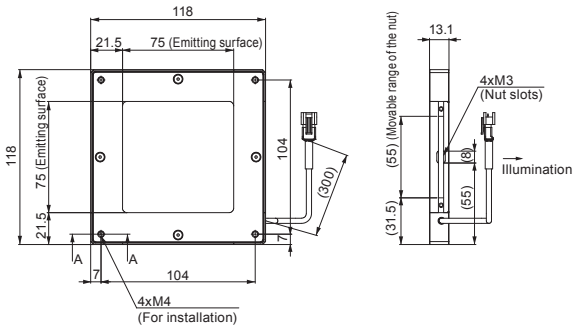


The holes for installation are on the light projection side surface of the Light Unit.
The LFX3-25-series Light Units do not have nut slots.

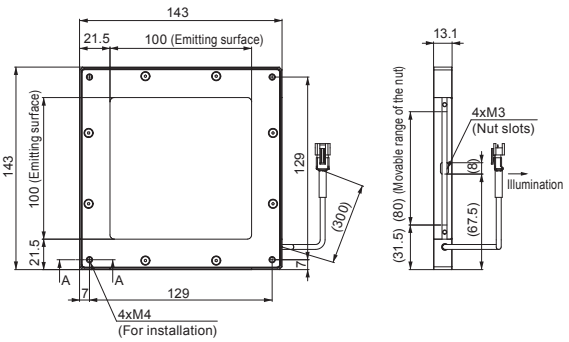
LFX3-50RD/SW/BL/IR860



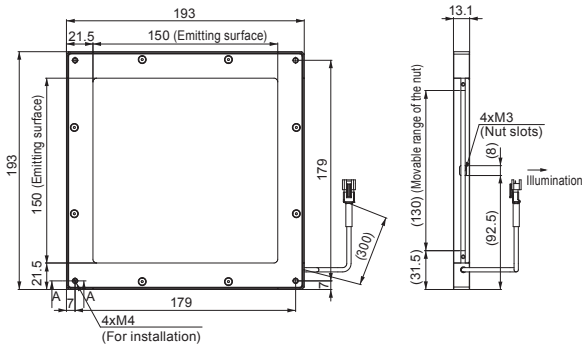
LFX3-75RD/SW/BL/IR860



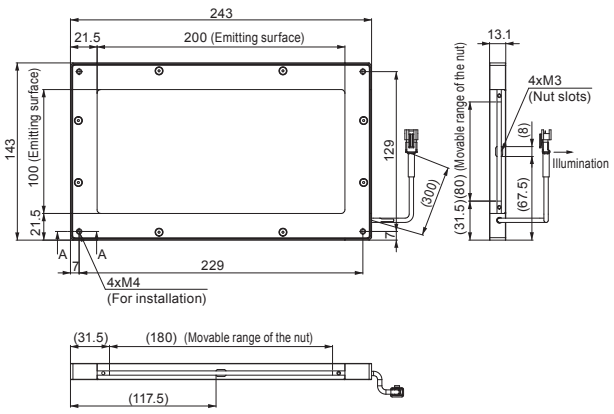
LFX3-100RD/SW/BL/IR860



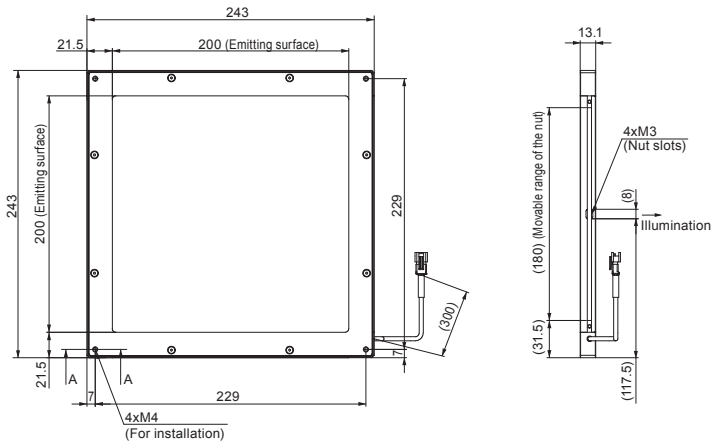
LFX3-150RD/SW/BL/IR860



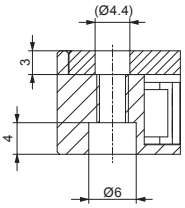
LFX3-200X100RD/SW/BL/IR860



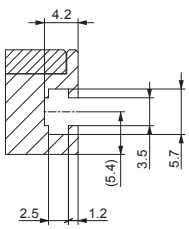
LFX3-200RD/SW/BL/IR860



Detail Diagram for the A-A Surface



Detail Diagram for the M3 Nut Slot



Note: These detail diagrams are not applicable to the LFX3-25-series Light Units.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

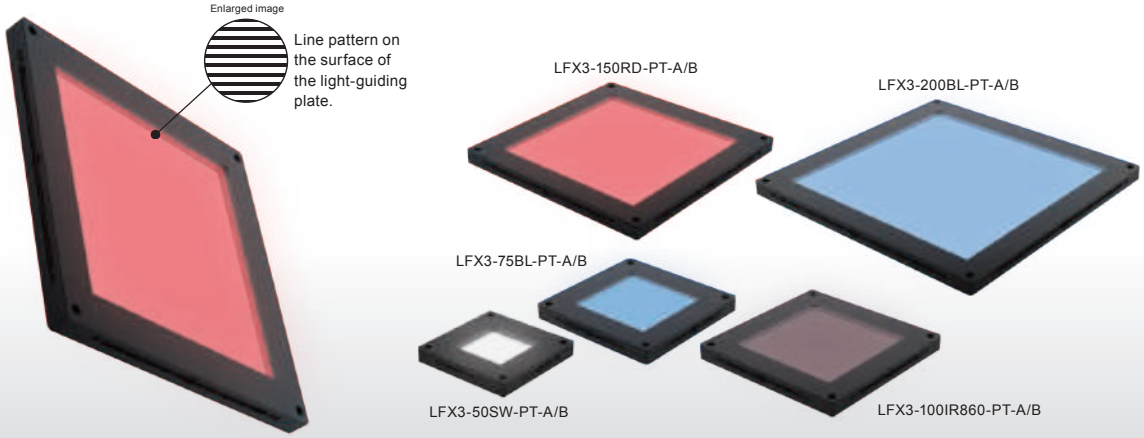
Diffused Lighting

Line Pattern Lights
LFX3-PT Series

Refer to our website for product details.
CCS LFX3 Line Pattern ▶ Search
For quick access.
You can also use your smartphone or cell phone.

A cutting-edge method for inspecting bumps on a reflective surface

Special Order Products



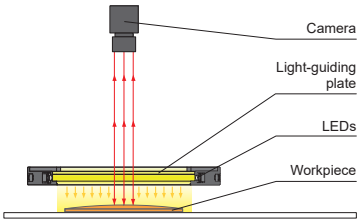
Applications Inspection for bumps on a reflective surface such as mirrors, metal sheets, films, glass parts, liquid crystal parts, etc.

Features

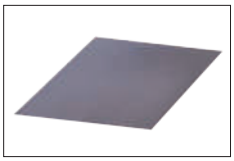
We altered the dot printings on the light-guiding plate surface to a line pattern. This makes it possible to detect gentle bumps on reflective surfaces which are hard to find with Coaxial Lights.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (LFX3-100-PT)



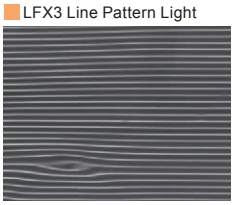
Imaging example: Imaging the appearance of metal plates


Workpiece: Metal plates

LED Coaxial Light


Coaxial Lights illuminate the whole surface evenly, making it difficult to detect the bumps.

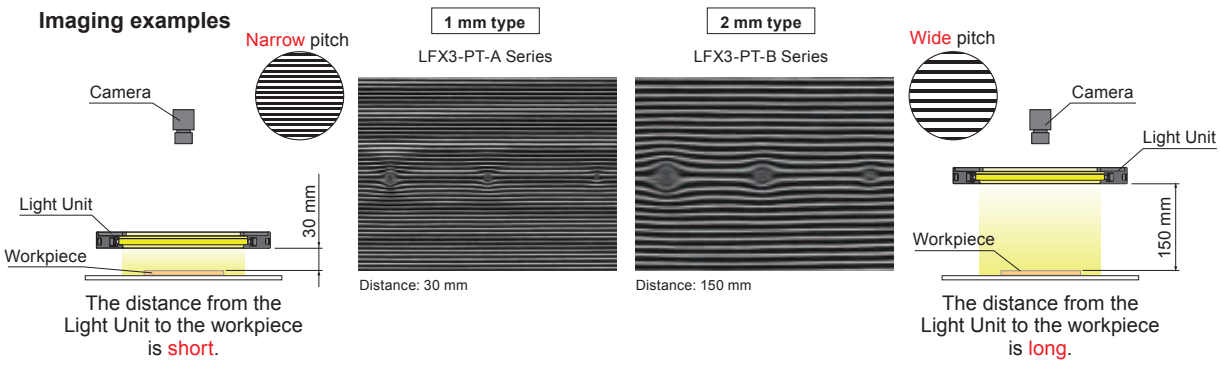
LFX3 Line Pattern Light


Line Pattern Lights highlight the bumps as curved lines.

Two Types of Line Patterns Available

Select one to match your inspection conditions.

Imaging examples



The distance from the Light Unit to the workpiece is short.

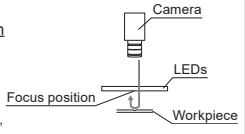
The distance from the Light Unit to the workpiece is long.

To capture a perfect image

Install the LFX3-PT-series Light Unit so that it projects the line pattern onto the inspection object surface. Generally, focus the camera not on the inspection object but on the line pattern of the Light Unit. If the captured image has interference fringes, adjust the settings as follows:

- Open the camera aperture.
- Increase the distance between the Light Unit and the inspection object.

Note: The most appropriate position of the Light Unit and the best imaging conditions, such as the distance between the camera and inspection object, focus position, F-number, and so on, may vary with the type of the inspection. Use the above description only as a guide for adjustment.



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

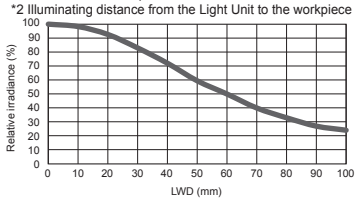
Register to use them.

Data: Relative Irradiance Graph (Representative Example)

LFX3-100SW-PT-A

Relative irradiance graph (LWD Characteristics)*2

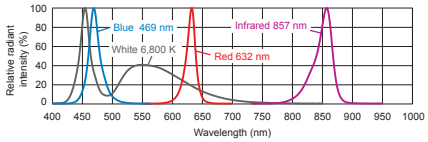
*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



The graph included is for reference only. Results for individual products may vary.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Lineup

	Model name	Type	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
Special Orders	LFX3-50RD-PT-A/-B	1 mm pitch type (the end of the model name: -A) / 2 mm pitch type (the end of the model name: -B)	Red	24 V / 13 W	632 nm	FCB*6 Straight Cable; FCB-W*7 2-branch Cable; FCB-F 4-branch Cable; FRCB Robot Cable	PD3, CC-ST-1024*2, PSB, POD*1	230 g
	LFX3-50SW-PT-A/-B		White	24 V / 12 W	6,800 K			
	LFX3-50BL-PT-A/-B		Blue	24 V / 6.1 W	469 nm			
	LFX3-50IR860-PT-A/-B		Infrared	24 V / 6.6 W	857 nm			
	LFX3-75RD-PT-A/-B		Red	24 V / 13 W	632 nm		PD3, CC-ST-1024*3, PSB, POD*1	320 g
	LFX3-75SW-PT-A/-B		White	24 V / 18 W	6,800 K			
	LFX3-75BL-PT-A/-B		Blue	24 V / 9.1 W	469 nm			
	LFX3-75IR860-PT-A/-B		Infrared	24 V / 14 W	857 nm			
	LFX3-100RD-PT-A/-B		Red	24 V / 19 W	632 nm		PD3, PSB, POD*1	400 g
	LFX3-100SW-PT-A/-B		White	24 V / 23 W	6,800 K			
	LFX3-100BL-PT-A/-B		Blue	24 V / 13 W	469 nm			
	LFX3-100IR860-PT-A/-B		Infrared	24 V / 14 W	857 nm			
	LFX3-150RD-PT-A/-B		Red	24 V / 25 W	632 nm		PD3, PSB*4, POD*1	620 g
	LFX3-150SW-PT-A/-B		White	24 V / 35 W	6,800 K			
	LFX3-150BL-PT-A/-B		Blue	24 V / 19 W	469 nm			
	LFX3-150IR860-PT-A/-B		Infrared	24 V / 20 W	857 nm			
	LFX3-200RD-PT-A/-B		Red	24 V / 37 W	632 nm		PD3, PSB*5, POD*1	910 g
	LFX3-200SW-PT-A/-B		White	24 V / 46 W	6,800 K			
	LFX3-200BL-PT-A/-B		Blue	24 V / 25 W	469 nm			
	LFX3-200IR860-PT-A/-B		Infrared	24 V / 27 W	857 nm			

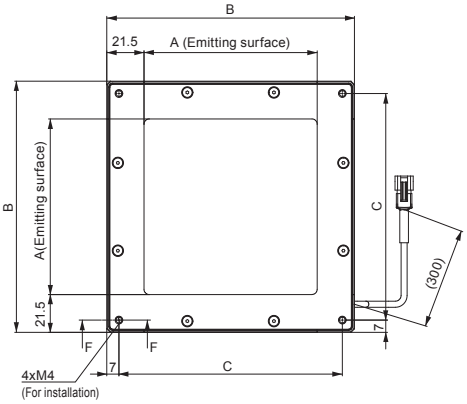
*2 Can only use blue and infrared.
*3 Can only use blue.
*4 Cannot use white.
*5 Can only use blue and infrared.
*6 The cables with a model name that ends with “-ME7”, “-EL2”, “-PF”, or “-PF-EL9” are not included.
*7 The cables with a model name that ends with “-EL2” are not included.

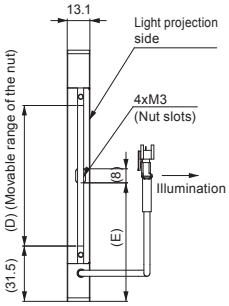
Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Dimensions (mm)

LFX3-PT-A/-B Series (Common for all colors)

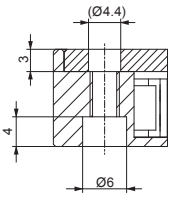




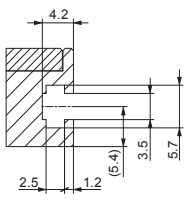
Dimensions by size (mm)

		Dimensions				
		A	B	C	D	E
Emitting surface size	50x50	50	93	79	30	42.5
	75x75	75	118	104	55	55
	100x100	100	143	129	80	67.5
	150x150	150	193	179	130	92.5
	200x200	200	243	229	180	117.5

Detail Diagram for the F-F Surface



Detail Diagram for the M3 Nut Slot



Imaging may be affected by dirt or dust on the Light Unit's surface. Be careful when handling the emitting surface and do not let dirt, dust, or fingerprints get on the Light Unit.
- Do not touch dirt or dust by hand. Remove by blowing air.
- If the Light Unit is very dirty, use a diluted neutral cleaner and a fine soft cloth to lightly wipe it down.
- If finger prints get on the Light Unit, wipe them off using a fine soft cloth.
- Do not use chemicals such as alcohol to wipe the emitting surface.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here. https://www.ccs-grp.com/contact/

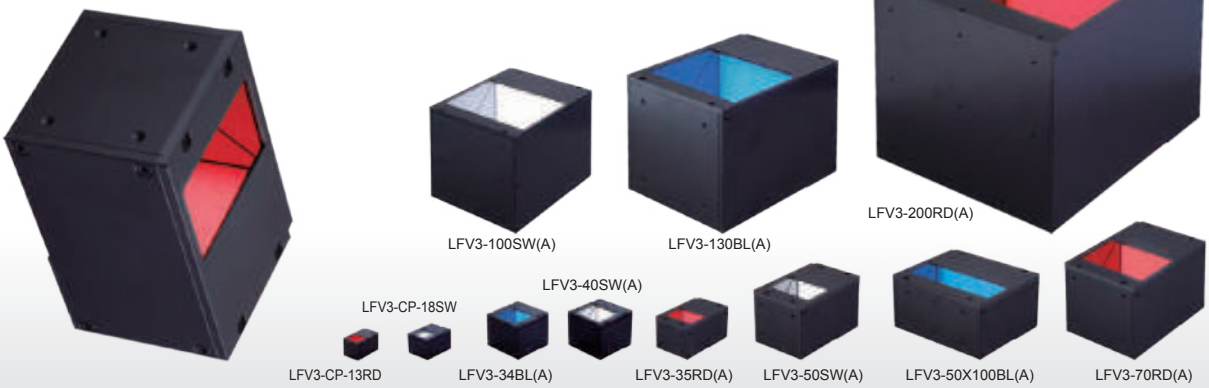
LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Diffused Lighting

Coaxial Lights
LFV3 Series

Refer to our website for product details.
CCS LFV3 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light evenly from the same axis as the camera



For information on change in model names, refer to P.123.

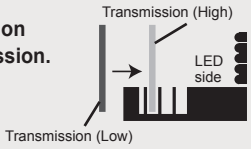
Applications Inspection for fault, damage, scratches, or dents on glossy surfaces or mirrors; pattern inspection on printed circuit boards; dimension measuring of glass; inspection for damage and dents on resin molded products; etc.

Freely Customize the Diffusion

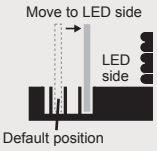
Customize the diffusion

Diffusion plate status	Result
Change the transmission from (high) to (low)	Increased uniformity
Change the installation position to the LED side	Emphasized directionality

1) Prepared two types of diffusion plates with different transmission.
Replace the diffusion plate to change the transmission.



2) The installation position of the diffusion plate can be adjusted.
Change the position to achieve various imaging effects.



LFV3-CP series

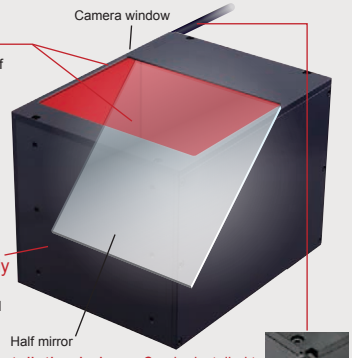
Replacing the half-mirror with a beam splitter increased accuracy. It is perfect for tiny workpieces and environments with limited installation space.


LFV3-CP-13SW

Supports High-Resolution Cameras

Highly-accurate optical glass is used for the camera window and the half-mirror. This allows for stable imaging when using high-resolution cameras.

LFV3 series, a Coaxial Light with improved quality



Uses optical glass
The camera window and half mirror are made of optical glass.

Expanded area for the camera window
By making the camera window wider, we ensured a larger field of vision.

Used an aluminum body
Used aluminum alloy to improve heat dissipation and achieve a durable body.

Increased Light Unit installation holes
We increased the number of installation holes for the Light Unit.
Various installation directions are supported.

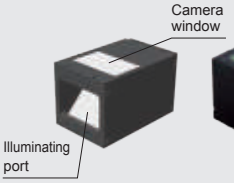
Can be installed to the cable surface
The cable can be bent flat in relation to the installation surface.

This description excludes the LFV3-CP-13 series and the LFV3-CP-18 series.

Custom Orders

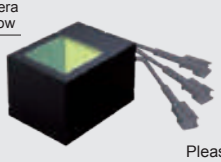
E.g.: Different shape

Format/ material — Created a Light Unit that changed the illuminating port from vertical to horizontal



E.g.: Different color

Wavelength/ color — Creating a full color (RGB) Light Unit



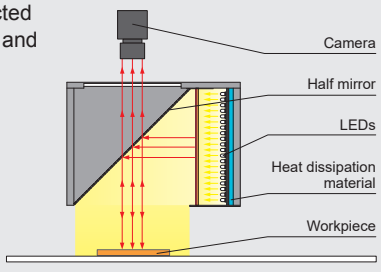
External/ internal diameter | Wavelength/ color | Increase output | Cable length | Illuminating angle | Format/ material | Connector format | Installation/ mounting | Etc.

Please contact your CCS sales representative.

Example Configuration

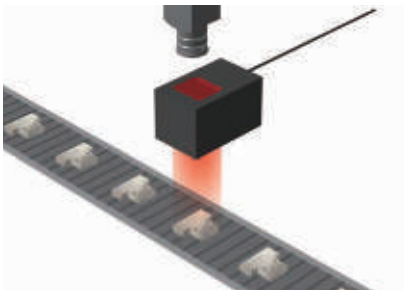
Diffused light from the LEDs is reflected on the half mirror and directed vertically downward on the same axis as the camera axis.

LFV3-100



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Imaging Example: Imaging Engraved Text on Metal Connector Hoods



Description	Character recognition
Workpiece	Connector hoods
Conventional lighting	LED Bar Light
New lighting	LFV3-50RD(A)
Result	Emphasizes the engraved text

■ Workpiece image



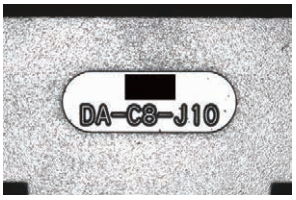
Metal connector hoods

■ LED Bar Light



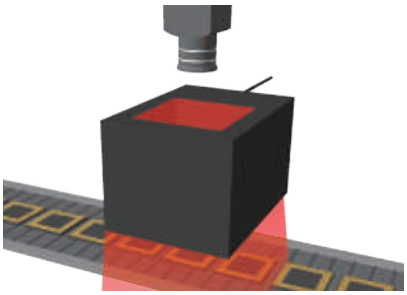
It is difficult to read the text engraved on the surface.

■ LFV3-50RD(A)



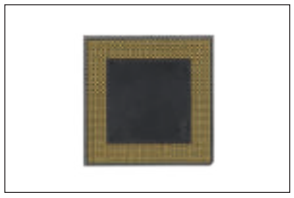
Effect from the surface unevenness is reduced and a clear image of the engraved text can be made.

Imaging Example: Imaging Through-Holes on Circuit Boards



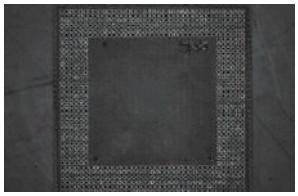
Description	Visual inspection
Workpiece	Circuit boards
Conventional lighting	LED Ring Light
New lighting	LFV3-100RD(A)
Result	Improved uniformity

■ Workpiece image



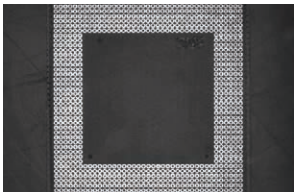
Circuit boards

■ LED Ring Light



With a Ring Light, it is difficult to form an image of the difference between the foundation and the through hole.

■ LFV3-100RD(A)



It is possible to form a clear image of the difference between the foundation and the through hole.

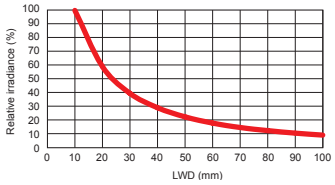
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

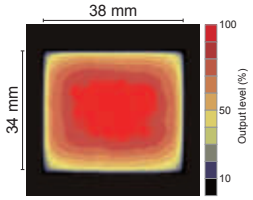
LFV3-35RD(A)

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative radiance)



LFV3 Series



Refer to our website for product details.

CCS LFV3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

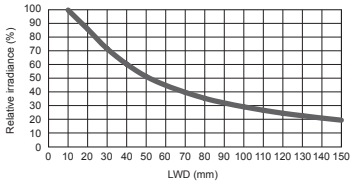
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

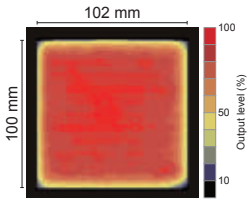
LFV3-100SW(A)

Relative irradiance graph (LWD characteristics) *2 *1

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative radiance)



Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFV3-34RD(A)	Red	24 V / 3.7 W	635 nm	–	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD3 CC-ST-1024 PSB POD*1	80 g
LFV3-34SW(A)	White	24 V / 3.2 W	6,000 K				
LFV3-34BL(A)	Blue		470 nm				
LFV3-35RD(A)	Red	24 V / 3.1 W	630 nm	Diffusion plate Polarizing plate Light control film Bracket		PD3 CC-ST-1024 PSB POD*1	175 g
LFV3-35SW(A)	White	24 V / 3.7 W	6,500 K				
LFV3-35BL(A)	Blue	24 V / 3.1 W	460 nm				
LFV3-40RD(A)	Red	24 V / 4.6 W	635 nm	–			100 g
LFV3-40SW(A)	White		6,000 K				
LFV3-40BL(A)	Blue		470 nm				
LFV3-50RD(A)	Red	24 V / 8.1 W	630 nm	Diffusion plate Polarizing plate Light control film Bracket		PD3 CC-ST-1024*2 PSB POD*1 *2 Can only use red and blue.	335 g
LFV3-50SW(A)	White	24 V / 11 W	6,500 K				
LFV3-50BL(A)	Blue	24 V / 9.1 W	460 nm				
LFV3-50X100RD(A)	Red	24 V / 17 W	630 nm	Diffusion plate Polarizing plate Light control film			530 g
LFV3-50X100SW(A)	White	24 V / 20 W	6,500 K				
LFV3-50X100BL(A)	Blue	24 V / 17 W	460 nm				
LFV3-70RD(A)	Red	24 V / 13 W	630 nm	Diffusion plate Polarizing plate Light control film Bracket		PD3 PSB POD*1	620 g
LFV3-70SW(A)	White	24 V / 19 W	6,500 K				
LFV3-70BL(A)	Blue	24 V / 16 W	460 nm				
LFV3-100RD(A)	Red	24 V / 22 W	630 nm				1,060 g
LFV3-100SW(A)	White	24 V / 27 W	6,500 K				
LFV3-100BL(A)	Blue		460 nm				
LFV3-130RD(A)	Red	24 V / 31 W	630 nm	Diffusion plate Polarizing plate Light control film		PD3 POD*1	1,750 g
LFV3-130SW(A)	White	24 V / 46 W	6,500 K				
LFV3-130BL(A)	Blue	24 V / 38 W	460 nm				
LFV3-200RD(A)	Red	24 V / 43 W	630 nm				4,350 g
LFV3-200SW(A)	White	24 V / 60 W	6,500 K			PD3 POD*1	
LFV3-200BL(A)	Blue	24 V / 53 W	460 nm				
LFV3-CP-13RD	Red	24 V / 2.1 W	635 nm	–			37 g
LFV3-CP-13SW	White	24 V / 2.3 W	6,000 K				
LFV3-CP-13BL	Blue	24 V / 1.3 W	470 nm			PD3 CC-ST-1024 PSB POD*1	
LFV3-CP-18RD	Red	24 V / 3.3 W	635 nm				70 g
LFV3-CP-18SW	White	24 V / 4.1 W	6,000 K				
LFV3-CP-18BL	Blue	24 V / 3.4 W	470 nm				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Change in model names

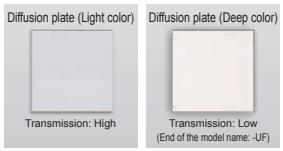
The suffix "(A)" has been added to the end of several model names, e.g. "LFV3-34RD" has been changed to "LFV3-34RD(A)".

Reason	Effect on functions and performance	Relevant models (applicable to all colors)
Due to part manufacturer's circumstances, some optical parts were expected to become difficult to obtain. CCS has changed these parts with those of comparable performance.	The functions and performance of the Light Units have not been affected.	LFV3-34(A) / LFV3-35(A) / LFV3-40(A) / LFV3-50(A) / LFV3-50X100(A) / LFV3-70(A) / LFV3-100(A) / LFV3-130(A) / LFV3-200(A)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

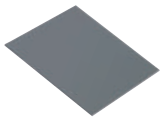
Register to use them.

Options

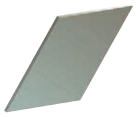


Replace the default diffusion plate to change the transmission.

When selecting, be aware that the default diffusion plate varies based on the emitted color.



Use with a polarizing filter to remove the light's surface reflection.



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

Diffusion plate

Model name	Applicable Light Unit (Common for all colors)	Model name	Applicable Light Unit (Common for all colors)
DF-LFV3-35	LFV3-35(A)	DF-LFV3-35-UF	LFV3-35(A)
DF-LFV3-50	LFV3-50(A)	DF-LFV3-50-UF	LFV3-50(A)
DF-LFV3-50X100	LFV3-50X100(A)	DF-LFV3-50X100-UF	LFV3-50X100(A)
DF-LFV3-70	LFV3-70(A)	DF-LFV3-70-UF	LFV3-70(A)
DF-LFV3-100	LFV3-100(A)	DF-LFV3-100-UF	LFV3-100(A)
DF-LFV3-130	LFV3-130(A)	DF-LFV3-130-UF	LFV3-130(A)
DF-LFV3-200	LFV3-200(A)	DF-LFV3-200-UF	LFV3-200(A)

▶ P.359

Polarizing plate

Model name	Applicable Light Unit (Common for all colors)
PL-LFV3-35	LFV3-35(A)
PL-LFV3-50	LFV3-50(A)
PL-LFV3-50X100	LFV3-50X100(A)
PL-LFV3-70	LFV3-70(A)
PL-LFV3-100	LFV3-100(A)
PL-LFV3-130	LFV3-130(A)
PL-LFV3-200	LFV3-200(A)

▶ P.360

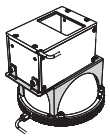
Light control film

Model name	Applicable Light Unit (Common for all colors)
LC-LFV3-35	LFV3-35(A)
LC-LFV3-50	LFV3-50(A)
LC-LFV3-50X100	LFV3-50X100(A)
LC-LFV3-70	LFV3-70(A)
LC-LFV3-100	LFV3-100(A)
LC-LFV3-130	LFV3-130(A)
LC-LFV3-200	LFV3-200(A)

▶ P.361

Coaxial Light joint bracket

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)
BK-HPD2-75-LFV	LFV3-35	HPD2-75
BK-HPD2-100-LFV	LFV3-50	HPD2-100
BK-HPD2-150-LFV		HPD2-150
BK-HPD2-200-LFV	LFV3-70	HPD2-200
BK-HPD2-250-LFV		HPD2-250



Combine with a Dome Light to solve uneven illumination and achieve uniform illumination from all directions.

▶ P.364

Transparent acrylic protective plates (PR Series) with AR (anti-reflective) coatings are available to protect the light emission surface from scratches and dirt. Contact our local sales office for details.

Regarding Changing the Diffusion Plate and Adjusting the Position

Models that support replacing the diffusion plate

Model (Common for all colors)
LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200

LFV3-34 / 40 / CP-13 / CP-18 does not support this feature.

Models that support adjusting the position of the diffusion plate

Model (Common for all colors)
LFV3-50 / 50X100 / 70 / 100 / 130 / 200

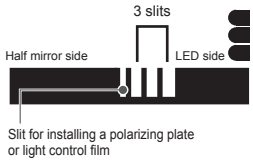
LFV3-34 / 35 / 40 / CP-13 / CP-18 does not support this feature.

Regarding the default diffusion plate

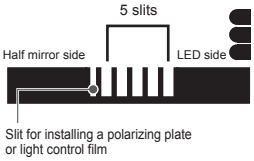
LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200	
Red light, white light	Blue light
Diffusion plate (Light color) is default	Diffusion plate (Deep color) is default
Transmission: High	Transmission: Low (End of the model name: -UF)

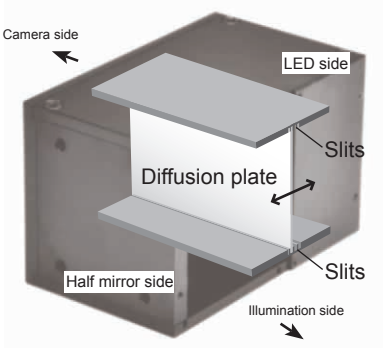
Position adjustment slit

For LFV3-50 / 50X100 / 70



For LFV3-100 / 130 / 200





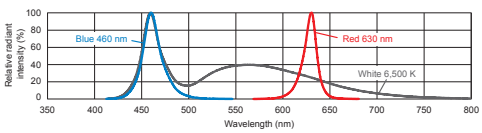
Conceptual image

For details about replacing the diffusion plate or adjusting the position, refer to the "Instruction Guide" included with the product.

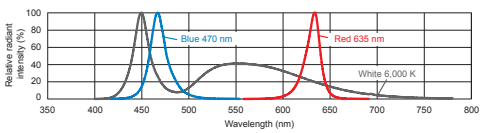
LED Properties

Spectral distribution

Supported models: LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200



Supported models: LFV3-34 / 40 / CP-13 / CP-18



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

For details about determining the field of view for the Coaxial Light, refer to "Determining the Field of View of Coaxial Lighting" on P. 381 in the Technical Guide.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/ HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

LFV3 Series



Refer to our website for product details.

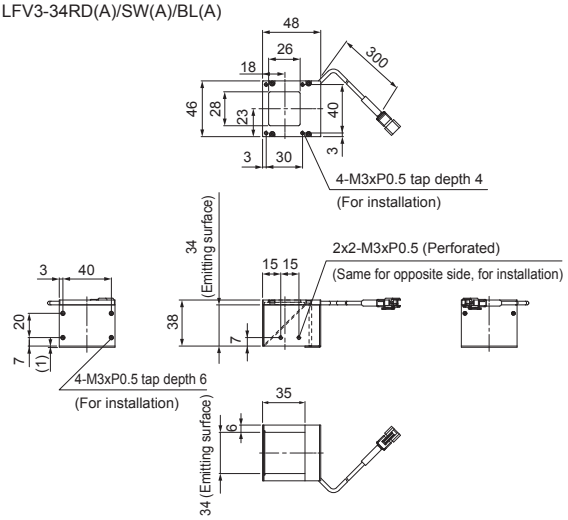
CCS LFV3 ▶ Search

For quick access.

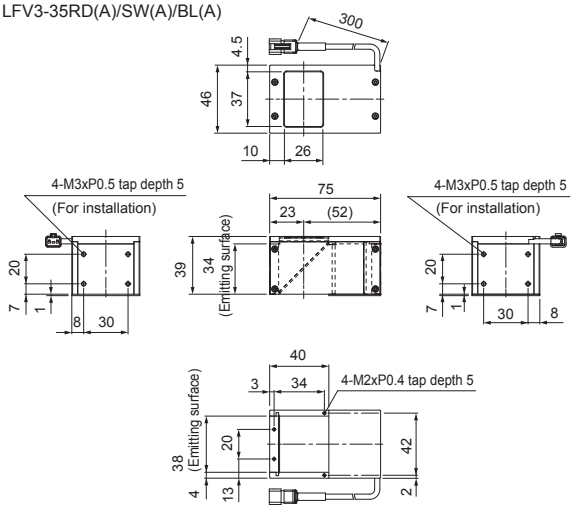
You can also use your smartphone or cell phone.

Dimensions (mm)

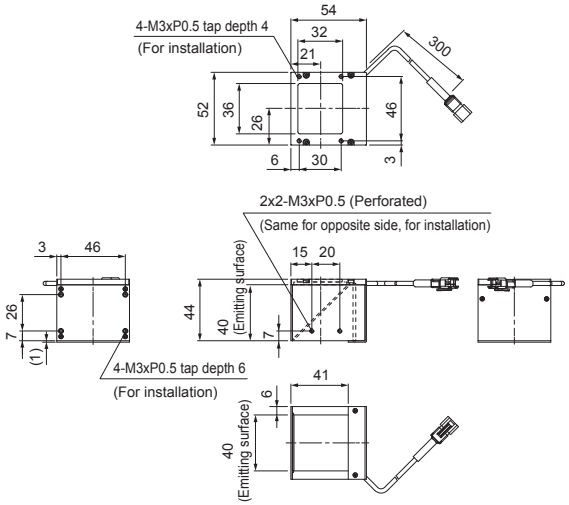
LFV3-34RD(A)/SW(A)/BL(A)



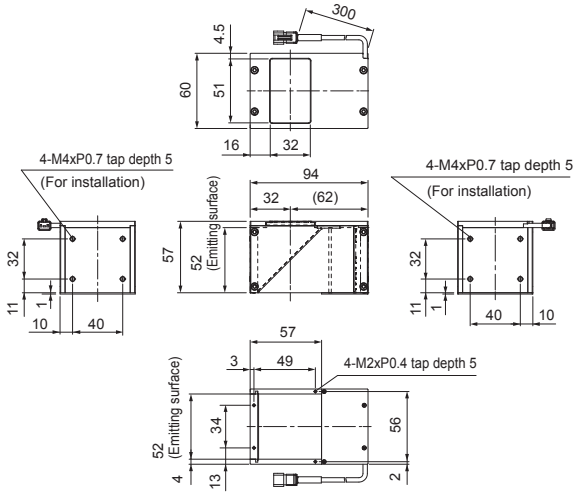
LFV3-35RD(A)/SW(A)/BL(A)



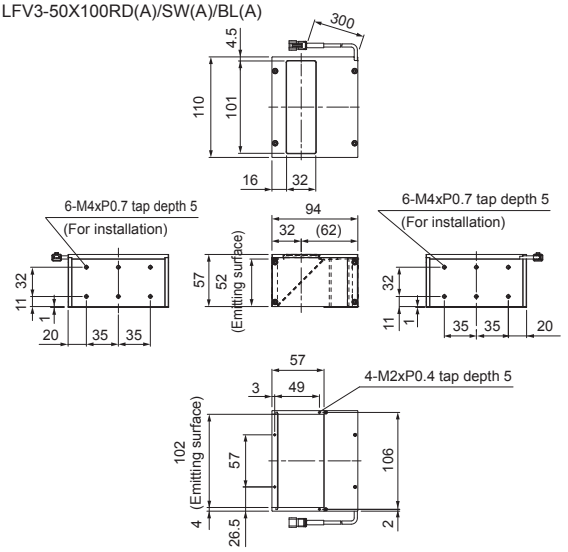
LFV3-40RD(A)/SW(A)/BL(A)



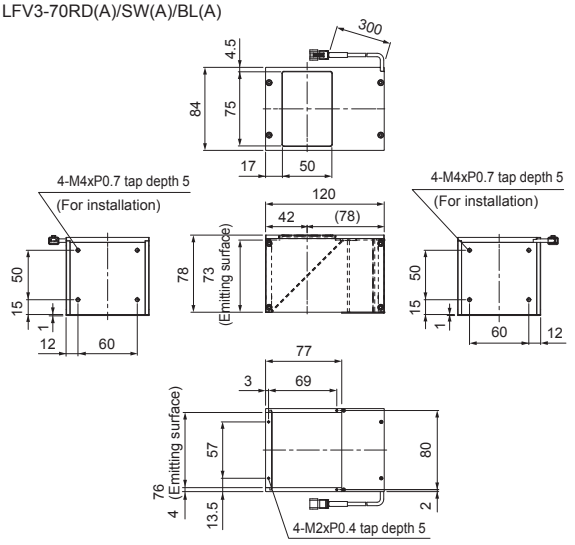
LFV3-50RD(A)/SW(A)/BL(A)



LFV3-50X100RD(A)/SW(A)/BL(A)



LFV3-70RD(A)/SW(A)/BL(A)

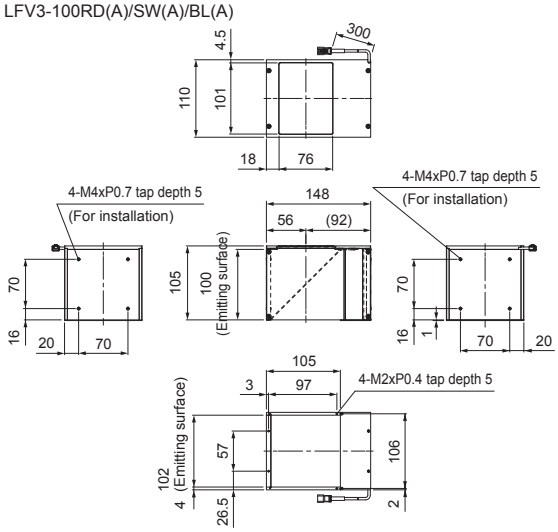


Various technical documents available.

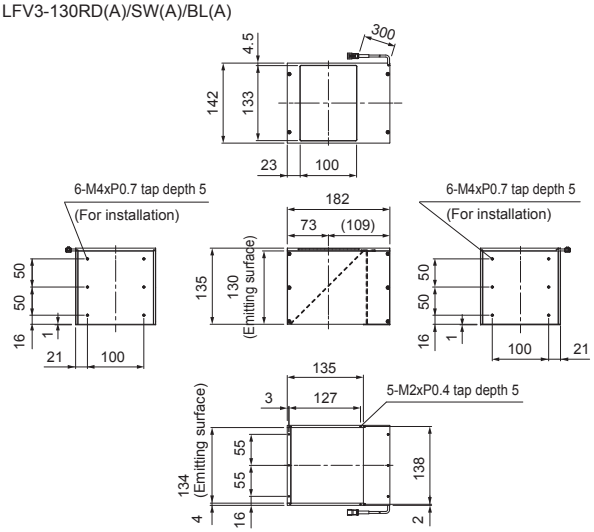
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

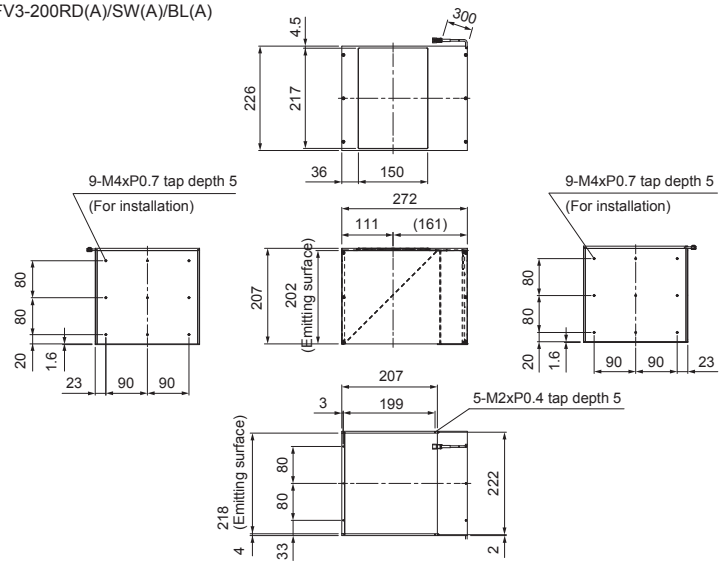
LFV3-100RD(A)/SW(A)/BL(A)



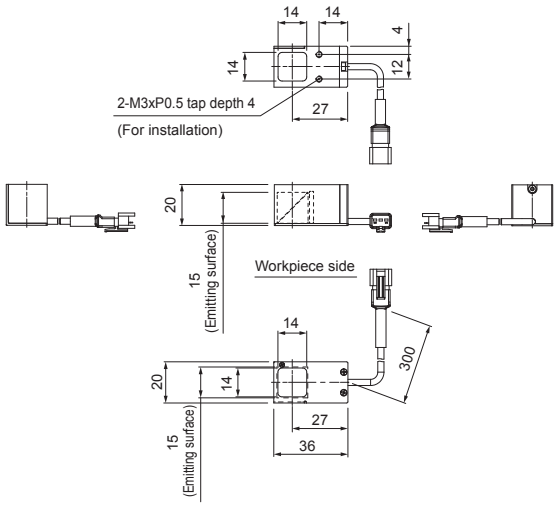
LFV3-130RD(A)/SW(A)/BL(A)



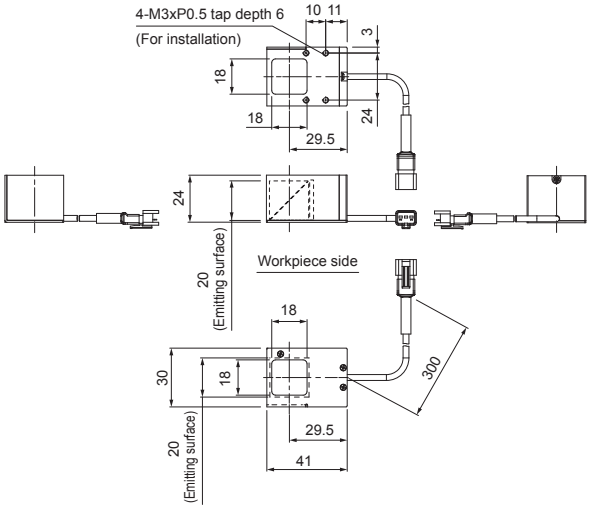
LFV3-200RD(A)/SW(A)/BL(A)



LFV3-CP-13RD/SW/BL



LFV3-CP-18RD/SW/BL



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Diffused Lighting

Coaxial Lights
LFV3-G Series

Refer to our website for product details.
CCS LFV3-G ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Equipped with a slim half mirror to support imaging using high-resolution cameras

NEW




LFV3-G-50RD


LFV3-G-50X100SW


LFV3-G-27RD


LFV3-G-30X60SW


LFV3-G-35BL

Applications Inspection for damage, scratches, or dents on glossy surfaces or mirrors; pattern inspection on printed circuit boards; dimension measuring of glass; inspection for damage and dents on resin molded products; etc.

Prevents ghost images and achieves higher resolution imaging than conventional products.

LFV3-G series structure (example)

Uses optical glass
The camera window and half mirror use optical glass.

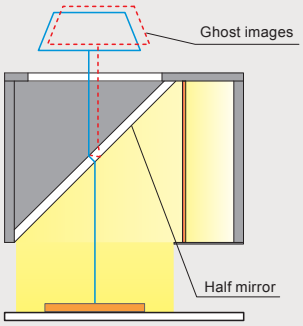


Slim half mirror
Uses a slim half-mirror to achieve high-resolution imaging.

Flat light source with narrow directionality
A narrow beam angle controls the spread of light, resulting in highly directional illumination.

Protective plate (Optional)
Uses 2 mm thick, transparent acrylic with an anti-reflective (AR) coating.

Causes of ghost images (example)

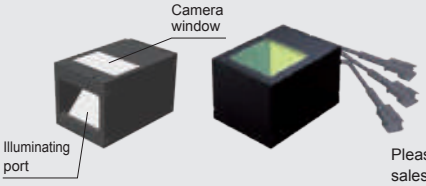


A thick half mirror causes deviations in the light path, generating ghost images.
Using a thinner mirror reduces the deviation of the ghost images, enabling high-resolution imaging.

Custom Orders

E.g.: Different shape
Format/ material — Change the illuminating port from vertical to horizontal

E.g.: Different color
Wavelength/ color — Full color (RGB) Light Unit



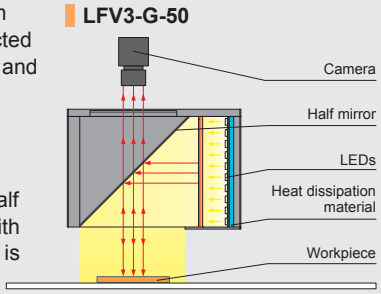
External/ internal diameter
Wavelength/ color
Increase output
Cable length
Illuminating angle
Format/ material
Connector format
Installation/ mounting
Etc.

Please contact your CCS sales representative.

Example Configuration

Diffused light from the LEDs is reflected on the half mirror and directed vertically downward on the same axis as the camera axis.
By using a slim half mirror, imaging with reduced ghosting is possible.

LFV3-G-50

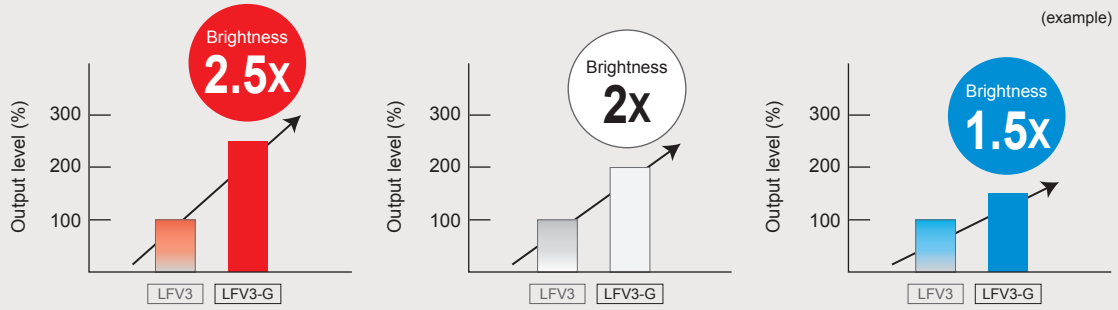


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Achieves up to 2.5 Times Higher Output Compared to LFV3

Can be combined with the strobe overdrive power supply POD series to further increase the brightness several times more.

(example)



In comparison with light colors of the LFV3 series. (These values are for reference only and are not guaranteed values.)

Strobe Overdrive Power Supply
POD Series
▶ P.325

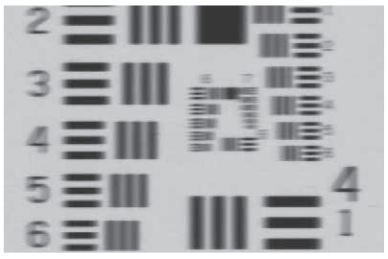




Imaging Example: Imaging Comparison of Resolution Evaluation Chart

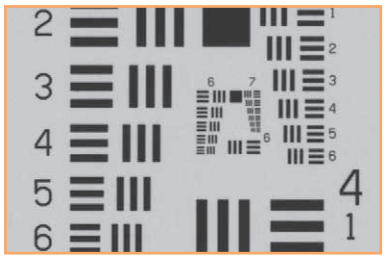


■ LFV3-50SW (A)



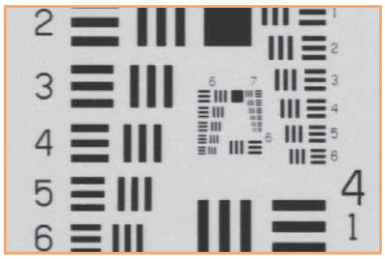


■ LFV3-G-27SW





■ LFV3-G-50X100SW



[Imaging conditions] Camera: 2448x2048 3.45 µm monochrome camera, Lens: 2x telecentric lens, Field of view: 4.2 x 3.5 mm (the image is a cutout of about 1.3 x 1.0 mm at the center), Resolution: 1.7 µm/pixel , WD: 110 mm, LWD: 25 mm. * The shutter speed and light intensity are adjusted for each image.

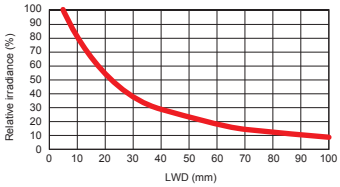
Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

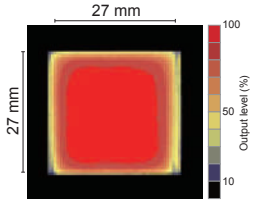
LFV3-G-27RD

Relative irradiance graph *1
(LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative radiance)



LFV3-G Series



Refer to our website for product details.

CCS LFV3-G ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFV3-G-27RD	Red	24 V / 5.0 W	630 nm	Protective Plate	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 / PSB / POD*2	110 g
LFV3-G-27SW	White	24 V / 5.0 W	7,000 K				
LFV3-G-27BL	Blue	24 V / 5.0 W	470 nm				
LFV3-G-30X60RD	Red	24 V / 12 W	630 nm			PD3 / CC-ST-1024*1 / PSB / POD*2 *1 Only blue can be used.	165 g
LFV3-G-30X60SW	White	24 V / 11 W	5,500 K				
LFV3-G-30X60BL	Blue	24 V / 8.1 W	467 nm				
LFV3-G-35RD	Red	24 V / 8.4 W	630 nm			PD3 / CC-ST-1024 / PSB / POD*2	140 g
LFV3-G-35SW	White	24 V / 8.3 W	5,500 K				
LFV3-G-35BL	Blue	24 V / 7.1 W	467 nm				
LFV3-G-50RD	Red	24 V / 17 W	630 nm			PD3 / PSB / POD*2	285 g
LFV3-G-50SW	White	24 V / 17 W	5,500 K				
LFV3-G-50BL	Blue	24 V / 15 W	467 nm				
LFV3-G-50X100RD	Red	24 V / 34 W	630 nm			PD3 / PSB / POD*2	445 g
LFV3-G-50X100SW	White	24 V / 34 W	5,500 K				
LFV3-G-50X100BL	Blue	24 V / 29 W	467 nm				

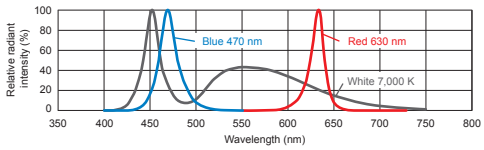
Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*2 For information on the combination of the LFV3-G and POD Series, please refer to the CCS website. https://www.ccs-grp.com/lnk/qr/pod

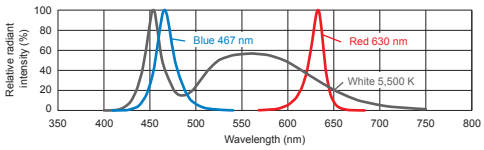
LED Properties

Spectral distribution

Supported models: LFV3-G-27



Supported models: LFV3-G-30X60 / 35 / 50 / 50X100

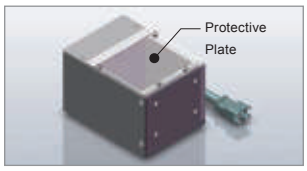


CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

For details about determining the field of view for the Coaxial Light, refer to "Determining the Field of View of Coaxial Lighting" on P. 381 in the Technical Guide.

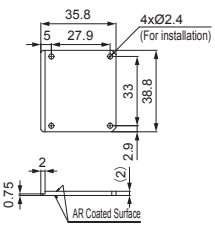
Options



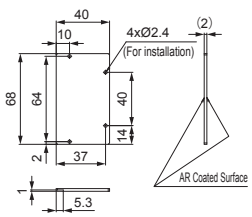
Protective plates are available to prevent any reductions in performance due to intrusion of foreign matter into the lights.
Anti-reflective (AR coating) has been applied.

* Be aware that installing a protective plate may reduce image resolution.

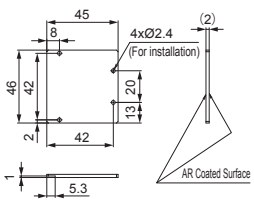
PR-LFV3-27



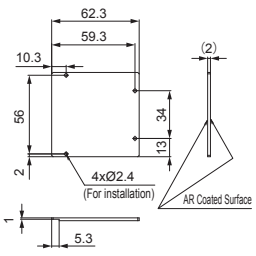
PR-LFV3-30X60



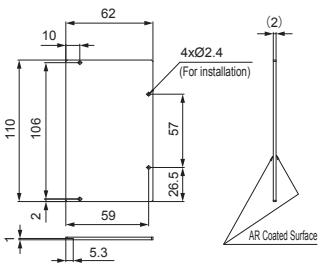
PR-LFV3-35



PR-LFV3-50X100



PR-LFV3-50



Protective Plate

Model name	Applicable Light Unit (Common for all colors)
PR-LFV3-27	LFV3-G-27
PR-LFV3-30X60	LFV3-G-30X60
PR-LFV3-35	LFV3-G-35
PR-LFV3-50	LFV3-G-50
PR-LFV3-50X100	LFV3-G-50X100

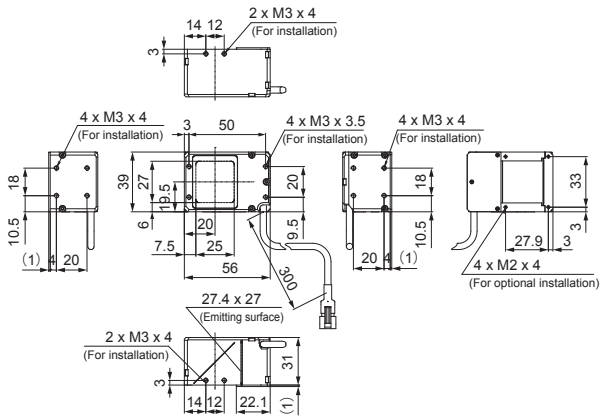
Accessories: Pan Head Screws x 5

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

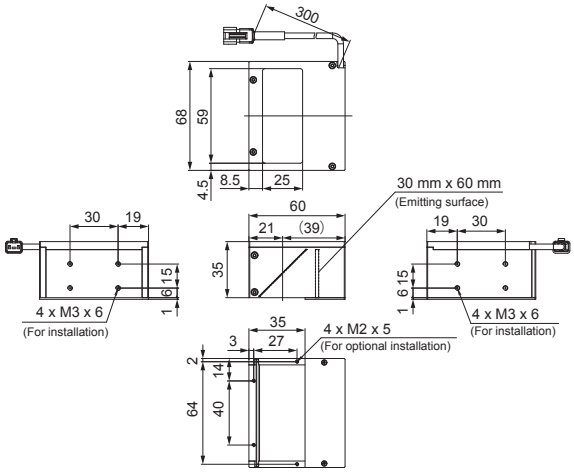
Register to use them.

Dimensions (mm)

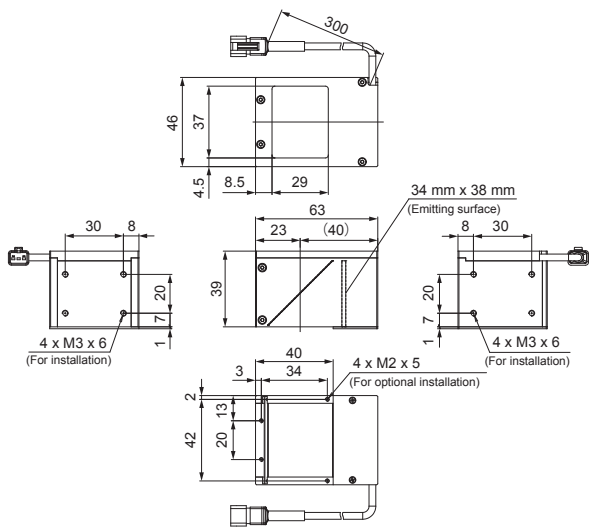
LFV3-G-27RD/SW/BL



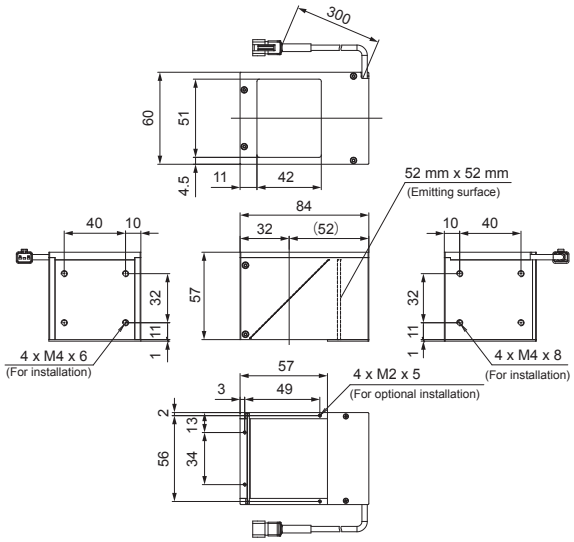
LFV3-G-30X60RD/SW/BL



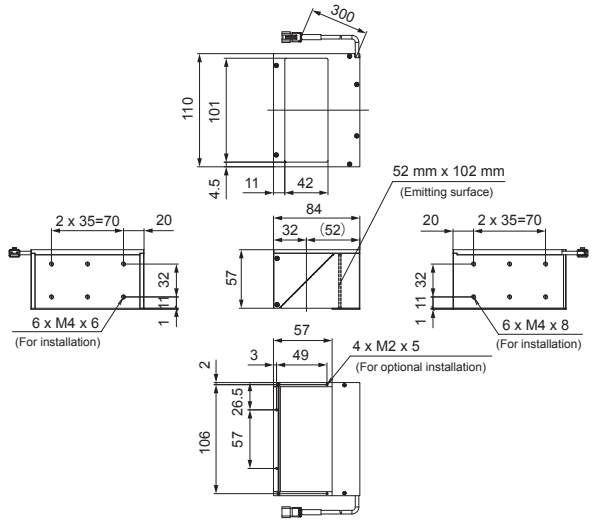
LFV3-G-35RD/SW/BL



LFV3-G-50RD/SW/BL



LFV3-G-50X100RD/SW/BL



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

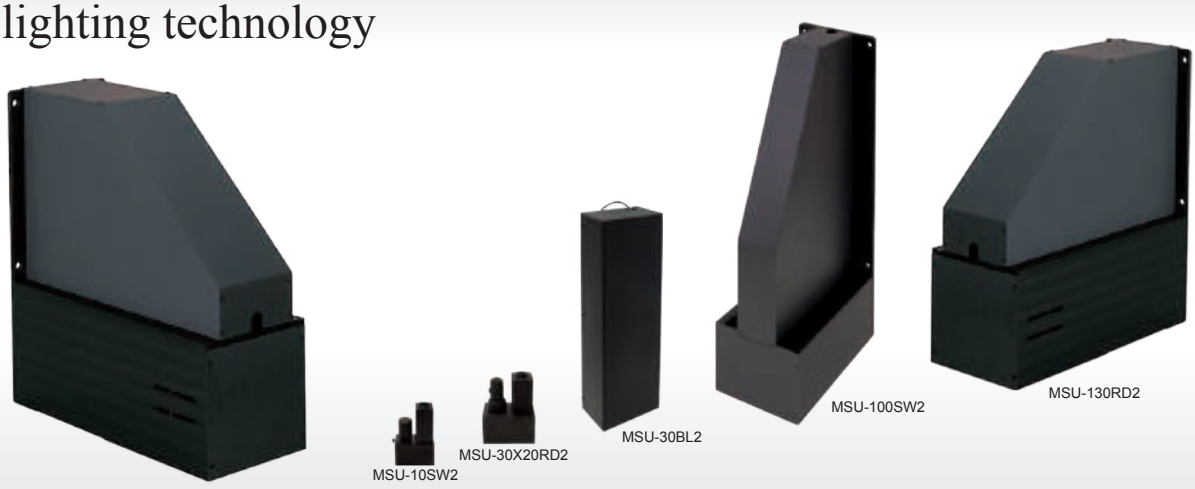
LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Collimated Lighting

Coaxial Lights
MSU Series

Refer to our website for product details.
CCS MSU ▶Search
For quick access.
You can also use your smartphone or cell phone.

Provides light with high parallelism using original lighting technology



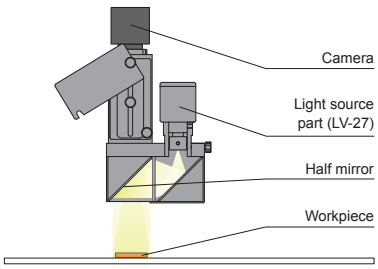
Applications Inspection for fine damage on glossy surfaces, character recognition on glossy surfaces, etc.

Features

Provides collimated lighting created using a special lens. It is perfect for extracting tiny scratches, damage, or dents on mirror surfaces. The included lens can be used for convergent light.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (MSU-10)



Imaging example: Imaging button cell batteries



Workpiece: Button cell batteries

■LED Coaxial Light



With the Coaxial Light, it is possible to reduce surface reflection and form an image of the engraved text.

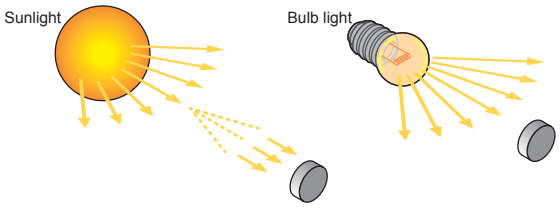
■MSU-30X20RD2



Not only is the image of the engraved text more clear than with the Coaxial Light, fine differences in the surface can also be imaged.

Collimated Light Optical Unit MSU Series

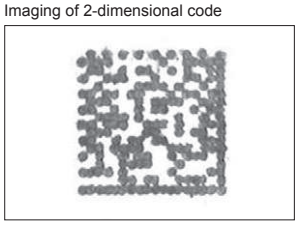
Light emitted from a normal light source moves in a straight line while radially diffusing. Collimated light refers to light where one point of light emitted from a source at infinitely far distance, such as the sun, hits any surface from the same angle. The MSU series is an optical unit developed by applying the principle of collimated light.



Extracts Damage, Scratches, and Dents on Mirror Objects

This optical unit is effective for inspections that were difficult using conventional image processing, such as extracting shallow and tiny scratches, damage and dents, and reading barcodes on mirror workpieces.

Imaging of 2-dimensional code



Using an LED Light allows for high performance, stable, and low-cost imaging. This is an applied product that melds lighting technology design with optical design.

For details about the procedure for usage, refer to the material "MSU Series Operating Procedures" on our website. You can download this information from the product website page.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

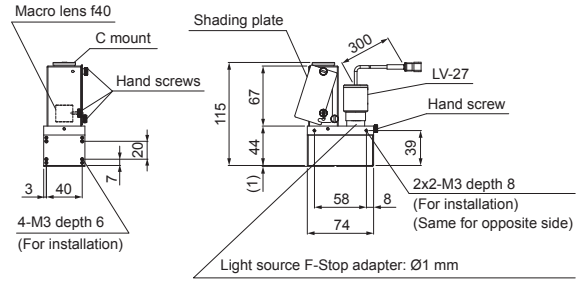
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
MSU-10RD2	Red	24 V / 0.8 W	630 nm	–	FCB*4 Straight Cable FCB-W*5 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *5 The cables with a model name that ends with "-EL2" are not included.	PD3 / CC-ST-1024 PSB / POD*3	275 g
MSU-10SW2	White	24 V / 0.4 W	5,500 K				
MSU-10BL2	Blue	24 V / 0.4 W	470 nm				
MSU-30RD2	Red	24 V / 0.8 W	630 nm				2,000 g
MSU-30BL2	Blue	24 V / 0.4 W	470 nm				
MSU-30X20RD2*1	Red	24 V / 0.8 W	630 nm			PD3*1 / CC-ST-1024 PSB / POD*3	540 g
MSU-30X20SW2	White	24 V / 0.5 W	5,500 K				
MSU-30X20BL2	Blue	24 V / 0.5 W	470 nm				
MSU-30X20GR2	Green	24 V / 0.5 W	525 nm				
MSU-100RD2	Red	24 V / 0.8 W	630 nm			PD3 / CC-ST-1024 PSB / POD*3	9,920 g
MSU-100SW2	White	24 V / 0.4 W	5,500 K				
MSU-130RD2	Red	24 V / 0.8 W	630 nm				12,700 g
MSU-130SW2-CL	White	24 V / 0.4 W 24 V / 4.6 W	5,500 K			PD3*2 PSB*2 / POD*3	13,000 g

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

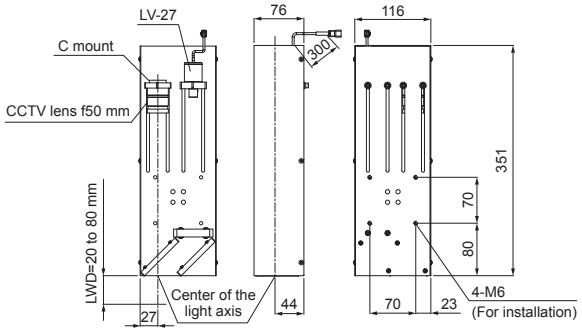
*1 This red light cannot be used with the PD3-5024-4-SI or PD3-5024-4-ET Control Unit.
*2 The MSU-130SW2-CL is equipped with two Light Units. Use a 2-channel Control Unit.
*3 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Dimensions (mm)

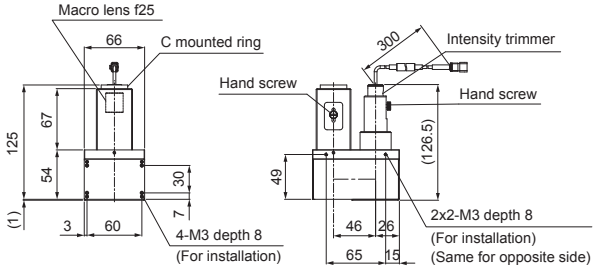
MSU-10RD2/SW2/BL2



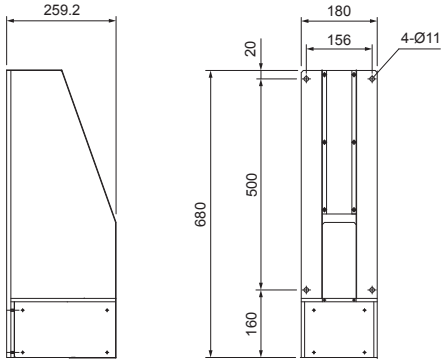
MSU-30RD2/BL2



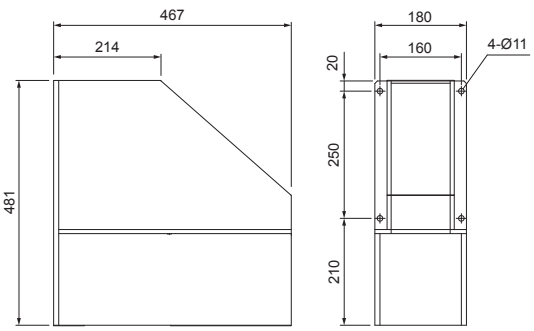
MSU-30X20RD2/SW2/BL2/GR2



MSU-100RD2/SW2



MSU-130RD2/SW2-CL



Reference chart for the field of vision (Estimate)
Using a 1/3 inch sensor camera

Model name	Field of vision	WD
MSU-10	7.5 mm	58 mm
MSU-30	18.7 mm	50 mm
MSU-30X20	15 mm	24 mm
MSU-100	60 mm	50 mm

Regarding reference field of vision
This is an estimate to help you select a Light Unit, and individual units may vary from the data listed above depending on your imaging conditions.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Collimated Lighting

Coaxial Lights
MFU Series

Refer to our website for product details.
CCS MFU ▶Search
For quick access.
You can also use your smartphone or cell phone.

Provides light with high parallelism using original lighting technology





MFU-34X30-BL



MFU-54X40-BL

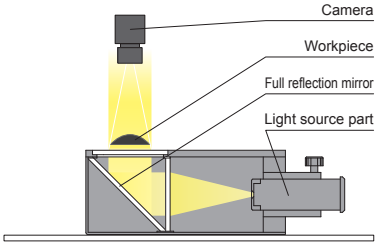
Applications Dimension measuring, dimension measuring of cylindrical objects, inspection for fine burrs, etc.

Features

We achieved collimated lighting through unique lighting technology. It allows for highly-accurate imaging that prevents light from wrapping around the workpiece. It allows for convergence to match the imaging-side lens in use.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (MFU-34×30)

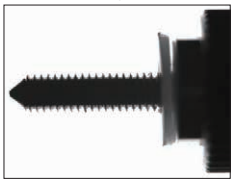


Imaging example: Imaging the appearance of screws



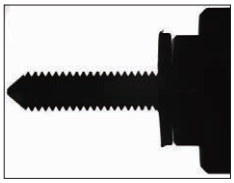
Workpiece: Knurled screws

■LED Flat Light



With a Flat Light, the emitted light wraps around the workpieces, making it difficult to emphasize the edges.

■MFU-34X30-BL



It prevents the emitted light from wrapping around, allowing for the edges to be emphasized.

Comparison of Imaging with a Flat Light and Collimated Light

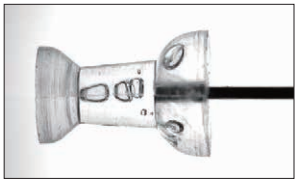
Imaging example: Imaging the appearance of push pins

■Workpiece image

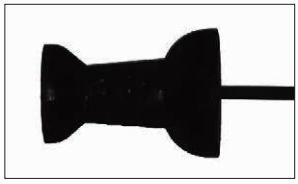


Push pins

■LED Flat Light



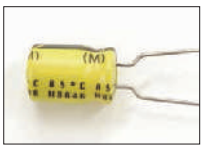
■MFU-34X30-BL



When you looks at a clear resin push pin with diffused light from a Flat Light installed at the back of the workpiece, the clear part appears clear. However, with collimated light, the light is refracted by the clear resin, and the whole pin appears black.

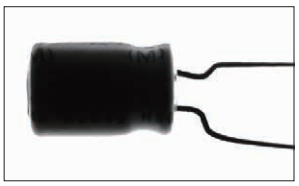
Imaging example: Imaging the appearance and dimensions of capacitors

■Workpiece image

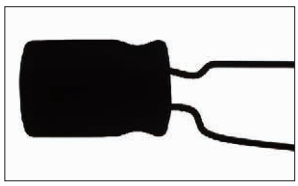


Capacitors

■LED Flat Light



■MFU-34X30-BL



When you view it with diffused light from a Flat Light installed at the back of the workpiece, the light wraps around the side of the capacitor body. However, with collimated light, that wrap around is prevented and the thickness of the wires is also imaged evenly.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

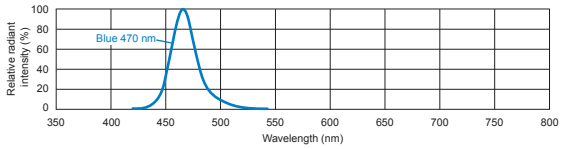
Model name	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
MFU-34X30-BL	Blue	12 V / 0.3 W	470 nm	–	CB Straight Cable CB-W 2-branch Cable CB-F 4-branch Cable RCB Robot Cable	PD2* PSB* PTU2*	185 g
MFU-54X40-BL	Blue	12 V / 0.3 W	470 nm				350 g

* Because the MFU series is for 12 V input, please select a Control Unit with a 12 V output.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

LED Properties

Spectral distribution

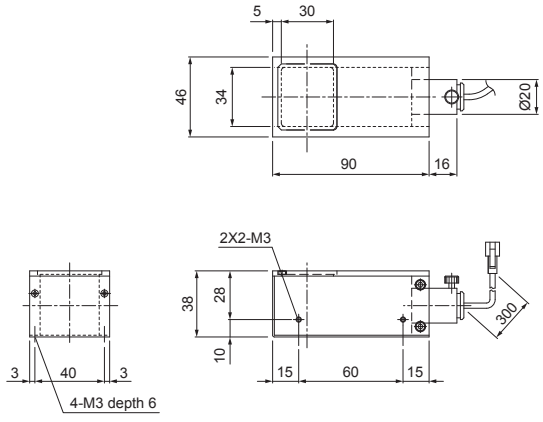


CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

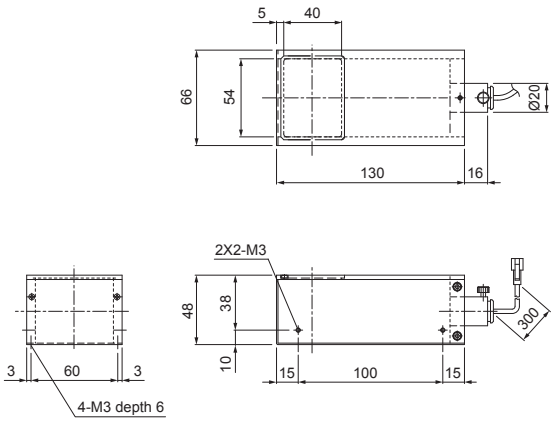
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Dimensions (mm)

MFU-34X30-BL



MFU-54X40-BL



Regarding the Procedure for Usage

1) Set the item to be inspected and determine the imaging range.
2) Set this product and determine the distance between the lens and the camera (LWD).
3) Align this product's light axis with the center of the imaging field of vision.
4) Adjust intensity.

For details about the procedure for usage, refer to the material "MFU Series Operating Procedures" on our website.
You can download this information from the product website page.

Strobe Lighting

High Power Strobe Lights
PF Series

Refer to our website for product details.
CCS PF ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Light Units

■ **Ring Type**
LDR-PF Series



■ **Low-Angle Ring Type**
LDR-PF-LA Series



■ **Ring Type for Diffuesd Lighting**
HPR-PF Series



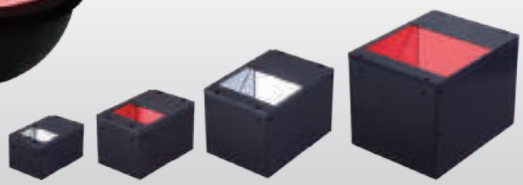
■ **Bar Type**
LDL-PF Series



■ **Dome Type**
HPD-PF Series



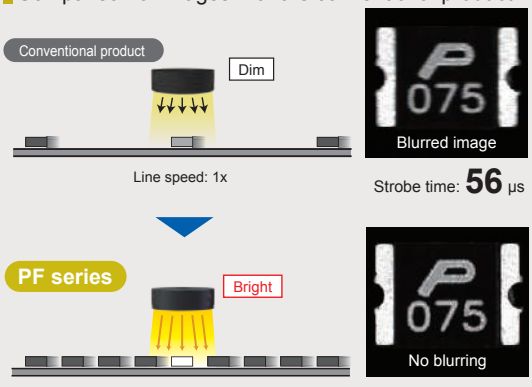
■ **Coaxial Type**
LFV-PF Series



"Extreme Power" Strobe Lights

The High Power Strobe Lights PF series enables extreme power strobe lighting. The PF-series Light Units are dedicatedly designed for strobe lighting to achieve further large output power than that of the conventional products when used with the dedicated Control Units.
This makes them applicable to fast inspection lines and a wide range of applications improving productivity.

Comparison of images with the conventional product



Comparison between the LDR-PF-36SW and LDR2-32SW2 Light Units (conventional products).

Dedicated Control Units PF-A4048-2 and PF-A16048-4

Maximize performance of the High Power Strobe Light Units.



For more information on the Dedicated Control Units ▶ P.331

Wide Variety of Available Light Units

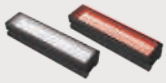
Ring, low-angle ring, ring for diffused lighting, bar, dome, and coaxial types are available. Select one to meet your purpose of use.

■ Ring Type
LDR-PF Series



▶ P.137

■ Bar Type
LDL-PF Series



▶ P.145

■ Low-Angle Ring Type
LDR-PF-LA Series



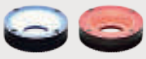
▶ P.139

■ Dome Type
HPD-PF Series



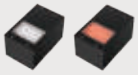
▶ P.149

■ Ring Type for Diffused Lighting
HPR-PF Series



▶ P.143

■ Coaxial Type
LFV-PF Series

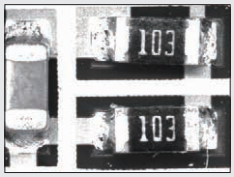


▶ P.151

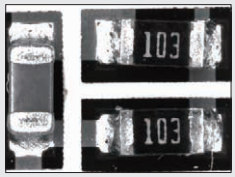
The lineup includes 48 models with different formats, sizes, and LED colors.

Brightness Comparable to Xenon Flash Lamps

Achieved the same inspection speed made possible by xenon lamps.



15 W xenon flash lamp
Strobe time: 1.75 µs
(measured value)



High Power Strobe Light Unit
Strobe time: 15 µs

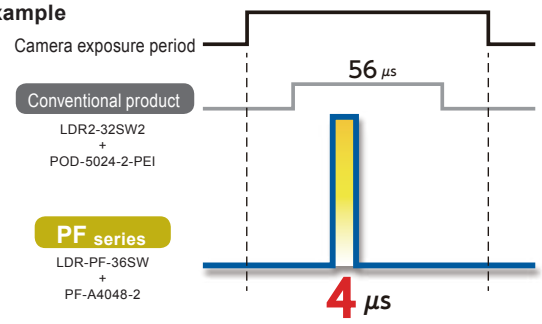
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Innovative Applications

Using the Flash As a Camera Shutter

Example





Conventional product

Long strobe time due to lack of brightness leads to image blurring.



PF series

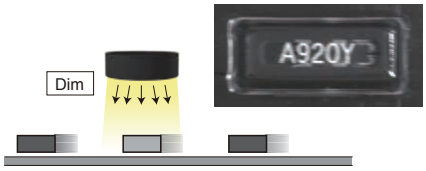
High power emission enables instantaneous imaging.

Eliminating Image Blur

● Horizontal Blur

Conventional product

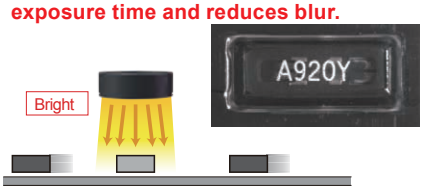
Long exposure period and insufficient brightness result in image blur.



The image is blurred in fast moving production lines.

PF series

High brightness allows for short exposure time and reduces blur.

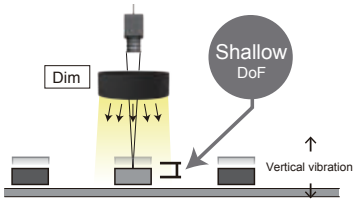


Applicable to fast moving production lines.

● Vertical Blur

Conventional product

Adjusting aperture to compensate for dim lighting reduces depth of field.



Vibration causes image blur.

PF series

High brightness allows for smaller aperture and increased depth of field.

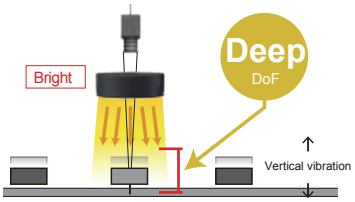
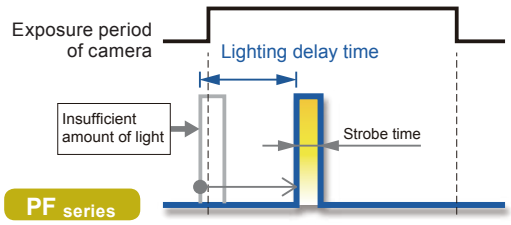


Image unaffected by vibration.

Freely Adjustable Flash Timing

You can use the lighting delay time setting of the Control Unit to adjust the timing of the flash to be within the exposure period of the camera.



Strobing before the exposure period of the camera leads to an insufficient amount of light.

Delaying the timing of the flash enables strobing within the exposure period of the camera.

PF-A4048-2 (2-channel model)



Features
- Light intensity: 512 levels
- Strobe time: 1 to 100 μs
- Lighting delay: 0 to 100 μs
- Compatible with Ethernet communications, etc.

PF-A16048-4 (4-channel model)



Features
- Light intensity: 512 levels
- Strobe time: 1 to 500 μs*
- Lighting delay: 0 to 100 μs
- Compatible with Ethernet communications
- Trigger link, etc.

* Refer to the specification table.

For the detailed information on the High Power Strobe Control Units ► P.331

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Strobe Lighting

Ring Type
LDR-PF Series

Refer to our website for product details.
CCS LDR-PF ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Ring Lights

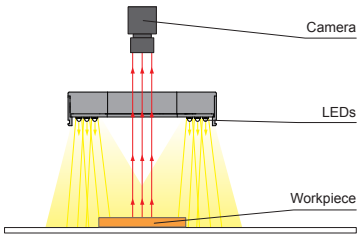


Applications Visual inspection for semiconductor, electronic components, metal parts, automobile components, printings, food, and medicines, etc.

Features

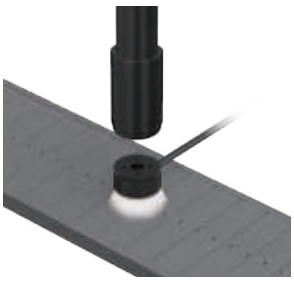
Strong direct-light from the LEDs mounted on the flat board illuminates the workpiece from above.

Example configuration (LDR-PF-75)

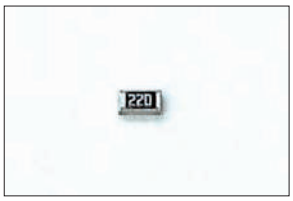


We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the external appearance of chip components



Workpiece



Chip component

LDR-PF-36SW



The appearance of the chip component is captured.

Data: Illuminance Graph and Uniformity (Representative Example)

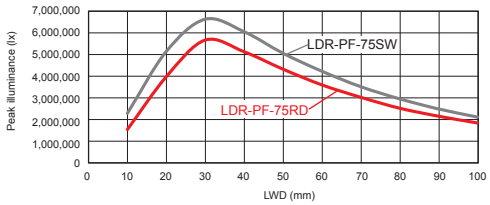
The data included is for reference only. Actual values may vary.

LDR-PF-75

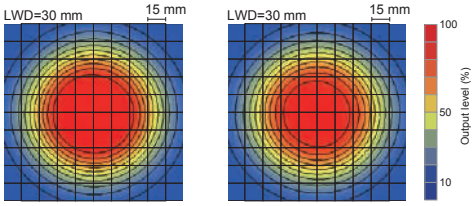


Illuminance graph (LWD characteristics)

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LDR-PF-75SW (White) LDR-PF-75RD (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

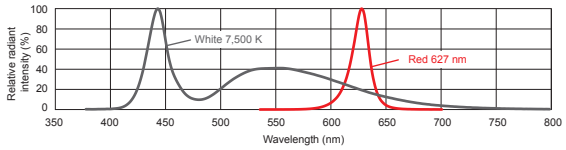
Lineup

Model name	LED color	Peak current	Peak wavelength / correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
LDR-PF-36SW	White	5.4 A	7,500 K	Diffusion plate Polarizing plate Adapter	FCB-PF Straight Cable (Dedicated Cable) ▶ P.138	PF-A4048-2 PF-A16048-4	70 g
LDR-PF-36RD	Red		627 nm				
LDR-PF-54SW	White	10.8 A	7,500 K				110 g
LDR-PF-54RD	Red		627 nm				
LDR-PF-75SW	White	21.6 A	7,500 K				150 g
LDR-PF-75RD	Red	18 A	627 nm				

Extension Cables ▶ P.138
Dedicated Control Unit ▶ P.331

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Reduces glare, especially problematic in the imaging of glossy workpieces.

Diffusion Plates

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-PF-36	LDR-PF-36
DF-LDR-PF-54	LDR-PF-54
DF-LDR-PF-75	LDR-PF-75

Use an Adapter to install the Diffusion Plate.

▶ P.359



Reduces glare when used in combination with a Polarizing Filter on the camera.

Polarizing Plates

Model name	Applicable Light Unit (Common for all colors)
PL-LDR-PF-36	LDR-PF-36
PL-LDR-PF-54	LDR-PF-54
PL-LDR-PF-75	LDR-PF-75

Use an Adapter to install the Polarizing Plate.

▶ P.360



For attaching a Diffusion Plate or Polarizing Plate to the Light Unit.

Adapters

Model name	Applicable Light Unit (Common for all colors)
AD-LDR-PF-36	LDR-PF-36
AD-LDR-PF-54	LDR-PF-54
AD-LDR-PF-75	LDR-PF-75

▶ P.362

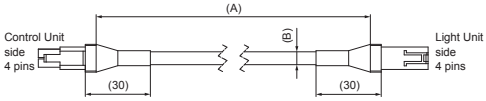
Extension Cables

FCB-PF

Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g

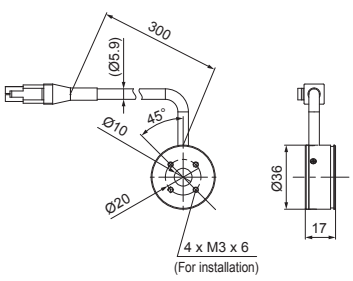
* The above cable permitted bending radii are reference values. Actual values may vary.

(mm)

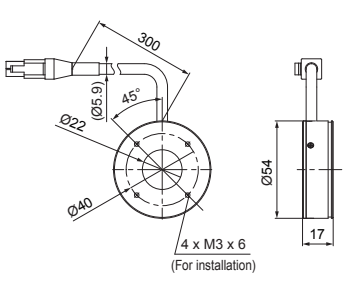


Dimensions (mm)

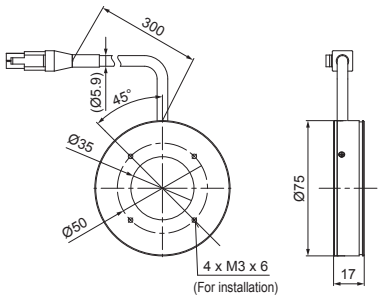
LDR-PF-36SW/RD



LDR-PF-54SW/RD



LDR-PF-75SW/RD



Strobe Lighting

Low-Angle Ring Type
LDR-PF-LA Series

Refer to our website for product details.
CCS LDR-PF-LA ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Low-Angle Ring Lights



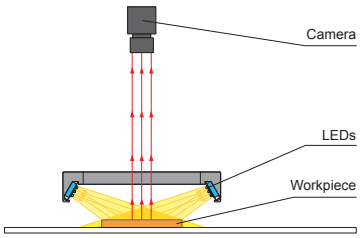
LDR-PF-75SW-LA
LDR-PF-100RD-LA
LDR-PF-150SW-LA

Applications Inspection for engravings, damage, or stains on metal surfaces; edge detection; inspection for foreign material mixed with food or medicine; inspection for scratches on glass surface; etc.

Features

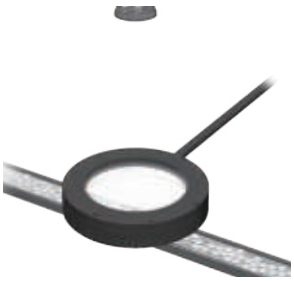
Provides extremely strong direct-light from a low angle to the center.

Example configuration (LDR-PF-75-LA)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the appearance of medicine tablets with imprinted text



Workpiece



Medicine tablets

LDR-PF-100SW-LA



Strobe light allows you to capture the imprinted text and the appearance of the workpiece.

Data: Illuminance Graph and Uniformity (Representative Example)

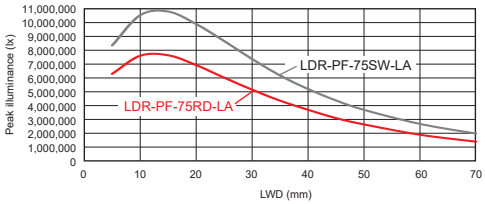
The data included is for reference only. Actual values may vary.

LDR-PF-75-LA

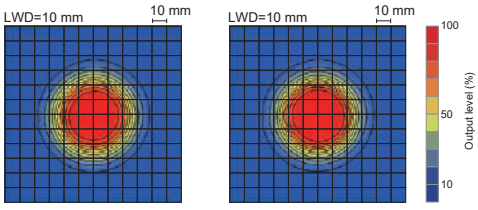


Illuminance graph (LWD characteristics)

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LDR-PF-75SW-LA (White)
LDR-PF-75RD-LA (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

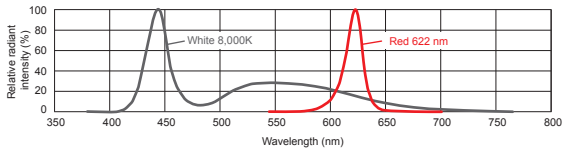
Lineup

Model name	LED color	Peak current	Peak wavelength / correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
LDR-PF-75SW-LA	White	16.2 A	8,000 K	Diffusion plate Mounting adapter	FCB-PF Straight Cable (Dedicated Cable) FCB-PF-EL9 Straight Cable (Dedicated Cable) ▶ P.140	PF-A4048-2 PF-A16048-4	125 g
LDR-PF-75RD-LA	Red		622 nm				
LDR-PF-100SW-LA	White	28.8 A	8,000 K				200 g
LDR-PF-100RD-LA	Red		622 nm				
LDR-PF-150SW-LA	White	42.0 A	8,000 K				350 g
LDR-PF-150RD-LA	Red		622 nm				

Extension Cables ▶ P.140 | Dedicated Control Unit ▶ P.331

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Reduces glare, especially problematic in the imaging of glossy workpieces.



Necessary for mounting a Diffusion Plate on the Light Unit.

Diffusion Plates

Model name	Applicable Light Unit (Common for all colors)
DF-LDR-PF-75-LA	LDR-PF-75-LA
DF-LDR-PF-100-LA	LDR-PF-100-LA
DF-LDR-PF-150-LA	LDR-PF-150-LA

Use a Mounting Adapter to install the Diffusion Plate.

▶ P.142

Mounting Adapters

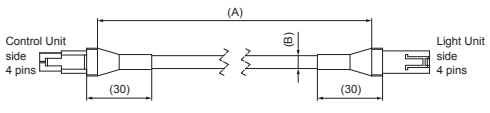
Model name	Applicable Light Unit (Common for all colors)
AD-LDR-PF-75-LA	LDR-PF-75-LA
AD-LDR-PF-100-LA	LDR-PF-100-LA
AD-LDR-PF-150-LA	LDR-PF-150-LA

▶ P.142

Extension Cables

FCB-PF

Applicable Light Units: LDR-PF-75-LA

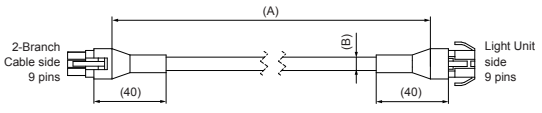


Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g

FCB-PF-EL9

(mm)

Applicable Light Units: LDR-PF-100-LA / LDR-PF-150-LA



Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF-EL9	1 m	Ø7.4	44.4 mm	100 g
FCB-2-PF-EL9	2 m			190 g
FCB-3-PF-EL9	3 m			270 g
FCB-5-PF-EL9	5 m	Ø9.1	54.6 mm	680 g

* These cable permitted bending radii are for reference only. Actual values may vary. For information on how to connect extension cables, refer to the next page.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP — Direct Lighting
HPR2 LFR LKR FPR FPQ3 — Diffused Lighting
LDL2 LDLB HLDL2 — Direct Lighting
TH2 (5 types) LFL HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT LFV3 LFV3-G — Diffused Lighting
MSU MFU — Collimated Lighting
PF — Strobe Lighting
HLDR-IP/ HSL-PCL — Water proof
UV2 UV LNSP-UV-FN — Ultraviolet Lighting
IR2 — Infrared Lighting
IU — Intensity Control
HLV3 HLV2 LV LSP HFS/HFR HLV3-NR HLV3-3M-RGB-4 HLV2-NR HLV2-3M-RGB-3W PFBR-600 PFBR-150 PFB3 — Spot Lighting, Etc.
LNLP LNSP2 LNSP Coaxial Units LNSP-FN LN/LN-HK — Convergent Lighting
LNSD LND2 HLND LT LNV — Diffused Lighting
LNDG LNIS2 LNIS LNIS-FN — Oblique Angled Lighting
Telecentric Lens Macro Lens — Lenses

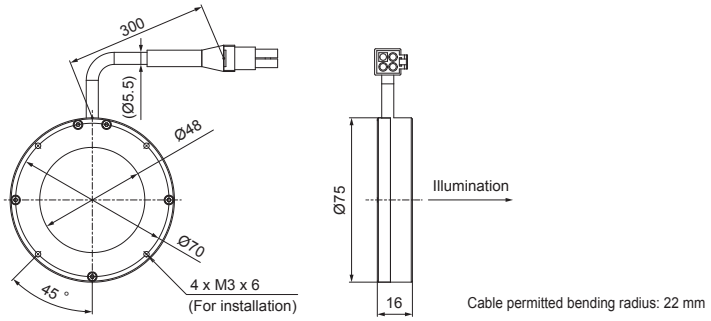
LDR-PF-LA Series



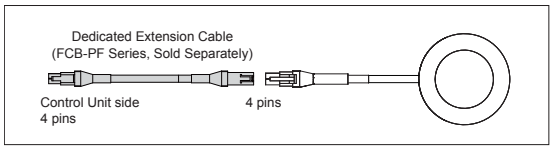
Refer to our website for product details.
CCS LDR-PF-LA ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Dimensions (mm)

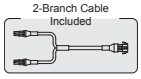
LDR-PF-75RD-LA / SW-LA

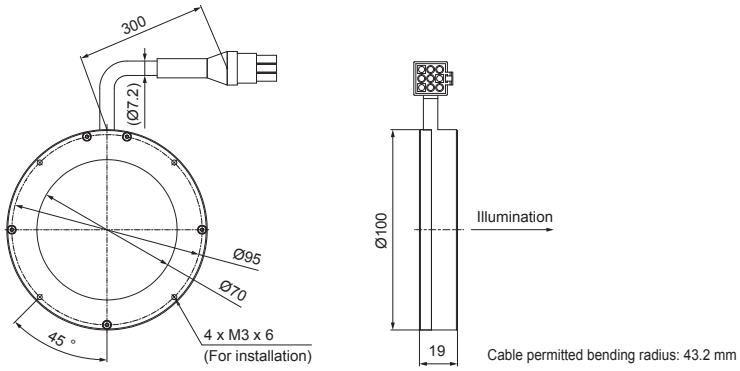


How to Connect the Extension Cables
For LDR-PF-75-LA

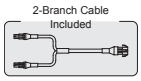


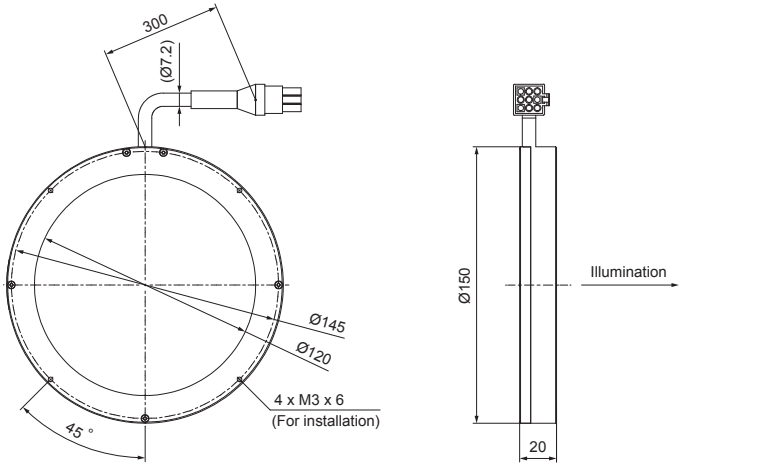
LDR-PF-100RD-LA / SW-LA



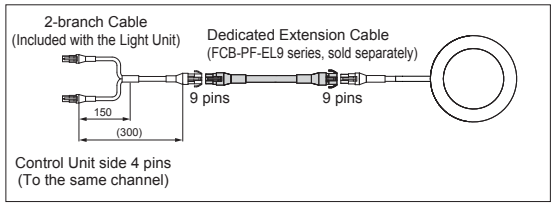


LDR-PF-150RD-LA / SW-LA





How to Connect the Extension Cables
For LDR-PF-100-LA / LDR-PF-150-LA



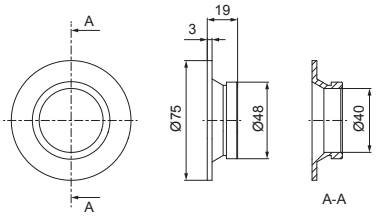
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

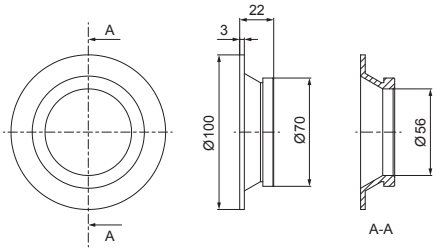
Dimensions for Optional Products (mm)

Diffusion Plates

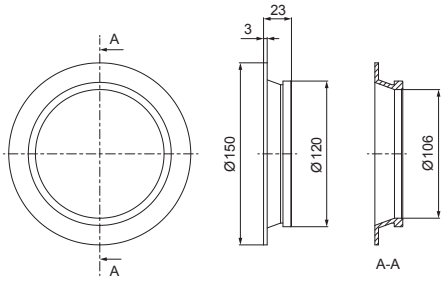
DF-LDR-PF-75-LA



DF-LDR-PF-100-LA

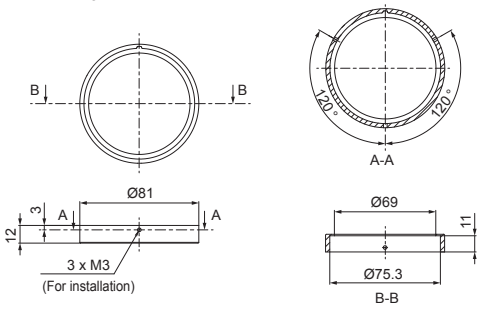


DF-LDR-PF-150-LA

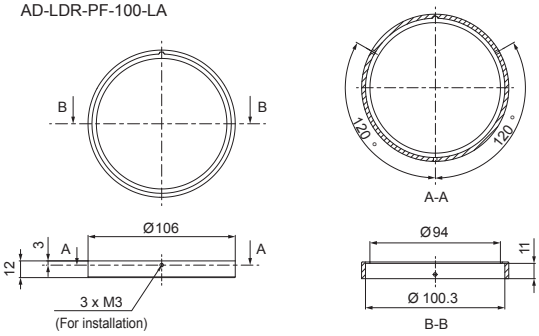


Mounting Adapters

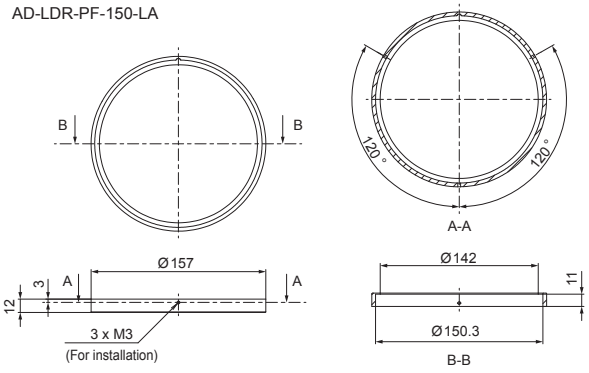
AD-LDR-PF-75-LA



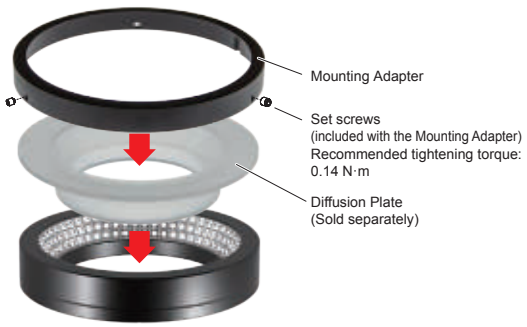
AD-LDR-PF-100-LA



AD-LDR-PF-150-LA



How to Install the Diffusion Plate



Strobe Lighting

Ring Type for Diffused Lighting
HPR-PF Series

Refer to our website for product details.
CCS HPR-PF ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Ring Lights for diffused lighting

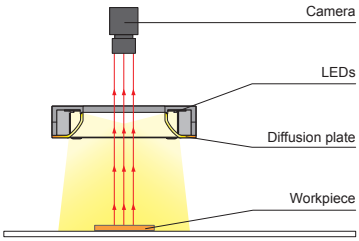


Applications Inspection for damage or stains, visual inspection, color determining inspection, character recognition, printed character inspection, appearance inspection for food or medicines, etc.

Features

The diffusion plate transmits light from LEDs and provides strong and uniform diffused light.

Example configuration (HPR-PF-100)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the appearance of beverage containers



Workpiece



Beverage container

HPR-PF-36SW



Condition of container bottom and text are clearly imaged.

Data: Illuminance Graph and Uniformity (Representative Example)

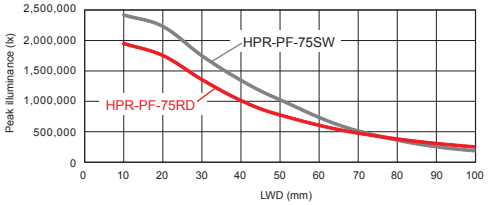
The data included is for reference only. Actual values may vary.

HPR-PF-75

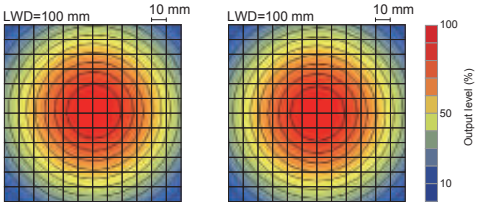


Illuminance graph (LWD characteristics)*2

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



HPR-PF-75SW (White)
HPR-PF-75RD (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Lineup

Model name	LED color	Peak current	Peak wavelength / correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
HPR-PF-75SW	White	12 A	6,500 K	Brackets	FCB-PF Straight Cable (Dedicated Cable) ▶ P.144	PF-A4048-2, PF-A16048-4	170 g
HPR-PF-75RD	Red		636 nm				
HPR-PF-100SW	White	21.6 A	6,500 K				180 g
HPR-PF-100RD	Red		636 nm				
HPR-PF-150SW	White	36 A	6,500 K		FCB-PF-EL9 Straight Cable (Dedicated Cable) ▶ P.144		270 g
HPR-PF-150RD	Red		636 nm				
HPR-PF-200SW	White	43.2 A	6,500 K				400 g
HPR-PF-200RD	Red		636 nm				

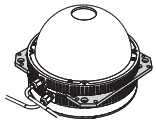
LED Properties: Light Spectrum ▶ P.384 | Extension Cables ▶ P.144 | Dedicated Control Unit ▶ P.331

Options

Expansion Mounting Brackets

Model name	Applicable Light Unit (Common for all colors)	
BK-75-CI	HPR-PF-75	HPD-PF-75
BK-100-CI	HPR-PF-100	HPD-PF-100
BK-150-CI	HPR-PF-150	HPD-PF-150
BK-200-CI	HPR-PF-200	HPD-PF-200

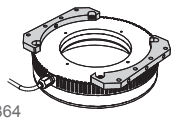
▶ P.363



Light Joint Brackets

Model name	Applicable units 1 (Common for all colors)	Applicable units 2 (Common for all colors)
BK-75-JO	HPR-PF-75	HPD-PF-75
BK-100-JO	HPR-PF-100	HPD-PF-100
BK-150-JO	HPR-PF-150	HPD-PF-150
BK-200-JO	HPR-PF-200	HPD-PF-200

▶ P.364

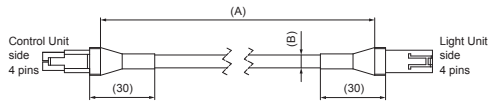


Extension Cables

(mm)

FCB-PF

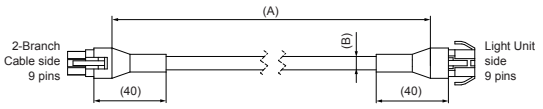
Applicable Light Units: HPR-PF-75 / HPR-PF-100



Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g

FCB-PF-EL9

Applicable Light Units: HPR-PF-150 / HPR-PF-200

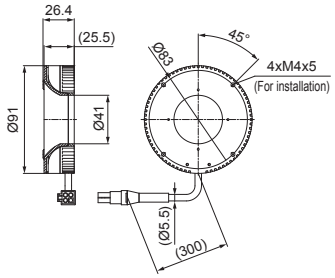


Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF-EL9	1 m	Ø7.4	44.4 mm	100 g
FCB-2-PF-EL9	2 m			190 g
FCB-3-PF-EL9	3 m			270 g
FCB-5-PF-EL9	5 m	Ø9.1	54.6 mm	680 g

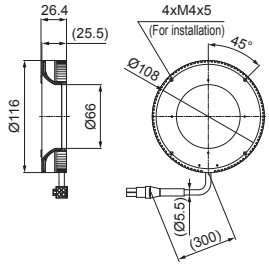
* These cable permitted bending radii are for reference only. Actual values may vary. For information on how to connect extension cables, refer to the figures shown below.

Dimensions (mm)

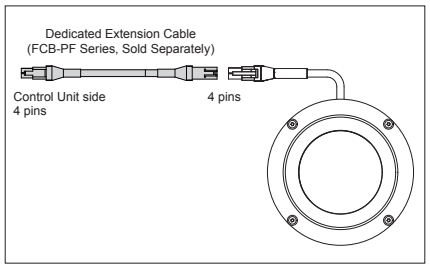
HPR-PF-75SW/RD



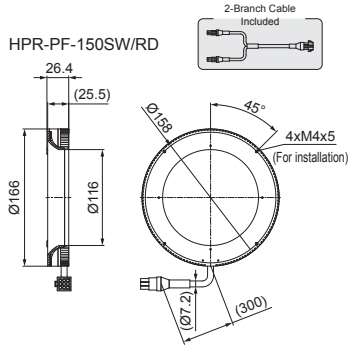
HPR-PF-100SW/RD



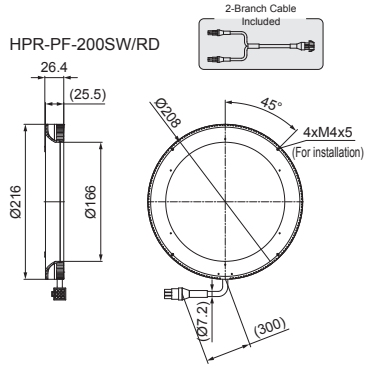
How to Connect the Extension Cables For HPR-PF-75 / 100



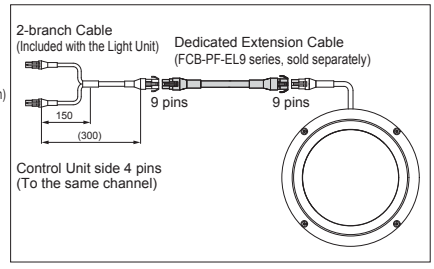
HPR-PF-150SW/RD



HPR-PF-200SW/RD



How to Connect the Extension Cables For HPR-PF-150 / 200



Strobe Lighting

Bar Type
LDL-PF Series

Refer to our website for product details.
CCS LDL-PF ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Bar Lights



LDL-PF-52X18SW　LDL-PF-102X18RD　LDL-PF-152X18SW

LDL-PF-52X30SW　LDL-PF-102X30RD　LDL-PF-152X30SW

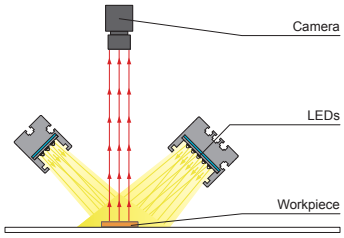
Applications Visual inspection for semiconductor, electronic components, metal parts, automobile components, printings, food, and medicines, etc.

Features

The diffusion plate transmits light from LEDs and provides uniform diffused light on the whole workpiece from its wide emitting surface.



Example configuration (LDL-PF-102X18 / 102X30)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the Paper Label of Beverage Bottles

Workpiece



Beverage bottle

LDL-PF-102X18SW

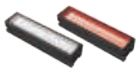


Captured image of a paper label and barcode.

Data: Illuminance Graph and Uniformity (Representative Example)

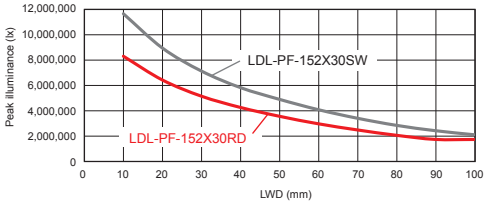
The data included is for reference only. Actual values may vary.

LDL-PF-152X30

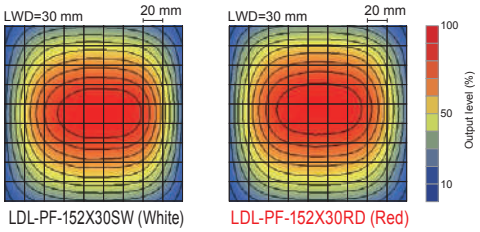


Illuminance graph (LWD characteristics)

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LDL-PF-152X30SW (White)　LDL-PF-152X30RD (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs　Register to use them.

Lineup

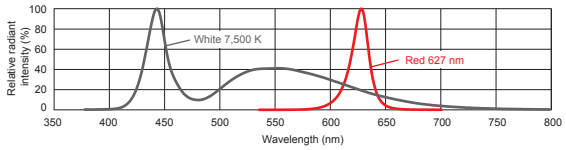
	Model name	LED color	Peak current	Peak wavelength / correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
Emitting width: 18 mm	LDL-PF-52X18SW	White	5.4 A	7,500 K	Diffusion plate Polarizing plate Brackets	FCB-PF Straight Cable (Dedicated Cable) ▶ P.146	PF-A4048-2 PF-A16048-4	140 g
	LDL-PF-52X18RD	Red		627 nm				
	LDL-PF-102X18SW	White	10.8 A	7,500 K				210 g
	LDL-PF-102X18RD	Red		627 nm				
	LDL-PF-152X18SW	White	16.2 A	7,500 K				290 g
	LDL-PF-152X18RD	Red		627 nm				
Emitting width: 30 mm	LDL-PF-52X30SW	White	9 A	7,500 K				180 g
	LDL-PF-52X30RD	Red		627 nm				
	LDL-PF-102X30SW	White	18 A	7,500 K				270 g
	LDL-PF-102X30RD	Red		627 nm				
	LDL-PF-152X30SW*	White	27 A	7,500 K		FCB-PF x 2*		380 g
	LDL-PF-152X30RD*	Red		627 nm				

* The LDL-PF-152X30SW/RD Light Unit has two connectors. Use two extension cables of the same length to connect the Light Unit. Using cables of different lengths may cause uneven light emission due to voltage drop caused by the DC resistance of the cable.

Extension Cables ▶ P.146
Dedicated Control Unit ▶ P.331

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Reduces glare, especially problematic in the imaging of glossy workpieces.

Diffusion Plates

Model name	Applicable Light Unit (Common for all colors)
DF-LDL-PF-52X18	LDL-PF-52X18
DF-LDL-PF-102X18	LDL-PF-102X18
DF-LDL-PF-152X18	LDL-PF-152X18
DF-LDL-PF-52X30	LDL-PF-52X30
DF-LDL-PF-102X30	LDL-PF-102X30
DF-LDL-PF-152X30	LDL-PF-152X30

▶ P.359



Reduces glare when used in combination with a Polarizing Filter on the camera.

Polarizing Plates

Model name	Applicable Light Unit (Common for all colors)
PL-LDL-PF-52X18-△△	LDL-PF-52X18
PL-LDL-PF-102X18-△△	LDL-PF-102X18
PL-LDL-PF-152X18-△△	LDL-PF-152X18
PL-LDL-PF-52X30-△△	LDL-PF-52X30
PL-LDL-PF-102X30-△△	LDL-PF-102X30
PL-LDL-PF-152X30-△△	LDL-PF-152X30

△△: Polarizing direction
HO: Light is polarized parallel to the longer edge of the plate.
VE: Light is polarized parallel to the shorter edge of the plate.

▶ P.360



Secures Light Units.

Brackets

Model name	Applicable Light Unit (Common for all colors)
BK-LDL-PF	LDL-PF-52X18 LDL-PF-102X18 LDL-PF-152X18 LDL-PF-52X30 LDL-PF-102X30 LDL-PF-152X30

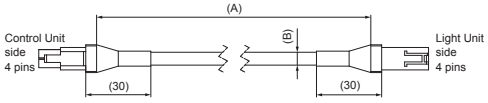
▶ P.363

Extension Cables

FCB-PF

(mm)

Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g



* These cable permitted bending radii are for reference only. Actual values may vary.
For information on how to connect extension cables, refer to the next page.

You can inquire using our website.
Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP — Direct Lighting
HPR2 LFR LKR FPR FPQ3 — Diffused Lighting
LDL2 LDLB HLDL2 — Direct Lighting
TH2 (5 types) LFL HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT LFV3 LFV3-G — Diffused Lighting
MSU MFU — Collimated Lighting
PF — Strobe Lighting
HLDR-IP/HSL-PCL — Water proof
UV2 UV LNSP-UV-FN — Ultraviolet Lighting
IR2 — Infrared Lighting
IU — Intensity Control
HLV3 HLV2 LV LSP HFS/HFR HLV3-NR HLV3-3M-RGB-4 HLV2-NR HLV2-3M-RGB-3W PFBR-600 PFBR-150 PFB3 — Spot Lighting, Etc.
LNLP LNSP2 LNSP Coaxial Units LNSP-FN LN/LN-HK — Convergent Lighting
LNSD LND2 HLND LT LNV — Diffused Lighting
LNDG LNIS2 LNIS LNIS-FN — Oblique Angled Lighting
Telecentric Lens Macro Lens — Lenses

LDL-PF Series



Refer to our website for product details.

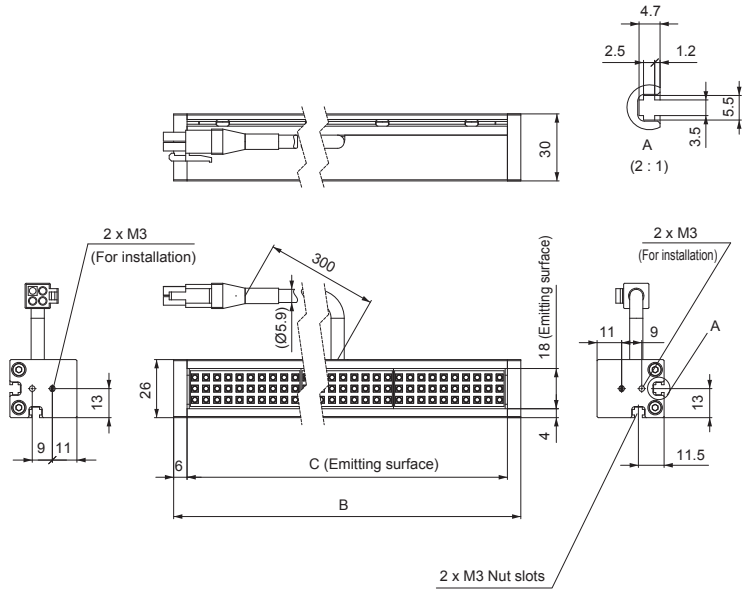
CCS LDL-PF ▶ Search

For quick access.

You can also use your smartphone or cell phone.

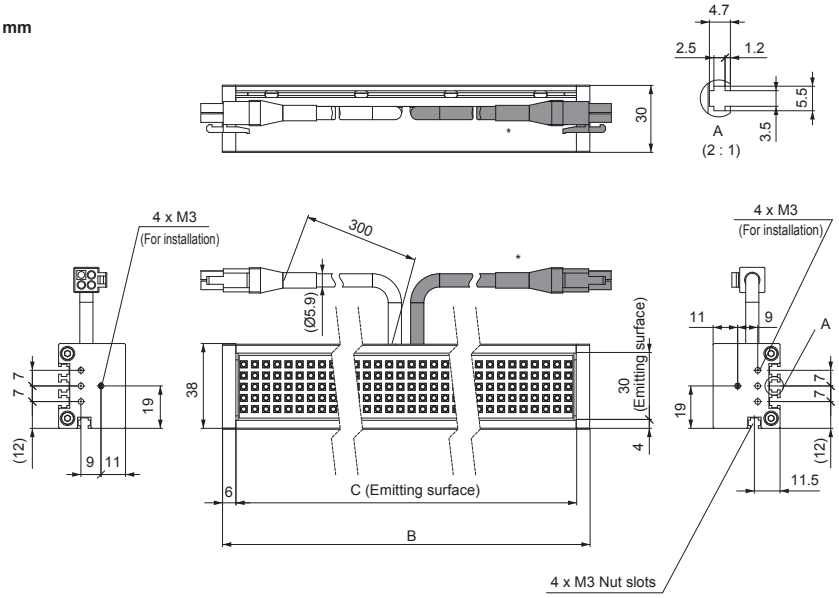
Dimensions (mm)

● **Emitting width: 18 mm**



Model name	B	C
LDL-PF-52X18SW/RD	64	52
LDL-PF-102X18SW/RD	114	102
LDL-PF-152X18SW/RD	164	152

● **Emitting width: 30 mm**



* The LDL-PF-152X30SW/RD Light Unit has two connectors.

Model name	B	C
LDL-PF-52X30SW/RD	64	52
LDL-PF-102X30SW/RD	114	102
LDL-PF-152X30SW/RD	164	152

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Strobe Lighting

Dome Type HPD-PF Series

Refer to our website for product details.

CCS HPD-PF ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Ultra-high power strobe Dome Lights



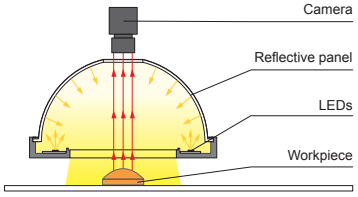
Applications Visual, text, or color determination inspections on glossy surfaces, curved surfaces, or uneven surfaces; inspection for engraving, damage, or stains on stain finishing; inspecting parts on boards; visual inspection food and medicines; etc.

Features

Light from the LEDs is diffused inside the dome-shaped reflective panel. The whole surface of the workpiece is illuminated with diffused light uniformly.



Example configuration (HPD-PF-150)



We accept custom orders. Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the surface of medicine tablets

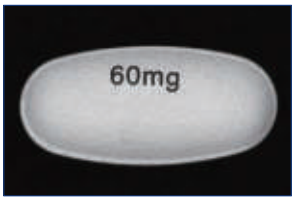
Workpiece



Medicine tablet

This workpiece was processed by CCS for sample imaging.

HPD-PF-75SW



Condition of tablet surface and text are clearly imaged.

Data: Illuminance Graph and Uniformity (Representative Example)

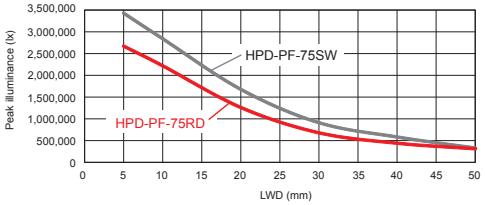
The data included is for reference only. Actual values may vary.

HPD-PF-75

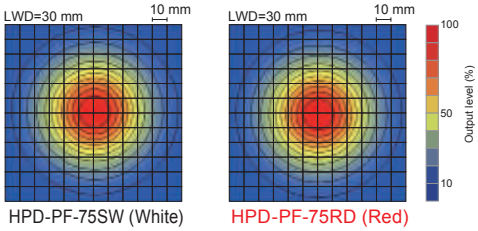


Illuminance graph (LWD characteristics)*1 *2

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



HPD-PF-75SW (White) HPD-PF-75RD (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

Model name	LED color	Peak current	Peak wavelength /correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
HPD-PF-75SW	White	12 A	6,500 K	Brackets	FCB-PF Straight Cable (Dedicated Cable) ▶ P.150	PF-A4048-2 PF-A16048-4	150 g
HPD-PF-75RD	Red		636 nm				
HPD-PF-100SW	White	21.6 A	6,500 K				170 g
HPD-PF-100RD	Red		636 nm				
HPD-PF-150SW	White	36 A	6,500 K		FCB-PF-EL9 Straight Cable (Dedicated Cable) ▶ P.150		310 g
HPD-PF-150RD	Red		636 nm				
HPD-PF-200SW	White	43.2 A	6,500 K				480 g
HPD-PF-200RD	Red		636 nm				

LED Properties: Light Spectrum ▶ P.384 | Extension Cables ▶ P.150 | Dedicated Control Unit ▶ P.331

Options

Light joint bracket

Model name	Applicable units 1 (Common for all colors)	Applicable units 2 (Common for all colors)
BK-75-JO	HPD-PF-75	HPR-PF-75
BK-100-JO	HPD-PF-100	HPR-PF-100
BK-150-JO	HPD-PF-150	HPR-PF-150
BK-200-JO	HPD-PF-200	HPR-PF-200

▶ P.364

Coaxial Light joint bracket

Model name	Applicable units 1 (Common for all colors)	Applicable units 2 (Common for all colors)
BK-HPD2-75-LFV	HPD-PF-75	LFV-PF-35
BK-HPD2-100-LFV	HPD-PF-100	LFV-PF-50
BK-HPD2-150-LFV	HPD-PF-150	
BK-HPD2-200-LFV	HPD-PF-200	LFV-PF-70

▶ P.364

Expansion mounting bracket

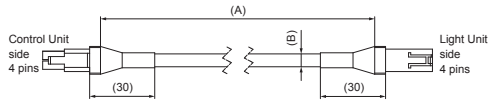
Model name	Applicable Light Unit (Common for all colors)
BK-75-CI	HPD-PF-75
BK-100-CI	HPD-PF-100
BK-150-CI	HPD-PF-150
BK-200-CI	HPD-PF-200

▶ P.364

Extension Cables

FCB-PF

Applicable Light Units: HPD-PF-75 / HPD-PF-100

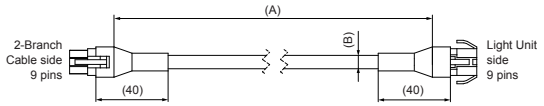


Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g

FCB-PF-EL9

(mm)

Applicable Light Units: HPD-PF-150 / HPD-PF-200

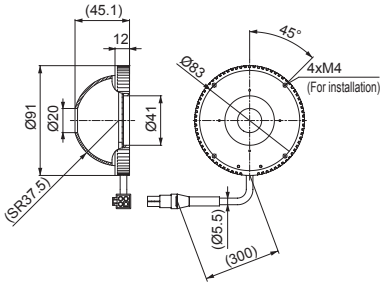


Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF-EL9	1 m	Ø7.4	44.4 mm	100 g
FCB-2-PF-EL9	2 m			190 g
FCB-3-PF-EL9	3 m			270 g
FCB-5-PF-EL9	5 m	Ø9.1	54.6 mm	680 g

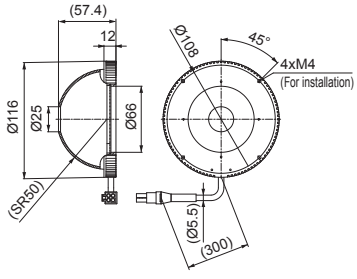
* These cable permitted bending radii are for reference only. Actual values may vary. For information on how to connect extension cables, refer to the figures shown below.

Dimensions (mm)

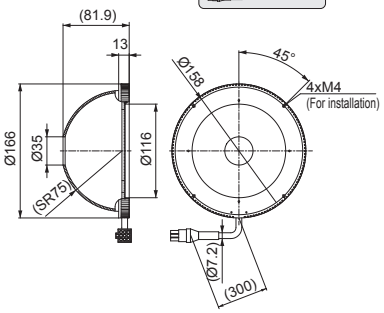
HPD-PF-75SW/RD



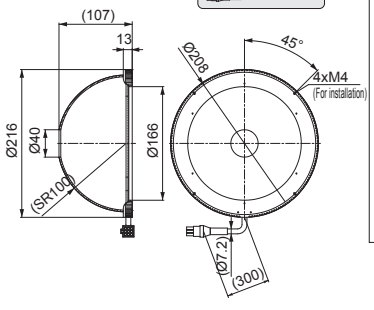
HPD-PF-100SW/RD



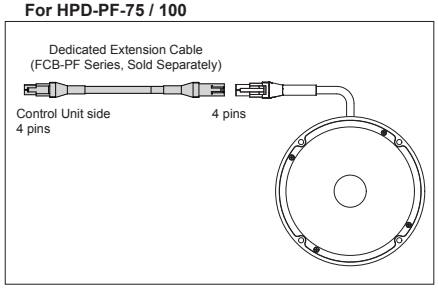
HPD-PF-150SW/RD



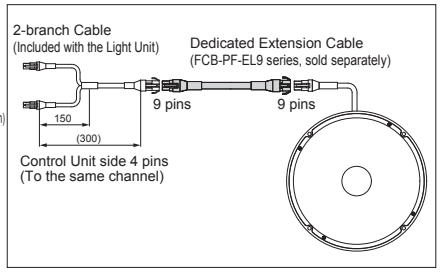
HPD-PF-200SW/RD



How to Connect the Extension Cables For HPD-PF-75 / 100



How to Connect the Extension Cables For HPD-PF-150 / 200

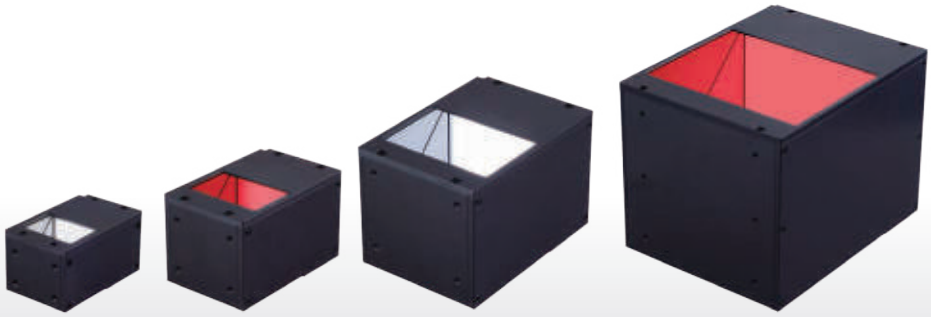


Strobe Lighting

Coaxial Type
LFV-PF Series

Refer to our website for product details.
CCS LFV-PF ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Ultra-high power strobe Coaxial Lights



LFV-PF-35SW LFV-PF-50RD LFV-PF-70SW LFV-PF-100RD

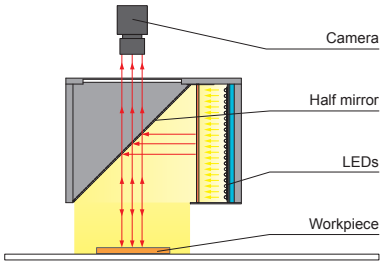
Applications Inspection for fault, damage, scratches, or dents on glossy surfaces or mirrors; visual inspection of metal parts; dimension measurement of glass; pattern inspection on printed circuit boards; etc.

Features

Diffused light from the LEDs is reflected on the half mirror and directed vertically downward on the same axis as the camera axis.



Example configuration (LFV-PF-100)



We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging example: Imaging the appearance of cans

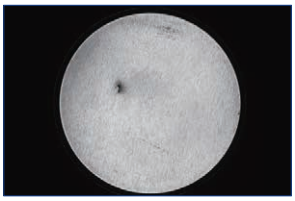
Workpiece



Can

This workpiece was processed by CCS for sample imaging.

HPD-PF-100SW



Condition and the appearance of can are clearly imaged.

Data: Illuminance Graph and Uniformity (Representative Example)

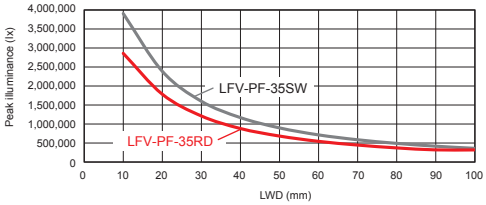
The data included is for reference only. Actual values may vary.

LFV-PF-35

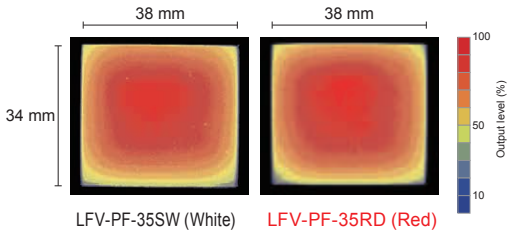


Illuminance graph (LWD characteristics)*1*2

*1 Illuminance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LFV-PF-35SW (White) LFV-PF-35RD (Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

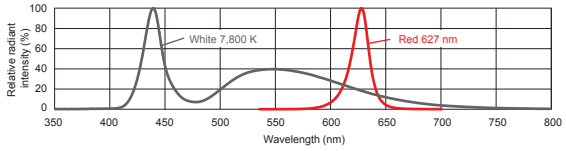
Model name	LED color	Peak current	Peak wavelength /correlated color temperature	Options	Extension cables	Dedicated Control Units	Weight
LFV-PF-35SW	White	14.4 A	7,800 K	Diffusion plate Polarizing plate Light control film Brackets	FCB-PF Straight Cable (Dedicated Cable) ▶ P.152	PF-A4048-2 PF-A16048-4	230 g
LFV-PF-35RD	Red	10.8 A	627 nm				
LFV-PF-50SW	White	21.6 A	7,800 K				400 g
LFV-PF-50RD	Red	18 A	627 nm				
LFV-PF-70SW	White	37.8A	7,800 K		FCB-PF-EL9 Straight Cable (Dedicated Cable) ▶ P.152		800 g
LFV-PF-70RD	Red	37.8A	627 nm				
LFV-PF-100SW	White	64.8A*1	7,800 K	Diffusion plate Polarizing plate Light control film		PF-A16048-4	1,400 g
LFV-PF-100RD	Red	48.6A*2	627 nm				

*1 LFV-PF-100SW (L1 connector: 32.4 A, L2 connector: 32.4 A)
*2 LFV-PF-100RD (L1 connector: 25.2 A, L2 connector: 23.4 A)

Extension Cables ▶ P.152
Dedicated Control Unit ▶ P.331

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options

Diffusion plates

Light Color Type
Transmission: High
Factory-installed

Deep Color Type
Transmission: Low
End of the model name: -UF

Reduces glare, especially problematic in the imaging of glossy workpieces.

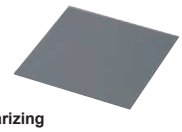
Replace the factory-installed Diffusion Plate if you want to change the transmission.

Model name	Applicable Light Unit (Common for all colors)
DF-LFV3-35	LFV-PF-35
DF-LFV3-50	LFV-PF-50
DF-LFV3-70	LFV-PF-70
DF-LFV3-100	LFV-PF-100

Model name	Applicable Light Unit (Common for all colors)
DF-LFV3-35-UF	LFV-PF-35
DF-LFV3-50-UF	LFV-PF-50
DF-LFV3-70-UF	LFV-PF-70
DF-LFV3-100-UF	LFV-PF-100

▶ P.359

Polarizing plates

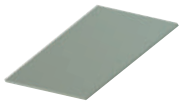


Reduces surface glare when used in combination with a polarizing filter on the camera.

Model name	Applicable Light Unit (Common for all colors)
PL-LFV3-35	LFV-PF-35
PL-LFV3-50	LFV-PF-50
PL-LFV3-70	LFV-PF-70
PL-LFV3-100	LFV-PF-100

▶ P.360

Light control film



Improves parallelism of light to reduce light diffraction so that the outline of the workpiece will be clearly imaged in the appearance inspection.

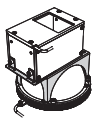
Model name	Applicable Light Unit (Common for all colors)
LC-LFV3-35	LFV-PF-35
LC-LFV3-50	LFV-PF-50
LC-LFV3-70	LFV-PF-70
LC-LFV3-100	LFV-PF-100

▶ P.361

Coaxial Light joint bracket

Model name	Applicable units 1 (Common for all colors)	Applicable units 2 (Common for all colors)
BK-HPD2-75-LFV	LFV-PF-35	HPD-PF-75
BK-HPD2-100-LFV	LFV-PF-50	HPD-PF-100
BK-HPD2-150-LFV		HPD-PF-150
BK-HPD2-200-LFV	LFV-PF-70	HPD-PF-200

▶ P.364

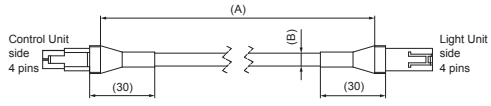


Combine with a Dome Lights HPD-PF series to solve uneven illumination and achieve uniform illumination from all directions.

Extension Cables

FCB-PF

Applicable Light Units: LFV-PF-35 / LFV-PF-50

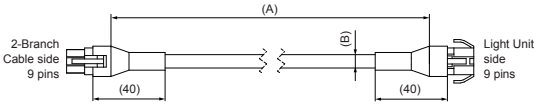


Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF	1 m	Ø5.9	35.4 mm	100 g
FCB-2-PF	2 m			150 g
FCB-3-PF	3 m			200 g
FCB-5-PF	5 m	Ø7.0	42.0 mm	450 g

FCB-PF-EL9

(mm)

Applicable Light Units: LFV-PF-70 / LFV-PF-100



Model name	Dimension A	Dimension B	Cable permitted bending radius*	Weight
FCB-1-PF-EL9	1 m	Ø7.4	44.4 mm	100 g
FCB-2-PF-EL9	2 m			190 g
FCB-3-PF-EL9	3 m			270 g
FCB-5-PF-EL9	5 m	Ø9.1	54.6 mm	680 g

* These cable permitted bending radii are for reference only. Actual values may vary. For information on how to connect extension cables, refer to the figures shown below.

LFV-PF Series



Refer to our website for product details.

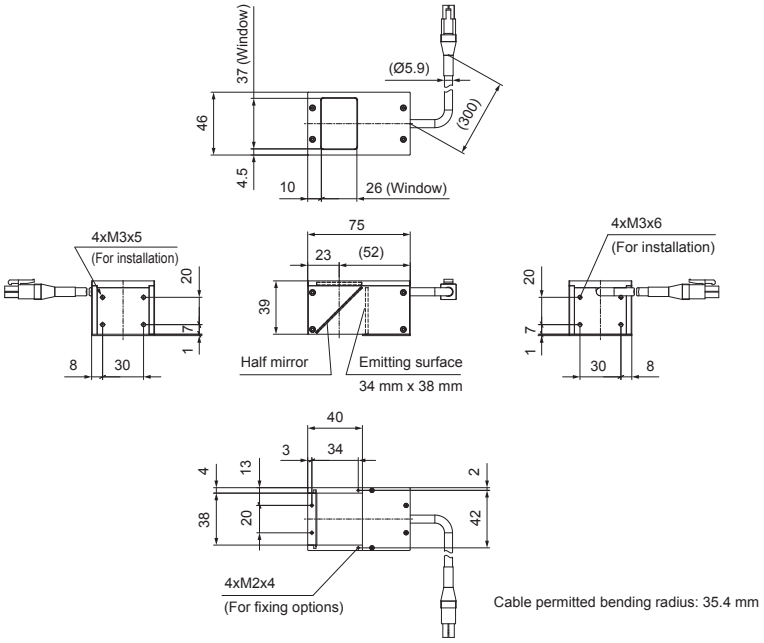
CCS LFV-PF ▶ Search

For quick access.

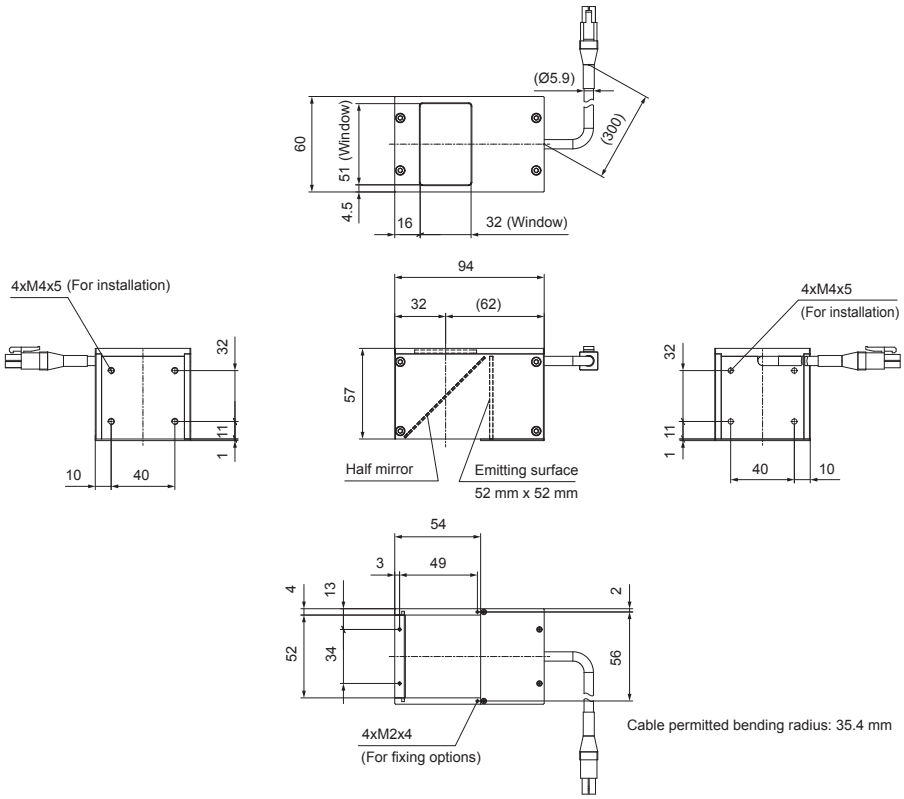
You can also use your smartphone or cell phone.

Dimensions (mm)

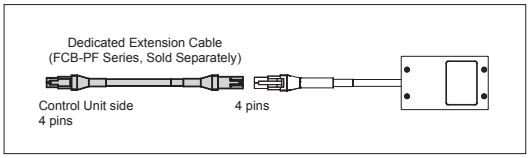
LFV-PF-35RD/SW



LFV-PF-50RD/SW



■ **How to Connect the Extension Cables:**
For LFV-PF-35 / LFV-PF-50

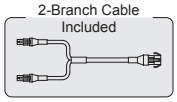


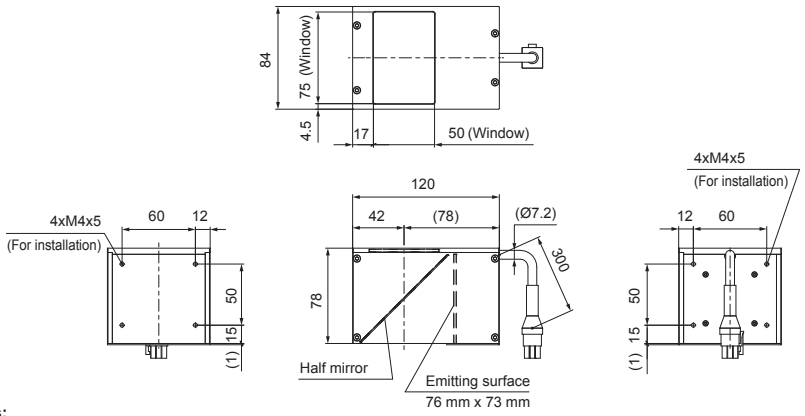
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

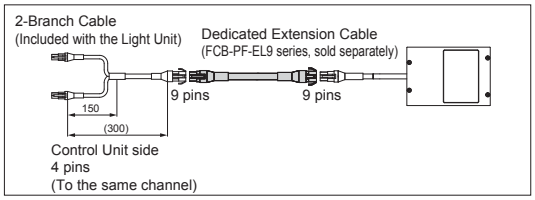
Dimensions (mm)

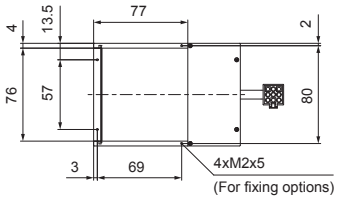
LFV-PF-70RD/SW





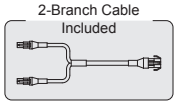
How to Connect the Extension Cables: For LFV-PF-70



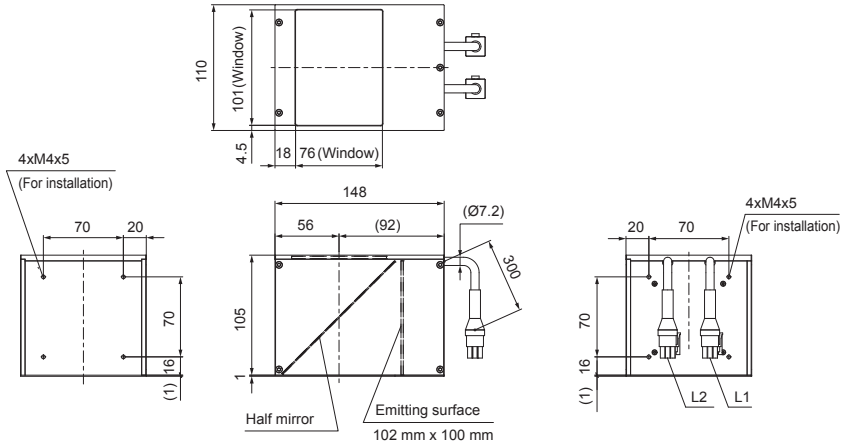


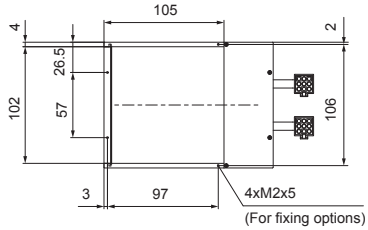
Cable permitted bending radius: 43.2 mm

LFV-PF-100RD/SW



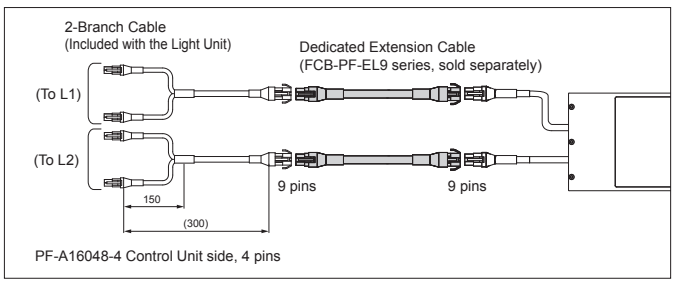
X 2 pieces





Cable permitted bending radius: 43.2 mm

How to Connect the Extension Cables: For LFV-PF-100



Waterproof

IP67 Lights (Waterproof Type)

HLDR-IP Series / HSL-PCL Series

Refer to our website for product details.
CCS HLDR-IP ▶ Search
For quick access.
You can also use your smartphone or cell phone.

HLDR-IP Series

Provides diffused light converged by a lens





HLDR-IP67-100RD



HLDR-IP67-100SW



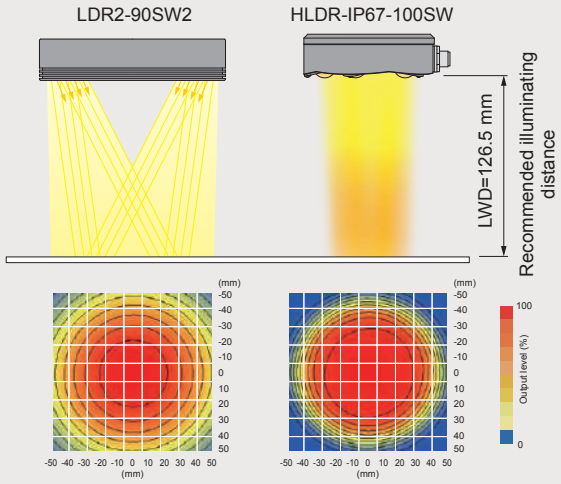
HLDR-IP67-100UV2-365

Applications Fault inspection for metal parts, visual inspection for rubber parts, visual inspection for resin parts, adhesive application inspection for food containers (UV), etc.

Achieves Convergent Illumination

The HLDR-IP series features convergent Ring Lights that ensure brightness with a convergent lens.

Comparison of illumination between a Ring Light and the HLDR-IP series



IP67 Compliant

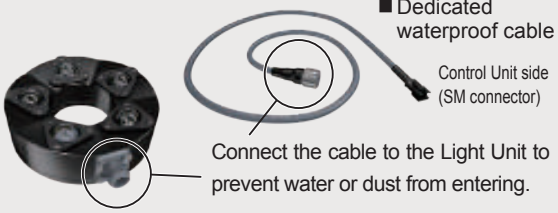
It has a waterproof and rustproof structure for use in harsh environments. Optimal for sites where manufacturing lines must be cleaned, such as for food and chemicals.

Waterproof Ring Light HLDR-IP series

- Convergent Ring Light
- Emitted color: Red, white, UV (365 nm)
- IP67 compliant
- Uses an M12 connector



Uses an M12 connector



Connect the cable to the Light Unit to prevent water or dust from entering.

Custom Orders

Please contact your CCS sales representative.

E.g.: Changed the illuminating angle

Illuminating angle

Creating a Light Unit with a changed converging distance



Customizable items

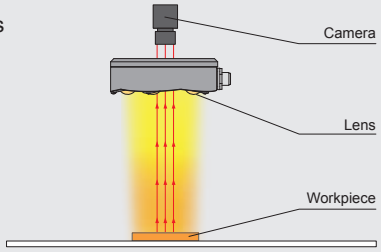
External/internal diameter | Wavelength/ color | Increase output | Cable length | Illuminating angle | Format/ material | Connector format | Installation/ mounting

Etc.

Example Configuration

Convergent waterproof Ring Light that ensures brightness with a convergent lens.

HLDR-IP67-100



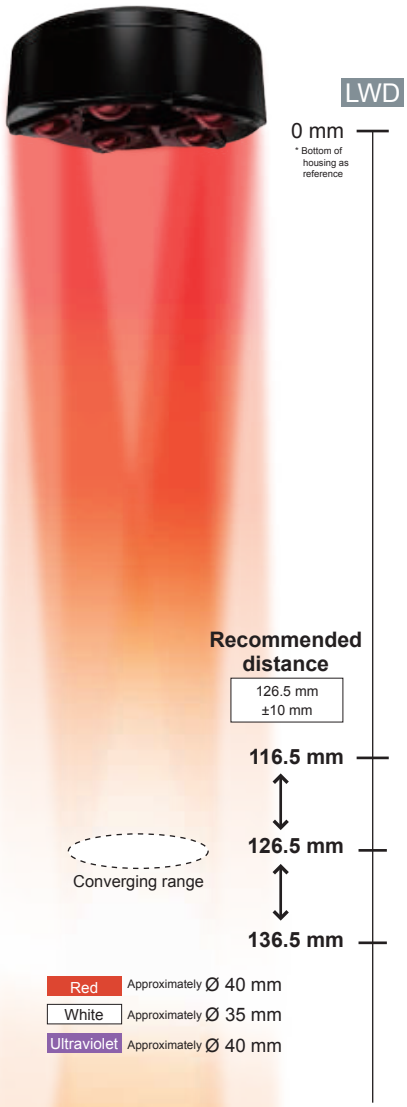
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

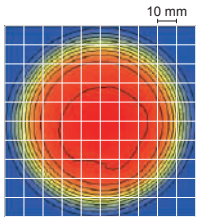
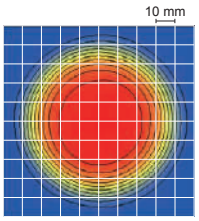
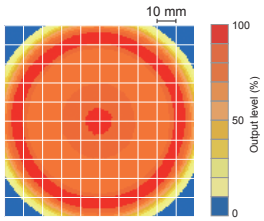
Regarding Recommended Distance

The data included is for reference only. Actual values may vary.

Convergent illumination image



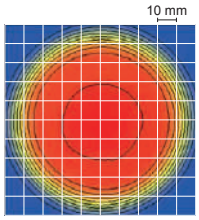
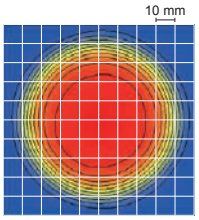
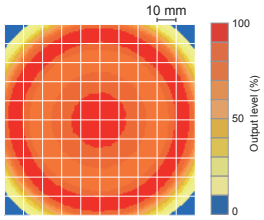
LWD=116.5 mm

Illuminance Approximately 59,000 lx (Red)	Illuminance Approximately 138,000 lx (White)	Irradiance 20.4 mW/cm² (Ultraviolet)
		

The values for red and white are measured values. Results for individual products may vary.

Values are simulated for UV. Actual values may vary.

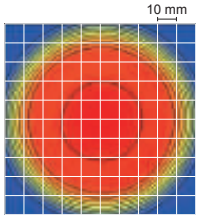
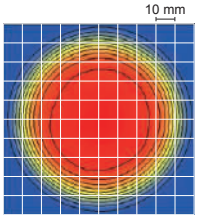
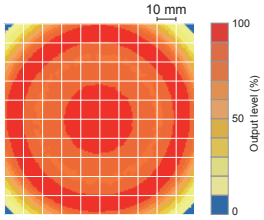
LWD=126.5 mm

Illuminance Approximately 53,000 lx (Red)	Illuminance Approximately 124,000 lx (White)	Irradiance 18.6 mW/cm² (Ultraviolet)
		

The values for red and white are measured values. Results for individual products may vary.

Values are simulated for UV. Actual values may vary.

LWD=136.5 mm

Illuminance Approximately 47,000 lx (Red)	Illuminance Approximately 113,000 lx (White)	Irradiance 16.8 mW/cm² (Ultraviolet)
		

The values for red and white are measured values. Results for individual products may vary.

Values are simulated for UV. Actual values may vary.



- Converged near LWD=126.5 mm.
- If the recommended range (126.5 mm±10 mm) is exceeded, the uniformity may change and the imaging may be affected.
- LWD is the distance from the Light Unit to the workpiece.

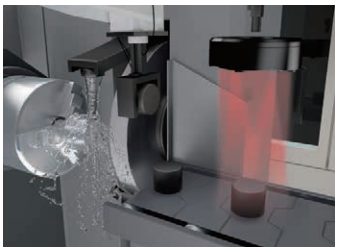
Safe to Use When Washing Manufacturing Lines

■ When washing manufacturing lines



Food, chemicals, etc.

■ For manufacturing lines that use water



Automotive parts, etc.

You can inquire using our website.

Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/ HSL-PCL
Water proof
UV2
UV
LNSP-UV-FN
Ultraviolet Lighting
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

HLDR-IP Series



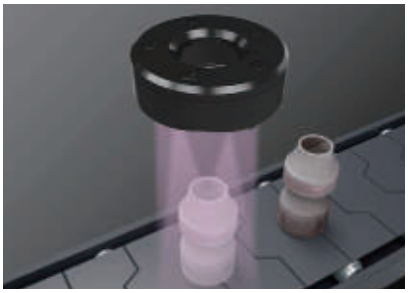
Refer to our website for product details.

CCS HLDR-IP ▶ Search

For quick access.

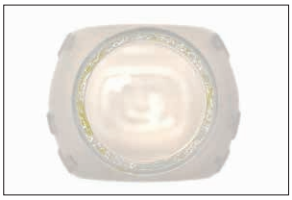
You can also use your smartphone or cell phone.

Imaging Example: Fluorescent Observation of Adhesive on Plastic Containers



Description	Application inspection for adhesive
Workpiece	Plastic containers
Conventional lighting	LED visible light lighting
New lighting	HLDR-IP67-100UV2-365
Result	Only detects the adhesive

Workpiece image



Plastic containers

LED visible light lighting



It was difficult to detect the application of the adhesive using visible light lighting.

HLDR-IP67-100UV2-365



Only the adhesive causes fluorescent scattering, allowing for an image of the application status.

Lineup

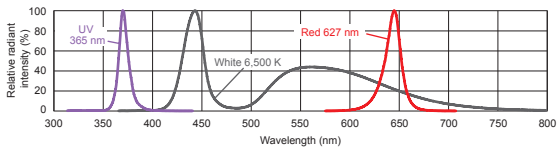
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Dedicated cables	Recommended Control Units	Weight
HLDR-IP67-100RD	Red	24 V / 18 W	627 nm	–	FCB-M12 Straight Cable ▶ P.158	PD3 PSB	420 g
HLDR-IP67-100SW	White		6,500 K				
HLDR-IP67-100UV2-365	Ultraviolet		365 nm	Band-pass filter Ultraviolet cutting filter Ultraviolet transmission filter			

Dedicated Cables ▶P.158 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶P.309

Please inquire if you would like to use in combination with a Strobe Control Unit (overdrive type).

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Transmits light with wavelength range of 290 nm to 365 nm. (Transmission of 90% min.)

Band-pass filter
F-BP324

Model name	Size
F-BP324	25 sizes (Refer to the pages on optional products.)

▶ P.355

Other various band-pass filters used for different wavelengths are available. For details, refer to the pages on optional lens filters.

▶ P.355



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

Ultraviolet cutting filter
L42 series

Model name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.358



Transmits light in a wavelength range from approximately 280 to 380 nm centered on 340 nm.

Ultraviolet transmission filter
U340 series

Model name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

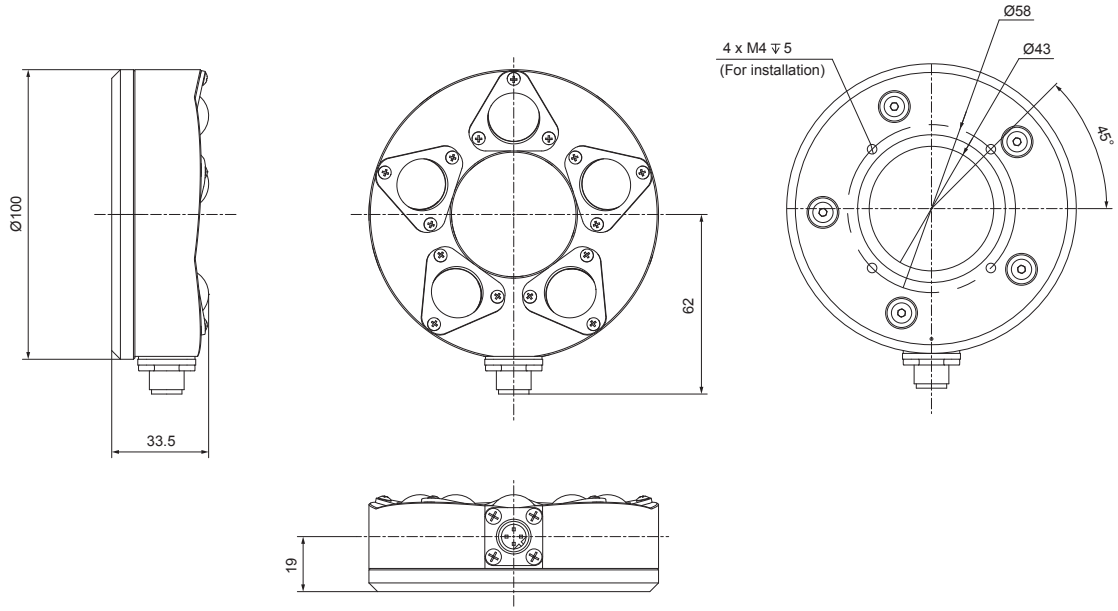
▶ P.358

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

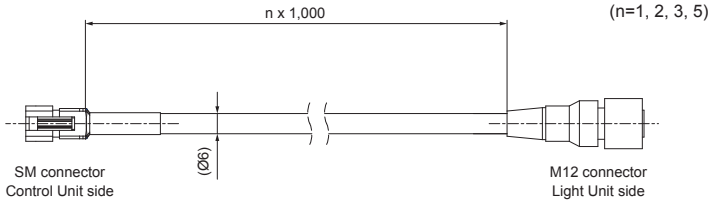
Dimensions (mm)

HLDR-IP67-100RD/SW/UV2-365



Dedicated Cable

Model name	Cable length	Weight
FCB-1-M12	1 m	70 g
FCB-2-M12	2 m	125 g
FCB-3-M12	3 m	180 g
FCB-5-M12	5 m	305 g



SM connectors are not waterproof.

Cable permitted bending radius: 40 mm
The above cable permitted bending radius is a reference value. Actual value may vary.

Regarding Case Materials

	LED Light (Common for all colors)	Dedicated cable
Case material	Body: aluminum alloy (black anodized) Screws: SUS Washers: SUS, elastomer (TPE) Connectors: PA resin Lens: silicone	Light Unit side connector: soft PBT Cable: PVC Control Unit side connector: nylon

Indicates the details for materials only regarding the external parts.

Note

"IP67" indicates the level of protection against foreign material entering electrical instruments

The 1st numeral "6" indicates the following level of protection:

- No dust inside the instrument. (dustproof)

The 2nd numeral "7" indicates the following level of protection:

- No damage when submerged in water at the rated pressure for the rated time. (watertight type)
- Can be submerged in water to a depth of 1 m (for instruments with a height of less than 850 mm) for 30 minutes.

Cautionary Information regarding Waterproofing

- After cleaning manufacturing lines, be sure to wipe away any moisture remaining on the lens.
  Imaging can be affected by moisture on the lens.
- Use water to wash away any cleaning agent adhered to this product.
- Use water to wash away any oils or chemicals adhered to this product.
- The Control Unit connectors (SM connectors) on dedicated cables are not waterproof.

Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using an UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiating parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Thoroughly educate all those involved near the product about the dangers of UV LEDs.



E.g.: UV blocking eye wear

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

HSL-PCL Series



Refer to our website for product details.

CCS HSL-PCL ▶ Search

For quick access.

You can also use your smartphone or cell phone.

HSL-PCL Series

High-Power Spot Lights



HSL-58RD-D300PCL



HSL-58SW-D300PCL



HSL-58BL-D300PCL



HSL-58GR-D300PCL

CE

Note: These products are sold only outside Japan.

Features

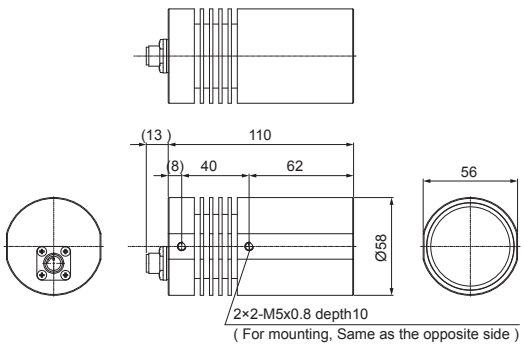
- For replacement of halogen
- Long lifetime
- Low power consumption
- High uniformity
- IP67 Compliant

Model name	LED color
HSL-58RD-D300PCL	Red
HSL-58SW-D300PCL	White
HSL-58BL-D300PCL	Blue
HSL-58GR-D300PCL	Green

Common Specifications

LED color	Red, White, Blue, Green
Peak wavelength	Red: 645 nm typ., Blue: 470 nm typ., Green: 520 nm typ.
Power consumption	2.8 W max.
Polarity & signal	1: (+), 2: no connection, 3: (-), 4: (R)
Housing material	Aluminum
Cooling method	Natural air cooling
Recommended LWD	2,000 mm or less
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Weight	400 g

Dimensions (mm)



Various technical documents available.

PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Recommended Controller

CC-PJ Series



CE

Refer to P.347 for more details.

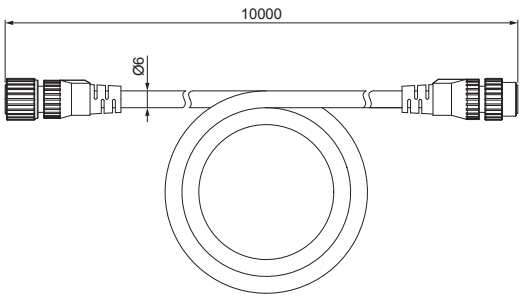
Features

- Constant-current analog controller
- Compact & space-saving
- 1-channel light output
- 100 different levels of light intensity
- 24 VDC input
- CE certified
- ON/OFF control and Strobe lighting via External control

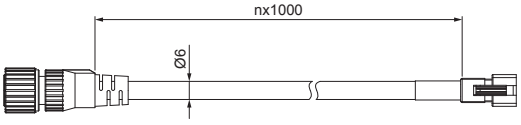
HSL-PCL Cables

Dimensions (mm)

Extension cable



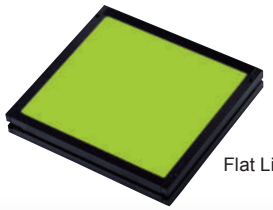
n=2, 5, 10



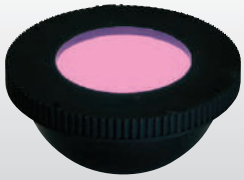
2 m	FCB-2-HSL-SM
5 m	FCB-5-HSL-SM
10 m	FCB-10-HSL-SM
10 m	FCB-EX10-HSL (Extension cable)

RGB Lighting: Create the Color You Want with One Light


Bar Lights


Flat Lights


Ring Lights


Dome Lights

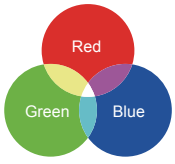

Coaxial Lights

Inspections Using RGB Lighting

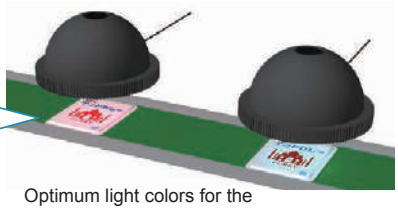
If there are workpieces with different colors, or if there are different colored products on the same assembly line, you need to set up suitable lighting colors to detect the features.
With RGB lighting, you can combine red, green, and blue light. This allows you to take optimum images of the workpieces by changing the illumination.

Special Features of RGB Lighting

1. Switch between red, green, or blue.
2. Create your own color by blending 3 colors.



Light Output Control


Optimum light colors for the workpieces and inspection schemes

There are aging variations in the radiant quantities depending on each LEDs color (red, green, and blue).

Form Factors

Various models are available to fit your workpieces and inspection schemes, such as ring lights, bar lights, dome lights, and flat lights. Furthermore, CCS can provide Custom LED Lights with specialized shapes and irradiation methods to meet your needs.

Ring Lights



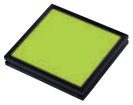
Bar Lights



Dome Lights



Flat Lights



Coaxial Lights



* CCS provides different types of custom production. Please contact your sales representatives for details.

Applications of RGB Lighting

Example 1: Imaging with an RGB Bar Light

Puzzle













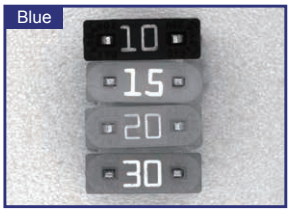
Example 2: Imaging with an RGB Dome Light

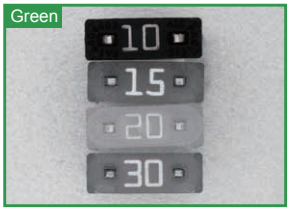
Fuse numbers

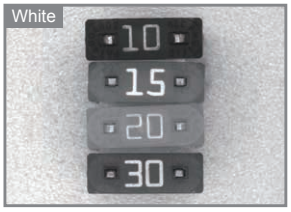








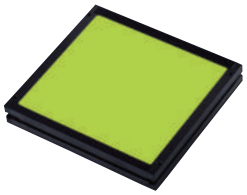




Example 3: Imaging with an RGB Flat Light

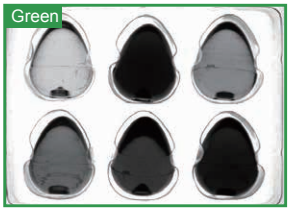
Semi-transparent products

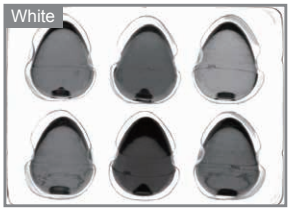












Refer to our website for product details.
CCS UV2 ▶Search
For quick access.
You can also use your smartphone or cell phone.

LDR2 LDR2-LA LDR-LA1 SQR SQR-TP — Direct Lighting
HPR2 LFR LKR FPR FPQ3 — Diffused Lighting
LDL2 LDLB HLDL2 — Direct Lighting
TH2 (5 types) LFL HPD2 LDM2 LAV PDM LFXV LFX3 LFX3-PT LFV3 LFV3-G — Diffused Lighting
MSU MFU — Collimated Lighting
PF — Strobe Lighting
HLDR-IP/HSL-PCL — Water-proof
UV2 UV LNSP-UV-FN — Ultraviolet Lighting
IR2 — Infrared Lighting
IU — Intensity Control
HLV3 HLV2 LV LSP HFS/HFR HLV3-NR HLV3-3M-RGB-4 HLV2-NR HLV2-3M-RGB-3W PFBR-600 PFBR-150 PFB3 — Spot Lighting, Etc.
LNLP LNSP2 LNSP Coaxial Units LNSP-FN LN/LN-HK — Convergent Lighting
LNSD LND2 HLND LT LNV — Diffused Lighting
LNDG LNIS2 LNIS LNIS-FN — Oblique-Angled Lighting
Telecentric Lens Macro Lens — Lenses

UV Lights that use high output UV-LEDs



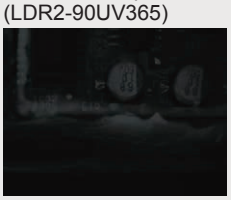
Applications Detecting seal material through fluorescent excitation, reading invisible code, inspections using differences in spectral reflectivity, inspections using differences in scattering rates, etc.

Using High Output UV-LEDs

The high output UV-LEDs achieved enhanced output power significantly higher than that of conventional products.

Comparison of imaging with conventional product

Conventional product (LDR2-90UV365)



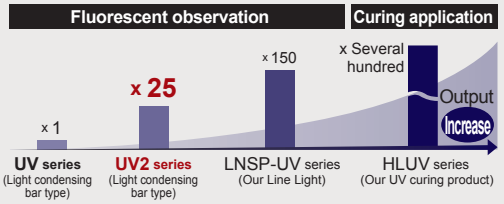
The conventional product lacks output and fluorescent observation is difficult.

LDR2-100UV2-365-W



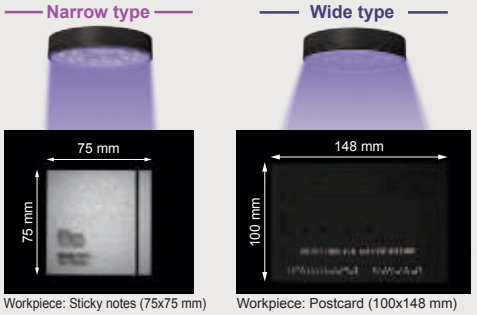
The increased output of the high output UV Light allows for fluorescent observation.

Image comparing output of UV Lights by application



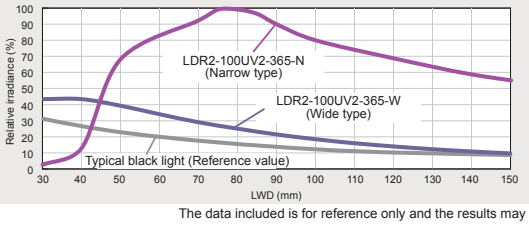
Narrow Type to Irradiate a Narrow Area

The product lineup includes wide type and narrow type Light Units to irradiate a respective extent. Select an optimum Light Unit to meet the purpose of use.



Workpiece: Sticky notes (75x75 mm)
Workpiece: Postcard (100x148 mm)

Comparison of output between a high output UV Light and a black light



The data included is for reference only and the results may vary.

Custom Orders

Please contact your CCS sales representative.

E.g.: Different shape

Format/ material

Created a format to match the needs



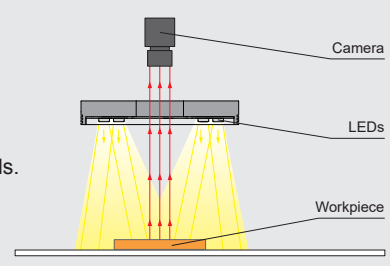
Customizable items

External/internal diameter | Wavelength/ color
Increase output | Cable length
Illuminating angle | Format/ material
Connector format | Installation/ mounting
Etc.

Example Configuration

Ring Lights that use high output UV-LEDs. Bar types and spot types are also available. Select your format to match your needs.

LDR2-100UV2-365-W



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Lineup

Ring Lights

Narrow type

Narrow range irradiation



LDR2-60UV2-365-N　LDR2-100UV2-365-N

Wide type

Wide range irradiation



LDR2-60UV2-365-W　LDR2-100UV2-365-W

Bar Lights

Narrow type

Narrow range irradiation



LDL SERIES

Emitting surface	
	71×12 mm
	138×12 mm
	205×12 mm
	339×12 mm

Wide type

Wide range irradiation



LDL SERIES

Emitting surface	
	71×12 mm
	138×12 mm
	205×12 mm
	339×12 mm

Bar Lights (Light Condensing)



LN SERIES

Emitting surface	
	61×16 mm
	128×16 mm
	195×16 mm

Spot Light



HLV2-24UV2-365

Emitting surface	
	Ø18 mm

Imaging Example: Imaging for Scratches by Magnetic Particle Inspection

■ Workpiece image



Metal components

■ LDL-71X12UV2-365-N

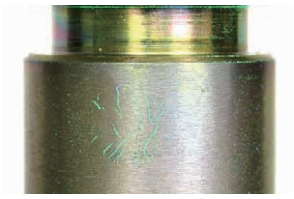


Image of magnetic particle inspection viewed with the naked eye
With a high-output UV LED Light Unit, the scratches can be observed by fluorescence.

■ LDL-71X12UV2-365-N

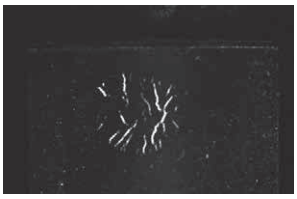


Image of magnetic particle inspection captured using a monochromatic camera
With a high-output UV LED Light Unit, the scratches can be observed by fluorescence.

Use an optional filter for imaging with increased contrast.

Imaging Example: Imaging Grease Application on Bearings

■ Workpiece image



Bearings

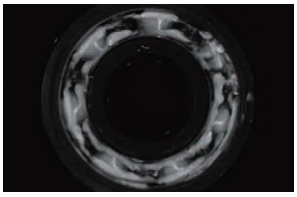
This workpiece was processed by CCS for sample imaging.

■ LED visible lighting



With white light, it is difficult to capture the application of the grease.

■ LDR2-100UV2-365-W



With a high output UV Light, fluorescent observation is possible.
Use an optional filter for imaging with increased contrast.

LDR2 Direct Lighting
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2 Diffused Lighting
LFR
LKR
FPR
FPQ3
LDL2 Direct Lighting
LDLB
HLDL2
TH2 (5 types) Diffused Lighting
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU Collimated Lighting
MFU
PF Strobe Lighting
HLDR-IP/HSL-PCL Water-proof
UV2 Ultraviolet Lighting
UV
LNSP-UV-FN
IR2 Infrared Lighting
IU Intensity Control
HLV3 Spot Lighting, Etc.
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP Convergent Lighting
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD Diffused Lighting
LND2
HLND
LT
LNV
LNDG Oblique-Angled Lighting
LNIS2
LNIS
LNIS-FN
Telecentric Lens Lenses
Macro Lens

UV2 Series



Refer to our website for product details.

CCS UV2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Imaging Example: Imaging Text on the Bottom Surface of Aluminum Cans

Workpiece image



Aluminum cans

LED visible lighting



With white light, it is difficult to capture the printed text at the bottom of the can.

LDL-138X12UV2-365-N



With a high output UV Light, fluorescent observation is possible.

Use an optional filter for imaging with increased contrast.

Imaging Example: Imaging Packing Tapes on Films

Workpiece image



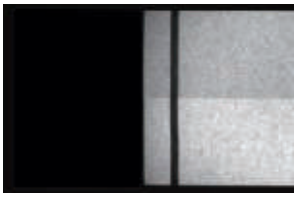
Sticky notes

LED visible lighting



With white light, it is difficult to capture the sticky notes and the packing tape with high contrast.

LDR2-100UV2-365-N



With a high output UV Light, fluorescent observation is possible.

Use an optional filter for imaging with increased contrast.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

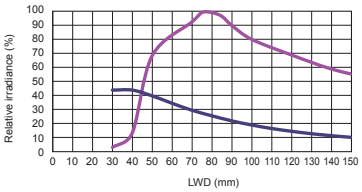
The data included is for reference only. Actual values may vary.

LDR2-100UV2-365-N



Relative irradiance graph *1 (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Narrow type (LDR2-100UV2-365-N)

Wide type (LDR2-100UV2-365-W)

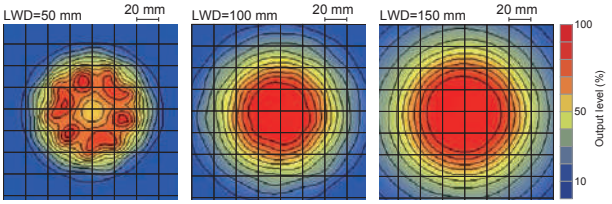
At short distances, uniformity of irradiation from narrow type Light Units is reduced.
This may affect imaging depending on the type of workpiece.

LDR2-100UV2-365-W

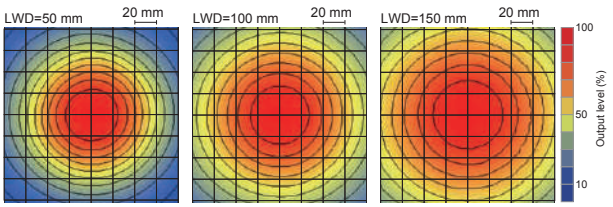


Uniformity (Relative irradiance)

LDR2-100UV2-365-N



LDR2-100UV2-365-W



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

The data included is for reference only. Actual values may vary.

LDL-205X12UV2-365-N

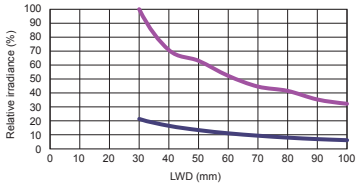


LDL-205X12UV2-365



Relative irradiance graph *1 (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



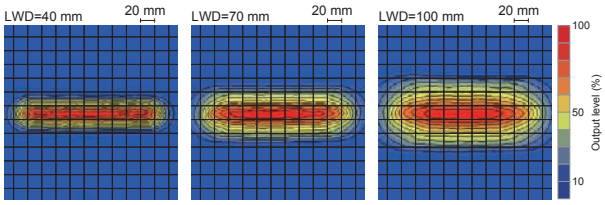
Narrow type (LDL-205X12UV2-365-N)

Wide type (LDL-205X12UV2-365)

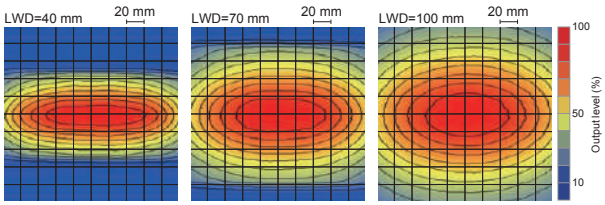
At short distances, uniformity of irradiation from narrow type Light Units is reduced.
This may affect imaging depending on the type of workpiece.

Uniformity (Relative irradiance)

LDL-205X12UV2-365-N



LDL-205X12UV2-365

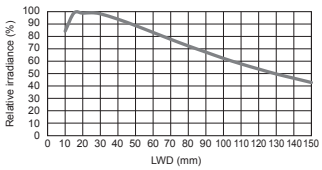


LN-195UV2-365 (Light condensing)

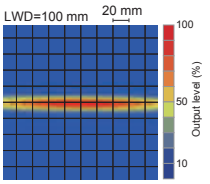


Relative irradiance graph *1 (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece

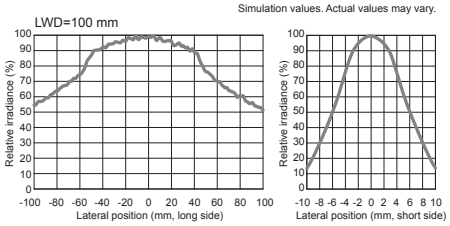


Uniformity (Relative irradiance)



Relative irradiance distribution

Simulation values. Actual values may vary.

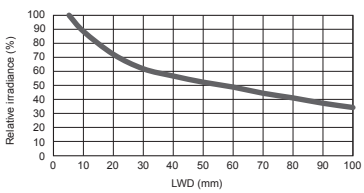


HLV2-24UV2-365

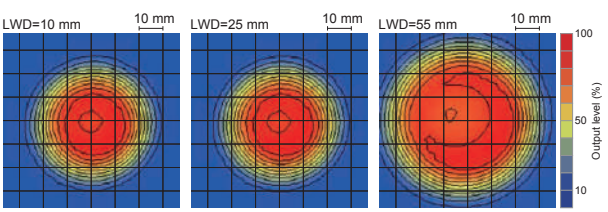


Relative irradiance graph *1 (LWD characteristics) *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

UV2 Series



Refer to our website for product details.

CCS UV2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	Type	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
LDR2-60UV2-365-N	Narrow	Ultraviolet	24 V / 7.6 W	365 nm	Band-pass filters Ultraviolet cutting filters Ultraviolet transmission filters	FCB*5 Straight Cable FCB-W*6 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 CC-ST-1024*1 PSB	170 g
LDR2-100UV2-365-N			24 V / 23 W					250 g
LDR2-60UV2-365-W	Wide		24 V / 7.6 W					170 g
LDR2-100UV2-365-W			24 V / 23 W					250 g
LDL-71X12UV2-365-N	Narrow	Ultraviolet	24 V / 7.6 W	365 nm				300 g
LDL-138X12UV2-365-N			24 V / 16 W					500 g
LDL-205X12UV2-365-N			24 V / 23 W					700 g
LDL-339X12UV2-365-N			24 V / 38 W				PD3 CC-ST-1024*2 PSB*3	1,090 g
LDL-71X12UV2-365	Wide		24 V / 7.6 W					300 g
LDL-138X12UV2-365			24 V / 16 W					500 g
LDL-205X12UV2-365			24 V / 23 W					700 g
LDL-339X12UV2-365			24 V / 38 W					1,090 g
LN-61UV2-365	–	Ultraviolet	24 V / 7.6 W	365 nm			PD3 CC-ST-1024*4	450 g
LN-128UV2-365			24 V / 16 W				PSB	750 g
LN-195UV2-365			24 V / 23 W					1,050 g
HLV2-24UV2-365	–	Ultraviolet	0.7 A / 3.2 W	365 nm		FCB*5 Straight Cable FRCB Robot Cable	PD3 CC-PJ-0707 PJ	50 g

*1 Can only use the 60 size.

*2 Can only use the 71x12 size.
*3 Cannot use the 339×12 size.

*4 Can only use the 61 size.

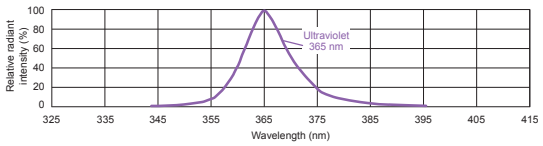
*5 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*6 The cables with a model name that ends with "-EL2" are not included.

Please inquire if you want to use the Light Unit in combination with a Strobe Control Unit (overdrive type).

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Transmits light with wavelength range of 290 nm to 365 nm. (Transmission of 90% min.)

Band-pass filter
F-BP324

Model name	Size
F-BP324	25 sizes (Refer to the pages on optional products.)

Other various band-pass filters used for different wavelengths are available. For details, refer to the pages on optional lens filters.

▶ P.355

▶ P.355



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

Ultraviolet cutting filter
L42 series

Model name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.358



Transmits light with wavelength range of approx. 280 nm to 380 nm, centered around 340 nm.

Ultraviolet transmission filter
U340 series

Model name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

▶ P.358

Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using an UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiating parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Thoroughly educate all those involved near the product about the dangers of UV LEDs.



E.g.: UV blocking eye wear

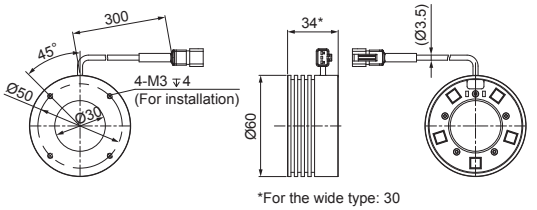
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

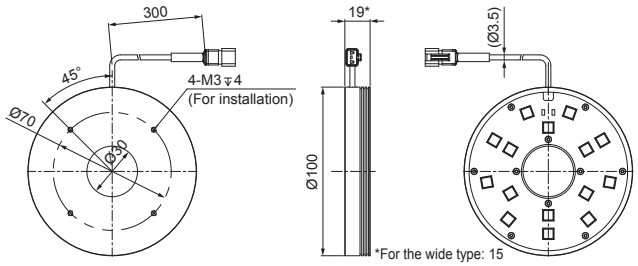
Dimensions (mm)

Ring Lights

LDR2-60UV2-365-N/-W (Common for the narrow/wide types)

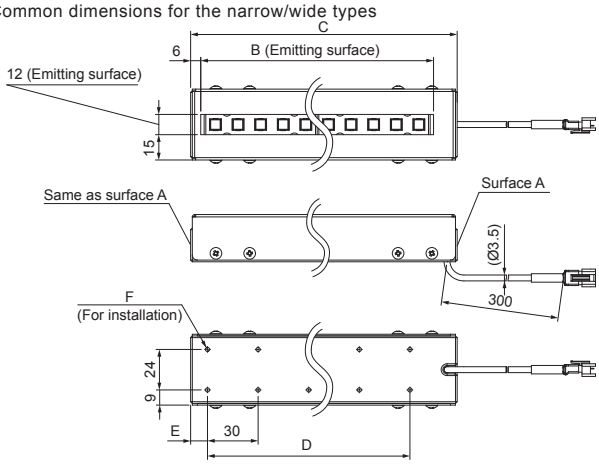


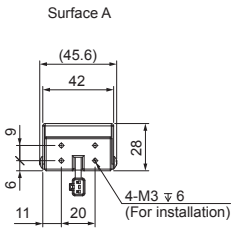
LDR2-100UV2-365-N/-W (Common for the narrow/wide types)



Bar Lights

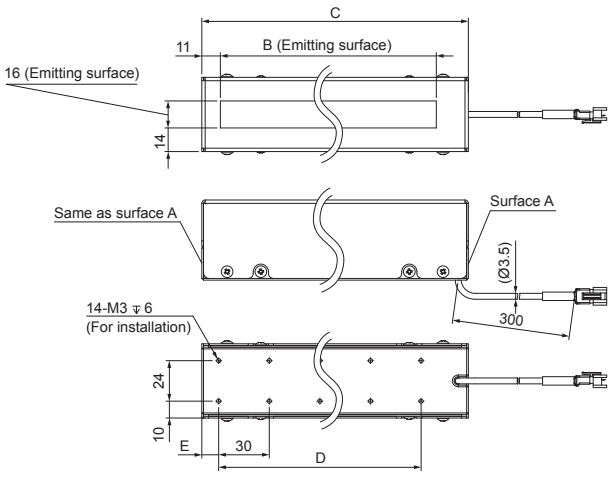
Common dimensions for the narrow/wide types

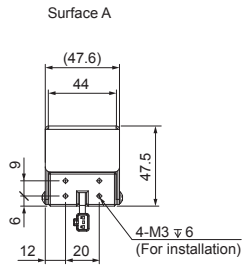




Model name (narrow/wide)	B	C	D	E	F
LDL-71X12UV2-365-N/-365	71	91	P30x2=60	10	6xM3x6
LDL-138X12UV2-365-N/-365	138	158	P30x4=120	10	10xM3x6
LDL-205X12UV2-365-N/-365	205	225	P30x6=180	20	14xM3x6
LDL-339X12UV2-365-N/-365	339	359	P30x10=300	29.5	22xM3x6

Convergent type Common dimensions

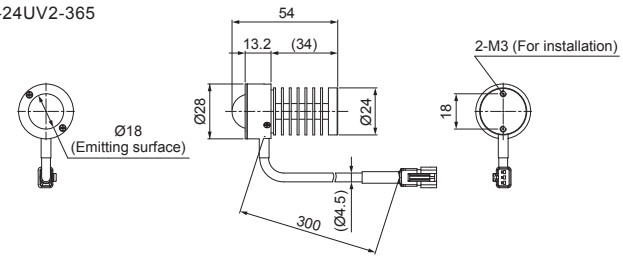




Model name	B	C	D	E
LN-61UV2-365	61	91	P30x2=60	10
LN-128UV2-365	128	158	P30x4=120	10
LN-195UV2-365	195	225	P30x6=180	20

Spot Lights

HLV2-24UV2-365



You can change the connectors of the Light Unit cable (except for the HLV2-24UV2-365). Choose between M12 connectors and flying leads. Refer to P.19 for details.

Ultraviolet Lighting

Ultraviolet Lights
UV Series

Refer to our website for product details.
CCS UV ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Varied Light Unit lineup using original UV-LEDs

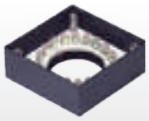

LDR2-100UV365-LA


LDR2-90UV365


LDQ-100UV365


LN-200UV365


LDR-75UV365-LA-1


SQR-56UV365


LDL-82X15UV365


LDL-42X15UV365


LSP-41UV365

Applications Detecting seal material through fluorescent excitation, reading invisible code, inspections using differences in spectral reflectivity, inspections using differences in scattering rates, etc.

Uses Original UV-LEDs

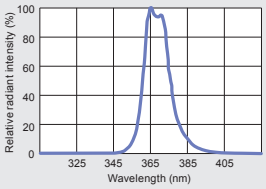
Uses LEDs with our unique spark prevention mechanism



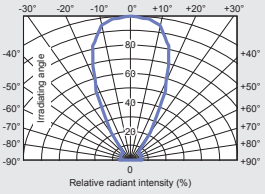
Because they have a steel alloy cap, many ultraviolet LEDs are susceptible to static electricity or impact. In particular, dead LEDs due to sparks occurring from contact with metal shards have been a major issue. Our company's original ultraviolet LEDs successfully solved this problem through our unique spark prevention mechanism. Compared to the conventional products, we significantly increased our "safety" and "reliability."

Peak Wavelength of 365 nm, Directional Characteristics of ±20°

Light spectrum of the UV-LED



Directional characteristics



Our original ultraviolet LEDs have a peak wavelength of 365 nm and directional characteristics of ±20°. Using the mono-wavelength, a characteristic of LEDs, allows for stable imaging over a long period of time that captures the workpiece's characteristics more accurately than using a black light. Furthermore, our rich lineup provides optimal Light Units depending on the inspected object, inspecting environment, and optical system.

Lineup

Model name	LED color	Power consumption *1		Peak wavelength	Options	Extension cables	Recommended Control Units		Weight	Dimensions
		June 2014 or earlier	July 2014 or later							
LDR2-32UV365	Ultraviolet	24 V / 0.4 W	24 V / 0.3 W	365 nm	Band-pass filter ▶ P.355 Ultraviolet cutting filter Ultraviolet transmission filter ▶ P.358	FCB*4 Straight Cable FCB-W*5 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3	CC-ST-1024*3	30 g	1
LDR2-42UV365		24 V / 0.8 W	24 V / 0.6 W				PSB	POD*2	50 g	
LDR2-50UV365		24 V / 1.2 W	24 V / 0.9 W						50 g	
LDR2-70UV365		24 V / 3.1 W	24 V / 2.3 W						130 g	2
LDR2-90UV365		24 V / 3.8 W	24 V / 2.8 W						170 g	1
LDR2-90-30UV365		24 V / 6.1 W	24 V / 4.5 W						220 g	
LDR2-120UV365		24 V / 9.5 W	24 V / 7.0 W						510 g	3
LDR2-74UV365-LA	Ultraviolet	24 V / 1.9 W	24 V / 1.4 W	365 nm					90 g	4
LDR2-100UV365-LA		24 V / 4.6 W	24 V / 3.4 W						170 g	5
LDR2-132UV365-LA		24 V / 6.9 W	24 V / 5.0 W						270 g	
LDR2-170UV365-LA		24 V / 9.9 W	24 V / 7.3 W						350 g	
LDR2-208UV365-LA		24 V / 12 W	24 V / 8.4 W						380 g	
LDR-75UV365-LA-1	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm					70 g	6
LDR-96UV365-LA-1		24 V / 2.3 W	24 V / 1.7 W						100 g	7
LDR-146UV365-LA-1		24 V / 3.1 W	24 V / 2.3 W						160 g	
LDR-176UV365-LA-1		24 V / 3.8 W	24 V / 2.8 W						200 g	
LDR-206UV365-LA-1		24 V / 4.6 W	24 V / 3.4 W						220 g	

*4 The cables with a model name that ends with "-ME7" or "-EL2" are not included.
*5 The cables with a model name that ends with "-EL2" are not included.

*3 Cannot be used with LDR2-208UV365-LA that was manufactured in July 2014 or earlier.

*1 The power consumption varies according to the production date. Refer to the power consumption given by the label tag of the product.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Model name	LED color	Power consumption*1 June 2014 or earlier	Power consumption*1 July 2014 or later	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight	Dimensions
SQR-56UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm	Band-pass filter ▶ P.355 Ultraviolet cutting filter Ultraviolet transmission filter ▶ P.358	FCB*3 Straight Cable FCB-W*4 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD3 CC-ST-1024 PSB POD*2	80 g	8
LDL-34X8UV365	Ultraviolet	24 V / 0.4 W	24 V / 0.3 W	365 nm				15 g	9
LDL-42X15UV365	Ultraviolet	24 V / 0.8 W	24 V / 0.6 W	365 nm				30 g	10
LDL-74X27UV365	Ultraviolet	24 V / 3.1 W	24 V / 2.3 W	365 nm				95 g	11
LDL-82X15UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm				45 g	12
LDL-130X15UV365	Ultraviolet	24 V / 2.3 W	24 V / 1.7 W	365 nm				85 g	12
LDL-180X16UV365	Ultraviolet	24 V / 3.8 W	24 V / 2.8 W	365 nm				110 g	12
LDQ-60-25UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm				60 g	13
LDQ-78UV365	Ultraviolet	24 V / 1.6 W	24 V / 1.2 W	365 nm				100 g	14
LDQ-100UV365	Ultraviolet	24 V / 3.1 W	24 V / 2.3 W	365 nm				330 g	15
LDQ-150UV365	Ultraviolet	24 V / 6.1 W	24 V / 4.5 W	365 nm				490 g	16
LDQ-200UV365	Ultraviolet	24 V / 9.1 W	24 V / 6.7 W	365 nm				790 g	17
LN-200UV365	Ultraviolet	24 V / 1.9 W	24 V / 1.4 W	365 nm				400 g	18
LSP-41UV365	Ultraviolet	24 V / 1.2 W	24 V / 0.9 W	365 nm				115 g	19

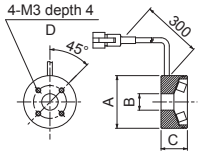
*1 The power consumption varies according to the production date. Refer to the power consumption given by the label tag of the product.

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

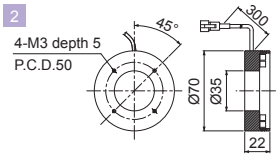
Dimensions (mm)

1

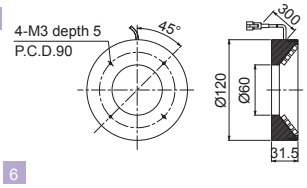


Model name	A	B	C	D
LDR2-32UV365	Ø32	Ø10	16	P.C.D.20
LDR2-42UV365	Ø42	Ø18	18	P.C.D.28
LDR2-50UV365	Ø50	Ø28	16	P.C.D.40
LDR2-90UV365	Ø90	Ø50	20	P.C.D.70
LDR2-90-30UV365	Ø90	Ø30	20	P.C.D.70

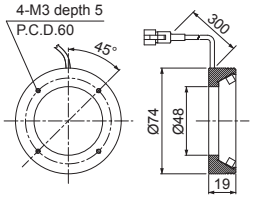
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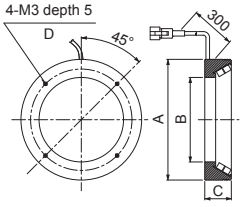
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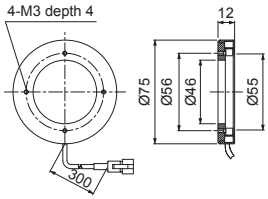


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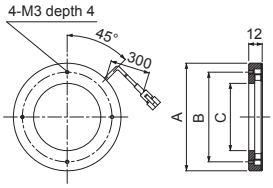


Model name	A	B	C	D
LDR2-100UV365-LA	Ø100	Ø70	22	P.C.D.84
LDR2-132UV365-LA	Ø132	Ø96	22	P.C.D.116
LDR2-170UV365-LA	Ø170	Ø134	22	P.C.D.154
LDR2-208UV365-LA	Ø208	Ø174	22	P.C.D.186

6

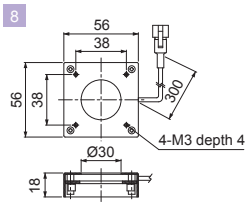


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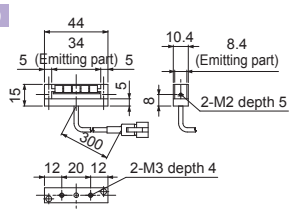


Model name	A	B	C
LDR-96UV365-LA-1	Ø96	Ø80	Ø60
LDR-146UV365-LA-1	Ø146	Ø130	Ø110
LDR-176UV365-LA-1	Ø176	Ø160	Ø140
LDR-206UV365-LA-1	Ø206	Ø190	Ø170

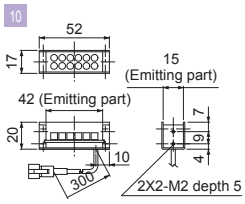
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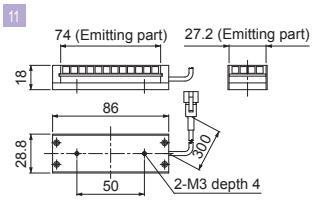
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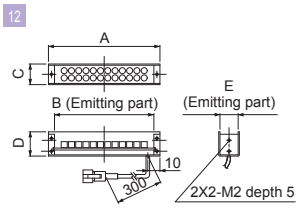
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11

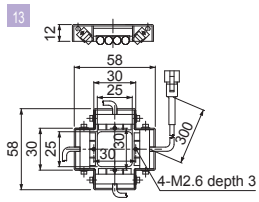


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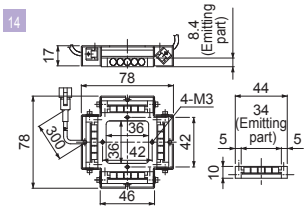


Model name	A	B	C	D	E
LDL-82X15UV365	92	82	17	20	15
LDL-130X15UV365	140	130	17	21	15
LDL-180X16UV365	191.4	181.4	18	21	16

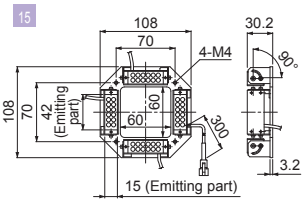
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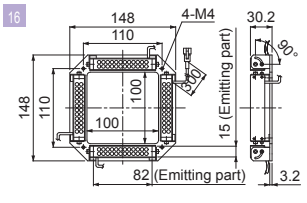
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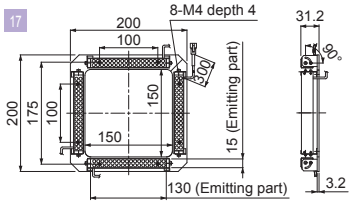
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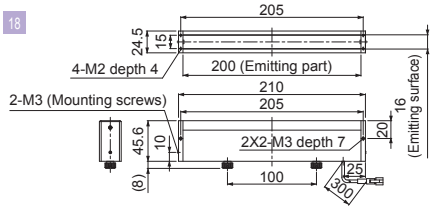
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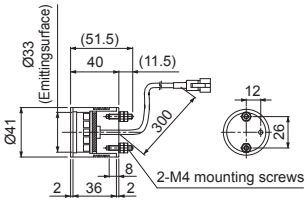
17



18



19



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here. https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

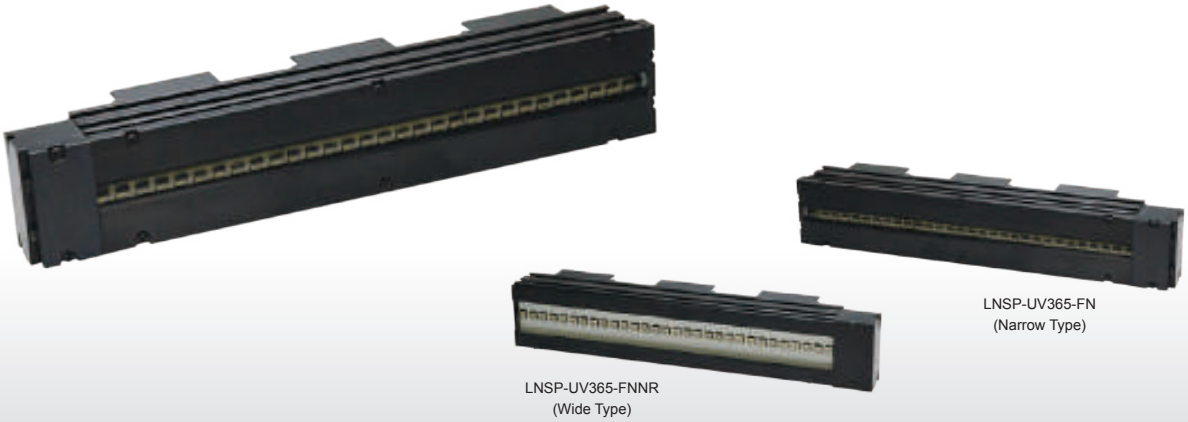
LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/ HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Ultraviolet Lighting

Ultraviolet Line Lights
LNSP-UV-FN Series

Refer to our website for product details.
CCS LNSP-UV-FN ▶ Search
For quick access.
You can also use your smartphone or cell phone.

UV Line Lights that use high-output UV-LEDs



Applications Inspection for detecting seal material through fluorescent excitation, inspections using differences in spectral reflectivity, inspections using differences in scattering rates, etc.

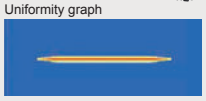
Narrow Type for Convergent Illumination

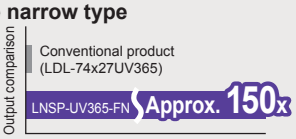
By using a rod lens, the Light Unit concentrates light in a narrow range. There is little loss of radiation output, allowing for convergent illumination.

Characteristics of the narrow type



Uniformity graph

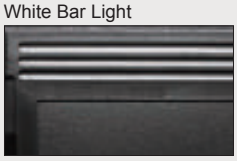




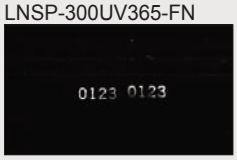


Imaging example	Imaging of invisible code
Workpiece	Plastic plate

White Bar Light



LNSP-300UV365-FN



Fluorescent observation is difficult with white light.

Fluorescent observation for the invisible code is possible.

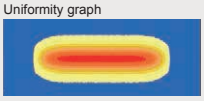
Wide Type for Diffused Illumination

The emitting width is wide, allowing for a broad range to be illuminated.

Characteristics of the wide type



Uniformity graph





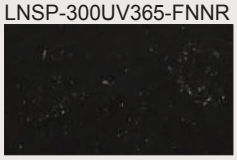


Imaging example	Imaging foreign material on paper
Workpiece	White paper (Tissue)

White Bar Light



LNSP-300UV365-FNNR



Fluorescent observation is difficult with white light.

Fluorescent observation for foreign material, such as dust, is possible.

Custom Orders

Please contact your CCS sales representative.

E.g.: Different wavelength

Wavelength

Equipped with 385 nm LEDs



Customizable items

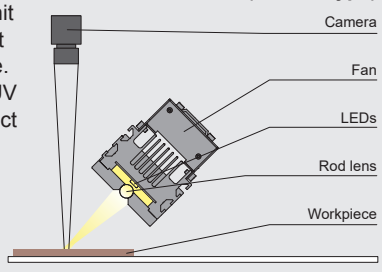
External/internal diameter | Wavelength/ color | Increase output | Cable length | Illuminating angle | Format/ material | Connector format | Installation/ mounting

Etc.

Example Configuration

By using a rod lens, the Light Unit concentrates light in a narrow range. High output UV Line Light perfect for UV excitation.

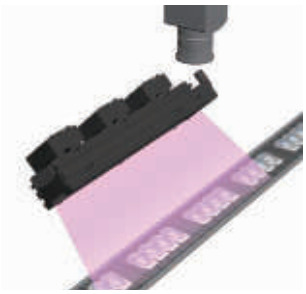
LNSP-UV365-FN (Narrow type)



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Imaging Example: Imaging for Detecting Contact Lenses inside Packaging



Description	Detection inspection
Workpiece	Contact lenses
Conventional lighting	LED visible light lighting
New lighting	LNSP-300UV365-FNNR
Result	Fluorescent excitation via ultraviolet lighting

Workpiece image



Contact lenses

LED visible light lighting



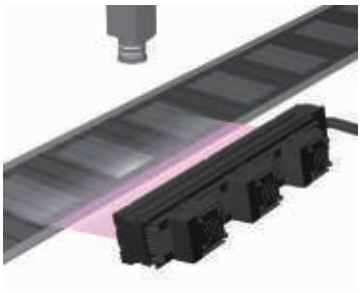
With visible light lighting, it is difficult to detect the contact lenses.

LNSP-300UV365-FNNR



Depending on the type of contact lens, they absorb the ultraviolet wavelength, allowing for the inside of the pack to be imaged.

Imaging Example: Imaging for the Alignment of Clear Films



Description	Visual inspection
Workpiece	Clear films
Conventional lighting	LED visible light lighting
New lighting	LNSP-300UV365-FN
Result	Fluorescent excitation via ultraviolet lighting

Workpiece image



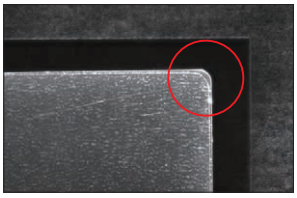
Clear plate (bottom) and film (top)

LED visible light lighting



With visible light lighting, it is difficult to form an image of the clear film.

LNSP-300UV365-FN



Only the clear film causes scattering, emphasizing the edge.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

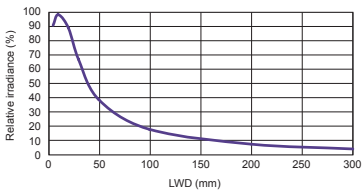
The data included is for reference only. Actual values may vary.

Narrow Type

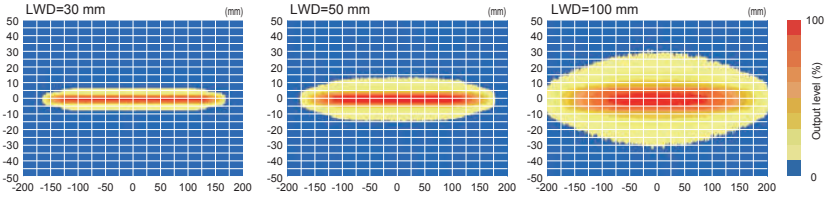


Relative irradiance graph (LWD characteristics) *1 *2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

LNSP-UV-FN Series



Refer to our website for product details.
CCS LNSP-UV-FN ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

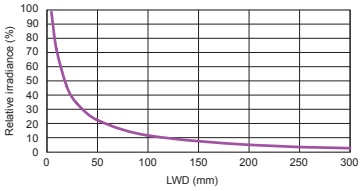
The data included is for reference only. Actual values may vary.

Wide Type

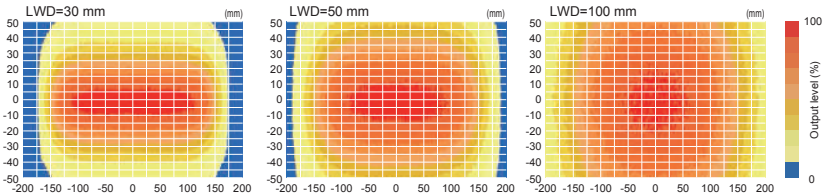


Relative irradiance graph*1 (LWD characteristics)*2

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative irradiance)



Lineup

"-FN" at the end of the model name: Narrow type, "-FNNR" at the end of the model name: Wide type

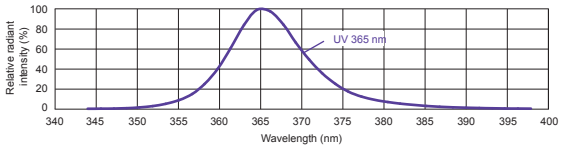
Model name	LED color	Power consumption*1 (including fans)		Peak wavelength	Options	Extension cables*2	Recommended Control Units*2	Weight
		June 2017 or earlier	July 2017 or later					
LNSP-100UV365-FN	Ultraviolet	31 W	31 W	365 nm	Band-pass filter Ultraviolet cutting filter Ultraviolet transmission filter	QCBM QCB	PSCC-30048(A) PSCC-60048(A)	1,000 g
LNSP-200UV365-FN		61 W	62 W					1,400 g
LNSP-300UV365-FN		92 W	93 W					1,800 g
LNSP-100UV365-FNNR		31 W	31 W					800 g
LNSP-200UV365-FNNR		61 W	62 W					1,100 g
LNSP-300UV365-FNNR		92 W	93 W					1,400 g

Extension Cables ▶ P.174
PSCC Series Product Page ▶ P.349

*1 The power consumption varies according to the production data. Refer to the power consumption given by the label tag of the product.
*2 Make sure to use an appropriate combination of the extension cable and the recommended Control Unit.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Transmits light with wavelength range of 290 nm to 365 nm. (Transmission of 90% min.)

Band-pass filter
F-BP324

Model name	Size
F-BP324	25 sizes (Refer to the pages on optional products.)

Other various band-pass filters used for different wavelengths are available. For details, refer to the pages on optional lens filters.
▶ P.355

▶ P.355



Blocks light with a wavelength of 420 nm or lower, transmits light with a longer wavelength.

Ultraviolet cutting filter
L42 series

Model name	Size
L42-25	M25.5 P0.5
L42-27	M27.0 P0.5
L42-30	M30.5 P0.5
L42-40	M40.5 P0.5
L42-46	M46.0 P0.75

▶ P.358



Transmits light with wavelength range of approx. 280 nm to 380 nm, centered around 340 nm.

Ultraviolet transmission filter
U340 series

Model name	Size
U340-25	M25.5 P0.5
U340-27	M27.0 P0.5
U340-30	M30.5 P0.5
U340-40	M40.5 P0.5
U340-46	M46.0 P0.75

▶ P.358

Cautionary Information regarding UV Products

- Do not expose your eyes or skin to direct UV irradiation.
- When using an UV illumination, be sure to wear UV blocking eye wear and avoid looking at irradiating parts (emitting parts).
- Do not turn on UV-LED irradiation parts (emitting parts) if they are facing someone's eyes.
- Wear long sleeves and gloves to protect your skin from UV irradiation.
- Carefully inform all persons in the area around this product of the dangers of UV-LED.

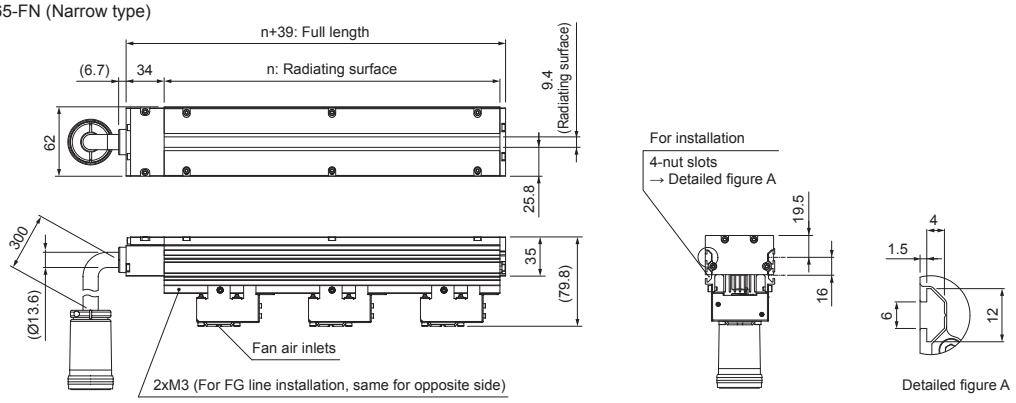


(E.g.) UV blocking eye wear

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

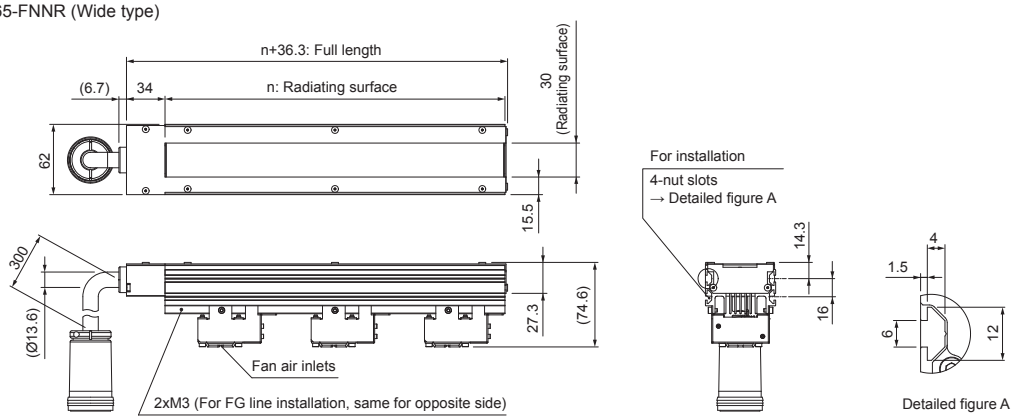
Dimensions (mm)

LNSP-□□□UV365-FN (Narrow type)



Model name	n	Number of cooling fans
LNSP-100UV365-FN	100	1
LNSP-200UV365-FN	200	2
LNSP-300UV365-FN	300	3

LNSP-□□□UV365-FNNR (Wide type)



Model name	n	Number of cooling fans
LNSP-100UV365-FNNR	100	1
LNSP-200UV365-FNNR	200	2
LNSP-300UV365-FNNR	300	3

Extension Cables

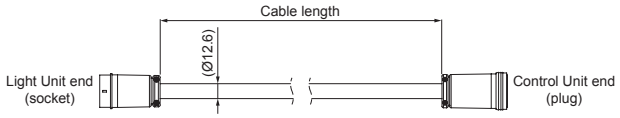
Necessary when connecting the Light Unit to the recommended Control Unit, the PSCC series.

QCBM

(mm)

Model name	Cable length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	

PSCC series Product Page ▶ P.349

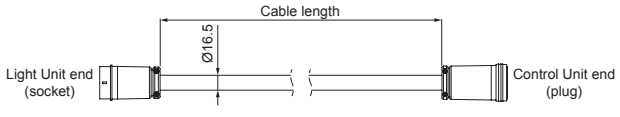


Cable permitted bending radius: 75.6 mm

QCB

Model name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	

PSCC series Product Page ▶ P.349



Cable permitted bending radius: 99 mm

The above cable permitted bending radii are reference values. Actual values may vary.

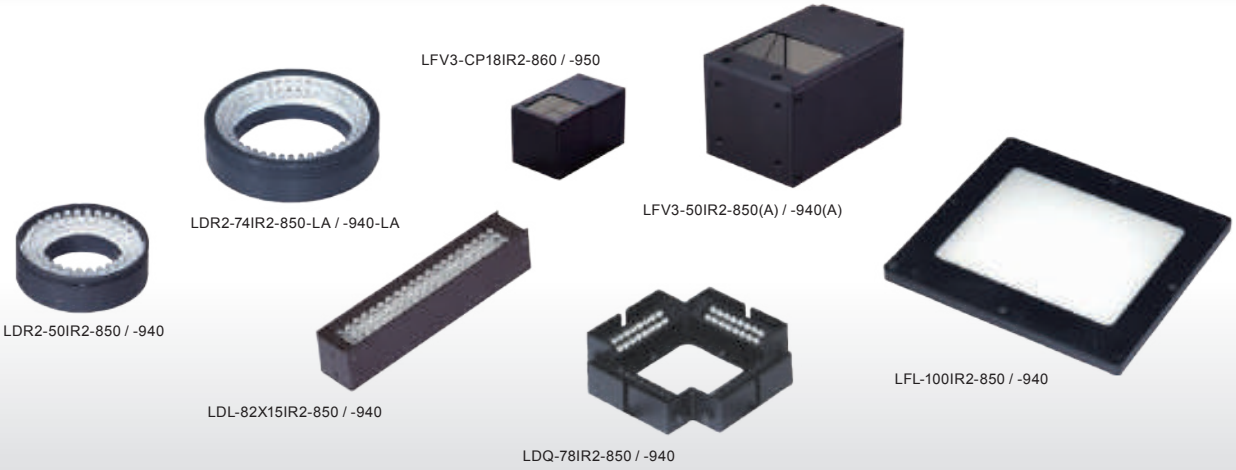
LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Infrared Lighting

Infrared Lights
IR2 Series

Refer to our website for product details.
CCS IR2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Varied Light Unit lineup using IR-LEDs



Applications Visual inspection that cancels the surface pattern, inspection penetrating liquid for foreign material inside, inspections using differences in spectral reflectivity, inspection for the inside of packaged food, etc.

What Is Infrared Light?

Infrared light is light that has a wavelength longer than that of visible red light and cannot be seen by the human eye. Compared to visible red light, infrared light has a low scattering rate and high transmission, and therefore is used in imaging which penetrates printed patterns or liquids.

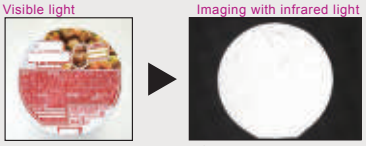
Imaging example using visible and infrared light

Features (1)
Penetration



Infrared irradiation penetrates the liquid to make inside visible.

Features (2)
Cancellation



Infrared irradiation cancels out the printing to image the surface evenly.

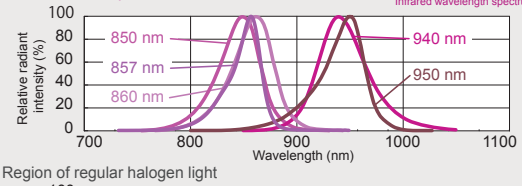
Merits

Irradiation of the Infrared LED includes only the energy of specific region of wavelength, so that the irradiation heat is extremely low compared to the halogen lights and gives less damage on the workpiece.

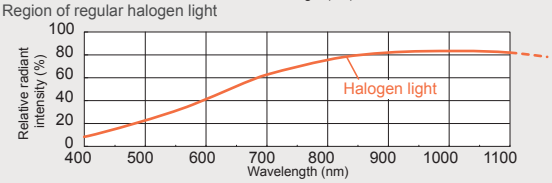
	Infrared LED	Regular halogen light
Irradiation heat	Extremely low	Heat-generating
Influence on the workpiece	Small heat damage	Huge heat damage



CCS's standard products



Region of regular halogen light



Custom Orders

Please contact your CCS sales representative.

E.g.: Different wavelength

Wavelength — Using the LEDs with a wavelength of 1,200, 1,450, or 1,550 nm.



Customizable items

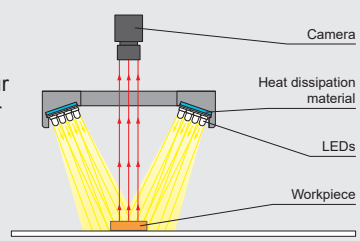
Outer diameter | Wavelength/ color | Increase output | Cable length | Illuminating angle | Format/ material | Connector format | Installation/ mounting

Etc.

Example Configuration

Ring Lights that use infrared LEDs. Bar types and coaxial types are also available. Select your format to match your needs.

LDR2-90IR2-850/940

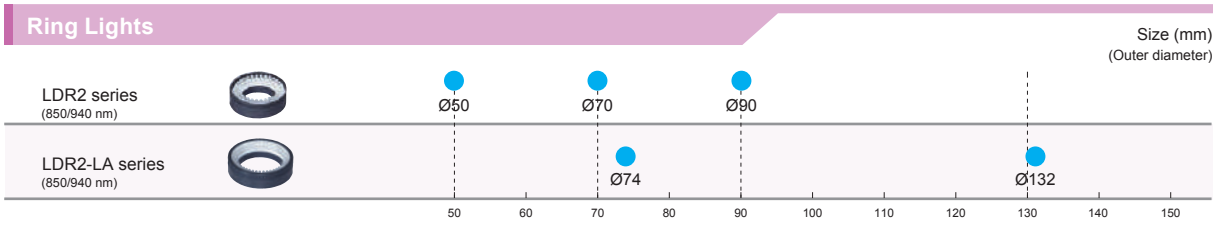


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

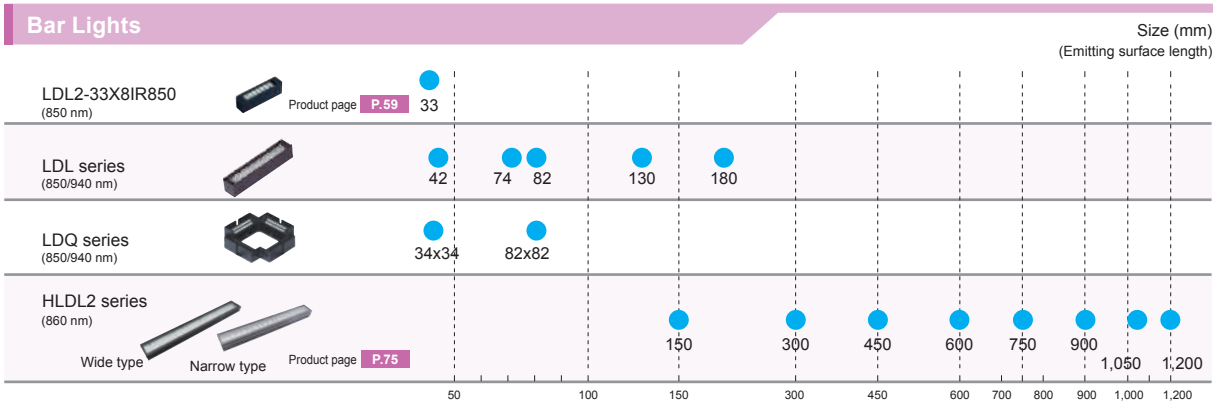
Register to use them.

Extensive Lineup of Infrared Lights

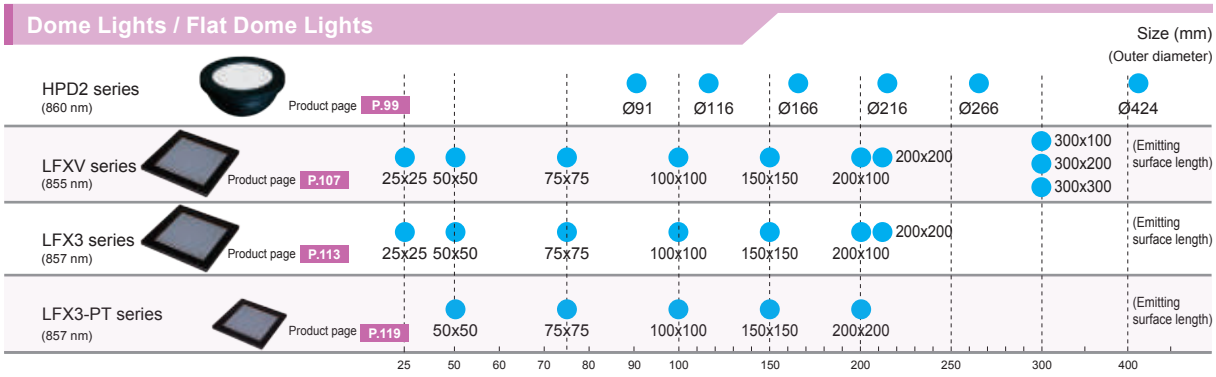
Ring Lights



Bar Lights



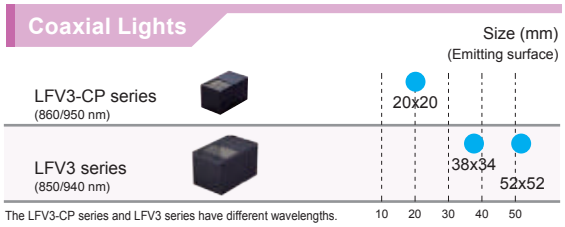
Dome Lights / Flat Dome Lights



Flat Lights



Coaxial Lights



Custom products with a wavelength of 1,000 nm or more are available.

CCS IR1200 ▶ Search

Near-Infrared Cameras in the Testing Rooms

Ready for the test with infrared light over 1,000 nm wavelength

CCS is deploying infrared-sensitive cameras in the testing rooms where you can perform workpiece tests directly for yourself using our LED Lights. Please feel free to make an appointment. We are looking forward to helping you.

Near-infrared camera



Optimal for infrared imaging

Specifications
ABA-003IR-GE (manufactured by AVALDATA)
- InGaAs sensor
- Wavelength: 950 to 1,700 nm
- 640 × 512 pixels
- Gig-E vision
- C mount



Our personalized staff will be happy to suggest the lighting solution for getting optimal images.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
LNSP-UV-FN
Ultraviolet Lighting
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

IR2 Series



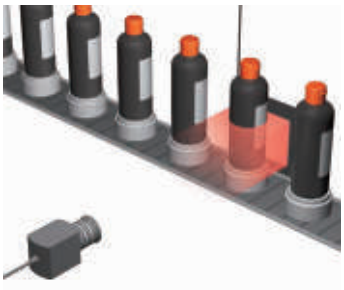
Refer to our website for product details.

CCS IR2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Imaging Example: Imaging for Foreign Materials in Disinfectant Products



Description	Foreign materials inspection
Workpiece	Disinfectant products
Conventional lighting	LED visible light lighting
New lighting	LFL-100IR2-940
Result	Infrared lighting penetrates the liquid

■ Workpiece image



Disinfectant products

■ LED visible light lighting



It is difficult to check the inside with visible light imaging.

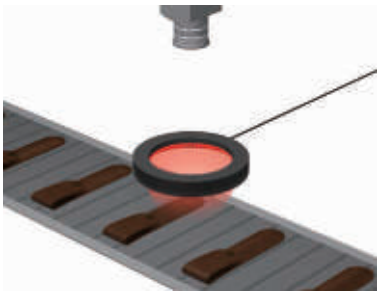
■ LFL-100IR2-940



Imaging with infrared light penetrates the liquid and captures the foreign materials.

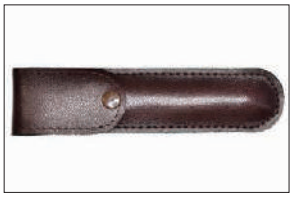
This workpiece was processed by CCS for sample imaging.

Imaging Example: Imaging the Appearance of Leatherware



Description	Visual inspection
Workpiece	Leatherware
Conventional lighting	LED visible light lighting
New lighting	LDR2-132IR2-850-LA
Result	Infrared lighting penetrates the dye on the threads

■ Workpiece image



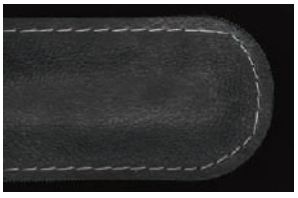
Leatherware

■ LED visible light lighting



The leather and the threads are of the same color, so that it is difficult to capture the stitching.

■ LDR2-132IR2-850-LA



Infrared light penetrates the dye to highlight the threads and captures the stitching.

Cautionary Information regarding Infrared Products

- This product uses infrared LEDs. You cannot visually sense the brightness, but infrared radiation comes out of the LEDs when they are on.
- The peak wavelength range corresponds to IR-A (780 to 1,400 nm).
- Infrared radiation in the IR-A range can damage your eyes. Never look at the infrared radiation directly.
- Inform all persons in the area around this product of the dangers of infrared LED.

Lineup

Series	Model name	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
LDR2	LDR2-50IR2-850	Infrared	24 V / 3.8 W	850 nm	—	FCB*4 Straight Cable FCB-W*5 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable *4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *5 The cables with a model name that ends with "-EL2" are not included.	PD3 PSB POD*2	50 g
	LDR2-50IR2-940			940 nm				
	LDR2-70IR2-850		24 V / 7.6 W	850 nm				130 g
	LDR2-70IR2-940			940 nm				
	LDR2-90IR2-850		24 V / 14 W	850 nm				170 g
	LDR2-90IR2-940			940 nm				
LDR2-LA	LDR2-74IR2-850-LA	Infrared	24 V / 6.9 W	850 nm				90 g
	LDR2-74IR2-940-LA			940 nm				
	LDR2-132IR2-850-LA		24 V / 16 W	850 nm				270 g
	LDR2-132IR2-940-LA			940 nm				
LDL	LDL-42X15IR2-850	Infrared	24 V / 2.3 W	850 nm				40 g
	LDL-42X15IR2-940			940 nm				
	LDL-74X27IR2-850		24 V / 6.9 W	850 nm				80 g
	LDL-74X27IR2-940			940 nm				
	LDL-82X15IR2-850		24 V / 3.8 W	850 nm				60 g
	LDL-82X15IR2-940			940 nm				
	LDL-130X15IR2-850		24 V / 6.1 W	850 nm				90 g
	LDL-130X15IR2-940			940 nm				
	LDL-180X15IR2-850		24 V / 8.4 W	850 nm				110 g
	LDL-180X15IR2-940			940 nm				
LDQ	LDQ-78IR2-850	Infrared	24 V / 6.1 W	850 nm			PD3*1 POD*1*2	110 g
	LDQ-78IR2-940			940 nm				
	LDQ-150IR2-850		24 V / 16 W	850 nm				530 g
	LDQ-150IR2-940			940 nm				
LDL	LDL-60X60IR2-850	Infrared	24 V / 7.6 W	850 nm				140 g
	LDL-60X60IR2-940			940 nm				
	LDL-100X100IR2-850		24 V / 21 W	850 nm				650 g
	LDL-100X100IR2-940			940 nm				
LFL	LFL-100IR2-850	Infrared	24 V / 7.6 W	850 nm			PD3 PSB POD*2	220 g
	LFL-100IR2-940			940 nm				
LFV3-CP	LFV3-CP18IR2-860	Infrared	24 V / 2.6 W	860 nm				70 g
	LFV3-CP18IR2-950			950 nm				
LFV3	LFV3-35IR2-850(A)*3	Infrared	24 V / 3.1 W	850 nm				175 g
	LFV3-35IR2-940(A)*3			940 nm				
	LFV3-50IR2-850(A)*3		24 V / 9.1 W	850 nm				335 g
	LFV3-50IR2-940(A)*3			940 nm				

*1 The LDQ series is equipped with four Light Units. If you want to control the light intensity individually, use a 4-channel Control Unit.

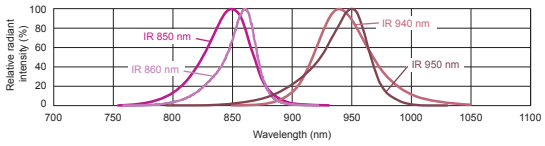
Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

*3 The suffix "(A)" has been added to the end of several model names, e.g. "LFV3-35RI2-850" has been changed to "LFV3-35RI2-850(A)".
Reason: Due to part manufacturer's circumstances, some optical parts were expected to become difficult to obtain. CCS has changed these parts with those of comparable performance.
Effect on functions and performance: The functions and performance of the Light Units have not been affected.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

LDR2 Direct Lighting
LDR2-LA Direct Lighting
LDR-LA1 Direct Lighting
SQR Direct Lighting
SQR-TP Direct Lighting
HPR2 Diffused Lighting
LFR Diffused Lighting
LKR Diffused Lighting
FPR Diffused Lighting
FPQ3 Diffused Lighting
LDL2 Direct Lighting
LDLB Direct Lighting
HLDL2 Direct Lighting
TH2 (5 types) Diffused Lighting
LFL Diffused Lighting
HPD2 Diffused Lighting
LDM2 Diffused Lighting
LAV Diffused Lighting
PDM Diffused Lighting
LFXV Diffused Lighting
LFX3 Diffused Lighting
LFX3-PT Diffused Lighting
LFV3 Diffused Lighting
LFV3-G Diffused Lighting
MSU Collimated Lighting
MFU Collimated Lighting
PF Strobe Lighting
HLDR-IP/HSL-PCL Water proof
UV2 Ultraviolet Lighting
UV Ultraviolet Lighting
LNSP-UV-FN Ultraviolet Lighting
IR2 Infrared Lighting
IU Intensity Control
HLV3 Spot Lighting, Etc.
HLV2 Spot Lighting, Etc.
LV Spot Lighting, Etc.
LSP Spot Lighting, Etc.
HFS/HFR Spot Lighting, Etc.
HLV3-NR Spot Lighting, Etc.
HLV3-3M-RGB-4 Spot Lighting, Etc.
HLV2-NR Spot Lighting, Etc.
HLV2-3M-RGB-3W Spot Lighting, Etc.
PFBR-600 Spot Lighting, Etc.
PFBR-150 Spot Lighting, Etc.
PFB3 Spot Lighting, Etc.
LNLP Convergent Lighting
LNSP2 Convergent Lighting
LNSP Convergent Lighting
Coaxial Units Convergent Lighting
LNSP-FN Convergent Lighting
LN/LN-HK Convergent Lighting
LNSD Diffused Lighting
LND2 Diffused Lighting
HLND Diffused Lighting
LT Diffused Lighting
LNV Diffused Lighting
LNDG Oblique-Angled Lighting
LNIS2 Oblique-Angled Lighting
LNIS Oblique-Angled Lighting
LNIS-FN Oblique-Angled Lighting
Telecentric Lens Lenses
Macro Lens Lenses

IR2 Series



Refer to our website for product details.

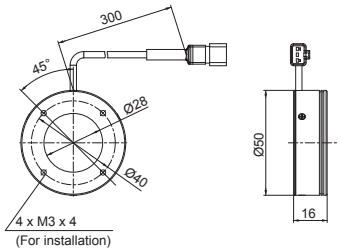
CCS IR2 ▶ Search

For quick access.

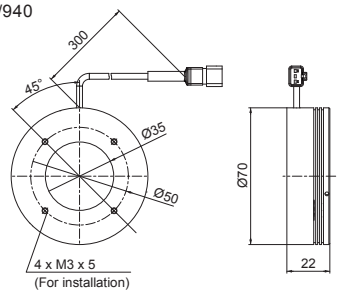
You can also use your smartphone or cell phone.

Dimensions (mm)

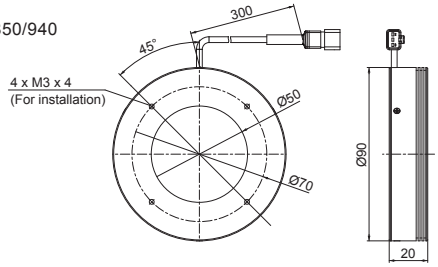
LDR2-50IR2-850/940



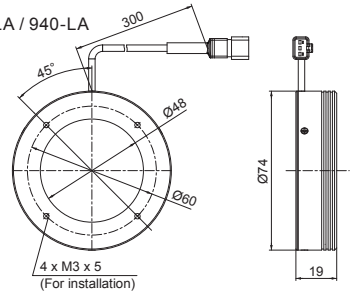
LDR2-70IR2-850/940



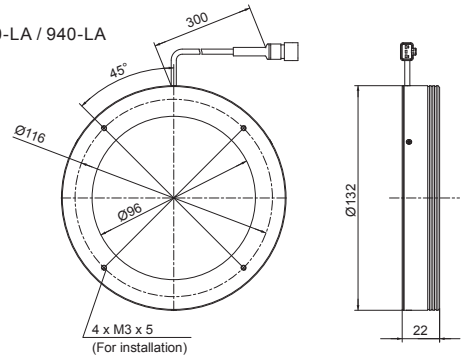
LDR2-90IR2-850/940



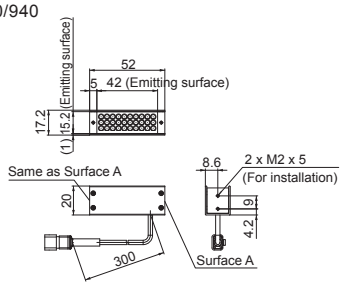
LDR2-74IR2-850-LA / 940-LA



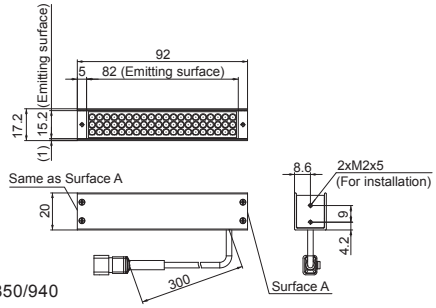
LDR2-132IR2-850-LA / 940-LA



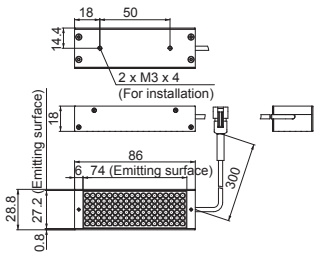
LDL-42X15IR2-850/940



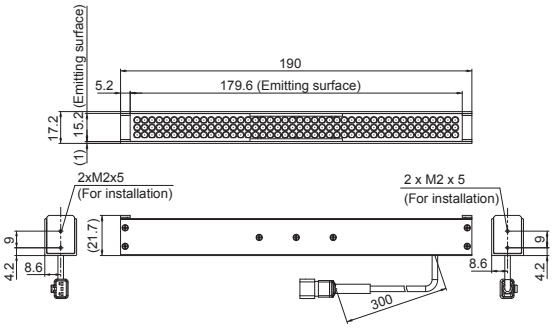
LDL-82X15IR2-850/940



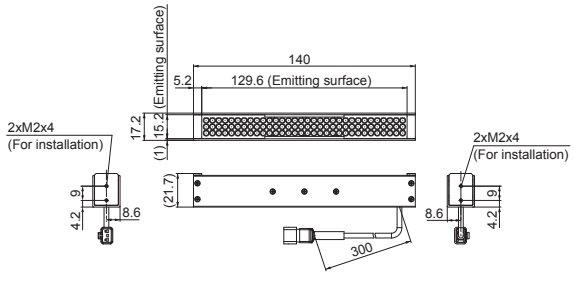
LDL-74X27IR2-850/940



LDL-180X15IR2-850/940



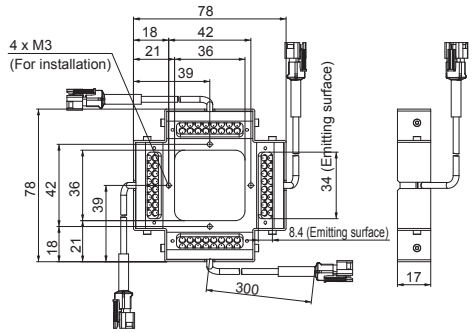
LDL-130X15IR2-850/940



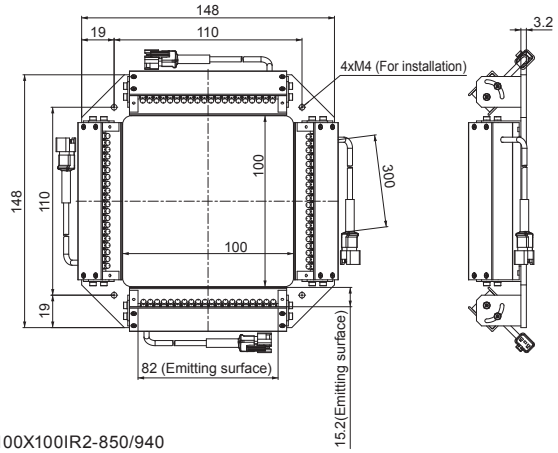
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

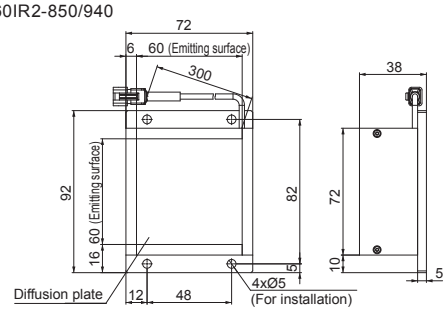
LDQ-78IR2-850/940



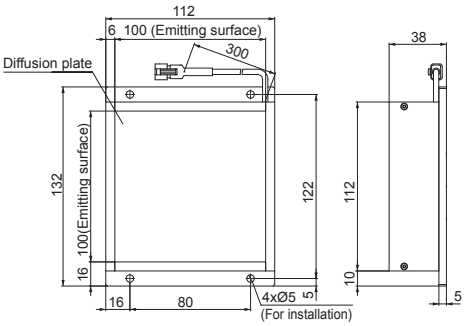
LDQ-150IR2-850/940



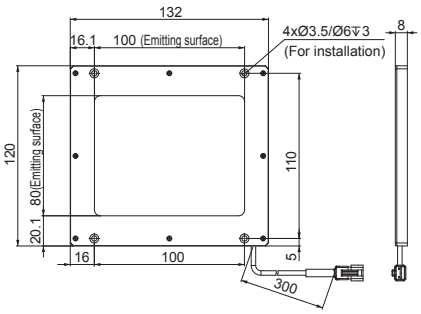
LDL-60X60IR2-850/940



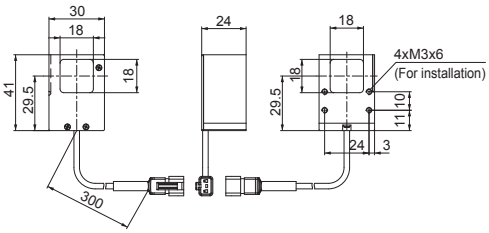
LDL-100X100IR2-850/940



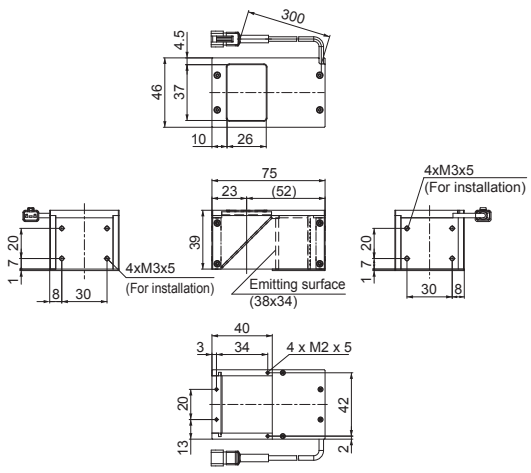
LFL-100IR2-850/940



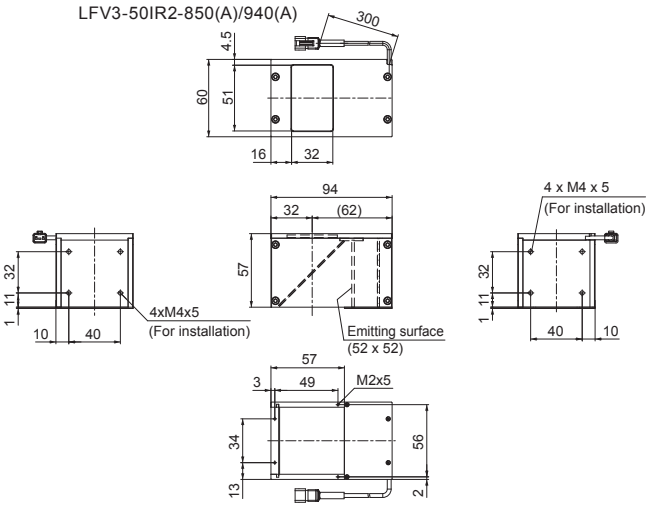
LFV3-CP18IR2-860/950



LFV3-35IR2-850(A)/940(A)



LFV3-50IR2-850(A)/940(A)



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Intensity Control

Light Units with Intensity Control Unit

IU Series

Refer to our website for product details.
CCS IU ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Light intensity and light ON/OFF control can be performed without an external controller.



The light intensity can be set to any of 126 levels by adjusting the Intensity Control Unit.

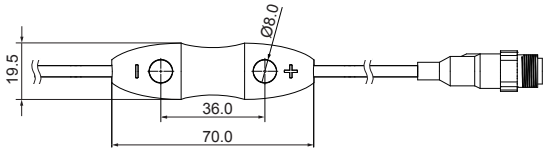
An M12 input connector, to which you can connect **Smart Cameras** and other devices to supply power.

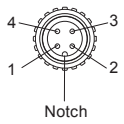
Note: These products are sold only outside Japan.

Common Specifications

Lighting method	Continuous lighting
Drive method	Constant-voltage system
Intensity control method	PWM control
PWM frequency	125 kHz
Input voltage (rating)	24 VDC
Input voltage (range)	21.6 to 24 VDC
Input connector	M12 (4 pins, male)
Cable length	670 mm (including the Intensity Control Unit)

Dimensions (mm)





Pin No.	Signal
1	24 VDC*1
2	NC
3	COMMON GND
4	ON/OFF input (+24 V)*2

*1 Voltage rating: 24 VDC, Voltage range: 21.6 to 24 VDC
- The brightness of the Light Unit will be lower when the input voltage is less than 24 VDC.
- Use a stable power source with an output voltage that does not fluctuate.

*2 Voltage rating: 24 VDC, Voltage range: 20 to 26.4 VDC

Custom Orders

Please contact your CCS sales representative.

E.g.: Different color

Wavelength/ Color — Creating a blue LED Light Unit



Customizable items

- External/internal diameter
- Wavelength/ Color
- Increase output
- Cable length
- Illuminating angle
- Format/ material
- Connector format
- Installation/ mounting

Etc.

Optional Accessories

■ Extension Cable

Model name: **FRCB-n-M12-4M-4F** (n=1, 2, 3)
This robot cable is used to extend the Light Unit cable length.
Cable length: 1, 2, 3 m

■ Continuous Lighting Adapter

Model name: **FRCB-0.5-M12-AL-4M4F**
This Adapter is used to continuously turn ON the Light Unit. A robot cable is used.
(Pins 1 and 4 are internally connected.)
Cable length: 0.5 m

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Lineup

Ring Lights

	Model name	Power consumption (typ.)
HPR2	HPR2-50RD-IU	8.1 W
	HPR2-50SW-IU	9.6 W
	HPR2-75RD-IU	11 W
	HPR2-75SW-IU	11 W
	HPR2-100RD-IU	11 W
	HPR2-100SW-IU	11 W
	HPR2-150RD-IU	11 W
	HPR2-150SW-IU	11 W
LDR2	LDR2-32RD2-IU	2.0 W
	LDR2-32SW2-IU	2.4 W
	LDR2-42RD2-IU	2.5 W
	LDR2-42SW2-IU	3.2 W
	LDR2-50RD2-IU	3.6 W
	LDR2-50SW2-IU	4.3 W
	LDR2-70RD2-IU	6.6 W
	LDR2-70SW2-IU	8.1 W
	LDR2-90RD2-IU	11 W
	LDR2-90SW2-IU	11 W
	LDR2-50RD2-WD-IU	3.6 W
	LDR2-70RD2-WD-IU	6.6 W
	LDR2-90RD2-WD-IU	11 W
LFR	LFR-100RD2-IU	4.1 W
	LFR-100SW2-IU	5.1 W
	LFR-130RD2-IU	5.1 W
	LFR-130SW2-IU	6.2 W
LKR	LKR-70RD2-IU	3.0 W
	LKR-70SW2-IU	4.3 W
LDR-LA1	LDR-75RD2-LA1-IU	3.0 W
	LDR-75SW2-LA1-IU	4.3 W
	LDR-96RD2-LA1-IU	3.6 W
	LDR-96SW2-LA1-IU	4.3 W
	LDR-146RD2-LA1-IU	5.1 W
	LDR-146SW2-LA1-IU	6.6 W
	LDR-176RD2-LA1-IU	6.6 W
	LDR-176SW2-LA1-IU	8.1 W
	LDR-206RD2-LA1-IU	7.6 W
	LDR-206SW2-LA1-IU	9.6 W
LDR2-LA	LDR2-48RD2-LA-IU	2.5 W
	LDR2-48SW2-LA-IU	3.6 W
	LDR2-74RD2-LA-IU	5.1 W
	LDR2-74SW2-LA-IU	6.2 W
	LDR2-100RD2-LA-IU	9.6 W
	LDR2-100SW2-LA-IU	11 W
	LDR2-132RD2-LA-IU	11 W
	LDR2-132SW2-LA-IU	11 W

Bar Lights

	Model name	Power consumption (typ.)
LDL2	LDL2-33X8RD2-IU	3.0 W
	LDL2-33X8SW2-IU	2.5 W
	LDL2-41X16RD2-IU	4.3 W
	LDL2-41X16SW2-IU	4.3 W
	LDL2-41X16RD2-WD-IU	4.3 W
	LDL2-41X16SW2-WD-IU	4.3 W
	LDL2-80X16RD2-IU	8.1 W
	LDL2-80X16SW2-IU	8.1 W
	LDL2-80X16RD2-WD-IU	8.1 W
	LDL2-80X16SW2-WD-IU	8.1 W
	LDL2-119X16RD2-IU	11 W
	LDL2-119X16SW2-IU	11 W
	LDL2-119X16RD2-WD-IU	11 W
	LDL2-119X16SW2-WD-IU	11 W
	LDL2-74X30RD2-IU	11 W
	LDL2-74X30SW2-IU	11 W
	LDL2-74X30RD2-WD-IU	11 W
	LDL2-74X30SW2-WD-IU	11 W

Square Lights

	Model name	Power consumption (typ.)
FPQ3	FPQ3-32RD-IU	4.3 W
	FPQ3-32SW-IU	7.6 W
	FPQ3-48RD-IU	5.6 W
	FPQ3-48SW-IU	11 W

Back Lights

	Model name	Power consumption (typ.)
TH2	TH2-27X27RD-IU	2.8 W
	TH2-27X27SW-IU	3.4 W
	TH2-43X35RD-IU	5.4 W
	TH2-43X35SW-IU	5.3 W
	TH2-51X51RD-IU	7.0 W
	TH2-51X51SW-IU	8.7 W
	TH2-63X60RD-IU	10.4 W
	TH2-63X60SW-IU	10.2 W
	TH2-83X75RD-IU	11 W
	TH2-83X75SW-IU	11 W

Back Lights (Continued)

	Model name	Power consumption (typ.)
LFL	LFL-612RD2-P-IU	1.0 W
	LFL-612SW2-P-IU	0.9 W
	LFL-1012RD2-IU	1.0 W
	LFL-1012SW2-IU	1.3 W
	LFL-1012RD2-P-IU	1.0 W
	LFL-1012SW2-P-IU	1.3 W
	LFL-3212RD2-IU	2.0 W
	LFL-3212SW2-IU	2.8 W
	LFL-4012RD2-IU	2.5 W
	LFL-4012SW2-IU	3.2 W
	LFL-50RD2-IU	3.0 W
	LFL-50SW2-IU	3.6 W
	LFL-100RD2-IU	5.6 W
	LFL-100SW2-IU	5.8 W

Dome Lights

	Model name	Power consumption (typ.)
HPD2	HPD2-75RD-IU	11 W
	HPD2-75SW-IU	11 W
	HPD2-100RD-IU	11 W
	HPD2-100SW-IU	11 W
	HPD2-150RD-IU	11 W
	HPD2-150SW-IU	11 W

Flat Dome Lights

	Model name	Power consumption (typ.)
LFX3	LFX3-50RD-IU	11 W
	LFX3-50SW-IU	11 W
	LFX3-75RD-IU	11 W
	LFX3-75SW-IU	11 W
	LFX3-100RD-IU	11 W
	LFX3-100SW-IU	11 W

Coaxial Lights

	Model name	Power consumption (typ.)
LFV3	LFV3-34RD-IU	4.2 W
	LFV3-34SW-IU	3.7 W
	LFV3-35RD-IU	3.6 W
	LFV3-35SW-IU	4.2 W
	LFV3-40RD-IU	5.1 W
	LFV3-40SW-IU	5.1 W
	LFV3-50RD-IU	8.6 W
	LFV3-50SW-IU	11 W
	LFV3-70RD-IU	11 W
	LFV3-70SW-IU	11 W
	LFV3-CP-13RD-IU	2.5 W
	LFV3-CP-13SW-IU	2.8 W
	LFV3-CP-18RD-IU	3.8 W
	LFV3-CP-18SW-IU	4.6 W

Note: For information on the LED color, wavelength, and other specifications, refer to those of the Light Unit that does not have "-IU" at the end of the model name.

Spot Lighting

Spot Lights
HLV3 Series

Refer to our website for product details.
CCS HLV3 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides high output and uniform spot lighting using an original optical design



HLV3-14RD
HLV3-14RD-HU

HLV3-14SW
HLV3-14SW-HU

HLV3-14BL
HLV3-14BL-HU

HLV3-14GR
HLV3-14GR-HU



HLV3-22RD
-2-1220



HLV3-22SW
-2-1220



HLV3-22BL
-2-1220



HLV3-22GR
-2-1220



HLV3-22RD-1
HLV3-22RD-2



HLV3-22SW-1
HLV3-22SW-2



HLV3-22BL-1
HLV3-22BL-2



HLV3-22GR-1
HLV3-22GR-2



HLV3-22RD-4M
HLV3-22RD-4S



HLV3-22SW-4M
HLV3-22SW-4S



HLV3-22BL-4M
HLV3-22BL-4S



HLV3-22GR-4M
HLV3-22GR-4S



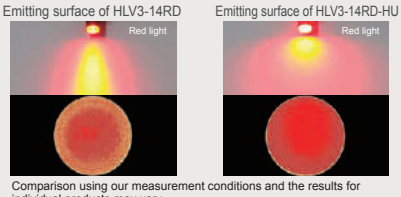
HLV3-22IR860

Applications As a light source for a telecentric lens, light source for alignment of LCDs or circuit boards, light source for dimension measuring, light source for spot illumination, etc.

Lineup with Selection to Match Your Needs

HLV3-14(-HU), with a lightweight and compact design

- **Both standard and high-uniformity types are available**

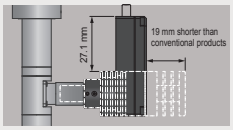


Comparison using our measurement conditions and the results for individual products may vary.

HLV3-22-1/-2, a standard model

- **Housing has been redesigned and optimized from that of conventional products**

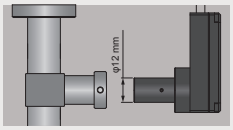
Horizontal space saved by using an L-shaped housing.



HLV3-22-2-1220, with a Ø12-mm light emitting tip

- **Supports lenses with a 12-mm diameter socket for mounting Spot Light**

Substitution from straight light guide also offers peace of mind.



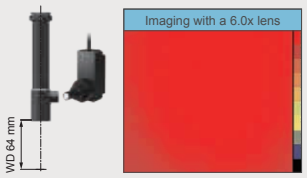
Mounting holes on rear of Spot Light enable flexible installation. (See the dimension diagrams.)

High Output Up to Double That of Conventional Products

HLV3-22-4S, a high output model

- **Optimized for CCS's high-magnification telecentric lenses**

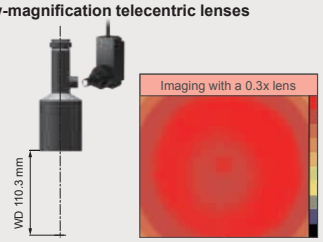
Spot Light (white)
HLV3-22SW-4S
+
Telecentric Lens
6x, WD: 65 mm
SE-65VT60-M



HLV3-22-4M, a high uniformity model

- **Optimized for CCS's low-magnification telecentric lenses**

Spot Light (white)
HLV3-22SW-4M
+
Telecentric Lens
0.3x, WD: 110 mm
SE-110VT03-5M



Each color represents the brightness in steps of 10% the maximum value.
The results for individual products may vary.

Custom Orders

Please contact your CCS sales representative.

E.g.: Further reduced individual differences and higher brightness in light output

Increase output
Reduce individual differences



Customizable items

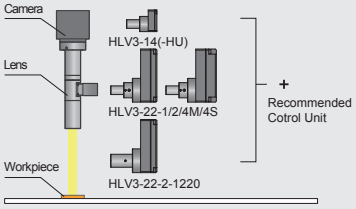
- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Etc.

Example Configuration

Spot Light with high output and uniformity.

HLV3 series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup That Caters to Your Specific Needs

Model	Compared to the brightness of conventional lighting*1				Compared to the brightness of HLV3 series units*2				Uniformity	Compact design	Reduced individual brightness differences	Telecentric lens recommended magnification
	RD (red)	SW (white)	BL (blue)	GR (green)	RD (red)	SW (white)	BL (blue)	GR (green)				
HLV3-14	1.7x	1.1x	3.0x	1.3x	–	–	–	–	○	◎	–	high-magnification
HLV3-14-HU	0.9x	1.1x	1.0x	1.7x	–	–	–	–	◎	◎	–	high-magnification
HLV3-22-1	1.2x	1.4x	1.5x	1.2x	1.0x	1.0x	1.0x	1.0x	◎	○	○	high-magnification
HLV3-22-2	1.1x	1.5x	1.5x	1.2x	1.8x	1.7x	1.6x	1.5x	◎	○	○	high-magnification
HLV3-22-2-1220	1.1x	1.5x	1.5x	1.2x	1.8x	1.7x	1.6x	1.5x	◎	○	○	–
HLV3-22-4M	1.0x	1.3x	1.2x	1.0x	1.6x	1.4x	1.3x	1.3x	◎	△	○	low-magnification
HLV3-22-4S	1.6x	1.9x	2.0x	1.6x	2.5x	2.2x	2.1x	2.0x	◎	△	○	high-magnification
HLV3-22IR860	–	–	–	–	–	–	–	–	–	△	–	–

*1 When comparing conventional lighting brightness, the comparison for HLV3-14 is with HLV2-14 of the same color, HLV3-14-HU is with HLV2-14HU of the same color, HLV3-22-1 is with HLV2-22 of the same color, and HLV3-22-2/-2-1220/-4M/-4S are with HLV2-22-3W of the same color.
*2 When comparing the brightness of the HLV3 series, the comparison uses HLV3-22-1 standard values for each emission color. HLV3-14, HLV3-14-HU and HLV3-22IR860 have individual differences and are thus not used for the comparison.
Note: Comparison using our measurement conditions. The data included is for reference only and the results may vary.

Reduced Individual Differences

(Excluding HLV3-14, HLV3-14-HU, and HLV3-22IR860)

The newly designed HLV3-series Spot Light allows for brightness adjustment to the standard value.
In the production process, the brightness of each HLV3-series Spot Light is measured and adjusted to the standard value established for each model. This allows us to produce high-quality Spot Lights with minimal variations in brightness between units of the same model.
The HLV3 series helps reduce labor time to install, maintain, and adjust brightness of Spot Lights and helps reduce time required on site.

Optimized for the Optical System of CCS High-Resolution Telecentric Lenses

Optimum Spot Lights for lens magnifications.
High uniformity types are available for low magnification lenses and high output types are available for high magnification lenses.
Spot Lights use an original lens to maintain high quality with minimal deviation in the optical axis.
Use Spot Lights with our original telecentric lenses (coaxial type) to create a stable imaging environment.

List of the recommended combination of telecentric lens and HLV3 series

	Magnification / WD	0.3	0.5	0.8	1.0	1.5	2.0	3.0	4.0	6.0
Telecentric lens	65 mm		SE-65 VT05-M	SE-65 VT08-M	SE-65 VT10-M		SE-65 VT20-M		SE-65 VT40-M	SE-65 VT60-M
	110 mm	SE-110 VT03-5M	SE-110 VT05-M	SE-110 VT08-M	SE-110 VT10-M	SE-110 VT15-M	SE-110 VT20-M	SE-110 VT30-M	SE-110 VT40-M	
HLV3 series		HLV3-22-4M			HLV3-22-1, HLV3-22-2, HLV3-22-4S, HLV3-14, and HLV3-14-HU					

Recommendation based on the test results using our measurement conditions.

The HLV3 series is up to 2.4x as bright, enabling use as high speed lighting!

Combining a power adapter and strobe overdrive power supply realizes an ideal photographic environment.

● Spot Lighting
HLV3-22-4M/4S series emission colors (red/white/blue/green), HLV3-22IR860 (infrared)



+

● Straight Cable
FCB-1/-2/-3/-5
● Robot Cable
FRCB-1/-2/-3/-5

*Branch cables cannot be used.

+

● Power Adapter
RB-16.4-48-HK
Special orders



*This adapter is to enable light emission with the HLV3 series in strobe overdrive mode.

+

● Strobe Overdrive Power Supply
POD-5024-2-PEI / POD-22024-4-PEI
(2 channel model) (4 channel model)



▶ P.325

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/HSL-PCL
Waterproof
UV2
UV
LNSP-UV-FN
Ultraviolet Lighting
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

HLV3 Series



Refer to our website for product details.

CCS HLV3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

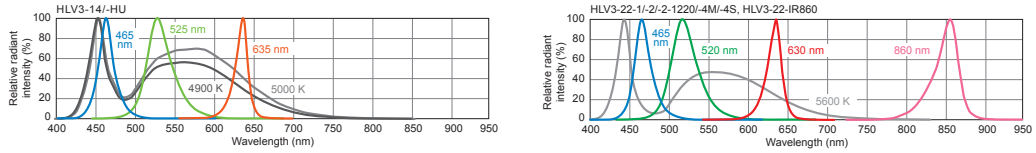
Model name	LED color	Peak wavelength/ correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Options	Extension cables	Recommended Control Units	Weight (max.)
HLV3-14RD	Red	635 nm	275 mA	0.7 W	–	FCB*2 Straight Cable FRCB Robot Cable	PD3*1 CC-PJ-0707 PJ PJ2	18 g
HLV3-14SW	White	5,000 K		0.9 W				
HLV3-14BL	Blue	465 nm		0.9 W				
HLV3-14GR	Green	525 nm		1.1 W				
HLV3-14RD-HU	Red	635 nm		0.7 W				
HLV3-14SW-HU	White	4,900 K		0.9 W				
HLV3-14BL-HU	Blue	465 nm		0.9 W				
HLV3-14GR-HU	Green	525 nm		1.1 W				
HLV3-22RD-1	Red	630 nm	385 mA	1.1 W	Condenser lens			46 g
HLV3-22SW-1	White	5,600 K		1.4 W				
HLV3-22BL-1	Blue	465 nm		1.5 W				
HLV3-22GR-1	Green	520 nm		1.5 W				
HLV3-22RD-2	Red	630 nm	700 mA	2.1 W				
HLV3-22SW-2	White	5,600 K		2.5 W				
HLV3-22BL-2	Blue	465 nm		2.7 W				
HLV3-22GR-2	Green	520 nm		2.8 W				
HLV3-22RD-2-1220	Red	630 nm	700 mA	2.1 W	–			47 g
HLV3-22SW-2-1220	White	5,600 K		2.5 W				
HLV3-22BL-2-1220	Blue	465 nm		2.7 W				
HLV3-22GR-2-1220	Green	520 nm		2.8 W				
HLV3-22RD-4M *3	Red	630 nm	1000 mA	3.2 W	Condenser lens	FCB*2 Straight Cable FRCB Robot Cable FCB-HLV3-10 Straight Cable FRCB-HLV3-10 Robot Cable	PJ2	53 g
HLV3-22SW-4M *3	White	5,600 K		3.7 W				
HLV3-22BL-4M *3	Blue	465 nm		4.0 W				
HLV3-22GR-4M *3	Green	520 nm		4.1 W				
HLV3-22RD-4S *3	Red	630 nm		3.2 W				
HLV3-22SW-4S *3	White	5,600 K		3.7 W				
HLV3-22BL-4S *3	Blue	465 nm		4.0 W				
HLV3-22GR-4S *3	Green	520 nm		4.1 W				
HLV3-22IR860 *3	Infrared	860 nm		4.1 W				

Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 The PD3-3024-3 and PD3-5024-3 series are not applicable to these products.
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

LED Properties

Spectral distribution



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary. See P.355 for details about lens filters.

Optional Cables (Sold Separately)

Extension cables	Straight cables	Robot cables
	FCB-1/-2/-3/-5 (1 m / 2 m / 3 m / 5 m)	FRCB-1/-2/-3/-5 (1 m / 2 m / 3 m / 5 m)
	FCB-HLV3-10 (10 m) *	FRCB-HLV3-10 (10 m)*

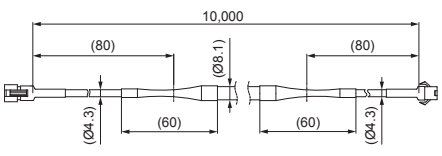
Notes

- The total length of the FCB-1/-2/-3/-5 and FRCB-1/-2/-3/-5 Extension Cables must be no longer than 5 m.
- Branch cables are not available for the HLV3 Spot Lights.

* These 10-m extension cables connect the HLV3-series Spot Light and the PJ2-series Control Unit.

FCB-HLV3-10 Straight Cable

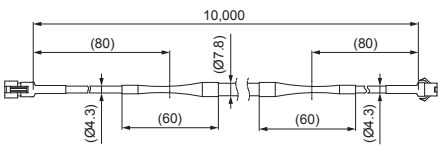
(Unit: mm)



Weight: 1,200 g max., Cable permitted bending radius: 65 mm

FRCB-HLV3-10 Robot Cable

(Unit: mm)

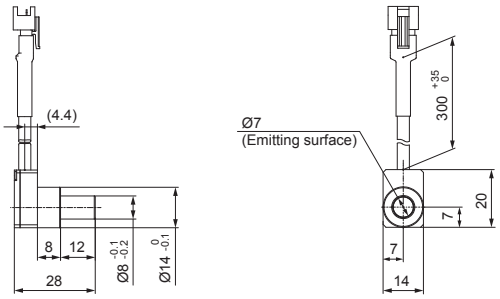


Weight: 1,200 g max., Cable permitted bending radius: 35 mm

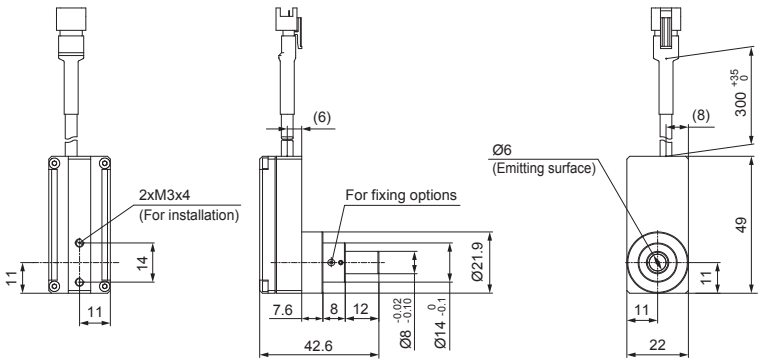
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Dimensions (mm)

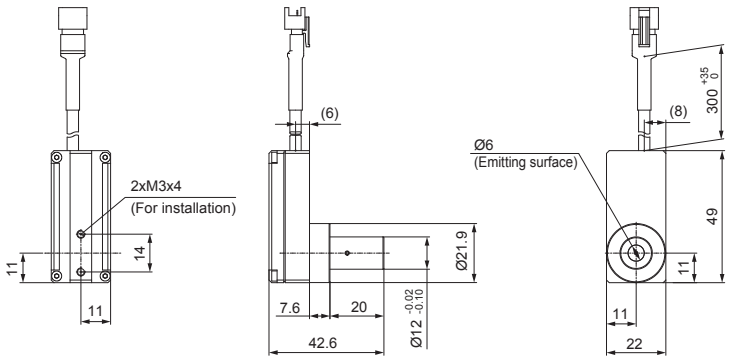
HLV3-14RD/SW/BL/GR
HLV3-14RD-HU / SW-HU / BL-HU / GR-HU



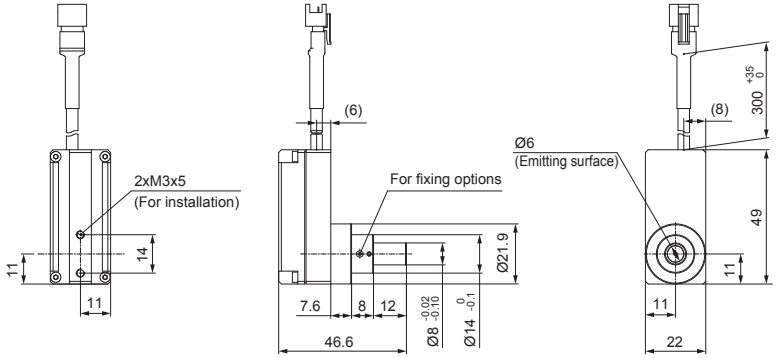
HLV3-22RD-1 / SW-1 / BL-1 / GR-1
HLV3-22RD-2 / SW-2 / BL-2 / GR-2



HLV3-22RD-2-1220 / SW-2-1220 / BL-2-1220 / GR-2-1220



HLV3-22RD-4M / SW-4M / BL-4M / GR-4M
HLV3-22RD-4S / SW-4S / BL-4S / GR-4S
HLV3-22IR860



LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

HLV3 Series



Refer to our website for product details.

CCS HLV3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Introduction to Condenser Lenses

Select lenses according to illuminating distance, illuminating range, and uniform region to achieve optimum illumination, even in imaging environments in which the workpiece is far away.

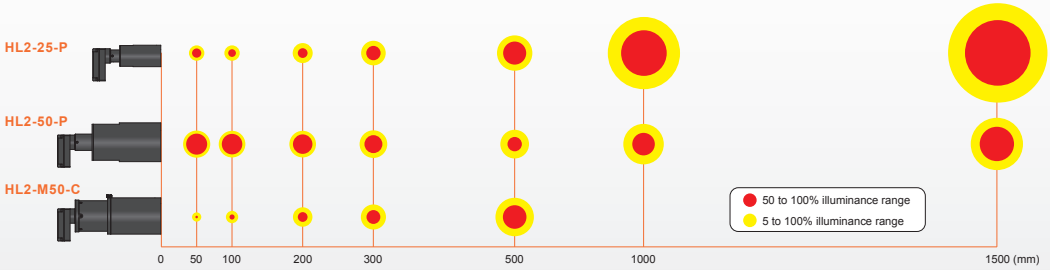
Recommended models for installation	HLV3-22-1, HLV3-22-2, HLV3-22-4M, HLV3-22-4S, and HLV3-22-IR860



Condenser lens for spot illumination with high parallelism.



Condenser lens with adjustable illuminating distance and range by variable barrel length.



Measured when HLV3-22SW-4S (white) is mounted on the lens. Comparison using our measurement conditions.
The data included is for reference only and the results for individual products may vary.

Illuminance Distributions (LWD Characteristics)

HL2-25-P + HLV3-22SW-4S (Unit of length used for the diameter of illuminated range: mm)

LWD	50 mm	100 mm	200 mm	300 mm	500 mm	1,000 mm	1,500 mm
50 to 100% illuminance	Ø18	Ø15	Ø19	Ø28	Ø45	Ø89	Ø128
5 to 100% illuminance	Ø30	Ø30	Ø39	Ø48	Ø69	Ø141	Ø194

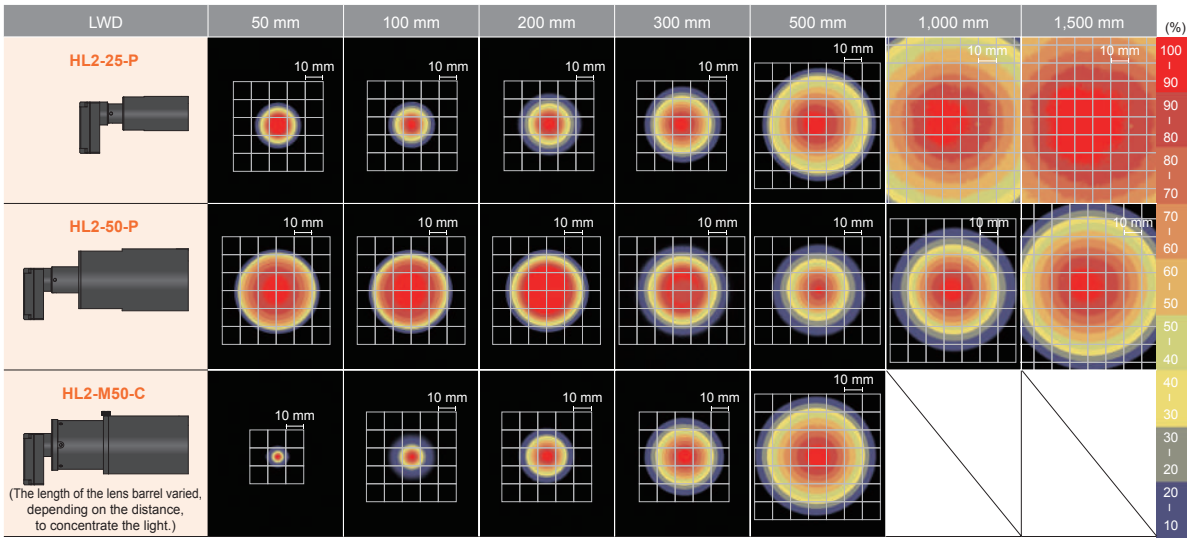
HL2-50-P + HLV3-22SW-4S (Unit of length used for the diameter of illuminated range: mm)

LWD	50 mm	100 mm	200 mm	300 mm	500 mm	1,000 mm	1,500 mm
50 to 100% illuminance	Ø41	Ø40	Ø38	Ø35	Ø28	Ø44	Ø67
5 to 100% illuminance	Ø53	Ø52	Ø52	Ø54	Ø56	Ø79	Ø102

HL2-M50-C + HLV3-22SW-4S (Unit of length used for the diameter of illuminated range: mm)

LWD	50 mm	100 mm	200 mm	300 mm	500 mm	1,000 mm	1,500 mm
50 to 100% illuminance	Ø5	Ø10	Ø19	Ø27	Ø46	–	–
5 to 100% illuminance	Ø18	Ø24	Ø38	Ø49	Ø75	–	–

Measured values, where the maximum illuminance within the range is expressed as 100%, using our measurement conditions. Results for individual products may vary.

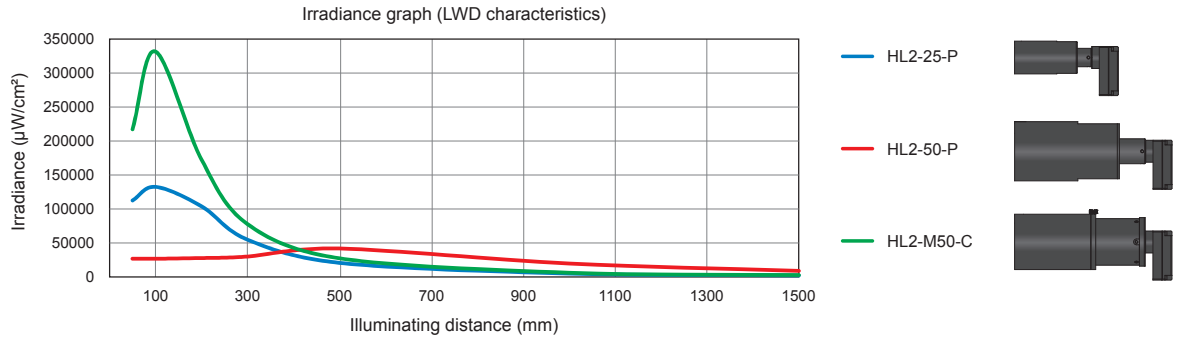


Measured values are in steps of 10%, where the maximum illuminance within the range is expressed as 100%, using our measurement conditions.
Measured when HLV3-22SW-4S (white) is mounted on the lens. Results for individual products may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

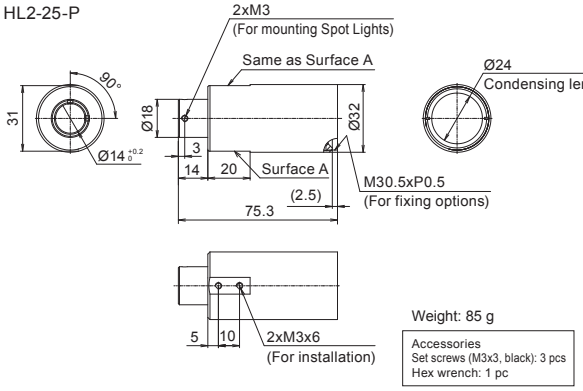
Data: Irradiance Comparison Graph



Measurement when HLV3-22SW-4S (white) is mounted on the lens. Measured values using our measurement conditions. Results for individual products may vary.

Condenser Lens Dimensions (mm)

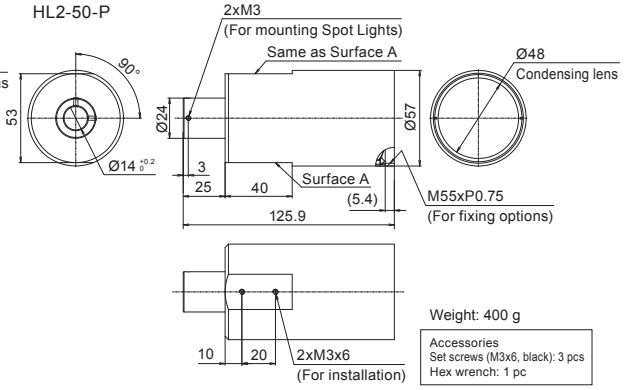
HL2-25-P



Weight: 85 g

Accessories
Set screws (M3x3, black): 3 pcs
Hex wrench: 1 pc

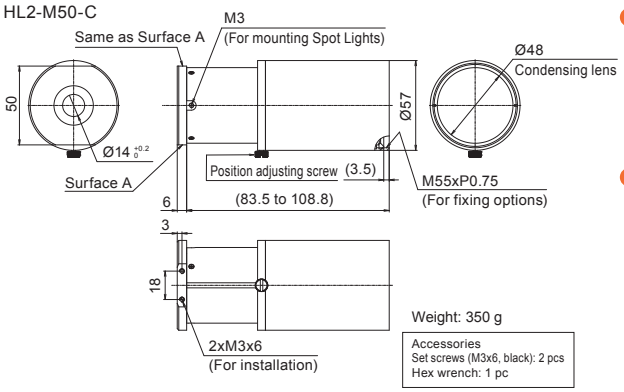
HL2-50-P



Weight: 400 g

Accessories
Set screws (M3x6, black): 3 pcs
Hex wrench: 1 pc

HL2-M50-C



Weight: 350 g

Accessories
Set screws (M3x6, black): 2 pcs
Hex wrench: 1 pc

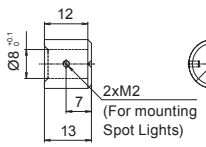
Polarizing filter (sold separately)

Many sizes available for condenser lens.
Use in combination with another one installed on the camera lens.

- For HL2-25-P
  Model: PL-30/PL-30-NL (including a screw to lock the polarizing direction)
- For HL2-50-P/HL2-M50-C
  Model: PL2-55-NL (including a screw to lock the polarizing direction)

Light aperture adapter (sold separately)

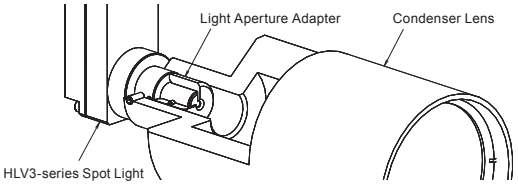
Attach the light aperture adapter to the HLV3-series Spot Light to change the directivity of emitted light.
When used with a condenser lens, the light aperture adapter enables fine adjustment of light to the illuminating distance and range.



For **SB-HL2-05**: Ø0.5 mm
For **SB-HL2-1**: Ø1 mm
For **SB-HL2-2**: Ø2 mm
(Aperture diameter)

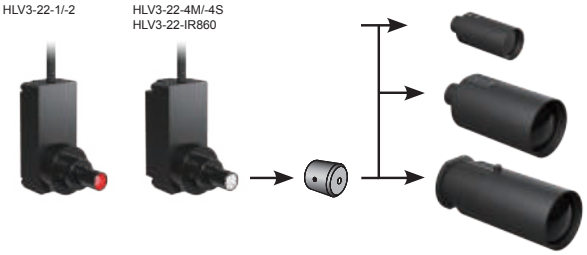
Accessories
Set screws (M2x2, black): 3 pcs
Hex wrench: 1 pc

Put the Light Aperture Adapter and Condenser Lens all the way onto the tip of the Spot Light.



Recommended models for installation

HLV3-22-1/-2
HLV3-22-4M/-4S
HLV3-22-IR860



Spot Lights
HLV2 Series

Refer to our website for product details.
CCS HLV2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides high output spot lighting using an original optical design

Discontinued in the Near Future
We recommend using the HLV3 series, a successor with improved performance.



Applications As a light source for a telecentric lens, light source for alignment of LCDs or circuit boards, light source for dimension measuring, light source for spot illumination, etc.

Lineup with Selection to Match Your Needs

The HLV2 series provides a selection to match your usage environment and application. The LED color has a lineup of red, white, blue, and green.

HLV2-14 series, with a lightweight and compact design

Compact model

The HLV2-14 series is perfect for saving space, with its lightweight and compact design.

Weighs just 18g



Example connection with the lens





Spot Lights That Achieve High Output

The lightweight and compact Spot Light achieved high output through its unique optical design.

HLV2-22-3W series, a high output model

Standard model

HLV2-22 series

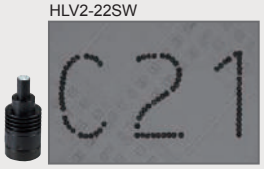


High output model

The HLV2-22-3W series is a Spot Light with the highest output of all series.

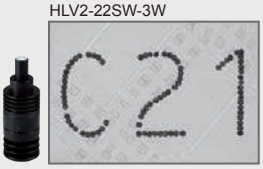


HLV2-22SW



Intensity setting: 35%
0 35% 100%
Shutter speed: 1/20,000 sec

HLV2-22SW-3W



Intensity setting: 35%
0 35% 100%
Shutter speed: 1/20,000 sec

Brightness varies based on the camera's spectral sensitivity.
The data included is for reference only and does not guarantee the quality of this product.

Custom Orders

Please contact your CCS sales representative.

E.g.: Changed the LED emitted wavelength to infrared

Wavelength



Created an Infrared Light

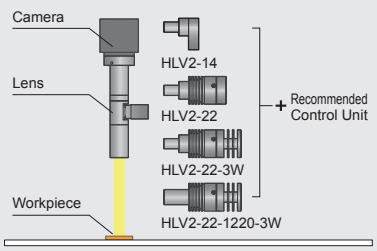
Customizable items

External/internal diameter | Wavelength/color
Increase output | Cable length
Illuminating angle | Format/material
Connector format | Installation/mounting
Etc.

Example Configuration

Revised the optical system to increase the emitting efficiency for this high output Spot Light.

HLV2 series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

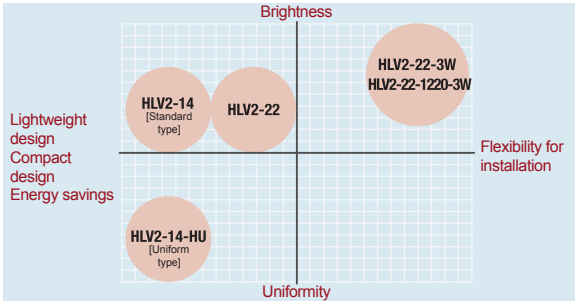
Register to use them.

Lineup Offering a Selection to Match Your Needs

HLV2 series evaluation chart

	Brightness	Uniformity	Lightweight design	Compact design	Flexibility for installation	Energy savings
HLV2-14 [Standard type]	Good	Good	Very Good	Very Good	Good	Very Good
HLV2-14-HU [Uniform type]	OK	Very Good	Very Good	Very Good	Good	Very Good
HLV2-22 (Comparison criterion)	Good	Good	Good	Good	Good	Good
HLV2-22-3W	Very Good	Good	OK	OK	Very Good	Good
HLV2-22-1220-3W	Very Good	Good	OK	OK	Very Good	Good

HLV2 series evaluation graph



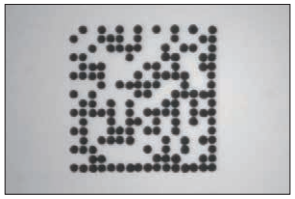
Comparison using CCS products

Imaging Example: Imaging of 2-dimensional Codes



Description	Code reading
Workpiece	2-dimensional codes
New lighting	HLV2-22RD-3W

HLV2-22RD-3W



2-dimensional code

Imaging Example: Imaging of Alignment Marks



Description	Positioning
Workpiece	Alignment marks
Light Unit in use	HLV2-22SW-3W

HLV2-22SW-3W



Alignment mark

HLV2 Series



Refer to our website for product details.

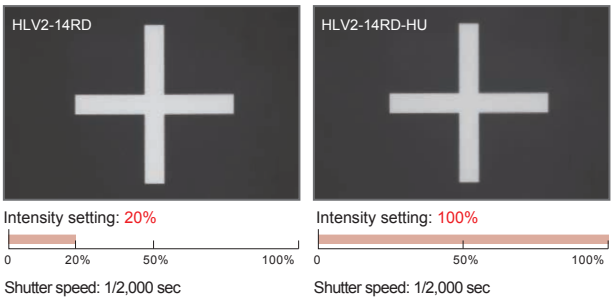
CCS HLV2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

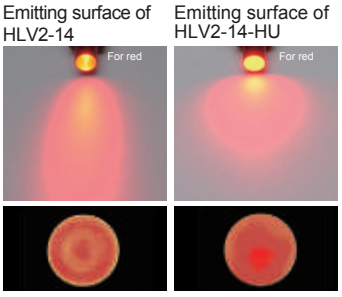
Comparison of Data for HLV2-14 Series

Brightness comparison between HLV2-14 and HLV2-14-HU



Shutter speed: 1/2,000 sec

Shutter speed: 1/2,000 sec



HLV2-14-HU is a Spot Light with a highly uniform emitting surface.

Comparison using CCS products
This data is for reference only. Actual values may vary.

Lineup

Model name	LED color	Power consumption	Peak wavelength/ correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
HLV2-14RD	Red	0.9 W	645 nm	–	FCB*2 Straight Cable / FRCB Robot Cable	PD3*1 / CC-PJ-0707 / PJ / PJ2	18 g
HLV2-14SW	White		5,300 K				
HLV2-14BL	Blue		465 nm				
HLV2-14GR	Green		520 nm				
HLV2-14RD-HU	Red	0.9 W	645 nm				18 g
HLV2-14SW-HU	White		4,700 K				
HLV2-14BL-HU	Blue		465 nm				
HLV2-14GR-HU	Green		520 nm				
HLV2-22RD	Red	1.4 W	645 nm	Convergent lens			37 g
HLV2-22SW	White		5,300 K				
HLV2-22BL	Blue		465 nm				
HLV2-22GR	Green		520 nm				
HLV2-22RD-3W	Red	2.8 W	645 nm				41g
HLV2-22SW-3W	White		5,300 K				
HLV2-22BL-3W	Blue		465 nm				
HLV2-22GR-3W	Green		520 nm				
HLV2-22RD-1220-3W	Red	2.8 W	645 nm	–			42 g
HLV2-22SW-1220-3W	White		5,300 K				
HLV2-22BL-1220-3W	Blue		465 nm				
HLV2-22GR-1220-3W	Green		520 nm				

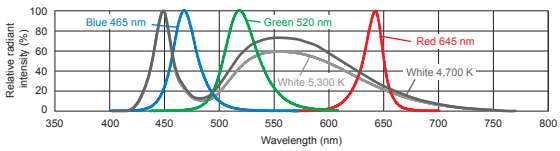
Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 The PD3-3024-3 and PD3-5024-3 series are not applicable to these products.
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

Caution	• The length of the extension cable must be 5 m or less. If you want to use longer than 5 m, please contact your CCS sales representative. • Branch cables cannot be used. Use the FCB series (straight cable) or the FRCB series (robot cable).

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

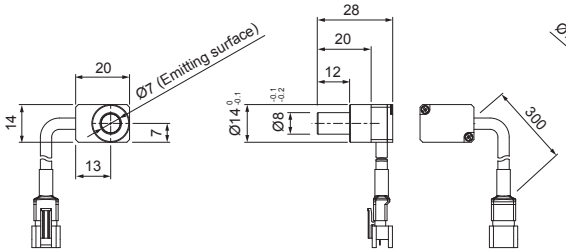
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

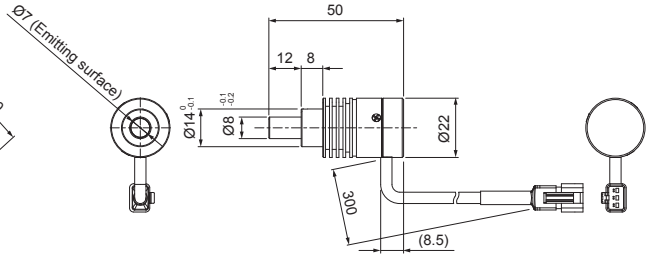
Register to use them.

Dimensions (mm)

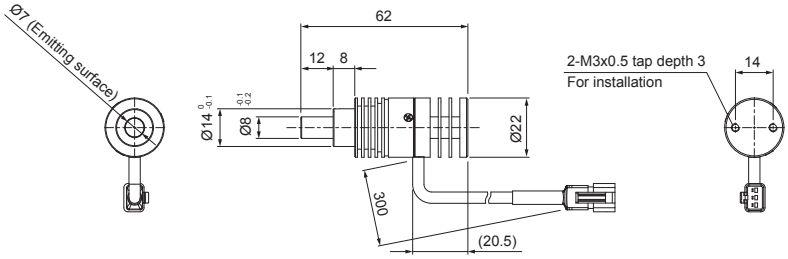
HLV2-14RD / SW / BL / GR / RD-HU / SW-HU / BL-HU / GR-HU



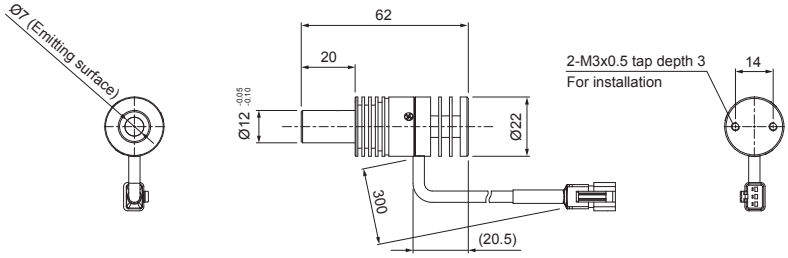
HLV2-22RD/SW/BL/GR



HLV2-22RD-3W / SW-3W / BL-3W / GR-3W



HLV2-22RD-1220-3W / SW-1220-3W / BL-1220-3W / GR-1220-3W



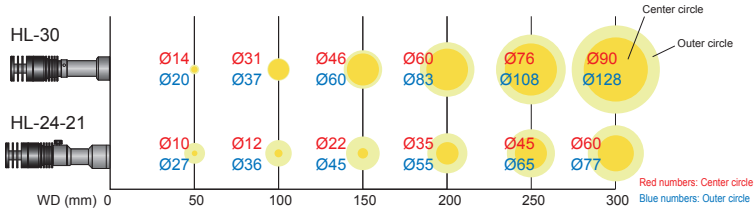
Options

HLV3-22 / HLV2-22 series dedicated condenser lens HL-30 / HL-24-21



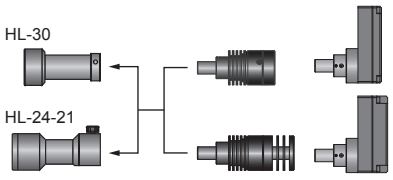
Cannot be used with the HLV3-14 / HLV3-22-2-1220 / HLV3-22-4-NR series and HLV2-14 / HLV2-22-1220-3W / HLV2-22-NR-3W series.

■Illuminated range of the HL-30 / HL-24-21



This data is actual measurement values when an HLV2-22-3W is connected. Results for individual products may vary.

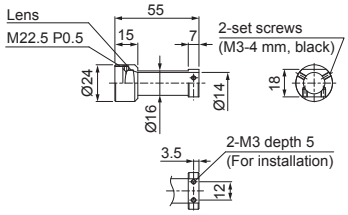
■ Installation with the HLV3-22 / HLV2-22 series



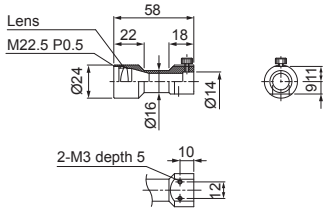
Supported models
HLV3-22-1/2/4M/4S series
HLV2-22/HLV2-22-3W series

Dimensions (mm)

HL-30



HL-24-21



LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/HSL-PCL
Water proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Spot Lighting

Spot Lights
LV Series

Refer to our website for product details.
CCS LV ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides spot lighting using original converging technology



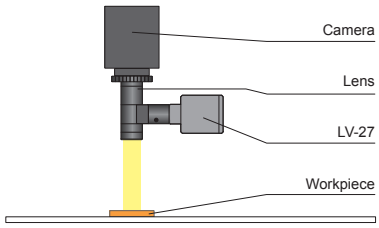
Applications As a light source for a telecentric lens, light source for inspecting alignment of LCDs or circuit boards, light source for dimension measuring, light source for spot illumination, etc.

Features

Spot Light with tip radius of Ø8 mm and emitting surface of Ø6 mm. Can be used embedded into the coaxial illuminating section of a telecentric lens or macro lens.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (LV-27)



Lightweight, compact design

With its lightweight and compact design, it doesn't take up much room and is perfect for saving space.

Spot Light with low power consumption

The LV series consumes 0.8 W (for red) of power, and can be used for saving energy.

Lineup

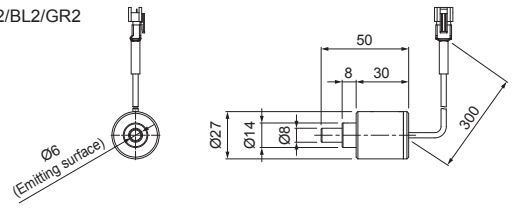
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LV-27RD2	Red	24 V / 0.8 W	630 nm	–	FCB*2 Straight Cable FCB-W*3 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable	PD3 / CC-ST-1024 PSB / POD*1	40 g
LV-27SW2	White	24 V / 0.4 W	5,500 K				
LV-27BL2	Blue	24 V / 0.4 W	470 nm				
LV-27GR2	Green	24 V / 0.6 W	525 nm				

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.
*3 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

LV-27RD2/SW2/BL2/GR2



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Note	• Use as a Spot Light for directly illuminating the workpiece. • In addition to Light Units with a tip radius of Ø8 mm, we also offer Ø10 mm and Ø12 mm as custom orders.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Super-Uniform Spotlight for wide variety of applications





LSP-41RD



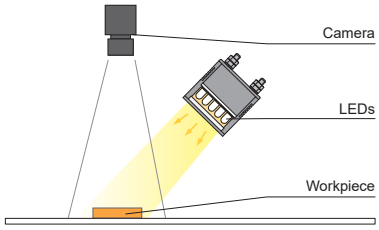
Applications Character recognition, visual inspection for electronic parts, visual and position inspections for circuit boards, light source for spot lights, etc.

Features

High luminance Spot Lights LSP Series is suited for limited and long working distance from 300 mm to 500 mm, with a compact design—Ø41 mm diameter housing.

We accept custom orders. Please feel free to inquire. • Changes in length, etc.

Example configuration (LSP-41RD)



Examples of Light Images



Reading bar code
Light used: LSP-41RD



Reading QR code
Light used: LSP-41RD



Inspecting dot-marked characters on pipe
Light used: LSP-41RD

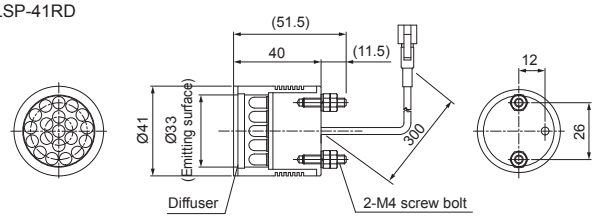
Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LSP-41RD	Red	12V / 2.0 W	660 nm	Polarizing plate	CB Straight Cable CB-W 2-branch Cable CB-F 4-branch Cable RCB Robot Cable	PD2 PSB PTU2	115 g

Options ▶ P.360 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

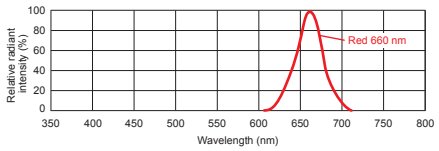
Dimensions (mm)

LSP-41RD



LED Properties

Light spectrum



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LED Fiber Light (straight) that uses original converging technology



Model name	HFS-14-500
Fiber material	Multicomponent glass
Case material	Aluminum alloy
Flexible tube material	SUS
Strand diameter (μm)	50
Fiber arrangement	Random
Numerical aperture (NA)	0.56
Receiving angle (°)	68
Transmitted wavelength (nm)	300 to 1,300
Minimum bending radius (mm)	50

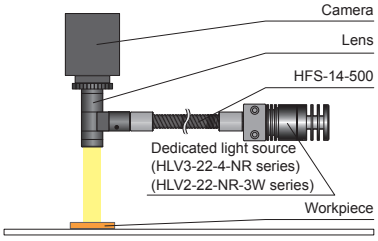
Applications As a light source for a telecentric lens, visual inspection for chips, alignment mark imaging, etc.
(Common for the HFS and HFR series)

Features

This is a unique Light Unit system that melds the strengths of both LEDs and fibers. The HFS series, a straight type, is lightweight, compact, and easy to manage, and therefore can be used in a variety of applications.

We accept custom orders. Please feel free to inquire. • Changes in length, etc.

Example configuration (HFS-14-500)

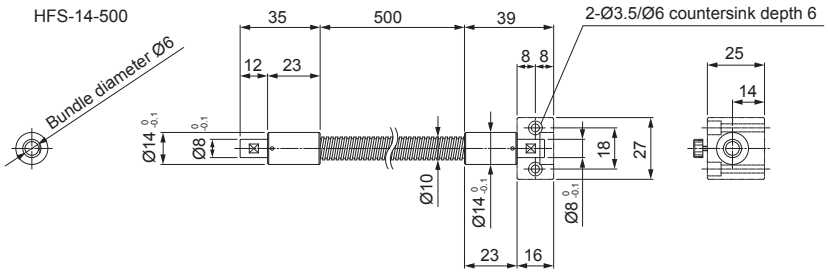


It can be used in a variety of situations



Dedicated Light Source (HLV3-22-4-NR series) Product Page ▶ P.197
Dedicated Light Source (HLV2-22-NR-3W series) Product Page ▶ P.199

Dimensions (mm)



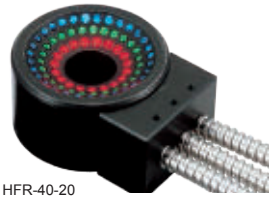
Common Specifications for the HFS/HFR Series

Model name	Operating temperature and humidity	Storage temperature and humidity	Weight
HFS-14-500	Temperature: 0 to 40°C, Humidity: 20% to 70%RH (with no condensation)	Temperature: -10 to 60°C, Humidity: 20% to 70%RH (with no condensation)	115 g
HFR-25-10			60 g
HFR-25-30			
HFR-40-20			250 g

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

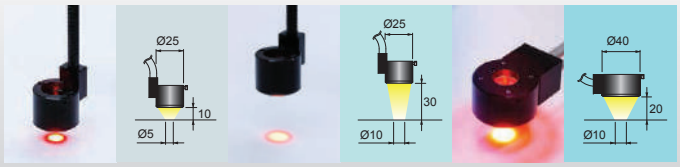
LED Fiber Light (ring type) that uses original converging technology


HFR-25-10
HFR-25-30


HFR-40-20
Three dedicated light sources are required for use.
Dedicated Light Source (HLV3-22-4-NR series)
Product Page ▶ P.197
Dedicated Light Source (HLV2-22-NR-3W series)
Product Page ▶ P.199

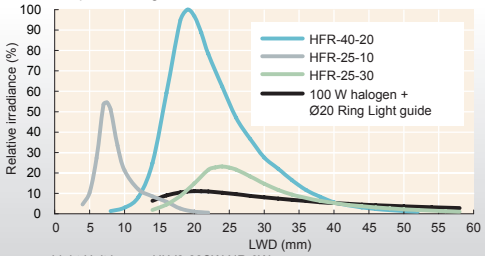
Model name	HFR-25-10/30 HFR-40-20
Fiber material	Plastic
Case material	Aluminum alloy
Flexible tube material	SUS
Strand diameter (μm)	500
Fiber arrangement	–
Numerical aperture (NA)	0.5
Receiving angle (°)	60
Transmitted wavelength (nm)	400 to 700
Minimum bending radius (mm)	30

■HFR-25-10 ■HFR-25-30 ■HFR-40-20



Ø5 mm near LWD 10 mm convergent illumination
Ø10 mm near LWD 30 mm convergent illumination
Ø10 mm near LWD 20 mm convergent illumination

Graph of change in irradiance in each LWD for the HFR series



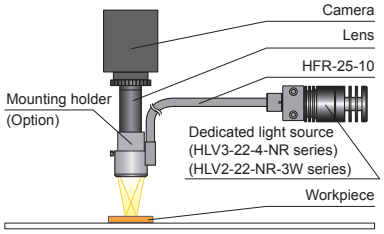
Light Unit in use: HLV2-22SW-NR-3W
This data is for reference only. Actual values may vary.

Features

The HFR series, a ring type, does not illuminate a broad range like a halogen fiber light, but can perform convergent illumination for the required field of vision.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

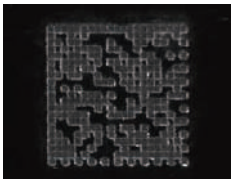
Example configuration (HFR-25-10)



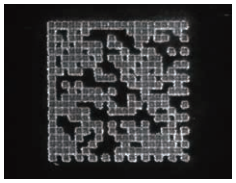
Imaging using HFR-25-10 (white)


HFR-25-10

100 W halogen + Ring Light guide: LWD 20 mm

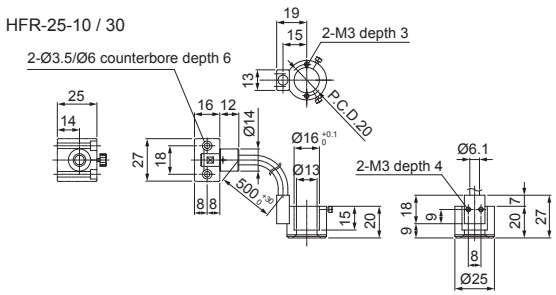

Intensity: 100%
Shutter speed: 1/4,000 sec

HFR-25-10 (White): LWD 10 mm

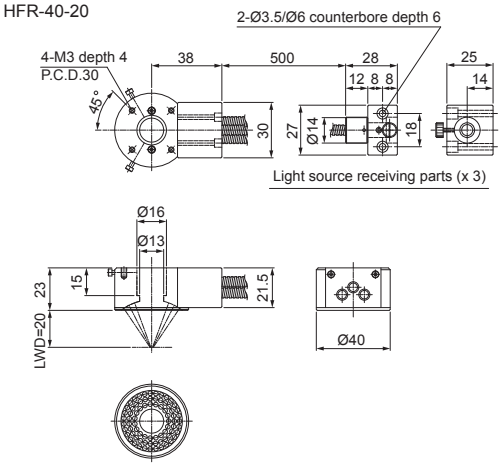

Intensity: 100%
Shutter speed: 1/4,000 sec

Dimensions (mm)

HFR-25-10 / 30



HFR-40-20



Options

Mounting holder for HFR-25-10 / -30

Light Units can be easily installed and mounted in the position for the most efficient convergence.


HD-HFR-25-1640 HD-HFR-25-1618


Example of usage


Example of usage

Dedicated Light Source (HLV3-22-4-NR series) Product Page ▶ P.197
Dedicated Light Source (HLV2-22-NR-3W series) Product Page ▶ P.199

Other Products

Micro Fiber Head Dedicated Light Sources
HLV3-22-4-NR Series

Refer to our website for product details.
CCS HLV3-22-4-NR ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides high output spot lighting using an original optical design



Connection example for HLV3-22-4-NR and a Micro Fiber Head



Straight type: HFS-14-500



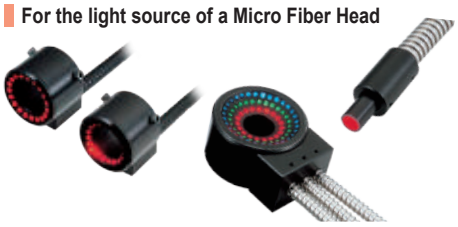
Ring type: HFR-25-10 / HFR-25-30 / HFR-40-20 (Three light sources are required for use.)

Features

The micro fiber head dedicated light source allows for easy installation and removal. Select the perfect emitted color for workpiece imaging to achieve accurate characteristic extraction.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

For the light source of a Micro Fiber Head



Micro Fiber Head Product Page ▼ P.195

For the light source of a full color blending unit



Full Color Blending Unit Product Page ▼ P.198

Lineup

Model name	LED color	Peak wavelength / correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Options	Extension cables	Recommended Control Units	Weight (max.)
HLV3-22RD-4-NR	Red	630 nm	1,000 mA	3.0 W	–	FCB* Straight Cable FRCB Robot Cable FCB-HLV3-10 Straight Cable FRCB-HLV3-10 Robot Cable	PJ2	37 g
HLV3-22SW-4-NR	White	5,600 K		3.5 W				
HLV3-22BL-4-NR	Blue	465 nm		3.8 W				
HLV3-22GR-4-NR	Green	520 nm		4.0 W				

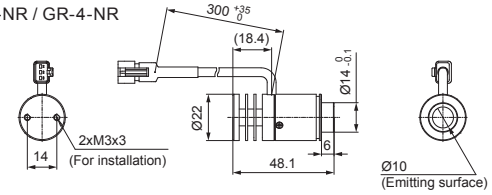
LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | PJ2 series Product Page ▶ P.343

* The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

Caution
- The total length of the FCB-1/-2/-3/-5 and FRCB-1/-2/-3/-5 Extension Cables must be no longer than 5 m.
- Branch cables cannot be used. Use the FCB series (straight cable) or the FRCB series (robot cable).

Dimensions (mm)

HLV3-22RD-4-NR / SW-4-NR / BL-4-NR / GR-4-NR



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

HLV3-3M-RGB-4

A full color light source that achieves the illumination color perfect for your workpiece



HLV3-3M-RGB-4

Connection example for HLV3-3M-RGB-4 and a Micro Fiber Head



Straight type: HFS-14-500



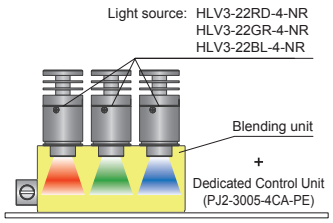
Ring type: HFR-25-10 / HFR-25-30 / HFR-40-20 (Three light sources are required for use.)

Features

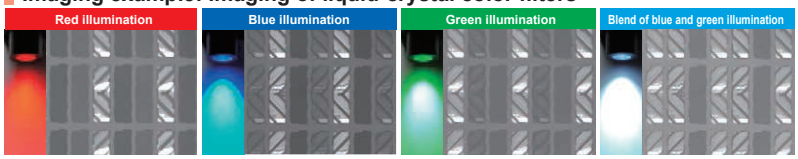
Red, blue, and green light from the dedicated light sources is blended inside this unit, achieving the illumination color perfect for the workpiece. Combine with a Micro Fiber Head to support a wide variety of applications.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (HLV3-3M-RGB-4)



Imaging example: Imaging of liquid-crystal color filters



Use the HLV3-22-4-NR series to create illumination with a highly accurate blended color.
Independently adjust the intensity for each color to create exactly the color you want and help improve inspection accuracy.

Micro Fiber Head Product Page ▼ P.195
HLV3-22-4-NR series Product Page ▼ P.197

Lineup

Model name	LED color	Peak wavelength / correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Options	Extension cables	Recommended Control Units	Weight (max.)
HLV3-3M-RGB-4	Red	630 nm	1,000 mA	11 W	–	FCB* Straight Cable FRCB Robot Cable FCB-HLV3-10 Straight Cable FRCB-HLV3-10 Robot Cable	PJ2-3005 -4CA-PE	232 g
	Blue	465 nm						
	Green	520 nm						

LED Properties: Spectral Distribution ▶ P.384
Extension Cables ▶ P.365
PJ2 series Product Page ▶ P.343

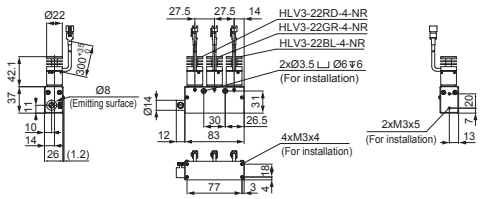
* The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

Caution	• The total length of the FCB-1/-2/-3/-5 and FRCB-1/-2/-3/-5 Extension Cables must be no longer than 5 m. • Branch cables cannot be used. Use the FCB series (straight cable) or the FRCB series (robot cable).

Dimensions (mm)

HLV3-3M-RBG-4

(Cable length: 300 mm)



You can inquire using our website.

Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

Other Products

Micro Fiber Head Dedicated Light Sources
HLV2-22-NR-3W Series

Refer to our website for product details.
CCS HLV2-22-NR-3W ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides high output spot lighting using an original optical design



Connecting HLV2-22-NR-3W to a Micro Fiber Head



Straight type: HFS-14-500

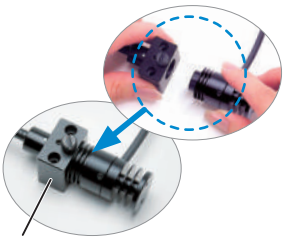


Ring type:
HFS-25-10 / HFR-25-30
HFS-40-20 (Three light sources are required.)

Features

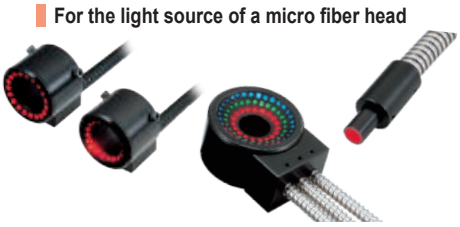
The micro fiber head dedicated light source allows for easy installation and removal. Select the perfect emitted color for workpiece imaging to achieve accurate characteristic extraction.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.



The light source adapter (model name: AD-HFS-14) is included with the HFS/HFR series.

For the light source of a micro fiber head



Micro Fiber Head Product Page ▼ P.195

For the light source of a full color blending unit



Full Color Blending Unit Product Page ▼ P.200

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
HLV2-22RD-NR-3W	Red	2.8 W	645 nm	–	FCB*2 Straight Cable FRCB Robot Cable	PD3*1 / CC-PJ-0707 PJ / PJ2	37 g
HLV2-22SW-NR-3W	White		5,300 K				
HLV2-22BL-NR-3W	Blue		465 nm				
HLV2-22GR-NR-3W	Green		520 nm				

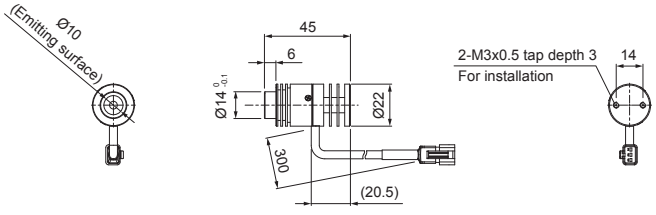
LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 The PD3-3024-3 and PD3-5024-3 series are not applicable to these products.
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

Caution
- The length of the extension cable must be 5 m or less. If you would like to use longer than 5 m, please contact your CCS sales representative.
- Branch cables cannot be used. Use the FCB series (straight cable) or the FRCB series (robot cable).

Dimensions (mm)

HLV2-22RD-NR-3W / SW-NR-3W / BL-NR-3W / GR-NR-3W



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

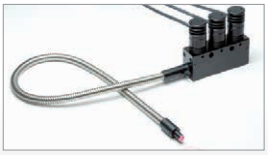
HLV2-3M-RGB-3W

A full color light source that achieves the illumination color perfect for your workpiece



HLV2-3M-RGB-3W

■ Connecting HLV2-3M-RGB-3W to a Micro Fiber Head



Straight type: HFS-14-500



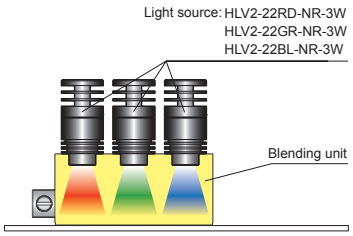
Ring type:
HFS-25-10 / HFR-25-30
HFS-40-20 (Three light sources are required.)

Features

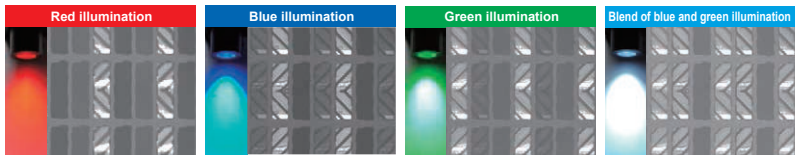
Red, blue, and green light from the dedicated light sources is blended inside this unit, achieving the illumination color perfect for the workpiece. Combine with a micro fiber head to support a wide variety of applications.

We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (HLV2-3M-RGB-3W)



Imaging example: Imaging of liquid-crystal color filters



Use the HLV2-22-NR-3W series to create illumination with a highly accurate blended color.
Independently adjust the intensity for each color to create exactly the color you want and help improve inspection accuracy.

Micro Fiber Head Product Page ▼ P.195
HLV2-22-NR-3W series Product Page ▼ P.199

Lineup

Model name	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
HLV2-3M-RGB-3W	Red	8.4 W	645 nm	–	FCB*2 Straight Cable FRCB Robot Cable	PD3*1 PJ PJ2	232 g
	Green		520 nm				
	Blue		465 nm				

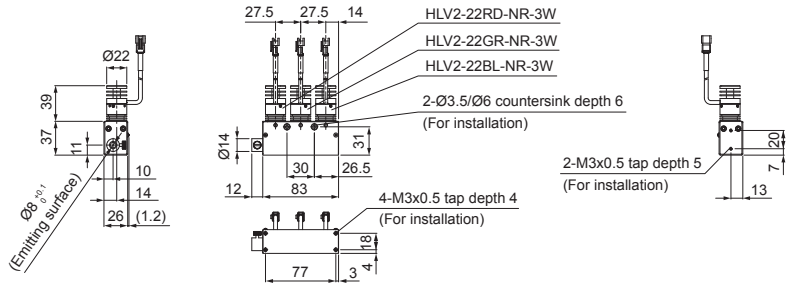
LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 The PD3-3024-3 and PD3-5024-3 series are not applicable to these products.
*2 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

Caution
- The length of the extension cable must be 5 m or less. If you want to use longer than 5 m, please contact your CCS sales representative.
- Branch cables cannot be used. Use the FCB series (straight cable) or the FRCB series (robot cable).

Dimensions (mm)

HLV2-3M-RGB-3W



You can inquire using our website.
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Inquire on our website here.
https://www.ccs-grp.com/contact/

Other Products

High-Power Light Sources
PFBR-600SW-LL/LLCF

Refer to our website for product details.

CCS PFBR-600 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Next-generation light sources delivering high output and a fast response



PFBR-600SW-LLCF
(Filter Changer Model)

PFBR-600SW-LL

Coming soon

Functionality that enables previously set light levels to be applied sequentially at high speed when the strobe emits light, and that allows for varying brightnesses for each input trigger, is planned to be added.

Refer to our website for details.

CE

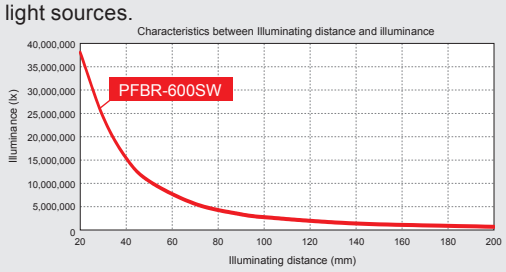
The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Light Source Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Applications Connect to dedicated light guides and use as a light source

Caution This product emits high-intensity visible light. Materials that absorb light may convert that light into heat and be damaged. Check the instructions in the "Instruction Guide" and use this product in a safe manner.

Brightness Up to 3.8 Million lx*

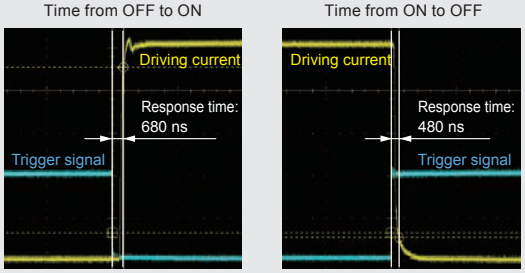
Provides high output to easily replace xenon flash light sources.



* Actual measurement values with intensity of 100%, bundles of Ø8 mm, a straight light guide with a total length of 1,000 mm installed, and at the illuminating distance of 20 mm away from the fiber output edge.(Results may vary for individual units.)

High-Speed Response 1 µs or Faster

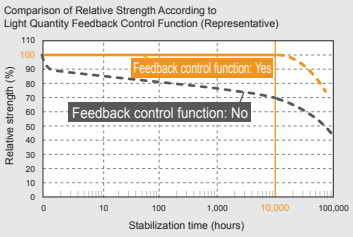
Response Time by External Trigger Signal Input



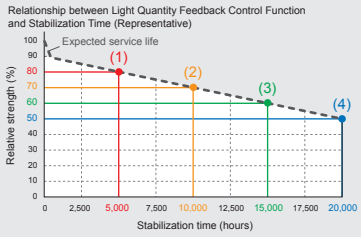
Note: Measured at the maximum light quantity. This data is for reference only. Actual values may vary.

Equipped with Light Quantity Feedback Control Function

Use the light quantity feedback control function and set the desired stabilization time to maintain output over long periods.



Note: When the stabilization time is set to 10,000 hours.
This graph is representative of the function. Actual values may vary.



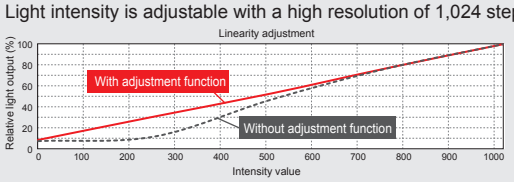
(1) Stabilized up to 5,000 hours at 80% maximum light quantity.
(2) Stabilized up to 10,000 hours at 70% maximum light quantity.
(3) Stabilized up to 15,000 hours at 60% maximum light quantity.
(4) Stabilized up to 20,000 hours at 50% maximum light quantity.

Note: In Ta=40°C environment.
This graph is representative of the function. Actual values may vary.

Note: Refer to the instruction guide for more information on the light quantity feedback control function.

Equipped with Linearity Adjustment Function

Light intensity is adjustable with a high resolution of 1,024 steps.



Note: Measurement values using our measurement conditions. (Not guaranteed values).
This product has continuous correction functionality.

External Control by Use of a Large Variety of Communication Methods

Ethernet communication control: TCP/IP and UDP/IP

Serial communication control: RS-232C

Parallel communication control

Digital light control: Compatible with sink and source types

Analog light control: Intensity control from 0 to 5 V

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

Model name	LED color	Correlated color temperature	Power consumption	Light guide adapters	External control cables	Weight
PFBR-600SW-LL	White	5,600 K	350 VA (100 V input) 370 VA (240 V input)	AD-PFBR-600-01	Parallel communication cable	8.0 kg
PFBR-600SW-LLCF (Filter Changer Model)						8.5 kg

Dedicated Light Guides / Light Guide Adapters

We offer various light guides suited to a variety of applications, including straight types, ring types, and types for line sensors.

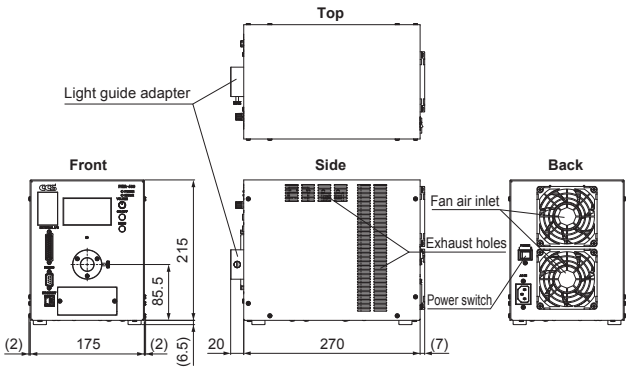
▶Straight Type ▶Ring Type ▶Bar Type for Line Sensors ▶Light Guide Adapter (AD-PFBR-600-01)



Various Light Guides with Heat Resistance Available

- Please be aware that the light guide adapter must be installed after purchase by the customer.
- We accept custom orders for the light guides. Please contact your CCS sales representative for details.

Dimensions (mm)

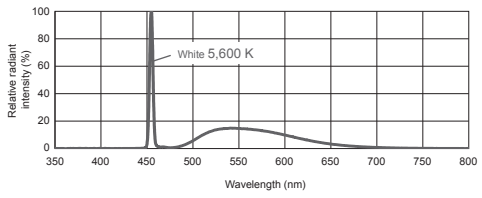


Specifications

Model name	PFBR-600SW-LL	PFBR-600SW-LLCF (Filter Changer Model)
Applicable fiber bundle diameter	Ø8 to Ø14 mm	
Light distribution angle	Total angle of 30°	
Emitting color	White	
Correlated color temp. (typ.)	5,600 K	
Drive method	Constant-current system	
Intensity control method	Variable-current control	
Number of channels	1 channel	
Input power supply	100 to 240 VAC (±10%), 50/60 Hz	
Power consumption (typ.)	350 VA at 100 V input, 370 VA at 240 V input	
Inrush current (typ.)	40 A (From a cold start)	
Ground leakage current	0.5 mA max. (240 VAC, 60 Hz, with 100 % load)	
Insulation withstand voltage (input-output, input-FG)	1,500 VAC for one minute, cutoff current: 10 mA, 500 VDC, 20 MΩ min.	
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 80%RH (with no condensation), Altitude: 2,000 m max., AC overvoltage: Category II, Pollution degree: 2	
Storage environment	Temperature: -15 to 60°C, Humidity: 20 to 85%RH (with no condensation)	
Cooling method	Forced cooling	
CE marking	Safety standard: Conforms to EN61010-1, EN62311-2008 EMC standard: Conforms to EN61000-6-2, EN61000-6-4 Environmental regulation standard: Conforms to EN50581-2012	
Environmental regulations	RoHS compliant	
Material, coating, surface processing	Aluminum alloy (black alumite)	
Weight	8.0 kg max.	8.5 kg max.
Accessories	Instruction guide, 2-m 3-prong AC power cable with ground terminal	Instruction guide, 2-m 3-prong AC power cable with ground terminal, Filter holders x 5 pcs., holder mounting screws x 18 pcs.

LED Properties

Spectral distribution

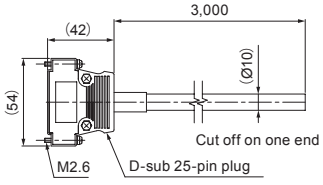


Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options

External control cable: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity)



- Purchase a commercially available RS-232 crossover cable (length: 3 m max.) for the serial communication cable.
- Purchase a commercially available LAN cable (length: shorter than 30 m) for the Ethernet communication cable. Refer to the instruction guide for more information.

Color Filters for PFBR-600SW-LLCF

Use filters to emit the optimum light for the inspected workpiece.

Six Colors Available

Five filters can be installed.



Conceptual image

- Red : DFR-610A
- Blue : DFB-500A
- Green : DFG-505A
- Cyan : DFC-590A
- Magenta : DFM-495A
- Yellow : DFY-520A

- A variety of filters are available with excellent heat resistance.
- Contact your CCS sales representative for the detailed information.

Other Products

High-Power Light Sources
PFBR-600SW-LL-XF/LLCF-XF

Refer to our website for product details.

CCS PFBR-600 XF ▶ Search

For quick access.

You can also use your smartphone or cell phone.

For replacing xenon light sources

NEW



PFBR-600SW-LLCF-XF
(Filter Changer Model)

PFBR-600SW-LL-XF

XF Type

Compatible with light guides you already own.
Choose a suitable "Light Guide Connection Adapter" for your brand of light guide.

Contact us for details.

The supplied AC cord is for use with 100 to 120 VAC. If you want to use the Light Source Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

CE

Applications Connect to your light guides and use them as a light source

Caution This product emits high-intensity visible light. Materials that absorb light may convert that light into heat and be damaged. Check the instructions in the "Instruction Guide" and use this product in a safe manner.

Strobe Light Source Units

- **Brightness up to 3.8 million lx***
  * Equipped with straight light guide with bound diameter of Ø8 mm and total length of 1,000 mm for maximum dimming. Measured value at an irradiation distance of 20 mm from the fiber outer end face (not a guaranteed value).
- **Strobe lighting mode** (internal trigger mode, external trigger mode) **can be selected**
- **External control via EtherNet, parallel or serial communication**
- **Dimming setting in up to 1,024 levels**
  (10 bit: 1,024 levels / 8 bit: 256 levels)

High-Speed Response

This strobe light source unit is a solid-state light source with a high-speed driver circuit for an extremely short response time from trigger input to maximum light emission of less than 1 µs.

Lamp replacement is unnecessary, greatly reducing work time

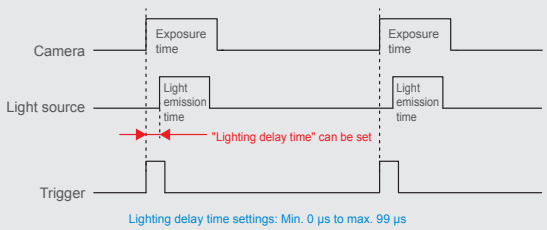
This product does not require lamp replacement.
The life of a xenon flash lamp is normally 10^8 to 10^9 flashes (approximately 1 billion times), before replacement is necessary. However, this product has a light emission time of 10 µs and a repetition frequency of 100 Hz, so with 10 flashes (approximately 1 billion times), the light output remains stable even after 2,800 hours.

Synchronized with camera exposure timing

The "lighting delay time" can be configured and adjusted to synchronize the exposure time and lighting time of the camera.

Achieves a stable imaging environment

"Lighting delay time" setting image



Lighting delay time settings: Min. 0 µs to max. 99 µs

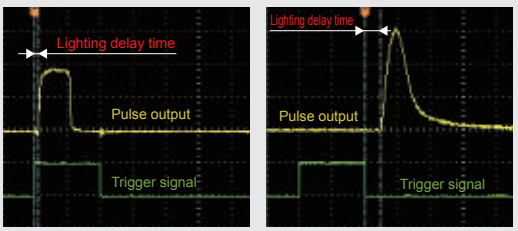
Stable light emission compared to xenon light sources

Unlike xenon flash lamps, there is no jitter nor light leakage. The lighting waveform is a square wave and can control the lighting cycle with a duty ratio of 1% or less using pulse width modulation (PWM).

Responsiveness provides little fluctuation in delay time (jitter) relative to the trigger signal

Comparison of pulse output with xenon light source

[PFBR-600SW-LL-XF] [Xenon light source]



Note: Actual values under our measurement conditions. The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

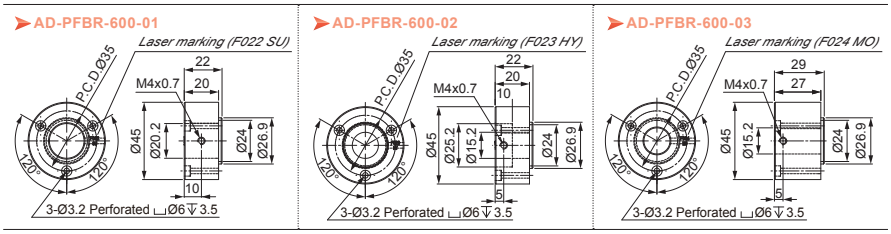
Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

Lineup

Model name	Emitting color	Correlated color temperature	Power consumption	Light guide adapters	External control cables	Weight
PFBR-600SW-LL-XF	White	5,600 K	350 VA (100 V input) 370 VA (240 V input)	AD-PFBR-600-01 AD-PFBR-600-02 AD-PFBR-600-03	Parallel communication cable	8.0 kg
PFBR-600SW-LLCF-XF (Filter Changer Model)						8.5 kg

Light guide adapters (mm)

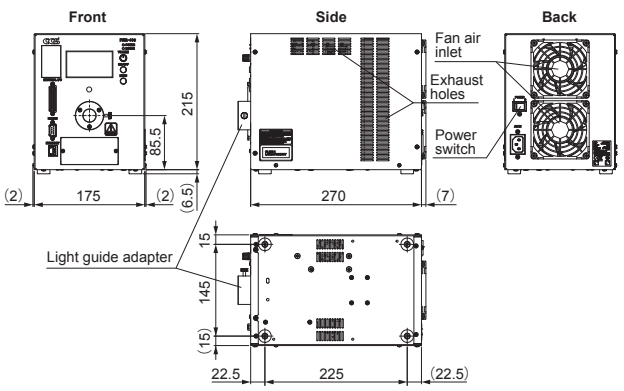
3 types of adapters are available to suit the light guide being used. Adapters not listed can also be custom manufactured to order.



- We accept custom orders for the light guides. Please contact your CCS sales representative for details.
- Please be aware that the light guide adapter must be installed after purchase by the customer.

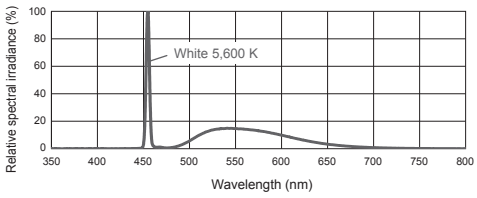
Dimensions (mm)

PFBR-600SW-LL-XF and PFBR-600SW-LLCF-XF share the same dimensions.



LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

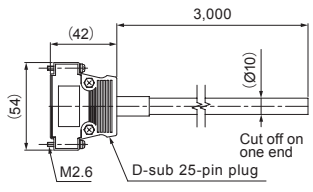
Specifications

Model name	PFBR-600SW-LL-XF	PFBR-600SW-LLCF-XF (Filter Changer Model)
Applicable fiber bundle diameter	Ø8 to Ø14 mm	
Light distribution angle	Total angle of 30°	
Emitting color	White	
Correlated color temperature (typ.)	5,600 K	
Drive method	Constant-current system	
Intensity control method	Variable-current control	
Number of channels	1 channel	
Input power supply	100 to 240 VAC (±10%), 50/60 Hz	
Power consumption (typ.)	350 VA at 100 V input, 370 VA at 240 V input	
Inrush current (typ.)	40 A (From a cold start)	
Ground leakage current	0.5 mA max. (240 VAC, 60 Hz, with 100 % load)	
Insulation withstand voltage (input-output, input-FG)	1,500 VAC for one minute, cutoff current: 10 mA, 500 VDC, 20 MΩ min.	
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 80%RH (with no condensation) Altitude: 2,000 m max., AC overvoltage: Category II, Pollution degree: 2	
Storage environment	Temperature: -15 to 60°C, Humidity: 20 to 85%RH (with no condensation)	
Cooling method	Forced cooling	
CE marking	Safety standard: Conforms to EN61010-1, EN62311-2008 EMC standard: Conforms to EN61000-6-2, EN61000-6-4 Environmental standard: Conforms to EN50581-2012	
Environmental regulations	RoHS compliant	
Material and surface processing	Aluminum alloy (black alumite)	
Weight	8.0 kg max.	8.5 kg max.
Accessories	Instruction guide, 2-m 3-prong AC power cord with ground terminal	Instruction guide, 2-m 3-prong AC power cord with ground terminal, Filter holders x 5 pcs., Holder mounting screws x 18 pcs.

Options

External Control Cables: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity control)



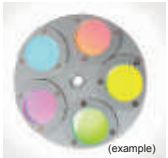
- Serial communication cable
  Purchase a commercially available RS-232 crossover cable (length: 3 m max.) for the serial communication cable.
- EtherNet communication cable
  Purchase a commercially available LAN cable (length: shorter than 30 m) for the Ethernet communication cable.
  Refer to the instruction guide for more information.

Color Filters for PFBR-600SW-LLCF-XF

Use filters to emit the optimum light for the inspected workpiece.

Six Colors Available

Five filters can be installed.



- Red : DFR-610A
- Blue : DFB-500A
- Green : DFG-505A
- Cyan : DFC-590A
- Magenta : DFM-495A
- Yellow : DFY-520A

- A variety of filters are available with excellent heat resistance.
- Contact your CCS sales representative for the detailed information.

LED Light Sources
PFBR-150 Series

Refer to our website for product details.
CCS PFBR-150 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides light output that exceeds that of a 250 W metal halide light source



We accept custom orders for red, blue, and green light.
Contact your CCS sales representative for details.



CE

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Light Source Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

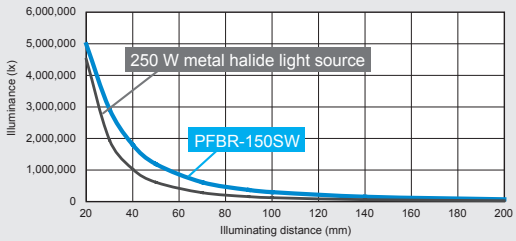
Applications Connect to light guides and use as a light source

Caution This product emits high-intensity visible light. Materials that absorb light may convert that light into heat and be damaged. Check the instructions in the "Instruction Guide" and use this product in a safe manner.

Achieves the Highest Level in the Industry with 2 Million lx*

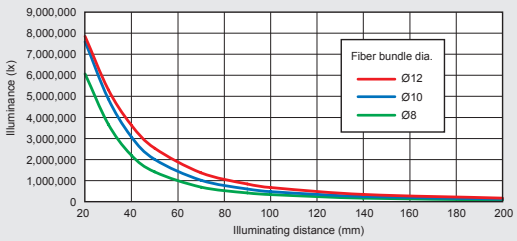
* Actual measurement values with a bundle of Ø10 mm, a straight light guide with a total length of 1,080 mm installed, and at a position 50 mm away from the fiber output edge. Results for individual products may vary.

LED light source unit that exceeds a 250 W metal halide light source



Actual measurement values with intensity of 100%, bundle of Ø8 mm, a straight light guide with a total length of 1,100 mm installed, and at positions at each illuminating distance away from the fiber output edge. Results for individual products may vary.

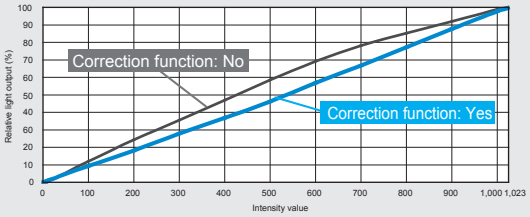
Optical design is optimized for all types of fiber to provide high output



Actual measurement values with intensity of 100%, bundles of Ø8, 10, and 12 mm, a straight light guide with a total length of 1,080 mm installed, and at positions at each illuminating distance away from the fiber output edge. Results for individual products may vary.

1,024-Step Intensity, Linear Characteristics with Reproducibility

Our unique correction function is a standard function.
Provides linearity with reproducibility

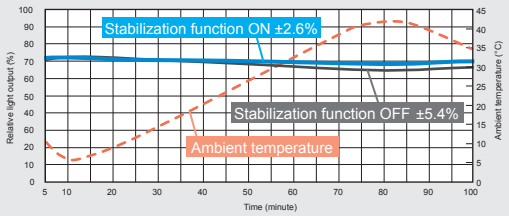


Actual measurement values using our measurement conditions.
Results for individual products may vary.
The correction function of this product is always set to "Yes".

■Intensity value can be adjusted in steps
• 1,024-step intensity (10-bit) • 256-step intensity (8-bit)

Equipped with a Light Output Stabilization (Feedback) Function

Stable light output even in severe operating environments



Actual measurement values using our measurement conditions. Results for individual products may vary. Stabilization function is set to OFF when shipped from the factory.

Standard Compatibility with Three Types of Light Guides

Check the dimensions of the light guide to be used before selecting an adapter.

- For details, refer to *Dimensions of the light guide adapters chart* on P. 206.
- Be careful as plastic fiber cannot be used.
- A light guide adapter is not provided with the LED Light Source. Order one separately.

External Control with a Large Variety of Communication Methods

Ethernet communication control: TCP/IP and UDP/IP

Serial communication control: RS-232C

Parallel communication control
Digital light control: Compatible with sink and source types
Analog light control: Intensity control from 0 to 5 V

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Lineup

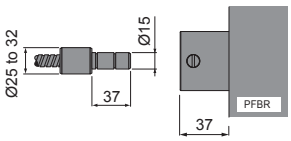
Model name	LED color	Correlated color temperature	Power consumption	Light guide adapters	External control cables	Weight
PFBR-150SW-MN	White	6,500 K	200 VA	AD-PFBR-150-MO AD-PFBR-150-HY AD-PFBR-150-SU	Parallel communication cable Serial communication cable	3,900 g

Dimensions of the light guide adapters chart (mm)

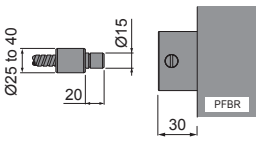
Select a light guide adapter when you evaluate the LED Light Source.

Options

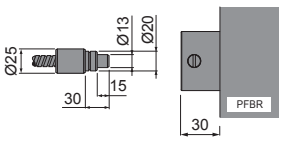
Model name: AD-PFBR-150-MO



Model name: AD-PFBR-150-HY



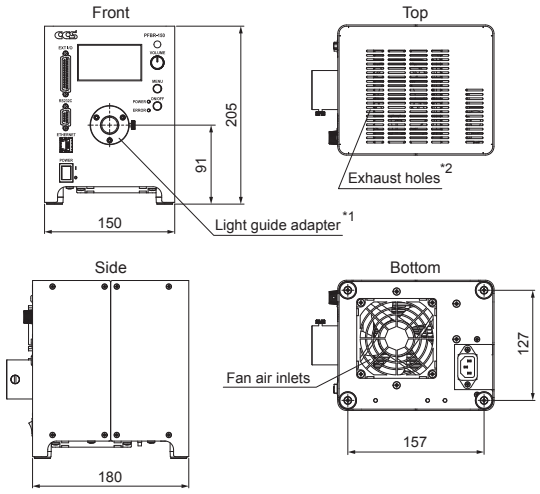
Model name: AD-PFBR-150-SU



Caution

- Be careful as plastic fiber cannot be used.
- Please be aware that the light guide adapter must be installed after purchase by the customer. Inquire with the CCS sales representative regarding sizes not listed here.

Dimensions (mm)



*1 A light guide adapter is not provided with the LED Light Source. Order one separately.
The shape of the light guide adapter depends on the details of the order.
*2 Installation method: Do not place any objects within 100 mm of the exhaust holes on the top panel.

We accept custom orders.
Please feel free to inquire.

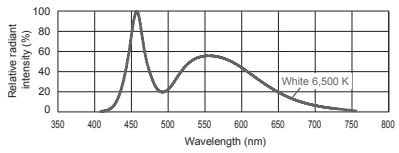
- Changes in wavelength (red, blue, and green)
- Change in light distribution angle, etc.

Specifications

Applicable fiber bundle diameter	Ø8 to Ø14 mm
Light distribution angle	Total angle of 30°
Drive method	Constant-current system
Intensity control method	Variable-current control
Number of channels	1 channel
Input power supply	100 to 240 VAC (±10%), 50/60 Hz
Power consumption (typ.)	200 VA
Inrush current (typ.)	15 A at 100 VAC, 30 A at 200 VAC From a cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)
Insulation withstand voltage (Input-FG)	1,500 VAC 1-min. cutoff current 10 mA 500 VDC 20 MΩ min.
Operating environment	Temperature: 5 to 40°C, Humidity: 20% to 80%RH (with no condensation) Altitude: 2,000 m max., Transient overcurrent: Category II, Pollution level: 2
Storage environment	Temperature: −15 to 60°C Humidity: 20% to 85%RH (with no condensation)
Cooling method	Forced air cooling
CE marking	Safety standard: Conforms to EN61010-1 EMC standard: Conforms to EN61000-6-2 and EN61000-6-4
Environmental regulations	RoHS compliant
Material, coating, surface processing	Aluminum alloy (black alumite)
Accessories	Instruction Guide x 1, 3-prong AC cord with ground terminal (2 m) x 1

LED Properties

Spectral distribution

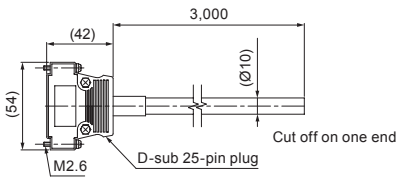


Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Optional Accessories (Sold Separately)

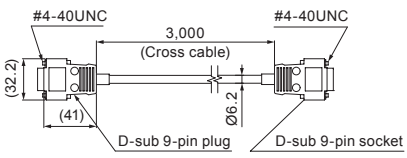
External control cable: EXCB2-25M-3

Parallel communication cable (Compatible with digital and analog intensity)



External control cable: EXCB2-9M-9F-3-CR

Serial communication cable (RS-232C)



You can inquire using our website.

Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

LED Light Sources
PFB3 Series

Refer to our website for product details.
CCS PFB3 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides light output that exceeds that of a 100 W halogen light source





(Without external control) (With external control)

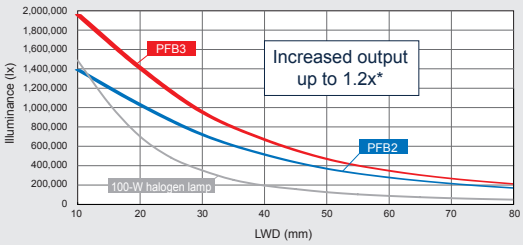
CE

Applications Connect to light guides and use as a light source

Renewed with Increased Brightness

Achieved high output up to 1.2x that of the conventional PFB2 series.

Illuminance comparison with a 100-W halogen lamp



* Actual measurement values with light intensity of 100%, bundles of Ø8 mm, a straight light guide installed, and at positions of 50 mm illuminating distance away from the fiber output edge.
The data included is for reference only and the results for individual products may vary.

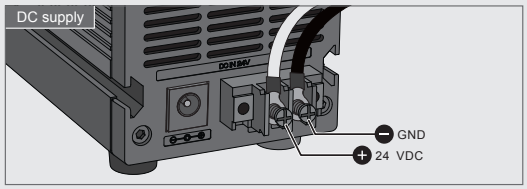
Supports Major Light Guide Manufacturers

Supports major light guide manufacturers
(5 Japanese companies, 6 international companies).

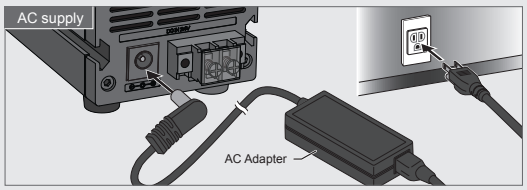
For details, refer to *Light Guide Adapter Dimensions Chart* on P. 208.

Select a Power Supply to Match Your Actual Environment

The terminal block on the unit rear supports 24 VDC input. With an optional AC adapter, it can also support 100 to 240 VAC input. You can make a selection to match your actual environment.



Use the terminal block on the rear of this unit for 24 VDC input.



Use the optional AC adapter for 100 to 240 VAC input.
Model name: ADP2460-PFB-JTLV6
(U.S. DoE CEC Level VI External Power Supply Efficiency Standards compliant)

Selectable External Control

The lineup includes a model where intensity can only be manually adjusted, and models that allow for external control. There are three types of external control: serial, parallel, and analog. ON/OFF control and intensity control are possible by each control type.



Standard type
PFB3-20SW-F-JT series
Manual intensity control | Without external control



Serial type
PFB3-20SW-F-SJT series
Manual intensity control | With external control



Parallel type
PFB3-20SW-F-PJT series
Manual intensity control | With external control



Analog type
PFB3-20SW-F-AJT series
Manual intensity control | With external control

Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Lineup

Model name	LED color	Power consumption	Options	Weight
PFB3-20SW-F-JT-□□□	White	15 W	AC Adapter	1,200 g
PFB3-20SW-F-SJT-□□□			AC Adapter External control cable (Serial type)	
PFB3-20SW-F-PJT-□□□			AC Adapter	
PFB3-20SW-F-AJT-□□□			External control cable (Parallel, Analog type)	

LED Properties: Spectral Distribution ▶ P.384

Inquire with your light guide manufacturer for details about the light guide.
Installation method: Do not place anything within 50 mm of the fan exhaust outlet on the rear, the air inlets on the left and right sides, and the top of the PFB3 unit.

How to read the lineup selection chart

PFB3-20SW-F-JT-□□□

Model name: JT/SJT/AJT/PJT

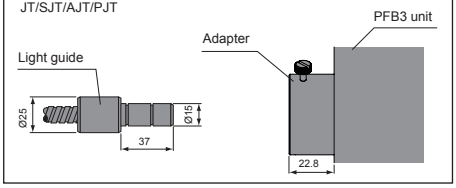
This indicates the light guide adapter type.
-MO/-NP/-MI/-HY/-SU/-VL/-TF/-TE/-SH1/-SH2/
-DJ1/-DJ2/-DJ3/-DJ4/-CS1/-IT

How to read light guide adapter dimensions chart

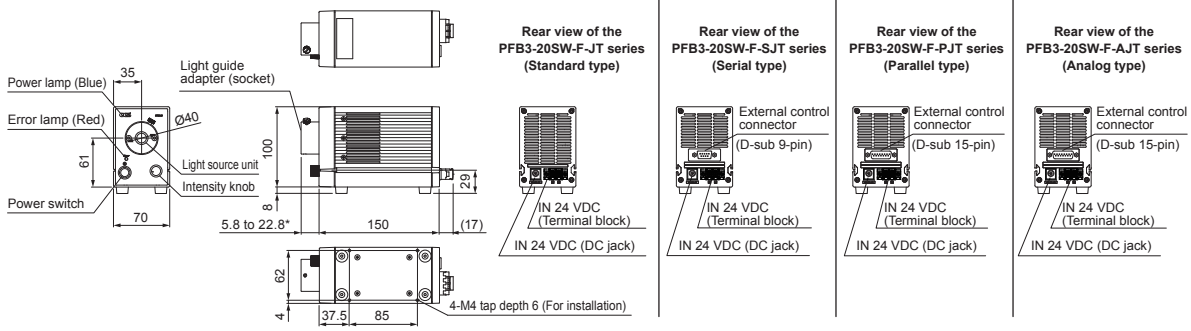
PFB3-20SW-F-□□□-MO

This indicates the model name. JT/SJT/AJT/PJT

Light guide adapter type



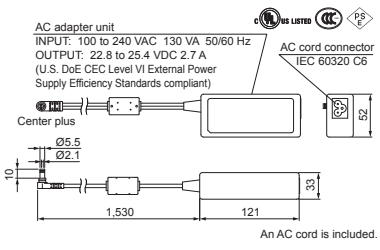
Dimensions (mm)



* The dimensions of the connection adapter (socket) vary based on the light guide in use. For detailed infromation, refer to *Light Guide Adapter Dimensions Chart*.

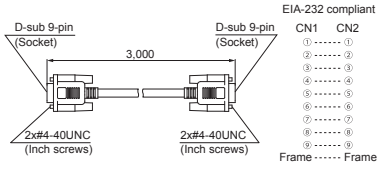
Options

AC adapter: ADP2460-PFB-JTLV6



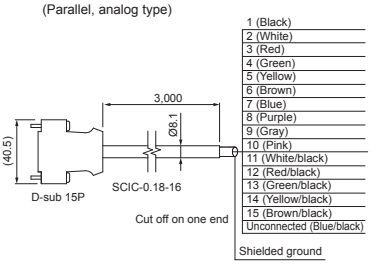
External control cable: EXCB2-9-9-3-ST

(Serial type)



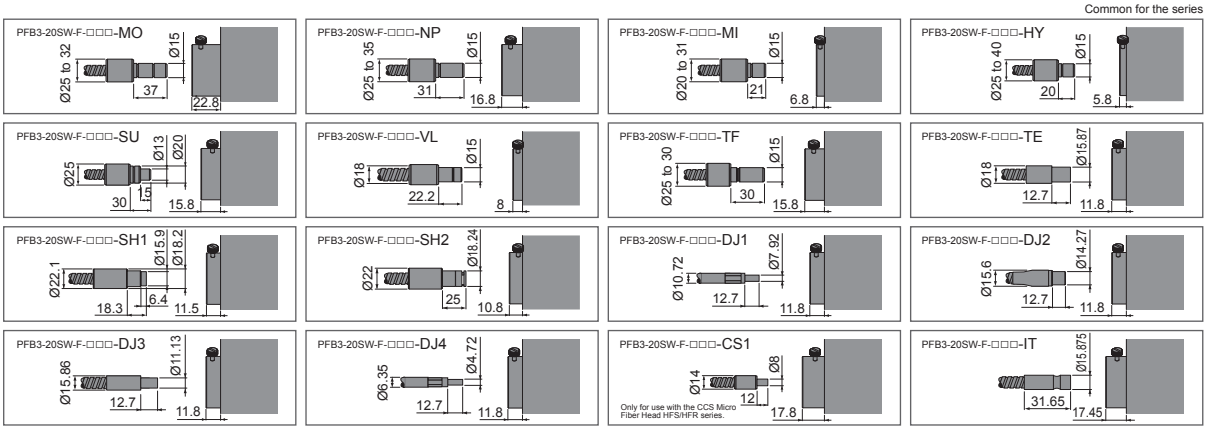
External control cable: EXCB2-B3

(Parallel, analog type)



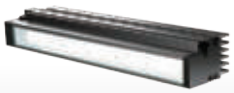
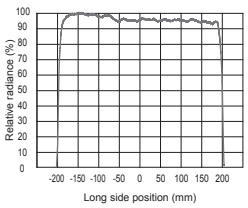
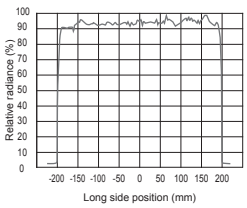
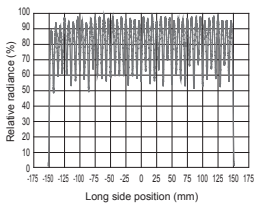
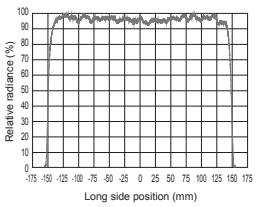
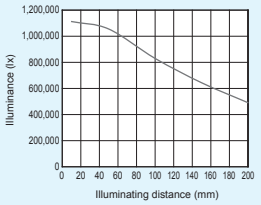
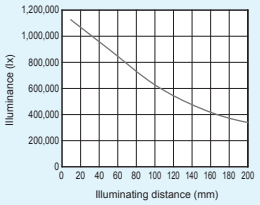
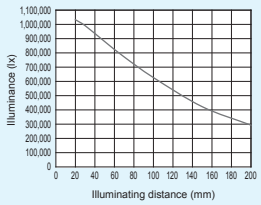
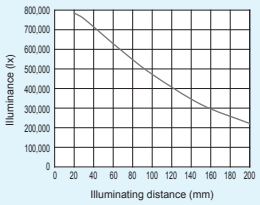
Light Guide Adapter Dimensions Chart (mm)

Common for the series

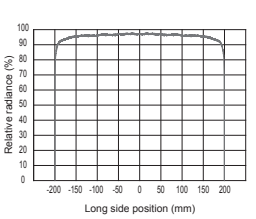
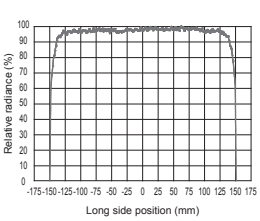
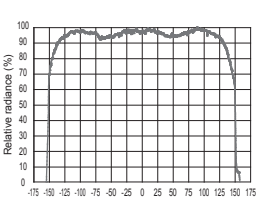
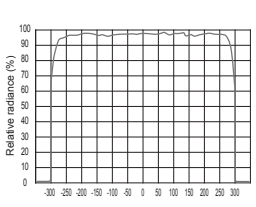
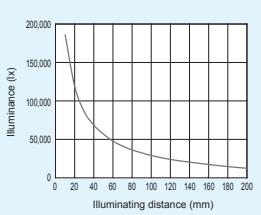
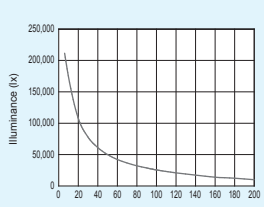
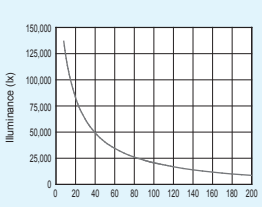
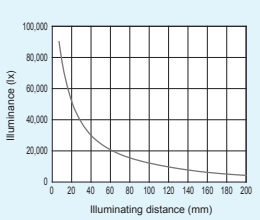


Line Light List INDEX

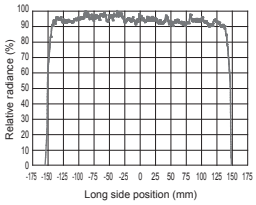
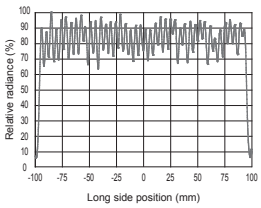
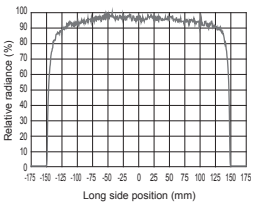
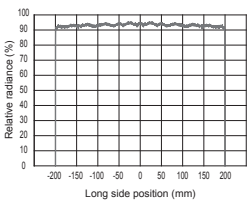
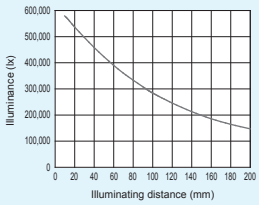
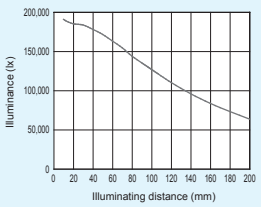
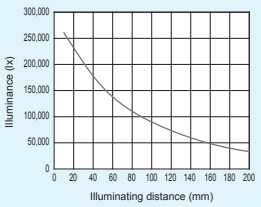
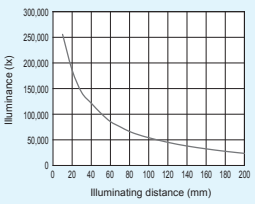
(By brightness)

Series name	LNLP Series	LNSP-FN Series	LNSP2 Series (NDF Type)	LNSP2 Series (Standard Type)	
					
	Applicable Control Units: PSCC series	Applicable Control Units: PSCC series	Applicable Control Unit: PD3-10024-8 / PSB4-30024-PEI	Applicable Control Unit: PD3-10024-8 / PSB4-30024-PEI	
	Refer to: P.211	Refer to: P.227	Refer to: P.215	Refer to: P.215	
Brightness	1,000,000 lx Emitting width (Short side): 21 mm	900,000 lx Emitting width (Short side): 23 mm	900,000 lx Emitting width (Short side): 25 mm	650,000 lx Emitting width (Short side): 25 mm	
Cooling method	Natural air	Forced air (Fan)	Natural air	Natural air	
Illum. method	Convergent	Convergent	Convergent	Convergent	
Relative radiance distribution					
Graph of the change in illuminance (on the optical axis)					

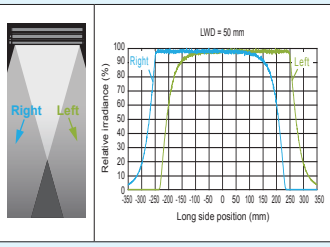
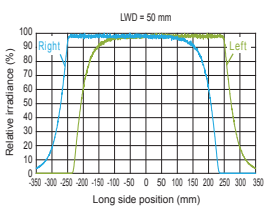
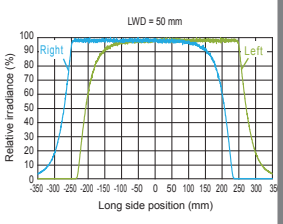
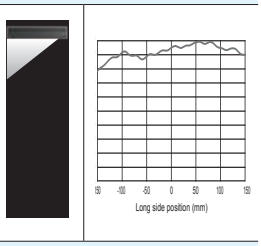
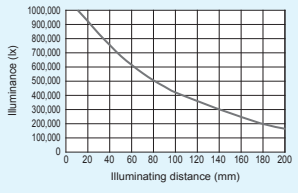
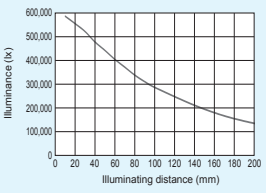
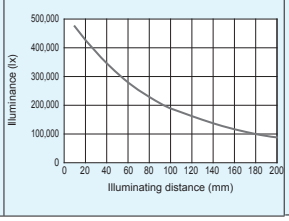
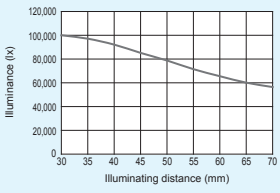
(By brightness)

Series name	LNSD Series (High Uniformity Type)	LT Series	HLND(-TT) Series	LND2 Series	
					
	Recommended Control Units: PD3-10024-8 / PSB4-30024-PEI	Applicable Control Unit: PSB4-30024-PEI	Applicable Control Unit: PSB4-30024-PEI	Recommended Control Units: PD3 series / PSB series, PSB4-30024-PEI	
	Refer to: P.233	Refer to: P.247	Refer to: P.241	Refer to: P.237	
Brightness	56,000 lx Emitting width (Short side): 15 mm	50,000 lx Emitting width (Short side): 2.8 mm	48,000 lx Emitting width (Short side): 7.6 mm	25,000 lx Emitting width (Short side): 18.2 mm	
Cooling method	Natural air	Natural air	Natural air	Natural air	
Illum. method	Diffused	Diffused	Diffused	Diffused	
Relative radiance distribution					
Graph of the change in illuminance (on the optical axis)					

The brightness is actual measurement value at the illuminating distance of 50 mm. The data included is for reference only. Actual values may vary.

	LNSP Series	LN-HK Series	TH2 Series (Rectangular Type)	LNSD Series (High Luminance Type)
				
	Applicable Control Unit: PSB4-30024-PEI	Applicable Control Units: PD3 series / PSB series	Recommended Control Units: PD3-10024-8 / PSB4-30024-PEI	Recommended Control Units: PD3-10024-8 / PSB4-30024-PEI
	Refer to: P.221	Refer to: P.232	Refer to: P.89	Refer to: P.233
	400,000 lx Emitting width (Short side): 21 mm	170,000 lx Emitting width (Short side): 16.5 mm	150,000 lx Emitting width (Short side): 75 mm	101,000 lx Emitting width (Short side): 15 mm
	Natural air	Natural air	Natural air	Natural air
	Convergent	Convergent	Diffused	Diffused
				
				

(By brightness)

Series name	LNIS-FN Series	LNIS2 Series	LNIS Series	LNDG Series
				
	Applicable Control Units: PSCC series	Recommended Control Units: PD3-10024-8 / PSB4-30024-PEI	Applicable Control Unit: PSB4-30024-PEI	Applicable Control Unit: PSCC series
	Refer to: P.265	Refer to: P.257	Refer to: P.261	Refer to: P.253
Brightness	678,000 lx Emitting width (Short side): 23 mm	440,000 lx Emitting width (Short side): 25 mm	310,000 lx Emitting width (Short side): 21 mm	80,000 lx Emitting width (Short side): 10 mm
Cooling method	Forced air (Fan)	Natural air	Natural air	Natural air
Illum. method	Oblique angled (bi-directional)	Oblique angled (bi-directional)	Oblique angled (bi-directional)	Oblique angled (mono-directional)
Relative irradiance distribution / Relative radiance distribution				
Graph of the change in illuminance (on the optical axis)				

The brightness is actual measurement value at the illuminating distance of 50 mm. The data included is for reference only. Actual values may vary.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Line Lights
LNLP Series

Refer to our website for product details.
CCS LNLP ▶ Search
For quick access.
You can also use your smartphone or cell phone.

1,000,000 lx or more in illuminance
High-illuminance fan-less (natural air-cooling) Line Lights

LED color
Custom orders accepted
Size
Custom orders accepted







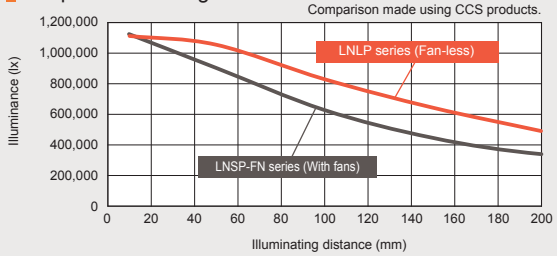
LNLP-400SW

Applications Inspection for scratches on plate glass, inspection for scratches and dents on sheet metal, inspection for scratches and foreign materials on transparent films, inspection of printing on paper, inspection of the appearance of plastic components, etc.

1,000,000 lx or More in Illuminance

The high-illuminance Line Lights brighter than the conventional fan-type units, despite being fan-less.

Graph of the change in illuminance



Actual measurement values at the center of the emitting surface, at each illuminating distance, 100% intensity. Results for individual products may vary.

Controlling each Light Unit circuit

The light intensity value for each Light Unit circuit can be set through the external control. Also, burn-out errors in LED circuits can be detected.

- The light intensity value can be set for each Light Unit circuit.
- Burn-out in LED circuits and other errors can be detected.



Control Units for LED Lights PSCC series

For detailed information on the applicable Control Units PSCC series, refer to the product page (P.349).

Optimum Light Unit Shape for Use at the Inspection Sites

For use at the site of inspection, the Light Unit shape is optimized with its light emitting tip shifted to one side of the Light Unit body. As a result, the camera view is not blocked during illumination, and the Light Unit can be installed close to the workpiece.

Close-up illumination from a low angle



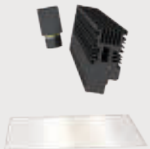


Workpiece: Printed material



When you configure the system at a shallow angle to the horizontal plane, you can emphasize and take advantage of the marginal difference in reflectivity between the white paper and the ink.

Semi-coaxial illumination from a high angle





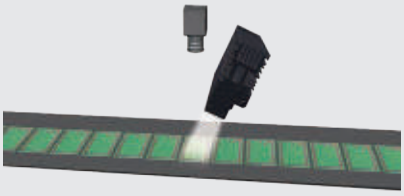
Workpiece: Clear file



It is possible to take advantage of surface reflection of a clear file; scratches and finger prints, which have a low reflectivity, can be imaged as black.

Applications

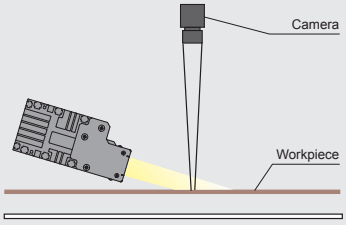
Inspecting the appearance of film substrates



Example Configuration

Achieves high-illuminance despite being fan-less. The constant-current drive system allows for even imaging with a high degree of uniformity.

LNLP series



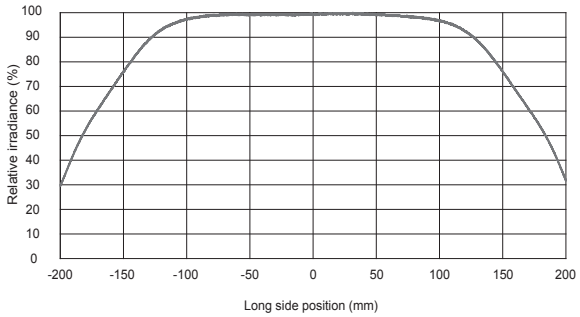
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

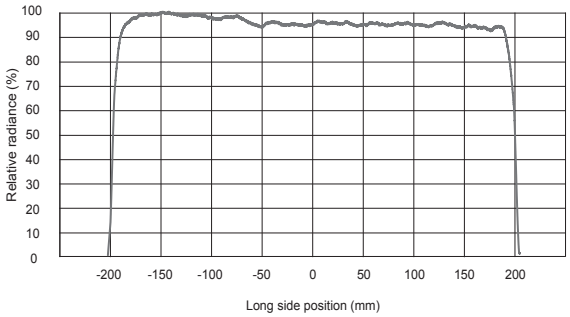
LNLP-400SW

Relative irradiance distribution



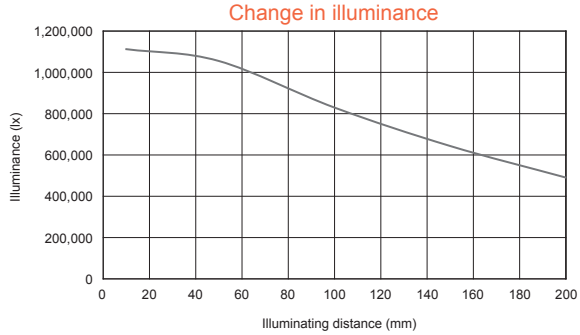
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



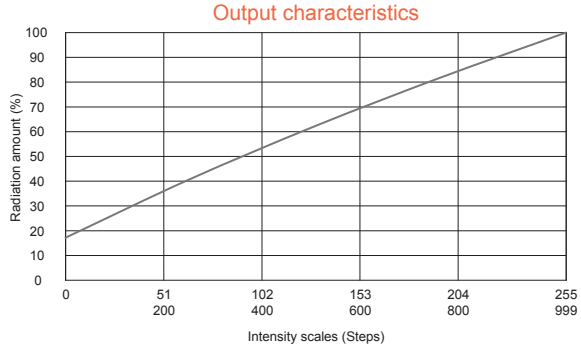
The graph included is for reference only. Actual values may vary.

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

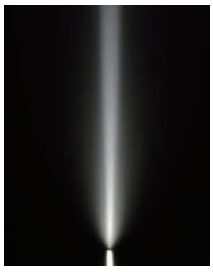
Output characteristics

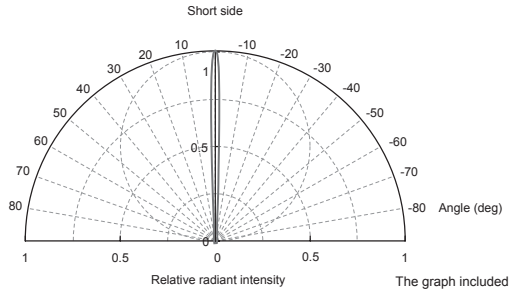


Actual measurement values when using Analog Control Unit, PSCC-30048(A).
Results for individual products may vary.

Illumination distribution characteristics

Measuring direction: short side



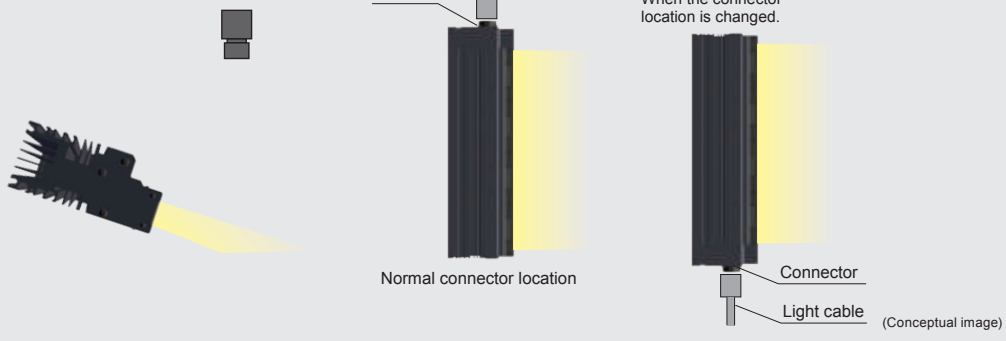


The graph included is for reference only. Actual values may vary.

Custom Orders

E.g.: Changes the location of the connector on the Light Unit case.

The location of the light cable can be changed to match your environment.



LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNLP Series



Refer to our website for product details.

CCS LNLP ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

	Model name	LED color	Power consumption	Correlated color temperature	Extension cables*1	Recommended Control Units*1	Weight
Standard products	LNLP-100SW	White	36 W	5,800 K	QCBM-DA QCB-DA	PSCC-30048(A) PSCC-60048(A)	1,400 g
	LNLP-200SW		72 W				2,200 g
	LNLP-300SW		108 W				3,000 g
	LNLP-400SW		144 W				3,800 g
	LNLP-500SW		180 W				4,600 g
	LNLP-600SW		216 W				5,400 g
	LNLP-700SW		252 W				6,200 g
	LNLP-800SW		288 W		QCB-DA	PSCC-60048(A)	7,000 g
	LNLP-900SW		324 W				7,800 g
	LNLP-1000SW		360 W				8,600 g
Special orders	LNLP-1100SW		396 W		QCB-DA	PSCC-60048(A)	9,400 g
	LNLP-1200SW		432 W				10,200 g
	LNLP-1300SW		468 W				11,000 g
	LNLP-1400SW		504 W				11,800 g
	LNLP-1500SW		540 W				12,600 g
	LNLP-1600SW		576 W		QCB-DA x 2 *2	PSCC-60048(A) x 2 *2	13,800 g
	LNLP-1700SW		612 W				14,800 g
	LNLP-1800SW		648 W				15,800 g
	LNLP-1900SW		684 W				16,800 g
	LNLP-2000SW		720 W				17,800 g
	LNLP-2100SW		756 W				18,800 g
	LNLP-2200SW		792 W				19,800 g
	LNLP-2300SW		828 W				20,800 g
	LNLP-2400SW		864 W				21,800 g
	LNLP-2500SW		900 W				22,800 g
	LNLP-2600SW		936 W				23,800 g
	LNLP-2700SW		972 W				24,800 g
	LNLP-2800SW		1008 W				25,800 g
	LNLP-2900SW		1044 W				26,800 g
	LNLP-3000SW		1080 W				27,800 g

Extension Cables ▶ P.214

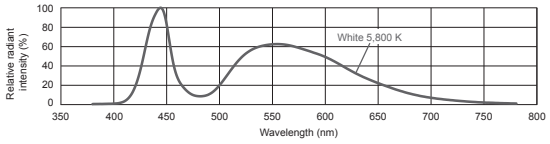
PSCC Series Product Page ▶ P.349

*1 Make sure to connect the appropriate extension cables to the Control Unit.
*2 For sizes 1,600 mm (emitting surface) or longer, a cable connector is located at each end of the Light Unit.

We accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

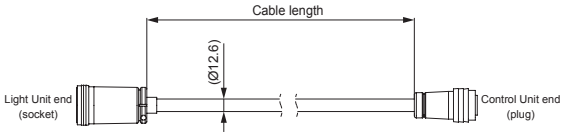
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, PSCC series.
Make sure to connect the appropriate extension cables to the Control Unit.

QCBM-DA

Model name	Cable length	Weight	Applicable Control Unit
QCBM-2-DA	2 m	800 g	PSCC-30048(A)
QCBM-3-DA	3 m	1,000 g	
QCBM-5-DA	5 m	1,500 g	
QCBM-10-DA	10 m	2,700 g	
QCBM-20-DA	20 m	5,000 g	

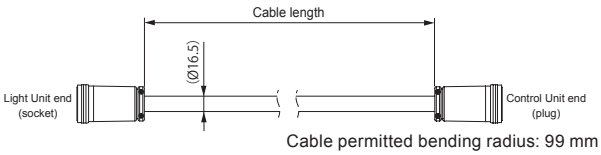
(mm)



Cable permitted bending radius: 75.6 mm

QCB-DA

Model name	Cable length	Weight	Applicable Control Unit
QCB-2-DA	2 m	1,100 g	PSCC-60048(A)
QCB-3-DA	3 m	1,500 g	
QCB-5-DA	5 m	2,400 g	
QCB-10-DA	10 m	4,600 g	
QCB-20-DA	20 m	8,900 g	

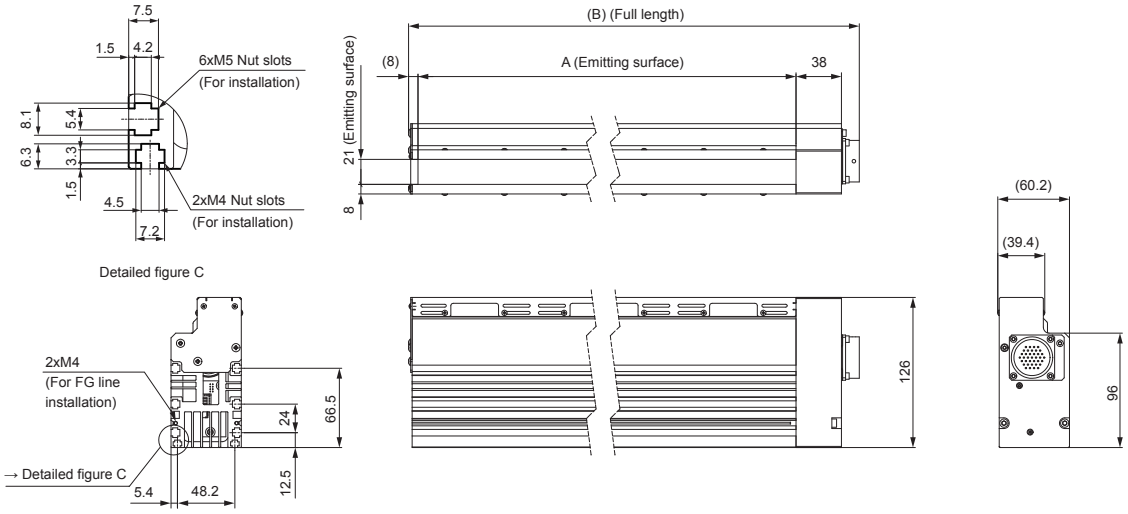


Cable permitted bending radius: 99 mm

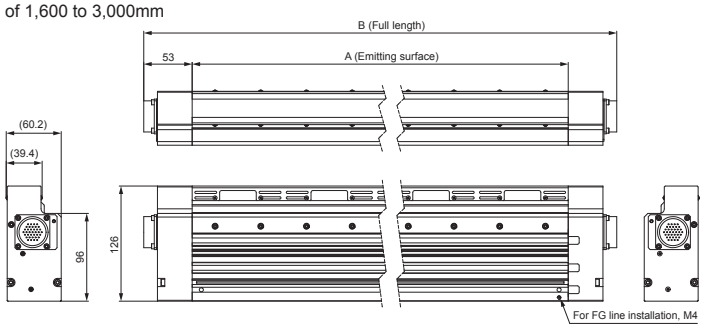
The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)

● For the emitting surface length of 100 to 1,500mm



● For the emitting surface length of 1,600 to 3,000mm



For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.

	Model name	A (Emitting surface)	B (Full length)		Model name	A (Emitting surface)	B (Full length)
Standard products	LNLP-100SW	100	161	Special orders	LNLP-1600SW	1,600	1,706
	LNLP-200SW	200	261		LNLP-1700SW	1,700	1,806
	LNLP-300SW	300	361		LNLP-1800SW	1,800	1,906
	LNLP-400SW	400	461		LNLP-1900SW	1,900	2,006
	LNLP-500SW	500	561		LNLP-2000SW	2,000	2,106
	LNLP-600SW	600	661		LNLP-2100SW	2,100	2,206
	LNLP-700SW	700	761		LNLP-2200SW	2,200	2,306
	LNLP-800SW	800	861		LNLP-2300SW	2,300	2,406
	LNLP-900SW	900	961		LNLP-2400SW	2,400	2,506
	LNLP-1000SW	1,000	1,061		LNLP-2500SW	2,500	2,606
Special orders	LNLP-1100SW	1,100	1,161		LNLP-2600SW	2,600	2,706
	LNLP-1200SW	1,200	1,261		LNLP-2700SW	2,700	2,806
	LNLP-1300SW	1,300	1,361		LNLP-2800SW	2,800	2,906
	LNLP-1400SW	1,400	1,461		LNLP-2900SW	2,900	3,006
	LNLP-1500SW	1,500	1,561		LNLP-3000SW	3,000	3,106

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Convergent Lighting

Line Lights
LNSP2 Series

Refer to our website for product details.
CCS LNSP2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

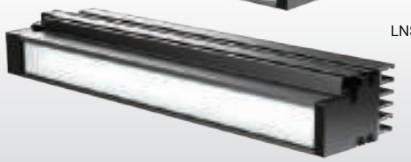
High-illuminance compact Line Lights
The light emitting tip is shifted to one side of the Light Unit body

LED color
Custom orders accepted
Size
Custom orders accepted





LNSP2-300SW-NDF



LNSP2-300SW

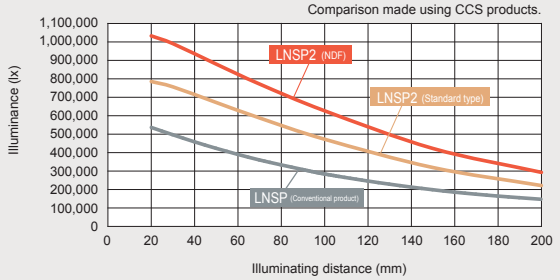
Applications Inspection for stains and scratches on glass; visual inspection of films, circuit boards, and electronic parts; inspection for stains on non-woven fabrics; visual inspection of non-woven fabrics and textured metal surface; etc.

Achieves an Illuminance of Approx. 900,000 lx*

* Measured using NDF type

This high-illuminance Line Light (NDF type) achieves an illuminance of approx. 900,000 lx.

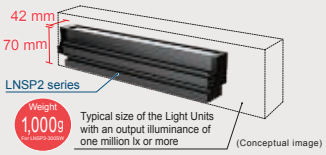
Graph of the change in illuminance



Actual measurement values at the center of the emitting surface, at each illuminating distance, 100% intensity. Results for individual products may vary.

Achieving both high output and compact space

We achieved a compact design compared to general, high output (one million lx or more) LED Lights for line sensors.



Two Types Are Available to Match Your Needs

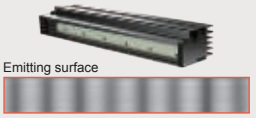
Standard type, which can be used for a wide range of applications, and NDF type, which is optimum for dark field inspection usage are offered.

Standard type



A diffusion sheet is included.

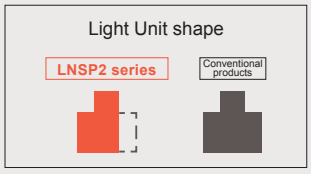
NDF type



Diffusion sheet is not included.

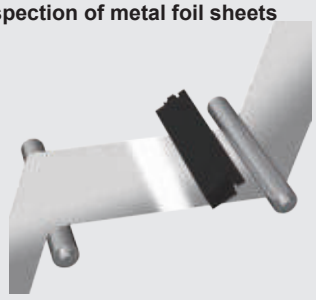
Optimum Light Unit shape for use at the inspection sites

For use at the site of inspection, the Light Unit shape is optimized with its light emitting tip shifted to one side of the Light Unit body. As a result, the camera view is not blocked during illumination, and the Light Unit can be installed close to the workpiece.



Applications

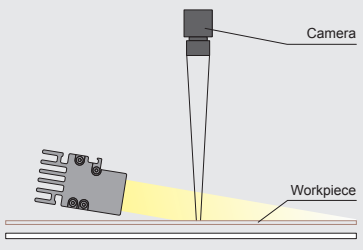
Visual inspection of metal foil sheets



Example Configuration

For use at the site of inspection, the Light Unit shape is optimized with its light emitting tip shifted to one side of the Light Unit body. High-illuminance and compact Line Lights.

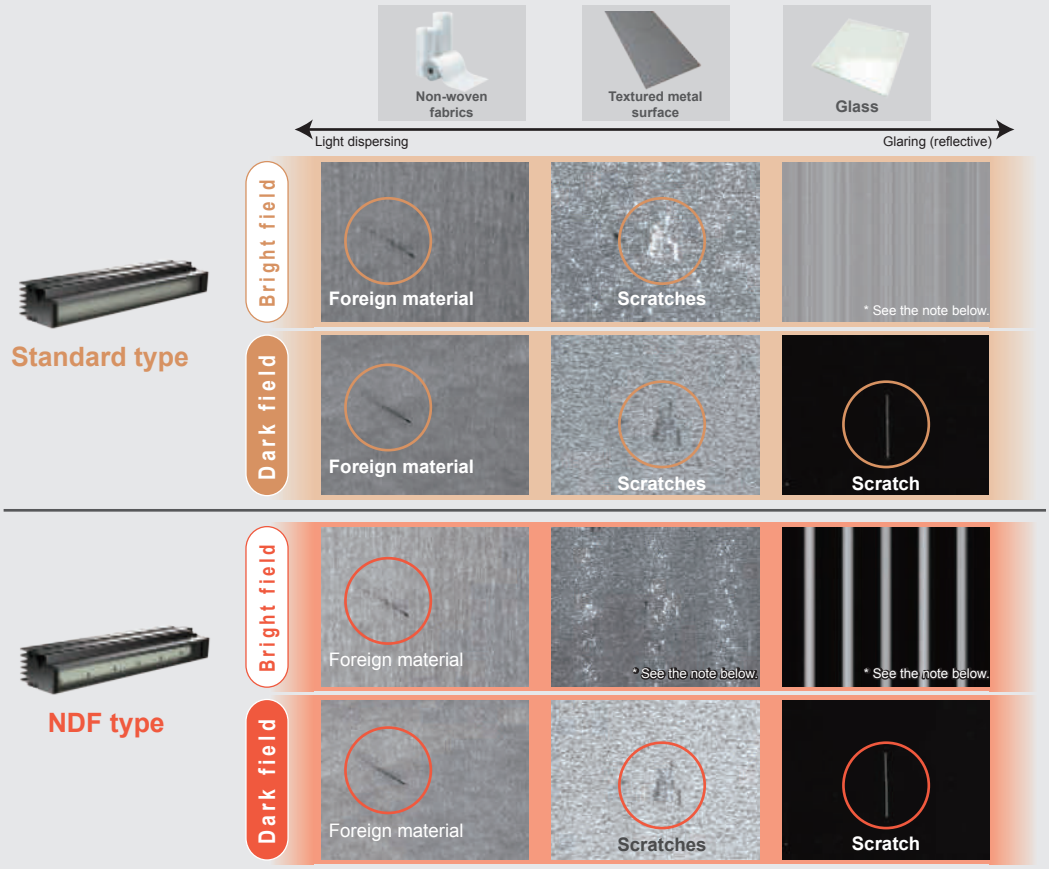
LNSP2 series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Different Imaging Results of the Typical Workpieces

These workpieces were processed by CCS for sample imaging.



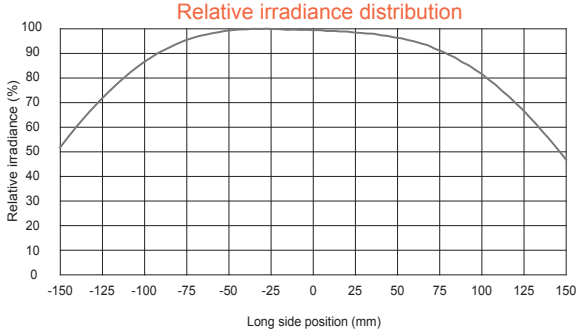
Note: The vertical lines in the above images with an asterisk mark (*) were caused by reflections of light from LEDs.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

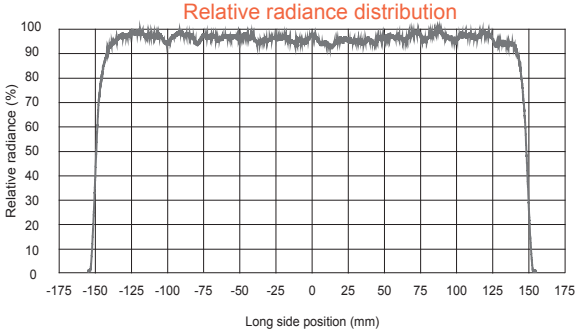
LNSP2-300SW

Relative irradiance distribution



Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

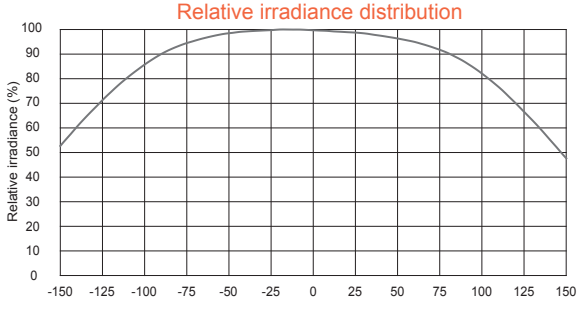
Relative radiance distribution



The graph included is for reference only. Actual values may vary.

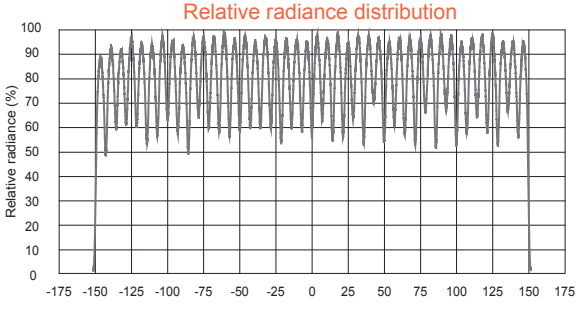
LNSP2-300SW-NDF

Relative irradiance distribution



Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



The graph included is for reference only. Actual values may vary.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNSP2 Series



Refer to our website for product details.

CCS LNSP2 ▶ Search

For quick access.

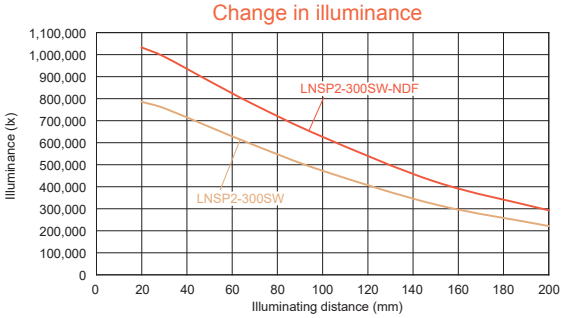
You can also use your smartphone or cell phone.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

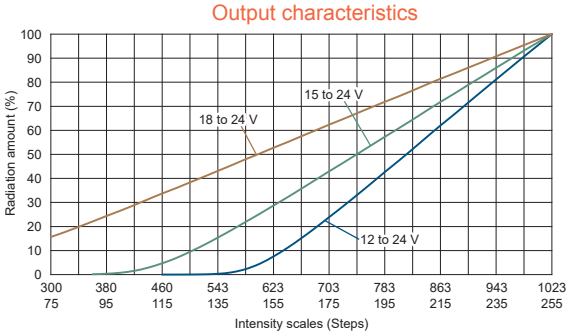
LNSP2-300SW / LNSP2-300SW-NDF

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

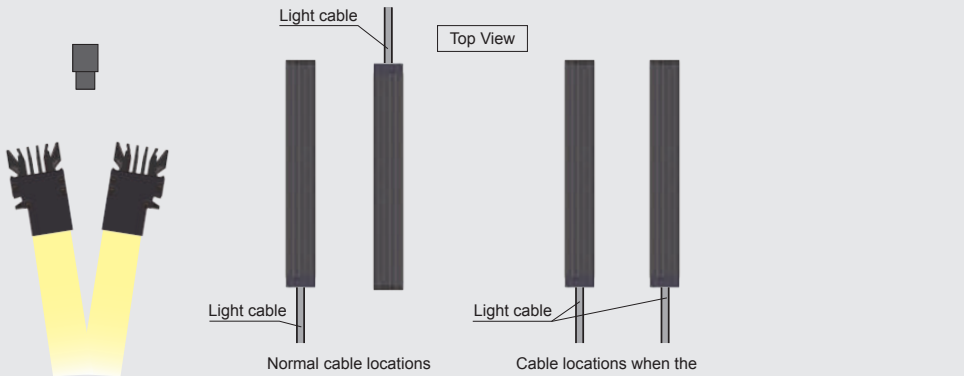
Output characteristics



Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Measured in each voltage range because the Analog Control Unit PSB4-30024-PEI has a switching function for the lower limit of the output voltage.

Custom Orders

E.g.: The location where the light cable comes out of the Light Unit case can be changed to match your environment.



(Conceptual image)

Various technical documents available.

PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

	Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
Standard type (Standard products)	LNSP2-100SW	White	24 V / 20 W	6,600 K	FCB-EL2	PSB4-30024-PEI	400 g
	LNSP2-200SW		24 V / 40 W				700 g
	LNSP2-300SW		24 V / 60 W			PD3-10024-8 *1	1,000 g
	LNSP2-400SW		24 V / 80 W				1,300 g
	LNSP2-500SW		24 V / 100 W				1,600 g
	LNSP2-600SW		24 V / 120 W				1,900 g
	LNSP2-700SW		24 V / 140 W		FCB-1.25SQ-ME7	PSB4-30024-PEI	2,200 g
	LNSP2-800SW		24 V / 160 W		FCB-20-2.0SQ-ME7		2,500 g
	LNSP2-900SW		24 V / 180 W				2,800 g
	LNSP2-1000SW		24 V / 200 W				3,100 g
Standard type (Special order)	LNSP2-1100SW		24 V / 220 W				3,400 g
	LNSP2-1200SW		24 V / 240 W				3,700 g
	LNSP2-1300SW		24 V / 260 W			PSB4-30024-PEI	4,000 g
	LNSP2-1400SW		24 V / 280 W				4,300 g
	LNSP2-1500SW		24 V / 300 W				4,600 g
	LNSP2-1600SW		24 V / 320 W				4,900 g
	LNSP2-1700SW		24 V / 340 W				5,200 g
	LNSP2-1800SW		24 V / 360 W				5,500 g
	LNSP2-1900SW		24 V / 380 W		FCB-1.25SQ-ME7		5,800 g
	LNSP2-2000SW		24 V / 400 W		FCB-20-2.0SQ-ME7		6,100 g
	LNSP2-2100SW		24 V / 420 W		x 2 *2		6,400 g
	LNSP2-2200SW		24 V / 440 W				6,700 g
	LNSP2-2300SW		24 V / 460 W			PSB4-60024-2-PEI	7,000 g
	LNSP2-2400SW		24 V / 480 W				7,300 g
	LNSP2-2500SW		24 V / 500 W				7,600 g
	LNSP2-2600SW		24 V / 520 W				7,900 g
	LNSP2-2700SW		24 V / 540 W				8,200 g
	LNSP2-2800SW		24 V / 560 W				8,500 g
	LNSP2-2900SW		24 V / 580 W				8,800 g
	LNSP2-3000SW		24 V / 600 W				9,100 g
NDF type (Standard products)	LNSP2-100SW-NDF		24 V / 24 W		FCB-EL2	PSB4-30024-PEI	400 g
	LNSP2-200SW-NDF		24 V / 48 W				700 g
	LNSP2-300SW-NDF		24 V / 72 W			PD3-10024-8 *1	1,000 g
	LNSP2-400SW-NDF		24 V / 96 W				1,300 g
	LNSP2-500SW-NDF		24 V / 120 W				1,600 g
	LNSP2-600SW-NDF		24 V / 144 W				1,900 g
	LNSP2-700SW-NDF		24 V / 168 W		FCB-1.25SQ-ME7	PSB4-30024-PEI	2,200 g
	LNSP2-800SW-NDF		24 V / 192 W		FCB-20-2.0SQ-ME7		2,500 g
	LNSP2-900SW-NDF		24 V / 216 W				2,800 g
	LNSP2-1000SW-NDF		24 V / 240 W				3,100 g
NDF type (Special orders)	LNSP2-1100SW-NDF		24 V / 264 W			PSB4-30024-PEI	3,400 g
	LNSP2-1200SW-NDF		24 V / 288 W				3,700 g
	LNSP2-1300SW-NDF		24 V / 312 W				4,000 g
	LNSP2-1400SW-NDF		24 V / 336 W				4,300 g
	LNSP2-1500SW-NDF		24 V / 360 W				4,600 g
	LNSP2-1600SW-NDF		24 V / 384 W				4,900 g
	LNSP2-1700SW-NDF		24 V / 408 W				5,200 g
	LNSP2-1800SW-NDF		24 V / 432 W			PSB4-60024-2-PEI	5,500 g
	LNSP2-1900SW-NDF		24 V / 456 W		FCB-1.25SQ-ME7		5,800 g
	LNSP2-2000SW-NDF		24 V / 480 W		FCB-20-2.0SQ-ME7		6,100 g
	LNSP2-2100SW-NDF		24 V / 504 W		x 2 *2		6,400 g
	LNSP2-2200SW-NDF		24 V / 528 W				6,700 g
	LNSP2-2300SW-NDF		24 V / 552 W				7,000 g
	LNSP2-2400SW-NDF		24 V / 576 W				7,300 g
	LNSP2-2500SW-NDF		24 V / 600 W			Please inquire for more information.	7,600 g
	LNSP2-2600SW-NDF		24 V / 624 W				7,900 g
	LNSP2-2700SW-NDF		24 V / 648 W				8,200 g
	LNSP2-2800SW-NDF		24 V / 672 W				8,500 g
	LNSP2-2900SW-NDF		24 V / 696 W				8,800 g
	LNSP2-3000SW-NDF		24 V / 720 W				9,100 g

Extension Cables ▶ P.219 | List of Control Unit Specifications ▶ P.309

*1 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series.
*2 For sizes 1,000 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.
The products with a model name in red letters require the custom Control Unit. Contact your CCS sales representative for details.

In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNSP2 Series



Refer to our website for product details.

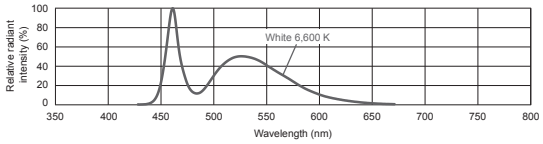
CCS LNSP2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Coaxial Unit

Allows for imaging with illumination on the same axis as the camera.

Model name	Applicable Light Unit
CU-LNSP2-100-GL	LNSP2-100SW (-NDF)
CU-LNSP2-200-GL	LNSP2-200SW (-NDF)
CU-LNSP2-300-GL	LNSP2-300SW (-NDF)
CU-LNSP2-400-GL	LNSP2-400SW (-NDF)
CU-LNSP2-500-GL	LNSP2-500SW (-NDF)

CU-LNSP2 Product Page ▶ P.225

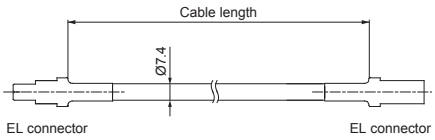
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit.

(mm)

FCB-EL2

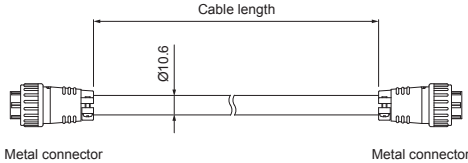
Model name	Cable length
FCB-1-EL2	1 m
FCB-2-EL2	2 m
FCB-3-EL2	3 m
FCB-5-EL2	5 m
FCB-10-EL2	10 m
FCB-15-EL2	15 m



Cable permitted bending radius: 29.6 mm

FCB-1.25SQ-ME7

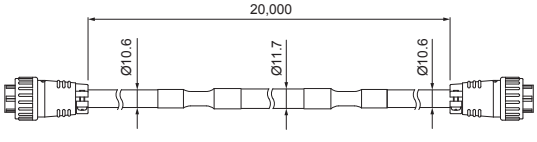
Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



Cable permitted bending radius: 63.6 mm

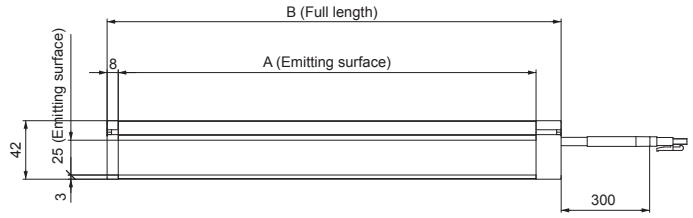
The above cable permitted bending radii are reference values. Actual values may vary.

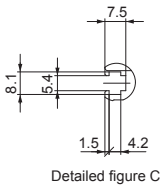
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

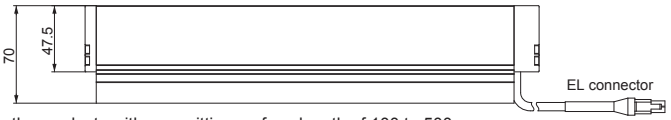
Dimensions (mm)

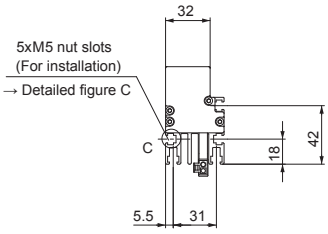
● Emitting surface length: 100 to 1,000 mm



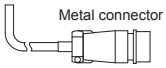


Detailed figure C



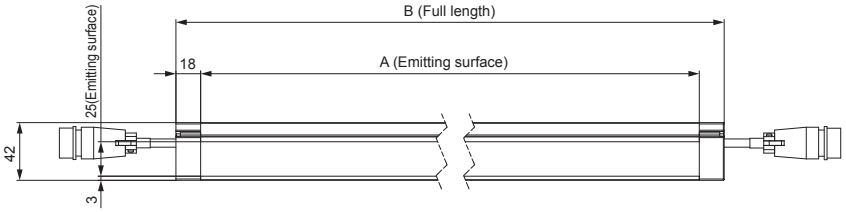


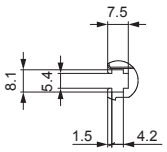
For the products with an emitting surface length of 100 to 500 mm:
EL connector
For the products with an emitting surface length of 600 to 1,000 mm:
Metal connector



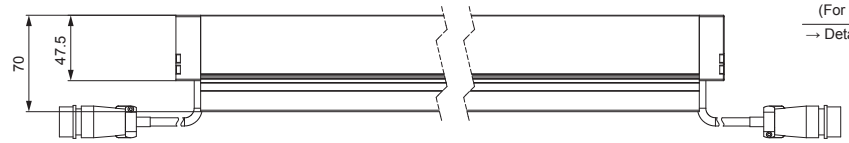
CCS accepts custom orders for such as the position where the light cable comes out of the case.
Please contact your CCS sales representative for details.

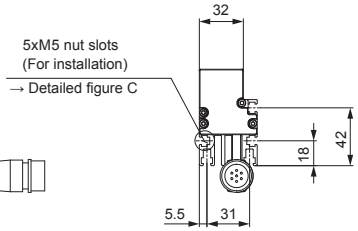
● Emitting surface length: 1,100 to 3,000 mm





Detailed figure C





For sizes 1,100 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.

	Model name	A (Emitting surface)	B (Full length)	Connector		Model name	A (Emitting surface)	B (Full length)	Connector
Standard products	LNSP2-100SW (-NDF)	100	126	EL connector	Special orders	LNSP2-1600SW (-NDF)	1,600	1,636	Metal connector
	LNSP2-200SW (-NDF)	200	226			LNSP2-1700SW (-NDF)	1,700	1,736	
	LNSP2-300SW (-NDF)	300	326			LNSP2-1800SW (-NDF)	1,800	1,836	
	LNSP2-400SW (-NDF)	400	426			LNSP2-1900SW (-NDF)	1,900	1,936	
	LNSP2-500SW (-NDF)	500	526			LNSP2-2000SW (-NDF)	2,000	2,036	
	LNSP2-600SW (-NDF)	600	626	Metal connector		LNSP2-2100SW (-NDF)	5,100	2,136	
	LNSP2-700SW (-NDF)	700	726			LNSP2-2200SW (-NDF)	2,200	2,236	
	LNSP2-800SW (-NDF)	800	826			LNSP2-2300SW (-NDF)	2,300	2,336	
	LNSP2-900SW (-NDF)	900	926			LNSP2-2400SW (-NDF)	2,400	2,436	
	LNSP2-1000SW (-NDF)	1,000	1,026			LNSP2-2500SW (-NDF)	2,500	2,536	
Special orders	LNSP2-1100SW (-NDF)	1,100	1,136	Metal connector		LNSP2-2600SW (-NDF)	2,600	2,636	
	LNSP2-1200SW (-NDF)	1,200	1,236			LNSP2-2700SW (-NDF)	2,700	2,736	
	LNSP2-1300SW (-NDF)	1,300	1,336			LNSP2-2800SW (-NDF)	2,800	2,836	
	LNSP2-1400SW (-NDF)	1,400	1,436			LNSP2-2900SW (-NDF)	2,900	2,936	
	LNSP2-1500SW (-NDF)	1,500	1,536			LNSP2-3000SW (-NDF)	3,000	3,036	

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Convergent Lighting

Line Lights
LNSP Series

Refer to our website for product details.
CCS LNSP ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Uses original converging technology to achieve illumination with reduced diffusion

LED color
Custom orders accepted
Size
Custom orders accepted





LNSP-600SW

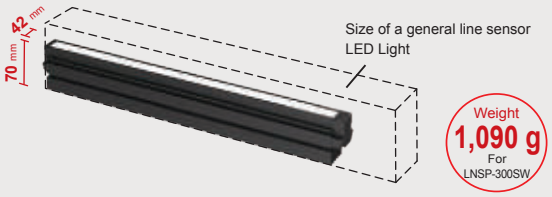
Applications Inspection for parts mounted on circuit boards, inspection for scratches on clear film, inspecting alignment for label seals, visual inspection of cans, inspection for unevenness in sheet metal, etc.

Illuminance of 400,000 lx* with Natural Air Cooling

* At the LWD of 50 mm

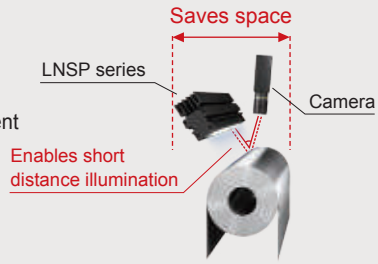
Achieving both high output and compact space

Achieved a more compact design compared to LED Lights for general high output line sensors.



Saving space for your inspection environment

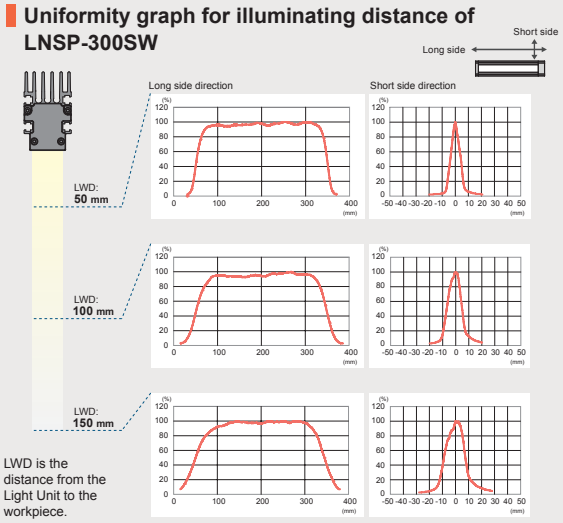
By making the Light Unit more compact, we contribute to saving space in your inspection environment or equipment environment.



Unique Illuminating Mechanism with Little Light Diffusion

By controlling light diffusion through the unique illuminating mechanism, there is little change in the brightness due to distance, so you can flexibly set the distance between the workpiece and the Light Unit. Uses constant-voltage control.

Uniformity graph for illuminating distance of LNSP-300SW

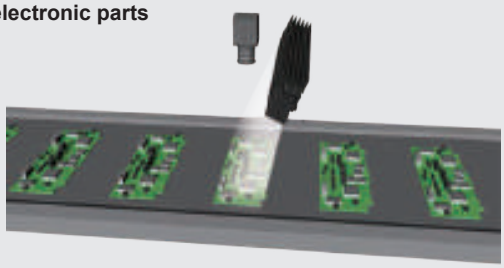


LWD is the distance from the Light Unit to the workpiece.

The graph included is for reference only. Actual values may vary.

Applications

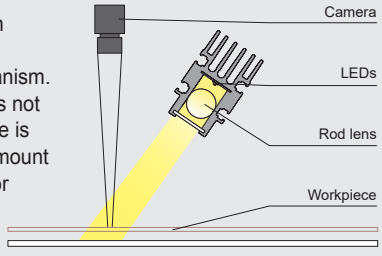
Visual inspection of circuit boards mounted with electronic parts



Example Configuration

Achieves high output illumination with controlled diffusion due to this unique illuminating mechanism. Because light does not easily diffuse, there is little loss for the amount of light, allowing for illumination over long distances.

LNSP series



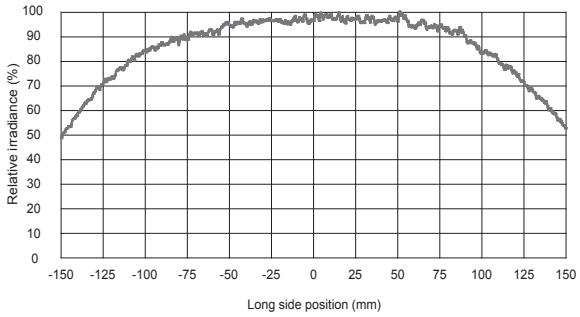
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

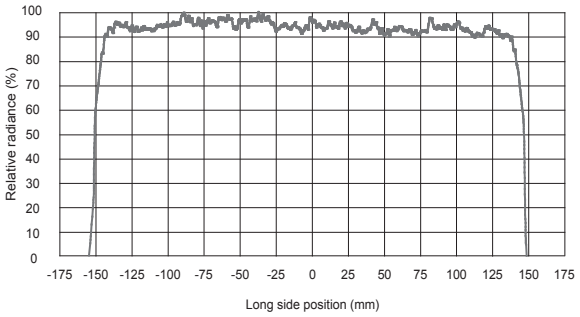
LNSP-300SW

Relative irradiance distribution



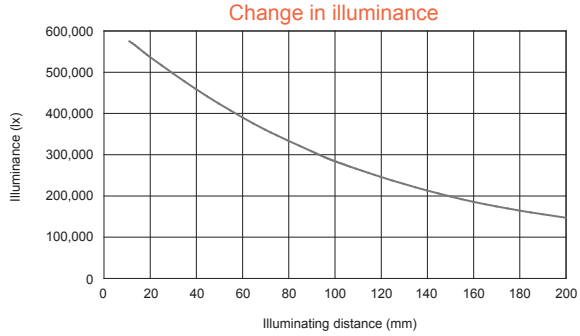
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



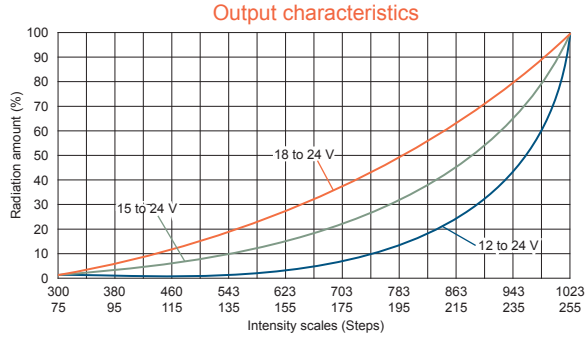
The graph included is for reference only. Actual values may vary.

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

Output characteristics



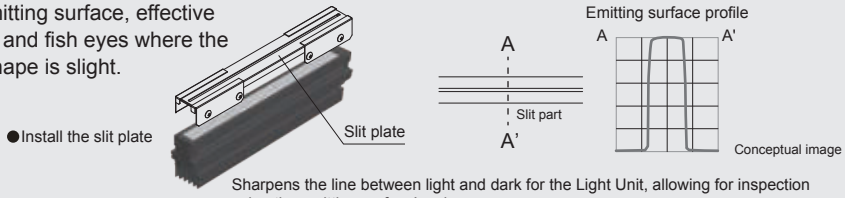
Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Measured in each voltage range because the Analog Control Unit PSB4-30024-PEI has a switching function for the lower limit of the output voltage.

Custom Orders

Please contact your CCS sales representative.

Example 1: Slit specifications (Install a slit plate on the emitting surface)

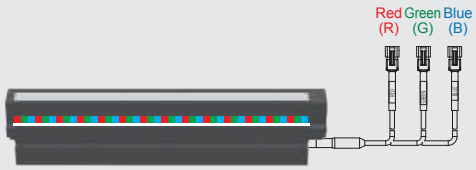
Result: Uses the edge of the emitting surface, effective for inspections for dents and fish eyes where the change in the surface shape is slight.



Sharpens the line between light and dark for the Light Unit, allowing for inspection using the emitting surface's edge.

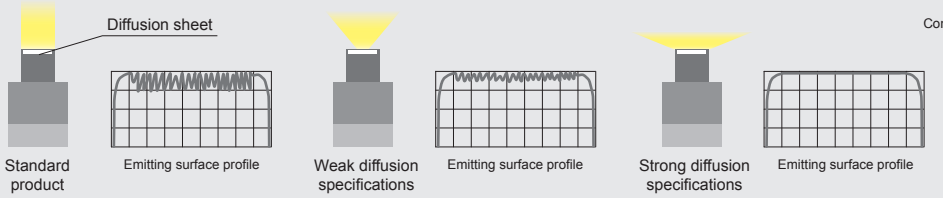
Example 2: Full color (RGB) specifications

Result: Because each emitted color (red, green, blue) can be controlled separately, this is effective for sheet inspections of different models on the same line.



Example 3: High uniformity specifications

Result: Achieved higher uniformity than a standard product by replacing the diffusion sheet.



LNSP Series



Refer to our website for product details.

CCS LNSP ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

	Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
Standard products	LNSP-100SW	White	24 V / 21 W	5,800 K			430 g
	LNSP-200SW		24 V / 41 W				760 g
	LNSP-300SW		24 V / 61 W				1,090 g
	LNSP-400SW		24 V / 81 W				1,420 g
	LNSP-500SW		24 V / 101 W		FCB-1.25SQ-ME7	PSB4-30024-PEI	1,740 g
	LNSP-600SW		24 V / 121 W		FCB-20-2.0SQ-ME7		2,070 g
	LNSP-700SW		24 V / 142 W				2,400 g
	LNSP-800SW		24 V / 162 W				2,730 g
	LNSP-900SW		24 V / 182 W				3,050 g
	LNSP-1000SW		24 V / 202 W				3,380 g
Special orders	LNSP-1100SW		24 V / 222 W				3,700 g
	LNSP-1200SW		24 V / 242 W				4,000 g
	LNSP-1300SW		24 V / 263 W		FCB-1.25SQ-ME7	PSB4-30024-PEI	4,300 g
	LNSP-1400SW		24 V / 283 W		FCB-20-2.0SQ-ME7		4,600 g
	LNSP-1500SW		24 V / 299 W				4,900 g
	LNSP-1600SW		24 V / 324 W				5,300 g
	LNSP-1700SW		24 V / 344 W				5,700 g
	LNSP-1800SW		24 V / 364 W				6,100 g
	LNSP-1900SW		24 V / 384 W				6,500 g
	LNSP-2000SW		24 V / 404 W				6,900 g
	LNSP-2100SW		24 V / 424 W				7,300 g
	LNSP-2200SW		24 V / 444 W		FCB-1.25SQ-ME7		7,700 g
	LNSP-2300SW		24 V / 464 W		FCB-20-2.0SQ-ME7	PSB4-60024-2-PEI	8,100 g
	LNSP-2400SW		24 V / 484 W		x 2 *		8,500 g
	LNSP-2500SW		24 V / 505 W				8,900 g
	LNSP-2600SW		24 V / 526 W				9,300 g
	LNSP-2700SW		24 V / 541 W				9,700 g
	LNSP-2800SW		24 V / 562 W				10,100 g
	LNSP-2900SW		24 V / 582 W				10,500 g
	LNSP-3000SW		24 V / 598 W				10,900 g

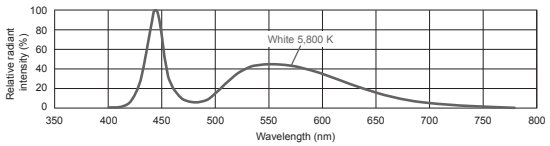
Extension Cables ▶ P.224 PSB4 Series Product Page ▶ P.351

* For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.

We accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Options



Coaxial Unit

Model name	Applicable Light Unit
CU-LNSP-100-GL	LNSP-100SW
CU-LNSP-200-GL	LNSP-200SW
CU-LNSP-300-GL	LNSP-300SW
CU-LNSP-400-GL	LNSP-400SW
CU-LNSP-500-GL	LNSP-500SW

CU-LNSP Product Page ▶ P.225

Allows for imaging with illumination on the same axis as the camera.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

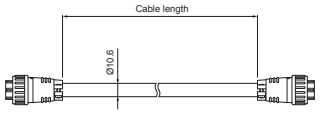
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, PSB4-30024-PEI.

FCB-1.25SQ-ME7

Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g

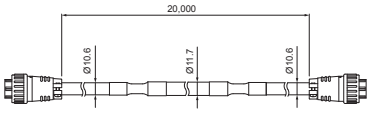
(mm)



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g

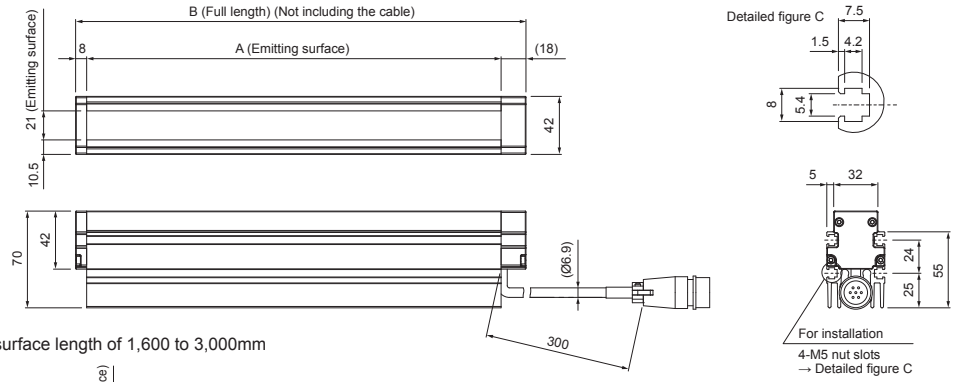


Cable permitted bending radius: 63.6 mm

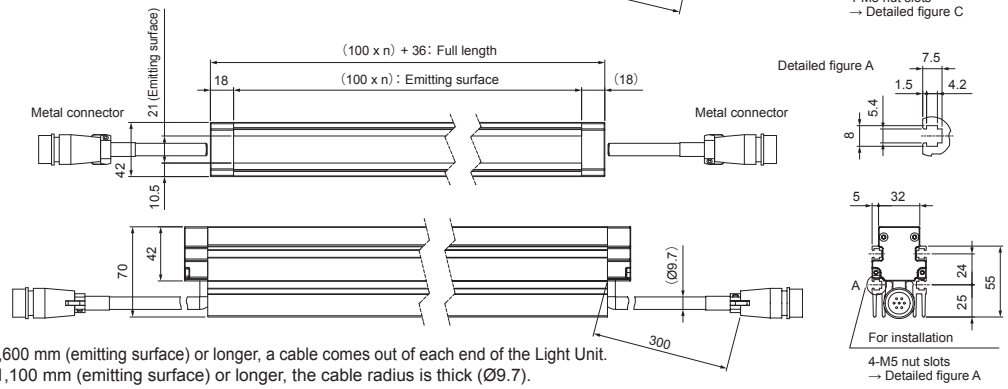
The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)

● For the emitting surface length of 100 to 1,500mm



● For the emitting surface length of 1,600 to 3,000mm



For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.
For sizes 1,100 mm (emitting surface) or longer, the cable radius is thick (Ø9.7).

	Model name	A (Emitting surface)	B (Full length)		Model name	A (Emitting surface)	B (Full length)
Standard products	LNSP-100SW	100	126	Special orders	LNSP-1600SW	1,600	1,636
	LNSP-200SW	200	226		LNSP-1700SW	1,700	1,736
	LNSP-300SW	300	326		LNSP-1800SW	1,800	1,836
	LNSP-400SW	400	426		LNSP-1900SW	1,900	1,936
	LNSP-500SW	500	526		LNSP-2000SW	2,000	2,036
	LNSP-600SW	600	626		LNSP-2100SW	2,100	2,136
	LNSP-700SW	700	726		LNSP-2200SW	2,200	2,236
	LNSP-800SW	800	826		LNSP-2300SW	2,300	2,336
	LNSP-900SW	900	926		LNSP-2400SW	2,400	2,436
	LNSP-1000SW	1,000	1,026		LNSP-2500SW	2,500	2,536
Special orders	LNSP-1100SW	1,100	1,126		LNSP-2600SW	2,600	2,636
	LNSP-1200SW	1,200	1,226		LNSP-2700SW	2,700	2,736
	LNSP-1300SW	1,300	1,326		LNSP-2800SW	2,800	2,836
	LNSP-1400SW	1,400	1,426		LNSP-2900SW	2,900	2,936
	LNSP-1500SW	1,500	1,526		LNSP-3000SW	3,000	3,036

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
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Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
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LN/LN-HK
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LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Options

LNSP2/LNSP Series Dedicated Coaxial Units
CU-LNSP2 / CU-LNSP Series

Refer to our website for product details.
CCS CU-LNSP ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Achieves high output with coaxial illumination



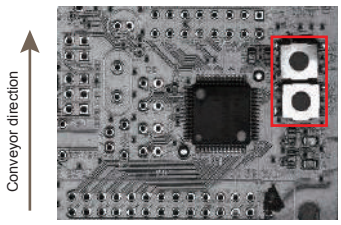
CU-LNSP2-200-GL　　CU-LNSP-200-GL

With Light Unit installed.
The Light Unit is sold separately.

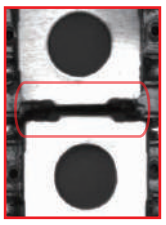
Applications Inspection of electronic parts on circuit boards, visual inspection of secondary battery separators, inspection for damage and dents on touch panels, etc.

Features

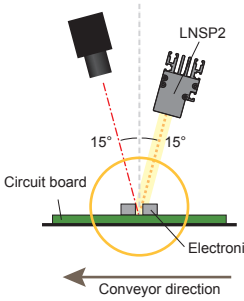
■ When imaging with V-shaped reflection: Only the LNSP2 Light Unit

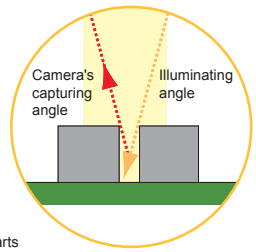


Because the camera is diagonal with respect to the line sensor viewpoint, when capturing objects with protrusions, such as electronic parts on circuit boards, some parts enter the camera's blind spot, limiting the inspected areas.



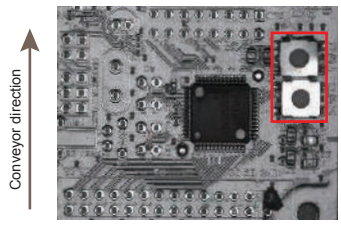
There is a shadow in the space between electronic parts, preventing visual inspection.



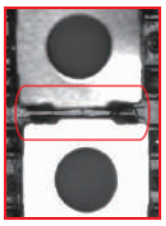


In the camera's blind spot

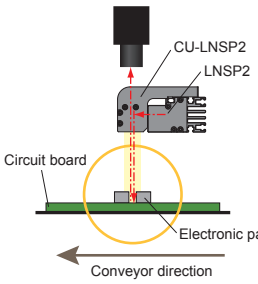
■ When imaging with coaxial illumination: CU-LNSP2 mounted

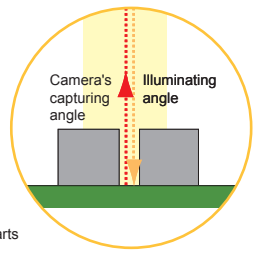


Because the camera is directly vertical with respect to the line sensor viewpoint, it is not affected by protrusions and can capture the image.



There is no shadow in the space between electronic parts, allowing for visual inspection.





Not in the camera's blind spot

Information about Custom Ordered Products

The following products can support coaxial illumination via a custom product. Inquire at your CCS sales representative for details.

■ LT series　▼ P.247

Custom products with an emitting surface that is 10 mm wide are also available.



Achieve both high uniformity and high brightness through this unique optical system. It can perform highly-accurate inspections and also supports high-speed scan rates.

■ LNSP-FN series　▼ P.227



High output type of the LNSP series. Forced air cooling (fan cooling). Achieved a brightness of 900,000 lx (at LWD = 50 mm).

■ LN-HK series　▼ P.232



A cylindrical lens allows for illumination with a convergent line of light. By changing the position of the lens unit on the tip, you can freely set the converging length or the width of emitting light.

Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Lineup

CU-LNSP2

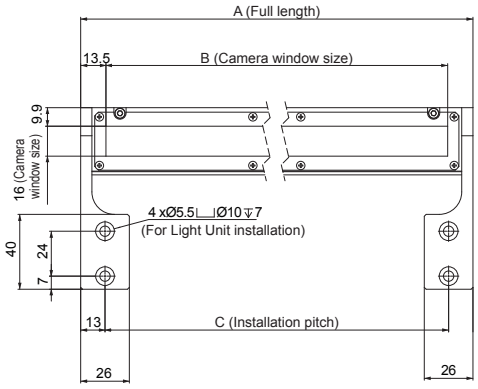
Model name	Weight	Applicable Light Unit	
CU-LNSP2-100-GL	250 g	LNSP2-100SW	LNSP2 series Product Page ▼ P.215
CU-LNSP2-200-GL	350 g	LNSP2-200SW	
CU-LNSP2-300-GL	450 g	LNSP2-300SW	
CU-LNSP2-400-GL	550 g	LNSP2-400SW	
CU-LNSP2-500-GL	650 g	LNSP2-500SW	

CU-LNSP

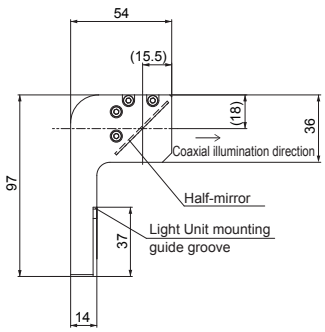
Model name	Weight	Applicable Light Unit	
CU-LNSP-100-GL	250 g	LNSP-100SW	LNSP series Product Page ▼ P.221
CU-LNSP-200-GL	350 g	LNSP-200SW	
CU-LNSP-300-GL	450 g	LNSP-300SW	
CU-LNSP-400-GL	550 g	LNSP-400SW	
CU-LNSP-500-GL	650 g	LNSP-500SW	

Dimensions (mm)

CU-LNSP2-100-GL / -200-GL / -300-GL / -400-GL / -500-GL



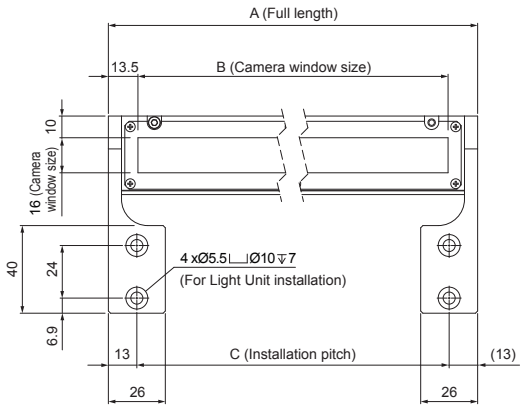
Four M5 screws and nuts are included for installing the Coaxial Unit on the Light Unit.



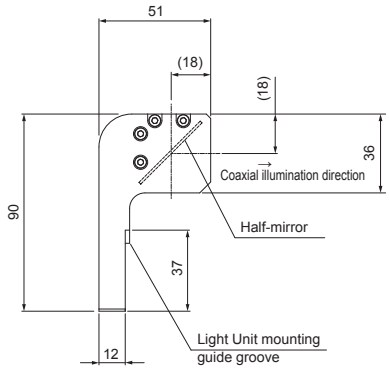
For a custom order, we can change the location where the light cable comes out of the Light Unit (LNSP2) case on which the Coaxial Unit is installed. Please contact your CCS sales representative for details.

Model name	Dimension A	Dimension B	Dimension C	Model name	Dimension A	Dimension B	Dimension C
CU-LNSP2-100-GL	112	85	86	CU-LNSP2-400-GL	412	385	386
CU-LNSP2-200-GL	212	185	186	CU-LNSP2-500-GL	512	485	486
CU-LNSP2-300-GL	312	285	286				

CU-LNSP-100-GL / -200-GL / -300-GL / -400-GL / -500-GL



Four M5 screws and nuts are included for installing the Coaxial Unit on the Light Unit.



Model name	Dimension A	Dimension B	Dimension C	Model name	Dimension A	Dimension B	Dimension C
CU-LNSP-100-GL	112	85	86	CU-LNSP-400-GL	412	385	386
CU-LNSP-200-GL	212	185	186	CU-LNSP-500-GL	512	485	486
CU-LNSP-300-GL	312	285	286				

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Line Lights
LNSP-FN Series

Refer to our website for product details.
CCS LNSP-FN ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Uses original converging technology to achieve illumination with reduced diffusion
High output Line Lights with forced air cooling (fan cooling)

LED color
Custom orders accepted

Size
Custom orders accepted





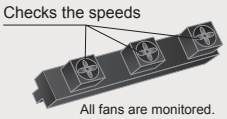
LNSP-400SW-FN

Applications Inspection of parts mounted on circuit boards, inspection for scratches on clear film, inspecting sheet alignment, inspection for unevenness in sheet metal, visual inspection of plastic products, etc.

Avoid Trouble with Error Detection

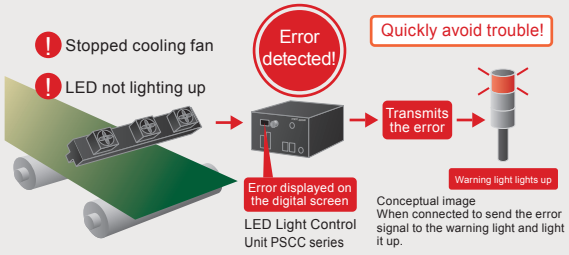
1) Error detection for cooling fans

An error is detected should a fault occur, such as insufficient speed or a stop in the cooling fans.



2) Error detection for the LEDs

Detects dead LEDs due to an open in the Light Unit circuit or a shorted LED.



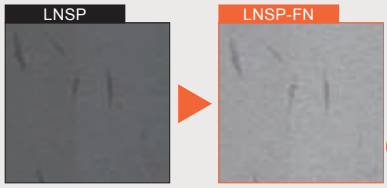
Error detection is a function included with the PSCC series, the recommended Control Units.

Illuminance of 900,000 lx with Forced Air Cooling (Fan)

Perfect for applications that demand high-speed image processing. Also allows for even imaging with a high degree of uniformity.

Comparison of illuminance for the LNSP and LNSP-FN

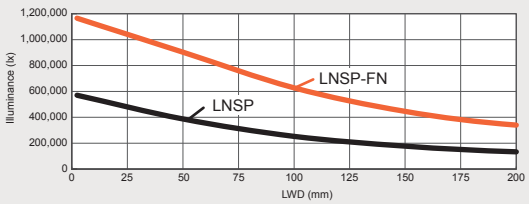
Comparison of imaging of paper (Japanese paper)



Perfect for applications that demand high-speed image processing.

More than doubled brightness

Brightness varies based on the camera's spectral sensitivity.

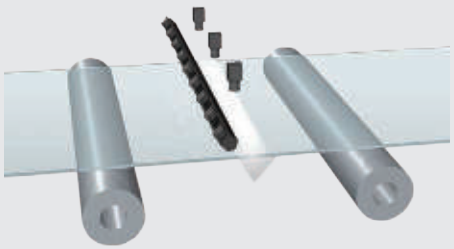


Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.
LWD is the distance from the Light Unit to the workpiece.

The graph included is for reference only. Actual values may vary.

Applications

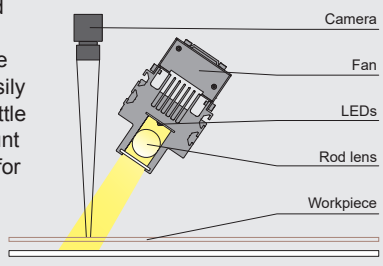
Inspection for damage on glass



Example Configuration

High-output Line Lights with forced air cooling (fan cooling). Because light does not easily diffuse, there is little loss for the amount of light, allowing for illumination over long distances.

LNSP-FN series



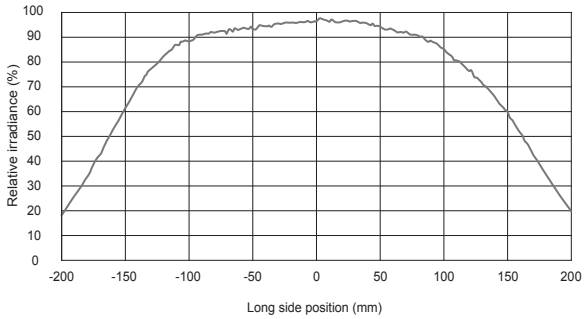
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

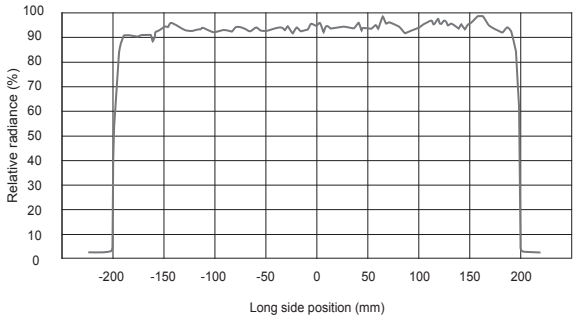
LNSP-400SW-FN

Relative irradiance distribution



Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

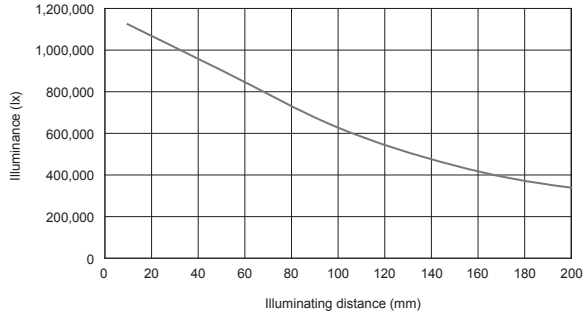
Relative radiance distribution



The graph included is for reference only. Actual values may vary.

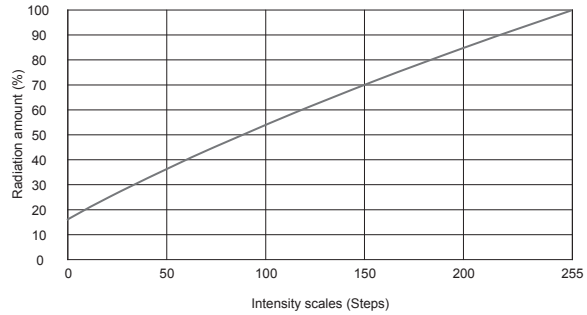
LNSP-1500SW-FN

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

Output characteristics



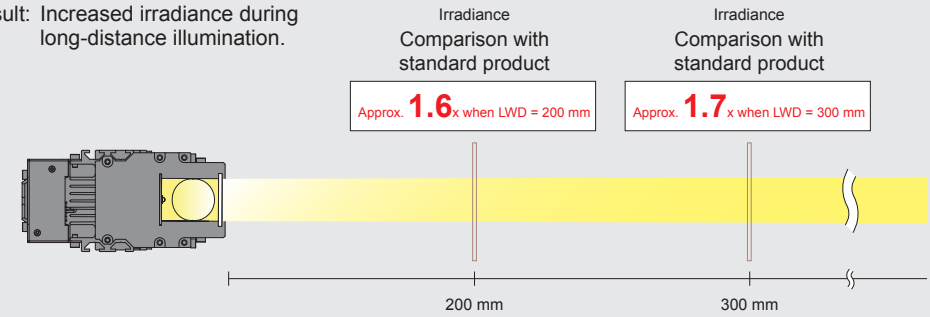
Actual measurement values using the Analog Control Unit PSCC-60048(A).
Results for individual products may vary.

Custom Orders

Please contact your CCS sales representative.

Example 1: Changes specifications for the rod lens diameter

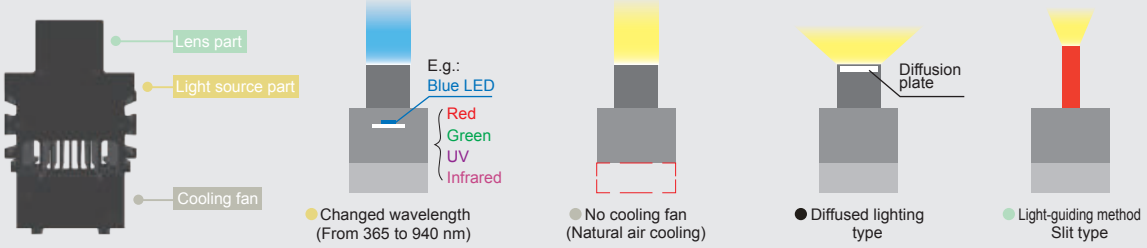
Result: Increased irradiance during long-distance illumination.



LWD is the distance from the Light Unit to the workpiece.

Example 2: Changes specifications to match application

Allows for customization including light source part



- Changed wavelength (From 365 to 940 nm)
- No cooling fan (Natural air cooling)
- Diffused lighting type
- Light-guiding method Slit type

LNSP-FN Series



Refer to our website for product details.

CCS LNSP-FN ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

	Model name	LED color	Power consumption*1 (Including the fan) June 2017 or earlier	Power consumption*1 (Including the fan) July 2017 or later	Correlated color temperature	Extension cables*2	Recommended Control Units*2	Weight
Standard products	LNSP-100SW-FN	White	41 W	41 W	5,800 K			900 g
	LNSP-200SW-FN		81 W	82 W				1,400 g
	LNSP-300SW-FN		117 W	118 W			PSCC-30048(A)	1,900 g
	LNSP-400SW-FN		157 W	158 W			PSCC-60048(A)	2,400 g
	LNSP-500SW-FN		192 W	194 W				2,900 g
	LNSP-600SW-FN		233 W	235 W				3,400 g
	LNSP-700SW-FN		268 W	270 W		QCBM		3,900 g
	LNSP-800SW-FN		309 W	311 W		QCB		4,400 g
	LNSP-900SW-FN		345 W	348 W				4,900 g
	LNSP-1000SW-FN		384 W	387 W				5,500 g
	LNSP-1100SW-FN		425 W	428 W			PSCC-60048(A)	6,000 g
	LNSP-1200SW-FN		460 W	464 W				6,500 g
	LNSP-1300SW-FN		501 W	504 W				7,000 g
	LNSP-1400SW-FN		536 W	540 W				7,500 g
	LNSP-1500SW-FN		576 W	581 W				8,000 g
Special orders	LNSP-1600SW-FN		613 W	618 W				8,800 g
	LNSP-1700SW-FN		652 W	658 W				9,300 g
	LNSP-1800SW-FN		689 W	695 W				9,800 g
	LNSP-1900SW-FN		728 W	734 W				10,300 g
	LNSP-2000SW-FN		768 W	775 W				10,900 g
	LNSP-2100SW-FN		804 W	811 W				11,400 g
	LNSP-2200SW-FN		844 W	851 W				11,900 g
	LNSP-2300SW-FN		881 W	888 W		QCB x 2 *3	PSCC-60048(A) x 2 *3	12,400 g
	LNSP-2400SW-FN		920 W	928 W				12,900 g
	LNSP-2500SW-FN		956 W	964 W				13,400 g
	LNSP-2600SW-FN		996 W	1,004 W				13,900 g
	LNSP-2700SW-FN		1,032 W	1,041 W				14,400 g
	LNSP-2800SW-FN		1,071 W	1,080 W				14,900 g
	LNSP-2900SW-FN		1,108 W	1,117 W				15,400 g
	LNSP-3000SW-FN		1,148 W	1,158 W				15,900 g

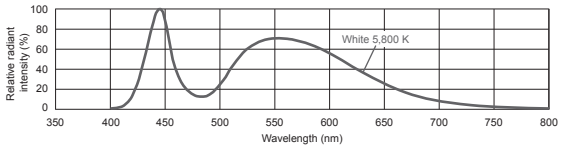
Extension Cables ▶ P.230 PSCC Series Product Page ▶ P.349

*1 The power consumption varies according to the production data. Refer to the power consumption given by the label tag of the product.
*2 Make sure to connect the appropriate extension cables to the Control Unit.
*3 For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.

We accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

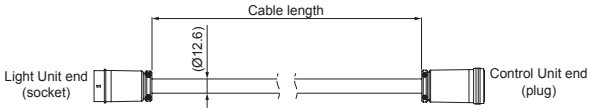
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, the PSCC series.
Make sure to connect the appropriate extension cables to the Control Unit.

QCBM

Model name	Cable length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	

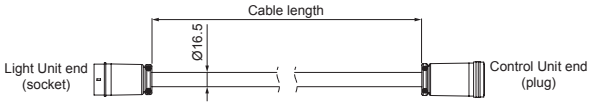
(mm)



Cable permitted bending radius: 75.6 mm

QCB

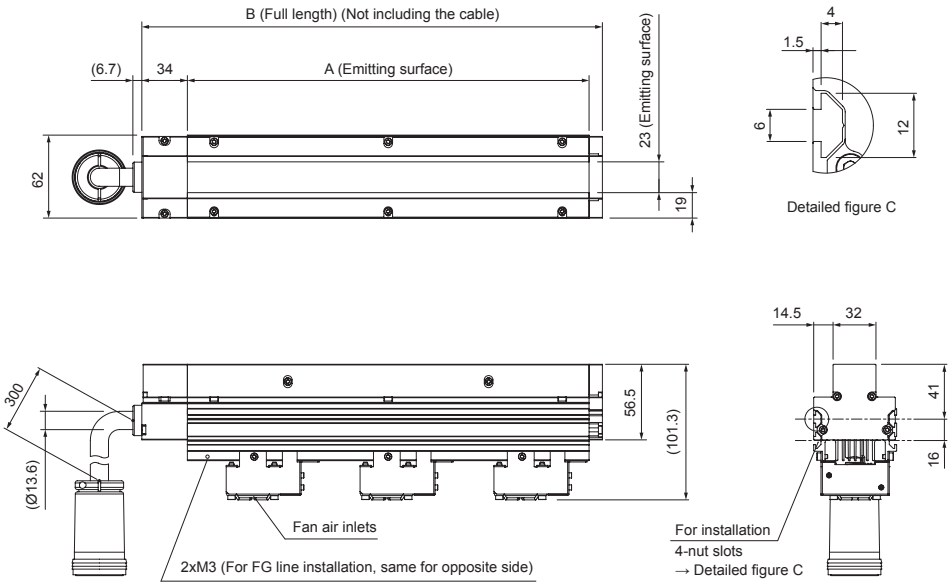
Model name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



Cable permitted bending radius: 99 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



For sizes 1,600 mm (emitting surface) or longer, a cable comes out of each end of the Light Unit.

	Model name	A (Emitting surface)	B (Full length)		Model name	A (Emitting surface)	B (Full length)
Standard products	LNSP-100SW-FN	100	144	Special orders	LNSP-1600SW-FN	1,600	1,668
	LNSP-200SW-FN	200	244		LNSP-1700SW-FN	1,700	1,768
	LNSP-300SW-FN	300	344		LNSP-1800SW-FN	1,800	1,868
	LNSP-400SW-FN	400	444		LNSP-1900SW-FN	1,900	1,968
	LNSP-500SW-FN	500	544		LNSP-2000SW-FN	2,000	2,068
	LNSP-600SW-FN	600	644		LNSP-2100SW-FN	2,100	2,168
	LNSP-700SW-FN	700	744		LNSP-2200SW-FN	2,200	2,268
	LNSP-800SW-FN	800	844		LNSP-2300SW-FN	2,300	2,368
	LNSP-900SW-FN	900	944		LNSP-2400SW-FN	2,400	2,468
	LNSP-1000SW-FN	1,000	1,044		LNSP-2500SW-FN	2,500	2,568
	LNSP-1100SW-FN	1,100	1,144		LNSP-2600SW-FN	2,600	2,668
	LNSP-1200SW-FN	1,200	1,244		LNSP-2700SW-FN	2,700	2,768
	LNSP-1300SW-FN	1,300	1,344		LNSP-2800SW-FN	2,800	2,868
	LNSP-1400SW-FN	1,400	1,444		LNSP-2900SW-FN	2,900	2,968
	LNSP-1500SW-FN	1,500	1,544		LNSP-3000SW-FN	3,000	3,068

Convergent Lighting

Line Lights
LN Series

Refer to our website for product details.
CCS LN ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides converged line lighting

LED color
Custom orders accepted
Size
Custom orders accepted



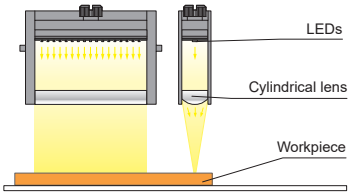


Applications Visual inspection of film circuit boards, inspection for faults in non-woven fabrics, inspection of parts mounted on circuit boards, visual inspection of printed objects, visual inspection of plastic products, etc.

Features

Emits light from the LEDs through the cylindrical lens on the tip and enables converged line-shape light.

Example configuration (LN-60)

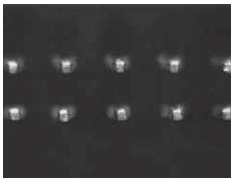


We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Imaging the side of a coin



Imaging for measuring width of a connector pin



Imaging of damage on glass



Lineup

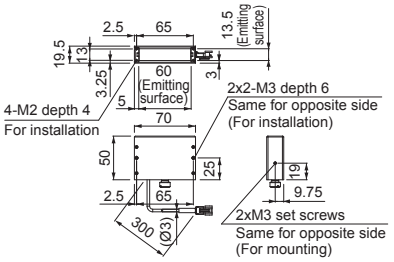
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LN-60RD2	Red	24 V / 2.1 W	630 nm	–	FCB Straight Cable*3 FCB-W 2-branch Cable*4 FCB-F 4-branch Cable FRCB Robot Cable *3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.	PD3*2 CC-ST-1024 PSB POD*1 *2 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.	130 g
LN-60SW2	White		5,500 K				
LN-60BL2	Blue		470 nm				
LN-60GR2	Green		525 nm				
LN-200RD2	Red	24 V / 3.1 W	630 nm				500 g
LN-200SW2	White		5,500 K				
LN-200BL2	Blue		470 nm				
LN-200GR2	Green		525 nm				

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

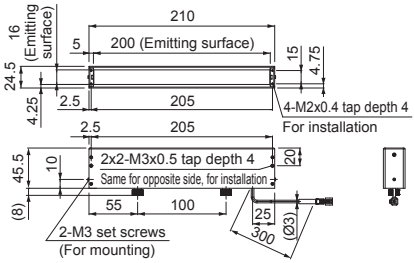
*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod

Dimensions (mm)

LN-60RD2/SW2/BL2/GR2



LN-200RD2/SW2/BL2/GR2



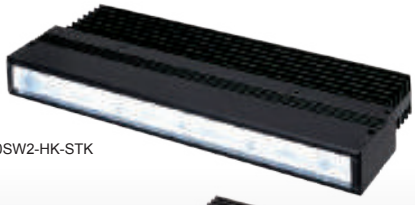
You can change the connectors of the Light Unit cable.
Choose between M12 connectors and flying leads.
Refer to P.19 for details.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Provides converged line lighting (High output type)

LED color
Custom orders accepted
Size
Custom orders accepted





LN-200SW2-HK-STK



LN-60SW2-HK-STK

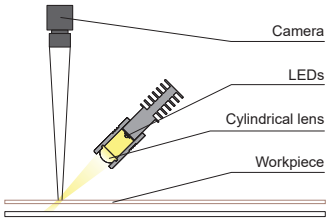
Applications Visual inspection of film circuit boards, inspection for faults in non-woven fabrics, inspection of parts mounted on circuit boards, visual inspection of printed objects, visual inspection of plastic products, etc.

Features

Emits light from the LEDs through the cylindrical lens on the tip and enables converged line-shape light.

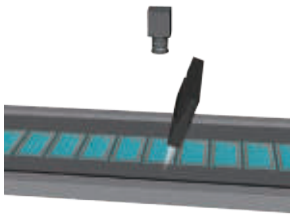
We accept custom orders. Please feel free to inquire.
- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Example configuration (LN-60SW2-HK-STK)



Applications

Visual inspection of film-circuit boards



Inspection for faults in non-woven fabrics



Lineup

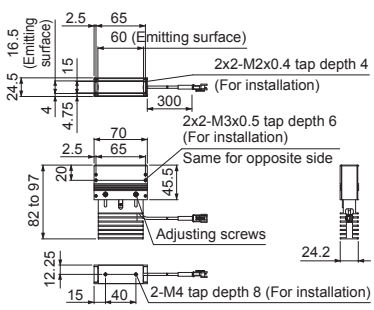
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LN-60SW2-HK-STK	White	24 V / 6.1W	5,500 K	–	FCB*3 Straight Cable, FCB-W*4 2-branch Cable, FCB-F 4-branch Cable, FRCB Robot Cable	PD3*2, CC-ST-1024*1, PSB *1 Cannot be used with LN-200SW2-HK-STK.	250 g
LN-200SW2-HK-STK		24 V / 22 W					750 g

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

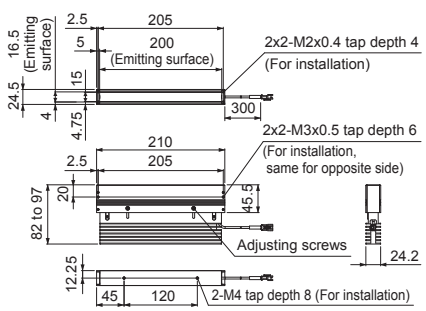
*2 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.
*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *4 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

LN-60SW2-HK-STK



LN-200SW2-HK-STK



You can change the connectors of the Light Unit cable.
Choose between M12 connectors and flying leads.
Refer to P.19 for details.

You can inquire using our website.
Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Diffused Lighting

Line Lights
LNSD Series

Refer to our website for product details.
CCS LNSD ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Highly-versatile Line Lights with a variety of uses

LED color
Custom orders accepted
Size
Custom orders accepted



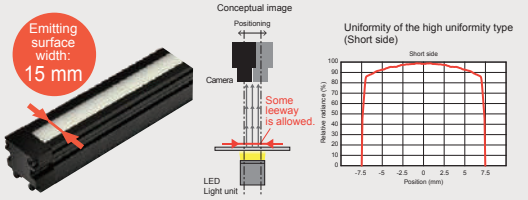


LNSD-400SW LNSD-400SW-HU LNSD-600RD LNSD-800BL

Applications Inspection for dents, foreign-material, or fish-eye-holes on clear film; inspection for blots, unevenness, or scratches on metallic foil; inspection for oil-sots, holes, or edge-breaking on paper; inspection for blots, mixing-of-hairs, or crude-density on non-woven fabric; etc.

Easy-to-Setup, Compact, and Lightweight

The wide and uniform emitting surface facilitates the positioning of the camera. You can improve the efficiency of the setting work.



Compact and lightweight



Stable quality even in a harsh environment

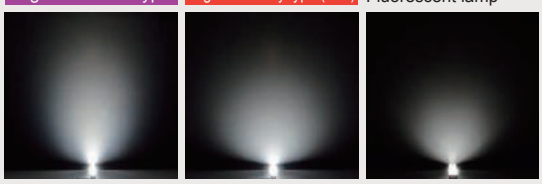
Operation temp. 50℃ allowed

Heat resistant design for a high temperature environment
- Optimized case design for heat dissipation
- Heat resistant cable and diffusion plate
- Other components for thorough heat resistance

Also make sure the operating temperature of the Control Unit and the optional accessories.

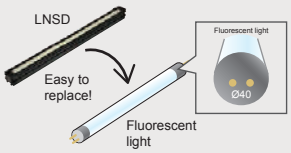
Optimum for Replacing Your Fluorescent Lights

Excellent brightness and the same uniformity as a fluorescent light

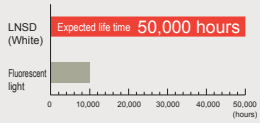


Measurement condition: 100% intensity, short side

Great for replacing fluorescent lights due to the equal size

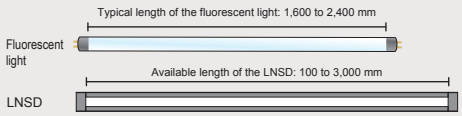


Life time comparison



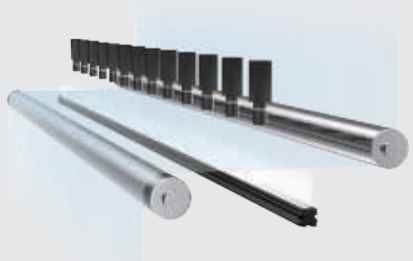
Light intensity: 70%, Operation temperature: 50°C, Calculated value where the light output drops to 50% Actual values may vary.
The life time of the fluorescent light is estimated as 10,000 hours according to CCS's research.

Supports 1,600 to 2,400 mm length as with the fluorescent light



Applications

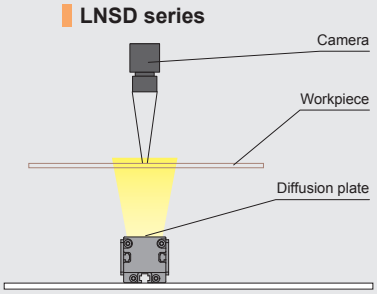
Inspection for foreign material on clear films



Example Configuration

Light from the chip LEDs on the flat boards passes through a diffusion plate to produce a band of diffused illumination.

LNSD series

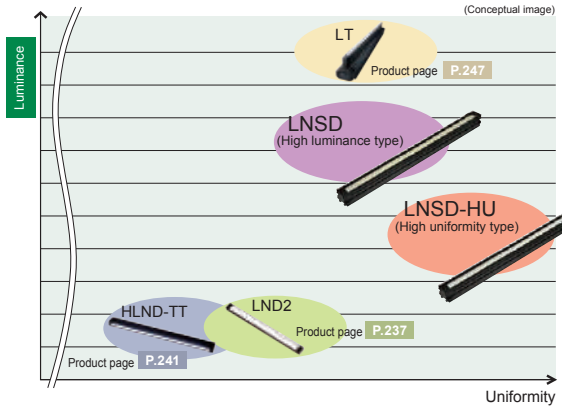


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

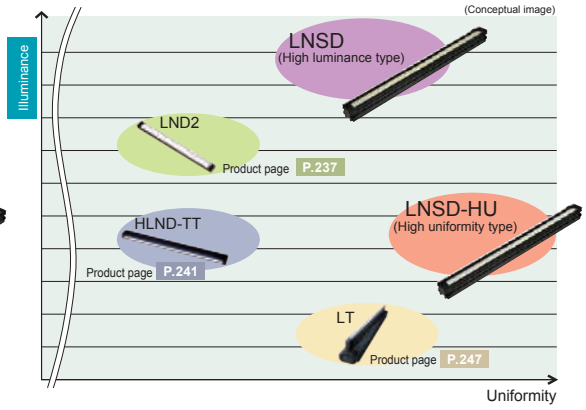
Register to use them.

Comparing Performance of the LNSD with Other CCS Line Lights

Comparison between the luminance and the uniformity



Comparison between the illuminance and the uniformity



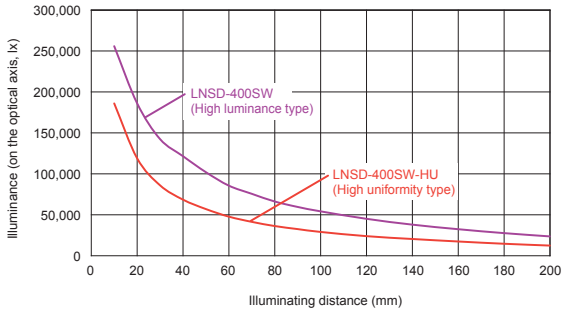
Data (Representative Example)

The graph included is for reference only. Actual values may vary.

Brightness

Series name	Luminance	Illuminance
LNSD-400SW (High luminance type)	265,000 cd/m²	101,000 lx LWD=50 mm
LNSD-400SW-HU (High uniformity type)	125,000 cd/m²	56,000 lx LWD=50 mm

Change in illuminance

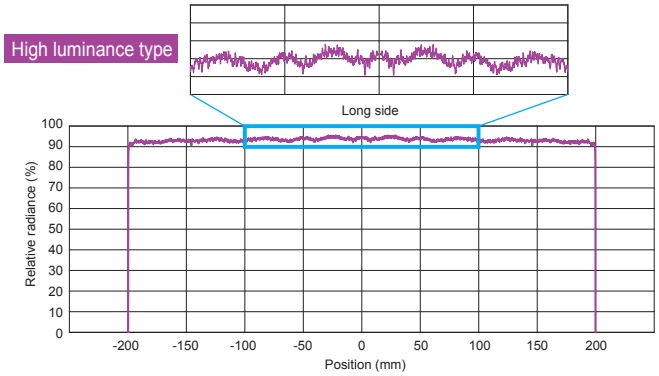


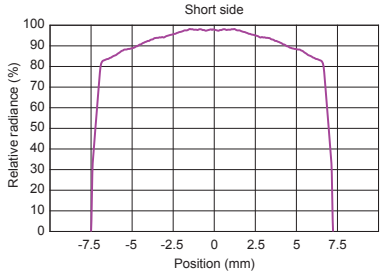
Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

LNSD-400SW

Relative radiance distribution

High luminance type

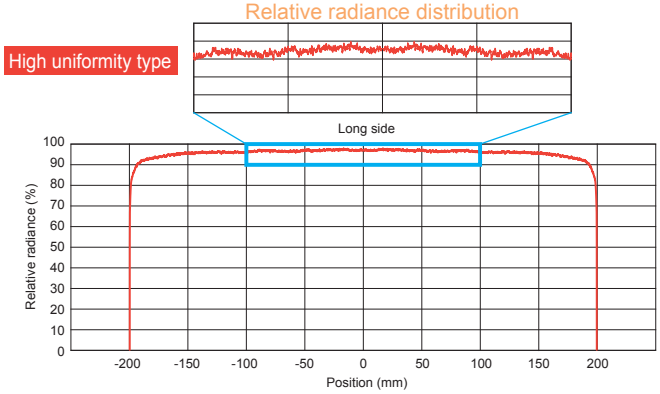


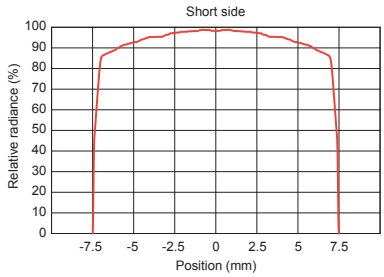


LNSD-400SW-HU

Relative radiance distribution

High uniformity type





Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LNSD Series



Refer to our website for product details.

CCS LNSD ▶ Search

For quick access.

You can also use your smartphone or cell phone.

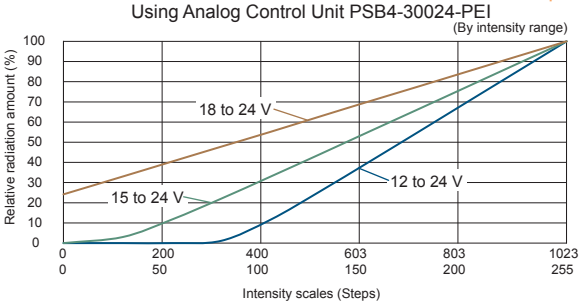
Data (Representative Example)

The graph included is for reference only. Actual values may vary.

LNSD-400SW / LNSD-400SW-HU

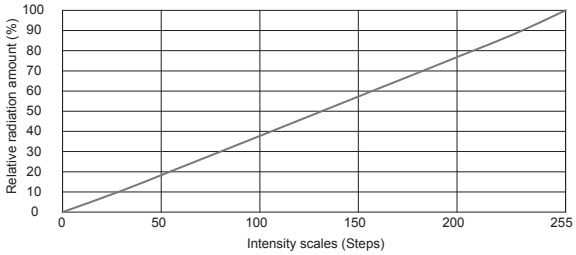
Output characteristics

Using Analog Control Unit PSB4-30024-PEI



Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.

Using Digital Control Unit PD3-10024-8



Actual measurement values using the Digital Control Unit PD3-10024-8.
Results for individual products may vary.
Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.

Lineup

Model name: High luminance type LNSD-□□□□□○○ (Emitting surface length) (LED color)
High uniformity type LNSD-□□□□□○○-HU (Emitting surface length) (LED color)

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
LNSD-100SW/RD/BL	White (SW) Red (RD) Blue (BL)	24 V / 11 W	White: 6,600 K Red: 631 nm Blue: 470 nm			200 g
LNSD-200SW/RD/BL		24 V / 21 W				320 g
LNSD-300SW/RD/BL		24 V / 31 W				460 g
LNSD-400SW/RD/BL		24 V / 41 W			PSB4-30024-PEI	590 g
LNSD-500SW/RD/BL		24 V / 51 W			PD3-10024-8*2	720 g
LNSD-600SW/RD/BL		24 V / 61 W		FCB-EL2		860 g
LNSD-700SW/RD/BL		24 V / 71 W				990 g
LNSD-800SW/RD/BL		24 V / 81 W				1,120 g
LNSD-900SW/RD/BL		24 V / 91 W				1,240 g
LNSD-1000SW/RD/BL		24 V / 101 W				1,370 g
LNSD-1100SW/RD/BL		24 V / 111 W				1,500 g
LNSD-1200SW/RD/BL		24 V / 121 W				1,640 g
LNSD-1300SW/RD/BL		White, Blue: 131 W / Red: 132 W				1,770 g
LNSD-1400SW/RD/BL		White, Blue: 141 W / Red: 142 W				1,910 g
LNSD-1500SW/RD/BL		White, Blue: 151 W / Red: 152 W				2,040 g
LNSD-1600SW/RD/BL		White, Blue: 161 W / Red: 162 W				2,170 g
LNSD-1700SW/RD/BL		White, Blue: 171 W / Red: 172 W				2,300 g
LNSD-1800SW/RD/BL		White, Blue: 181 W / Red: 182 W				2,440 g
LNSD-1900SW/RD/BL		24 V / 192 W				2,570 g
LNSD-2000SW/RD/BL		24 V / 202 W				2,700 g
LNSD-2100SW/RD/BL		24 V / 212 W		FCB-EL2 x 2 *1	PSB4-30024-PEI	2,830 g
LNSD-2200SW/RD/BL		24 V / 222 W				2,960 g
LNSD-2300SW/RD/BL		24 V / 232 W				3,090 g
LNSD-2400SW/RD/BL		24 V / 242 W				3,220 g
LNSD-2500SW/RD/BL		White, Blue: 230 W / Red: 227 W				3,350 g
LNSD-2600SW/RD/BL		White, Blue: 239 W / Red: 236 W				3,480 g
LNSD-2700SW/RD/BL		White, Blue: 248 W / Red: 245 W				3,610 g
LNSD-2800SW/RD/BL		White, Blue: 257 W / Red: 255 W				3,740 g
LNSD-2900SW/RD/BL		White, Blue: 267 W / Red: 264 W				3,870 g
LNSD-3000SW/RD/BL		White, Blue: 276 W / Red: 273 W				4,000 g

High luminance type / High uniformity type (Add "-HU" at the end of the model name.)

Extension Cables ▶ P.236
List of Control Unit Specifications ▶ P.309

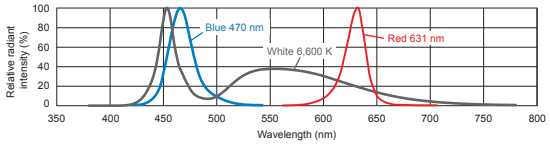
*1 The Light Units with an emitting surface length more than 1,200 mm have two input connectors. To install the Light Unit, use two Extension Cables of the same length. Using the cables of different length may cause uneven emission due to a difference in voltage drop caused by the DC resistance of the cables.
*2 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.

We accept custom orders, such as changes to the LED color (green/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

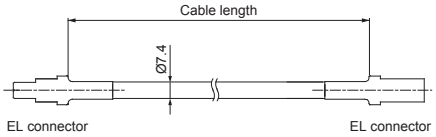
Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Extension Cables

FCB-EL2

Model name	Cable length	Model name	Cable length
FCB-1-EL2	1 m	FCB-5-EL2	5 m
FCB-2-EL2	2 m	FCB-10-EL2	10 m
FCB-3-EL2	3 m	FCB-15-EL2	15 m

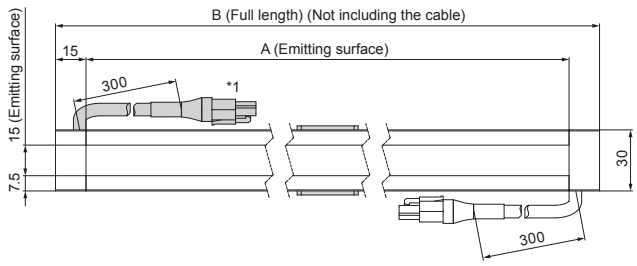
(mm)

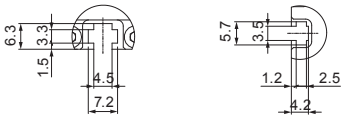


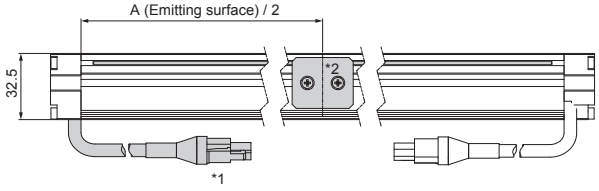
Cable permitted bending radius: 29.6 mm

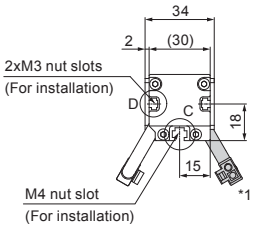
The above cable permitted bending radius is a reference value. Actual value may vary.

Dimensions (mm)









*1 Only the Light Units with an emitting surface length more than 1,200 mm have two connectors.

*2 Only the Light Units with an emitting surface length more than 1,600 mm have reinforcing metal fittings.

	Model name	A (Emitting surface)	B (Full length)
High luminance type / High uniformity type (Add "-HU" at the end of the model name.)	LNSD-100SW/RD/BL	100	130
	LNSD-200SW/RD/BL	200	230
	LNSD-300SW/RD/BL	300	330
	LNSD-400SW/RD/BL	400	430
	LNSD-500SW/RD/BL	500	530
	LNSD-600SW/RD/BL	600	630
	LNSD-700SW/RD/BL	700	730
	LNSD-800SW/RD/BL	800	830
	LNSD-900SW/RD/BL	900	930
	LNSD-1000SW/RD/BL	1,000	1,030
	LNSD-1100SW/RD/BL	1,100	1,130
	LNSD-1200SW/RD/BL	1,200	1,230
	LNSD-1300SW/RD/BL	1,300	1,330
	LNSD-1400SW/RD/BL	1,400	1,430
	LNSD-1500SW/RD/BL	1,500	1,530

	Model name	A (Emitting surface)	B (Full length)
High luminance type / High uniformity type (Add "-HU" at the end of the model name.)	LNSD-1600SW/RD/BL	1,600	1,630
	LNSD-1700SW/RD/BL	1,700	1,730
	LNSD-1800SW/RD/BL	1,800	1,830
	LNSD-1900SW/RD/BL	1,900	1,930
	LNSD-2000SW/RD/BL	2,000	2,030
	LNSD-2100SW/RD/BL	2,100	2,130
	LNSD-2200SW/RD/BL	2,200	2,230
	LNSD-2300SW/RD/BL	2,300	2,330
	LNSD-2400SW/RD/BL	2,400	2,430
	LNSD-2500SW/RD/BL	2,500	2,530
	LNSD-2600SW/RD/BL	2,600	2,630
	LNSD-2700SW/RD/BL	2,700	2,730
	LNSD-2800SW/RD/BL	2,800	2,830
	LNSD-2900SW/RD/BL	2,900	2,930
	LNSD-3000SW/RD/BL	3,000	3,030

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Diffused Lighting

Line Lights
LND2 Series

Refer to our website for product details.
CCS LND2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light from an emitting surface equipped with LEDs in straight lines

LED color
Custom orders accepted

Size
Custom orders accepted





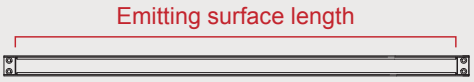
Applications Inspection for damage or dents in metal cylindrical parts, inspection for damage or dents in motor shafts, inspection for foreign material on clear film, etc.

Suitable for All Types of Line Sensor Inspections

This Line Light achieves brightness equivalent to a fluorescent lamp while keeping the price down.

Emitting surface length

You can select from 101 mm, 201 mm, 301 mm, 401 mm, 503 mm, 603 mm, 703 mm, 803 mm, 903 mm, 1003 mm, 1103 mm and 1,203 mm.



For a custom order, we can create an emitting surface with a length with a 100 mm pitch.

LED color

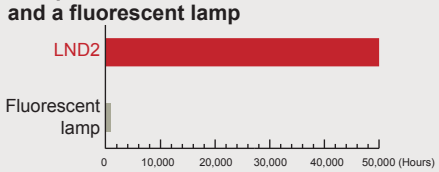
For emitted LED color, we have a lineup consisting of:
Red and White
Select your Light Unit based on the details of your inspections.

For a custom order, we can create LEDs that emit blue, green, IR, or UV.

Also Perfect for Replacing Fluorescent Lamps

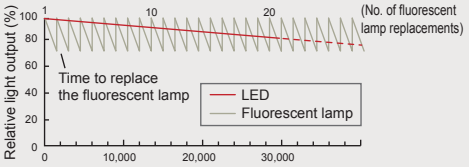
LEDs have a long service life, so the bulbs don't burn out like fluorescent lamps, thus reducing costs for lamp replacement and work hours.

Comparison of service life between the LND2 (red) and a fluorescent lamp



Calculated values with an intensity of 100%, ambient temperature of 25ºC and a light output drop of up to 50%.
Actual values may vary.
Assuming the service life of a fluorescent lamp is 1,500 hours.

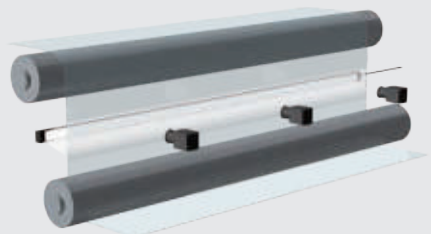
Change in the amount of light from the LEDs and work hours for replacing fluorescent lamps



Imaging comparing the change in LED light and a fluorescent lamp that is replaced every 1,500 hours.

Applications

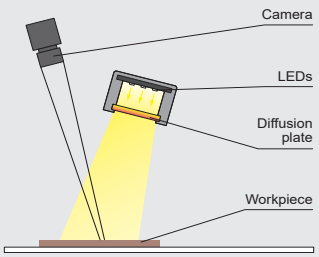
Inspection for foreign material on clear films



Example Configuration

Provides diffused light with a high degree of uniformity by mounting LEDs with high density.

LND2 series



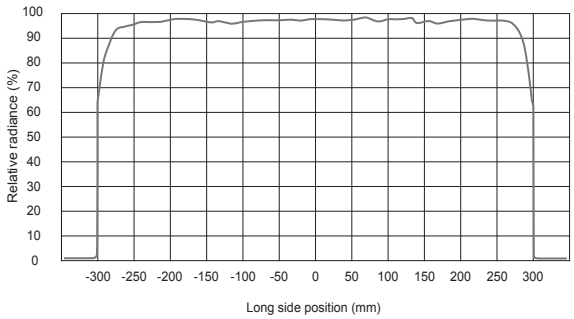
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

LND2-600SW

Relative radiance distribution

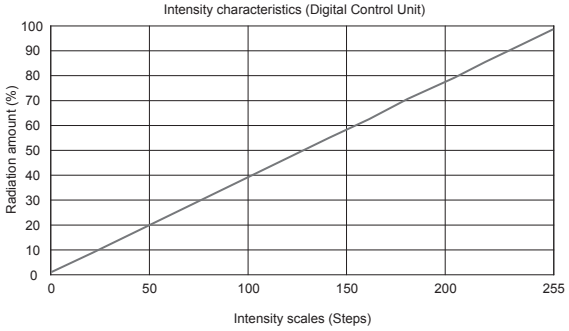


The graph included is for reference only. Actual values may vary.

LND2-300SW

Output characteristics

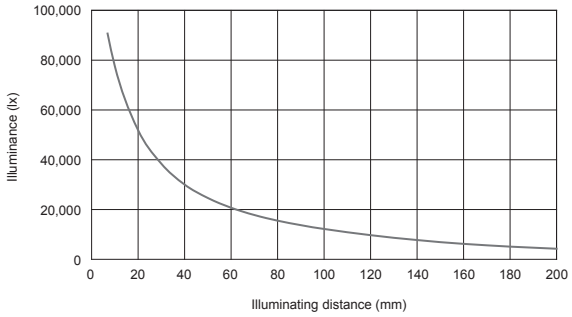
Intensity characteristics (Digital Control Unit)



Actual measurement values using the Digital Control Unit PD3 series.
Results for individual products may vary.

LND2-300SW

Change in illuminance

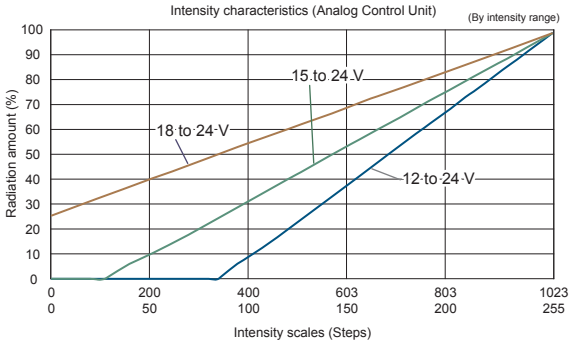


Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

LND2-900SW

Output characteristics

Intensity characteristics (Analog Control Unit)



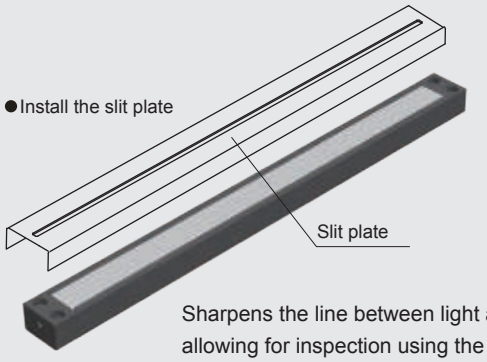
Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Measured in each voltage range because the Analog Control Unit PSB4-30024-PEI has a switching function for the lower limit of output voltage.

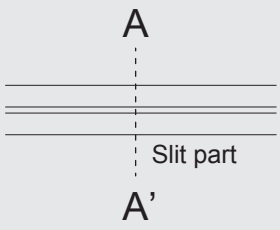
Custom Order

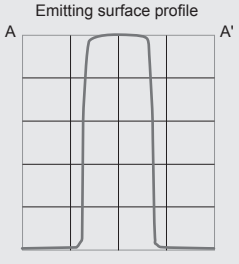
Please contact your CCS sales representative.

E.g.: Slit specifications (Install a slit plate on the emitting surface)

Result: Uses the edge of the emitting surface, effective for inspections for dents and fish eyes where the change in the surface shape is slight.







(Conceptual image)

Sharpens the line between light and dark for the Light Unit, allowing for inspection using the emitting surface's edge.

LND2 Series



Refer to our website for product details.

CCS LND2 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
LND2-100SW	White	24 V / 5.8 W	5,500 K	FCB*3 Straight Cable, FRCB Straight Cable	PD3*2, POD*1	140 g
LND2-200SW		24 V / 12 W				170 g
LND2-300SW		24 V / 18 W				200 g
LND2-400SW		24 V / 24 W				250 g
LND2-500SW		24 V / 29 W				300 g
LND2-600SW		24 V / 35 W				360 g
LND2-700SW		24 V / 41 W		FCB-EL2 Straight Cable	PD3-10024-8*2, POD-22024-4-PEI*1, PSB4-30024-PEI	405 g
LND2-800SW		24 V / 47 W				455 g
LND2-900SW		24 V / 53 W				505 g
LND2-1000SW		24 V / 58 W				560 g
LND2-1100SW		24 V / 64 W				615 g
LND2-1200SW		24 V / 70 W				670 g
LND2-100RD	Red	24 V / 7.6 W	630 nm	FCB*3 Straight Cable, FRCB Straight Cable	PD3*2, POD*1	140 g
LND2-200RD		24 V / 16 W				170 g
LND2-300RD		24 V / 23 W				200 g
LND2-400RD		24 V / 31 W				250 g
LND2-500RD		24 V / 38 W				300 g
LND2-600RD		24 V / 46 W				360 g
LND2-700RD		24 V / 53 W		FCB-EL2 Straight Cable	PD3-10024-8*2, POD-22024-4-PEI*1, PSB4-30024-PEI	405 g
LND2-800RD		24 V / 61 W				455 g
LND2-900RD		24 V / 69 W				505 g
LND2-1000RD		24 V / 76 W				560 g
LND2-1100RD		24 V / 84 W				615 g
LND2-1200RD		24 V / 91 W				670 g

*3 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included.

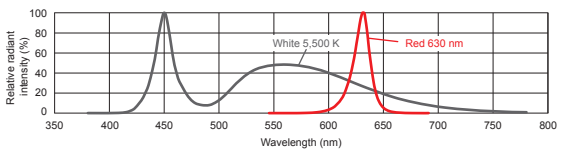
Extension Cables ▶ P.240 List of Control Unit Specifications ▶ P.309

*1 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*2 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (blue/green/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength.
For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Extension Cables

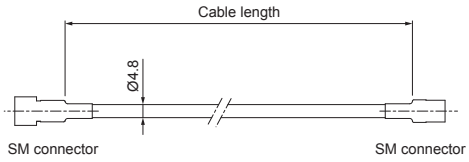
FCB

Model name	Cable length
FCB-1	1 m
FCB-2	2 m
FCB-3	3 m
FCB-5	5 m

FRCB

Model name	Cable length
FRCB-1	1 m
FRCB-2	2 m
FRCB-3	3 m
FRCB-5	5 m

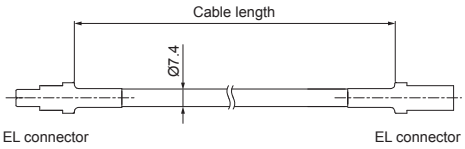
(mm)



Cable permitted bending radius: 28.8 mm

FCB-EL2

Model name	Cable length
FCB-1-EL2	1 m
FCB-2-EL2	2 m
FCB-3-EL2	3 m
FCB-5-EL2	5 m
FCB-10-EL2	10 m
FCB-15-EL2	15 m

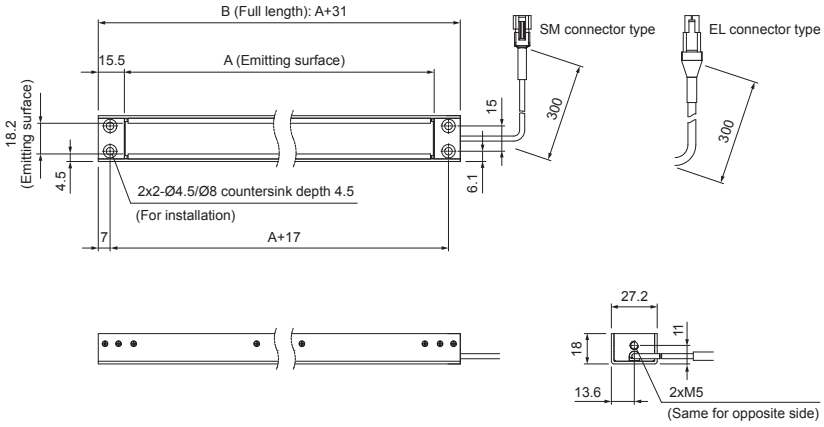


Cable permitted bending radius: 29.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)

	Model name
SM connector type	LND2-100
	LND2-200
	LND2-300
	LND2-400
	LND2-500
	LND2-600
EL connector type	LND2-700
	LND2-800
	LND2-900
	LND2-1000
	LND2-1100
	LND2-1200



	Model name	A (Emitting surface)	B (Full length)		Model name	A (Emitting surface)	B (Full length)
White	LND2-100SW	101	132	Red	LND2-100RD	101	132
	LND2-200SW	201	232		LND2-200RD	201	232
	LND2-300SW	301	332		LND2-300RD	301	332
	LND2-400SW	401	432		LND2-400RD	401	432
	LND2-500SW	503	534		LND2-500RD	503	534
	LND2-600SW	603	634		LND2-600RD	603	634
	LND2-700SW	703	734		LND2-700RD	703	734
	LND2-800SW	803	834		LND2-800RD	803	834
	LND2-900SW	903	934		LND2-900RD	903	934
	LND2-1000SW	1,003	1,034		LND2-1000RD	1,003	1,034
	LND2-1100SW	1,103	1,134		LND2-1100RD	1,103	1,134
	LND2-1200SW	1,203	1,234		LND2-1200RD	1,203	1,234

You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens
Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique-Angled Lighting
Lenses

Diffused Lighting

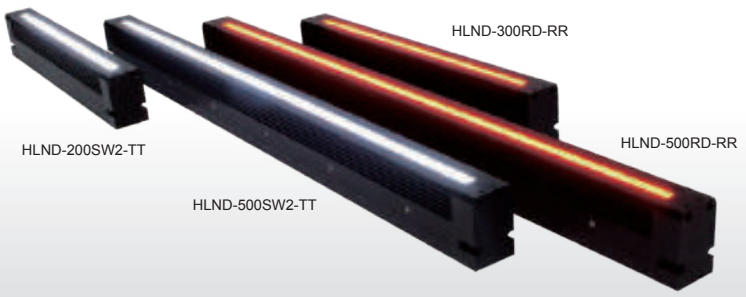
Line Lights
HLND Series

Refer to our website for product details.
CCS HLND ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light from an emitting surface equipped with LEDs in a straight line

LED color
Custom orders accepted
Size
Custom orders accepted





Applications Mixed foreign materials inspection of rice, foreign material inspection of clear film, stain inspection of sheet steel, inspection of surface printing on paper, dimension measuring of sheet steel, etc.

Can Create Up to a Maximum of 2,700 mm

Provides a Light Unit with the optimal length to meet your needs.

Emitting surface length

From 100 mm to 2,700 mm | Can be made in units of 100 mm

LED color

For emitted LED color, we have a lineup consisting of:

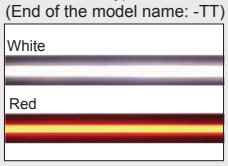
Red and White

Select your Light Unit based on the details of your inspections.

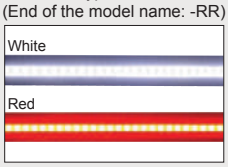
Two types, with different diffusion plates and transmission, are available

You can select from a uniform type perfect as transmission lighting, and a high output type perfect as reflection lighting.

Transmission type
(End of the model name: -TT)



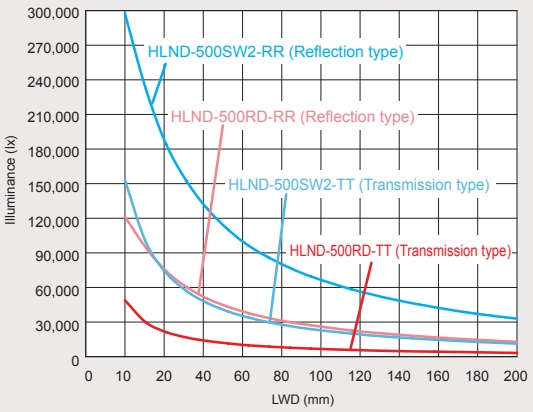
Reflection type
(End of the model name: -RR)



Uses a Unique Illumination Mechanism

We used surface-mounted LEDs and a unique illumination mechanism to achieve a high output Line Light. Two types of diffusion plates to be equipped are available. Select one to match your needs.

Illumination comparison for the HLND series

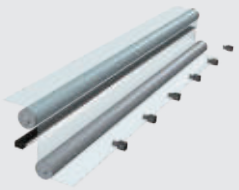


Actual measurement values at 100% intensity in each illuminating distance. Results for individual products may vary.
LWD is the distance from the Light Unit to the workpiece.

The graph included is for reference only. Actual values may vary.

Applications

Inspection for foreign material on clear films (Transmission type)



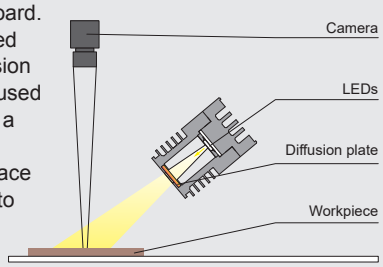
Visual inspection of color sheet steel (Reflection type)



Example Configuration

LEDs are mounted on a flat circuit board. Light is transmitted through the diffusion plate and the diffused light is emitted in a line-shape.
The emitting surface can be made up to 2,700 mm long.

HLND series



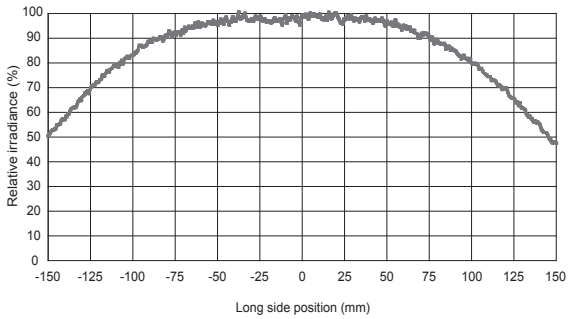
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

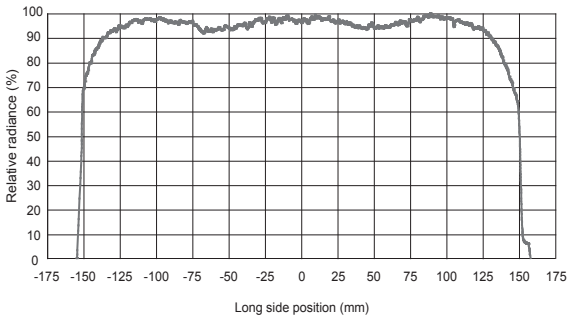
HLND-300SW2-TT (Transmission type)

Relative irradiance distribution



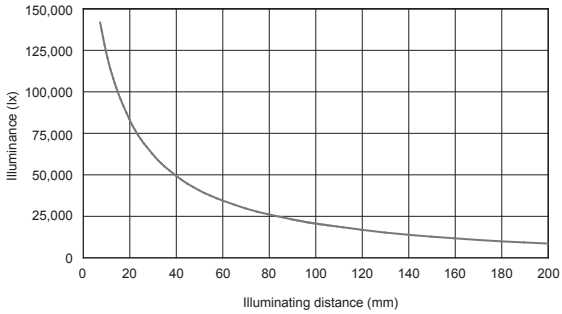
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



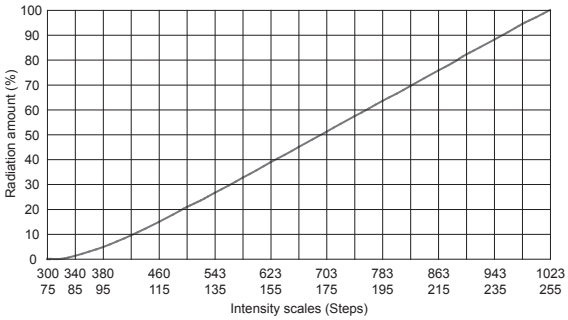
The graph included is for reference only. Actual values may vary.

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

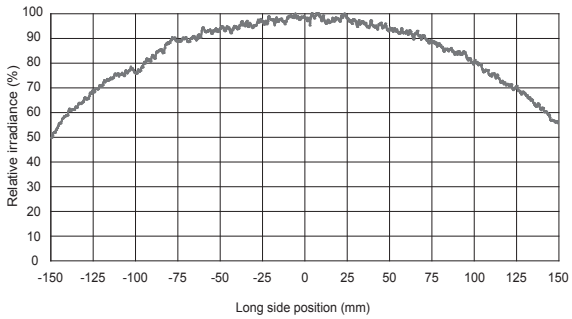
Output characteristics



Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Data obtained when output voltage range is 12 to 24 V.

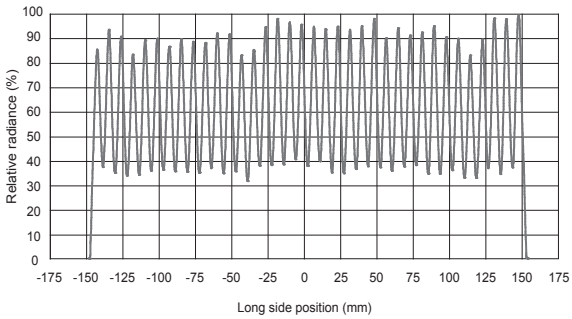
HLND-300SW2-RR (Reflection type)

Relative irradiance distribution



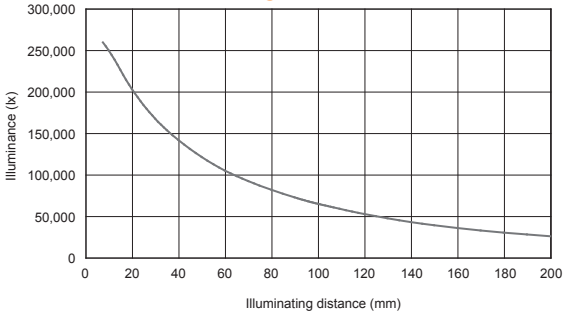
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



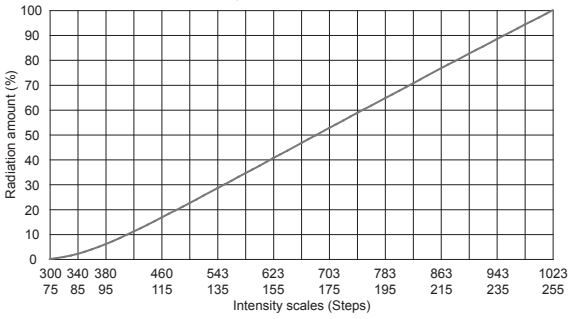
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

Output characteristics



Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Data obtained when output voltage range is 12 to 24 V.

HLND Series



Refer to our website for product details.

CCS HLND ▶ Search

For quick access.

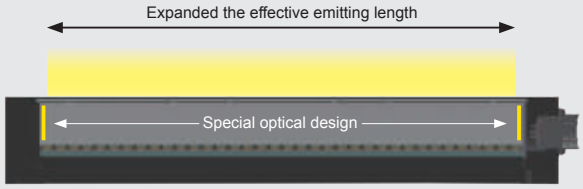
You can also use your smartphone or cell phone.

Custom Order

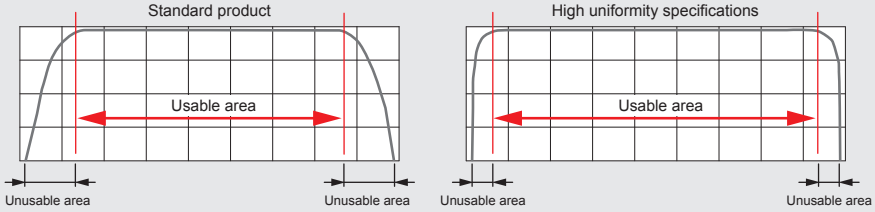
Please contact your CCS sales representative.

E.g.: Usable area expansion (Special optical design on both sides of the housing)

Result: Keeps weakening on both sides of the Light Unit housing to a minimum, expanding the effective emitting length.



● Image of wave length capturing with a line sensor



Light is weakened at both ends, and the effective emitting length for the camera is short.

Weakening at both ends can be reduced, expanding the effective emitting length with respective to the Light Unit emitting length.

Lineup

	Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
Transmission type	HLND-100SW2-TT	White	10 W	6,500 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	520 g
	HLND-200SW2-TT		20 W				840 g
	HLND-300SW2-TT		30 W				1,160 g
	HLND-400SW2-TT		40 W				1,480 g
	HLND-500SW2-TT		50 W				1,800 g
	HLND-600SW2-TT		60 W				2,120 g
	HLND-700SW2-TT		71 W				2,440 g
	HLND-800SW2-TT		81 W				2,760 g
	HLND-900SW2-TT		91 W				3,080 g
	HLND-1000SW2-TT		89 W				3,400 g
	HLND-1100SW2-TT		98 W				3,720 g
	HLND-1200SW2-TT		107 W				4,040 g
	HLND-1300SW2-TT		115 W				4,360 g
	HLND-1400SW2-TT		124 W				4,680 g
	HLND-1500SW2-TT		133 W				5,000 g
	HLND-1600SW2-TT		142 W				5,320 g
	HLND-1700SW2-TT		151 W				5,640 g
	HLND-1800SW2-TT		160 W				5,960 g
	HLND-1900SW2-TT		169 W				6,280 g
	HLND-2000SW2-TT		178 W				6,600 g
	HLND-2100SW2-TT		186 W				6,920 g
	HLND-2200SW2-TT		195 W				7,240 g
	HLND-2300SW2-TT		204 W				7,560 g
	HLND-2400SW2-TT		213 W				7,880 g
	HLND-2500SW2-TT		222 W				8,200 g
	HLND-2600SW2-TT		231 W				8,520 g
	HLND-2700SW2-TT		240 W				8,840 g

Extension Cables ▶ P.246

PSB4 Series Product Page ▶ P.351

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

Various technical documents available.

PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Lineup

	Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
Transmission type	HLND-100RD-TT	Red	4.8 W	624 nm	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	520 g
	HLND-200RD-TT		9.6 W				840 g
	HLND-300RD-TT		14 W				1,160 g
	HLND-400RD-TT		19 W				1,480 g
	HLND-500RD-TT		24 W				1,800 g
	HLND-600RD-TT		29 W				2,120 g
	HLND-700RD-TT		34 W				2,440 g
	HLND-800RD-TT		38 W				2,760 g
	HLND-900RD-TT		43 W				3,080 g
	HLND-1000RD-TT		48 W				3,400 g
	HLND-1100RD-TT		53 W				3,720 g
	HLND-1200RD-TT		58 W				4,040 g
	HLND-1300RD-TT		62 W				4,360 g
	HLND-1400RD-TT		67 W				4,680 g
	HLND-1500RD-TT		72 W				5,000 g
	HLND-1600RD-TT		77 W				5,320 g
	HLND-1700RD-TT		82 W				5,640 g
	HLND-1800RD-TT		86 W				5,960 g
	HLND-1900RD-TT		91 W				6,280 g
	HLND-2000RD-TT		96 W				6,600 g
	HLND-2100RD-TT		101 W				6,920 g
	HLND-2200RD-TT		106 W				7,240 g
	HLND-2300RD-TT		110 W				7,560 g
	HLND-2400RD-TT		115 W				7,880 g
	HLND-2500RD-TT		120 W				8,200 g
	HLND-2600RD-TT		125 W				8,520 g
	HLND-2700RD-TT		130 W				8,840 g
Reflection type	HLND-100SW2-RR	White	10 W	6,500 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	520 g
	HLND-200SW2-RR		20 W				840 g
	HLND-300SW2-RR		30 W				1,160 g
	HLND-400SW2-RR		40 W				1,480 g
	HLND-500SW2-RR		50 W				1,800 g
	HLND-600SW2-RR		60 W				2,120 g
	HLND-700SW2-RR		71 W				2,440 g
	HLND-800SW2-RR		81 W				2,760 g
	HLND-900SW2-RR		91 W				3,080 g
	HLND-1000SW2-RR		89 W				3,400 g
	HLND-1100SW2-RR		98 W				3,720 g
	HLND-1200SW2-RR		107 W				4,040 g
	HLND-1300SW2-RR		115 W				4,360 g
	HLND-1400SW2-RR		124 W				4,680 g
	HLND-1500SW2-RR		133 W				5,000 g
	HLND-1600SW2-RR		142 W				5,320 g
	HLND-1700SW2-RR		151 W				5,640 g
	HLND-1800SW2-RR		160 W				5,960 g
	HLND-1900SW2-RR		169 W				6,280 g
	HLND-2000SW2-RR		178 W				6,600 g
	HLND-2100SW2-RR		186 W				6,920 g
	HLND-2200SW2-RR		195 W				7,240 g
	HLND-2300SW2-RR		204 W				7,560 g
	HLND-2400SW2-RR		213 W				7,880 g
	HLND-2500SW2-RR		222 W				8,200 g
	HLND-2600SW2-RR		231 W				8,520 g
	HLND-2700SW2-RR		240 W				8,840 g

Extension Cables ▶ P.246 | PSB4 Series Product Page ▶ P.351

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products
Inquire on our website here.
https://www.ccs-grp.com/contact/

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

HLND Series



Refer to our website for product details.

CCS HLND ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

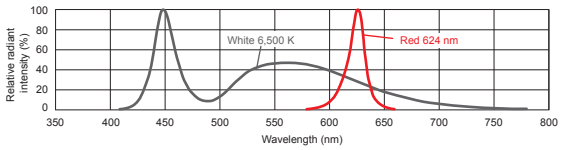
	Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Extension cables	Recommended Control Units	Weight
Reflection type	HLND-100RD-RR	Red	4.8 W	624 nm	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	520 g
	HLND-200RD-RR		9.6 W				840 g
	HLND-300RD-RR		14 W				1,160 g
	HLND-400RD-RR		19 W				1,480 g
	HLND-500RD-RR		24 W				1,800 g
	HLND-600RD-RR		29 W				2,120 g
	HLND-700RD-RR		34 W				2,440 g
	HLND-800RD-RR		38 W				2,760 g
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	HLND-1600RD-RR		77 W				5,320 g
	HLND-1700RD-RR		82 W				5,640 g
	HLND-1800RD-RR		86 W				5,960 g
	HLND-1900RD-RR		91 W				6,280 g
	HLND-2000RD-RR		96 W				6,600 g
	HLND-2100RD-RR		101 W				6,920 g
	HLND-2200RD-RR		106 W				7,240 g
	HLND-2300RD-RR		110 W				7,560 g
	HLND-2400RD-RR		115 W				7,880 g
	HLND-2500RD-RR		120 W				8,200 g
	HLND-2600RD-RR		125 W				8,520 g
	HLND-2700RD-RR		130 W				8,840 g

Extension Cables ▶ P.246
PSB4 Series Product Page ▶ P.351

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



CCS offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.355.

Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

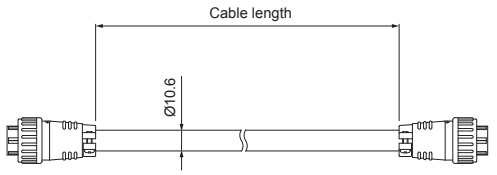
Register to use them.

Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, PSB4-30024-PEI.

FCB-1.25SQ-ME7

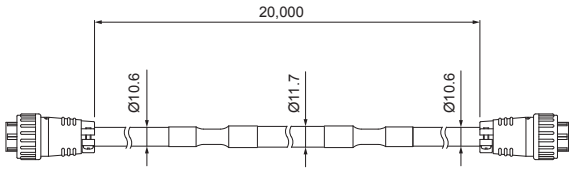
Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

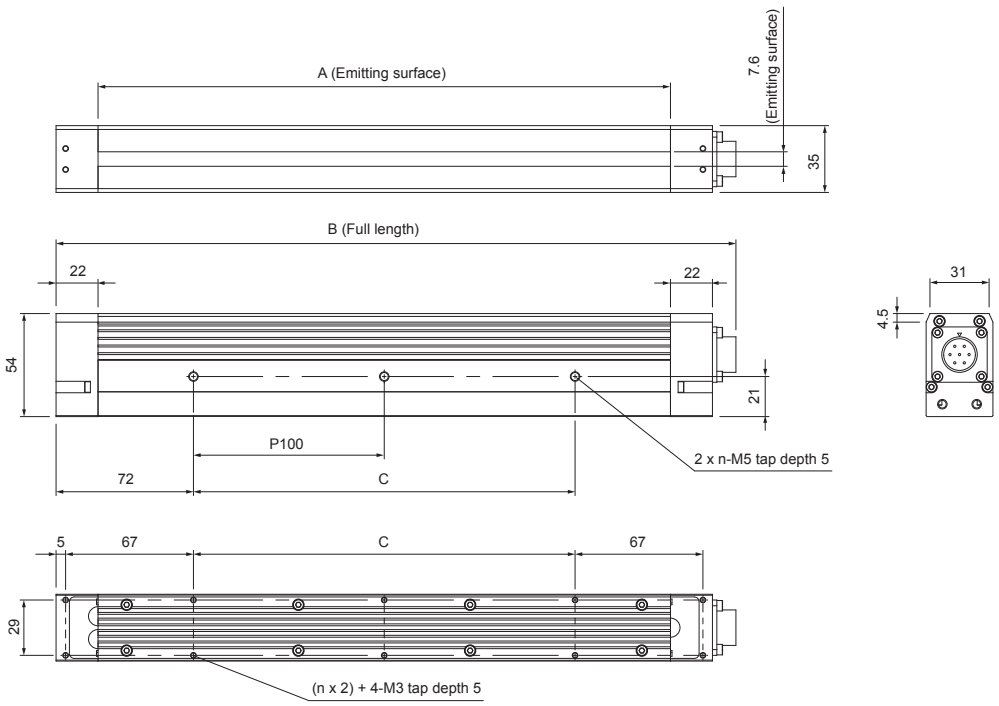
Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



Cable permitted bending radius: 63.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



	Model name (Common for all colors)	A (Emitting surface)	B (Full length)	C	n
Common for the transmission / reflection type	HLND-100SW/RD	100	156.3	-	1
	HLND-200SW/RD	200	256.3	100	2
	HLND-300SW/RD	300	356.3	200	3
	HLND-400SW/RD	400	456.3	300	4
	HLND-500SW/RD	500	556.3	400	5
	HLND-600SW/RD	600	656.3	500	6
	HLND-700SW/RD	700	756.3	600	7
	HLND-800SW/RD	800	856.3	700	8
	HLND-900SW/RD	900	956.3	800	9
	HLND-1000SW/RD	1,000	1,056.3	900	10
	HLND-1100SW/RD	1,100	1,156.3	1,000	11
	HLND-1200SW/RD	1,200	1,256.3	1,100	12
	HLND-1300SW/RD	1,300	1,356.3	1,200	13
	HLND-1400SW/RD	1,400	1,456.3	1,300	14

	Model name (Common for all colors)	A (Emitting surface)	B (Full length)	C	n
Common for the transmission / reflection type	HLND-1500SW/RD	1,500	1,556.3	1,400	15
	HLND-1600SW/RD	1,600	1,656.3	1,500	16
	HLND-1700SW/RD	1,700	1,756.3	1,600	17
	HLND-1800SW/RD	1,800	1,856.3	1,700	18
	HLND-1900SW/RD	1,900	1,956.3	1,800	19
	HLND-2000SW/RD	2,000	2,056.3	1,900	20
	HLND-2100SW/RD	2,100	2,156.3	2,000	21
	HLND-2200SW/RD	2,200	2,256.3	2,100	22
	HLND-2300SW/RD	2,300	2,356.3	2,200	23
	HLND-2400SW/RD	2,400	2,456.3	2,300	24
	HLND-2500SW/RD	2,500	2,556.3	2,400	25
	HLND-2600SW/RD	2,600	2,656.3	2,500	26
	HLND-2700SW/RD	2,700	2,756.3	2,600	27

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
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Spot Lighting, Etc.
LNLP
LNSP2
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Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Diffused Lighting

Line Lights

LT Series

Refer to our website for product details.

CCS LT ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Provides diffused light evenly using an original optical design

LED color
Custom orders accepted

Size
Custom orders accepted



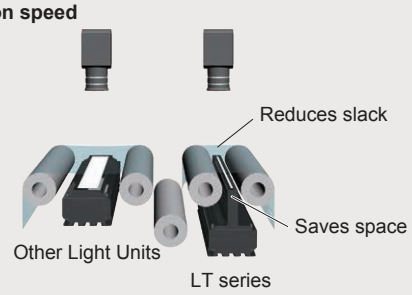


LT-300SW

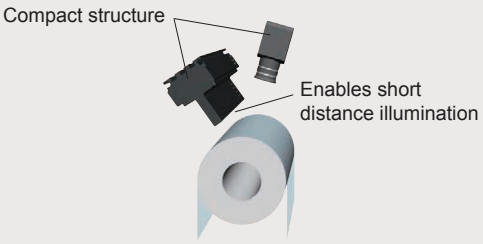
Applications Fish eye inspection on clear film, scratch inspection on film sheets, inspection for cracks or damage on wafers, visual inspection of metal foil sheets, shrinkage inspection of resin, etc.

Provides Optimal Imaging with Its Unique Illuminating Mechanism

By reducing the space between rolls, you can improve inspection speed



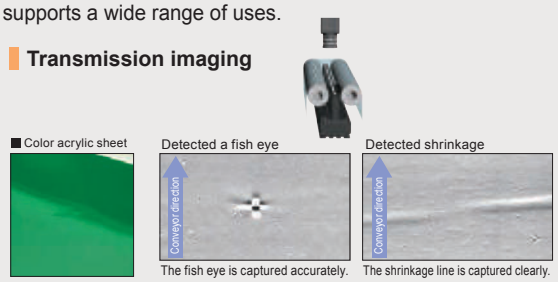
Allows for inspections where the light is installed at a narrow angle with the camera



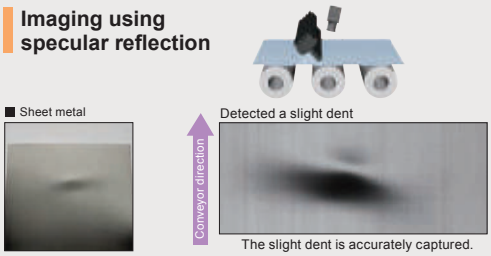
Achieves Both High Uniformity and High Brightness

We achieved both high uniformity and high brightness through our unique optical system. It can perform highly-accurate inspections depending on the scan rate, and supports a wide range of uses.

Transmission imaging



Imaging using specular reflection



Applications

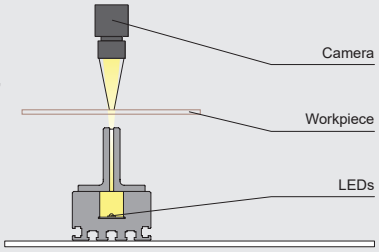
Inspection for fish eyes, scratches, and foreign materials on clear films



Example Configuration

By employing a mechanism where the emitting surface sticks out from the main unit, it's possible to place the tip close to the workpiece, even in a narrow space.

LT series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

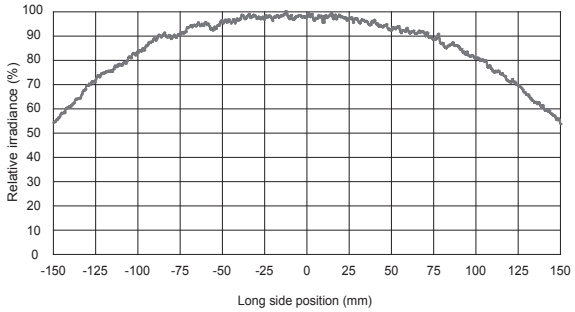
Register to use them.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

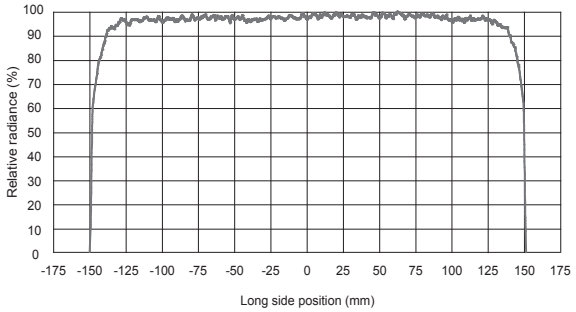
LT-300SW

Relative irradiance distribution



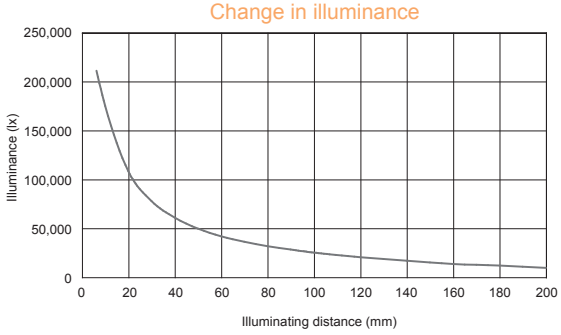
Actual measurement values at 100% intensity in 100 mm illuminating distance.
Results for individual products may vary.

Relative radiance distribution



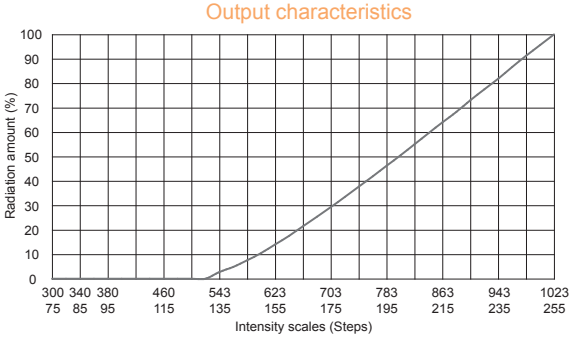
The graph included is for reference only. Actual values may vary.

Change in illuminance



Actual measurement values at 100% intensity in each illuminating distance.
Results for individual products may vary.

Output characteristics



Actual measurement values using the Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Data obtained when output voltage range is 12 to 24 V.

Custom Order

Please contact your CCS sales representative.

E.g.: Widened emitting surface (Changed the standard product's 2.8 mm to 9.8 mm)

Result: Made it easier to align the line sensor camera axis and the illuminated range when using long Line Lights over 1,000 mm.

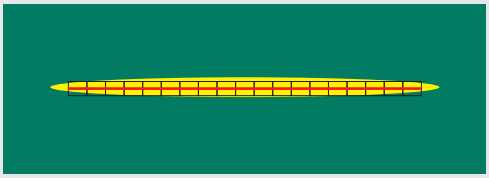


Standard product
(Emitting width of 2.8 mm)



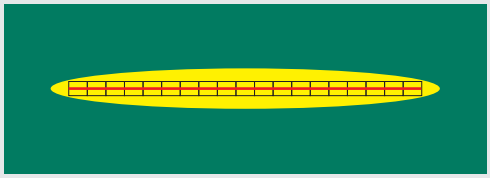
Wide type
(Emitting width of 9.8 mm)

Position image of the camera axis and the illuminated range



Camera axis ——— Illuminated range ⬭

Position image of the camera axis and the illuminated range



Camera axis ——— Illuminated range ⬭

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique-Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LT Series



Refer to our website for product details.

CCS LT ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

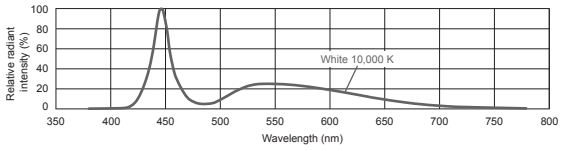
Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
LT-100SW	White	15 W	10,000 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	500 g
LT-200SW		29 W				1,000 g
LT-300SW		43 W				1,500 g
LT-400SW		57 W				2,000 g
LT-500SW		71 W				2,500 g
LT-600SW		85 W				3,000 g
LT-700SW		99 W				3,500 g
LT-800SW		113 W				4,000 g
LT-900SW		128 W				4,500 g
LT-1000SW		142 W				5,000 g
LT-1100SW		156 W				5,500 g
LT-1200SW		170 W				6,000 g
LT-1300SW		184 W				6,500 g
LT-1400SW		198 W				7,000 g
LT-1500SW		212 W				7,500 g
LT-1600SW		226 W				8,000 g
LT-1700SW		240 W				8,500 g
LT-1800SW		255 W				9,000 g

Extension Cables ▶ P.250 PSB4 Series Product Page ▶ P.351

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

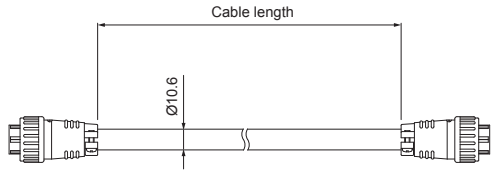
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, PSB4-30024-PEI.

FCB-1.25SQ-ME7

Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g

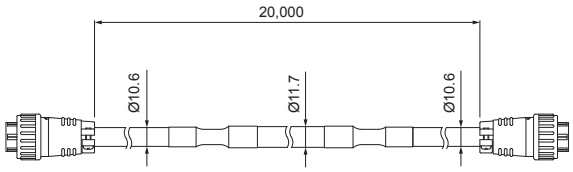
(mm)



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

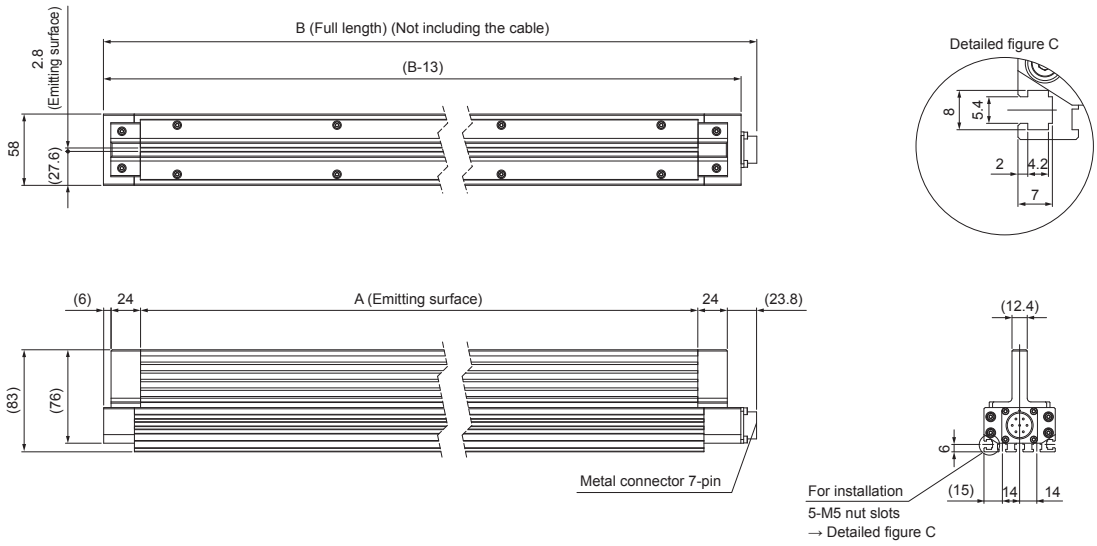
Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



Cable permitted bending radius: 63.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



Model name	A (Emitting surface)	B (Full length)	Model name	A (Emitting surface)	B (Full length)
LT-100SW	100	178	LT-1000SW	1,000	1,078
LT-200SW	200	278	LT-1100SW	1,100	1,178
LT-300SW	300	378	LT-1200SW	1,200	1,278
LT-400SW	400	478	LT-1300SW	1,300	1,378
LT-500SW	500	578	LT-1400SW	1,400	1,478
LT-600SW	600	678	LT-1500SW	1,500	1,578
LT-700SW	700	778	LT-1600SW	1,600	1,678
LT-800SW	800	878	LT-1700SW	1,700	1,778
LT-900SW	900	978	LT-1800SW	1,800	1,878

Diffused Lighting

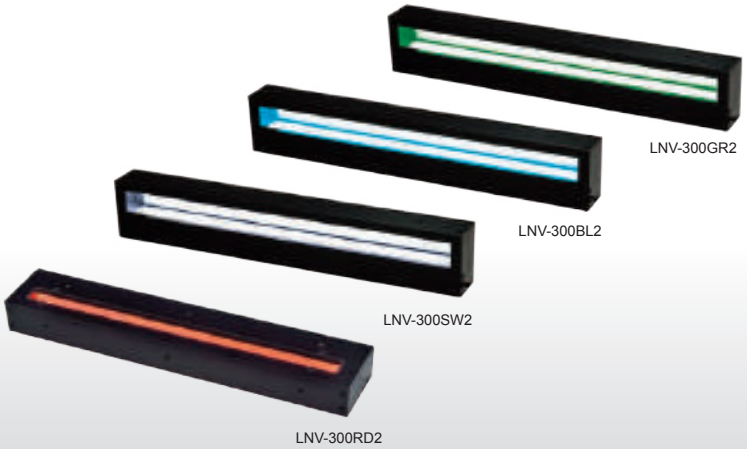
Line Coaxial Lights
LNV Series

Refer to our website for product details.
CCS LNV ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Provides diffused light from the same axis as the camera

LED color
Custom orders accepted
Size
Custom orders accepted



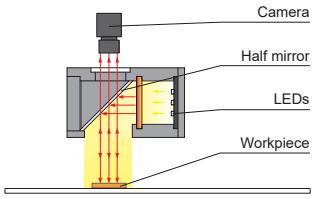


Applications Inspection for gaps between electronic parts on circuit boards, inspection for faults in lead frames, inspection for stains attached to sheet metal, etc.

Features

Line coaxial illumination.
Allows for imaging with a line sensor camera.

Example configuration (LNV-300 series)



Applications

Inspection for dents on metal bars





We accept custom orders.
Please feel free to inquire.

- Shape modifications
- Brightness increases
- Changes in wavelength, etc.

Lineup

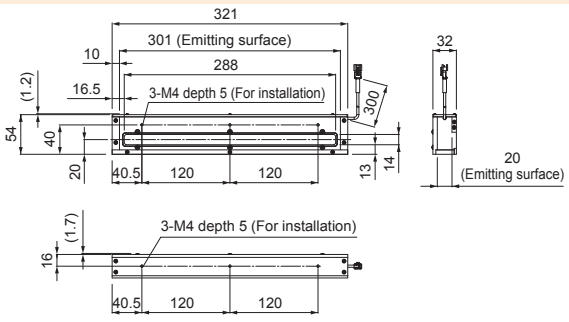
Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LNV-300RD2	Red	24 V / 19 W	630 nm	–	FCB*4 Straight Cable, FCB-W*5 2-branch Cable, FCB-F 4-branch Cable, FRCB Robot Cable	PD3*1, CC-ST-1024*3, PSB, POD*2 *3 Can only use green.	550 g
LNV-300SW2	White	24 V / 13 W	5,500 K				
LNV-300BL2	Blue	24 V / 13 W	470 nm				
LNV-300GR2	Green	24 V / 9.9 W	525 nm				

LED Properties: Spectral Distribution ▶ P.384 | Extension Cables ▶ P.365 | Control Unit Selection Guide ▶ P.307 | List of Control Unit Specifications ▶ P.309

*1 Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.
*2 For information on the combination of Light Units and POD-series Control Unit, please refer to our website. https://www.ccs-grp.com/lnk/qr/pod
*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL9" are not included. *5 The cables with a model name that ends with "-EL2" are not included.

Dimensions (mm)

LNV-300RD2/SW2/BL2/GR2

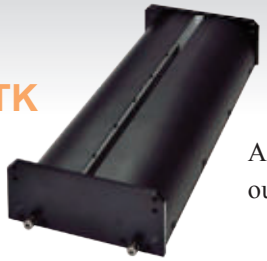


You can change the connectors of the LightUnit cable. Choose between M12 connectors and flying leads. Refer to P.19 for details.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Line High Power Dome Light

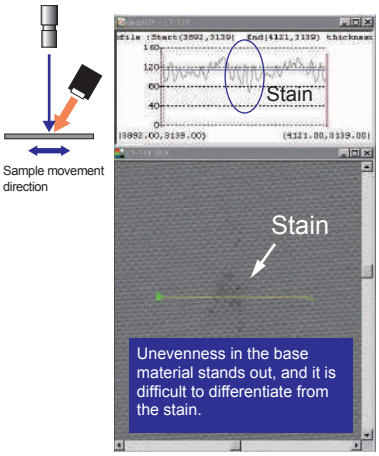
HLDN-600BLTN55ARELTK



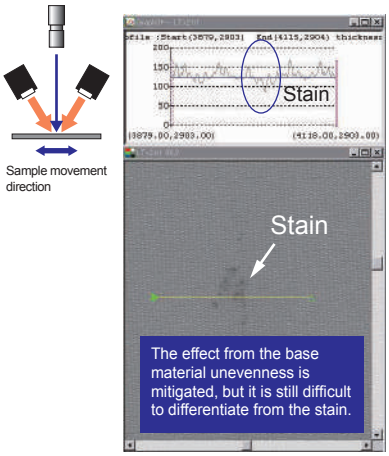
Adding an air joint made it possible to increase output using compressed air cooling.

Example 1: Detecting Stains on Fibers

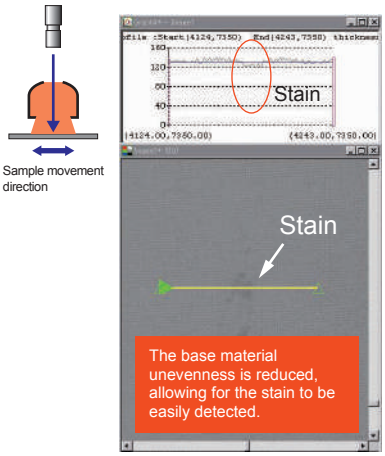
■ Diffused reflection on one side



■ Diffused reflection on both sides

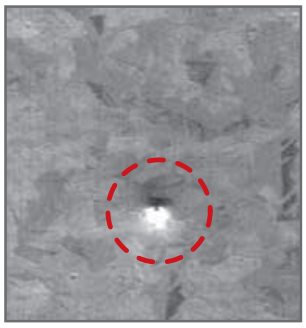


■ Line High Power Dome Light



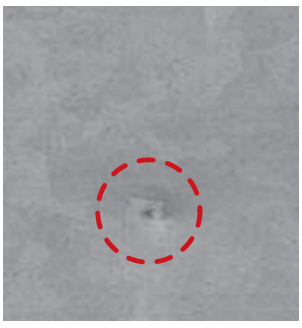
Example 2: Imaging the Appearance of Galvanized Sheet Steel

■ Line Sensor Light



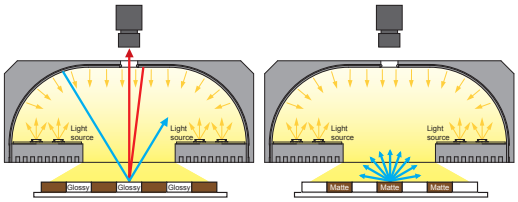
It's difficult to differentiate between minute faults and surface differences.

■ Line High Power Dome Light



The diffused light from the Dome Light negates differences in surface tone, making it possible to notice faults.

Working of exterior imaging of galvanized sheet steel using a Line High Power Dome Light



Glossy section

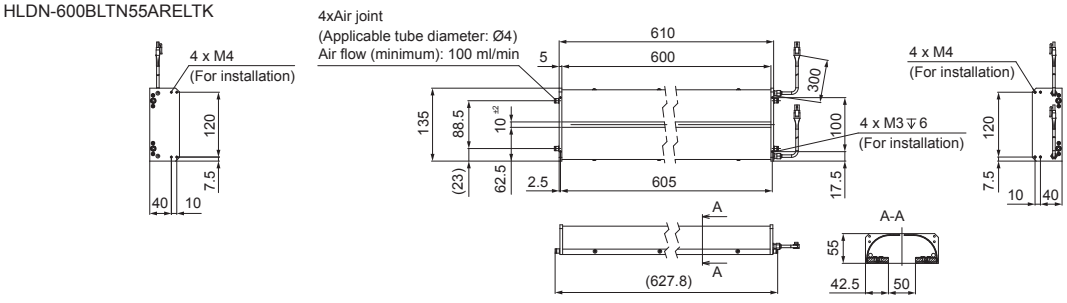
Only the light emitted from near the roof of the reflective panel is reflected on the glossy section of the inspected item with semi-specular reflection and is captured by the camera.

Matte section

The matte section has a lower reflection rate compared to the glossy section. The light emitted from the whole reflective panel is diffused on the matte section and is captured by the camera.

Dimensions (mm)

HLDN-600BLTN55ARELTK



LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-3W
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Oblique Angled Lighting

Line Lights
LNDG Series

Refer to our website for product details.

CCS LNDG ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Achieves angled illumination using an original optical design
Bumps and subtle vertical wrinkles can be detected

LED color
Custom orders accepted

Size
Custom orders accepted





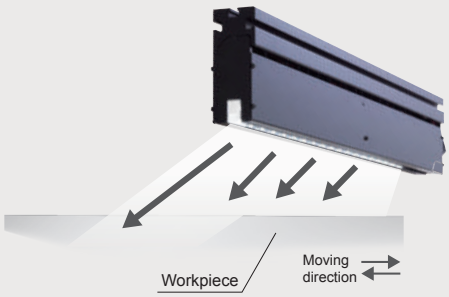
LNDG-500SW-LA

Applications Inspection for vertical wrinkles in paper, vertical striations in cardboard, vertical wrinkles and folding in non-woven fabric, wrinkles in bonded sheets, etc

Achieves Angled Illumination

The LNDG series enables detection of bumps and subtle vertical wrinkles, which were difficult to detect with conventional line sensor lights, in paper or non-woven fabric that disperses light.

Conceptual image of angled illumination



Other features

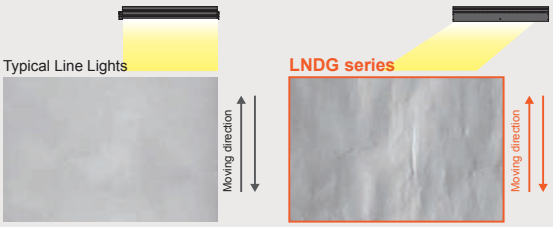
1) Fan-less (Natural air cooling)
2) Error detection support
3) Emitting surface 300 to 3,000 mm long (can be made in units of 100 mm)

Error detection is a function included with the PSCC series, the recommended Control Units.

Bumps and Subtle Vertical Wrinkles Can Be Detected

Imaging samples

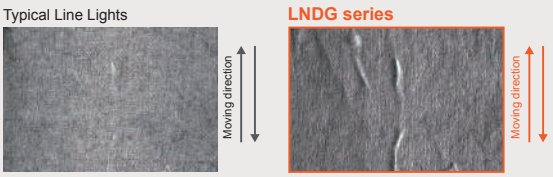
Inspections for vertical wrinkles in paper labels



Vertical wrinkles and bumps cannot be detected.

Vertical wrinkles and bumps and are clearly visible.

Inspecting non-woven fabric for defects



Fiber fraying and kinks cannot be detected.

Fiber fraying and kinks are clearly visible.

Applications

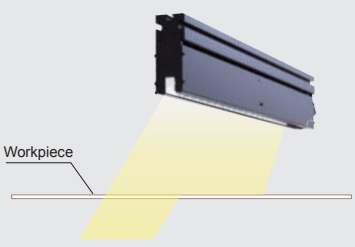
Inspection for vertical wrinkles in paper labels



Example Configuration

Achieves angled illumination using an original optical design. This is a line sensor light perfect for detecting moving-direction bumps and subtle vertical wrinkles.

LNDG series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

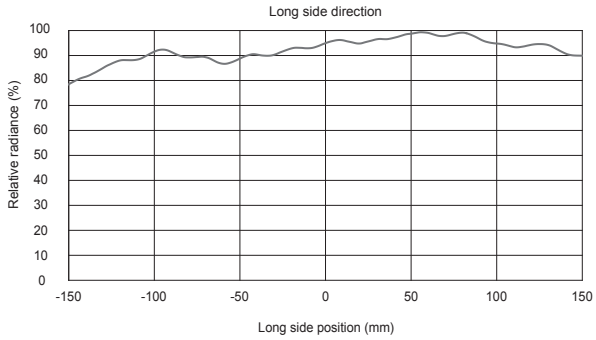
Register to use them.

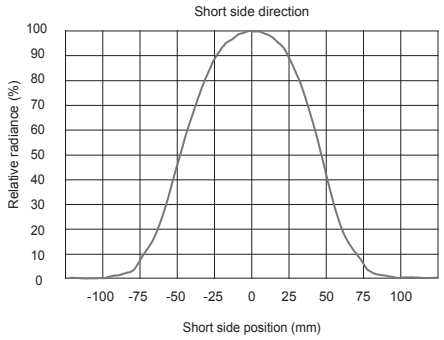
Data (Representative Example)

The graph included is for reference only. Actual values may vary.

LNDG-500SW-LA

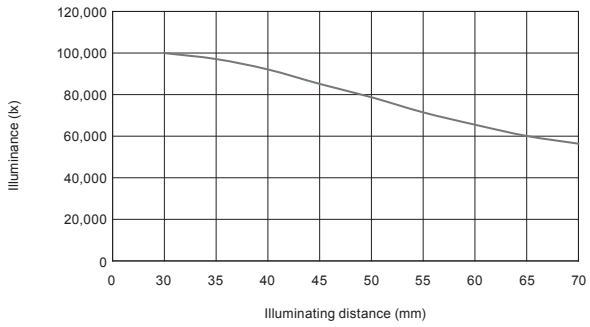
Relative radiance distribution





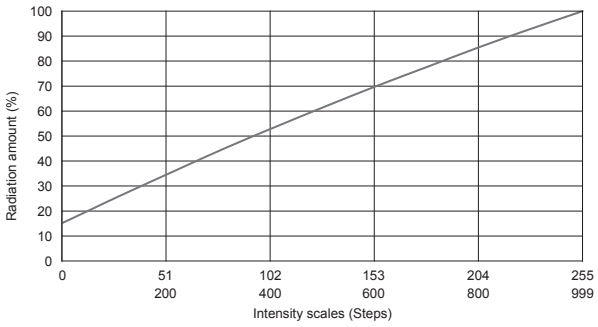
The graph included is for reference only. Actual values may vary.

Change in illuminance



Actual measurement values at 100% intensity, in the center part of emission in each illuminating distance.
Results for individual products may vary.

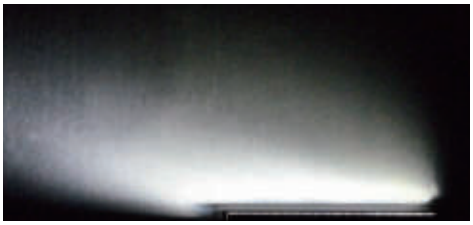
Graph of the correlation between intensity and output



Actual measurement values using the Analog Control Unit PSCC-30048(A).
Results for individual products may vary.

Characteristic of the illumination distribution

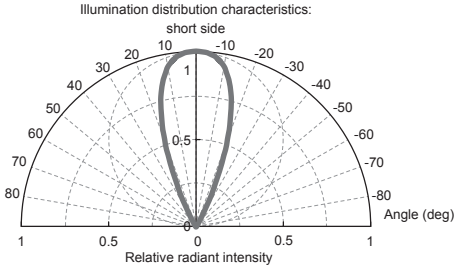
Measuring direction: long side



Measuring direction: short side



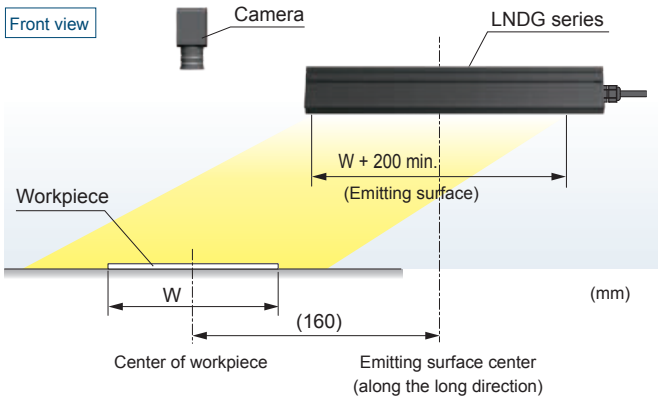
Illumination distribution characteristics:

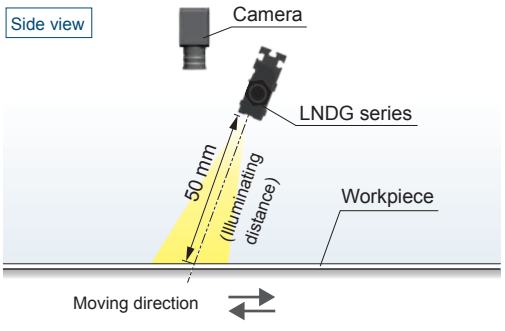


These graphs are for reference only. Actual values may vary.

Select a Light Unit That Is Longer Than the Width of the Workpiece.

The LNDG-series Light Unit emits light at an angle to enable detecting "vertical wrinkles and bumps." When you select a Light Unit, select one that is at least 200 mm longer than the width of the workpiece to be inspected. We recommend a illuminating distance of 50 mm to obtain sufficient illumination.





The above illustration is an example of typical installation.
Consider the application environment for actual applications.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-3W
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
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LN/LN-HK
Convergent Lighting
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LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNDG Series



Refer to our website for product details.

CCS LNDG ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Lineup

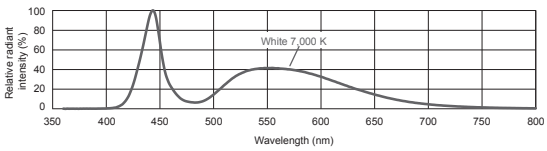
Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
LNDG-300SW-LA	White	39 W	7,000 K			1,600 g
LNDG-400SW-LA		52 W				2,000 g
LNDG-500SW-LA		65 W				2,400 g
LNDG-600SW-LA		78 W				2,800 g
LNDG-700SW-LA		91 W				3,200 g
LNDG-800SW-LA		104 W				3,600 g
LNDG-900SW-LA		117 W				4,000 g
LNDG-1000SW-LA		130 W		QCBM	PSCC-30048(A)	4,400 g
LNDG-1100SW-LA		143 W		QCB	PSCC-60048(A)	4,800 g
LNDG-1200SW-LA		156 W				5,200 g
LNDG-1300SW-LA		169 W				5,500 g
LNDG-1400SW-LA		182 W				5,900 g
LNDG-1500SW-LA		195 W				6,300 g
LNDG-1600SW-LA		208 W				6,700 g
LNDG-1700SW-LA		221 W				7,100 g
LNDG-1800SW-LA		234 W				7,500 g
LNDG-1900SW-LA		247 W				7,900 g
LNDG-2000SW-LA		260 W				8,300 g
LNDG-2100SW-LA		273 W				8,700 g
LNDG-2200SW-LA		286 W				9,100 g
LNDG-2300SW-LA		299 W				9,500 g
LNDG-2400SW-LA		312 W				9,900 g
LNDG-2500SW-LA		325 W		QCB	PSCC-60048(A)	10,300 g
LNDG-2600SW-LA		338 W				10,700 g
LNDG-2700SW-LA		351 W				11,100 g
LNDG-2800SW-LA		364 W				11,500 g
LNDG-2900SW-LA		377 W				11,900 g
LNDG-3000SW-LA		390 W				12,300 g

Extension Cables ▶ P.256 PSCC Series Product Page ▶ P.349

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.). Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

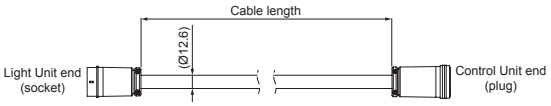
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, the PSCC series.
Make sure to connect the appropriate extension cables to the Control Unit.

(mm)

QCBM

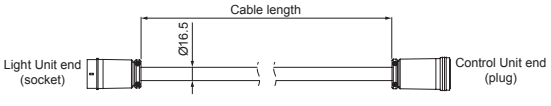
Model name	Cable length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	



Cable permitted bending radius: 75.6 mm

QCB

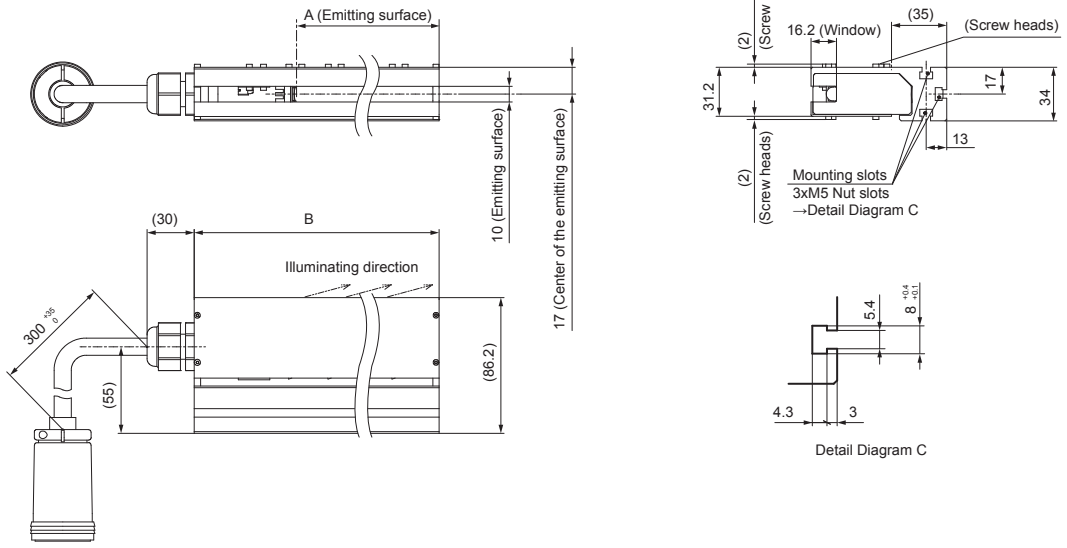
Model name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



Cable permitted bending radius: 99 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



Model name	A (Emitting surface)	B (Full length)	Model name	A (Emitting surface)	B (Full length)
LNDG-300SW-LA	300	365	LNDG-1700SW-LA	1,700	1,765
LNDG-400SW-LA	400	465	LNDG-1800SW-LA	1,800	1,865
LNDG-500SW-LA	500	565	LNDG-1900SW-LA	1,900	1,965
LNDG-600SW-LA	600	665	LNDG-2000SW-LA	2,000	2,065
LNDG-700SW-LA	700	765	LNDG-2100SW-LA	2,100	2,165
LNDG-800SW-LA	800	865	LNDG-2200SW-LA	2,200	2,265
LNDG-900SW-LA	900	965	LNDG-2300SW-LA	2,300	2,365
LNDG-1000SW-LA	1,000	1,065	LNDG-2400SW-LA	2,400	2,465
LNDG-1100SW-LA	1,100	1,165	LNDG-2500SW-LA	2,500	2,565
LNDG-1200SW-LA	1,200	1,265	LNDG-2600SW-LA	2,600	2,665
LNDG-1300SW-LA	1,300	1,365	LNDG-2700SW-LA	2,700	2,765
LNDG-1400SW-LA	1,400	1,465	LNDG-2800SW-LA	2,800	2,865
LNDG-1500SW-LA	1,500	1,565	LNDG-2900SW-LA	2,900	2,965
LNDG-1600SW-LA	1,600	1,665	LNDG-3000SW-LA	3,000	3,065

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-3W, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Oblique Angled Lighting

Line Lights
LNIS2 Series

Refer to our website for product details.
CCS LNIS2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Achieves bi-directional angled illumination using an original optical design

LED color
Custom orders accepted
Size
Custom orders accepted





LNIS2-300SW

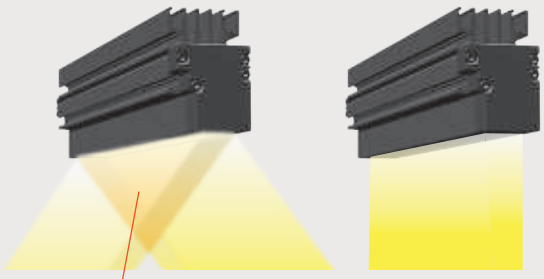
Applications Streak inspection of sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

Achieves Bi-Directional Angled Illumination

The LNIS2 series is a completely new concept product that was developed to detect "moving-direction scratches," which were difficult to detect with conventional line sensor lights.

Difference between bi-directional angled illumination and conventional illumination

Cross angled illumination | Conventional illumination



Recommended illuminating range

Other features

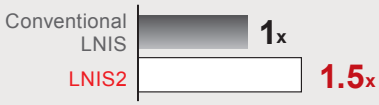
1) Fan-less (Natural air cooling)
2) Compact design
3) Emitting surface 100 to 1,000 mm long (can be made in units of 100 mm)

Brightness Up to 1.5x

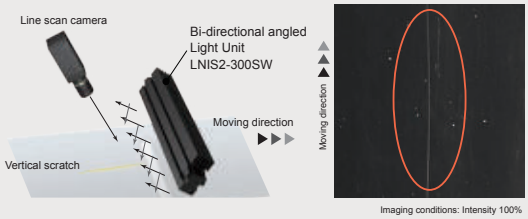
The LNIS2 series has achieved the brightness up to 1.5x that of the conventional LNIS series. This expands the range of applications.

Higher output power than the conventional products

Illuminance comparison graph



Imaging of vertical scratches (moving-direction scratches) on film

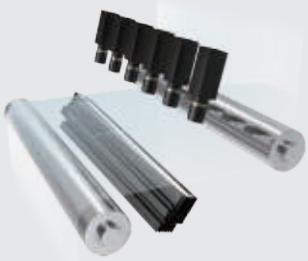


Emphasizes only the vertical scratch. Even if you increase the output, the background noise and brightness do not increase.

The data included is for reference only. Actual values may vary.

Applications

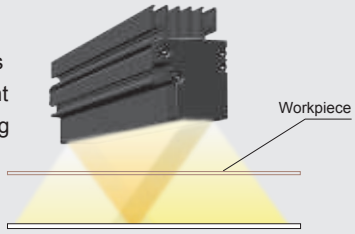
Inspection for scratches on transparent films



Example Configuration

Achieves bi-directional angled illumination using an original optical design. This is a line sensor light perfect for detecting moving-direction scratches.

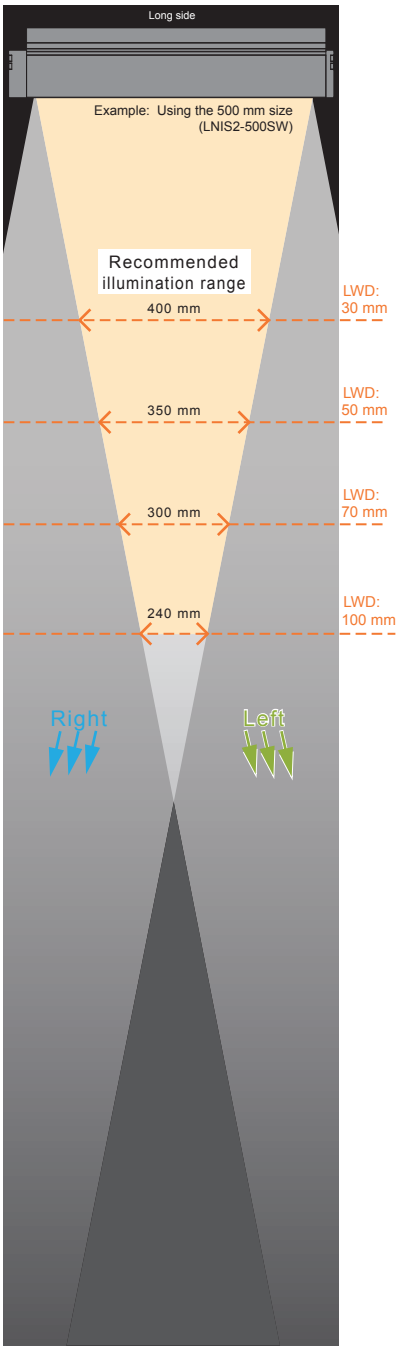
LNIS2 series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Recommended Illumination Range

Light Unit in use: LNIS2-500SW

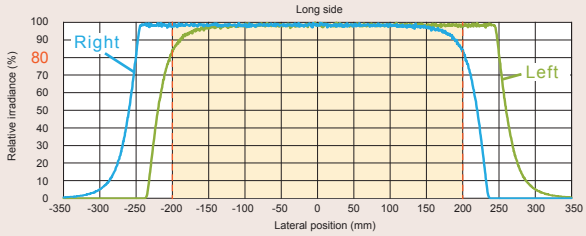


LWD is the distance from the Line Light to the workpiece.

Graph of effective illumination range

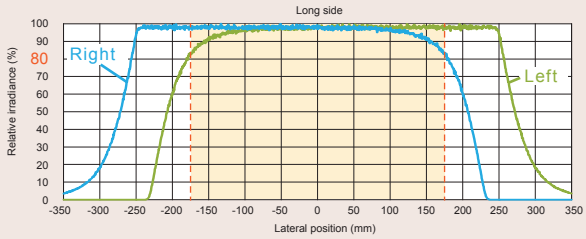
Illuminating distance: 30 mm

The values are based on the simulation. Actual values may vary.



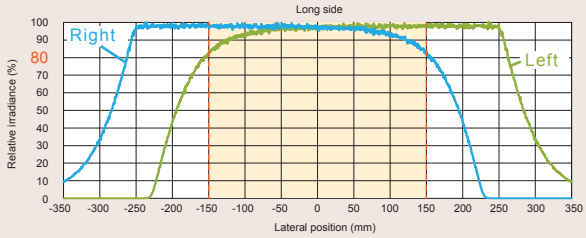
Illuminating distance: 50 mm

The values are based on the simulation. Actual values may vary.



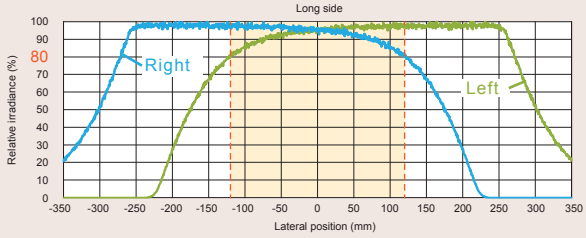
Illuminating distance: 70 mm

The values are based on the simulation. Actual values may vary.



Illuminating distance: 100 mm

The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illuminance is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

Table of the recommended illumination range

(Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length									
	100	200	300	400	500	600	700	800	900	1,000
10	40	140	240	340	440	540	640	740	840	940
30		100	200	300	400	500	600	700	800	900
50		50	150	250	350	450	550	650	750	850
70			100	200	300	400	500	600	700	800
100			40	140	240	340	440	540	640	740

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

You can inquire using our website. Sample Testing | Light Unit Selection | Free Product Trial | Custom Orders | Product Details | Pricing/ Quotation | Discontinued Products

Inquire on our website here. https://www.ccs-grp.com/contact/

Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/ HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNIS2 Series



Refer to our website for product details.

CCS LNIS2 ▶ Search

For quick access.

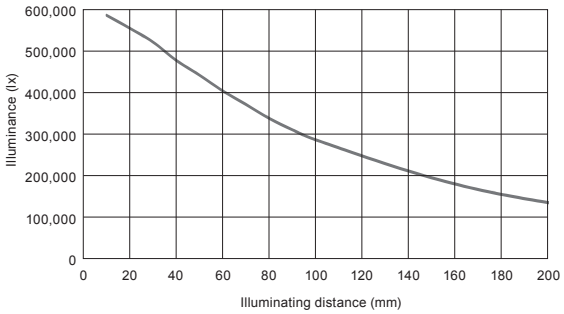
You can also use your smartphone or cell phone.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

LNIS2-500SW

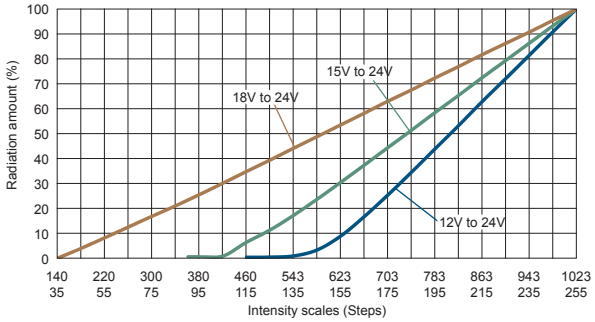
Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity.
Results for individual products may vary.

Graph of the correlation between intensity and output

Output characteristics of each intensity range
using Analog Control Unit (constant voltage) PSB4-30024-PEI

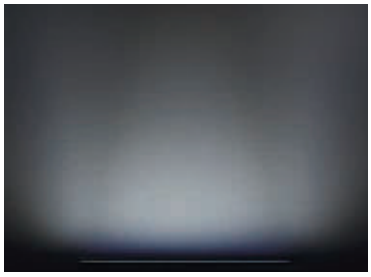


Actual measurement values using Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.
Measured in each voltage range because the Analog Control Unit PSB4-30024-PEI has a switching function for the lower limit of output voltage.

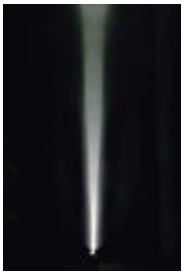
LNIS2-400SW

Characteristics of the illumination distribution

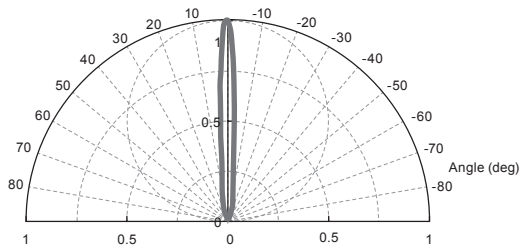
Measuring direction: long side



Measuring direction: short side



Illumination distribution chracteristics:
short side



These graphs are for reference only. Actual values may vary.

Lineup

Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
LNIS2-100SW	White	24 V / 18 W	6,500 K	FCB-EL2	PSB4-30024-PEI PD3-10024-8*	400 g
LNIS2-200SW		24 V / 35 W				700 g
LNIS2-300SW		24 V / 52 W				1,000 g
LNIS2-400SW		24 V / 69 W				1,300 g
LNIS2-500SW		24 V / 86 W				1,600 g
LNIS2-600SW		24 V / 103 W		FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	1,900 g
LNIS2-700SW		24 V / 120 W				2,200 g
LNIS2-800SW		24 V / 138 W				2,500 g
LNIS2-900SW		24 V / 155 W				2,800 g
LNIS2-1000SW		24 V / 172 W				3,100 g

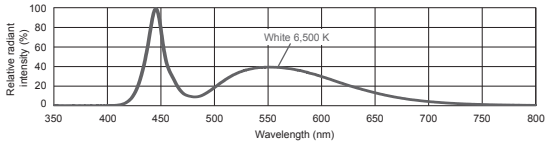
* Custom products with a PWM frequency of 500 kHz are available for Digital Control Unit PD3 series. Please contact your CCS sales representative for details.

Extension Cables ▶ P.260
List of Control Unit Specifications ▶ P.309

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
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Register to use them.

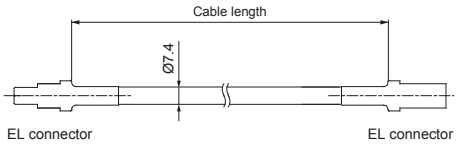
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit.

FCB-EL2

Model name	Cable length
FCB-1-EL2	1 m
FCB-2-EL2	2 m
FCB-3-EL2	3 m
FCB-5-EL2	5 m
FCB-10-EL2	10 m
FCB-15-EL2	15 m

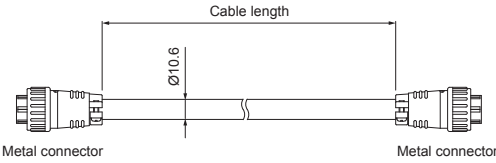
(mm)



Cable permitted bending radius: 29.6 mm

FCB-1.25SQ-ME7

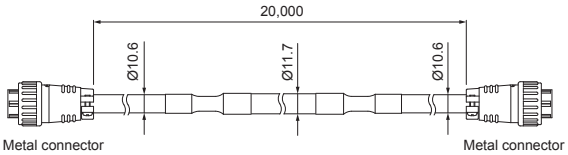
Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

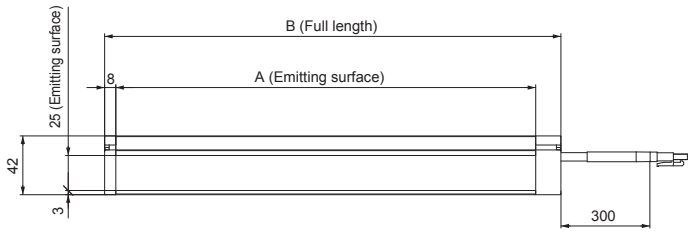
Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g

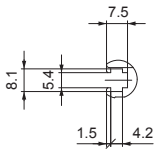


Cable permitted bending radius: 63.6 mm

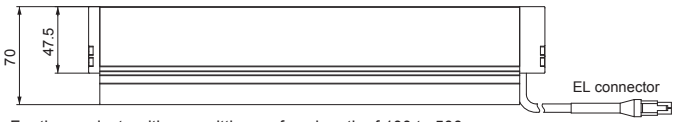
The above cable permitted bending radii are reference values. Actual values may vary.

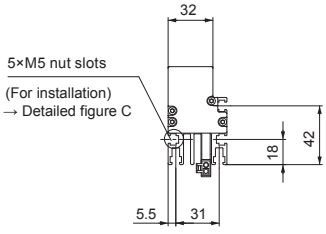
Dimensions (mm)



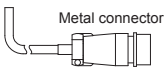


Detailed figure C





For the products with an emitting surface length of 100 to 500 mm:
EL connector
For the products with an emitting surface length of 600 to 1,000 mm:
Metal connector



CCS accepts custom orders for such as the position where the light cable comes out of the case.
Please contact your CCS sales representative for details.

Model name	A (Emitting surface)	B (Full length)	Connector
LNIS2-100SW	100	126	EL connector
LNIS2-200SW	200	226	
LNIS2-300SW	300	326	
LNIS2-400SW	400	426	
LNIS2-500SW	500	526	

Model name	A (Emitting surface)	B (Full length)	Connector
LNIS2-600SW	600	626	Metal connector
LNIS2-700SW	700	726	
LNIS2-800SW	800	826	
LNIS2-900SW	900	926	
LNIS2-1000SW	1,000	1,026	

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

Oblique Angled Lighting

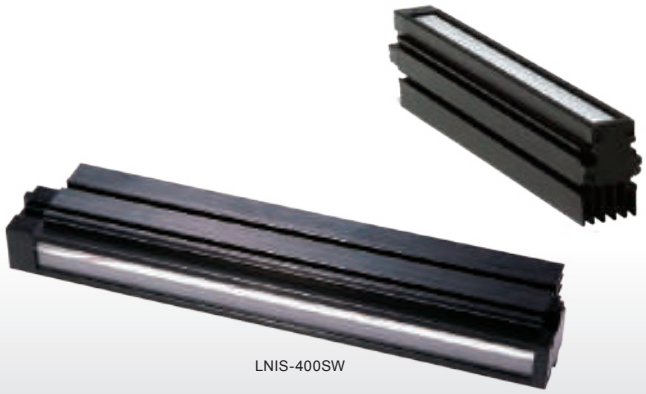
Line Lights
LNIS Series

Refer to our website for product details.
CCS LNIS ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Achieves bi-directional angled illumination using an original optical design

LED color
Custom orders accepted
Size
Custom orders accepted





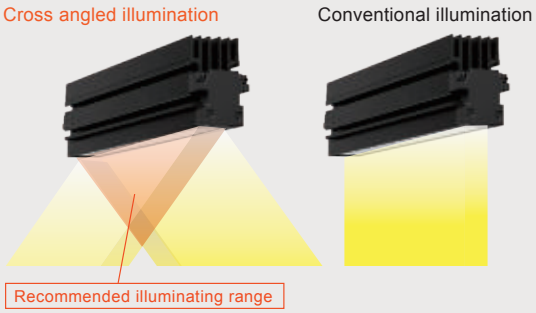
LNIS-400SW

Applications Streak inspection of sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

Achieves Bi-Directional Angled Illumination

The LNIS series is a completely new concept product that was developed to detect "moving-direction scratches," which were difficult to detect with conventional line sensor lights.

Difference between bi-directional angled illumination and conventional illumination

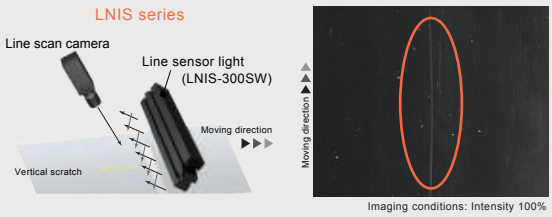


Other features

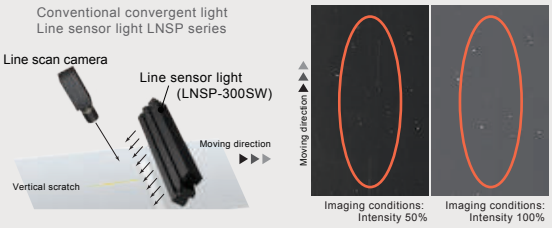
1) Fan-less (Natural air cooling)
2) Compact design
3) Emitting surface 100 to 1,000 mm long (can be made in units of 100 mm)

Perfect for Moving-Direction Scratches Such as Streaks

Imaging of vertical scratches (moving-direction scratches) on film



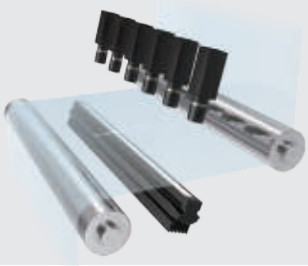
Emphasizes only the vertical scratch. Even if you increase the output, the background noise and brightness do not increase.



It's difficult to highlight only the vertical scratch. If you increase the output, the background noise and brightness increase but the contrast ratio does not.

Applications

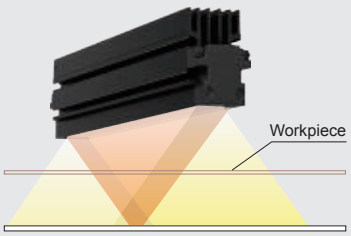
Inspection for scratches on transparent films



Example Configuration

Achieves bi-directional angled illumination using an original optical design. This is a line sensor light perfect for detecting moving-direction scratches.

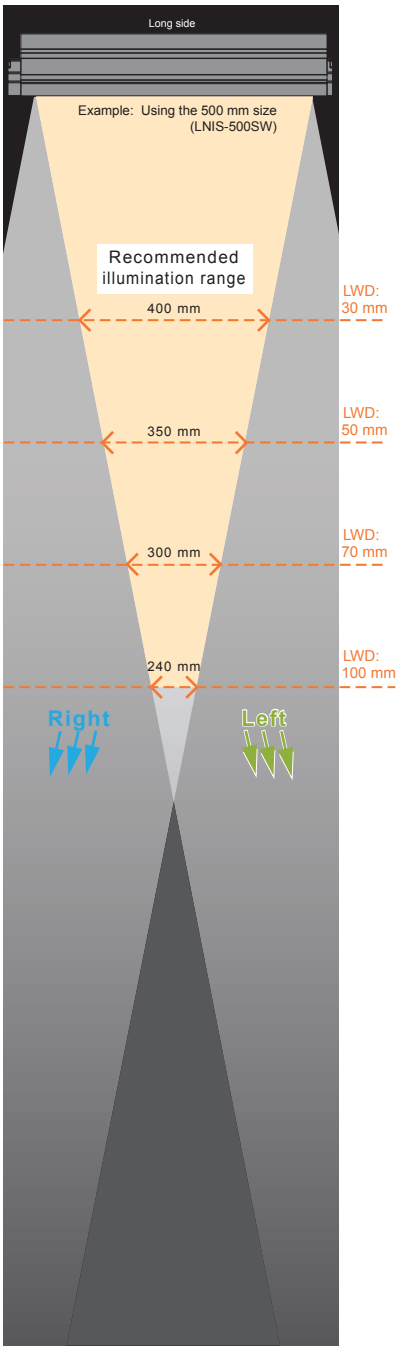
LNIS series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Recommended Illumination Range

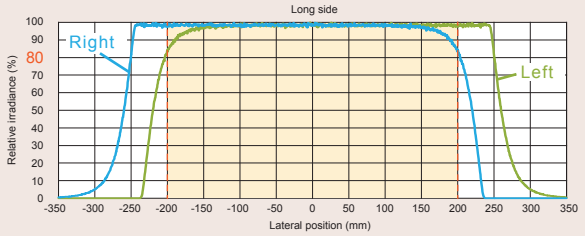
Light Unit in use: LNIS-500SW



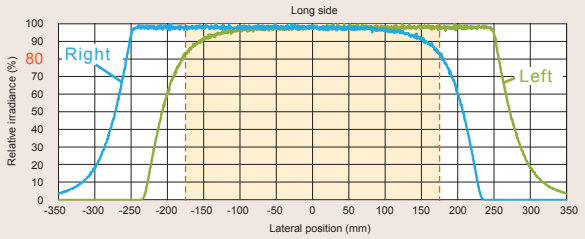
LWD is the distance from the Line Light to the workpiece.

Graph of effective illumination range

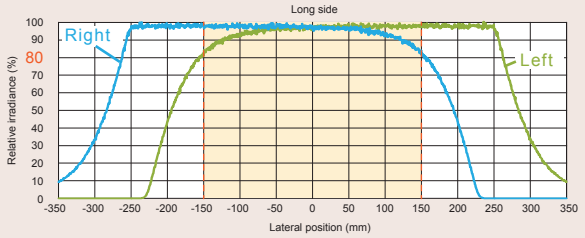
Illuminating distance: 30 mm — The values are based on the simulation. Actual values may vary.



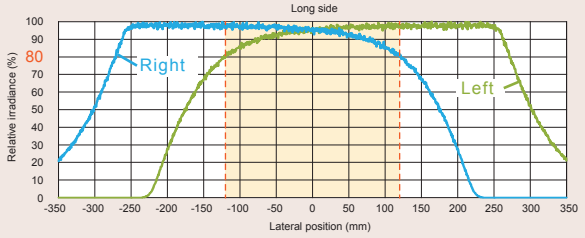
Illuminating distance: 50 mm — The values are based on the simulation. Actual values may vary.



Illuminating distance: 70 mm — The values are based on the simulation. Actual values may vary.



Illuminating distance: 100 mm — The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illuminance is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

Table of the recommended illumination range

(Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length									
	100	200	300	400	500	600	700	800	900	1,000
10	40	140	240	340	440	540	640	740	840	940
30		100	200	300	400	500	600	700	800	900
50		50	150	250	350	450	550	650	750	850
70			100	200	300	400	500	600	700	800
100			40	140	240	340	440	540	640	740

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

LDR2 Direct Lighting
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2 Diffused Lighting
LFR
LKR
FPR
FPQ3
LDL2 Direct Lighting
LDLB
HLDL2
TH2 (5 types) Diffused Lighting
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU Collimated Lighting
MFU
PF Strobe Lighting
HLDR-IP/HSL-PCL Water-proof
UV2 Ultraviolet Lighting
UV
LNSP-UV-FN
IR2 Infrared Lighting
IU Intensity Control
HLV3 Spot Lighting, Etc.
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP Convergent Lighting
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD Diffused Lighting
LND2
HLND
LT
LNV
LNDG Oblique Angled Lighting
LNIS2
LNIS
LNIS-FN
Telecentric Lens Lenses
Macro Lens

LNIS Series



Refer to our website for product details.

CCS LNIS ▶ Search

For quick access.

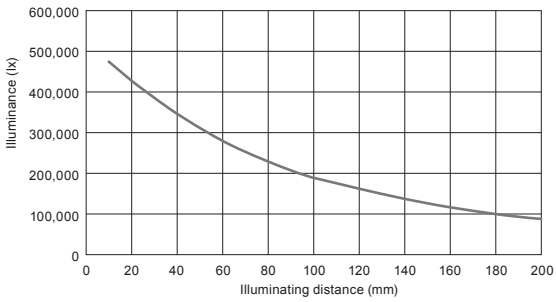
You can also use your smartphone or cell phone.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

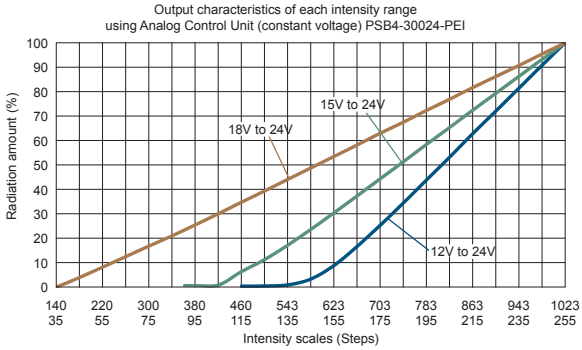
LNIS-500SW

Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity.
Results for individual products may vary.

Graph of the correlation between intensity and output



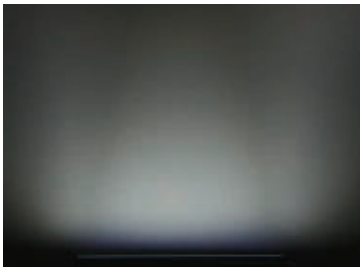
Actual measurement values using Analog Control Unit PSB4-30024-PEI.
Results for individual products may vary.

Measured in each voltage range because the Analog Control Unit PSB4-30024-PEI has a switching function for the lower limit of output voltage.

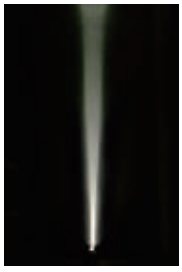
LNIS-400SW

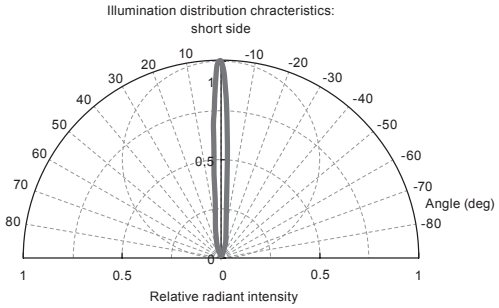
Characteristics of the illumination distribution

Measuring direction: long side



Measuring direction: short side





These graphs are for reference only. Actual values may vary.

Lineup

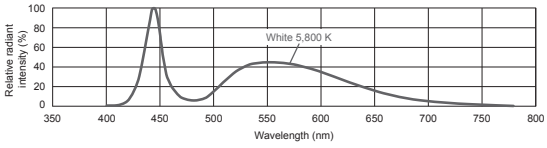
Model name	LED color	Power consumption	Correlated color temperature	Extension cables	Recommended Control Units	Weight
LNIS-100SW	White	24 V / 21 W	5,800 K	FCB-1.25SQ-ME7 FCB-20-2.0SQ-ME7	PSB4-30024-PEI	430 g
LNIS-200SW		24 V / 41 W				760 g
LNIS-300SW		24 V / 61 W				1,090 g
LNIS-400SW		24 V / 81 W				1,420 g
LNIS-500SW		24 V / 101 W				1,740 g
LNIS-600SW		24 V / 121 W				2,070 g
LNIS-700SW		24 V / 142 W				2,400 g
LNIS-800SW		24 V / 162 W				2,730 g
LNIS-900SW		24 V / 182 W				3,050 g
LNIS-1000SW		24 V / 202 W				3,380 g

Extension Cables ▶ P.264
PSB4 Series Product Page ▶ P.351

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (red/blue/IR, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

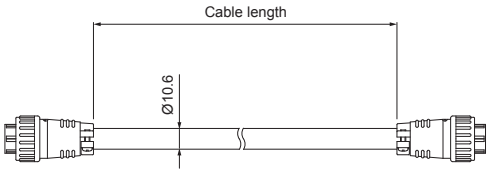
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, PSB4-30024-PEI.

FCB-1.25SQ-ME7

Model name	Cable length	Weight
FCB-2-1.25SQ-ME7	2 m	430 g
FCB-3-1.25SQ-ME7	3 m	580 g
FCB-5-1.25SQ-ME7	5 m	1,000 g
FCB-10-1.25SQ-ME7	10 m	2,000 g

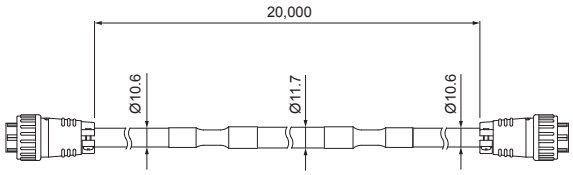
(mm)



Cable permitted bending radius: 63.6 mm

FCB-20-2.0SQ-ME7

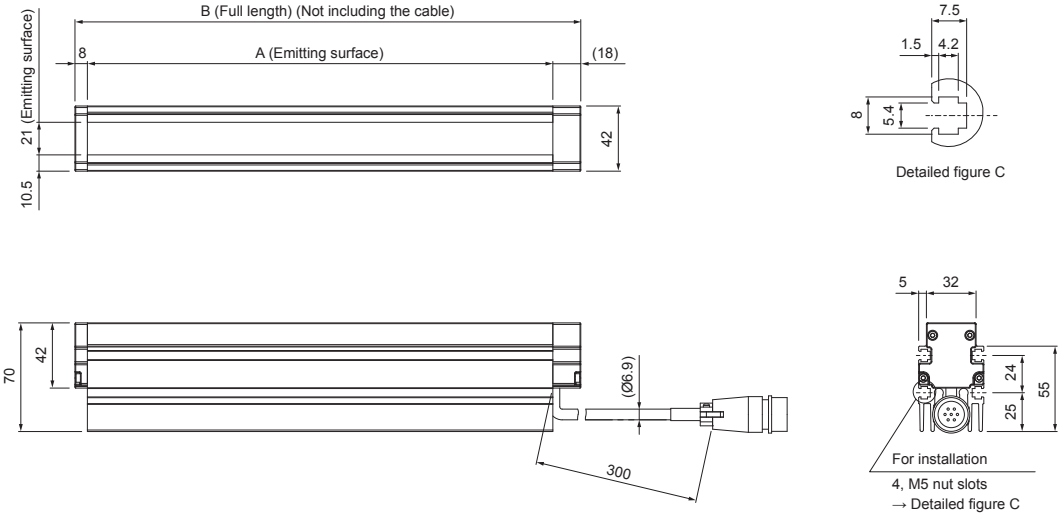
Model name	Cable length	Weight
FCB-20-2.0SQ-ME7	20 m	5,000 g



Cable permitted bending radius: 63.6 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



Model name	A (Emitting surface)	B (Full length)	Model name	A (Emitting surface)	B (Full length)
LNIS-100SW	100	126	LNIS-600SW	600	626
LNIS-200SW	200	226	LNIS-700SW	700	726
LNIS-300SW	300	326	LNIS-800SW	800	826
LNIS-400SW	400	426	LNIS-900SW	900	926
LNIS-500SW	500	526	LNIS-1000SW	1,000	1,026

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HPR2
LFR
LKR
FPR
FPQ3
LDL2
LDLB
HLDL2
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
MSU
MFU
PF
HLDR-IP/
HSL-PCL
UV2
UV
LNSP-UV-FN
IR2
IU
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
LNSD
LND2
HLND
LT
LNV
LNDG
LNIS2
LNIS
LNIS-FN
Telecentric Lens
Macro Lens

Direct Lighting
Diffused Lighting
Direct Lighting
Diffused Lighting
Collimated Lighting
Strobe Lighting
Water-proof
Ultraviolet Lighting
Infrared Lighting
Intensity Control
Spot Lighting, Etc.
Convergent Lighting
Diffused Lighting
Oblique Angled Lighting
Lenses

Oblique Angled Lighting

Line Lights
LNIS-FN Series

Refer to our website for product details.
CCS LNIS-FN ▶ Search
You can also use your smartphone or cell phone.
For quick access.

Achieves bi-directional angled illumination using an original optical design
High output type which adopts forced air (fan)

LED color
Custom orders accepted

Size
Custom orders accepted





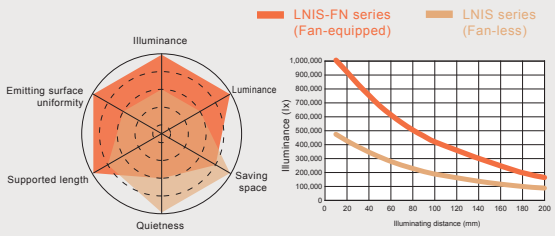
LNIS-400SW-FN

Applications Streak inspection on sheet surfaces, scratch inspection on clear film, scratch inspection on glass panels, damage inspection on sheet metal, etc.

Illuminance of 678,000 lx Using Forced Air (Fan)

This is a high-output (fan-equipped) type of the LNIS series, developed to detect moving-direction scratches such as streaks. It meets the needs of customers who require even brighter lights.

Comparison between LNIS and LNIS-FN



Series name	Brightness
LNIS-FN series	678,000 lx LWD = 50 mm
LNIS series	310,000 lx LWD = 50 mm

Other features

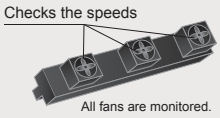
1) Emitting surface 100 to 1,500 mm long (can be made in units of 100 mm)
2) Due to the constant-current drive system, the emitting surface has uniformity higher than the LNIS series.

The graph included is for reference only. Actual values may vary.

Avoid Trouble with Error Detection

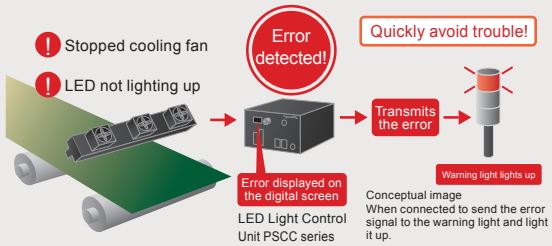
1) Error detection for cooling fans

An error is detected should a fault occur, such as insufficient speed or a stop in the cooling fans.



2) Error detection for the LEDs

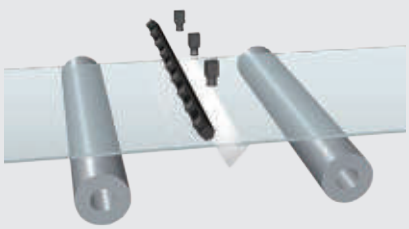
Detects dead LEDs due to an open in the Light Unit circuit or a shorted LED.



Error detection is a function included with the PSCC series, the recommended Control Units.

Applications

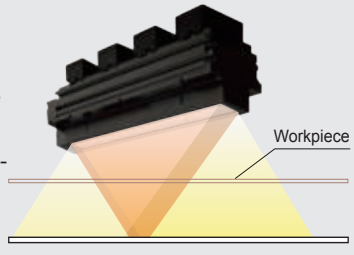
Inspection for scratches on plate glass



Example Configuration

Achieves bi-directional angled illumination using an original optical design. This is a line sensor light perfect for detecting moving-direction scratches. (fan cooling type)

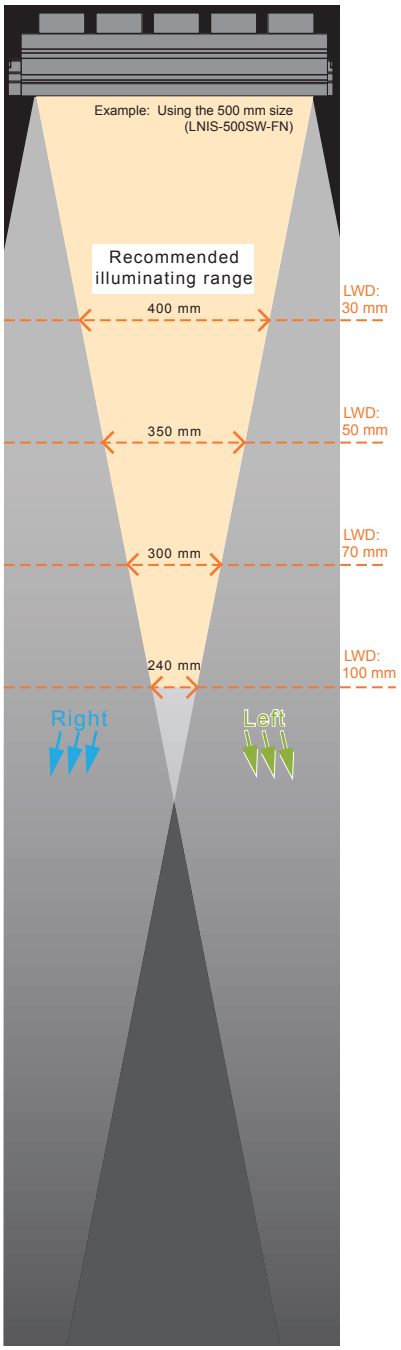
LNIS-FN series



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Recommended Illumination Range

Light Unit in use: LNIS-500SW-FN

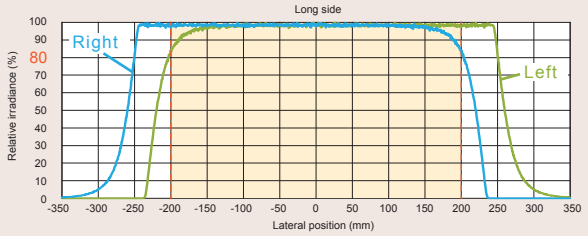


LWD is the distance from the Line Light to the workpiece.

Graph of effective illumination range

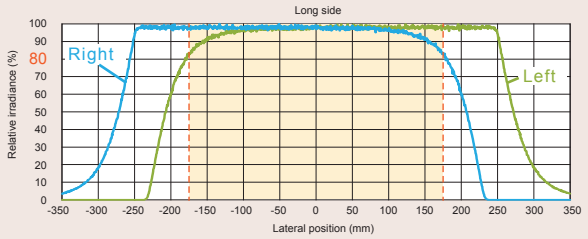
Illuminating distance: 30 mm

The values are based on the simulation. Actual values may vary.



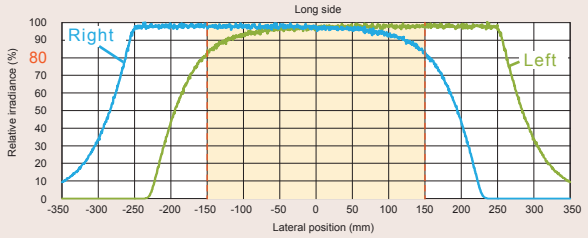
Illuminating distance: 50 mm

The values are based on the simulation. Actual values may vary.



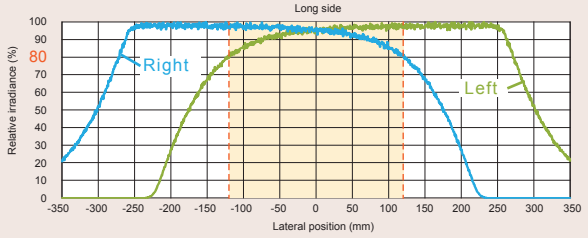
Illuminating distance: 70 mm

The values are based on the simulation. Actual values may vary.



Illuminating distance: 100 mm

The values are based on the simulation. Actual values may vary.



The section on the graph where "Left" and "Right" overlap is the section where light from the left and right sides overlaps. The recommended illumination range is the range in this overlapping section where each illuminance is ensured for 80% or higher of the peak.

These graphs are for reference only. Actual values may vary.

Table of the recommended illumination range

(Where illuminance of the left/right beam is 80% of the peak value or more.) (mm)

LWD: Illuminating distance	Emitting surface length														
	100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
10	40	140	240	340	440	540	640	740	840	940	1,040	1,140	1,240	1,340	1,440
30		100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400
50		50	150	250	350	450	550	650	750	850	950	1,050	1,150	1,250	1,350
70			100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300
100			40	140	240	340	440	540	640	740	840	940	1,040	1,140	1,240

These values are based on the simulation. Actual range of the effective illumination depends on your imaging environment.

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
Direct Lighting
HPR2
LFR
LKR
FPR
FPQ3
Diffused Lighting
LDL2
LDLB
HLDL2
Direct Lighting
TH2 (5 types)
LFL
HPD2
LDM2
LAV
PDM
LFXV
LFX3
LFX3-PT
LFV3
LFV3-G
Diffused Lighting
MSU
MFU
Collimated Lighting
PF
Strobe Lighting
HLDR-IP/
HSL-PCL
Water-proof
UV2
UV
Ultraviolet Lighting
LNSP-UV-FN
IR2
Infrared Lighting
IU
Intensity Control
HLV3
HLV2
LV
LSP
HFS/HFR
HLV3-NR
HLV3-3M-RGB-4
HLV2-NR
HLV2-3M-RGB-3W
PFBR-600
PFBR-150
PFB3
Spot Lighting, Etc.
LNLP
LNSP2
LNSP
Coaxial Units
LNSP-FN
LN/LN-HK
Convergent Lighting
LNSD
LND2
HLND
LT
LNV
Diffused Lighting
LNDG
LNIS2
LNIS
LNIS-FN
Oblique Angled Lighting
Telecentric Lens
Macro Lens
Lenses

LNIS-FN Series



Refer to our website for product details.

CCS LNIS-FN ▶ Search

For quick access.

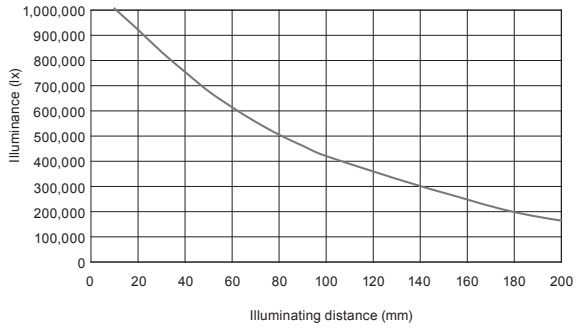
You can also use your smartphone or cell phone.

Data (Representative Example)

The graph included is for reference only. Actual values may vary.

LNIS-400SW-FN

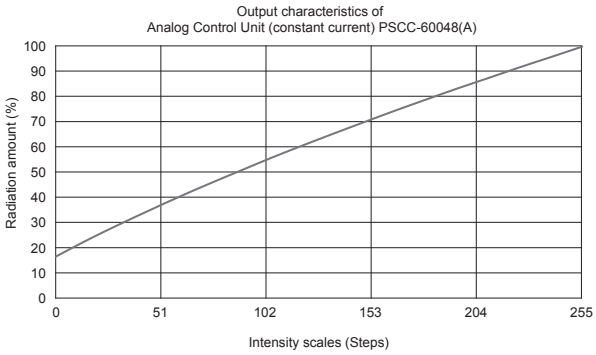
Change in illuminance



Actual measurement values at the center of the emitting surface, 100% intensity.
Results for individual products may vary.

LNIS-1500SW-FN

Graph of the correlation between intensity and output



Actual measurement values using the Analog Control Unit PSCC-60048(A) .
Results for individual products may vary.

Lineup

Model name	LED color	Power consumption*1 (including fans)		Correlated color temperature	Extension cables*2	Recommended Control Units*2	Weight
		June 2017 or earlier	July 2017 or later				
LNIS-100SW-FN	White	41 W	41 W	5,800 K	QCBM QCB	PSCC-30048(A) PSCC-60048(A)	900 g
LNIS-200SW-FN		81 W	82 W				1,400 g
LNIS-300SW-FN		117 W	118 W				1,900 g
LNIS-400SW-FN		157 W	158 W				2,400 g
LNIS-500SW-FN		192 W	194 W				2,900 g
LNIS-600SW-FN		233 W	235 W				3,400 g
LNIS-700SW-FN		268 W	270 W				3,900 g
LNIS-800SW-FN		309 W	311 W		QCB	PSCC-60048(A)	4,400 g
LNIS-900SW-FN		345 W	348 W				4,900 g
LNIS-1000SW-FN		384 W	387 W				5,500 g
LNIS-1100SW-FN		425 W	428 W				6,000 g
LNIS-1200SW-FN		460 W	464 W				6,500 g
LNIS-1300SW-FN		501 W	504 W				7,000 g
LNIS-1400SW-FN		536 W	540 W				7,500 g
LNIS-1500SW-FN		576 W	581 W				8,000 g

Extension Cables ▶ P.268

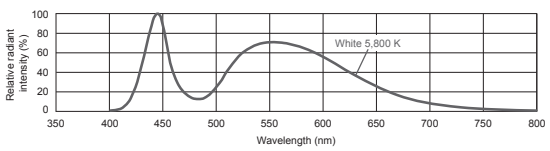
PSCC Series Product Page ▶ P.349

*1 The power consumption varies according to the production data. Refer to the power consumption given by the label tag of the product.
*2 Make sure to connect the appropriate extension cables to the Control Unit.

The emitting surface is available in sizes of 100 mm units. For details about other sizes, inquire with your CCS sales representative.
In addition, we accept custom orders, such as changes to the LED color (red/blue/IR/UV, etc.) and size changes. Inquire at your CCS sales representative for details.

LED Properties

Spectral distribution



Be sure to read the “Instruction Guide” included with the product before use and follow the safety precautions upon use.
The data included is for reference only. Actual values may vary.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

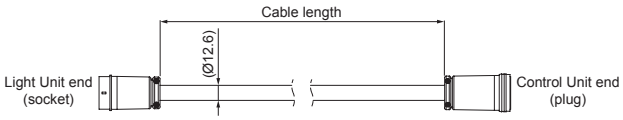
Extension Cables

Necessary when connecting the Light Unit to the recommended Control Unit, the PSCC series.
Make sure to connect the appropriate extension cables to the Control Unit.

QCBM

Model name	Cable length	Weight	Applicable Control Unit
QCBM-2	2 m	800 g	PSCC-30048(A)
QCBM-3	3 m	1,000 g	
QCBM-5	5 m	1,500 g	
QCBM-10	10 m	2,700 g	
QCBM-20	20 m	5,000 g	

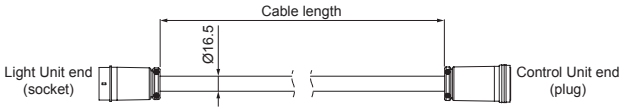
(mm)



Cable permitted bending radius: 75.6 mm

QCB

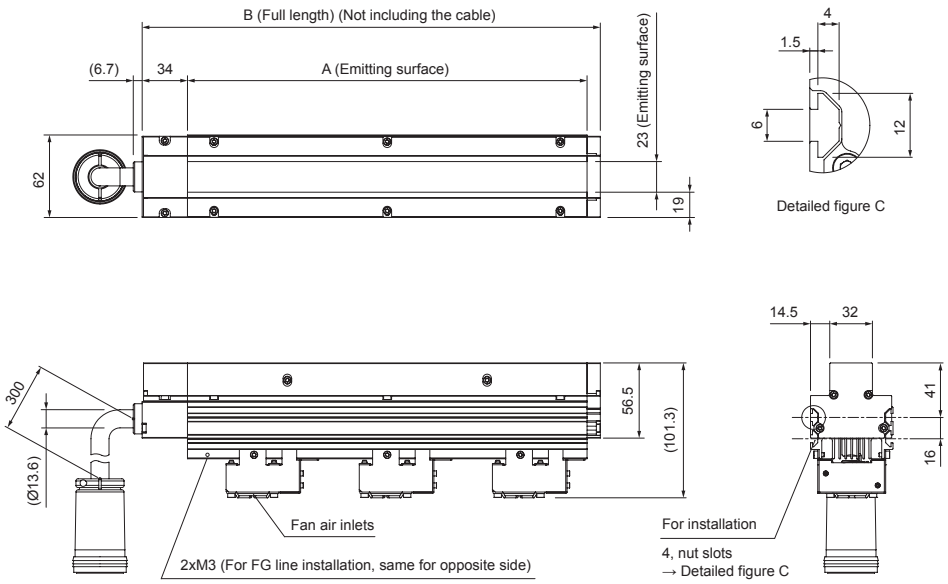
Model name	Cable length	Weight	Applicable Control Unit
QCB-2	2 m	1,100 g	PSCC-60048(A)
QCB-3	3 m	1,500 g	
QCB-5	5 m	2,400 g	
QCB-10	10 m	4,600 g	
QCB-20	20 m	8,900 g	



Cable permitted bending radius: 99 mm

The above cable permitted bending radii are reference values. Actual values may vary.

Dimensions (mm)



Model name	A (Emitting surface)	B (Full length)	Model name	A (Emitting surface)	B (Full length)
LNIS-100SW-FN	100	144	LNIS-900SW-FN	900	944
LNIS-200SW-FN	200	244	LNIS-1000SW-FN	1,000	1,044
LNIS-300SW-FN	300	344	LNIS-1100SW-FN	1,100	1,144
LNIS-400SW-FN	400	444	LNIS-1200SW-FN	1,200	1,244
LNIS-500SW-FN	500	544	LNIS-1300SW-FN	1,300	1,344
LNIS-600SW-FN	600	644	LNIS-1400SW-FN	1,400	1,444
LNIS-700SW-FN	700	744	LNIS-1500SW-FN	1,500	1,544
LNIS-800SW-FN	800	844			

Lenses

High-Resolution Telecentric Lenses
SE-65-M/SE-110-M Series

Refer to our website for product details.
CCS telecentric lens ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Compatible with 5-megapixel cameras*1
Ideal for the combination with megapixel cameras*2

*1 2/3"L (5.98 mm height, 11.26 mm width) and 5.5 µm/pixel, Applicable models: SE-110VT03-5M and SE-110ST03-5M
*2 Approx. 4.65 µm/pixel min.

Total of **28** Models

SE-65-M series (WD 65 mm)

Coaxial type, 0.5x to 6.0x



Straight type, 0.5x to 6.0x



SE-110-M series (WD 110 mm)

Coaxial type 0.3x to 4.0x



Straight type 0.3x to 4.0x



Specifications (SE-65-M Series)

Model name (Coaxial type)	SE-65VT05-M	SE-65VT08-M	SE-65VT10-M	SE-65VT20-M	SE-65VT40-M	SE-65VT60-M
Model name (Straight type)	SE-65ST05-M	SE-65ST08-M	SE-65ST10-M	SE-65ST20-M	SE-65ST40-M	SE-65ST60-M
Optical magnification	0.5x±5%	0.8x±5%	1.0x±5%	2.0x±5%	4.0x±5%	6.0x±5%
WD	65.1±2 mm	65.4±2 mm	65.1±2 mm	65.2±2 mm	65.3±2 mm	64±2 mm
Depth of field*1*2	2.87 mm	1.18 mm	0.79 mm	0.26 mm	0.08 mm	0.06 mm
Resolution*2*3	12.0 µm	8.0 µm	6.7 µm	4.4 µm	2.9 µm	2.9 µm
NA*2	0.028	0.042	0.05	0.076	0.118	0.118
Actual F-number (Fe)*2	9.0	9.4	9.8	12.9	16.9	25.5
TV distortion*2	-0.001%	+0.006%	-0.023%	+0.021%	-0.003%	-0.026%
Weight (Coaxial)	80 g	62 g	54 g	55 g	85 g	100 g
Weight (Straight)	77 g	57 g	49 g	49 g	83 g	98 g
Mount	C mount					
Maximum applicable image size	2/3 inch (Ø11.00 mm)			2/3 inch L (Ø12.75 mm)*4		
Physical distance (O/I)*2	171.1 mm	171.5 mm	161 mm	160.9 mm	184.5 mm	216.7 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength.
*4 2/3 inch L (Length: 5.98 mm, Width: 11.26 mm) The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Field of Vision Chart (SE-65-M Series)

These values are for reference.

Model name (Coaxial type)	SE-65VT05-M	SE-65VT08-M	SE-65VT10-M	SE-65VT20-M	SE-65VT40-M	SE-65VT60-M
Model name (Straight type)	SE-65ST05-M	SE-65ST08-M	SE-65ST10-M	SE-65ST20-M	SE-65ST40-M	SE-65ST60-M
Optical magnification	0.5x	0.8x	1.0x	2.0x	4.0x	6.0x
Sensor size	2/3 inch			2/3 inch L		
Length	13.20 mm	8.25 mm	6.60 mm	2.99 mm	1.50 mm	1.00 mm
Width	17.60 mm	11.0 mm	8.80 mm	5.63 mm	2.82 mm	1.88 mm
Diagonal	22.00 mm	13.75 mm	11.00 mm	6.38 mm	3.19 mm	2.13 mm

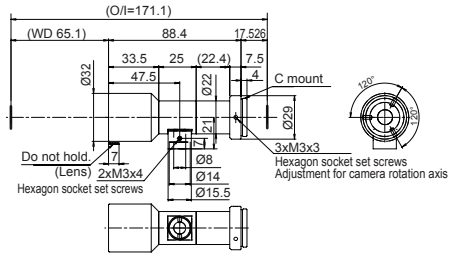
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.390

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

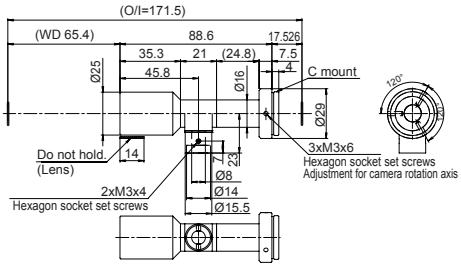
Dimensions (SE-65-M Series, mm)

Coaxial type

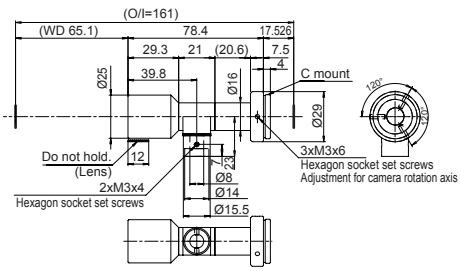
SE-65VT05-M



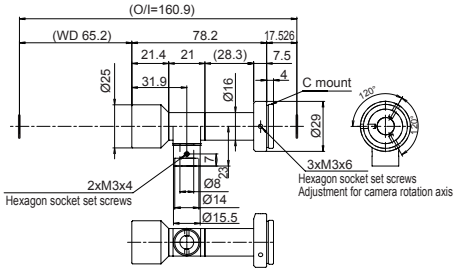
SE-65VT08-M



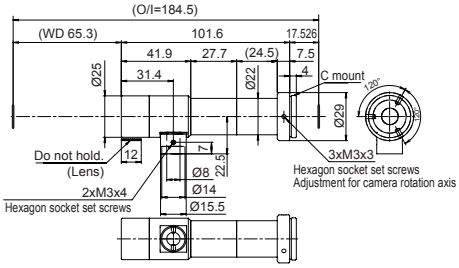
SE-65VT10-M



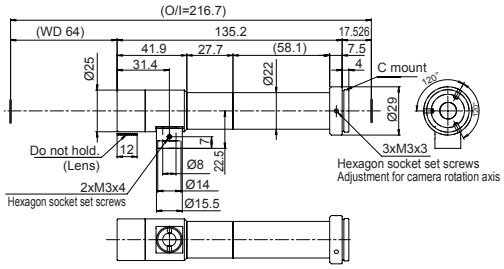
SE-65VT20-M



SE-65VT40-M

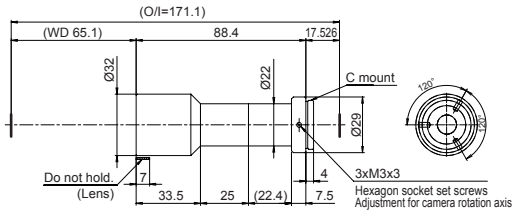


SE-65VT60-M

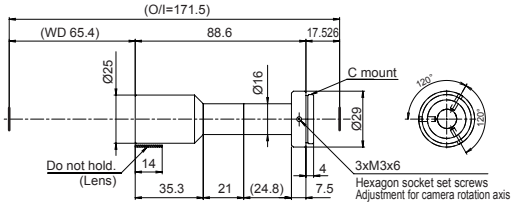


Straight type

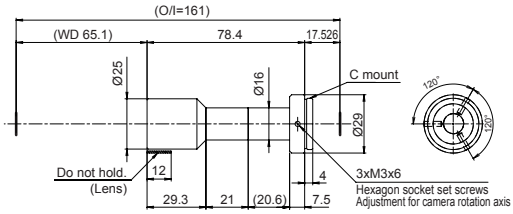
SE-65ST05-M



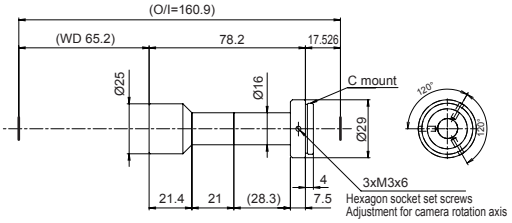
SE-65ST08-M



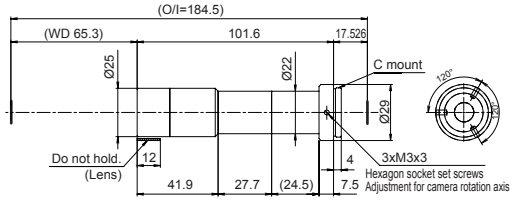
SE-65ST10-M



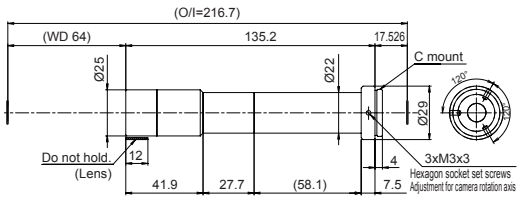
SE-65ST20-M



SE-65ST40-M



SE-65ST60-M



Direct Lighting: LDR2, LDR2-LA, LDR-LA1, SQR, SQR-TP
Diffused Lighting: HPR2, LFR, LKR, FPR, FPQ3
Direct Lighting: LDL2, LDLB, HLDL2
Diffused Lighting: TH2 (5 types), LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G
Collimated Lighting: MSU, MFU
Strobe Lighting: PF
Water-proof: HLDR-IP/HSL-PCL
Ultraviolet Lighting: UV2, UV, LNSP-UV-FN
Infrared Lighting: IR2
Intensity Control: IU
Spot Lighting, Etc.: HLV3, HLV2, LV, LSP, HFS/HFR, HLV3-NR, HLV3-3M-RGB-4, HLV2-NR, HLV2-3M-RGB-3W, PFBR-600, PFBR-150, PFB3
Convergent Lighting: LNLP, LNSP2, LNSP, Coaxial Units, LNSP-FN, LN/LN-HK
Diffused Lighting: LNSD, LND2, HLND, LT, LNV
Oblique-Angled Lighting: LNDG, LNIS2, LNIS, LNIS-FN
Lenses: Telecentric Lens, Macro Lens

SE-65-M/ SE-110-M Series



Refer to our website for product details.

CCS telecentric lens ▶ Search

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Specifications (SE-110-M Series)

5 M

Model name (Coaxial type)	SE-110VT03-5M	SE-110VT05-M	SE-110VT08-M	SE-110VT10-M	SE-110VT15-M	SE-110VT20-M	SE-110VT30-M	SE-110VT40-M
Model name (Straight type)	SE-110ST03-5M	SE-110ST05-M	SE-110ST08-M	SE-110ST10-M	SE-110ST15-M	SE-110ST20-M	SE-110ST30-M	SE-110ST40-M
Optical magnification	0.3x±5%	0.5x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	3.0x±5%	4.0x±5%
WD	110.3±3.3 mm	110.8±3.3 mm	110.1±3.3 mm	110.5±3.3 mm	110.1±3.3 mm	110.6±3.3 mm	111.4±3.3 mm	110.5±3.3 mm
Depth of field*1*2	5.75 mm	3.03 mm	1.31 mm	0.82 mm	0.42 mm	0.27 mm	0.14 mm	0.11 mm
Resolution*2*3	14.5 µm	12.7 µm	8.8 µm	6.9 µm	5.2 µm	4.5 µm	3.6 µm	3.7 µm
NA*2	0.023	0.026	0.038	0.049	0.064	0.075	0.094	0.091
Actual F-number (Fe)*2	6.5	9.4	10.3	10.2	11.7	13.0	16.0	21.9
TV distortion*2	+0.026%	-0.009%	-0.026%	-0.0007%	+0.024%	-0.018%	+0.008%	-0.004%
Weight (Coaxial)	212 g	131 g	106 g	108 g	110 g	115 g	166 g	121 g
Weight (Straight)	211 g	128 g	103 g	105 g	108 g	113 g	160 g	120 g
Mount	C mount							
Maximum applicable image size	2/3 inch L*4 (Ø12.75 mm)	2/3 inch (Ø11.00 mm)	2/3 inch L*4 (Ø12.75 mm)					2/3 inch (Ø11.00 mm)
Physical distance (O/I)*2	268.2 mm	259.7 mm	254.2 mm	255.8 mm	256.9 mm	255.8 mm	272.9 mm	256.7 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength.
*4 2/3 inch L (Length: 5.98 mm, Width: 11.26 mm) The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Field of Vision Chart (SE-110-M Series)

These values are for reference.

5 M

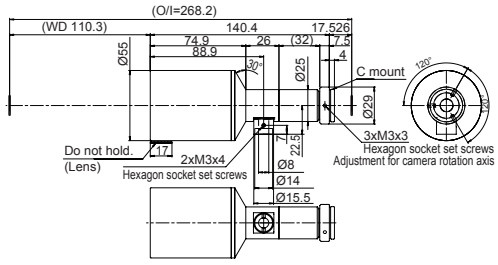
Model name (Coaxial type)	SE-110VT03-5M	SE-110VT05-M	SE-110VT08-M	SE-110VT10-M	SE-110VT15-M	SE-110VT20-M	SE-110VT30-M	SE-110VT40-M
Model name (Straight type)	SE-110ST03-5M	SE-110ST05-M	SE-110ST08-M	SE-110ST10-M	SE-110ST15-M	SE-110ST20-M	SE-110ST30-M	SE-110ST40-M
Optical magnification	0.3x	0.5x	0.8x	1.0x	1.5x	2.0x	3.0x	4.0x
Sensor size	2/3 inch L	2/3 inch	2/3 inch L					2/3 inch
Length	19.95 mm	13.20 mm	7.48 mm	5.98 mm	3.99 mm	2.99 mm	1.99 mm	1.65 mm
Width	37.55 mm	17.60 mm	14.08 mm	11.26 mm	7.51 mm	5.63 mm	3.75 mm	2.20 mm
Diagonal	42.52 mm	22.00 mm	15.94 mm	12.75 mm	8.50 mm	6.38 mm	4.25 mm	2.75 mm

For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.390

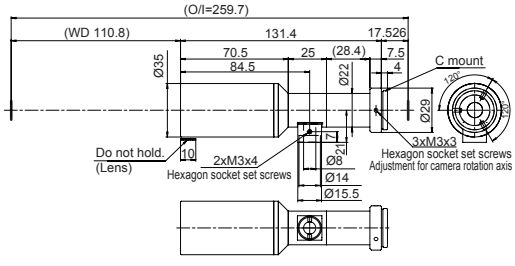
Dimensions (SE-110-M Series, mm)

Coaxial type

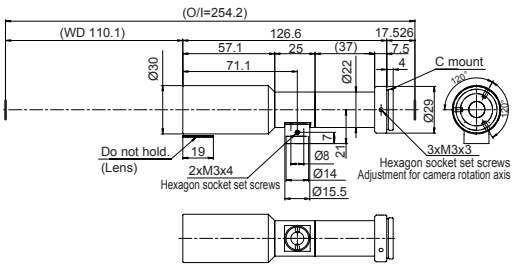
SE-110VT03-5M 5 M



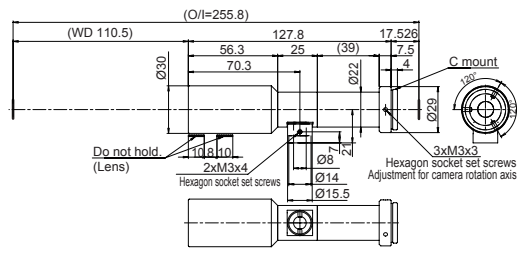
SE-110VT05-M



SE-110VT08-M



SE-110VT10-M



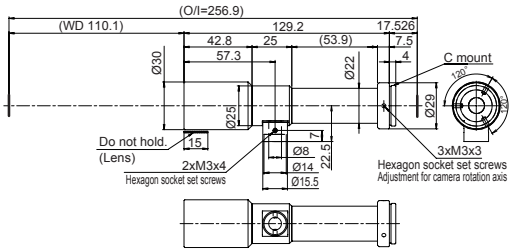
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

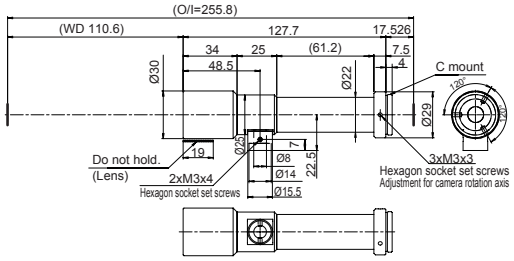
Dimensions (SE-110-M Series, mm, Continued)

Coaxial type (continued)

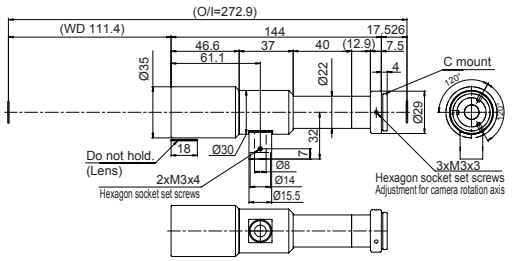
SE-110VT15-M



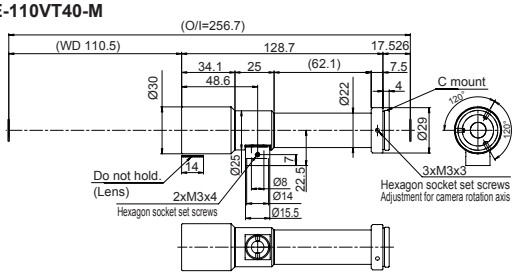
SE-110VT20-M



SE-110VT30-M

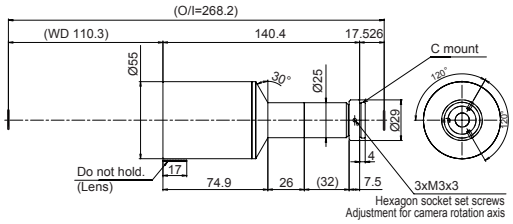


SE-110VT40-M

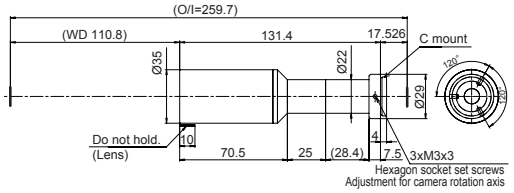


Straight type

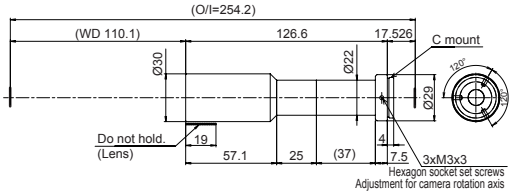
SE-110ST03-5M 5 M



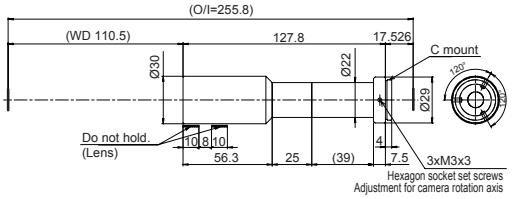
SE-110ST05-M



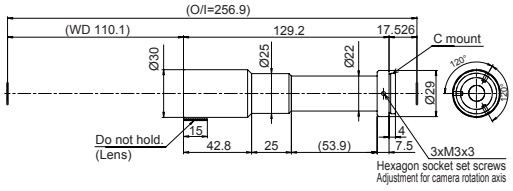
SE-110ST08-M



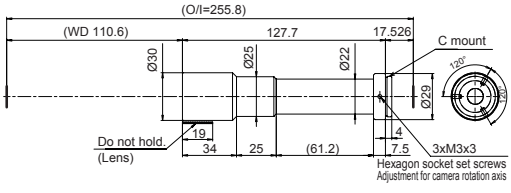
SE-110ST10-M



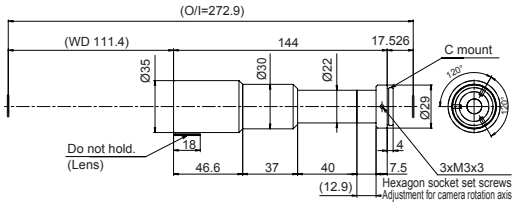
SE-110ST15-M



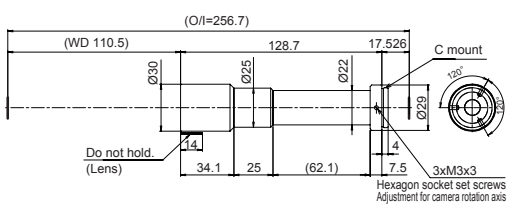
SE-110ST20-M



SE-110ST30-M



SE-110ST40-M



Lenses

Telecentric Lenses
SE-65/SE-110 Series

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Object-side telecentric lenses supporting a wide variety of applications beyond just dimension measuring

SE-65 series (WD 65 mm)



Straight type
0.8x to 4x

Coaxial type
0.8x to 4x

SE-110 series (WD 110 mm)



Straight type
0.8x to 4x

Coaxial type
0.8x to 4x

SE-65/SE-110 Series Specifications

Coaxial type

Model name	SE-65VT08	SE-65VT10	SE-65VT15	SE-65VT20	SE-65VT40	SE-110VT08	SE-110VT10	SE-110VT15	SE-110VT20	SE-110VT40
Optical magnification	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%
WD	67.7±2 mm	65.2±2 mm	65.0±2 mm	65.1±2 mm	65.1±2 mm	110.4±3.3 mm	110.0±3.3 mm	114.1±3.4 mm	110.0±3.3 mm	110.0±3.3 mm
Depth of field*1*2	1.85 mm	1.33 mm	0.59 mm	0.33 mm	0.13 mm	2 mm	1.6 mm	0.86 mm	0.65 mm	0.2 mm
Resolution*2*3	12.4 µm	11.2 µm	7.5 µm	5.6 µm	4.3 µm	13.4 µm	13.4 µm	10.8 µm	10.8 µm	6.6 µm
NA*2	0.027	0.030	0.045	0.060	0.078	0.025	0.025	0.031	0.031	0.051
Actual F-number (Fe)*2	14.9	16.8	16.7	16.7	25.4	16.0	19.9	24.0	32.0	39.5
TV distortion*2	-0.027%	-0.010%	-0.017%	-0.013%	+0.006%	-0.05%	-0.05%	+0.01%	-0.01%	+0.01%
Weight	50 g	54 g	37 g	38 g	40 g	54 g	56 g	48 g	50 g	50 g
Mount	C mount					C mount				
Maximum applicable image size	1/1.8 inch					1/1.8 inch				
Physical distance (O/I)*2	164.6 mm	172.1 mm	133.3 mm	135.8 mm	147 mm	211 mm	213.9 mm	208 mm	216.1 mm	212.5 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Straight type

Model name	SE-65ST08	SE-65ST10	SE-65ST15	SE-65ST20	SE-65ST40	SE-110ST08	SE-110ST10	SE-110ST15	SE-110ST20	SE-110ST40
Optical magnification	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%	0.8x±5%	1.0x±5%	1.5x±5%	2.0x±5%	4.0x±5%
WD	67.7±2 mm	65.2±2 mm	65.0±2 mm	65.1±2 mm	65.1±2 mm	110.4±3.3 mm	110.0±3.3 mm	114.1±3.4 mm	110.0±3.3 mm	110.0±3.3 mm
Depth of field*1*2	1.85 mm	1.33 mm	0.59 mm	0.33 mm	0.13 mm	2 mm	1.6 mm	0.86 mm	0.65 mm	0.2 mm
Resolution*2*3	12.4 µm	11.2 µm	7.5 µm	5.6 µm	4.3 µm	13.4 µm	13.4 µm	10.8 µm	10.8 µm	6.6 µm
NA*2	0.027	0.030	0.045	0.060	0.078	0.025	0.025	0.031	0.031	0.051
Actual F-number (Fe)*2	14.9	16.8	16.7	16.7	25.4	16.0	19.9	24.0	32.0	39.5
TV distortion*2	-0.027%	-0.010%	-0.017%	-0.013%	+0.006%	-0.05%	-0.05%	+0.01%	-0.01%	+0.01%
Weight	45 g	49 g	32 g	33 g	35 g	49 g	51 g	43 g	45 g	45 g
Mount	C mount					C mount				
Maximum applicable image size	1/1.8 inch					1/1.8 inch				
Physical distance (O/I)*2	164.6 mm	172.1 mm	133.3 mm	135.8 mm	147 mm	211 mm	213.9 mm	208 mm	216.1 mm	212.5 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
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Field of Vision Chart

These values are for reference.

Coaxial type

(Unit: mm)

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-65VT08	0.8x	6.65	8.98	11.16
SE-65VT10	1.0x	5.32	7.18	8.93
SE-65VT15	1.5x	3.55	4.78	5.95
SE-65VT20	2.0x	2.66	3.59	4.47
SE-65VT40	4.0x	1.33	1.80	2.23

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-110VT08	0.8x	6.65	8.97	11.17
SE-110VT10	1.0x	5.32	7.18	8.93
SE-110VT15	1.5x	3.55	4.78	5.95
SE-110VT20	2.0x	2.66	3.59	4.47
SE-110VT40	4.0x	1.33	1.79	2.23

Straight type

(Unit: mm)

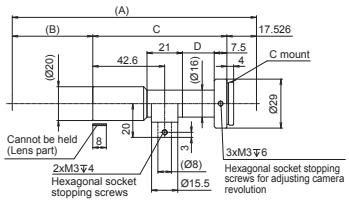
Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-65ST08	0.8x	6.65	8.98	11.16
SE-65ST10	1.0x	5.32	7.18	8.93
SE-65ST15	1.5x	3.55	4.78	5.95
SE-65ST20	2.0x	2.66	3.59	4.47
SE-65ST40	4.0x	1.33	1.80	2.23

Model name	Optical magnification	Sensor size: 1/1.8 inch		
		Length	Width	Diagonal
SE-110ST08	0.8x	6.65	8.97	11.17
SE-110ST10	1.0x	5.32	7.18	8.93
SE-110ST15	1.5x	3.55	4.78	5.95
SE-110ST20	2.0x	2.66	3.59	4.47
SE-110ST40	4.0x	1.33	1.79	2.23

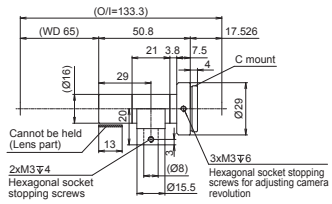
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.390

Dimensions (mm)

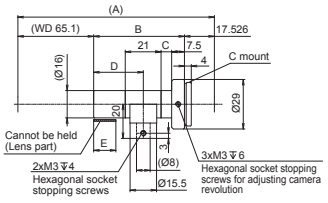
SE-65VT08/SE-65VT10 (Coaxial)



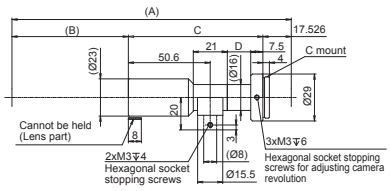
SE-65VT15 (Coaxial)



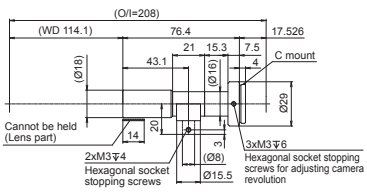
SE-65VT20/SE-65VT40 (Coaxial)



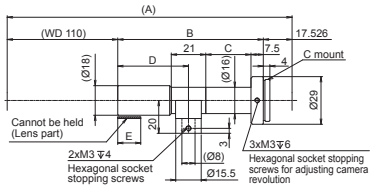
SE-110VT08/SE-110VT10 (Coaxial)



SE-110VT15 (Coaxial)

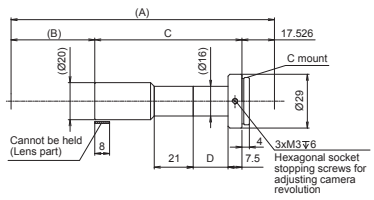


SE-110VT20/SE-110VT40 (Coaxial)

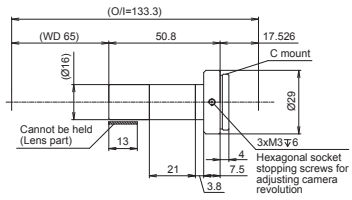


		SE-65VT08	SE-65VT10	SE-65VT20	SE-65VT40	SE-110VT08	SE-110VT10	SE-110VT20	SE-110VT40
Dimensions chart	A	O/I=164.6	O/I=172.1	O/I=135.8	O/I=147	O/I=211	O/I=213.9	O/I=216.1	O/I=212.5
	B	WD 67.7	WD 65.2	53.2	64.4	WD 110.4	WD 110	88.6	84.9
	C	79.4	89.4	6.2	18.5	83.1	86.3	27.5	30.4
	D	18.8	28.8	29	27.9	14.5	17.7	43.1	36.5
	E	–	–	13	11	–	–	14	11

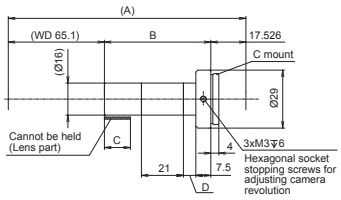
SE-65ST08/SE-65ST10 (Straight)



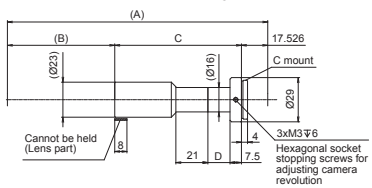
SE-65ST15 (Straight)



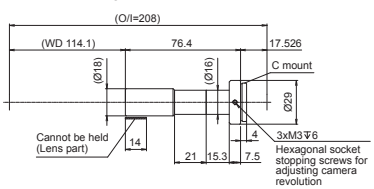
SE-65ST20/SE-65ST40 (Straight)



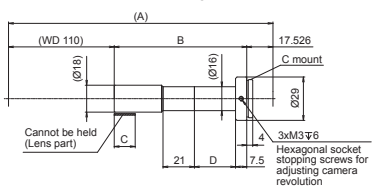
SE-110ST08/SE-110ST10 (Straight)



SE-110ST15 (Straight)



SE-110ST20/SE-110ST40 (Straight)



		SE-65ST08	SE-65ST10	SE-65ST20	SE-65ST40	SE-110ST08	SE-110ST10	SE-110ST20	SE-110ST40
Dimensions chart	A	O/I=164.6	O/I=172.1	O/I=135.8	O/I=147	O/I=211	O/I=213.9	O/I=216.1	O/I=212.5
	B	WD 67.7	WD 65.2	53.2	64.4	WD 110.4	WD 110	88.6	84.9
	C	79.4	89.4	13	11	83.1	86.3	14	11
	D	18.8	28.8	6.2	18.5	14.5	17.7	27.5	30.4

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Original macro lenses that achieve both "high performance" and "low cost"

SE-16 series



Straight type
0.5x to 2x

Coaxial type
0.5x to 2x

Full set



Model: SE-16MS
Set details:
- Straight mount
- Coaxial mount
- Lens unit
- Lens tube (Short)
- Lens tube (Long)

SE-18 series



Straight type
2x to 6x

Coaxial type
2x to 6x

Full set



Model: SE-18MS
Set details:
- Straight lens unit
- Coaxial lens unit
- C mounted ring
- 4x ring
- 6x ring

SE-16/SE-18 Series Specifications

Coaxial type

Model name	SE-16VM05	SE-16VM1	SE-16VM2	SE-18VM2	SE-18VM4	SE-18VM6
Optical magnification	0.5x	1.0x	2.0x	2.0x	4.0x	6.0x
WD	107 mm	67 mm	47 mm	114±1 mm	110±1 mm	109±1 mm
Depth of field*1*2	1,900 µm	620 µm	230 µm	380 µm	190 µm	130 µm
Resolution*2*3	8 µm	5.2 µm	3.9 µm	6.3 µm		
NA*2	0.042	0.065	0.087	0.053		
Actual F-number (Fe)*2	5.92	7.88	11.7	18.9	37.7	56.6
TV distortion	-0.026569%	-0.014059%	-0.005588%	-0.058268%	-0.073489%	-0.031328%
Weight	41.9 g	46.3 g	55.8 g	50 g	60 g	65 g
Mount	C mount			C mount		
Maximum applicable image size	1/2 inch			2/3 inch		
Physical distance (O/I)*2	179.9 mm	160 mm	180.6 mm	201.4 mm	227.1 mm	256.7 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Straight type

Model name	SE-16SM05	SE-16SM1	SE-16SM2	SE-18SM2	SE-18SM4	SE-18SM6
Optical magnification	0.5x	1.0x	2.0x	2.0x	4.0x	6.0x
WD	107 mm	67 mm	47 mm	114±1 mm	110±1 mm	109±1 mm
Depth of field*1*2	1,900 µm	620 µm	230 µm	380 µm	190 µm	130 µm
Resolution*2*3	8 µm	5.2 µm	3.9 µm	6.3 µm		
NA*2	0.042	0.065	0.087	0.053		
Actual F-number (Fe)*2	5.93	7.74	11.5	18.9	37.7	56.6
TV distortion	-0.001335%	-0.000957%	-0.000232%	-0.058268%	-0.073489%	-0.031328%
Weight	29.6 g	34 g	43.5 g	40 g	50 g	55 g
Mount	C mount			C mount		
Maximum applicable image size	1/2 inch			2/3 inch		
Physical distance (O/I)*2	179.9 mm	160 mm	180.6 mm	199.1 mm	224.8 mm	254.4 mm

*1 The depth of field is a value calculated using 40 µm as the permissible circle of confusion.
*2 These are calculated values.
*3 The resolution is a value calculated using a 550 nm wavelength. The specifications above are values based on the optical design. Differences between individual devices may occur due to assembly accuracy, etc.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Field of Vision Chart

These values are for reference.

Coaxial type

(Unit: mm)

Model name	Optical magnification	Sensor size: 1/2 inch		
		Length	Width	Diagonal
SE-16VM05	0.5x	9.60	12.80	16.00
SE-16VM1	1.0x	4.80	6.40	8.00
SE-16VM05+SE-EX2 (2x rear converter)				
SE-16VM2	2.0x	2.40	3.20	4.00
SE-16VM1+SE-EX2 (2x rear converter)				
SE-16VM2+SE-EX2 (2x rear converter)	4.0x	1.20	1.60	2.00

Model name	Optical magnification	Sensor size: 2/3 inch		
		Length	Width	Diagonal
SE-18VM2	2.0x	3.30	4.40	5.50
SE-18VM4	4.0x	1.65	2.20	2.75
SE-18VM2+SE-EX2 (2x rear converter)				
SE-18VM6	6.0x	1.10	1.47	1.83

Straight type

(Unit: mm)

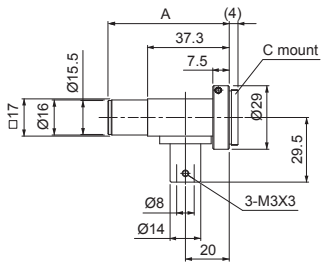
Model name	Optical magnification	Sensor size: 1/2 inch		
		Length	Width	Diagonal
SE-16SM05	0.5x	9.60	12.80	16.00
SE-16SM1	1.0x	4.80	6.40	8.00
SE-16SM05+SE-EX2 (2x rear converter)				
SE-16SM2	2.0x	2.40	3.20	4.00
SE-16SM1+SE-EX2 (2x rear converter)				
SE-16SM2+SE-EX2 (2x rear converter)	4.0x	1.20	1.60	2.00

Model name	Optical magnification	Sensor size: 2/3 inch		
		Length	Width	Diagonal
SE-18SM2	2.0x	3.30	4.40	5.50
SE-18SM4	4.0x	1.65	2.20	2.75
SE-18SM2+SE-EX2 (2x rear converter)				
SE-18SM6	6.0x	1.10	1.47	1.83

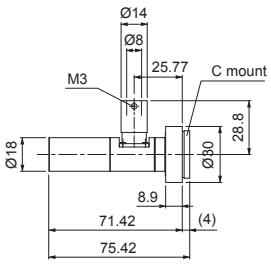
For other fields of vision, refer to the field of vision chart in the Technical Guide. ▼ P.390

Dimensions (mm)

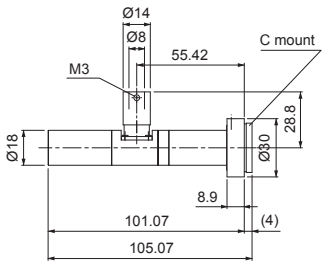
SE-16 (Coaxial)



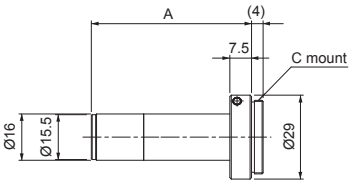
SE-18VM2 (Coaxial)



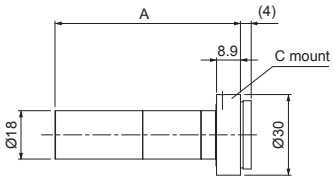
SE-18VM4 (Coaxial)



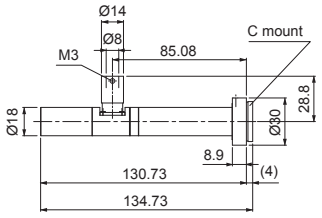
SE-16 (Straight)



SE-18 (Straight)



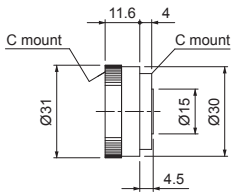
SE-18VM6 (Coaxial)



	Model name	A
Coaxial	SE-16VM05	55.4
	SE-16VM1	75.5
	SE-16VM2	116.1
Straight	SE-16SM05	55.4
	SE-16SM1	75.5
	SE-16SM2	116.1
	SE-18SM2	69.1
	SE-18SM4	98.8
	SE-18SM6	128.4

Options

SE-EX2 (2x rear converter)



Mount between the lens and camera to double the magnification. Be aware this will reduce the brightness and resolution.

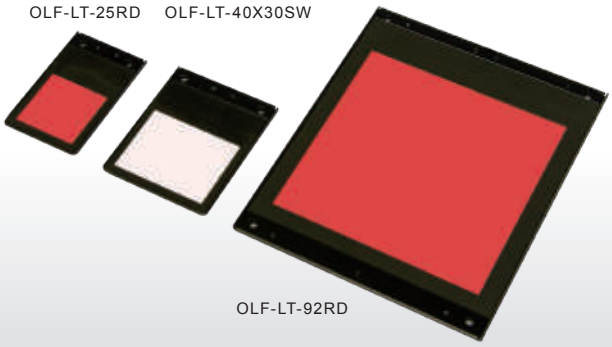
Organic LED (OLED) Products

CCS OLED ▶ Search

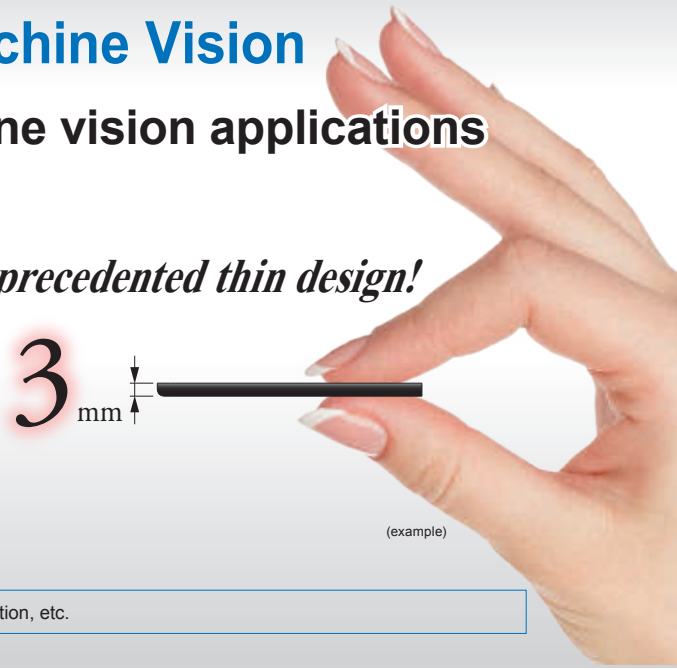
Warranty Warranty for this product differs from standard CCS lights. Contact our local sales office for details.

Organic LED Lights for Machine Vision

Brightness required for machine vision applications



Unprecedented thin design!



Applications Visual inspections, dimension measuring, foreign material inspection, etc.

A New CCS Brand, "CCS-LT"

"CCS-LT" ("CCS Leading Technology") is a new CCS product brand providing advanced technologies.

Its purpose is to introduce newly developed technologies to the market early and to broaden our range of solution proposals.

* The warranty period for lighting products is for 1 year from when the product ships from CCS. Emission amounts not guaranteed. Contact our local sales office for details.

Features

- Available in 3 sizes, for a total lineup of 6 models
- Uniform light emitting surface
- Expands the possibilities for lighting installation with a 3 mm-thin design
- Thin, lightweight, and low heat next-generation light source* * Comparison with CCS LED lighting.
- Red and white light emitting colors
- Notifies the user regarding recommended lighting replacement periods through a dedicated controller

Guidance for lighting service lifetime status is provided in three stages: (1) Good (no problems), (2) Lifetime warning (replacement period approaching), and (3) Lifetime expired (replacement recommended)

Dedicated controller

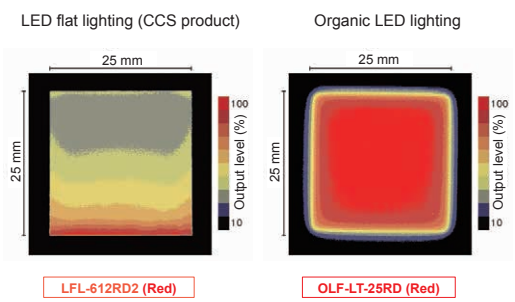


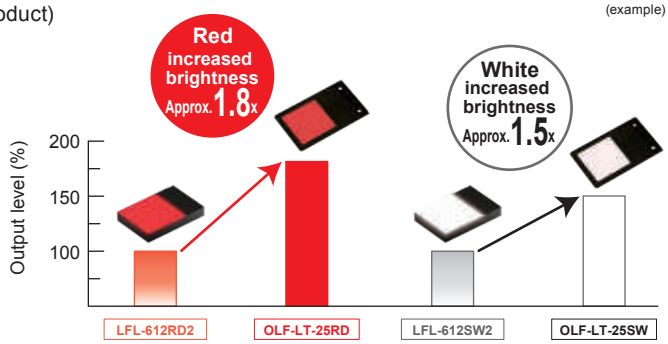
OC-0736-1-ET OC-G-5646-2-ET

Brightness Required for Machine Vision Applications

■ Brightness comparison with LED flat lighting (CCS product)

(example)





(The data included is for reference only. Actual values may vary.)

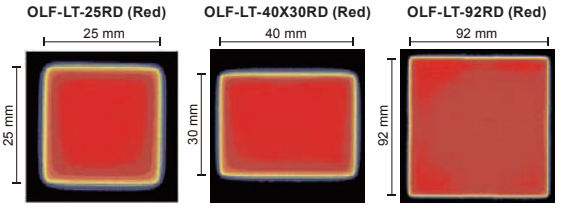
Warranty Warranty for this product differs from standard CCS lights. Contact our local sales office for details.

Specifications by Lighting Model

Model name	LED emitting color	Peak wavelength/ Correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Weight (max.)	Expected service life (hours)
OLF-LT-25RD	Red	630 nm	0.019 A	0.40 W	19 g	50,000
OLF-LT-25SW	White	3800 K	0.018 A	0.42 W	19 g	32,000
OLF-LT-40X30RD	Red	630 nm	0.037 A	0.78 W	29 g	50,000
OLF-LT-40X30SW	White	3800 K	0.035 A	0.81 W	29 g	28,000
OLF-LT-92RD	Red	630 nm	0.262 A	5.6 W	102 g	50,000
OLF-LT-92SW	White	3800 K	0.250 A	5.8 W	102 g	19,000

* Use OC-G-5646-2-ET when using OLF-LT-92 model in overdrive mode.

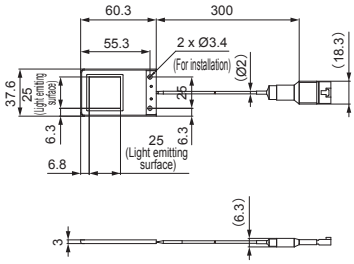
Uniformity (Relative Irradiance)



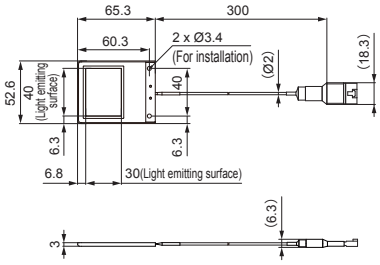
(The data included is for reference only. Actual values may vary.)

Dimensions (mm)

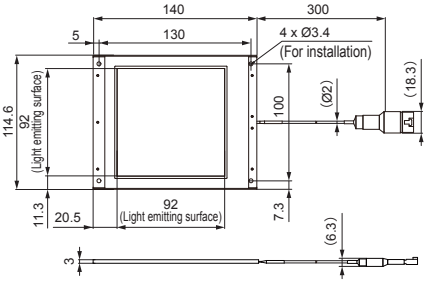
OLF-LT-25RD/SW



OLF-LT-40X30RD/SW



OLF-LT-92RD/SW

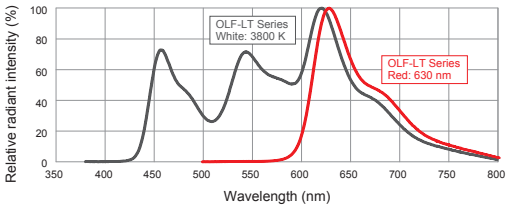


General Specifications

Cable length	300 mm
Cooling method	Natural air-cooling
Operating environment (indoors only)	Temperature: 5 to 40°C, Humidity: 20% to 85% (with no condensation)
Storage environment	Temperature: -20 to 50°C, Humidity: 20 to 85%RH (with no condensation)
CE marking	Safety standard: Conforms to EN62471
Environmental regulations	RoHS2 compliant
Case material	Aluminum alloy
Accessories	Instruction Manual, Extension Cable (1 m)

* The warranty period for lighting products is for 1 year from when the product ships from CCS. Emission amounts not guaranteed. Contact our local sales office for details.

Spectral Distribution Comparison



(The data included is for reference only. Actual values may vary.)

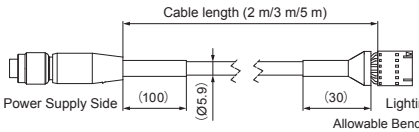
Optional Extension Cable

Model name	OLCB-2	OLCB-3	OLCB-5
Cable length	2 m	3 m	5 m
Weight	127 g max.	182 g max.	292 g max.

* A 1 m cable is supplied with this light.

OLCB Dimensions (mm)

Extension cable: OLCB



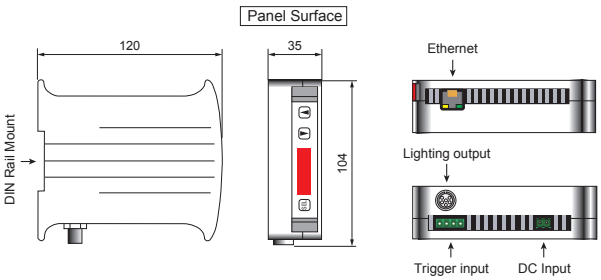
Allowable Bending Radius: 35.4 mm

OC-0736-1-ET Specifications

Input voltage	24 VDC (21.6 to 26.4 V)
Drive method	Constant-current system
Light emission mode	Regular Emission [Continuous], ON/OFF Emission [Switch], Strobe Emission (With Overdrive Mode) [Pulse]
Setting method	Ethernet, Panel Surface Button Operation
Number of channels	1
Input current peak	1 A
Power consumption (typ.)	12 W (Continuous light emission at time of maximum load)
Trigger cycle	Max. 100 Hz
Trigger input	3 to 24 VDC input TTL, NPN, and PNP Input impedance (nominal) 8 kΩ
Strobe light emission time setting	100 µs to 10 ms (100 µs units)
Light emission delay time setting	2 µs to 10 ms (100 µs units)
Strobe emission response speed	Max. 10 µs
ON/OFF emission response speed	Max. 100 µs
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)
Storage environment	Temperature: - 20 to 60°C, Humidity: 20 to 85% RH (with no condensation)
CE marking	EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS2 compliant
Weight	300 g max.
Accessories	Wurth 351 Series 2 pins x1, Wurth 361 Series 4 pins x1

OC-0736-1-ET Dimensions (mm)

Controller: OC-0736-1-ET



* Use OC-G-5646-2-ET when using OLF-LT-92 model in overdrive mode. Contact our local sales office for details.

Regarding the recommended lighting replacement period

Expected Service Life (Hours until radiant quantity drops to 50% when used at intensity: 100%, ambient temperature: 40°C) * Not a guaranteed value.

When the expected service life is at 20%, the "Lifetime warning" is displayed, and when at 0%, the "Lifetime expired" notice is displayed.

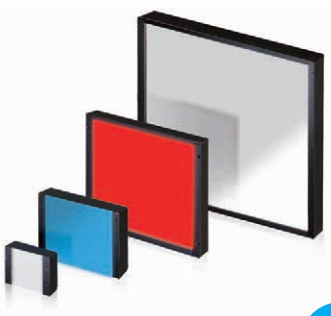
*See the specifications of each light for its expected service life.

* Settings can be verified using a web browser while the lights are connected to the controller and the controller is connected to a PC via LAN connection.



CCS FASTUS

realizes long-term stable



New brand offering new value

CCS + FASTUS = CCS FASTUS

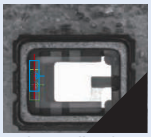
Problem 1

Temperature changes influence brightness.

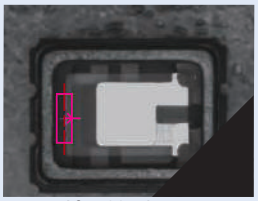
Increased temperature due to self-heating and changes in ambient temperature as air conditioning equipment starts up can affect the brightness of LED lighting.

Inspection example: Extraction of the liquid crystal edge of liquid crystal elements

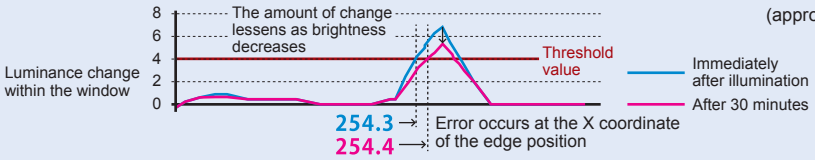
Liquid crystal blank edge extraction is difficult to detect due to transparency, but if the brightness decreases as a result of heating due to lighting, the contrast will be further lowered and a sub-pixel error will occur at the detection position.



Immediately after illumination



After 30 minutes (approx. 20% brightness drop)



Solution 1

Our FALUX technology automatically compensates for brightness fluctuations due to temperature changes.

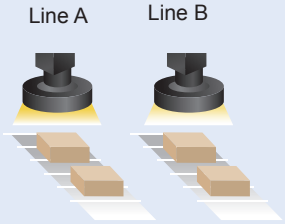
FALUX ► P.282

Problem 3

Need consistent level of brightness across multiple light units.

Actual brightness of light unit is different on each inspection line even though the setting is the same.

	Line A	Line B
Modulated light level	500	500
Brightness	500	475



Solution 3

Solved by using an absolute brightness monitor + copying setting values across all units.

► P.282

sensing lighting

inspection environments



Sensing

Monitoring

Feedback



Problem 2

Need consistent brightness for long-term use.

On a fully operational 24-hour line, LEDs begin to lose brightness after about 1,000 hours, causing costly inspection failures.



Solution 2

Brightness is automatically adjusted to maintain initial settings after receiving a low brightness alarm.

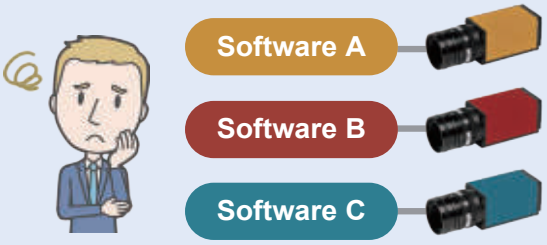


▶ P.282

Problem 4

Different settings are needed one after another

Different settings or programs must be used depending on the camera, requiring extra time and cost.

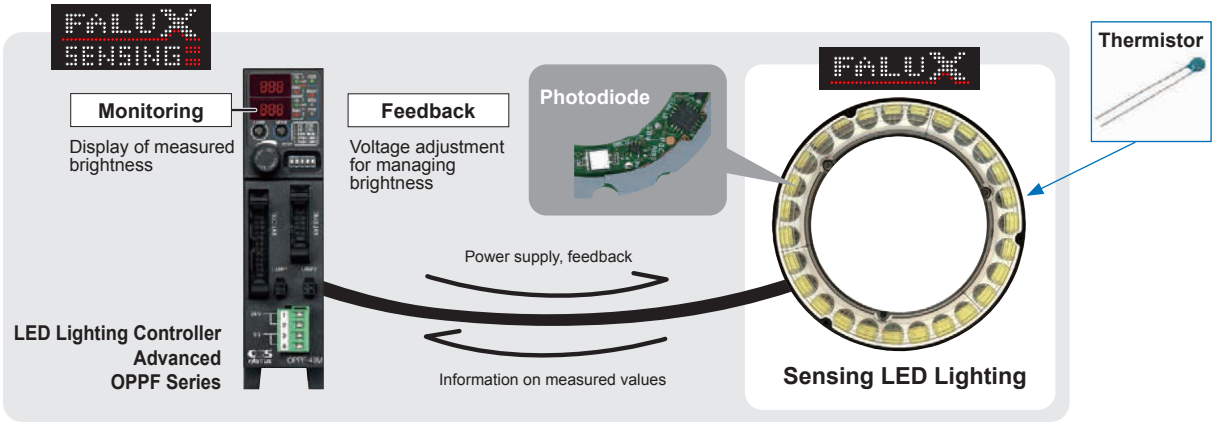


Solution 4

Easy configuration with our original controllers.

▶ P.283

Outline of FALUX and FALUX Sensing



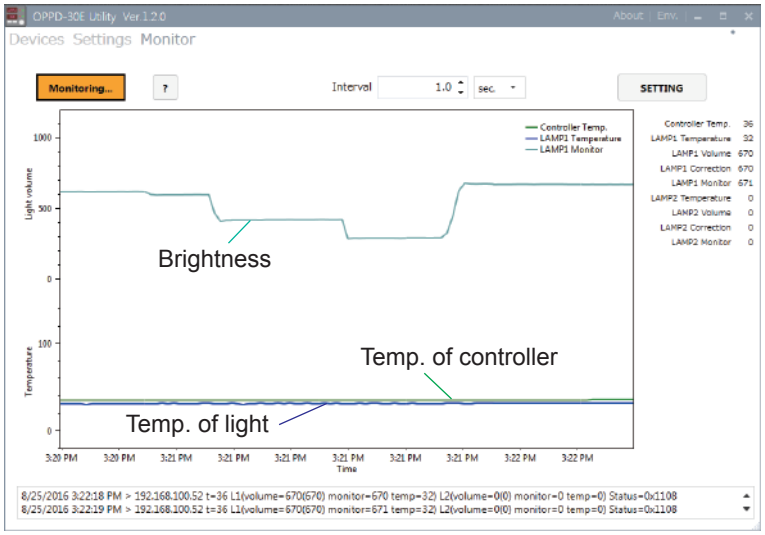
Built-in “FALUX” circuit to correct variations in brightness

FALUX SENSING for monitoring brightness and temperature to maintain the default brightness

Data Logging and Predictive Maintenance

Measured values can be displayed and recorded.

- ✓ Measure brightness
- ✓ Output an alarm when brightness decreases to a predetermined value
- ✓ Measure internal temperatures



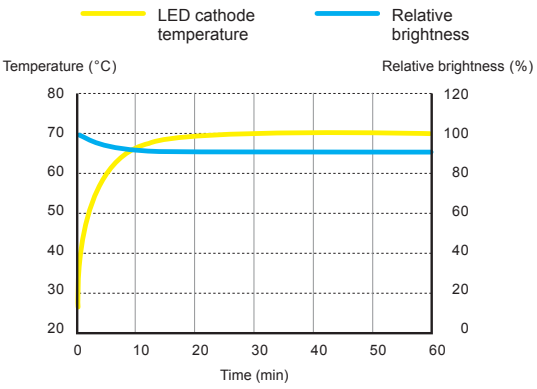
Monitoring changes in brightness is useful for predictive maintenance

Note: The above graph is displayed using dedicated software for the OPPD-30E controller.

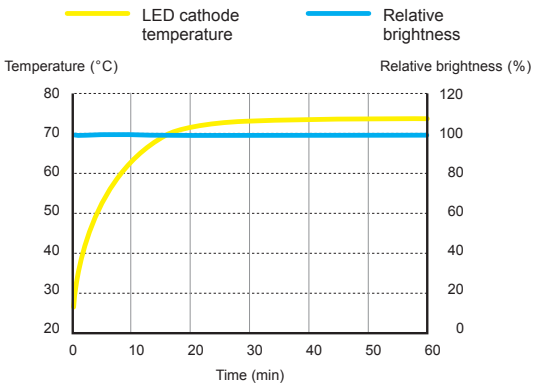
‘FALUX’ Technology

Do you know the LED brightness varies depending on ambient temperature?

FALUX not included

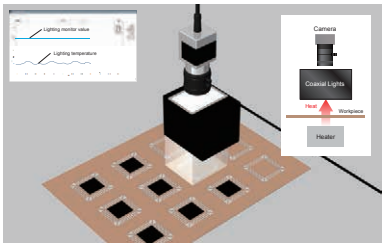


FALUX included



Using the constant current circuit dependent on the input voltage, variations in the forward current of individual LEDs are corrected for uniform brightness.
The temperature compensation circuit compensates for fluctuations in brightness due to changes in temperature.

Application Example: Chip positioning in a high temperature environment

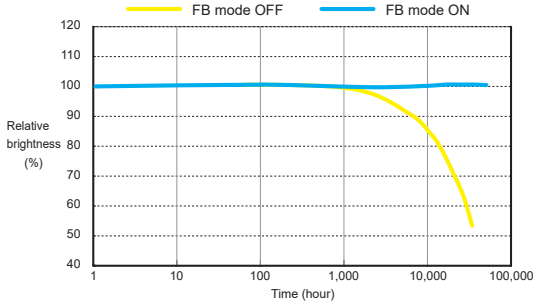


Controller: OPPD-30E / Lighting units: OPX series

Before placing the chip on the lead frame, positioning is performed using a camera and coaxial illumination.
Because it is heated from below with a heater for bonding, the brightness of the lighting fluctuates due to an increase in the ambient temperature, which results in variations in positioning accuracy. If using sensing coaxial illumination, the controller OPPD-30E can not only monitor the illumination temperature, but the feedback function adjusts the brightness to remain constant even if the brightness varies as the temperature rises. This enables variations to be minimized.

‘FALUX Sensing’ Technology

Do you know the LED brightness will be decreased after 1,000 hours operation?

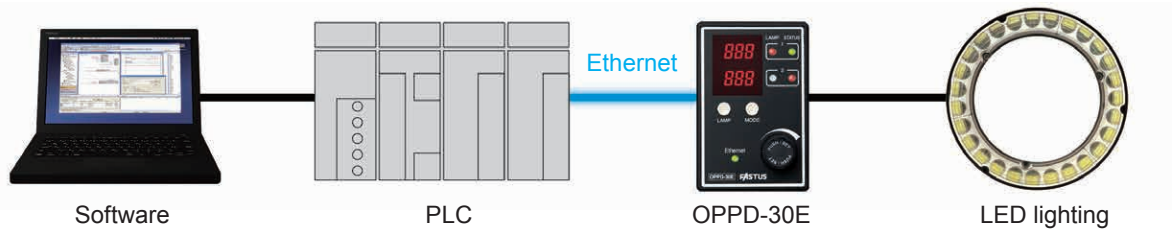


FB control

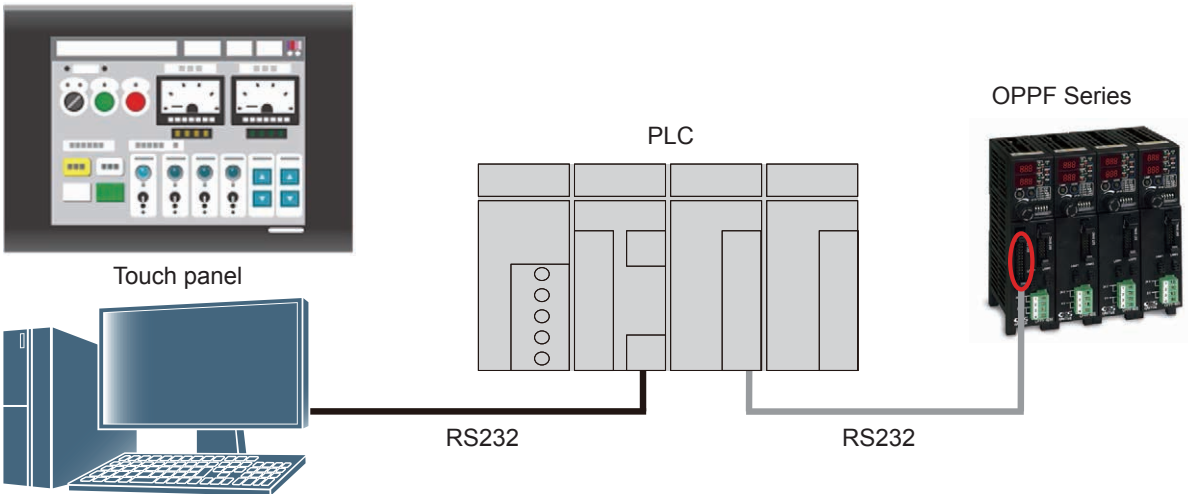
- ✓ Eliminates variations over long periods
- ✓ FB control fine tunes the output voltage to match the standard brightness
- ✓ Output as a feedback error when the upper or lower output voltage adjustment limit is reached

Connection Example

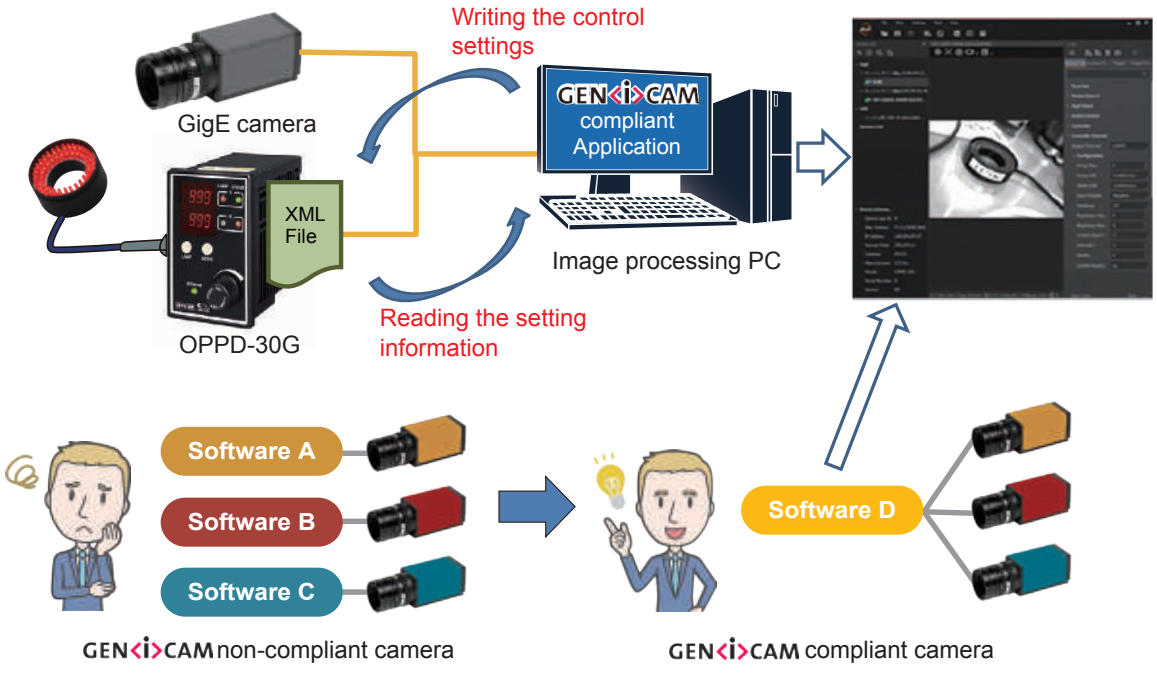
Connection example (Ethernet / OPPD-30E)



Connection example (RS232 / OPPF Series)



Connection example (GEN<i>CAM / OPPD-30G)



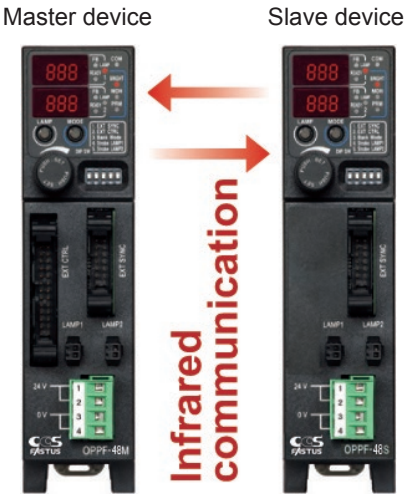
Fastus Controllers






Comparison of Fastus Controllers				
Model	**OPPD-15**	**OPPD-30E**	**OPPD-30G**	**OPPF Series**
Capacity	15 W	30 W	30 W	48 W
Number of channels	1	2	2	2
External control	---	Ethernet	GiGE Vision (Gen<I>Cam)	Parallel/RS232 0-5 V analog input
Sensing	×	○	○	○
Monitoring	×	○	○	○
Feedback	×	○	○	○
Alarm	×	○	○	○
Overdrive	×	×	×	○ (Max 18 V)
PWM frequency	100 kHz	100 kHz	100 kHz	100 kHz

Multi Channel Support (OPPF)



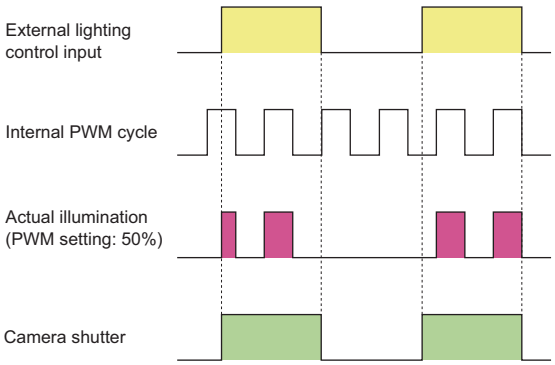
- With 2 channels per unit, support for up to 8 channels is possible by linking (DIN mounting) 3 master and slave devices.
- Communication between units is connector-less and uses infrared.
- A setting copy function allows settings to be batch copied to all channels.
- Connecting a single slave device or just a slave device is possible.

■ No changes in brightness thanks to full synchronization between illumination control input and PWM

Even with fast shutter speeds, illumination is synchronized when using external input lighting, eliminating variations in brightness.

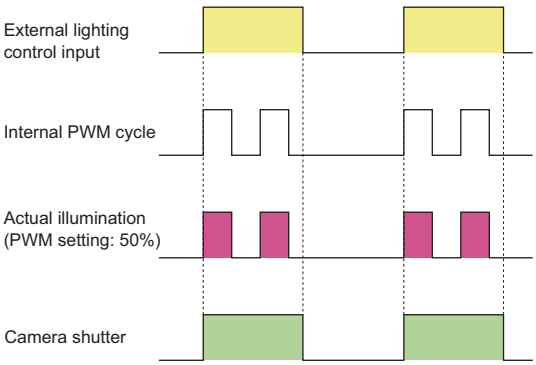
Conventional control

The internal input for external control and the PWM frequency are not synchronized, so brightness will vary with every illumination.



Full synchronization between illumination control input and PWM

The external control input and PWM are synchronized before starting, preventing variations in the cumulative illumination times of each light.



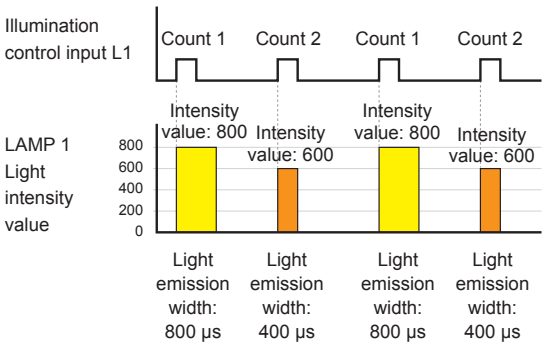
Lighting control sequence

An industry first!

With the OPPD-30E, up to four illumination setting patterns including light intensity values can be configured.
Each pattern can be configured in an illumination control sequence with ordered switching for each illumination control input. (Lighting delay time settings are shared.)
With intensity values and illumination widths set in advance, automatic switching is only performed for illumination control input, allowing the time required for changing settings to be kept to a minimum.
With conventional models, control is not possible without using a PLC and setting up complex ladders.
With the OPPD-30E, such control can be achieved with no other equipment required.

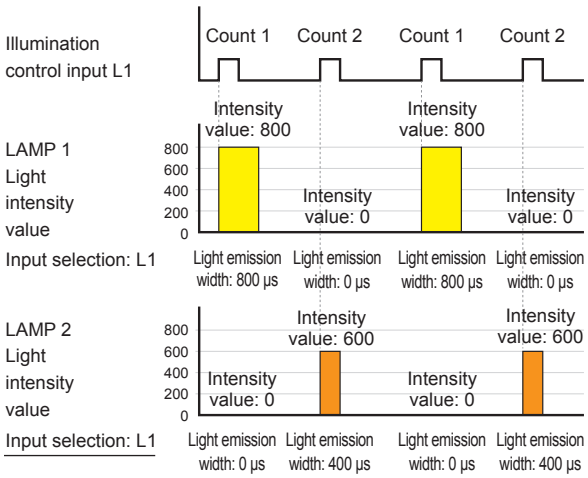
Ex. 1: Light intensity value and emission width switching

Lighting control sequence: 2-count setting



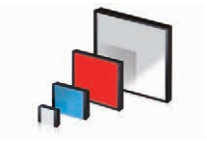
Ex. 2: Lighting switching

Lighting control sequence: 2-count setting



Fastus Lighting Products



Fastus Lighting Products				
Category	**Ring Lights**	**Ring Lights**	**Bar Lights**	**Back Lights**
Model	OPR	OPR-SF	OPB-S	OPF-PS/DF
FALUX SENSING				
Monitoring	○	○	○	○
Feedback	○	×	○	○
FALUX	○	×*1	○	○
Advantages	3 way illumination 	High brightness		PS - Narrow directivity DF - Wide directivity

*1 Instead of FALUX, this series has an automatic shutoff function which works if the internal temperature reaches a specific temperature or higher (SF55 - 80°C, SF70, 85 - 60°C).






Fastus Lighting Products				
Category	**Coaxial Lights**	**Spot Lights**	**Ring Lights**	**Dome Lights**
Model	OPX-S / M	OPS / -U / -ST	HPRS	HPDS
FALUX SENSING				
Monitoring	○	○	○	○
Feedback	○ / ×	○	○	○
FALUX	×	○	○	○
Advantages		OPS - High brightness -U - High uniformity -ST - For overdrive use		

For more details, please visit our website.
https://www.ccs-grp.com/fastus/

What is Computational Imaging?

Also refer to our website.
www.computationalimaging.com

Computational Imaging (CI) refers to digital image capture and processing techniques that combine computation and optical encoding. Relying on data extracted and computed from a series of input images captured under different lighting or optical conditions, CI can improve the capability of a camera or introduce new features not previously possible. By creating an output image focused on the image properties most important to a particular machine vision task, CI offers powerful advantages over traditional one-shot imaging. Within this summary, we introduce the concept of Computational Imaging with an analogy from an every day trend in the consumer environment, and then explain how this technology is making an ever greater impact in high performance Machine Vision (MV) applications.

Analogy with the consumer environment

Consumers want functionality such as the ability to hold up their cell phones and snap the perfect selfie with the sun setting over the beach behind them; they want to sweep them left to right in order to create panorama shots that challenge even the best of wide angle lenses!

In the case of the setting sun, the sun and sky are often thousands of times brighter than the subject of the selfie. The dynamic range of the small imagers used in cell phones is easily exceeded, yet the consumer expects to clearly see both their face and the brilliantly lit sky. To meet this expectation, many of the top cell phones now snap 2 or 3 pictures in rapid succession, each with a different exposure level. Invisible to the user, an algorithm in the background picks the most usable pixels in each image, weights them relative to each exposure level, and combines them into one single high dynamic range (HDR) image with a total dynamic range greater than possible with a single image capture.

Wide angle panorama images are created by grabbing many shots as the camera is swept left to right. An algorithm aligns each image to the last, merges the border between the two, and then repeats this for the next image in the sequence. The final wide angle panorama is a composite image created from the best pixels of all the aligned images and with a wider field-of-view (FOV) than would be possible with a single shot from a fixed imager and lens.

These techniques and many more are part of a trend to use multiple images to create a single computed output image and fit into an area called Computational Imaging. Computational imaging has slowly crept its way into the cameras on smart phones and other portable devices.

Computational Imaging in Machine Vision

Advances in technology and the latest high speed CMOS cameras are making many computational imaging techniques viable for machine vision applications. With CI, system designers can start to think in new ways about creating solutions to difficult imaging problems. Unlike traditional image acquisition, which often requires substantial post-capture image processing and still falls short in producing the optimal image, CI — with its targeted feature extraction — directly outputs the image you need, allowing for more robust MV solutions. Better or previously impossible images for Machine Vision systems can be created at a lower cost.

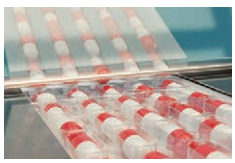
By using multiple image captures and processing the computed “super image”, computational imaging directly outputs the image you need, shortening development time and allowing for more robust MV solutions.

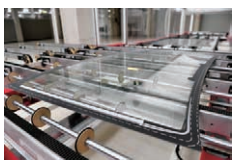
Computational imaging is easier than ever to implement into almost any vision system. In the following pages we outline some of the typical functions that can be accomplished with applications that previously would have been difficult.

Illumination for Computational Imaging

Computational Illumination is a necessary component of computational imaging. It refers to controlling illumination in a structured fashion, to encode the relevant information needed for digital processing. Typically, programmable lighting systems are used to create lighting sequences that vary application-specific parameters such as illumination direction or angle, wavelength, intensity, or focus.

Fundamental techniques include image-based relighting, image enhancement, image deblurring, geometry/material recovery and others. These methods are applied in numerous practical ways to enhance machine vision solutions.

Principle of Operation

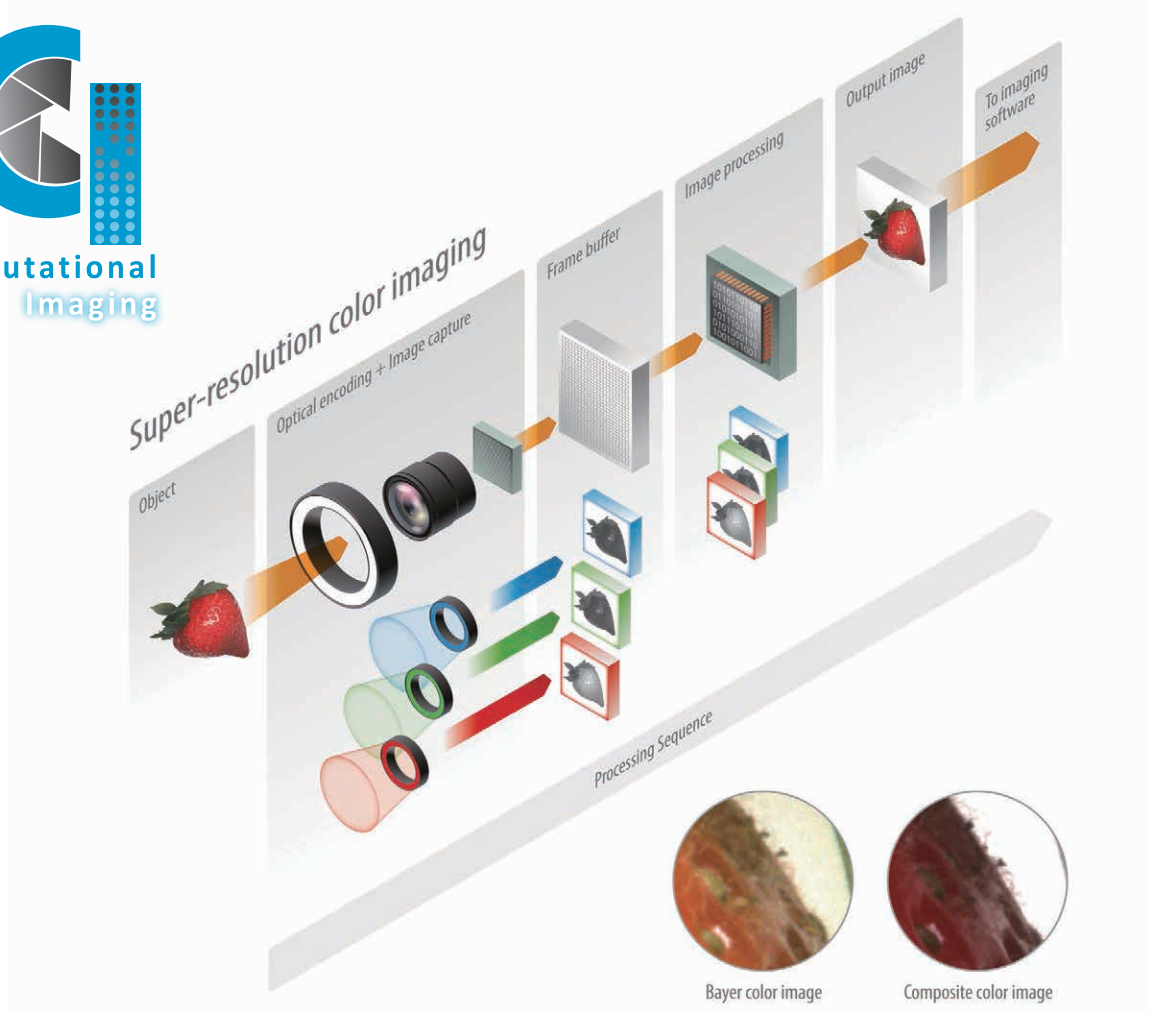
In this section we introduce the principle of Computational Imaging. The key principles of CI are:

- Computation is inherent in the image formation process
- Combines special optics and/or lighting along with image processing during image capture
- Typically involves a sequence of images with different illumination for each frame
- Covers a wide variety of techniques, all designed to output better images or images with unique characteristics
- Ends with the image acquisition process — does not involve image analysis

The illustrated example below uses Super-Resolution Color Image Capture as its theme. With this example, we can show the practical elements that comprise the steps of computational imaging. These steps can be generalized as computational illumination/optical encoding, image capture and image processing/decoding.

Example using super-resolution color imaging

Using a monochrome camera with a CCS full-color ring light, which has 3-channel control of red, green, and blue output, the user can generate full resolution RGB color images at practical data rates. By grabbing a sequence of 3 monochrome images correlated to red, green, and blue strobes, a full color composite image at the full monochrome resolution can be created by aligning the images and using the red, green, and blue values for each pixel to create the color pixel.



Advantages of composite images

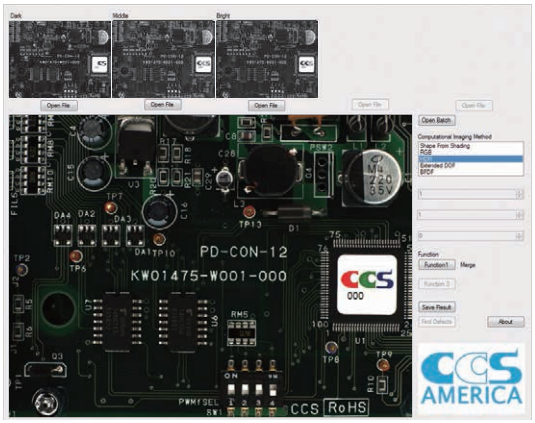
In this illustrated example, the resulting composite color images are much sharper than that of a single image capture with a Bayer or mosaic color camera. The images are similar to those from 3-CCD cameras without the expense, special prism or lens limitations, and at much higher resolutions than that of available 3-CCD cameras. The advantage of this method is the ability to have the best of both worlds; complete color information at the full pixel resolution of the imager. Due to the spatial effects of interpolation, Bayer color imagers capture the color information, but lose spatial resolution across several pixels.

Practical Application Examples

High resolution color (RGB)

Here we take a look at a practical example of the concept outlined in the previous section on the principle of Computational imaging.

Three monochrome full resolution images are captured. To get the color information, each image is strobed with a single color; Red, Green, or Blue. A color image with the full resolution of the monochrome camera can be created from the data of the 3 input images. In this example, 3 monochrome 8-bit 1600 x 1200 images are combined to make a 24-bit color 1600 x 1200 image.

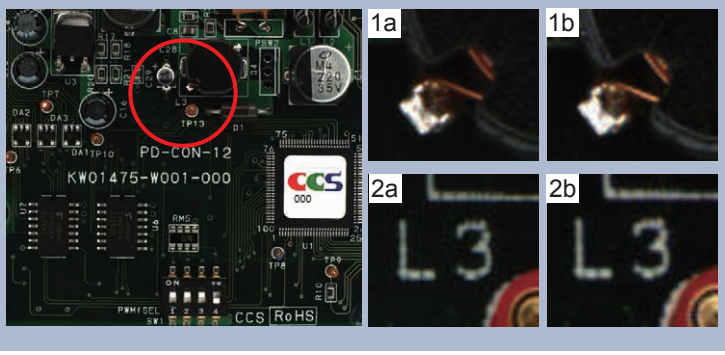


Composite color image

The advantages of this method to create composite color images becomes apparent as you zoom into feature details, as you might in a machine vision inspection.

In the zoomed image 1a, you can see the two exposed layers of the coil wire and the exit wire to the solder point. The edges are sharp and transitions are smooth with good contrast. In image 1b, the Bayer interpolation artifacts cause the wire to alias red + green along its length. Contrast to the background and between wire layers is reduced and noisy.

You can see similar effects in the 2a + 2b zoomed images. In the Bayer image 2b, the white silkscreen is almost completely Bayer noise. The red/gold/black boundaries of the test point in the lower corner become blurred and wider. In the 2a equivalent image, the silkscreen and test point are sharper, with good contrast and color.



Bright field + dark field

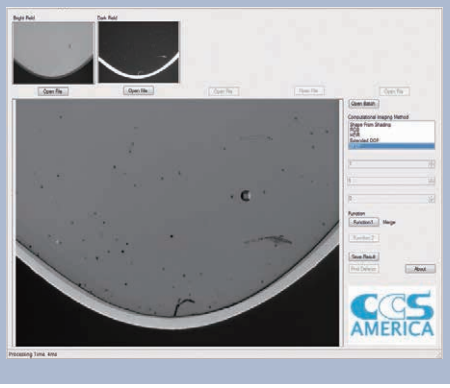
Bright field and dark field are two common methods of illumination for machine vision inspection. Normally, they are used independently, as most samples image best using one method or the other. But what if your sample contains some features that can only be seen with bright field, and other features that can only be seen with dark field?

Multishot imaging nicely solves this problem through the use of a combined bright field/dark field illuminator. The bright field image is combined with the dark field image to generate an output image which contains the features or defects found in both input images.

Oil drop on scratched glass plate

The piece of glass in this example contains several types of common defects — microscopic particles, fine scratches, pits, and oil droplets on the surface.

Bright field imaging shows the droplets and larger particles, but not the fine surface details. Dark field imaging highlights all the surface details, readily showing the scratches, pits and microscopic particles. While neither bright field nor dark field lighting show everything, a CI process can produce an output image that does.



Photometric Stereo (PMS)

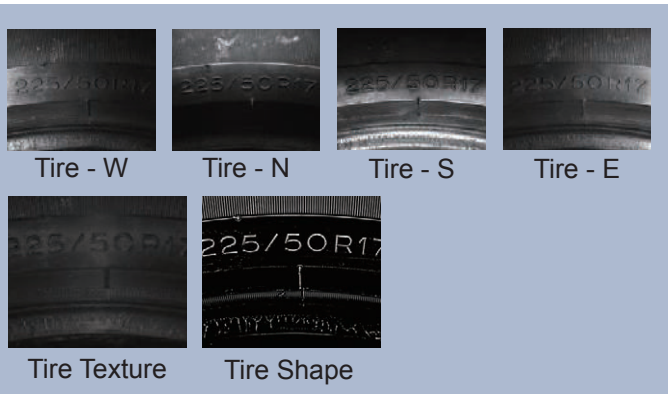
Photometric stereo allows the user to separate the shape of an object from its 2D texture. It works by firing segmented light arrays from multiple angles and then processing the resulting shadows in a process called “shape from shading.” It is useful for the detection of small surface defects and 3D surface reconstruction. PMS is a height driven process which can enhance surface details like scratches, dents, pin holes, raised printing, or engraved characters. Because the final image is a computed surface based on the shading information surface coloring or features without height are removed. This can make visually noisy or highly reflective surfaces easier to inspect. This capability is rapidly becoming popular in the MV market. Numerous machine vision suppliers are offering photometric stereo tools.

A basic PMS system uses a ring light with four 90 degree quadrants to cast a directional shadow around raised features on an object. The feature map can be applied through different algorithms to show surface details that are hard to find or can’t be detected in pure visual images.

Tire inspection with PMS

The images in this example were captured with a ring light with four 90 degree quadrants. The quadrants were fired in sequence to create the West, North, South, and East images as shown on the right.

Images of the Tire Texture and Tire Shape are then created by combining these images in software as shown. The PMS routine removes the visual noise and leaves only the features of interest.



CCS illumination for Computational Imaging systems

Computational Illumination from CCS provides illumination in a structured format — enabling high quality image capture in a controlled fashion. These systems are open-architecture so that they can be integrated with any GenICam cameras and many Smart cameras.



CCS provide Computational Illumination components and kits to allow for easy implementation. Please contact your CCS sales representative if you require any assistance in selecting relevant cameras and imaging software.

LSS-2404 and segmented HPR2 Ring Light

The LSS-2404 Light Sequencing Switch is a special-purpose programmable LED Lighting controller designed to switch external +24 VDC power for up to 4 channels of lights. Upon receiving an external system trigger, the LSS-2404 executes a pre-programmed sequence of lighting on the 4 channels and outputs a set of correlated camera triggers, automatically synchronizing a series of external camera exposures to the programmed lighting sequence. Arbitrarily complex lighting sequences are possible to support any combination of Computational Imaging (multi-shot) and conventional (single-shot) image capture. Bundled software allows the user to configure the controller and update the firmware.



CCS also offers a range of segmented ring lights. The special version of HPR2 series is available in 4 segments, which is ideal in combination with the LSS-2404 for Photometric Stereo applications. All standard sizes are available in segmented form.

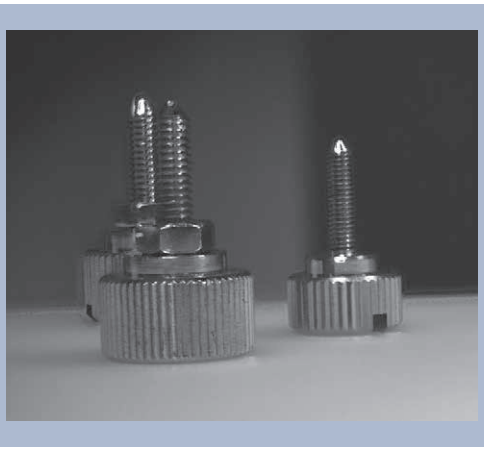


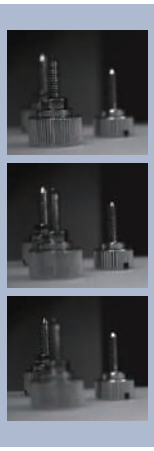
For more information, please visit www.computationalimaging.com or contact your local CCS representative.

Extended Depth of Field (EDOF)

All images have a depth of field (DOF), a distance over which objects appear in sharp focus. In any single image, DOF is limited by the magnification and aperture size used. In some machine vision applications, the DOF may not be great enough to focus sharply on all the objects in a scene. Conventional solutions for increasing DOF such as closing the aperture (higher f/#) come with substantial tradeoffs such as decreased light and less resolution.

The EDOF technique allows an image to be created with a DOF greater than any of the single images. Using EDOF image processing software and the CCS computational illumination kit, multiple images with various depths of field can be merged to return a clear, sharp result - without loss of light or resolution.





How to get a lot more Depth of Field

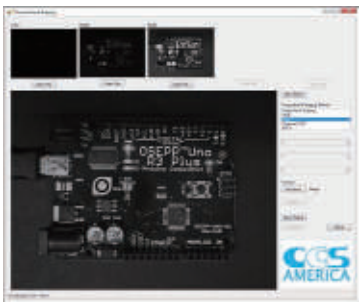
To extend DOF, several input images captured at different focal planes are necessary. While there are a number of methods for EDOF imaging, two common ones are:

- Using motorized or liquid lenses to vary the focal point
- Using a chromatically uncorrected lens along with multiple wavelengths of light to induce focal plane shifts

The example to the left merged three separately focused images to produce an EDOF image with all three fasteners in sharp focus.

High Dynamic Range (HDR)

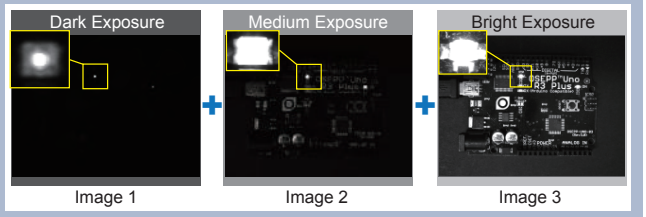
All imagers have a limit to the ratio of the brightest object to the darkest object that can be distinguished in a single image. This is called the dynamic range. Many machine vision applications involve bright, shiny, or dark objects that challenge the dynamic range of the camera. To solve these cases, a series of images with different exposure levels can be captured to create a single HDR image with all the detail that needs to be included for the inspection.

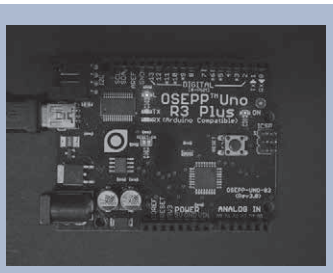


HDR imaging

This HDR image is created from 3 images with different exposures. Image 1 lets you see the LED die and surrounding package, but no other details are visible. Image 2 exposure allows the silkscreen and brightest parts of the components to be seen, but the LED is oversaturated.

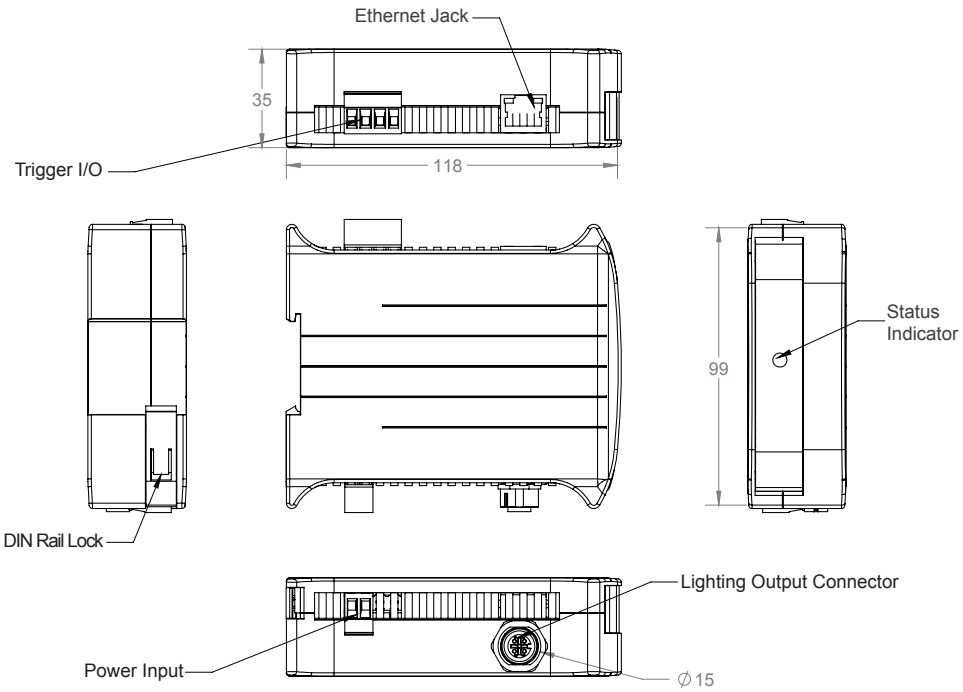
Image 3 allows the barrel connector and other dark components to be seen, but the text and component leads are oversaturated; the LEDs are completely washed out. The HDR image allows correct exposure of the bright LEDs, proper saturation of the silkscreen and component leads, yet the dark components can still be seen.





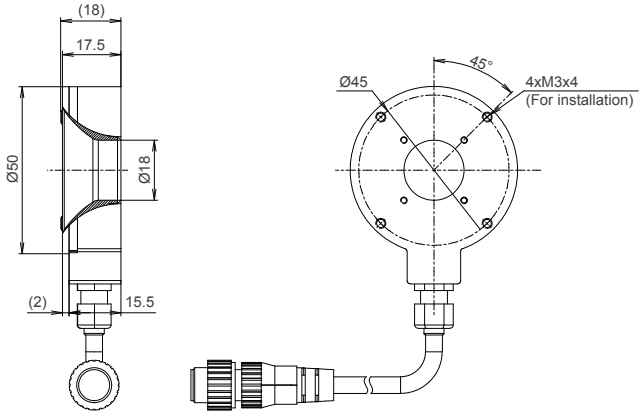
Relevant Products

LSS-2404 Specifications	
Description	The LSS-2404 Light Sequencing Switch is designed to be the heart of any CI system and can switch external +24 VDC power for up to 4-channels of lights. Upon receiving an external system trigger, the LSS-2404 executes a pre-programmed sequence of lighting on the 4-channels and outputs a correlated camera trigger, automatically timing an external camera exposure to the programmed lighting sequence. May be set-up as master or slave in a system.
Number of lighting channels	4
Input voltage	10.8 – 28.8 VDC (absolute range); suitable for either 12 V or 24 V DC lighting.
Power consumption	5W maximum internal dissipation; excluding attached lighting and dependent on configuration.
Trigger Out (to camera)	Selectable to 5 V, 12 V, or 24 V via software. Voltage level tolerance +/- 15%. Maximum limited to ~93% Vin
Trigger Input	Voltage mode: Accepts 3.3 – 24 VDC logic level voltage with adjustable trigger level Switched Ground Mode: Use opto-isolators or closed contacts via direct connection without external components.
Trigger Threshold	Software programmable 1 - 24 VDC trigger level in 100 mV increments Default = 9.6 V threshold to work with 12 V or 24 V trigger logic
Maximum Current Rating	1 A/ch x 4-channels; 4 A maximum all channels.
Communication Port	RJ45 connector. 100BaseT Ethernet. TCP/IP protocol. Control via web-based GUI or TCP/IP command set.
Firmware	User upgradeable via GUI (included).
Sequence Timing	User programmable via GUI (included).
Timing Resolution	Maximum Trigger rate: 10,000 fps (100 µS) Minimum output signal width: 100 µS Timing resolution: 1 µS Channel skew + jitter: <= 10 µS
Operating Temperature Range	Range 0 to 40 °C
Storage Temperature Range	Range -10 to 50 °C
Cooling	Free air cooling (standard model)
Dimensions	4.13 x 6.15 x 1.57 inches L x W
Weight	442g

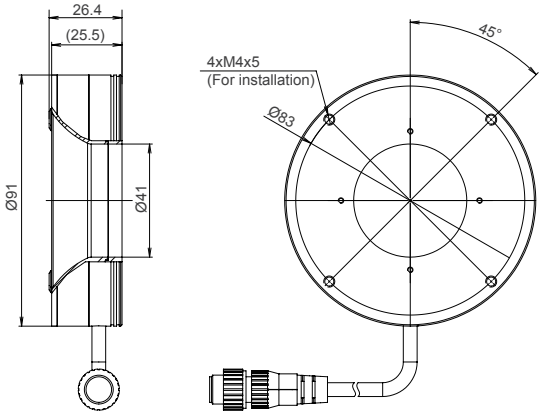


Dimensions Segmented Ring Lights

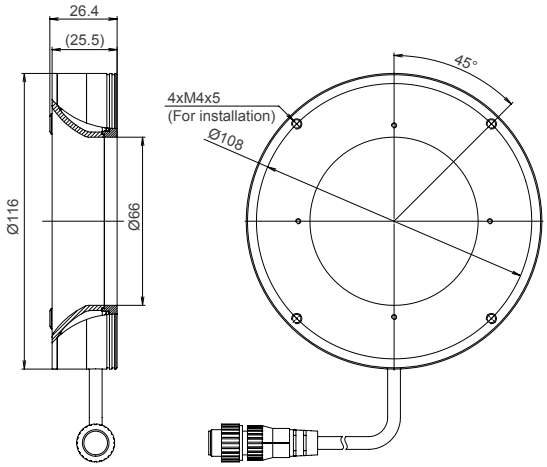
HPR2-50SW-DV04M12-5



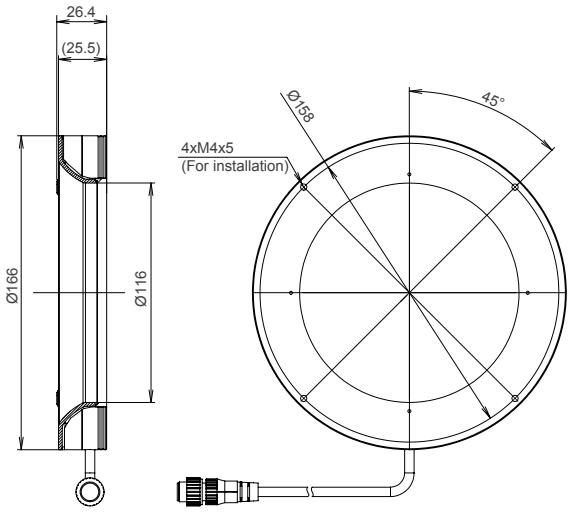
HPR2-75SW-DV04M12-5



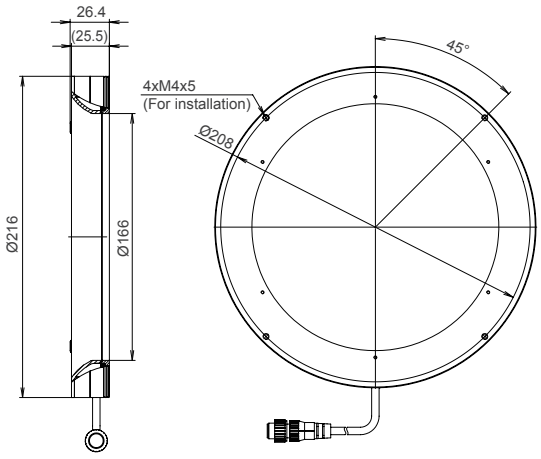
HPR2-100SW-DV04M12-5



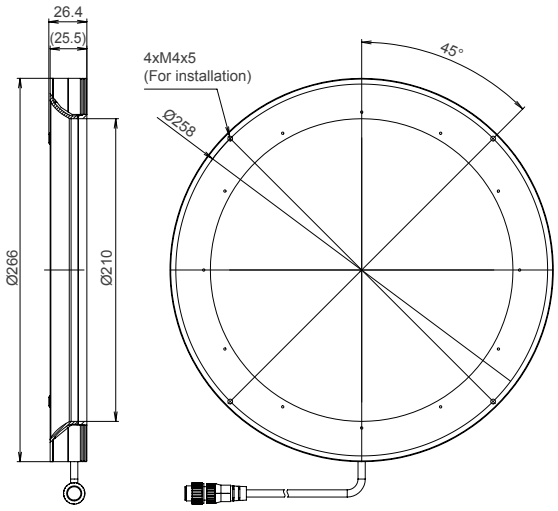
HPR2-150SW-DV04M12-5



HPR2-200SW-DV04M12-5



HPR2-250SW-DV04M12-5



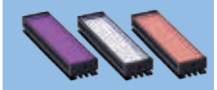
CCS Illumination for Computational Imaging Systems

Computational Imaging

Computational Illumination from CCS provides illumination in a structured format – enabling high quality multi-shot image capture in a controlled fashion. These components are open-architecture so that they can be integrated with any machine vision camera and many smart cameras.

CCS provides a number of Computational Illumination products to allow for easy implementation. Please contact your local CCS Sales office, or CCS Partners, if you require any assistance in selecting compatible components, such as cameras, lenses and imaging software.

CCS Computational Illumination Kit components

Item	Size	Part Number	Key specifications	Photo
Light Sequencing Switch	1.5x DIN Module	LSS-2404	The LSS-2404 Light Sequencing Switch is a programmable LED lighting controller designed to manage multi-shot image capture sequences for Computational Imaging.	
Ring Light (4 Quadrant)	50 mm 75 mm 100 mm 150 mm 200 mm 250 mm	HPR2-YYYxx-DV04M12-5 YYY=size: 50,75,100,150,200,250 mm xx=color: BL, RD, SW, IR	PMS - Photometric Stereo HDR - High Dynamic Range	
Bar Lights (4 Quadrant)	33-509 mm 300 mm 150-1500 mm Universal	LDL2 Series LDLB Series HLDL2 Series BK-QUADBAR-4C	PMS - Photometric Stereo HDR - High Dynamic Range Corner Bracket Assembly w/mounting - Fits all sizes	
Full Color	33-509 mm 50-400 mm 27-500 mm 50-400 mm 13-200 mm	LDL2 Bar Lights HPR2 Ring Lights TH2 Panel Lights HPD2 Dome Lights LFV3(A) Coaxial Lights	URC - Ultra-Resolution Color CHDR - Color HDR EDOF - Extended DOF (chromatic dispersion)	
Multi-spectral	Wide Range	UV Series NIR Series Full Color Series	Wide range of form factors and sizes in UV, NIR, visible, and Full Color (RGB) lights available for any multi-spectral application.	
Segmented Full Color Light	50 mm 75 mm 100 mm 150 mm 200 mm 250 mm	HPR2 Series	Combo 4-segment + Full Color RGB 12-channel input for ultimate flexibility	
Breakout Cable	300 mm 900 mm	FCB-F-0.3-XS2-zzz FCB-F-0.9-XS2-zzz zzz=Light Connector type: Blank=M12 (default) or SM3	4-way branch, 0.3 meters total length 4-way branch, 0.9 meters total length Allows any four CCS lights to connect to the LSS-2404 controller.	
Extension Cables M12	1,3,5, or 9 meters	FCB-X-0.5SQM12-5M5F X=length of 1,3, 5, or 9 m	Straight extension cables for use between the LSS-2404 controller and breakout cables or lights with M12 connector.	
Extension Cables SM3	1,2,3,5, or 10 meters	FCB-XX XX=Length: 1,2,3,5, or 10 m	Straight extension cables for use between FCB-F-X.X-XS2 branches and CCS lights with SM3 connectors only.	
Adjustable Bracket	150 mm Other sizes available	BK-HPR2-150-IS	Mounting bracket for camera and segmented or standard HPR2 ring light. The bracket has a slider mechanism, allowing for the camera working distance to be adjusted. Bracket mountable at either camera or light position.	
Software			Software support for Computational Imaging available through leading machine vision suppliers. Visit www.computationalimaging.com for details.	

Depending on the particular CI process, any standard light may be incorporated. CCS can create custom products such as integrated multi-spectral lights in one unit. Contact CCS for additional details.

triniti™ technology

Expert control of Machine Vision lighting… made easy

triniti™ is a new, enabling technology from Gardasoft, which provides expert control, operational intelligence and full integration of Machine Vision Lighting — all within a 'plug-&-play' environment.

With **triniti**, Machine Vision systems with LED Lighting are now much easier to create, configure and commission, while, at the same time, offering increased functionality.

This is because complex control techniques have now been made very easy to implement.

triniti delivers many benefits to users, including that it:

- enables non-expert users to use expert Machine Vision lighting techniques
- revolutionises the integration of lighting parameters right through to application level software
- addresses the industry's identified need for a highly flexible system that is also readily 'plug-&-play'
- provides a stability of brightness, long-term, that helps to enhance the reliability of Machine Vision systems, over many years.

Interworking between Machine Vision product manufacturers

As a system-enabling technology, **triniti** embraces a collaborative approach with leading manufacturers of LED Lighting and providers of Machine Vision software.



LED Lighting - CCS is one of the world's most prominent Machine Vision product manufacturers; CCS is also one of the leading triniti partners for LED Lighting.

Machine Vision APIs - The triniti API is compatible with Image Processing Software from leading suppliers.

triniti™ comprises three key technological elements:

1 Integration of Lights into software

triniti-enabled LED lights are seamlessly integrated into Machine Vision networks, providing diagnostic and configuration benefits through imaging and application processing software.



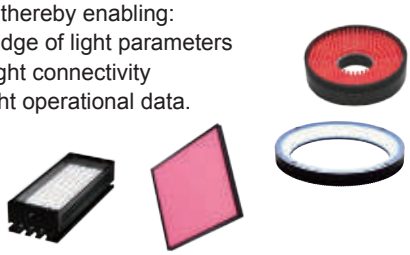
2 Expert Light Control

triniti systems incorporate the control functionality of Gardasoft Vision's patented LED light controller technology, in either discrete or embedded form.



3 Light Identification and Operational Data

triniti chips are mounted into partner lights or light cabling, thereby enabling:
- knowledge of light parameters
- easy light connectivity
- and light operational data.

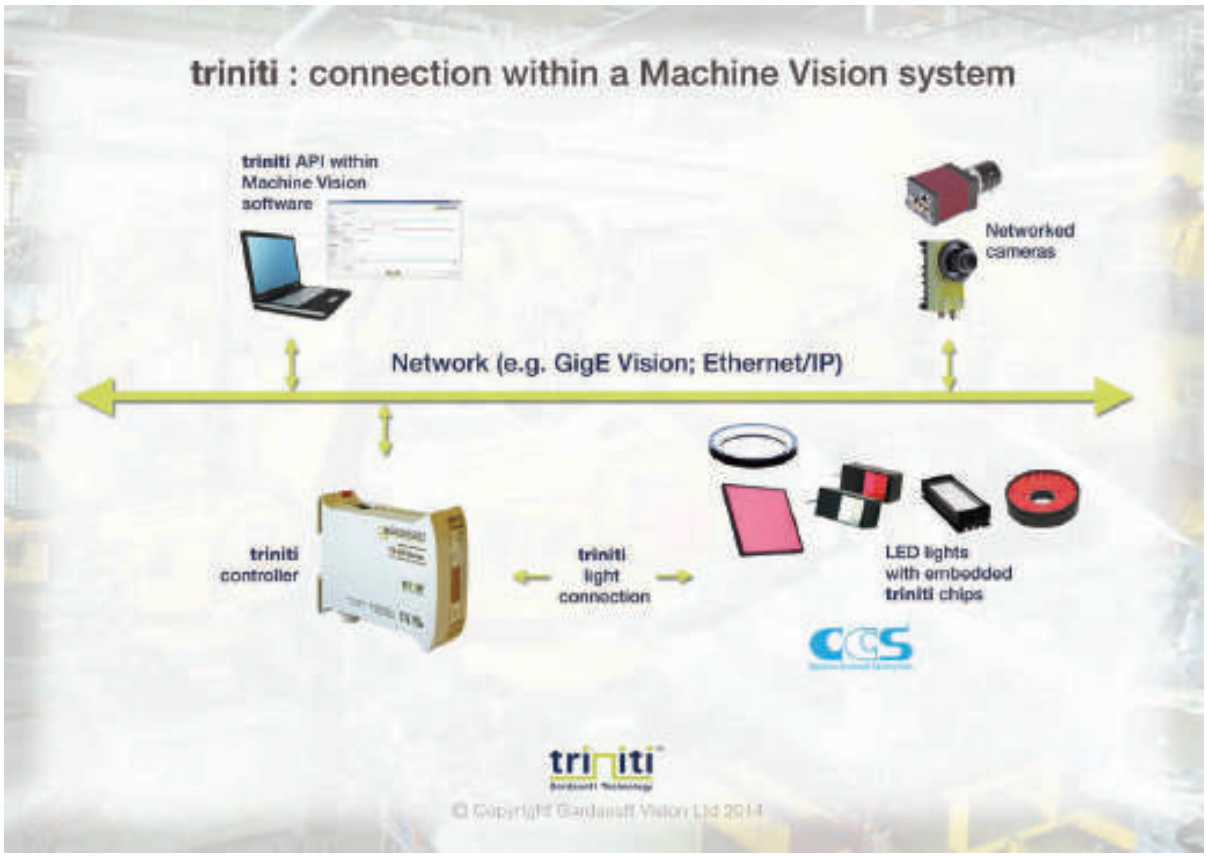


A Collaboration of Machine Vision manufacturers: LED lighting; image processing software; expert light control

triniti™ products and developments

As part of the collaborative development programme, **triniti** deliverables include core hardware and software elements that are integrated with, or embedded into, products from leading LED Light hardware and Machine Vision software manufacturers.

triniti also exploits standard Machine Vision networking and communication architectures such as **GigE Vision** and **GenICam**, in order to ensure that the resulting solutions are fully integrated as follows:



a) triniti Machine Vision Software Interface (API)

triniti-enabled LED lights are seamlessly integrated into Machine Vision networks and provide diagnostic and configuration benefits through Image Processing Software.

b) triniti Protocols

The **GigE Vision** protocol has been implemented in the **triniti** Controllers so that intelligent cameras and applications and libraries which support **GigE Vision** or GenICam can interface directly to **triniti** Controllers.

c) triniti Controller

These are LED Light Controllers which inherit the patented Gardasoft functionality, and combine this with **triniti** communication and GigE Vision compatibility.

d) triniti Chip

The **triniti** chip has been built into partners' lights or light cabling. It holds manufacturer's data on the lights, stores dynamic usage data and can return measurements from sensors within the light.

triniti-enabled LED Lights

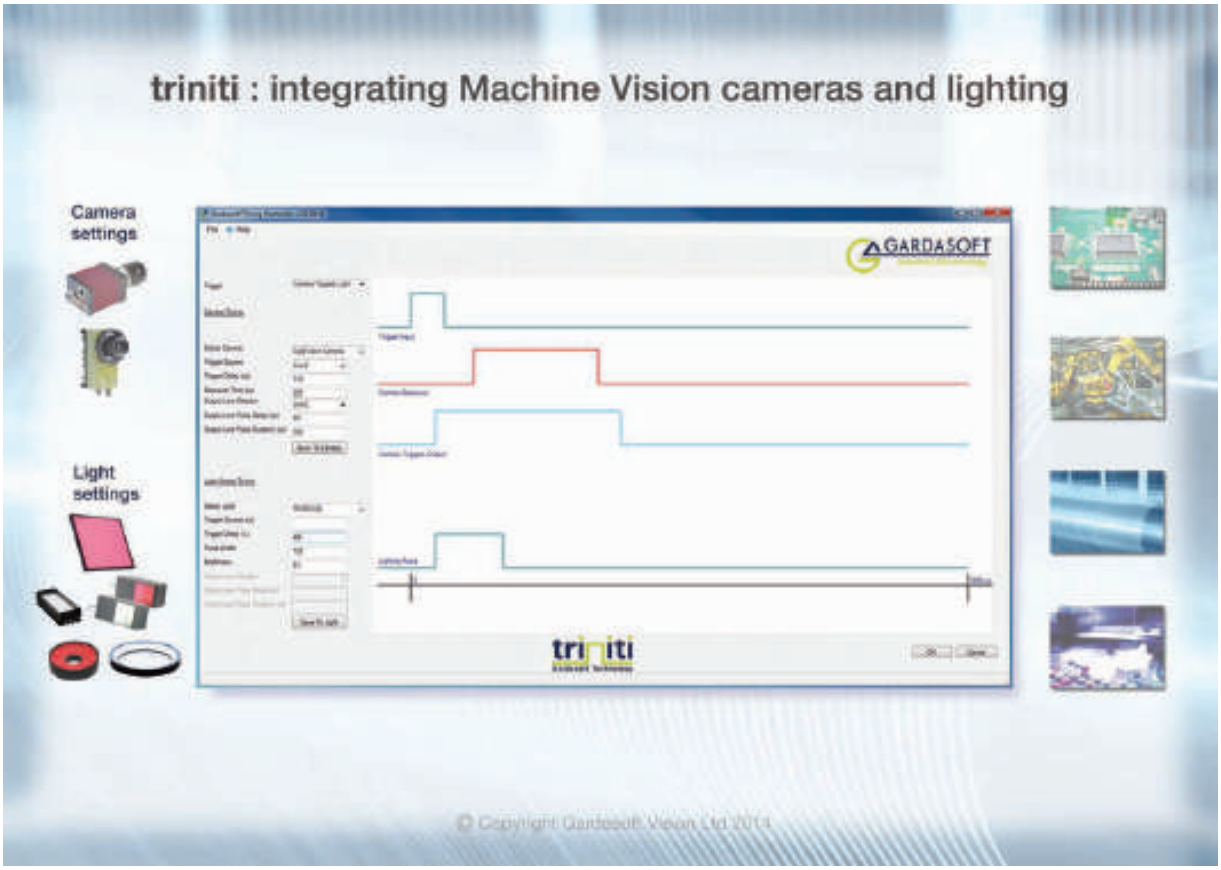
triniti™ provides APIs for integration with Image Processing Software

triniti offers much closer integration of lighting to the application level. This is done by providing links from the applications to the light through industry-standard protocols and software APIs for specific environments.

triniti API extensions are available for leading Machine Vision software for Image Processing and System configuration — with the result that a full graphical interface is provided to the user for configuration and synchronisation between GigE Vision (and other cameras) and lighting.

By integrating camera and lighting configuration and control at the application level, the operation of the system as a whole can be more visible.

For example, a timing diagram (like the below example) showing the timing of the trigger source, camera exposure time and lighting pulses, can be shown on-screen, to make it much easier for both development and diagnostics.



triniti™ gives expert control

With **triniti**-enabled lighting, users benefit from having expert control techniques for their lighting systems readily available — with an ease-of-use more typically associated with 'plug-&-play' products.

Functional advantages include enhanced overdrive and pulse control, and flexible light switching and synchronisation. (Note: refer to **CCS** – www.ccs-grp.com – for specific details.)

'Plug-&-play' customer benefits include:
Optimum application settings for lighting are easy to configure, multiple light systems are easy to manage, and automatic adjustment can maintain more stable brightness over many years of operation.

Expert customer benefits include:
Machine Vision functionality is increased, as performance is improved, and the potential of camera and lighting equipment can be fully exploited. This means that system reliability is maximised, and at the same time, services to end users can be extended and enhanced.

triniti Products

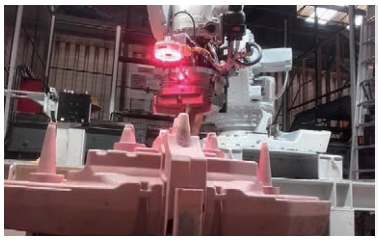
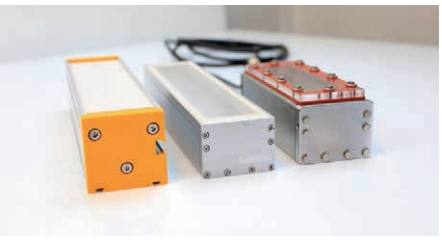
Model Name	Led Color	Wavelength/ Correlated Color temp.	Options		Weight (g)
Ring Lights					
LDR2-32RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Lens attachment ring	30
LDR2-32SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Lens attachment ring	30
LDR2-42RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Adapter	50
LDR2-42SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Adapter	50
LDR2-50RD2-TR	Red	630 nm	Diffusion plate Polarization plate	Lens attachment ring	50
LDR2-50SW2-TR	White	5,500 K	Diffusion plate Polarization plate	Lens attachment ring	50
LDR2-70RD2-TR	Red	630 nm	Diffusion plate	Polarization plate	110
LDR2-70SW2-TR	White	5,500 K	Diffusion plate Polarization plate		120
LDR2-74RD2-LA-TR	Red	630 nm	Diffusion plate		90
LDR2-74SW2-LA-TR	White	5,500 K	Diffusion plate		90
LDR2-100RD2-LA-TR	Red	630 nm	Diffusion plate		170
LDR2-100SW2-LA-TR	White	5,500 K	Diffusion plate		170
LDR2-132RD2-LA-TR	Red	630 nm	Diffusion plate		270
LDR2-132SW2-LA-TR	White	5,500 K	Diffusion plate		270
HPR2-50RD-TR	Red	635 nm	Bracket		46
HPR2-50SW-TR	White	6,000 K	Bracket		46
HPR2-50BL-TR	Blue	470 nm	Bracket		46
HPR2-75RD-TR	Red	635 nm	Bracket		160
HPR2-75SW-TR	White	6,000 K	Bracket		160
HPR2-75BL-TR	Blue	470 nm	Bracket		160
HPR2-100RD-TR	Red	635 nm	Bracket		170
HPR2-100SW-TR	White	6,000 K	Bracket		170
HPR2-100BL-TR	Blue	470 nm	Bracket		170
Square Lights					
FPQ3-32RD-TR	Red	630 nm	-		50
FPQ3-32SW-TR	White	6,000 K	-		50
FPQ3-48RD-TR	Red	630 nm	-		85
FPQ3-48SW-TR	White	6,000 K	-		85
Bar Light					
LDL2-33X8RD-TR	Red	635 nm	Diffusion plate Polarization plate	Bracket	20
LDL2-33X8SW-TR	White	6,600 K	Diffusion plate Polarization plate	Bracket	20
LDL2-41X16RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-41X16SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	50
LDL2-119X16RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-119X16SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-119X16RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-119X16SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	95
LDL2-74X30RD-NR-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30SW-NR-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30RD-WD-TR	Red	635 nm	Diffusion plate Polarization plate	Protective plate Bracket	100
LDL2-74X30SW-WD-TR	White	6,600 K	Diffusion plate Polarization plate	Protective plate Bracket	100
Flat Lights					
TH-27X27RD-TR	Red	635 nm	Light control film	Bracket	30
TH-27X27SW-TR	White	6,600 K	Light control film	Bracket	30
TH-43X35RD-TR	Red	635 nm	Light control film	Bracket	40
TH-43X35SW-TR	White	6,600 K	Light control film	Bracket	40
TH-51X51RD-TR	Red	635 nm	Light control film	Bracket	60
TH-51X51SW-TR	White	6,600 K	Light control film	Bracket	60
TH-63X60RD-TR	Red	635 nm	Light control film	Bracket	100
TH-63X60SW-TR	White	6,600 K	Light control film	Bracket	100
TH-83X75RD-TR	Red	635 nm	Light control film	Bracket	140
TH-83X75SW-TR	White	6,600 K	Light control film	Bracket	140
TH-100X100RD-TR	Red	635 nm	Light control film	Bracket	200
TH-100X100SW-TR	White	6,600 K	Light control film	Bracket	200
Dome Lights					
HPD2-75RD-TR	Red	635 nm	Bracket		140
HPD2-75SW-TR	White	6,500 K	Bracket		140
HPD2-75BL-TR	Blue	470 nm	Bracket		140
HPD2-100RD-TR	Red	635 nm	Bracket		160
HPD2-100SW-TR	White	6,500 K	Bracket		160
HPD2-100BL-TR	Blue	470 nm	Bracket		160
Coaxial Lights					
LFV3-CP-18RD-TR	Red	635 nm		-	80
LFV3-CP-18SW-TR	White	6,000 K		-	80
LFV3-35RD-TR	Red	635 nm	Diffusion plate Polarization plate	Light control film	175
LFV3-35SW-TR	White	6,000 K	Diffusion plate Polarization plate	Light control film	175
LFV3-50RD-TR	Red	635 nm	Diffusion plate Polarization plate	Light control film	335
LFV3-50SW-TR	White	6,000 K	Diffusion plate Polarization plate	Light control film	335

Flood lights, 3D Pattern Projector,

CCS introduces a new range of high-quality plug & play lighting that achieves an innovative advancement in flexible design. This comprehensive range of lighting innovations includes Flood Lights, 3D Pattern Projector, Hyperspectral & Multispectral, SWIR, and more.

HIGHLIGHTS

Flood light

Specialised in high-power LED lights for wide field of view inspection.

Flexibility




Do it yourself! Lights with adjustable wavelength, lens position, diffusers, drivers, and optical accessories delivers a new level of flexibility and convenience.

IP standard compliance



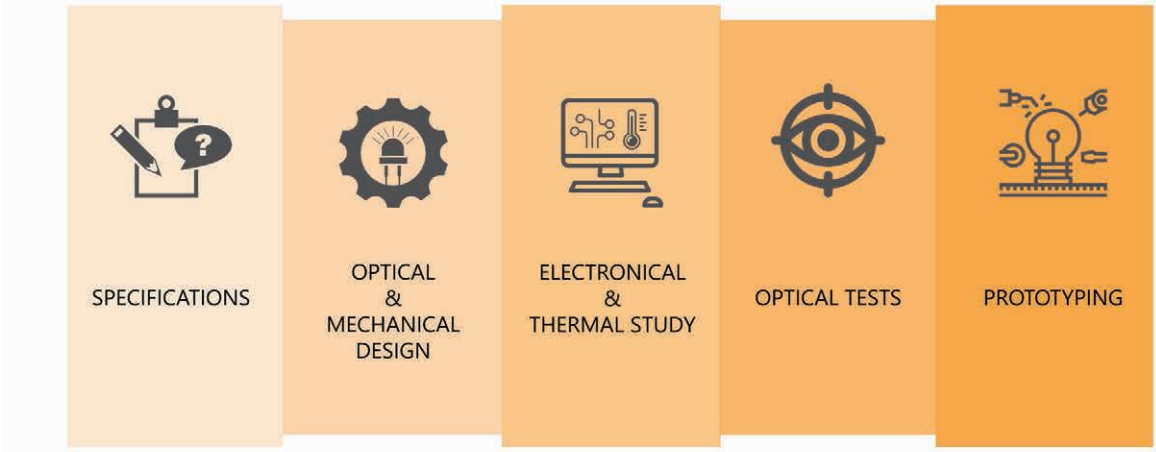

IP options are available to overcome challenges in industrial applications such as food processing and pharmaceuticals, where equipment is exposed to water, dust or other contaminants.

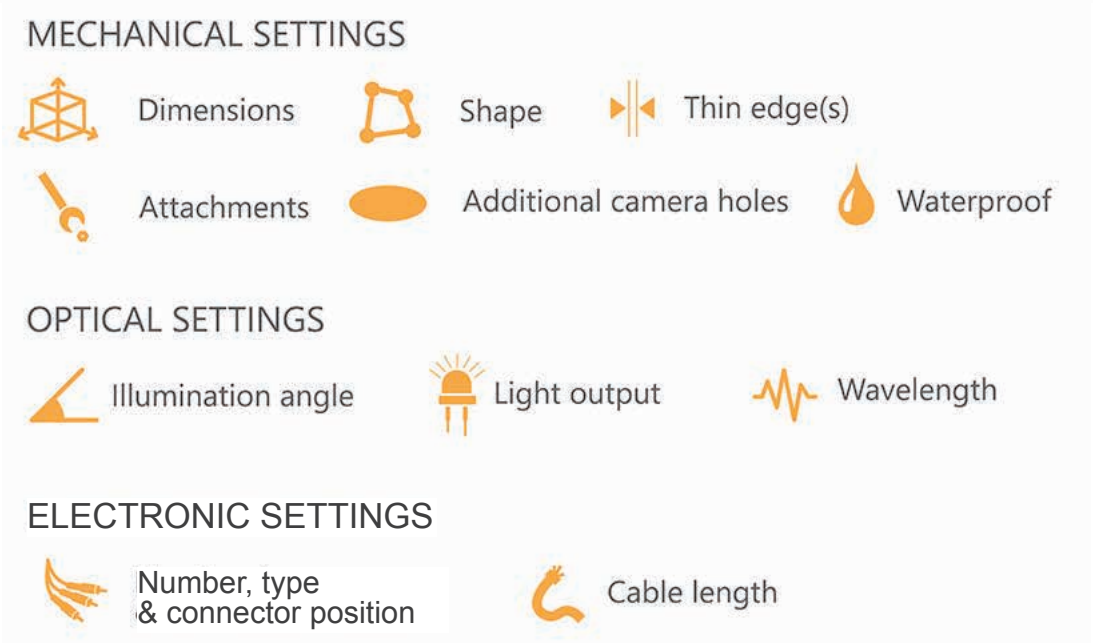
Built-in controller with M12 cable



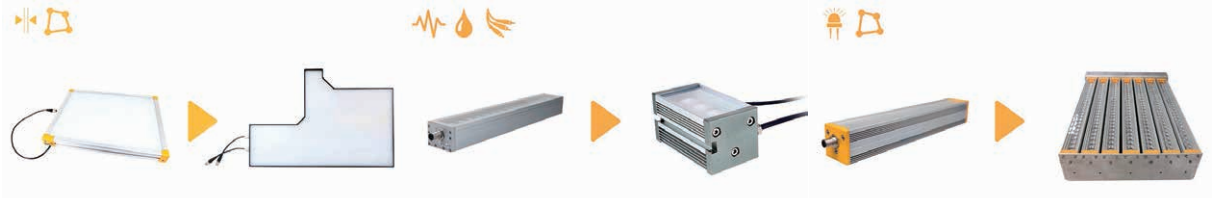

Space & cost-saving built-in controller with M12 cable is a standard feature, allowing easy overdrive, auto-strobe, dimming, and current control.

Customization and OEM solutions





CUSTOM



Back light
Backlight custom form with 2 connectors.

Bar light
Tri-color LED bar - 3 wavelengths.

Bar light
Multiple LED bars
(more luminance and greater illuminated area).

OEM



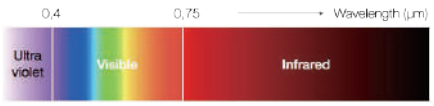
Light sheet
Visualization of airflow.

Projector
12 focus light solution for xenon flash replacement.

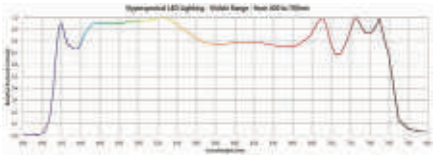
“L” projector (50m distance)
Safety markings Ø300 mm.

COMPREHENSIVE PRODUCT RANGE

Wavelength



From UV to IR



Hyper & Multispectral

Size



Any size upon request

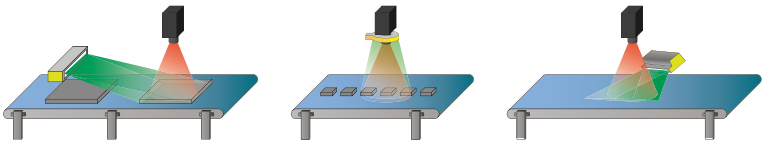
Protection





UP to IP69K Standard

Camera type



3D, Area scan, Line scan, SWIR, NIR, Board, Smart, Hyperspectral, Multispectral, UV, High-speed

Standard Custom

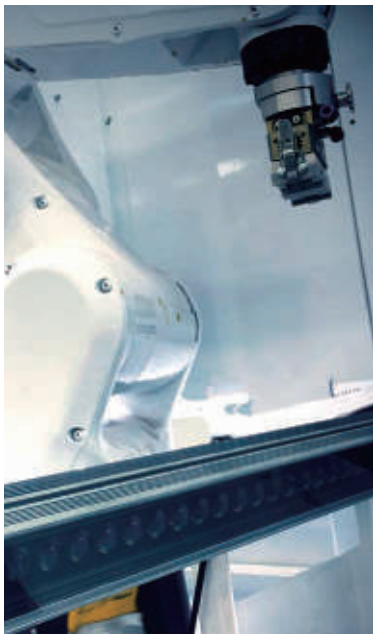


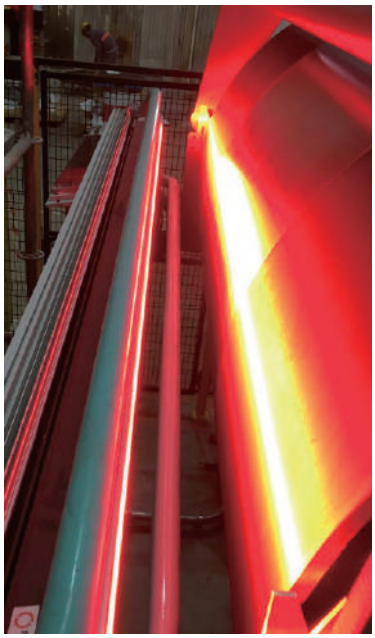
Standard

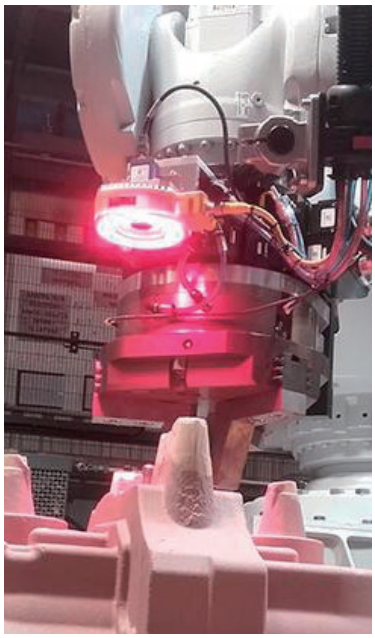
Custom

APPLICATIONS

Best suited for robotics, logistics, biomedical, F&B, automotive, 3D, pharmaceuticals, packaging, cosmetics and many other machine vision applications.

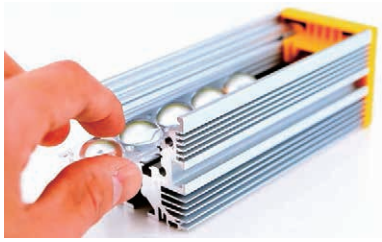






FLOOD TYPE BAR LIGHT





High-power user adjustable bar light featuring high intensity and uniformity offers 24 possible configurations in just one light. The innovative design, maximum optical, electronic, and mechanical flexibility allow users to easily adapt to any application requirements.

- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10° to provide the optimal amount of coverage.
- Integrated controller with Auto-strobe feature that automatically illuminates at 300% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Easy to open to make optical adjustments (lens position, diffuser, optical accessories).
- Robust design for challenging inspection environments.

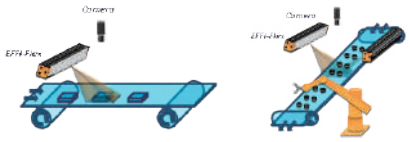
Common uses: Most machine vision inspection applications with large FOV.

Color	UV		Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	365	405	465	525	625	850	000

Transparent | Semi-diffuse | Opaline



Position	P0	P1	P2	P3
Angle	90° Without lens	45°	25°	10°



FLOOD TYPE RING LIGHT





High-power adjustable ring light with changeable diffuser plates and lens positions offers 24 possible configurations in just one light. It includes a smart Auto-strobe driver and IP65 rating for dust & water protection.

- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10° to adapt from flood lighting to a spotlight.
- Integrated controller with Auto-strobe feature allows for automatic 700% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Easy to open to make optical adjustments and easy to mount on the end of a robotic arm.
- Compatible with most lenses (58 mm camera hole).

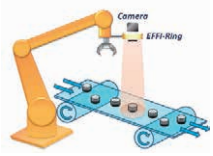
Common uses: Robot guidance, pick & place and any large FOV inspection.

Color	UV	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)	Full Color
Wavelength (nm)	405	465	525	625	850	000	RGB

Transparent | Semi-diffuse | Opaline



Position	P0	P1	P2	P3
Angle	90° Without lens	45°	25°	10°



FLOOD TYPE BRICK LIGHT





High-power brick light with 2 rows of LEDs. Highly flexible design which allows user to easily adjust lens positioning and diffuser plates when necessary.

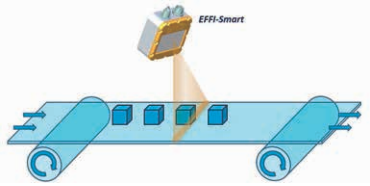
- 3 diffuser plates (Clear, Semi-diffuse, Diffuse) are included to create a suitable balance between power and homogeneity.
- 4 adjustable lens positions to easily change the emission angle from 90° to 10°.
- Integrated controller for dimming or auto-strobe functionality. In case of Auto-strobe, it offers 700% increased intensity in strobe mode as compared to continuous operation.
- Easy-to-use standard M12 connector.
- Robust design with IP67 rating to overcome challenging working environments.

Common uses: Harsh working environments, where dust and water are constant factors.

Color	UV	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	405	465	525	625	850	000



Position	P0	P1	P2	P3
Angle	90° Without lens	45°	25°	10°



FLOOD TYPE BACK LIGHT



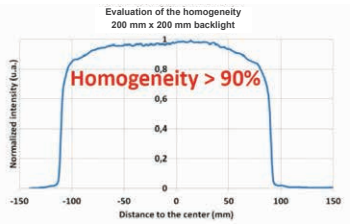


High performance back light offers exceptional contrast, high intensity & uniformity to provide a superior solution for strobed or continuous backlight inspections.

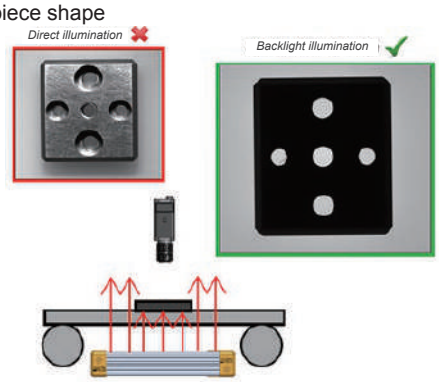
- Excellent uniformity (>90%).
- Anti-reflection system to absorb unwanted reflections from interfering light.
- Built-in dimming controller offers convenient and precise Analog Intensity Control.
- Easy-to-use M12 connector.
- Easy to mount with the built-in T-slot profile.
- Robust design for challenging inspection environments.

Common uses: Inspection which requires high accuracy measurement of work piece shape

Color	Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	465	525	625	850	000







FLAT LIGHT WITH CAMERA HOLE

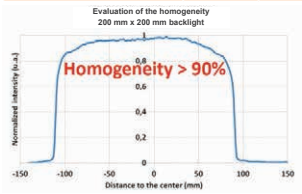


High-power flat light with camera hole offers high uniformity plus an integrated intensity controller. This light is an ideal front light for highly reflective work pieces and applications with a large field of view or mechanical constraints.

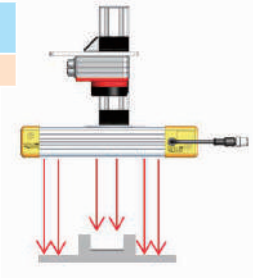
- Excellent uniformity (>90%).
- Anti-reflection system to absorb unwanted reflections from interfering light.
- Built-in dimming controller offers convenient and precise Analog Intensity Control.
- Strobe or Continuous use.
- Easy-to-use M12 connector.
- 39 mm standard size camera hole.

Common uses: Inspection with large FOV on reflective surfaces.

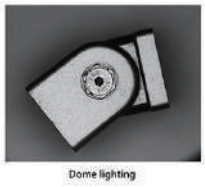
Color	Blue	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	465	625	850	000











3D PATTERN PROJECTOR





LED based structured LED pattern projector retains all the advantages of LEDs compared to laser sources (e.g. pattern uniformity and sharpness, eye safety, lifetime issues).

- Ultra-high power, superior homogeneity, sharp edges, speckle-free.
- Multiple interchangeable patterns with wide depth of field.
- Dedicated cloud of dots pattern mask for body scanning and stereo vision.
- Compatible with most lenses (C-Mount, E-Mount) to change the size of the projection area.
- Strobe mode and trigger mode are customizable to fit application needs.
- Full range of wavelengths (UV, visible, IR).

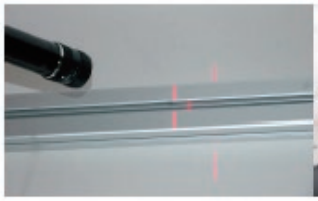
Common uses: 3D profilometry, body scanning, stereo vision, bin picking in robotics, alignment applications

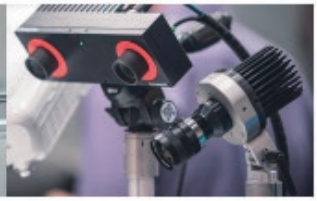
Color	UV		Blue	Green	Red	IR	White (T°= 5500 k ± 500 K)
Wavelength (nm)	365	395	405	465	525	625	850	000

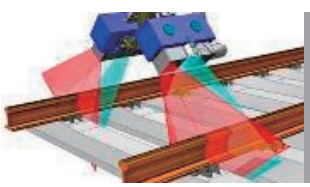
Name	Line	Cloud	Grid
Mask			







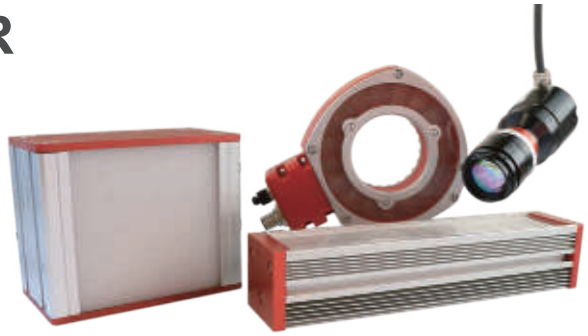


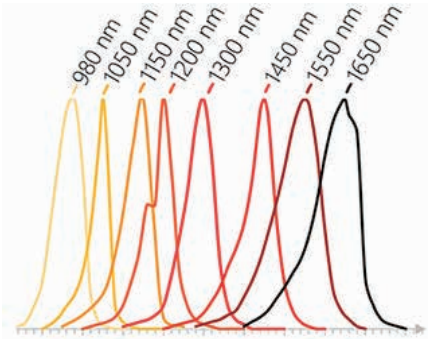




Flood lights, 3D Pattern Projector,

SWIR





Thanks to the innovative high-power LED SWIR source developed by EFFILUX, our full range of SWIR lighting solutions can be well adapted to different cameras, overcoming the current limitations of common lighting and taking machine vision inspection to the next level.

- Great lifetime and no excessive warm up.
- Perfect stability and reliability for repetitive tasks and measurements.
- Speckle free light source, thanks to LED-based technology.
- Quick pulse is achievable as a result of quick response time.
- Fully safe for human eyes, in contrast to laser source.
- Low power consumption as a result of great energy efficiency design.

effiLux SWIR H.O.P

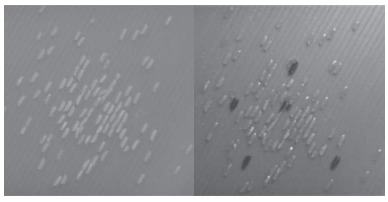
Vision Systems DESIGN 2019 Innovators Awards BRONZE

In partnership with the French Institute of Optics, EFFILUX developed an innovative LED SWIR source - SWIR H.O.P. (High Optical Power) Technology, based on a proprietary material that emits SWIR light, which is designed to deliver high output power.

The SWIR H.O.P. Technology retains all the advantages of LEDs compared to halogen or laser sources, with huge improvements in power and the flexibility to create both highly focused SWIR beams, as well as large area uniform SWIR illumination. In fact, one “chip” of the H.O.P. Technology emits a luminous flux comparable to a 50 W halogen source.

- Cost efficient: many expensive SWIR LEDs can be replaced by a single H.O.P. “chip” to achieve the same output power, resulting in lower costs for system builders.
- Superior optical performances and flexibility: User can project any pattern required on illuminated objects from short working distances (focused light) to far working distances (5 meters)
- Compact size with high level of adaptability: Can be integrated easily into a variety of illuminators.
- Exceptionally powerful LED SWIR source: To reveal the invisible phenomena that usual LED systems could not.

Common uses: Water detection (agriculture, food, medical/biotech), opaque materials inspection (plastics, silicon, solar cells etc), fill level, security, see through smoke, fog, dust, etc.



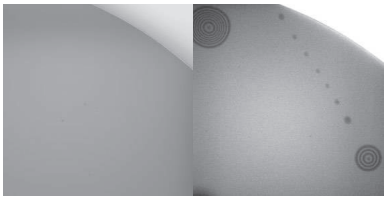
Visible *SWIR*

Dry vs Wet rice



Visible *SWIR*

Isopropanol / Water / Acetone

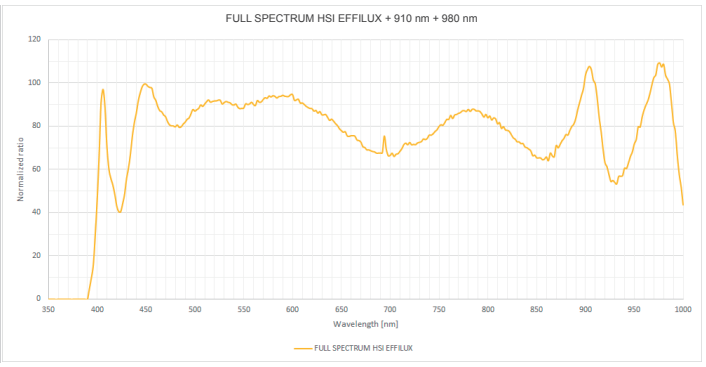


Visible *SWIR*

Wafer Bonding Inspection

HYPERSPECTRAL & MULTISPECTRAL





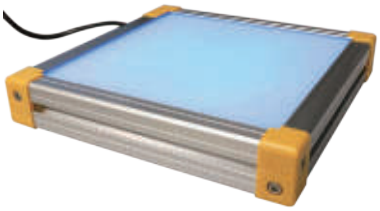
With CCS & EFFILUX combined expertise in optics & LEDs and a close collaboration with hyperspectral camera manufacturers, EFFILUX offers the best solution to fit any specific need.

- Single LED technology with the most broadband spectrum (400 - 1000 nm).
- Highly flexible and can be integrated for any lighting solution.
- Ideal for collimated line light bar for line scan hyperspectral cameras, backlight or spotlight for area scan sensors.
- Excellent uniformity both spectrally and spatially.

Common uses: Quality control, information transmission to robotic actuators, automated picking and sorting of commodities.



Collimated line light bar for line scan hyperspectral cameras



Backlight for area scan sensors



“Spot” concept for area scan sensors

MANUFACTURER

EFFILUX, a member of the CCS Group with headquarters in Paris, specializes in the design, manufacturing and sales of powerful, flexible and easy-to-use LED lighting solutions for machine vision applications. EFFILUX differentiates itself through cutting-edge flexible LED lighting design, more than 35 years of optical experience, extensive technical expertise, strong customization capabilities, and comprehensive lighting solutions with superior quality.

TALK TO THE EXPERTS

For more information about EFFILUX’s products and solutions, please contact your nearest CCS sales representative or check the relevant product pages on ccs-grp.com.

INDEX

Guide to Selecting Control Units According to Functions

You can easily find and select the Control Unit you need. Excluding the PSCC series, PSB4 series, and PSB3-30024.

PD3 series	PD2 series	PSB series	CC-ST-1024	POD series	CN-EPOE series	CN-4024-2-EIPT	PTU2 series	PB-2430-1	PF series
									 Dedicated Light Units ▶ P.135
Refer to P. 311 .	Refer to P. 319 .	Refer to P. 323 .	Refer to P. 341 .	Refer to P. 325 .	Refer to P. 335 .	Refer to P. 337 .	Refer to P. 329 .	Refer to P. 339 .	Refer to P. 331 .

★Control Units recommended by CCS

▶ Search by Power Supply

AC input
★PD3 series
PD2 series
PSB series

DC input
★PD3 series
CC-ST-1024
CN-4024-2-EIPT
PB-2430-1

PoE input
★CN-EPOE series

▶ Search by Output Voltage

24 V output
★PD3 series
PD2 series
PSB series
CC-ST-1024
CN-EPOE series
CN-4024-2-EIPT
PB-2430-1

12 V output
PD2 series
PSB series

▶ Search by Capacity

Actual capacity varies depending on the product. Refer to the corresponding product specifications for details.

100 W	PD3 series
50 W	★PD3 series, PD2 series
40 W	CN-4024-2-EIPT
30 W	★PD3 series, PD2 series, PSB series, PB-2430-1
10 W	★CC-ST-1024, CN-EPOE series, PD2 series, PSB series
5 W (Capacity)	PSB series

▶ Search by Number of Channels

1 2 3 4 5 6 7 8	★PD3 series
1 2 3 4	★PD3 series, PD2 series, CN-EPOE series
1 2	CN-4024-2-EIPT
1 (Number of channels)	★CC-ST-1024, PSB series, PB-2430-1

▶ Search by External Control

If you want prompt control by receiving set values in a batch:

Parallel communication
★PD3 series
PD2 series

If you want to individually manage multi-drop wiring:

Serial communication
EIA-485
PD3 series

If you want to manage the Control Units from an upper level network:

Ethernet communication
TCP/IP UDP/IP
PD3 series
CN-EPOE series

Ethernet communication
EtherNet/IP
TCP/IP
CN-4024-2-EIPT

▶ Search by Intensity Control Method

If you want to digitally set intensity control:

PWM control
★PD3 series
PD2 series
CC-ST-1024
CN-EPOE series
CN-4024-2-EIPT

If you want to use with a high-speed shutter of 1/4,000 or higher:

Variable voltage control
PSB series
PB-2430-1

▶ Search by ON/OFF Control

Use when continuously emitting light:

Continuous lighting
★PD3 series
PD2 series
PSB series
CC-ST-1024
CN-EPOE series
CN-4024-2-EIPT
PB-2430-1

Use for emitting light only when necessary:

ON/OFF lighting
★PD3 series
PD2 series
CC-ST-1024
CN-4024-2-EIPT

Use for emitting light momentarily:

Strobe lighting

No overdrive
★PD3 series
CC-ST-1024
CN-EPOE series
CN-4024-2-EIPT
(Continuous emitting type)

If you want to emit light brighter than ON/OFF lighting or strobe lighting without overdrive:

Overdrive specifications
Light emission is made even brighter by increasing the output to Light Units for a short time.
★POD series
CN-4024-2-EIPT
PTU2 series
PF series (Used with dedicated Light Units ▶ P.135 for strobe emitting)

Guide to Selecting Control Units for the Spot Lights HLV3 and HLV2 Series

PD3 series



Refer to P. 311 .

PJ2 series



Refer to P. 343 .

PJ series



Refer to P. 345 .

CC-PJ-0707



Refer to P. 347 .

Search by Output Voltage

Selection is not necessary.

Search by Capacity

If you want to use the HLV3 series, check the input current of the Spot Light and select the applicable Control Unit.
Also note that you cannot connect multiple Spot Lights with a branch cable.

If you are connecting any Light Units other than the Spot Lights HLV3/HLV2 series to the PD3 series, be sure to check that the total power consumption of the Light Unit is within the output power of the Control Unit before using.

★Control Units recommended by CCS

*1 The PD3-3024-3 and PD3-5024-3 series are not applicable to the Spot Lights HLV3/HLV2 series.
*2 The HLV3-4M/HLV3-4S/HLV3-22-4-NR/HLV3-3M-RGB-4 must be used with the PJ2 series.

▶ Search by Power Supply

AC input
★**PD3** series*1
★**PJ2** series*2
PJ series

DC input
★**PD3** series*1
PJ series
CC-PJ-0707

▶ Search by Number of Channels

1 2 3 4 5 6 7 8 ★**PD3** series*1
1 2 3 4 ★**PJ2** series*2
1 2 3 **PJ** series
1 ★**CC-PJ-0707**
(Number of channels)

▶ Search by External Control

If you want to individually manage IP addresses from an upper level network:

Ethernet communication
TCP/IP UDP/IP
★**PD3** series*1
★**PJ2** series*2

If you want prompt control by receiving set values in a batch:

Parallel communication
★**PD3** series*1
★**PJ2** series*2

If you want to control intensity by analog voltage:

Analog input
★**PJ** series

If you want to individually manage multi-drop wiring:

Serial communication
EIA-485
★**PD3** series*1

▶ Search by Intensity Control Method

Variable-current control
★**PD3** series*1
★**PJ2** series*2
PJ series
CC-PJ-0707

▶ Search by ON/OFF Control

Use when continuously emitting light:	Use for emitting light only when necessary:	Use for emitting light momentarily:
Continuous lighting	**ON/OFF lighting**	**Strobe lighting**
★**PD3** series*1 ★**PJ2** series*2 **PJ** series **CC-PJ-0707**	★**PD3** series*1 ★**PJ2** series*2 **PJ** series **CC-PJ-0707**	★**CC-PJ-0707** No overdrive

Refer to the Technical Guide on P. 388 for details regarding the technical structure and meanings of terminology for PWM, variable voltage and other types of control.

List of Control Unit Specifications

INDEX

Digital Control Units Analog Control Units

Excluding the PF series, PJ2 series, PJ series, and CC-PJ-0707.

Model name	PD3-3024-3-PI	PD3-3024-3-SI(A)	PD3-3024-3-EI(A)	PD3-5024-4-PI(A)	PD3-5024-4-SI(A)	PD3-5024-4-EI(A)	PD3-10024-8-PI	PD3-10024-8-SI(A)	PD3-10024-8-EI(A)	PD3-3024-3-PT	PD3-3024-3-ET(A)	PD3-5024-3-PT	PD3-5024-3-ET(A)
Output voltage	24 V												
Output power	28 W			46 W			95 W			28 W		48 W	
No. of channels	3			4			8			3			
Lighting method	Continuous / Strobe lighting												
Intensity control method	PWM control / Lighting time control												
PWM frequency	125 kHz												
Intensity value	256 steps												
Input voltage	100 to 240 VAC									24 VDC			
Frequency	50/60 Hz									–			
Power consumption	78 VA			70 VA			130 VA			32 W		52 W	
Parallel communication	○	–	–	○	–	–	○	–	–	○	–	○	–
EIA-485 communication	–	○	–	–	○	–	–	○	–	–	–	–	–
Ethernet	–	–	○	–	–	○	–	–	○	–	○	–	○
Analog input	–	–	–	–	–	–	–	–	–	–	–	–	–
Manual control	○	○	○	○	○	○	○	○	○	○	○	○	○
ON/OFF lighting	○	○	○	○	○	○	○	○	○	○	○	○	○
Strobe lighting	○ (No overdrive)												
Lighting time	40 µs / 80 µs / 120 µs / 200 µs / 600 µs / 1 ms / 4 ms / 10 ms / 20 ms / 40 ms												
Lighting delay time	10 µs max.			20 µs max.						10 µs max.			
CE marking	○												
Weight	600 g			1.2 kg			1.5 kg			400 g			
Cooling method	Natural air cooling			Forced air cooling						Natural air cooling			
Mounting method	Bottom and DIN rail mounting												
Relevant page	P.311												

Model name	PD3-5024-4-PT(A)	PD3-5024-4-ET(A)	PD2-1024(A)	PD2-3024(A)	PD2-3024-2(A)	PD2-3024-4(A)	PD2-3024-8(A)	PD2-5024(A)
Output voltage	24 V							
Output power	46 W		9 W	28 W		27 W	25 W	46 W
No. of channels	4		1		2	4	8	1
Lighting method	Continuous / Strobe lighting		Continuous lighting					
Intensity control method	PWM control / Lighting time control		PWM control					
PWM frequency	125 kHz		62.5 kHz					
Intensity value	256 steps							
Input voltage	24 VDC		100 to 120 VAC	100 to 240 VAC				
Frequency	–		50/60 Hz					
Power consumption	52 W		27 VA	78 VA				122 VA
Parallel communication	○	–	○	○	○	○	○	○
EIA-485 communication	–	–	–	–	–	–	–	–
Ethernet	–	○	–	–	–	–	–	–
Analog input	–	–	–	–	–	–	–	–
Manual control	○	○	○	○	○	○	○	○
ON/OFF lighting	○	○	○	○	○	○	○	○
Strobe lighting	○ (No overdrive)		–					
Lighting time	40 µs / 80 µs / 120 µs / 200 µs / 600 µs /1 ms / 4 ms / 10 ms/ 20 ms / 40 ms		–					
Lighting delay time	20 µs max.		–					
CE marking	○		–	○				
Weight	850 g		700 g	1.1 kg		1.2 kg	1.5 kg	1.3 kg
Cooling method	Forced air cooling		Natural air cooling					Forced air cooling
Mounting method	Bottom and DIN rail mounting		Bottom mounting	Bottom and DIN rail mounting				
Relevant page	P.311		P.319					

Model name	PB-2430-1	PSB-524V(A)	PSB-1024VB	PSB-3024VB	PSB-1024V-WW	CN-4024-2-EIPT	POD-5024-2-PEI	POD-22024-4-PEI	PTU2-3024(A)
Output voltage	24 V					24 or 48 V (Overdrive)	24 to 48 V (Overdrive mode)		48 V
Output power	24 W	5 W	10 W	30 W	10 W	Refer to the spec. table on p.337. *1	Refer to the specification table on p.327. *1		27 W
No. of channels	1					2	2	4	2
Lighting method	Continuous lighting					Strobe lighting / Continuous lighting			Strobe lighting
Intensity control method	Variable voltage control					Lighting time / PWM control	Variable voltage control / PWM control		Lighting time control
PWM frequency	–					125 kHz			–
Intensity value	Stepless					512 steps			10% to 100% (10% steps)
Input voltage	24 VDC	100 to 120 VAC			100 to 240 VAC	24 VDC	100 to 240 VAC		
Frequency	–	50/60 Hz				–	50/60 Hz		
Power consumption	30 W	12 VA	27 VA	78 VA	27 VA	45 W (average) 71.3 W (peak)	65 VA	260 VA	78 VA
Parallel communication	–	–	–	–	–	–	○		○
EIA-485 communication	–	–	–	–	–	–	–		–
Ethernet	–	–	–	–	–	○*2	○		–
Analog input	–	–	–	–	–	–	–		–
Manual control	○	○	○	○	○	–	○		○
ON/OFF lighting	–	–	–	–	–	○	○		–
Strobe lighting	–	–	–	–	–	○ (With overdrive)			
Lighting time	–					Refer to the instruction guide.	1 to 1,000 µs (1 µs steps)	1 to 3,000 µs (See the spec. table.)	10 to 990 µs (10 µs steps) (Can only be set by using the front switch.)
Lighting delay time	–					0 to 10,000 µs (1 µs steps)	0 to 1,000 µs (1 µs steps)		15 µs max.
CE marking	○	–			○	○			
Weight	270 g	450 g	470 g	700 g	470 g	500 g	1.5 kg	3.3 kg	1.2 kg
Cooling method	Natural air cooling						Forced air cooling		Natural air cooling
Mounting method	DIN rail mounting	Bottom mounting				DIN rail mounting	Bottom mounting		
Relevant page	P.339	P.323				P.337	P.325		P.329

*1 Confirm the peak current of the Light Units and use them within the output current of the Control Unit. For information on possible combinations of Light Units with a Control Unit, please refer to our website.
https://www.ccs-grp.com/lnk/qr/pod
*2 EtherNet/IP and TCP/IP interfaces support

New

Model name	CN-1024-2-EPOE	CN-1024-4-EPOE	CC-ST-1024	PSCC-30048(A)	PSCC-60048(A)	PSB4-30024-PEI	PSB4-60024-2-PEI	PSB3-30024
Output voltage	24 V		24 V	43 V		24 V		24 V
Output power	10 W for total		10 W	300 W	600 W	300 W	300 W (Total for 1 ch)	300 W
No. of channels	2	4	1	1		1	2	1
Lighting method	Continuous / Strobe lighting		Continuous / Strobe lighting	Continuous lighting		Continuous lighting		Continuous lighting
Intensity control method	PWM control / Lighting time control		PWM control / Lighting time control	Variable current control		Variable voltage control		Variable voltage control
PWM frequency	125 kHz		100 kHz	–		–		–
Intensity value	256 steps		100 steps	256 or 1,000 steps		256 or 1,024 steps		256 steps
Input voltage	RJ-45 connector (based on PoE)		24 VDC	100 to 240 VAC		100 to 240 VAC		100 to 240 VAC
Frequency	–		–	50/60 Hz		50/60 Hz		50/60 Hz
Power consumption	13.9 W		11 W	360 VA	750 VA	388 VA	765 VA	410 VA
Parallel communication	–		–	○	○	○		○
EIA-485 communication	–		–	○	○	–		○
Ethernet	○		–	○	○	○		–
Analog input	–		–	–	–	–		○
Manual control	–		○	○	○	○		○
ON/OFF lighting	○		○	○	○	○		○
Strobe lighting	○ (No overdrive)		○ (No overdrive)	–		–		–
Lighting time	8 to 100 µs (8 µs steps)		50 µs / 100 µs / 250 µs / 500 µs / 1 ms / 4 ms / 10 ms / 40 ms	–		–		–
Lighting delay time	0 to 100 µs (10 µs steps)		3 µs max.	–		–		–
CE marking	○		○	○		○		○
Weight	140 g		80 g	3.1 kg	7.0 kg	2.4 kg	4.1 kg	2.3 kg
Cooling method	Natural air cooling		Natural air cooling	Forced air cooling		Forced air cooling		Forced air cooling
Mounting method	DIN rail mounting, Bottom mounting		DIN rail mounting	Bottom mounting		Bottom mounting		Bottom mounting
Relevant page	P.335		P.341	P.349		P.351		P.353

Control Units

Digital Control Units
PD3 Series

Refer to our website for product details.
CCS PD3 ▶Search
For quick access.
You can also use your smartphone or cell phone.

Select Digital Control Units matching your network

500 PWM kHz Custom orders accepted

Ethernet Enabled



AC Input Types



DC Input Types

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

For information on change in model names, refer to P.316.

Features

- Each single unit is compatible with continuous, ON/OFF and strobe lighting. (Spot Light HLV series cannot emit strobe.)
- Digital display enables set values to be easily checked.

Spot Light HLV3 series Product Page ▶ P. 183
Spot Light HLV2 series Product Page ▶ P. 189

- 256 stage dimmer settings.
- Select from 3 types of external control.
- AC input types and DC input types available.
- DIN rail installation is standard.
- Select from 3 channel, 4 channel or 8 channel models.
- There are four types of capacity: 3 channel/28 W[*1], 3 channel/48 W[*1][*2], 4 channel/46 W[*3], and 8 channel/95 W[*3].

*1: Can be connected only with 24 V Light. *2: Lineup includes only DC-input Control Units.
*3: Can be connected with both 24 V Light and Spot Light HLV series.

A Wide Ranging Lineup is Available and Custom Orders are Accepted

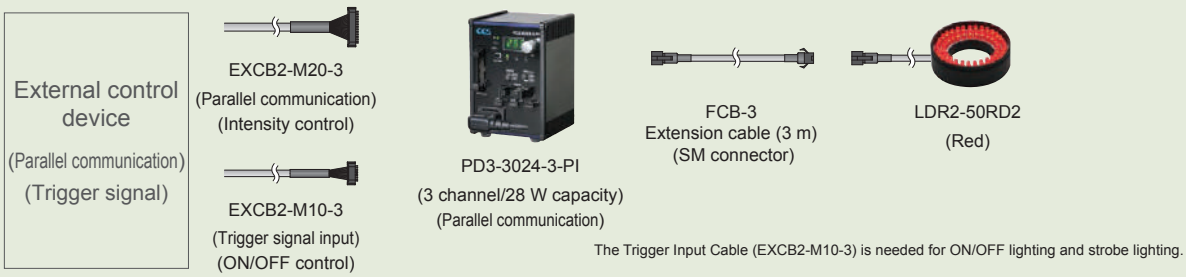
- The parallel type has the fastest switching for settings. Perform high-speed control through batch transmission. (External trigger signal input is available as an NPN input or PNP input) See ▶ P.313 for details
- Ethernet types support standard TCP/IP and UDP/IP protocols. (Models with keep-alive functions are available) See ▶ P.314 for details
  Keep-alive functions monitor the validity of the connection of the machine to the network, wherein to prevent the connection from dropping, a signal is periodically sent between machines.
- The EIA-485 type can individually manage units using multi-drop wiring. Can manage up to 4 units. See ▶ P.315 for details
- PWM frequency is available as standard 125 kHz or 500 kHz. See ▶ P.316 for details

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example System Configuration

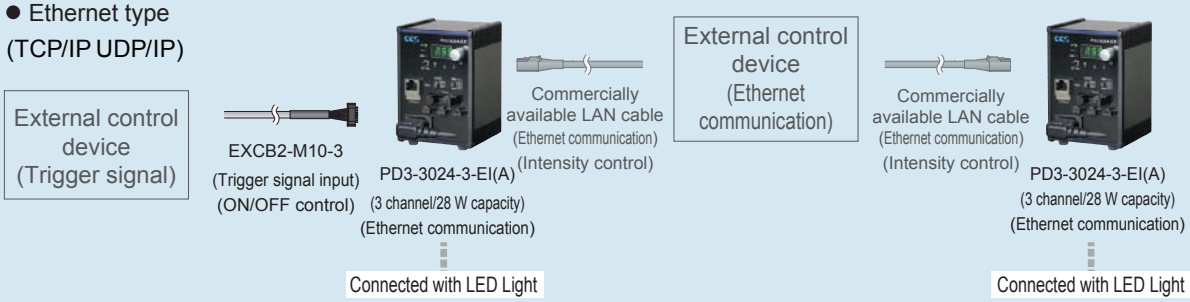
Example:
External control device — **External control cables** — **Control Unit** — **Extension cables** — **LED Light**

● Parallel type

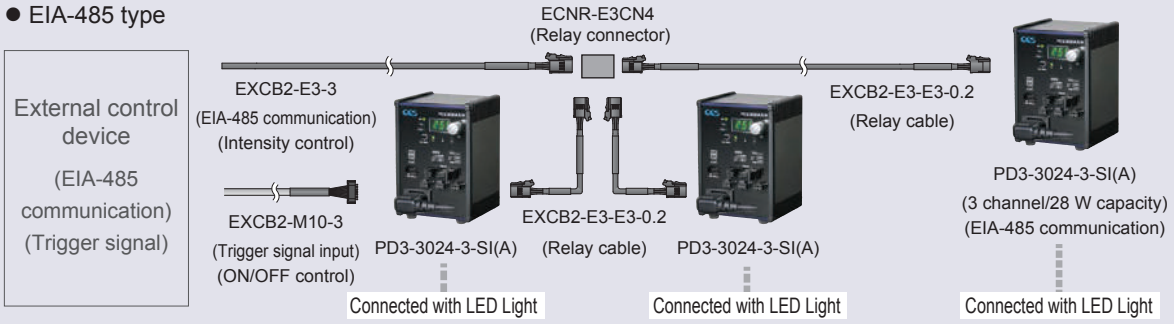


The Trigger Input Cable (EXCB2-M10-3) is needed for ON/OFF lighting and strobe lighting.

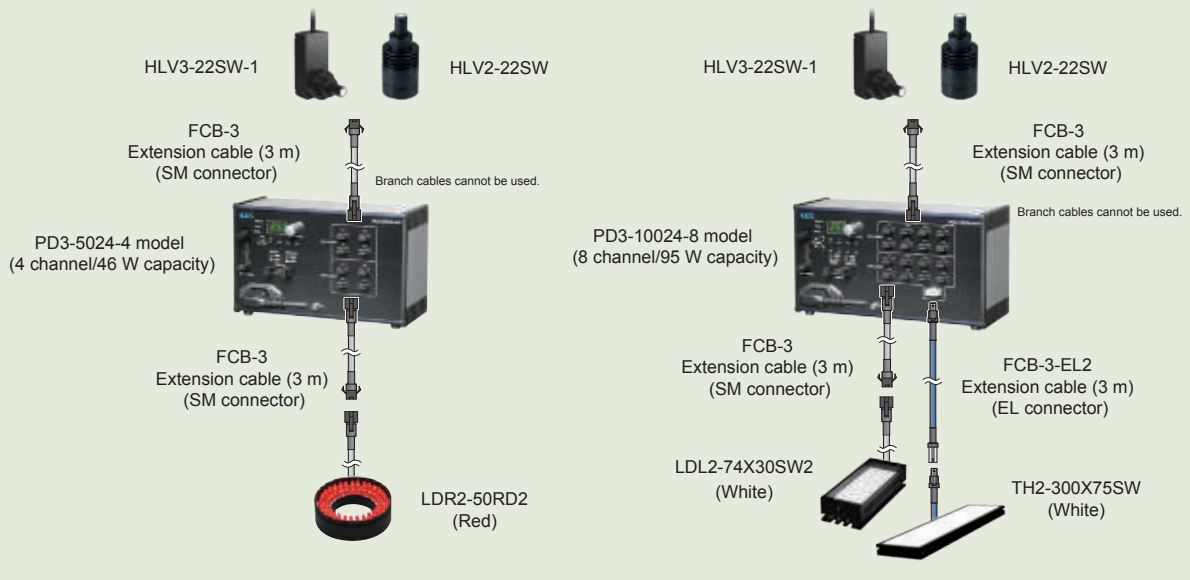
● Ethernet type (TCP/IP UDP/IP)



● EIA-485 type



Fixture Connection Example



PD3 Series



Refer to our website for product details.

CCS PD3 ▶ Search

For quick access.

You can also use your smartphone or cell phone.

Common Specifications: Parallel Types

External trigger signal input is also available as a PNP input.

Model name							
NPN Input Model		PD3-3024-3-PI	PD3-5024-4-PI(A)	PD3-10024-8-PI	PD3-3024-3-PT	PD3-5024-3-PT	PD3-5024-4-PT(A)
PNP Input Model		PD3-3024-3-PI-PNP	PD3-5024-4-PI-PNP（A）	PD3-10024-8-PI-PNP	PD3-3024-3-PT-PNP	PD3-5024-3-PT-PNP	PD3-5024-4-PT-PNP（A）
Input voltage (rated)		100 to 240 VAC (+10% -15%)			24 VDC (21.6 to 26.4 V)		
Lighting method		Continuous / Strobe lighting (no overdrive)					
Drive method		Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system		Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system
Intensity control method		PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control		PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control
No. of channels		3 channels	4 channels	8 channels	3 channels		4 channels
Applicable Light Unit (rated)		Light Units with 24 VDC input Total for 3 channels: 28 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 4 channels: 46 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 8 channels: 95 W (EL connector: one 95 W connector)	Light Units with 24 VDC input Total for 3 channels: 28 W	Light Units with 24 VDC input Total for 3 channels: 48 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 4 channels: 46 W
PWM frequency		125 kHz					
Error detection display		"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV series only)		"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV series only)
Overcurrent protection		Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.					
Power consumption (typ.)		78 VA	70 VA	130 VA	32 W	52 W	
Frequency		50/60 Hz			–		
Output voltage (rated)		24 VDC					
Intensity setting		Manual: 256-step using the front setting switch					
		External: 8-bit input (B0 to B7), write pulse (BRTWR), and channel selection (CHSEL0 to CHSEL2)					
ON/OFF setting		External trigger input					
Lighting mode setting		Manual: 11-step using the front setting switch					
		External: 4-bit input (M0 to M3), write pulse (TRGWR), and channel selection (CHSEL0 to CHSEL2)					
Error detection output		External control connector 19(OC)-20(OE) pin with transistor output When normal: Non-conducting, With overcurrent output detected: Conducting					
External control connector		Trigger input: MIL connector, 10-pin					
		Intensity/Lighting mode setting: MIL connector, 20-pin					
Operating temperature and humidity		Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)					
Storage temperature and humidity		Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)					
Cooling method		Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling
CE marking		Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A			EMC standard: Conforms to EN61326-1 Class A		
Material/Surface processing		Material: aluminum and resin, Surface processing: blue alumite					
Weight		600 g max.	1,200 g max.	1,500 g max.	400 g max.		850 g max.
Accessories		3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-PI(A) / 10024-8-PI)			Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-PT(A))		

Connection Example

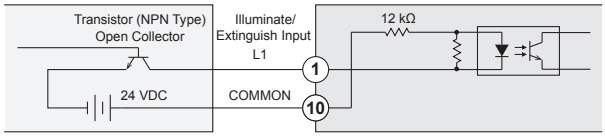
Refer to the instruction guide for more information.

External Trigger Signal Connection Example

NPN Input Model

Sink Type (NPN)

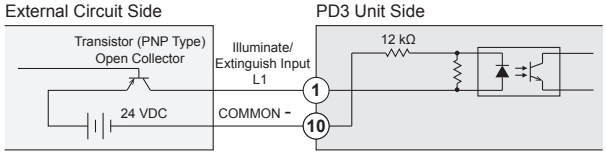
External Circuit Side / PD3 Unit Side



PNP Input Model

Source Type (PNP)

External Circuit Side / PD3 Unit Side



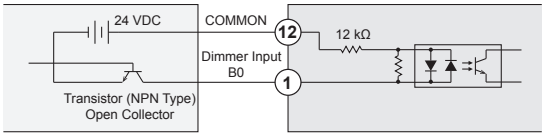
Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

Trigger Principle Setting Switch	Input Signal	Photocoupler	ON/OFF Mode	Strobe Mode
HIGH	HIGH	OFF	LED ON	LED ON for Set Time
	LOW	ON	LED OFF	No Change
LOW	HIGH	OFF	LED OFF	No Change
	LOW	ON	LED OFF	LED ON for Set Time

External Signal Connection Example (Parallel Type)

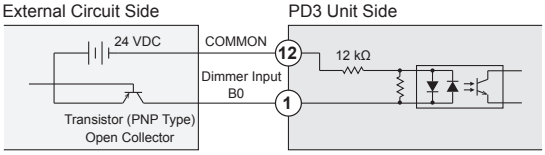
Sink Type (NPN)

External Circuit Side / PD3 Unit Side



Source Type (PNP)

External Circuit Side / PD3 Unit Side



Connection Specifications (Per 1 Terminal)			
Rated Input Voltage	Max. Input Voltage	Photocoupler ON Voltage/ON Current	Photocoupler OFF Voltage/OFF Current
24 VDC	26.4 VDC	14.4 VDC or more/1 mA or more	5 VDC or less/0.4 mA or less

	Input Signal	Photocoupler	Data
Sink Type	HIGH	OFF	1
	LOW	ON	0
Source Type	HIGH	ON	0
	LOW	OFF	1

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Common Specifications: Ethernet Type

Models with keep-alive functions are available.

Model name	–	PD3-3024-3-EI(A)	PD3-5024-4-EI(A)	PD3-10024-8-EI(A)	PD3-3024-3-ET(A)	PD3-5024-3-ET(A)	PD3-5024-4-ET(A)
	With Keep-Alive Function	PD3-3024-3-EIK	PD3-5024-4-EIK	PD3-10024-8-EIK	PD3-3024-3-ETK	PD3-5024-3-ETK	PD3-5024-4-ETK
Input voltage (rated)		100 to 240 VAC (+10% -15%)			24 VDC (21.6 to 26.4 V)		
Lighting method		Continuous / Strobe lighting (no overdrive)					
Drive method		Constant-voltage system	24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system		Constant-voltage system		24 V LIGHT: Constant-voltage system HLV LIGHT: Constant-current system
Intensity control method		PWM control and lighting time control	24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control		PWM control and lighting time control		24 V LIGHT: PWM control and lighting time control HLV LIGHT: Variable-current control
No. of channels		3 channels	4 channels	8 channels	3 channels		4 channels
Applicable Light Unit (rated)		Light Units with 24 VDC input Total for 3 channels: 28 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 4 channels: 46 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 8 channels: 95 W (EL connector: one 95 W connector)	Light Units with 24 VDC input Total for 3 channels: 28 W	Light Units with 24 VDC input Total for 3 channels: 48 W	Light Units with 24 VDC input, HLV series (Spot Light) Total for 4 channels: 46 W
PWM frequency		125 kHz					
Error detection display		"OCP" displayed on front digital display: Overcurrent error	"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV series only)		"OCP" displayed on front digital display: Overcurrent error		"OCP" displayed on front digital display: Overcurrent error "EFN" display: Fan stop error "EID" display: ID error (HLV series only)
Overcurrent protection		Operates at 107% of the output current. Reset by pressing and holding the setting switch for 1 sec., or turning the power off and then on again. Do not create an intentional short circuit between the positive (+) and negative (-) outputs.					
Power consumption (typ.)		78 VA	70 VA	130 VA	32 W	52 W	
Frequency		50/60 Hz			–		
Output voltage (rated)		24 VDC					
Intensity setting		Manual: 256-step using the front setting switch					
		External: Command input via TCP/IP or UDP/IP communication					
ON/OFF setting		External trigger input or command input via TCP/IP or UDP/IP communication					
Lighting mode setting		Manual: 11-step using the front setting switch					
		External: Command input via TCP/IP or UDP/IP communication					
Error detection output		Command sent when overcurrent output is detected.					
External control connector		Trigger input: MIL connector, 10-pin					
		Intensity/Lighting mode setting: RJ-45 connector					
Operating temperature and humidity		Temperature: 0 to 40°C, Humidity: 20 to 85% RH (with no condensation)					
Storage temperature and humidity		Temperature: -20 to 60°C, Humidity: 20 to 85% RH (with no condensation)					
Cooling method		Natural air cooling	Forced air cooling		Natural air cooling		Forced air cooling
CE marking		Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A			EMC standard: Conforms to EN61326-1 Class A		
Material/Surface processing		Material: Aluminum and resin, Surface processing: Blue alumite					
Weight		600 g max.	1,200 g max.	1,500 g max.	400 g max.		850 g max.
Accessories		3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-EI(A) / 10024-8-EI(A))			Instruction Guide x 1, Base Brackets x 1 set (PD3-5024-4-ET(A))		

Keep-alive functions monitor the validity of the connection of the machine to the network, wherein to prevent the connection from dropping, a signal is periodically sent between machines.

Guide to Custom Power Supply Manufacturing

Power supplies can be custom ordered in accordance with customer requests. Inquiries are welcomed.

● **Customized Item Example**

- Change Input Voltage
- Change Output Current
- Change External Control Method
- Change PWM Frequency
- Change Internal Program
- Change No. of Dimmer Stages
- Change No. of Channels
- Change Connector Shape
- Change External Dimensions
- Change Housing Material
- Change Fixing Method
- Change Options

etc.

PD3 Series



Refer to our website for product details.

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For quick access.

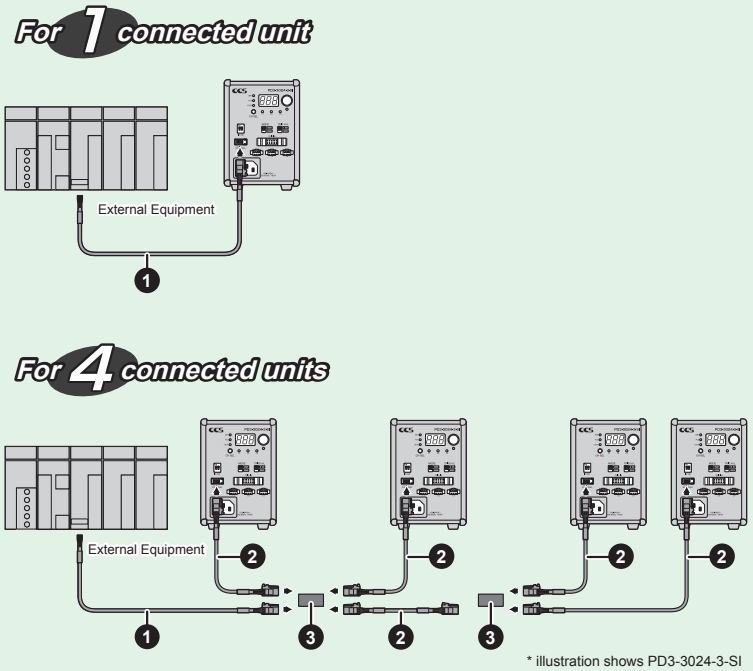
You can also use your smartphone or cell phone.

Common Specifications: EIA-485 Type

Model name	PD3-3024-3-SI(A)	PD3-5024-4-SI(A)	PD3-10024-8-SI(A)
Input voltage (rated)	100 to 240 VAC (+10% -15%)		
Lighting method	Regular Emission/Strobe Emission (Without Overdrive)		
Drive method	Constant-voltage system	24 V LIGHT: Constant-voltage system	HLV LIGHT: Constant-current system
Intensity control method	PWM Control Or Light Emission Time Control	24 V LIGHT: PWM control or light emission time control HLV LIGHT: Variable-current control	
No. of channels	3 channels	4 channels	8 channels
Applicable Light Units (rated)	24 VDC Input Lights, 3 Channel Total: 28 W	24 VDC Input Lights, HLV Series (Spot Lighting) 4 Channel Total: 46 W	24 VDC Input Lights, HLV Series (Spot Lighting) 8 Channel Total: 95 W (EL connector: 1 connector 95 W)
PWM frequency	125 kHz		
Error detection display	Front Digital "OCP" Display: Overcurrent Error	Front Digital "OCP" Display: Overcurrent error "EFN" Display: Fan stop error "EID" Display: ID error (HLV series only)	
Overcurrent protection	Activated at output current of 107% min. and can be restored by holding the setting switch for 1 second, or by reinserting power assumes output +/- are not unintentionally short-circuited.		
Power consumption (typ.)	78 VA	70 VA	130 VA
Frequency	50/60 Hz		
Output voltage (rated)	24 VDC		
Dimmer setting	Manual: 256 stages via front setting switch		
	External: Command input via EIA-485 communication		
ON/OFF setting	External: Trigger input or command input via EIA-485 communication		
Emission mode setting	Manual: 11 stages via front setting switch		
	External: Command input via EIA-485 communication		
Error detection output	Command Sending for Overcurrent Detection		
External control connector	Trigger Input: MIL connector 10-pole		
	Dimmer/Emission Mode Setting: e-Con Connector 3-Pole		
Operating environment	Temperature: 0 to 40°C, Humidity: 20 to 85% (with no condensation)		
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85% (with no condensation)		
Cooling method	Natural air-cooling	Forced cooling	
CE marking	Safety standard: Conforms to EN61010-1 EMC standard: Conforms to EN61326-1 Class A		
Electrical appliance and Material safety law	–	Specified electrical equipment (DC power supply) compliant with technical standards	
Material/Surface processing	Material: Aluminum, resin, Surface processing: Navy anodizing		
Weight	600 g max.	1,200 g max.	1,500 g max.
Accessories	2 m 3-prong AC power cable with ground terminal, Instruction Manual x 1, Bottom installation bracket x 1 set (PD3-5024-4-SI(A)/10024-8-SI(A))		

EIA-485 Communication Cable Connection Method

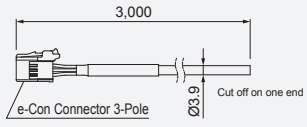
EIA-485 communication types identify based on ID switch settings, enables up to 4 units to be connected on one signal line. The options differ depending on the number of units to be connected. Refer to the following connection diagram.



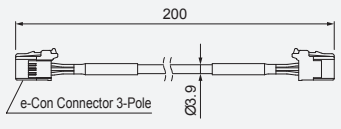
* illustration shows PD3-3024-3-SI

Options

1 EXCB2-E3-3



2 EXCB2-E3-E3-0.2



3 ECNR-E3CN4



Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

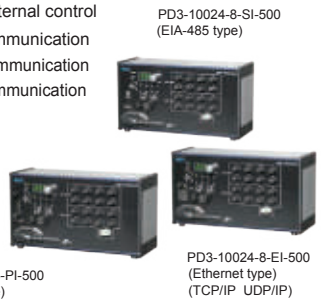
Lineup of Models with 500 kHz PWM Frequency

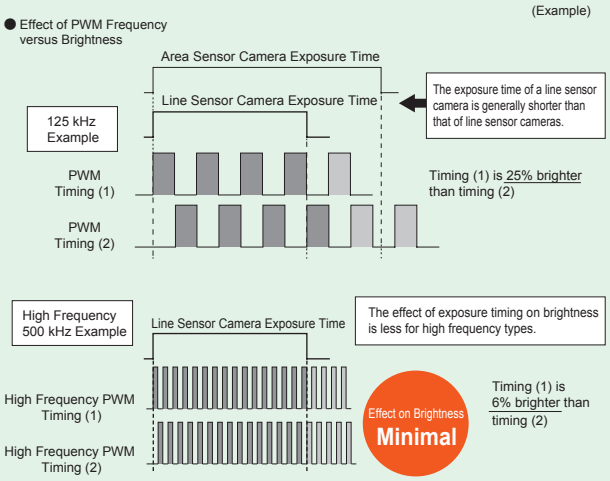
When selecting a digital power supply, consider using the higher frequency type. Power supplies with a PWM frequency of 500 kHz can be made to order. Contact our local sales office for details.

Introducing High Frequency Power Supplies (Made to Order)

PD3-10024-8 Series

- PWM Dimmer Control (500 kHz)
- 95 W Capacity (EL Connector: 1 Channel)
- AC Input
- 3 types of external control
  - Parallel communication
  - Ethernet communication
  - EIA-485 communication





Differences Between Specifications and Models

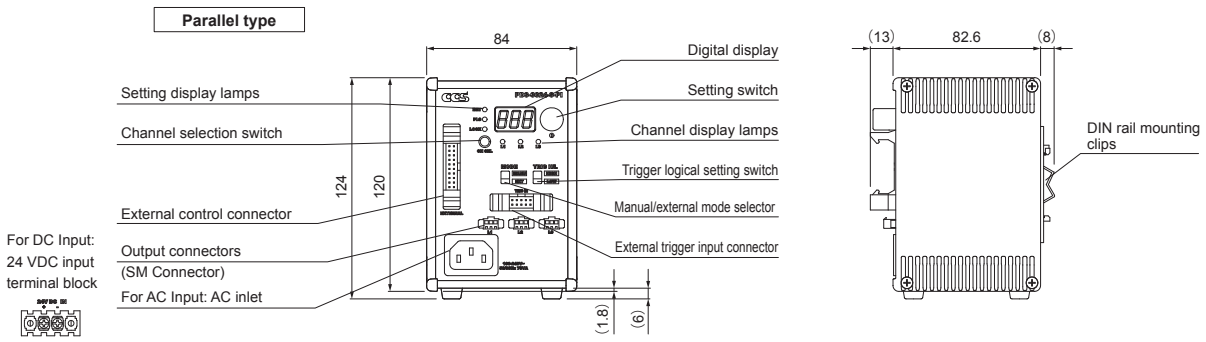
[(A) attached to end of model number] Ex.: PD3-3024-3-EI → PD3-3024-3-EI(A)

	Contents Changed	Applicable Models
Software Change	• Command specifications for changing the setting values for dimmer control commands (F commands) as a batch have been added. • Command specifications for changing the status of each channel for ON/OFF commands (L commands) as a batch have been added.	PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-ET(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-ET(A) / PD3-5024-3-ET(A) / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)
DIN Rail Mount Added	• The number of DIN rail mounts for 50 W power supplies has increased from 1 to 2.	PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)

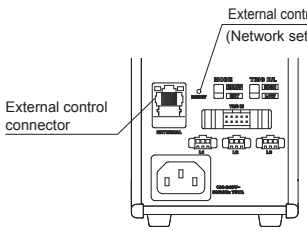
Dimensions (mm)

PD3-3024-3-PI / PD3-3024-3-EI(A) / PD3-3024-3-SI(A) / PD3-3024-3-PT / PD3-3024-3-ET(A) / PD3-5024-3-PT / PD3-5024-3-ET(A)

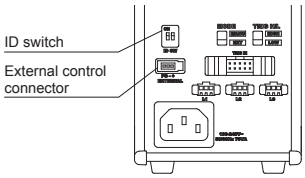
Parallel type

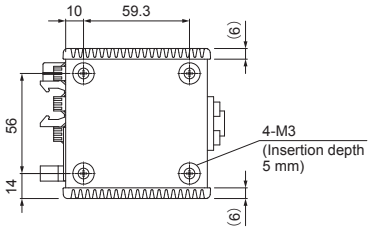


Ethernet type



EIA-485 type





Ethernet/EIA-485 types have the same external dimensions as the parallel type.

PD3 Series



Refer to our website for product details.

CCS PD3 ▶ Search

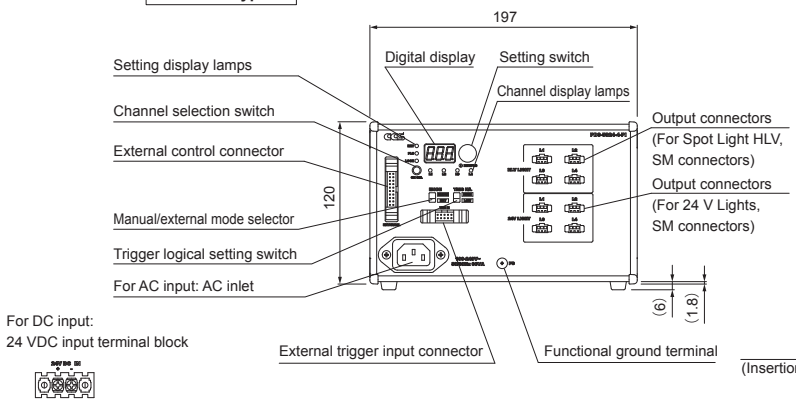
For quick access.

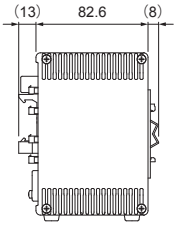
You can also use your smartphone or cell phone.

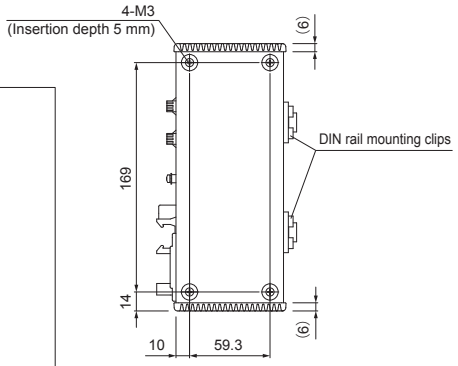
Dimensions (mm)

PD3-5024-4-PI(A) / PD3-5024-4-EI(A) / PD3-5024-4-SI(A) / PD3-5024-4-PT(A) / PD3-5024-4-ET(A)

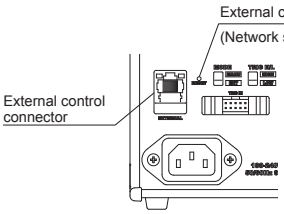
Parallel type



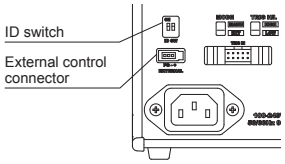




Ethernet type



EIA-485 type

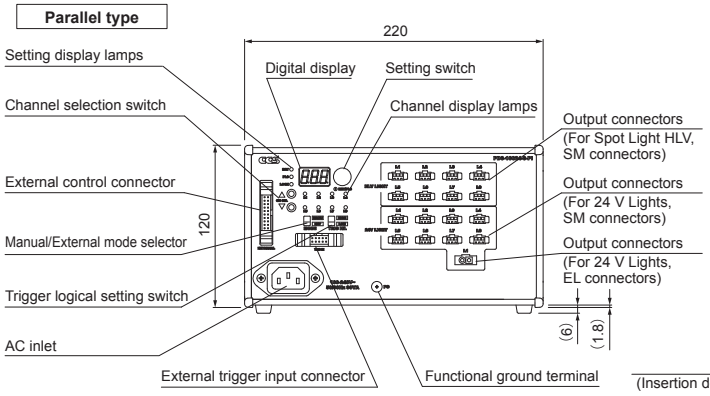


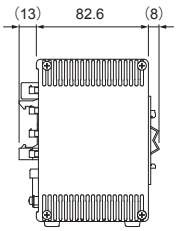
Ethernet/EIA-485 types have the same external dimensions as the parallel type.

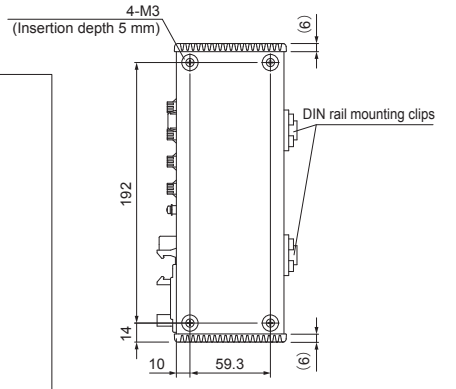
Dimensions (mm)

PD3-10024-8-PI / PD3-10024-8-EI(A) / PD3-10024-8-SI(A)

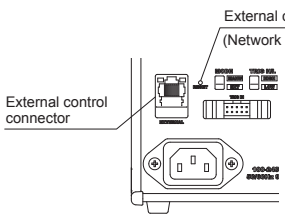
Parallel type



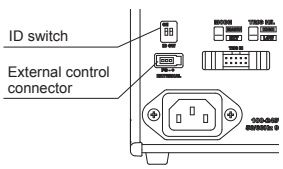




Ethernet type



EIA-485 type



Ethernet/EIA-485 types have the same external dimensions as the parallel type.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Options

External control cables

Dimensions (mm)

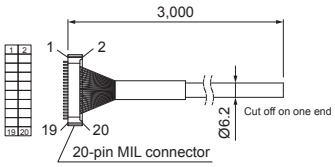
Parallel communication cable

Used for performing external control via parallel communication. You can select the channel, intensity setting and lighting mode (continuous, ON/OFF and strobe modes).

The Trigger Input Cable shown (EXCB2-M10-3) below is needed for ON/OFF lighting and strobe lighting.



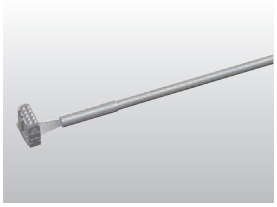
Model name: EXCB2-M20-3



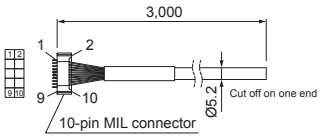
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

Trigger input cable

Cable through which external trigger signals are input by parallel bit method. Used when performing ON/OFF or strobe lighting using an external trigger signal.



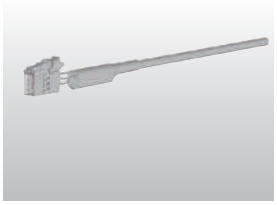
Model name: EXCB2-M10-3



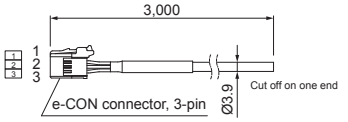
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

EIA-485 communication cable

Used for performing external control via EIA-485 communication. You can select the channel, intensity setting, ON/OFF setting and lighting mode (continuous, ON/OFF and strobe modes).



Model name: EXCB2-E3-3

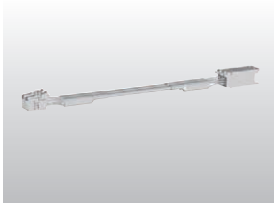


PIN No.	Line color	Embedded line color
1	Black	None
2	Black	White
3 (shielded)	Drain wire	None

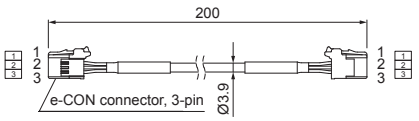
EIA-485 communication relay cable

Relay cable necessary if using with two or more PD3 series units connected for EIA-485 communication.

EIA-485 communication relay connector

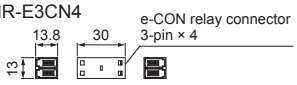


Model name: EXCB2-E3-E3-0.2



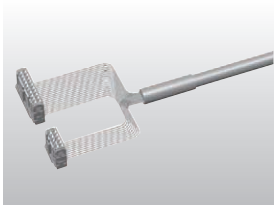
Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

Model name: ECNR-E3CN4

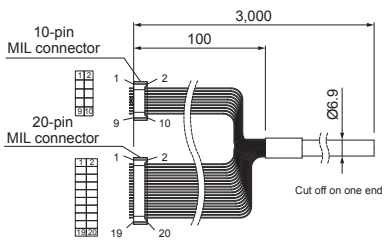


Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



Model name: EXCB2-M10M20-3



20-pin MIL connector

PIN No.	Line color	Marking
1	Orange	Black2
2	Orange	Red2
3	Gray	Black2
4	Gray	Red2
5	White	Black2
6	White	Red2
7	Yellow	Black2
8	Yellow	Red2
9	Pink	Black2
10	Pink	Red2
11	Orange	Black3
12	Orange	Red3
13	Gray	Black3
14	Gray	Red3
15	White	Black3
16	White	Red3
17	Yellow	Black3
18	Yellow	Red3
19	Pink	Black3
20	Pink	Red3

10-pin MIL connector

PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

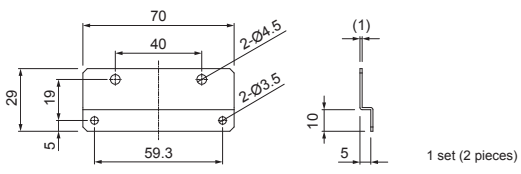
Base brackets

Bracket for securing PD3 series units to the floor, shelving and similar locations.

Base Brackets are included with PD3-5024-4 and PD3-10024-8 models.



Model name: BK-PD3



1 set (2 pieces)

Control Units

Digital Control Units
PD2 Series

Refer to our website for product details.
CCS PD2 ▶Search
For quick access.
You can also use your smartphone or cell phone.

Intensity control to 256-step Compatible with a wide range of uses


PD2-3012-4(A) / PD2-3024-4(A)


PD2-3012-8(A) / PD2-3024-8(A)


PD2-1012(A) / PD2-1024(A)


PD2-3012(A) / PD2-3024(A)


PD2-5012(A) / PD2-5024(A)


PD2-3012-2(A) / PD2-3024-2(A)

CE Compliant model(s)
PD2-3012(A) / PD2-3024(A) / PD2-5012(A) / PD2-5024(A) / PD2-3012-2(A) / PD2-3024-2(A) / PD2-3012-4(A) / PD2-3024-4(A) / PD2-3012-8(A) / PD2-3024-8(A)

The supplied AC cord is for use with 100 to 120 VAC. If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

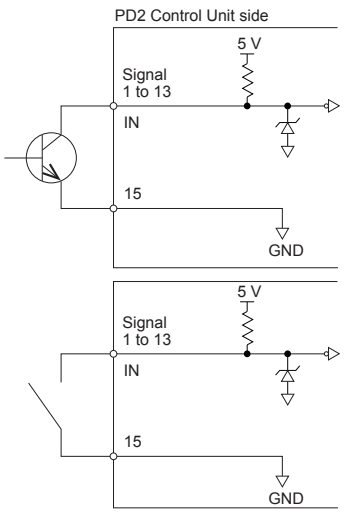
- You can select either 12 V or 24 V type according to the input voltage of the LED Light being used.
- You can select from 10 W, 30 W and 50 W types according to the power consumption of the LED Light being used.
- You can select from 2, 4 and 8-channel types if you are using individual intensity settings for multiple Light Units.
- You can select an optional external control cable if you are using external control (refer to P.322).

Example Connection

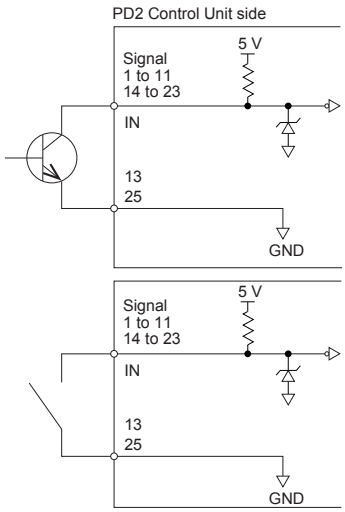
Refer to the “Instruction Guide” for details.

Example connections of external control signal

■ 1, 2 channels



■ 4, 8 channels



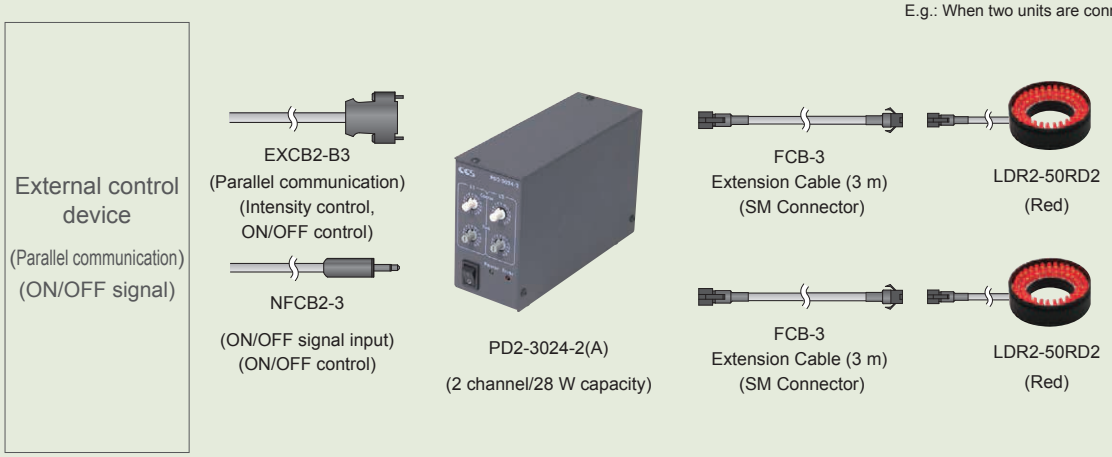
Drive using driver IC or NPN open-collector. Drive is possible if there is a device through which flows an approximately 10 mA current from signal to ground.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs — Register to use them.

Example System Configuration

Example:
External control device — **External control cables** — **Control Unit** — **Extension cables** — **LED Lights (two units connected)**

E.g.: When two units are connected



Specifications

Model name	PD2-1012(A)	PD2-1024(A)	PD2-3012(A)	PD2-3024(A)	PD2-5012(A)	PD2-5024(A)	PD2-3012-2(A)	PD2-3024-2(A)	PD2-3012-4(A)	PD2-3024-4(A)	PD2-3012-8(A)	PD2-3024-8(A)
Input voltage	100 to 120 VAC		100 to 240 VAC									
Input current*1	0.25 A typ.		0.78 A typ.		1.3 A typ.		0.78 A typ.					
Frequency	50/60 Hz											
Inrush current	15 A typ.											
No. of channels	1 channel	1 channel	1 channel	1 channel	1 channel	1 channel	2 channels	2 channels	4 channels	4 channels	8 channels	8 channels
DC output voltage	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V	12 V	24 V
Output power	9.5 W max.	9.0 W max.	28 W max.	28 W max.	46 W max.	46 W max.	28 W max.	28 W max.	27 W max.	27 W max.	25 W max.	25 W max.
Intensity control	Intensity control method: 62.5 kHz PWM control Manual: 16-step intensity control using coarse and fine rotary switches on the front panel External: Intensity control using 8-bit parallel signal											
External control input	Input circuit: Pull-up of +5.0 V internally by use of resistor (4.7 kΩ)								Input circuit: Pull-up of +5.0 V internally by use of resistor (2.2 kΩ)			
	HS-CMOS input: Low level of max. 1.0 V, high level of 3.5 V or more											
External control connector	D-sub 15-pin (plug)								D-sub 25-pin (plug)			
Lights ON/OFF control	ON/OFF control during manual intensity control: Ø3.5 mm microphone jack ON/OFF control during external intensity control: D-sub 15-pin ON signal (not synchronized with writing sequence)								Manual/External: D-sub 25-pin ON signal (not synchronized with writing sequence)			
Light ON/OFF response time	OFF→ON: 10 µs typ., ON→OFF: 10 µs typ.											
Startup time	0.5 sec typ.											
Output overcurrent protection	Operates at 107% of the output current. Reset by turning the power off and then on again.											
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)											
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)											
Weight	0.7 kg max.		1.1 kg max.		1.3 kg max.		1.1 kg max.		1.2 kg max.		1.5 kg max.	
Accessories	3-prong AC cord with ground terminal*2 (2 m) x 1, Instruction Guide x 1											

*1 For 100 VAC
*2 Except for PD2-1012(A) / 1024(A)

PD2 Series



Refer to our website for product details.

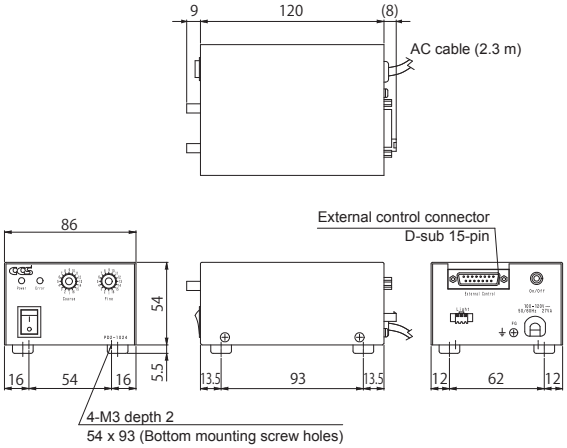
CCS PD2 ▶ Search

For quick access.

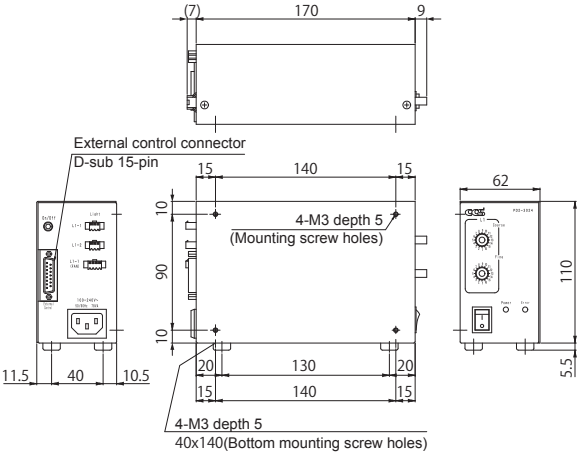
You can also use your smartphone or cell phone.

Dimensions (mm)

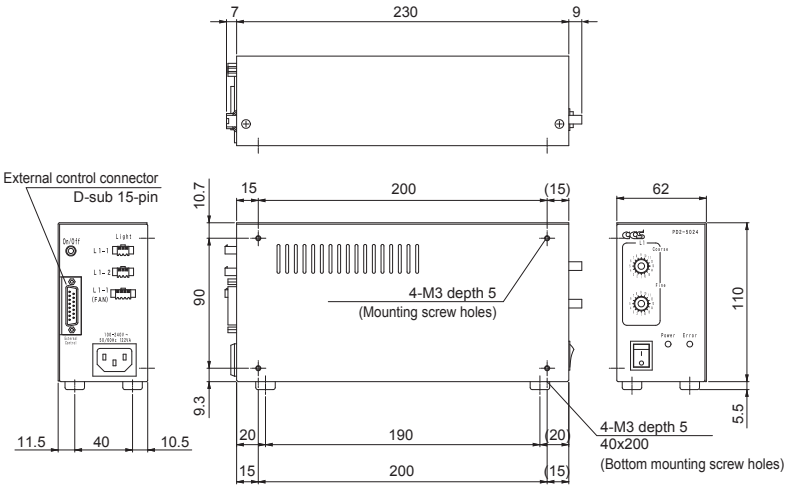
PD2-1012(A) / PD2-1024(A)



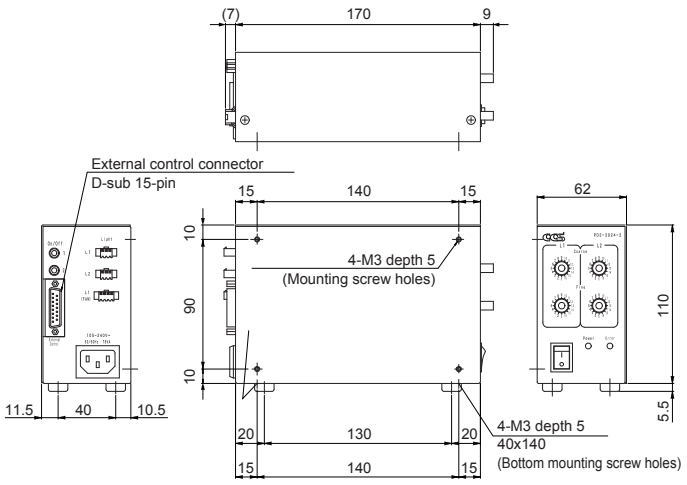
PD2-3012(A) / PD2-3024(A)



PD2-5012(A) / PD2-5024(A)



PD2-3012-2(A) / PD2-3024-2(A)

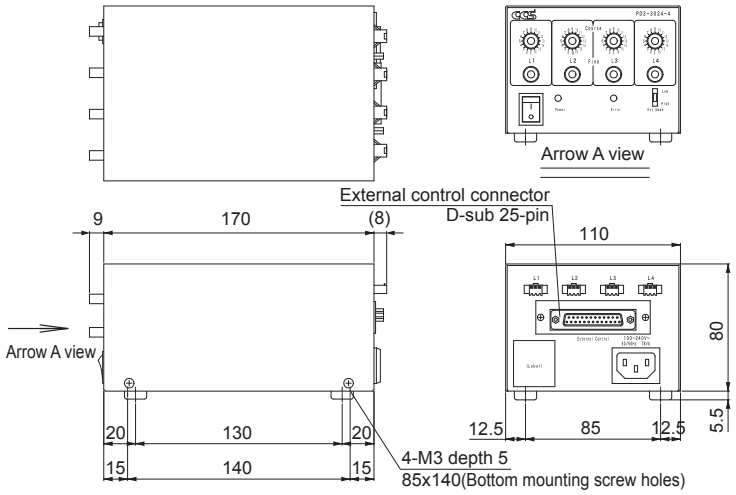


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

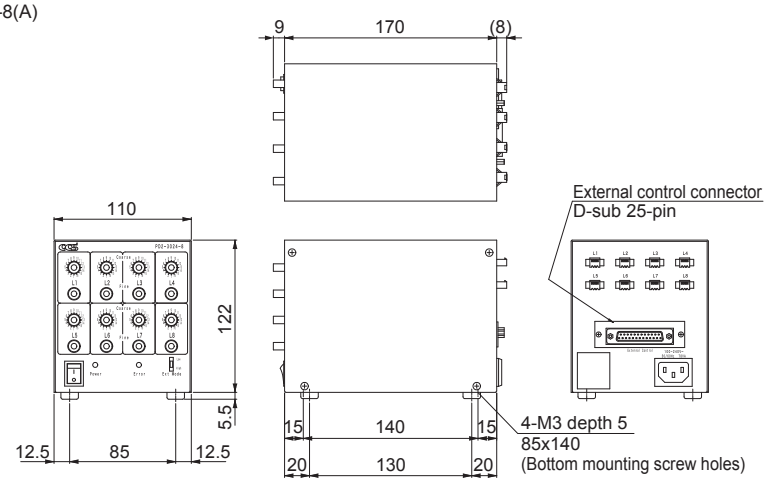
Register to use them.

Dimensions (mm, Continued)

PD2-3012-4(A) / PD2-3024-4(A)



PD2-3012-8(A) / PD2-3024-8(A)



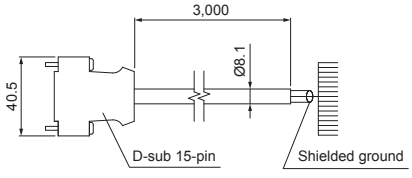
Options

External control cable

Dimensions (mm)

Corresponding Control Unit: PD2 (1 and 2 channels) series

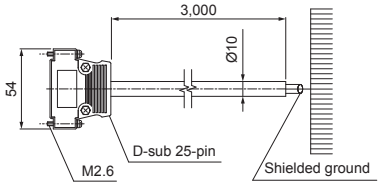
EXCB2-B3 (3 m): D-sub 15-pin



No.	Line color	No.	Line color
1	Black	9	Gray
2	White	10	Pink
3	Red	11	White/Black
4	Green	12	Red/Black
5	Yellow	13	Green/Black
6	Brown	14	Yellow/Black
7	Blue	15	Brown/Black
8	Purple	NC	(Blue/Black)

Corresponding Control Unit: PD2 (4 and 8 channels) series

EXCB2-25-3 (3 m): D-sub 25-pin

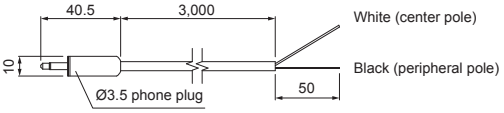


No.	Line color	No.	Line color	No.	Line color	No.	Line color
1	Black	9	Gray	17	Purple/Black	25	Brown/White
2	White	10	Pink	18	Grey/Black	NC	(Blue/White)
3	Red	11	White/Black	19	Pink/Black	NC	(Purple/White)
4	Green	12	Red/Black	20	Light green/Black	NC	(Grey/White)
5	Yellow	13	Green/Black	21	Black/White	NC	(Pink/White)
6	Brown	14	Yellow/Black	22	Red/White	NC	(Light green/White)
7	Blue	15	Brown/Black	23	Green/White		
8	Purple	16	Blue/Black	24	Yellow/White		

External ON/OFF control cable

Corresponding Control Unit: PD2 (1 and 2 channels) series

NFCB2-3 (3 m)



Line color	Signal
White	ON/OFF
Black	GND (-)

Control Units

Analog Control Units
PSB Series

Refer to our website for product details.
CCS PSB ▶ Search
For quick access.
You can also use your smartphone or cell phone.

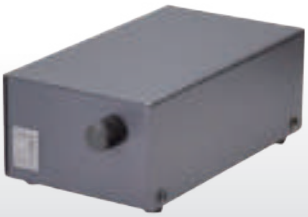
Low cost LED Light Control Units

Use the PD3/PD2 Series Digital Control Unit if you require fine intensity settings, controllability, or reproducibility.


PSB-1012V-WW / PSB-1024V-WW


PSB-512V / PSB-524V(A)


PSB-1012VB / PSB-1024VB


PSB-3012VB / PSB-3024VB

CE Compliant model(s)
PSB-1012V-WW / PSB-1024V-WW

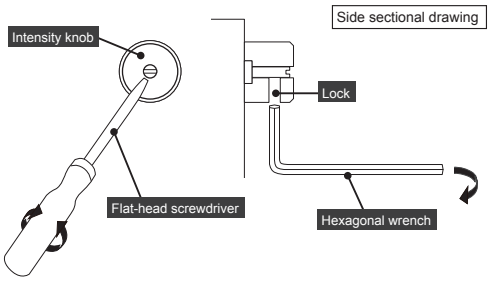
Features

- Stepless intensity control is performed by varying the voltage.
- Continuous lighting making it optimal for use with fast shutter speeds.
- There is a worldwide (WW) type of Control Unit that can be used with 100 to 240 VAC.
- There is a type where the intensity knob can be fixed (special order product).

● Locking intensity knob

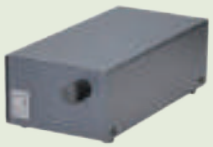
Adjust the intensity using a flat-head screwdriver.
To lock the knob, use a hexagonal wrench to turn the M3 set screw on the knob body and lock it.

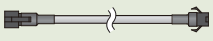
Products with a model name ending with an "L" have a locking intensity knob.

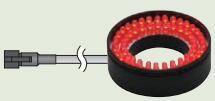


Example System Configuration

Example:
Control Unit——Extension cables— LED Light


PSB-3024VB
(1 channel/30 W capacity)


FCB-3
Extension Cable (3 m)
(SM Connector)


LDR2-50RD2
(Red)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

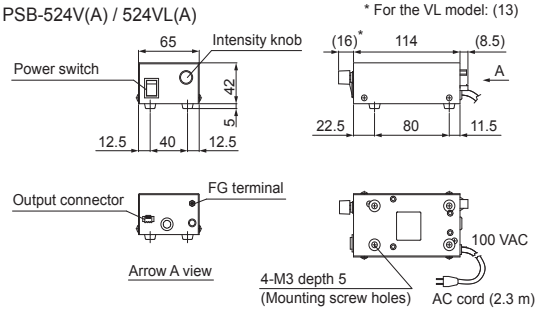
Specifications

Model name	PSB-524V(A) PSB-524VL(A)	PSB-1012VB PSB-1012VBL	PSB-1024VB PSB-1024VBL	PSB-3012VB PSB-3012VBL	PSB-3024VB PSB-3024VBL	PSB-1012V-WW	PSB-1024V-WW
Lighting method	Continuous lighting						
Drive method	Constant-voltage system						
Intensity control method	Variable voltage control						
No. of channels	1 channel						
Applicable Light Unit (rated)	24 V 5 W	12 V 10 W	24 V 10 W	12 V 30 W	24 V 30 W	12 V 10 W	24 V 10 W
Intensity	Intensity knob on the unit front panel						
Overcurrent protection	Operates at 125% of the rated current or higher. Resets automatically.					Operates at 105% of the rated current or higher. Resets automatically.	
Input voltage (rated)	100 to 120 VAC					100 to 240 VAC	
Input voltage (range)	85 to 132 VAC					85 to 264 VAC	
Power consumption (typ.)	12 VA	27 VA		78 VA		27 VA	
Frequency	50/60 Hz						
Inrush current (typ.)	15 A (For 100 VAC) From a cold start					15 A (For 100 VAC), 20 A (For 200 VAC) From a cold start	
Ground leakage current						3.5 mA max. (264 VAC, 60 Hz, with no load)	
Output voltage (rated)	15 (±1) VDC to 24.05 (±0.25) VDC	8.3 (±1) VDC to 12.05 (±0.15) VDC	12 (±1) VDC to 24.05 (±0.25) VDC	8.3 (±1) VDC to 12.05 (±0.15) VDC	12 (±1) VDC to 24.05 (±0.25) VDC	8.3 (±1) VDC to 12.05 (±0.15) VDC	12 (±1) VDC to 24.05 (±0.25) VDC
Output current (rated)	0.21 A	0.83 A	0.41 A	2.5 A	1.25 A	0.83 A	0.41 A
Dielectric strength (Input - Output)	1,000 VAC 1-min. cutoff current 10 mA 500 VDC 20 MΩ or more					1,500 VAC 1-min. cutoff current 10 mA 500 VDC 20 MΩ or more	
Dielectric strength (Input-FG)	1,000 VAC 1-min. cutoff current 10 mA 500 VDC 20 MΩ or more					1,500 VAC 1-min. cutoff current 10 mA 500 VDC 20 MΩ or more	
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)						
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)						
Cooling method	Natural air cooling						
Elevation	2,000 m max.						
Protective ground class	Class 0					Class I	
Degree of contamination	Degree of contamination 2						
Overvoltage category	Category II						
CE marking						Safety standard: EN61010-1 compliant EMC standard: EN61326 compliant	
Environmental regulations	RoHS compliant						
Material, coating, surface processing	Steel plate, Thickness: 1.0, N3, Matte finish						
Weight	Approx. 450 g	Approx. 470 g		Approx. 700 g		Approx. 470 g	
Accessories	Instruction Guide x 1					Instruction Guide x 1 AC cord (with ground wire) x 1	

Model names ending with an “L” have a locking intensity knob.

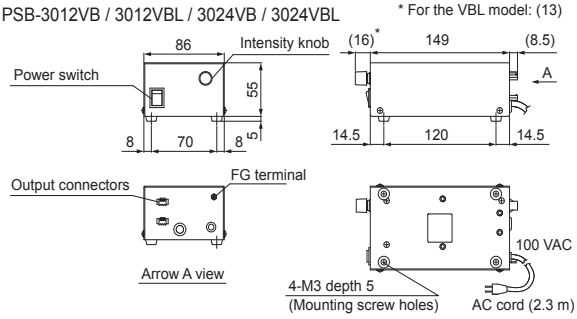
Dimensions (mm)

PSB-524V(A) / 524VL(A)

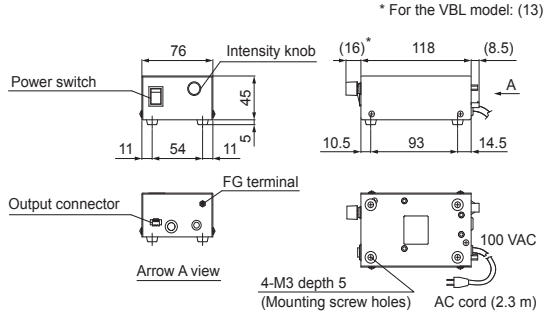


Note: PSB-524V(A) and PSB-524VL(A) have “MIN” and “MAX” labels under the intensity knob on the front panel and have a “+ -” label near the output connector on the back panel.

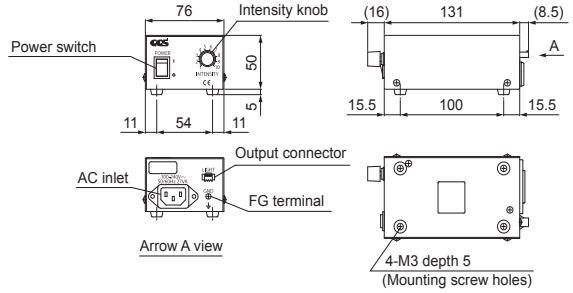
PSB-3012VB / 3012VBL / 3024VB / 3024VBL



PSB-1012VB / 1012VBL / 1024VB / 1024VBL



PSB-1012V-WW / 1024V-WW



Control Units

Strobe Overdrive Control Units
POD Series

Refer to our website for product details.
CCS POD ▶Search
For quick access.
You can also use your smartphone or cell phone.

Multi-functional and fine-tunable Control Units

Overdrive Variable-voltage Control
Ethernet Enabled
Minimum Strobe Time: 1 µs
10 Scenes Storable



POD-5024-2-PEI
(2 channel model)

POD-22024-4-PEI
(4 channel model)

CE Compliant

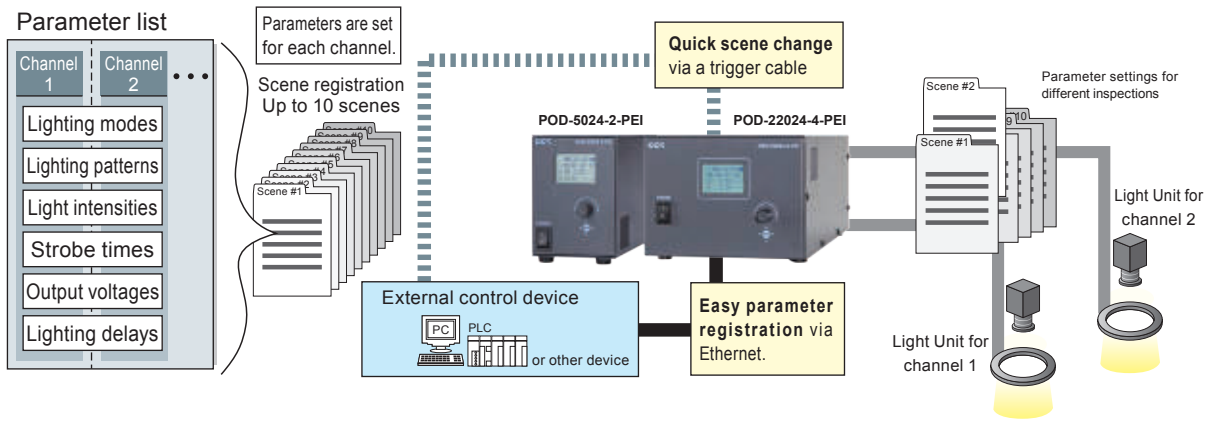
The supplied AC cord is for use with 100 to 120 VAC. If you would like to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

- Strobe lighting. Overdrive specifications.
- Voltage control during overdrive operation.
- Ethernet and parallel communications.
- Continuous lighting under PWM control.
- Sets of parameters related to light control can be registered.
- The light intensity can be set to one of 512 levels.
- Output voltage: 24 to 48 VDC
- Minimum strobe time of 1 µs.
- Strobe delay: 0 to 1,000 µs (in steps of 1 µs)
- 2 channels (POD-5024-2-PEI), 4 channels (POD-22024-4-PEI).
- Trigger link function (POD-22024-4-PEI).
  You can make the Light Units on multiple channels turn ON (or OFF) with a single trigger signal that is input through one of the pins of the trigger input connector.

A Specification Difference between POD-5024-2-PEI and POD-22024-4-PEI
In POD-22024-4-PEI (4-channel model), the lighting mode setting (Overdrive or PWM) is applied to all channels. Please note that the setting cannot be individually specified for each channel as in POD-5024-2-PEI (2-channel model).

●Registering Scenes (sets of parameters)



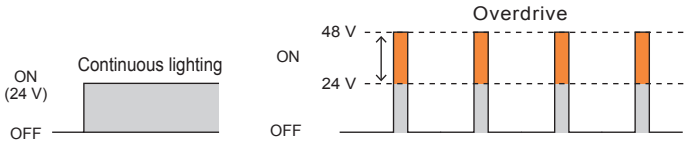
You can register sets of parameters called scenes that consist of the light control settings for all channels. By just applying a scene to the channels, you can easily change the settings. Up to 10 scenes can be registered. Refer to the "Instruction Guide" for details.
For information on possible combinations of Light Units with a POD-series Control Unit, refer to our website.
https://www.ccs-grp.com/lnk/qr/pod

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

● What Is "Overdriving"?

Overdriving is used to emit brighter light by applying a high voltage to an LED Light Unit.

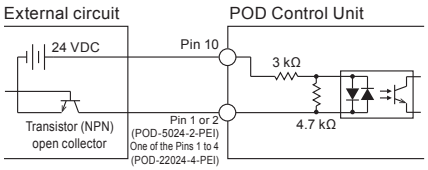
This voltage exceeds the voltage for continuous lighting.



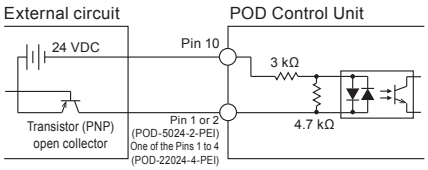
Example Connections

Example connections of external trigger signal

■ Sink type (NPN)



■ Source type (PNP)

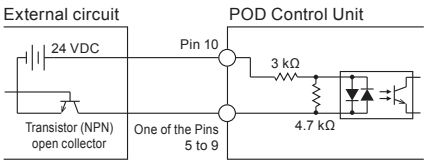


Connection specifications (for each terminal)				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.	Refer to the sequence diagrams on the Instruction Guide.

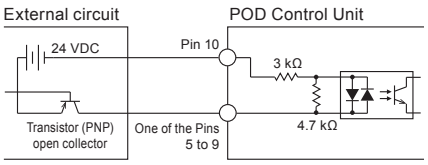
Setting of the LCG-TRG item on the COM Menu	Photocoupler	When lighting mode is set to O/D Mode, or when lighting mode is set to PWM Mode and lighting pattern is set to Strobe Lighting Pattern	When lighting mode is set to PWM Mode and lighting pattern is set to Continuous Lighting Pattern
ACTIVE HI	ON	No change	Light Unit OFF
	OFF	Light Unit flashes for the strobe time.	Light Unit ON
ACTIVE LO	ON	Light Unit flashes for the strobe time.	Light Unit ON
	OFF	No change	Light Unit OFF

Example connections of external trigger signal (Applying scenes)

■ Sink type (NPN)



■ Source type (PNP)

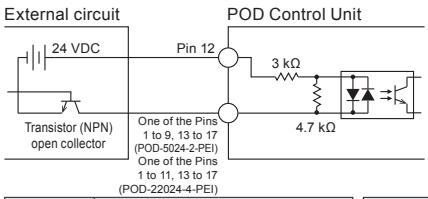


Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to *ACTIVE HI*	When the LGC-PAR item on the COM Menu is set to *ACTIVE LO*
ON	1	0
OFF	0	1

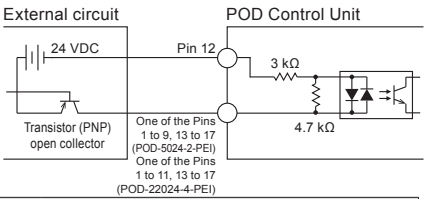
Scene number	Data				LCD
	SC3	SC2	SC1	SC0	
00	0	0	0	0	S01
01	0	0	0	1	S02
02	0	0	1	0	S03
03	0	0	1	1	S04
04	0	1	0	0	S05
05	0	1	0	1	S06
06	0	1	1	0	S07
07	0	1	1	1	S08
08	1	0	0	0	S09
09	1	0	0	1	S10

Example connections of external signal (Parallel communications)

■ Sink type (NPN)



■ Source type (PNP)



Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to *ACTIVE HI*	When the LGC-PAR item on the COM Menu is set to *ACTIVE LO*
ON	1	0
OFF	0	1

Connection specifications (for each terminal)				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.	Refer to the sequence diagrams on the Instruction Guide.

POD Series



Refer to our website for product details.

CCS POD ▶ Search

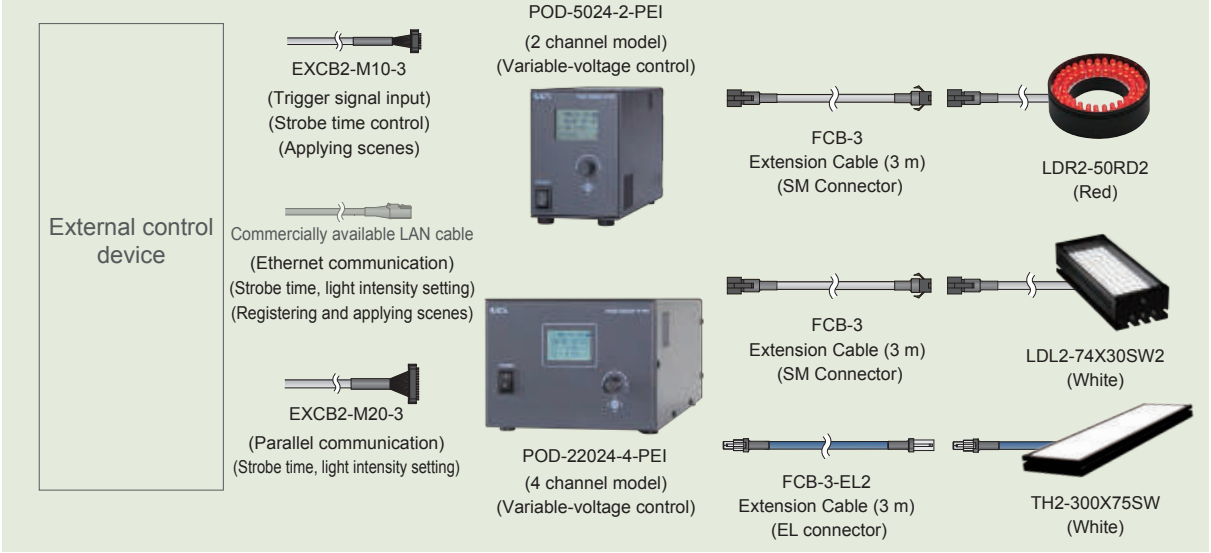
For quick access.

You can also use your smartphone or cell phone.

Example System Configuration

Example:

External control device —— **External control cable** —— **Control Unit** —— **Extension cables** —— **LED Light**



Specifications

Model name	POD-5024-2-PEI / POD-22024-4-PEI			
Lighting method	Strobe lighting (Overdrive mode), continuous lighting (PWM mode)			
Drive method	Costant-voltage system			
Intensity control method	Variable-voltage control or PWM control			
Number of channels	POD-5024-2-PEI: 2 channels / POD-22024-4-PEI: 4 channels			
Number of output connectors	POD-5024-2-PEI	L1: 1 (SM connector), L2: 1 (SM connector)		
	POD-22024-4-PEI	L1: 2 (EL connectors, SM connectors), L2: 2 (EL connector, SM conenctor), L3: 1 (SM connector), L4: 1 (SM connector)		
Output ratings*1	POD-5024-2-PEI		POD-22024-4-PEI	
	When both channels are in O/D Mode	Output current: 10 A max. (total for 2 channels)	O/D Mode (peak)	**Total for 4 channels: 50 A max.** L1, L2: 15 A max./channel (EL connector: 15 A max./channel) (SM connector: 10 A max./channel) L3, L4: 10 A max./channel
	When both channels are in PWM Mode	Output power: 45 W max. (total for 2 channels)		
	When the channels are used together with different lighting modes	Output current: 6.3 A max. and Output power: 36 W max. (total for 2 channels)	PWM Mode	**Total for 4 channels: 200 W max.** L1, L2: 100 W max./channel (EL connector: 100 W max./channel) (SM connector: 60 W max./channel) L3, L4: 60 W max./channel
Output voltage (ratings)	Overdrive (O/D) mode: 24 to 48 VDC, PWM mode: 24 VDC			
PWM frequency	125 kHz			
Light control settings	Manual	Operation on the front panel	512 levels	
	External	Command input via TCP/IP or UDP/IP communications		
		Signal input through parallel port		
Strobe time settings	Manual	Operation on the front panel	POD-5024-2-PEI: 1 to 1,000 µs (in steps of 1 µs) POD-22024-4-PEI: 1 to 3,000 µs*2	
	External	Command input via TCP/IP or UDP/IP communications		
		Signal input through parallel port		
Lighting delay settings	Manual	Operation on the front panel	0 to 1,000 µs (in steps of 1 µs)	
	External	Command input via TCP/IP or UDP/IP communications		
		Signal input through parallel port		
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz			
Power consumption (typ.)	POD-5024-2-PEI: 65 VA, POD-22024-4-PEI: 260 VA			
Inrush current (typ.)	POD-5024-2-PEI: 15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start			
	POD-22024-4-PEI: 17 A (at 100 VAC), 40.8 A (at 240 VAC) from a cold start			
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)			
Insulation withstand voltage (input-output, input-FG)	1,500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.			
Overvoltage category	Category II			
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only			
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)			
Cooling method	Forced air cooling			
CE marking	Safety standard: Conforms to EN 61010-1 EMC standard: Conforms to EN61000-6-2, EN61000-6-4			
Environmental regulations	RoHS compliant			
Material, coating, and surface processing	Steel sheet, Cover thickness: 1.6 mm, Chassis thickness: 1.0 mm, N3 (leather tone)			
Weight	POD-5024-2-PEI: 1,500 g max., POD-22024-4-PEI: 3,300 g max.			
Accessories	Instruction Guide x1, 2-m-long 3-prong AC power cord with ground terminal x1			

*1 For information on possible combinations of Light Units with a POD-series Control Unit, refer to our website. https://www.ccs-grp.com/lnk/qr/pod

*2 For manual control and Ethernet communications: 1 to 1,000 µs (in steps of 1 µs), 1,002 to 3,000 µs (in steps of 3 µs)
For parallel communications: 3 to 3,000 µs (in steps of 3 µs) for high strobe time range, 1 to 1,000 (in steps of 1 µs) for low strobe time range

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

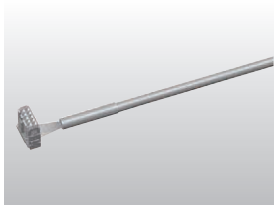
Options

External control cables

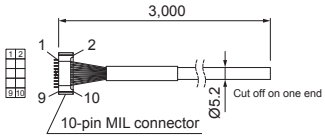
Dimensions (mm)

Trigger input cable

Used to input a external trigger signal of parallel bits. Used for performing strobe lighting and scene application.



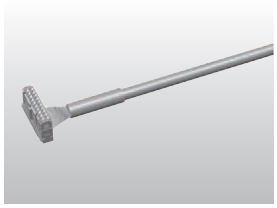
Model name: EXCB2-M10-3



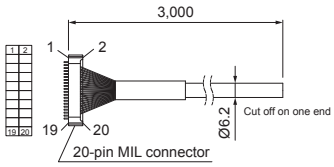
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

Parallel communication cable

Used for performing external control via parallel communication.



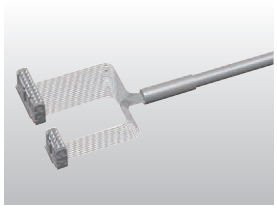
Model name: EXCB2-M20-3



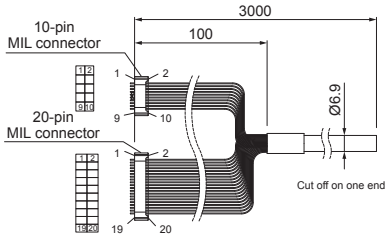
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



Model name: EXCB2-M10M20-3



10-pin MIL connector

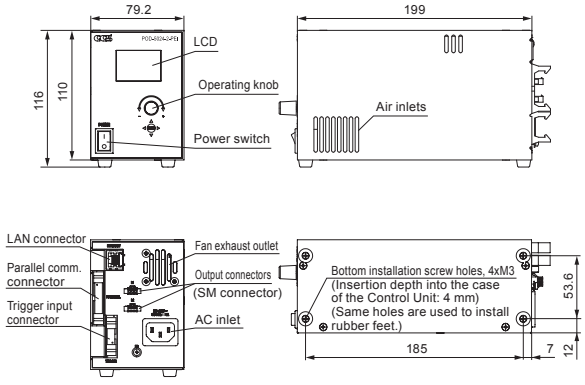
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

20-pin MIL connector

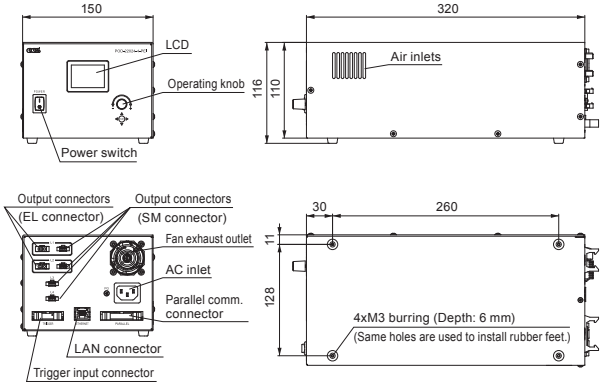
PIN No.	Line color	Marking
1	Orange	Black2
2	Orange	Red2
3	Gray	Black2
4	Gray	Red2
5	White	Black2
6	White	Red2
7	Yellow	Black2
8	Yellow	Red2
9	Pink	Black2
10	Pink	Red2
11	Orange	Black3
12	Orange	Red3
13	Gray	Black3
14	Gray	Red3
15	White	Black3
16	White	Red3
17	Yellow	Black3
18	Yellow	Red3
19	Pink	Black3
20	Pink	Red3

Dimensions (mm)

POD-5024-2-PEI



POD-22024-4-PEI



Control Units

Strobe Overdrive Control Units
PTU2 Series

Refer to our website for product details.
CCS PTU2 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Overdrive Strobe Control Units
Enables even brighter emission of Light Units

Overdrive Specifications

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.



The PTU2 series enables strobe lighting with overdrive. Overdrive refers to brighter than normal emission of light by increasing the voltage and current supplied to the Light Unit.

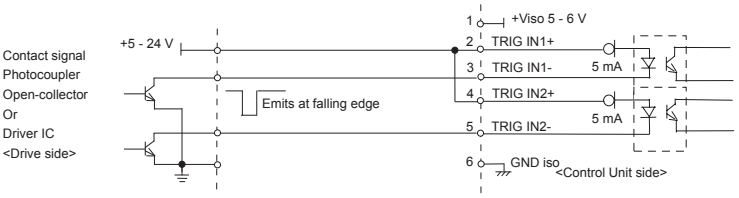
Features

- The PTU2 series enables the lights to emit several times brighter than the conventional Control Units.
- The two independent channels allow for setting each channel to emit for 10 to 990 µs.

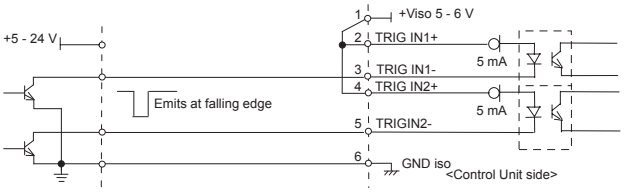
Example Connections

Refer to the “Instruction Guide” for details.

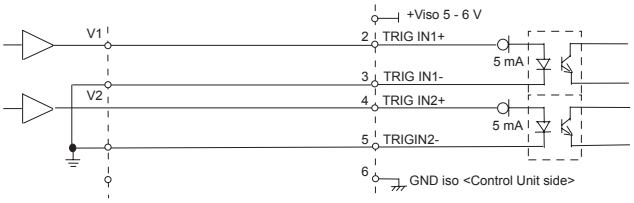
(1) Non-voltage contact drive 1
(using drive-side power supply)



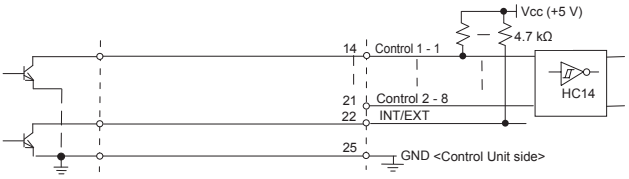
(2) Non-voltage contact drive 2
(using insulation power supply)



(3) If driven by the high-pulse
voltage output signal



(4) External intensity input



Low: 0 V or more 1.13 V max. High: 3.15 V or more 5 V max.

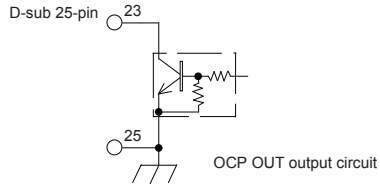
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Overcurrent protection function

PTU2 Control Units forcibly stop the power output when the current consumption in the Light Unit exceeds the value shown below. The error lamp (red) on the front of the unit also flashes. Stopping of output is not released until the Control Unit is restarted.

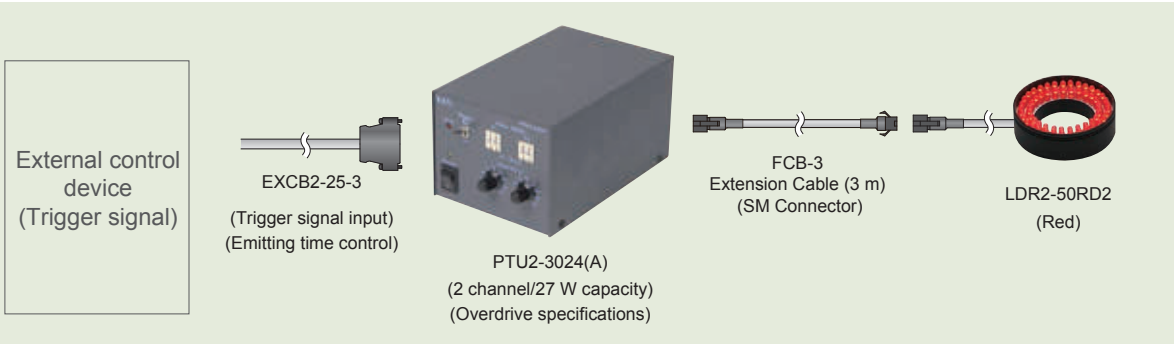
Model name	PTU2-3012(A)	PTU2-3024(A)
Power consumption	8.5 A peak min	6.0 A peak min

Use 24 VDC and 20 mA max. for the OCP OUT load in order to obtain a margin.



Example System Configuration

Example:
External control device — **External control cable** — **Control Unit** — **Extension cables** — **LED Light**

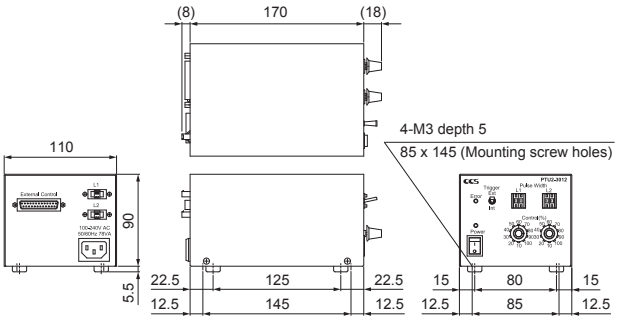


Specifications

Model name	PTU2-3012(A)	PTU2-3024(A)
Input voltage (rated)	100 to 240 VAC	
Frequency	50/60 Hz	
Inrush current (typ.)	26 A (for 100 VAC) 63 A (for 240 VAC) at cold start	15 A (for 100 VAC) 30 A (for 240 VAC) at cold start
Output	18 VDC, 8.1 A max. (Peak value when connected to max. load)	48 VDC, 4.3 A max. (Peak value when connected to max. load)
Applicable Light Unit (rated)	Total for 2 channels: 27 W max.	
Lighting time	10 to 990 µs Lighting time = Pulse Width [x10 µs] x Control (10 to 100%) Pulse Width: 0 to 99 x 10 µs Control: 10 to 100% (10% steps)	
Lighting delay	15 µs max.	
Output connector	SMP-02V-BC	SMP-03V-BC
External control connector	D-sub 25-pin (plug), M2.6 screw	
Overcurrent protection	Output shutdown: 107% min. of rated load Reset by clearing the cause, and then turning the power off and on again.	
Weight	1.2 kg max.	
Accessories	3-prong AC cord with ground terminal (2 m) x 1, External control connector x 1, Instruction Guide x 1	

Dimensions (mm)

PTU2-3012(A) / 3024(A)

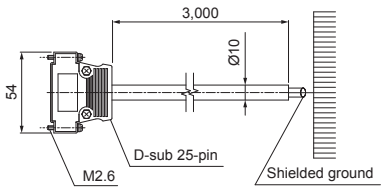


Options

External control cable

Dimensions (mm)

EXCB2-25-3 (3 m)
D-sub 25-pin



No.	Line color	No.	Line color	No.	Line color	No.	Line color
1	Black	9	Gray	17	Purple/Black	25	Brown/White
2	White	10	Pink	18	Grey/Black	NC	(Blue/White)
3	Red	11	White/Black	19	Pink/Black	NC	(Purple/White)
4	Green	12	Red/Black	20	Light green/Black	NC	(Grey/White)
5	Yellow	13	Green/Black	21	Black/White	NC	(Pink/White)
6	Brown	14	Yellow/Black	22	Red/White	NC	(Light green/White)
7	Blue	15	Brown/Black	23	Green/White		
8	Purple	16	Blue/Black	24	Yellow/White		

Control Units

High Power Strobe Control Units
PF Series

Refer to our website for product details.
CCS PF ▶Search
For quick access.
You can also use your smartphone or cell phone.

Enables “extreme power” strobe lights
Dedicated for the High Power Strobe Light Units

Light intensity **512** levels
Ethernet enabled
Available Strobe time **1** µs min.
Lighting delay time **0** to **100** µs



CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you would like to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

PF-A4048-2
(2 channel model)

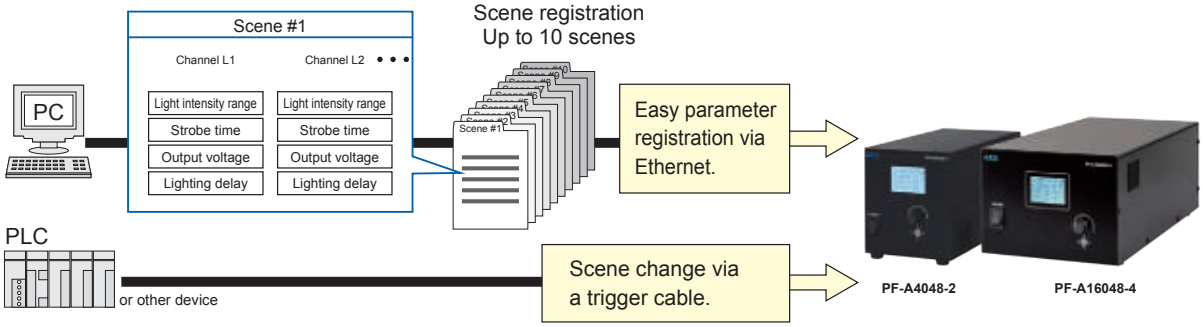
PF-A16048-4
(4 channel model)

High Power Strobe Lights PF series
Product Page ▼ P.135

Features

- Dedicated Control Unit for the High Power Strobe Lights PF series. PF series Product Page ▼ P.135
- Light intensity: 512 levels
- Minimum strobe time of 1 µs.
- Lighting delay time: 0 to 100 µs (in steps of 0.1 µs)
- 2 channels (PF-A4048-2), 4 channels (PF-A16048-4).
- Ethernet and parallel communications.
- Sets of parameters related to light control can be registered.
- Trigger link function (PF-A16048-4)
  You can make the Light Units on multiple channels turn ON (or OFF) with a single trigger signal that is input through one of the pins of the trigger input connector.

● Registering Scenes (sets of parameters)

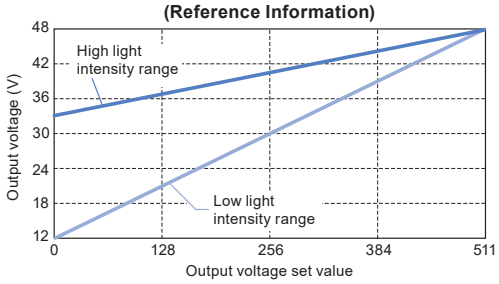


You can register sets of parameters called scenes that consist of the light control settings for all channels.
By just applying a scene to the channels, you can easily change the settings. Up to 10 scenes can be registered.
Refer to the "Instruction Guide" for operation details.

● Light Intensity Ranges
Each channel can be set to either of the light intensity ranges below. The output voltage of the output connectors varies depending on the light intensity range.

- High light intensity range (default): 33 to 48 VDC
- Low light intensity range: 12 to 48 VDC

Output Voltage Characteristics (Reference Information)



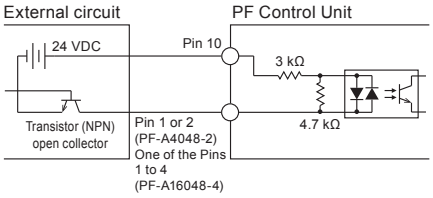
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example Connections

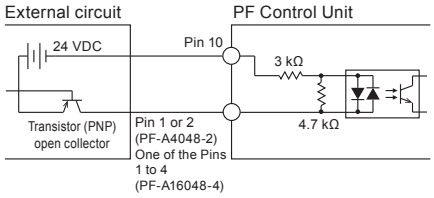
Refer to the “Instruction Guide” for details.

Example connections of external trigger signal

■ **Sink type (NPN)**



■ **Source type (PNP)**

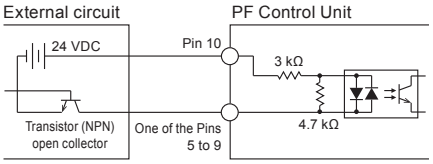


Connection specifications for each terminal				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 V DC min. / 7 mA min.	1.5 V DC max. / 1 mA max.	Refer to the sequence diagrams on the Instruction Guide.

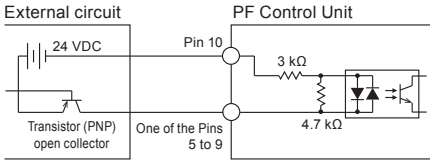
Setting of the LCG-TRG item on the COM Menu	Photocoupler	Light Unit status
ACTIVE HI	ON	No change
	OFF	Light Unit flashes for the strobe time.
ACTIVE LO	ON	Light Unit flashes for the strobe time.
	OFF	No change

Example connections of external trigger signal (Applying scenes)

■ **Sink type (NPN)**



■ **Source type (PNP)**

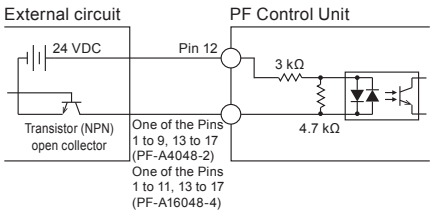


Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to *ACTIVE HI*	When the LGC-PAR item on the COM Menu is set to *ACTIVE LO*
ON	1	0
OFF	0	1

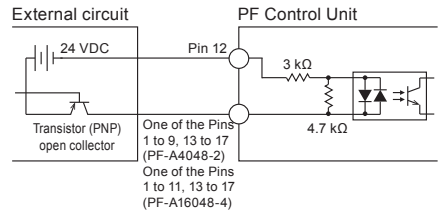
Scene number	Data				LCD
	SC3	SC2	SC1	SC0	
00	0	0	0	0	S01
01	0	0	0	1	S02
02	0	0	1	0	S03
03	0	0	1	1	S04
04	0	1	0	0	S05
05	0	1	0	1	S06
06	0	1	1	0	S07
07	0	1	1	1	S08
08	1	0	0	0	S09
09	1	0	0	1	S10

Example connections of external signal (Parallel communications)

■ **Sink type (NPN)**



■ **Source type (PNP)**



Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to *ACTIVE HI*	When the LGC-PAR item on the COM Menu is set to *ACTIVE LO*
ON	1	0
OFF	0	1

Connection specifications for each terminal				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 V DC min. / 7 mA min.	1.5 V DC max. / 1 mA max.	Refer to the sequence diagrams on the Instruction Guide.

PF Series



Refer to our website for product details.

CCS PF ▶ Search

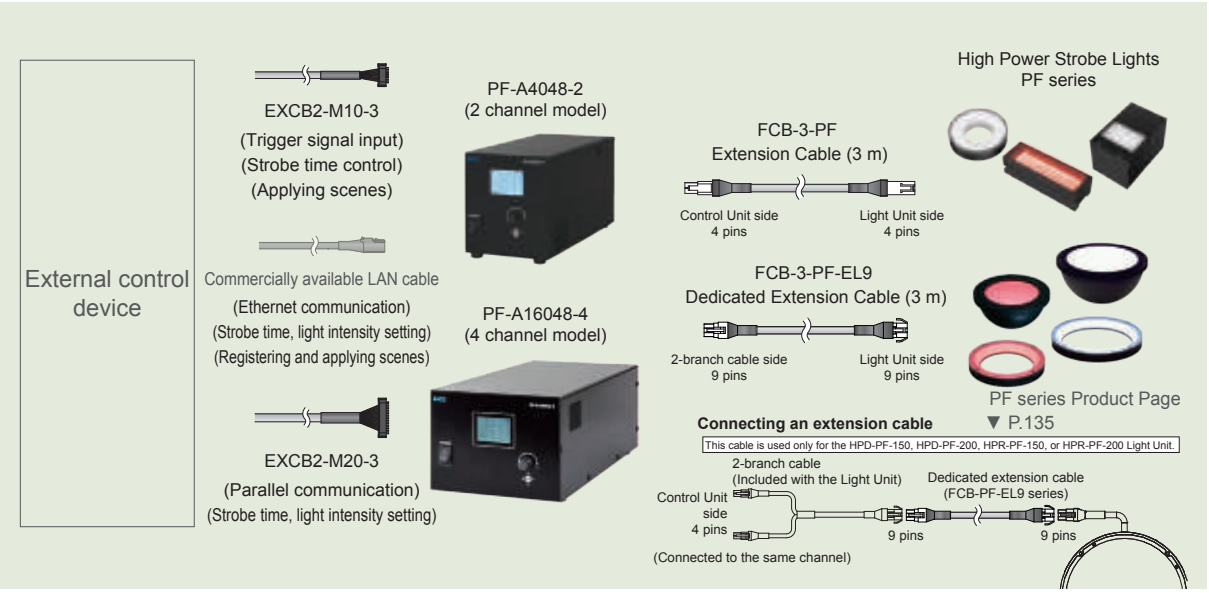
For quick access.

You can also use your smartphone or cell phone.

Example System Configuration

Example:

External control device — **External control cable** — **Control Unit** — **Extension cables** — **LED Light**



Specifications

Model name	PF-A4048-2, PF-A16048-4		
Lighting method	Strobe lighting		
Drive method	Constant-voltage system		
Intensity control method	Variable-voltage control, Strobe time control		
Number of channels	PF-A4048-2	2 channels	
	PF-A16048-4	4 channels	
Number of output connectors	PF-A4048-2	L1: 2, L2: 1	
	PF-A16048-4	L1: 2, L2: 2, L3: 2, L4: 2	
Applicable Light Unit (ratings)	High Power Strobe Light Units from CCS		
Output voltage settings	Manual	Operation on the front panel	512 levels
	External	Command input via TCP/IP or UDP/IP communications	
		Signal input through parallel port	
Strobe time settings	Manual	Operation on the front panel	PF-A4048-2: 1 to 100 µs (in steps of 0.1 µs) PF-A16048-4: 1 to 500 µs*1
	External	Command input via TCP/IP or UDP/IP communications	
		Signal input through parallel port	
Lighting delay settings	Manual	Operation on the front panel	0 to 100 µs (in steps of 0.1 µs)
	External	Command input via TCP/IP or UDP/IP communications	
		Signal input through parallel port	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz		
Power consumption (typ.)	PF-A4048-2	65 VA	
	PF-A16048-4	140 VA	
Inrush current (typ.)	PF-A4048-2	15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start	
	PF-A16048-4	17 A (at 100 VAC), 40.8 A (at 240 VAC) from a cold start	
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)		
Output voltage (ratings)	High light intensity range: 33 to 48 VDC Low light intensity range: 12 to 48 VDC		
Output current (peak)	PF-A4048-2	Total for 2 channels: 43.2 A (21.6 A/connector)	
	PF-A16048-4	Total for 4 channels: 172.8 A (21.6 A/connector)	
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.		
Overvoltage category	Category II		
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation) Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only		
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)		
Cooling method	Forced air cooling		
CE marking	Safety standard: Conforms to EN 61010-1 EMC standard: Conforms to EN61000-6-2, EN61000-6-4		
Environmental regulations	RoHS compliant		
Material and surface processing	Steel sheet, Cover thickness: 1.6 mm, Chassis thickness: 1.0 mm, Black (half matte)		
Weight	PF-A4048-2	1900 g max.	
	PF-A16048-4	3,300 g max.	
Accessories	Instruction guide, 2-m-long 3-prong AC power cord with ground terminal		

*1 For Ethernet communications: 1 to 100 µs (in steps of 0.1 µs), 100.5 to 500 µs (in steps of 0.5 µs)
For parallel communications: High strobe time range (5 to 500 µs, in steps of 0.5 µs), Low strobe time range (1 to 100 µs, in steps of 0.1 µs)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

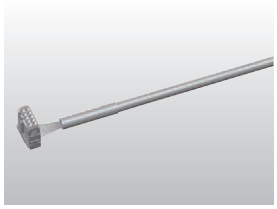
Options

External control cables

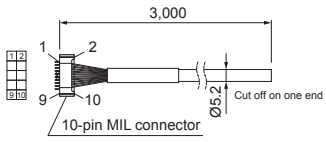
Dimensions (mm)

Trigger input cable

Used to input a external trigger signal of parallel bits. Used for performing strobe lighting and scene application.



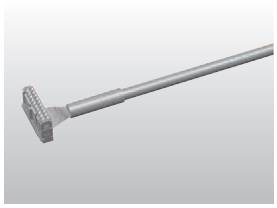
Model name: EXCB2-M10-3



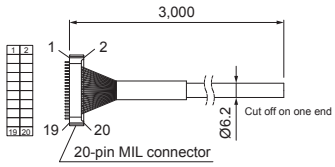
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

Parallel communication cable

Used for performing external control via parallel communication.



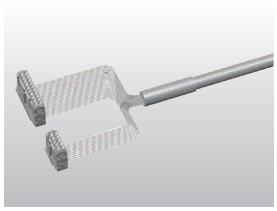
Model name: EXCB2-M20-3



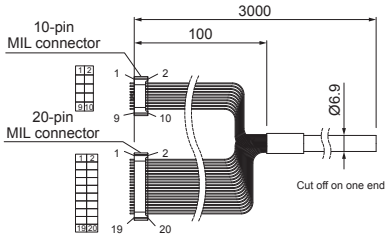
PIN No.	Line color	Marking	PIN No.	Line color	Marking
1	Orange	Black1	11	Orange	Black2
2	Orange	Red1	12	Orange	Red2
3	Gray	Black1	13	Gray	Black2
4	Gray	Red1	14	Gray	Red2
5	White	Black1	15	White	Black2
6	White	Red1	16	White	Red2
7	Yellow	Black1	17	Yellow	Black2
8	Yellow	Red1	18	Yellow	Red2
9	Pink	Black1	19	Pink	Black2
10	Pink	Red1	20	Pink	Red2

Parallel communication/Trigger input branch cable

Branch cable that combines parallel communication and trigger input cables into a single cable.



Model name: EXCB2-M10M20-3



10-pin MIL connector

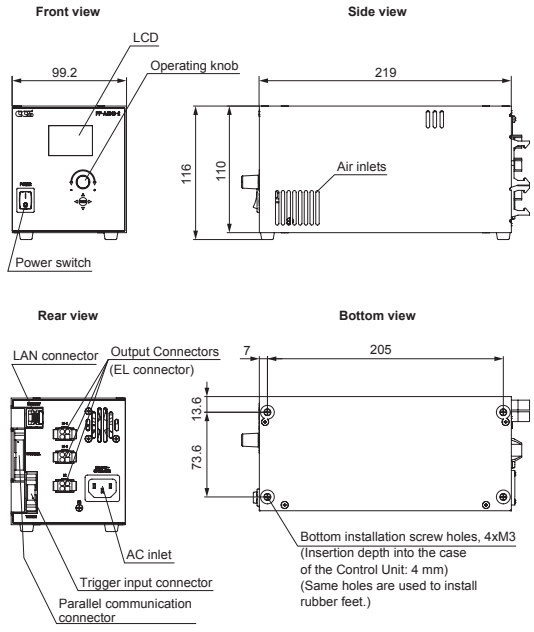
PIN No.	Line color	Marking
1	Orange	Black1
2	Orange	Red1
3	Gray	Black1
4	Gray	Red1
5	White	Black1
6	White	Red1
7	Yellow	Black1
8	Yellow	Red1
9	Pink	Black1
10	Pink	Red1

20-pin MIL connector

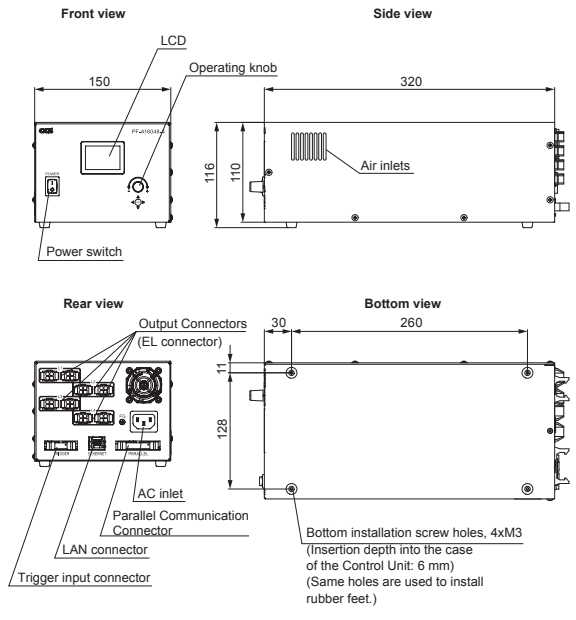
PIN No.	Line color	Marking
1	Orange	Black2
2	Orange	Red2
3	Gray	Black2
4	Gray	Red2
5	White	Black2
6	White	Red2
7	Yellow	Black2
8	Yellow	Red2
9	Pink	Black2
10	Pink	Red2
11	Orange	Black3
12	Orange	Red3
13	Gray	Black3
14	Gray	Red3
15	White	Black3
16	White	Red3
17	Yellow	Black3
18	Yellow	Red3
19	Pink	Black3
20	Pink	Red3

Dimensions (mm)

PF-A4048-2



PF-A16048-4



Controllers

PoE Enabled Light Controller
CN-EPOE Series

Refer to our website for product details.
CCS CN-PoE ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Using a single LAN cable for power receiving and communication

NEW

PoE Enabled

Ethernet Enabled

10 Scenes Storable

CE Compliant

Front Panel
CN-1024-2-EPOE / CN-1024-4-EPOE Common



Rear Panel

CN-1024-2-EPOE (2 channel model)



CN-1024-2-EPOE

CN-1024-4-EPOE (4 channel model)



CN-1024-4-EPOE

*4-branch cable supplied

Note: The CN Controller is operated only through external control, and cannot be controlled manually.

Features

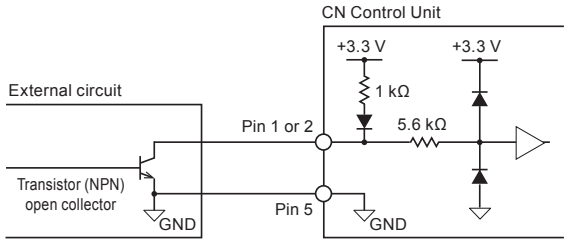
- Reduce the number of cables in your system by using a single LAN cable for power receiving and communication.
- Light control via Ethernet communication from your machine vision device or PC.
- Compact case design
- Can be installed apart from the control panel and close to the inspection site.
- Models equipped with 2 channels and 4 channels are available.
- Selectable continuous and strobe lighting with a single unit
- Trigger sequencing mode enables all channels to be simultaneously controlled with 1 trigger.
  (both 2 channel model/4 channel model)
- Trigger circulation mode enables channels to be turned on in sequence with each trigger input.
  (4 channel models only)
- Provides accumulated values of controller power ON duration, total light ON time, and other operation data.
- 256 levels of light intensity.
- Compatible with approx. 350 models of CCS LED lights up to 10 W.

Example Connection

Refer to the “Instruction Guide” for details.

Example connection of external trigger signal

When the transistor shown below is turned ON, the trigger signal will be turned OFF.
Ensure that the external circuit allows the current of 3.1 mA to flow.

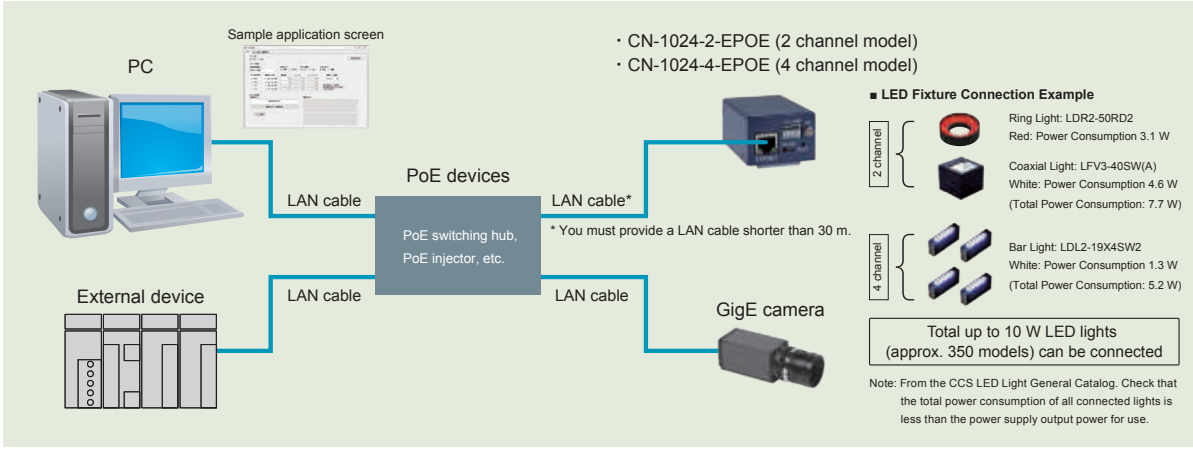


Trigger signal ON	Trigger signal OFF
Either pin 1 or 2 and pin 5 are open.	Either pin 1 or 2 and pin 5 are closed.

Note: Do not use the 3.3 V power supply provided in the Control Unit for different purposes other than trigger input.
Also, do not apply the voltage exceeding the rating to the pins.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example System Configuration



PoE (Power over Ethernet) is a technology that uses a LAN cable used for Ethernet to simultaneously deliver signaling and supply power to PoE compatible equipment connected.
Two standards, IEEE802.3af and IEEE802.3at are defined. (As of August 2019) Connect a PoE compatible device compliant with these standards to this product.

Specifications

Model name	CN-1024-2-EPOE	CN-1024-4-EPOE
Applicable Light Units (ratings)	24 VDC 10 W (2 channels total)	24 VDC 10 W (4 channels total)
Number of channels	2 channels	4 channels
Lighting method	Strobe Mode: Strobe lighting, Continuous Mode: Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Strobe Mode: Lighting time control, Continuous Mode: PWM control	
PWM frequency	125 kHz	
Power input	RJ-45 connector (based on PoE)	
Power consumption (typ.)	13.9 W	
External control protocol	TCP/IP, UDP/IP	
Strobe time setting (Strobe mode)	8 µs to 100 ms (Must be a multiple of 8 µs)	
Lighting delay setting (Strobe mode)	Strobe mode: 0 to 100 ms (Must be a multiple of 10 µs)	
Light intensity setting	256 levels (including 0: Not lit.)	
Operating environment (Indoor use only)	Temperature: 0 to 40°C, Humidity: 20 to 85% (with no condensation)	
Storage environment	Temperature: −20 to 60°C, Humidity: 20 to 85% (with no condensation)	
Cooling method	Natural air cooling	

CE marking	EMC standard: Conforms to EN61000-6-2, EN61000-6-4	
Environmental regulations	RoHS compliant	
Output connectors	SMP-03V-BC x 2 pcs.	SMP-08V-BC
Trigger input	Screw-less terminal block, 5-pin, Solid wires or stranded wires AWG 28 to 22	
Trigger input voltage (range)	24 VDC	
Material and surface processing	Aluminum alloy, thickness: 1.5 mm, navy-blue, leather tone	
Weight	140 g max.	
Accessories	Instruction guide	Instruction guide, 4-branch cable

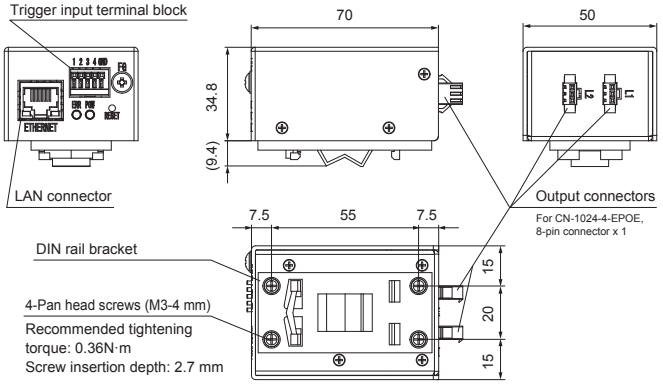
A sample application that demonstrates the initial settings including IP address and the light control settings is available on our website. Please download it as required.



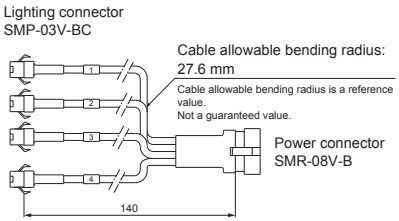
Sample application screen

Dimensions (mm)

■ CN-1024-2-EPOE
(CN-1024-4-EPOE is the same size except for the output connector)



■ For CN-1024-4-EPOE 4-branch cable (supplied)
Model name: CN-1024-4-CABLE



Weight: 20 g max.

• Turn OFF the power source when you remove and attach the DIN rail bracket.
• Do not reverse the position when attaching the DIN rail bracket.

Controllers

Controller with EtherNet/IP Interface

CN-4024-2-EIPT

Refer to our website for product details.
CCS CN-EIPT ▶Search
For quick access.
You can also use your smartphone or cell phone.

Light Control through an EtherNet/IP Network

Overdrive Specifications

EtherNet/IP Compatible

CE Compliant



CN-4024-2-EIPT

EtherNet/IP ODVA

"EtherNet/IP" is a trademark of ODVA, Inc.

Note: The CN Controller is operated only through external control, and cannot be controlled manually.

Features

- Operated only through external control.
- Light intensity and other settings can be controlled with explicit messages via EtherNet/IP communications and with I/O commands via TCP/IP communications.

Device classification	Message type	Connection type for implicit messaging	Requested packet interval	DLR function
Adapter	Explicit (UCMM, Class 3), Implicit	Exclusive owner, Input only	10 to 3200 ms	Available

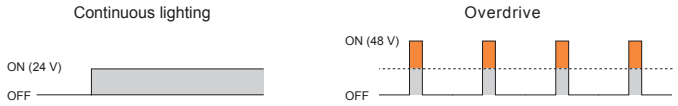
Port number to use (TCP)	Port number to use (UDP)	DHCP	Conformity
44818	2222, 44818	Available (Default: fixed IP address)	ODVA Composite Conformance Test Revision CT15

- Three selectable lighting modes:

1. Overdrive Mode

(48 VDC output, Strobe time control: 1 to 1,000 µs, Maximum duty ratio: 7%)

When an external trigger signal is input to the CN Controller, the corresponding Light Unit flashes.
By overdriving the voltage that is applied to the Light Unit, you can make the Light Unit flash a few times brighter than when the Light Units operate in any other lighting modes.



2. Strobe Mode

(24 VDC Output, Strobe time control: 1 to 10,000 µs)

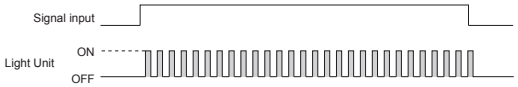
When an external trigger signal is input to the CN Controller, the corresponding Light Unit flashes.
LED Lights can withstand being turned on and off frequently. Turning on the Light Unit only when taking images will reduce heat generation, provide a more stable radiation output, and increase the service life of the Light Unit.



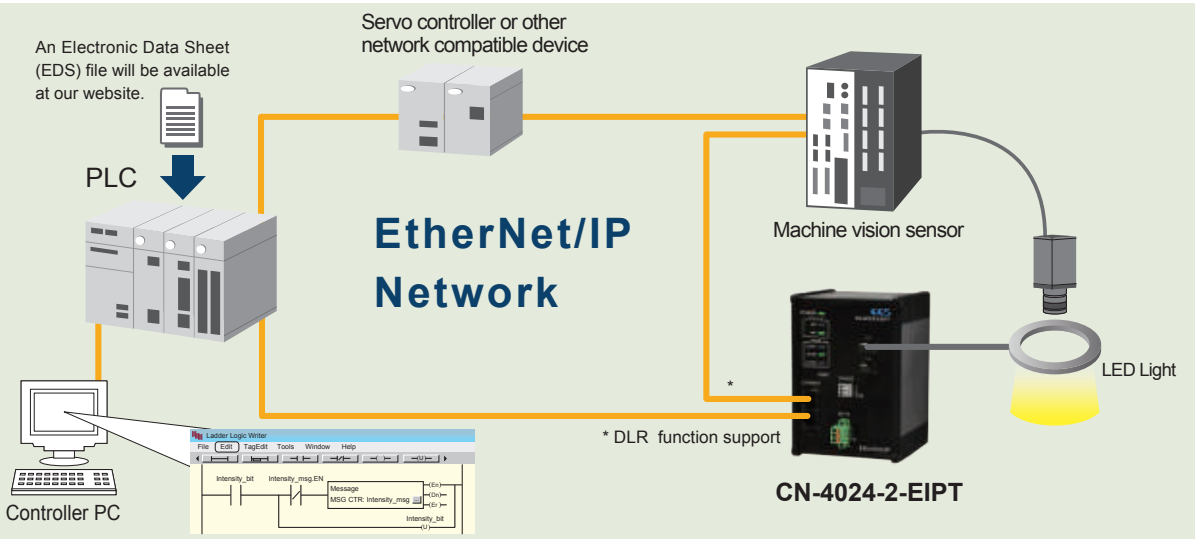
3. Continuous Mode

(24 VDC Output, PWM Control: the light intensity can be set to any of 512 levels.)

The Light Unit will be ON (or OFF) as long as there is an external trigger signal input to the CN Controller.



Example System Configuration



The PLC specifies light control settings for the CN Controller via EtherNet/IP communications.
When you use a PLC ladder editor, you can get and set the operation values for the CN Controller.

You can get the following values through an EtherNet/IP network:
Accumulated trigger count, accumulated lighting duration, and error status
Additionally, you can set and check the following values:
Lighting mode, trigger logic, ON/OFF setting for the Light Unit, light intensity, strobe time, and lighting delay
The CN Controller also provides TCP/IP commands for the same operations.

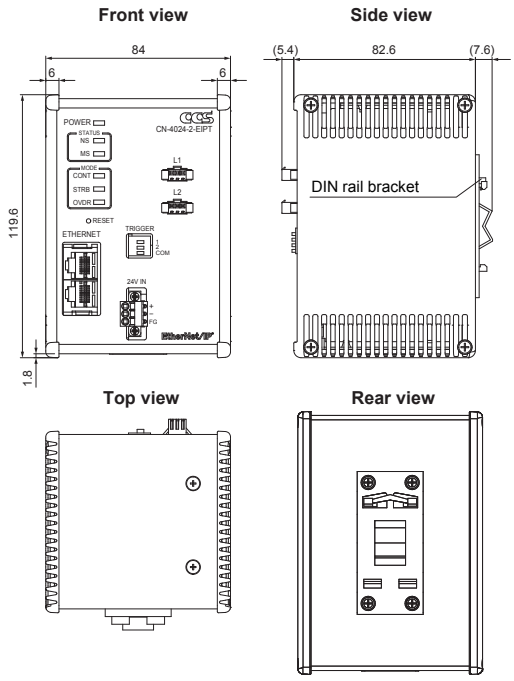
Specifications

Model name	CN-4024-2-EIPT
Lighting method	Overdrive (O/D) Mode, Strobe Mode: Strobe lighting Continuous Mode: Continuous lighting
Drive method	Constant-voltage system
Intensity control method	O/D Mode, Strobe Mode: Lighting time control Continuous Mode: PWM control
PWM frequency	125 kHz
Number of channels	2 channels
Output ratings (O/D Mode)	48 VDC 5 A max./connector, Total for 2 channels: 7 A max.*1
Output ratings (Strobe Mode, Continuous Mode)	24 VDC 40 W max./connector, Total for 2 channels: 40 W max.
External control protocol	EtherNet/IP, TCP/IP
Strobe time	O/D Mode: 1 to 1,000 µs (in steps of 1 µs) Strobe Mode: 1 to 10,000 µs (in steps of 1 µs)
Lighting delay	O/D Mode, Strobe Mode: 0 to 10,000 µs (in steps of 1 µs)
Light intensity	Continuous Mode: Set any of 512 levels
Trigger input	Terminal block, 3 poles, Solid wires or stranded wires AWG 28 to 22 Maximum duty ratio (O/D Mode): 7%
Trigger input voltage (rating)	24 VDC
Power input	Terminal block, 3 poles, Solid wires or stranded wires AWG 24 to 16
Power input voltage (rating)	24 VDC
Power input voltage (range)	21.6 to 26.4 VDC
Average power consumption (typ.)	45 W
Peak power consumption (max.)	71.3 W *2
Inrush current (typ.)	6.9 A, 21.4 µs (reference values)
Insulation withstand voltage, Insulation resistance (i/o-FG)	250 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Indoor use only
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)
Cooling method	Natural air cooling

CE marking	EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS compliant
Material and surface processing	Material: Aluminum and resin, Surface processing: Black alumite
Weight	500 g max.
Accessories	Instruction Guide

*1 Confirm the peak current of the LED Lights and use them within the above output current. For information on the availability of your LED Lights, refer to our website.
https://www.ccs-grp.com/lnk/qr/pod
*2 When you select a power supply, the rated output power must be larger than the above peak power consumption.

Dimensions (mm)



Controllers

Analog Controller
PB-2430-1

Refer to our website for product details.
CCS PB-2430-1 ▶Search
For quick access.
You can also use your smartphone or cell phone.

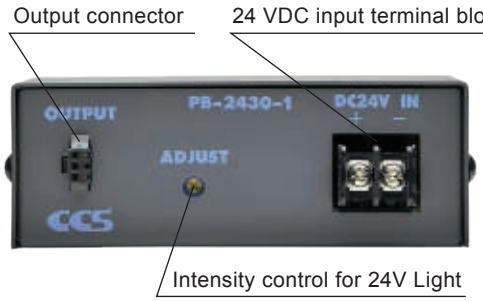
Low-price DC input Controller contributing to cost reductions



CE Compliant

Features

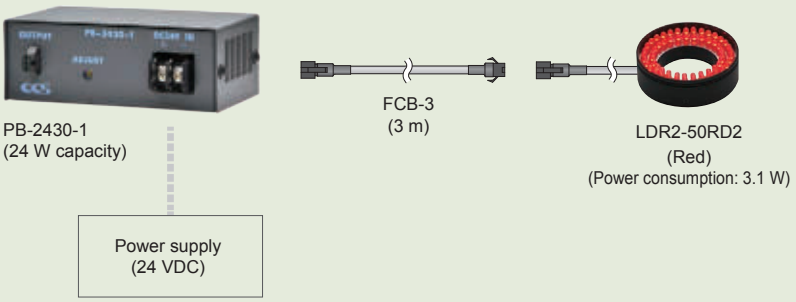
- 24 VDC input
- 24 V / 24 W rating
- 1 channel model
- DIN rail installation
- Intensity control with variable voltage
- Lightweight, compact design





Example System Configuration

Example:
Controller —— **Extension cables** — **LED Light**
|
Power supply
(24 VDC)

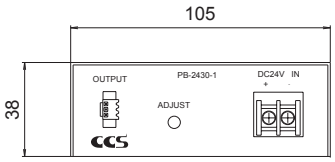


Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

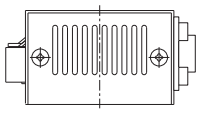
Specifications

Model name	PB-2430-1
Lighting method	Constant lighting
Drive method	Constant-voltage system
Light control method	Variable voltage control
No. of channels	One channel
Applicable Light Units (rating)	24 V 24 W
Over current protection	Built in (input section, with poly-switch), 5.0 A, 20°C during continuous operation
Input voltage (rating)	24 VDC
Input voltage (range)	21.6 to 26.4 VDC
Power consumption (typ.)	30 W
Output voltage (range)	15.0 to 23.0 VDC (±10%) (for 24 VDC input)
Insulation resistance, dielectric strength (Input/output - housing)	50 VDC, 20 MΩ min. 250 VAC for one minute 1 mA cutoff current
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20 to 85% RH (No condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20 to 85% RH (No condensation)
Cooling method	Natural air cooling
CE marking	EMC standard: Complies with EN61000-6-2, EN61000-6-4
Environmental regulation	RoHS compliant
Input connector	Input terminal block, use M3 screws with 7.62 mm pitch
Output connector	SMP-03V-BC (JST)
Material, coating, surface processing	Steel plate, Thickness: 1.0, N3, Matt finish
Weight	270 g

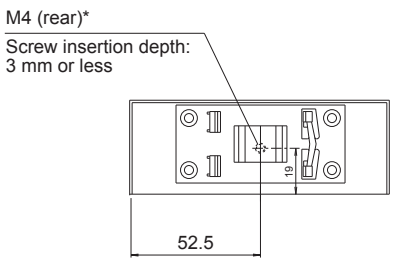
Dimensions (mm)



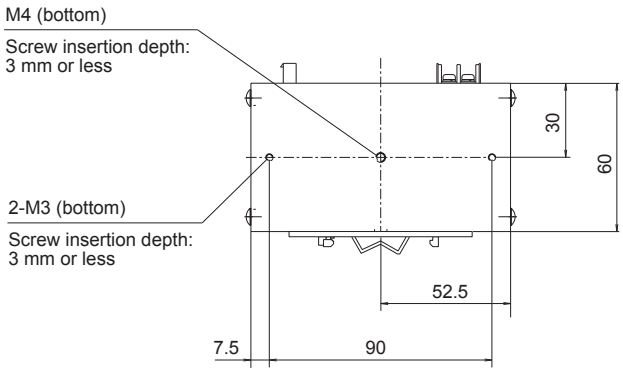
Front



Side



Rear



Bottom

* Remove the DIN rail bracket to find the hole.

Controllers

Compact Controller
CC-ST-1024

Refer to our website for product details.
CCS CC-ST-1024 ▶Search
For quick access.
You can also use your smartphone or cell phone.

Compact, lightweight LED Light-dedicated controller

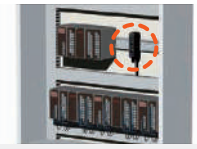


Compliant

Installation inside the device
Mount it on a compact device or single devices



Installation inside a control panel to centrally manage other instruments



Installation next to the camera or near the light for a compact configuration



These are conceptual images.

Features

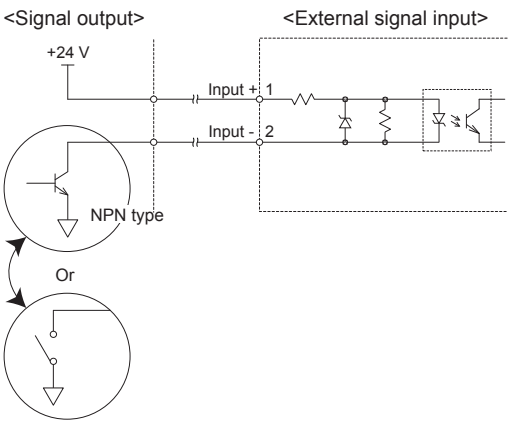
- This LED Light-dedicated controller has the same size as a sensor amp.
- DIN rail installation
- Can be installed in various locations such as inside a control panel or next to any type of sensor amp inside a device.
- Power supply is 24 VDC, optimal for on-site usage.

Example Connections

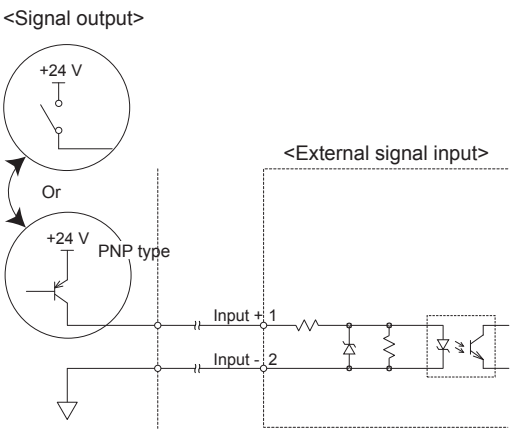
Refer to the “Instruction Guide” for details.

External signal
Example connections

■ Sink type（NPN）



■ Source type（PNP）

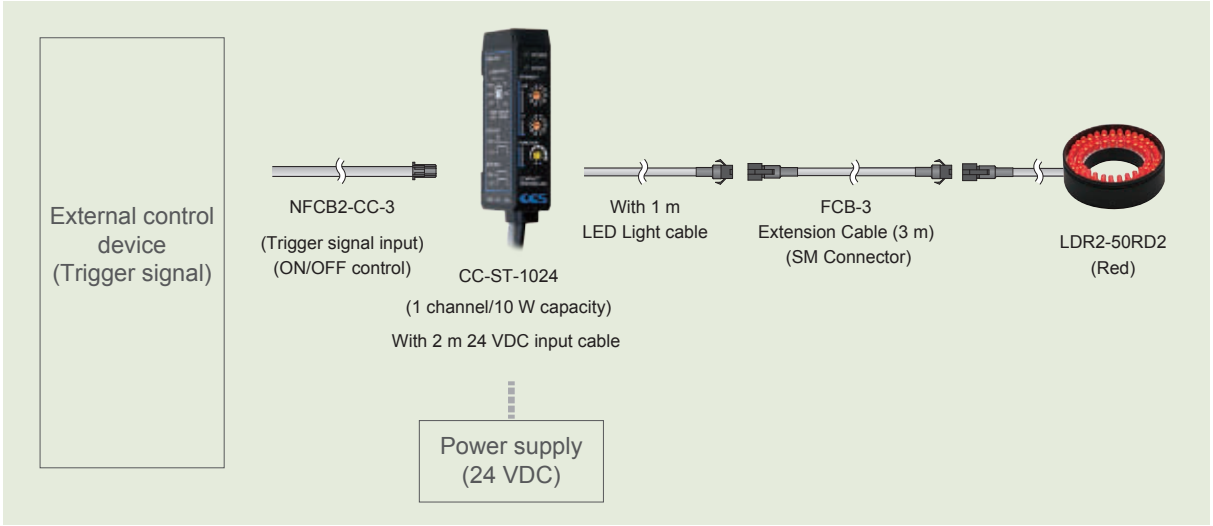


Becomes HIGH when 24 V is applied to input+ and 0 V is applied to input-.
Apply a current using the open-collector circuit, high-speed photocoupler, semiconductor relay, or others. (We recommend 10 mA or less.) The pulse width must be 10 µs or more (Applied voltage 24 V±10%).
If using in an environment where noise is likely to occur, we recommend isolating the signal line and GND line from the drive device using a photocoupler or semiconductor relay.

Various technical documents available.
PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example System Configuration

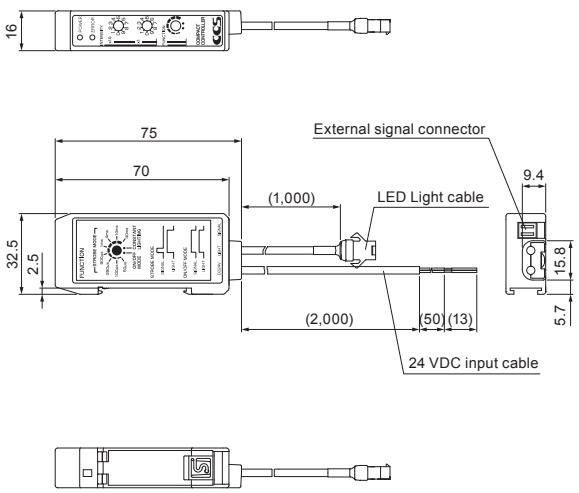
Example:
External control device — **External control cable** — **Controller** — **Extension cables** — **LED Light**
Power supply (24 VDC)



Specifications

Model name	CC-ST-1024
Drive method	Constant-voltage system
Intensity control method	PWM control and lighting time control
Applicable Light Unit (rated)	24 V 10 W
PWM frequency	100 kHz
Input overcurrent protection	Overcurrent protection is provided by fuse interruption.
Input voltage	24 VDC±10%
Power consumption (typ.)	11.0 W (with 10 W LED Light during max. intensity drive)
Output voltage (rated)	24 VDC
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec^2, Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: Each hour in the X, Y, and Z directions
Impact resistance	Acceleration: 49.0 m/sec^2, Operation time: 30 m sec, Repetitions: Three times for each of the six directions
Cooling method	Natural air cooling
CE marking	EMC standard: Conforms to EN61326-1 Class A
Environmental regulations	RoHS compliant
Material	ABS
Weight	80 g
Accessories	Instruction Guide x 1, flat-head screwdriver x 1

Dimensions (mm)



Options

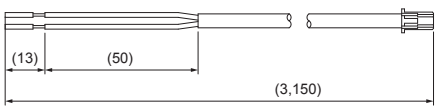
External signal cable

NFCB2-CC-3 (3 m)



This cable is for use with external signals. It is used for intaking HIGH signals (during ON/OFF mode) and trigger signals (during strobe mode) into this product.

Dimensions (mm)





1: White (Input+)
2: Black (Input -)

Housing: PAP-02V-K (JST)
Contact: BPHD-002T-P0.5 (JST)

Control Units

Spot Light Dedicated Control Units
PJ2 Series

Refer to our website for product details.
CCS PJ2 ▶ Search
Use a search engine.
You can also use your smartphone or cell phone.

External control compatible with Ethernet and parallel communications

Ethernet Enabled

Adjust light intensity to 1,024 levels



PJ2-1505-2CA-PE
(2 channel model)



PJ2-3005-4CA-PE
(4 channel model)

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

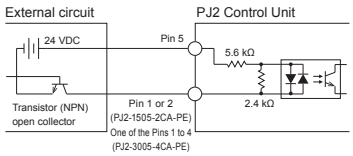
- Dedicated Analog Control Units for the Spot Light HLV3/HLV2 series. (Spot Light HLV3 series Product Page ▼ P. 183)
(Spot Light HLV2 series Product Page ▼ P. 189)
- Easily check and set operation of Light Units with the built-in LCD.
- Light intensity can be set in 1,024 steps.
- Available in 2-channel and 4-channel Light Unit output types.
- Can be controlled manually or via Ethernet or parallel communications.

Example Connection

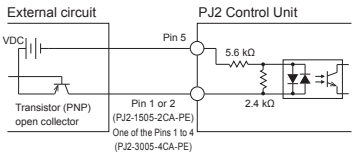
Refer to the “Instruction Guide” for details.

Example connections of external trigger signal

■ **Sink type (NPN)**



■ **Source type (PNP)**



Connection specifications (for each terminal)				
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current	Response time
24 VDC	26.4 VDC	21.6 VDC min. / 4 mA min.	1.5 VDC max. / 1 mA max. or open-circuit	Refer to the Instruction Guide.

Example System Configuration

Example:
External control device — **External control cables** — **Control Unit** — **Extension cables** — **LED Light (Spot Light)**

External control device

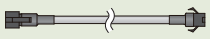
Commercially available LAN cable
(Ethernet communication)
(Light intensity setting)



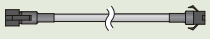
EXCB2-M20-3
(Parallel communication)
(Light intensity setting)



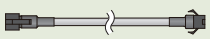
PJ2-3005-4CA-PE
(AC input)
(4 channels)
(Spot Light dedicated)



FCB-3
Extension Cable (3 m, SM Connector)



FCB-HLV3-10
Extension Cable (10 m, SM Connector)



FRCB-HLV3-10
Extension Cable (10 m, SM Connector)
Robot Cable Type

Branch cables cannot be used.



HLV3-22SW-4S
(White)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

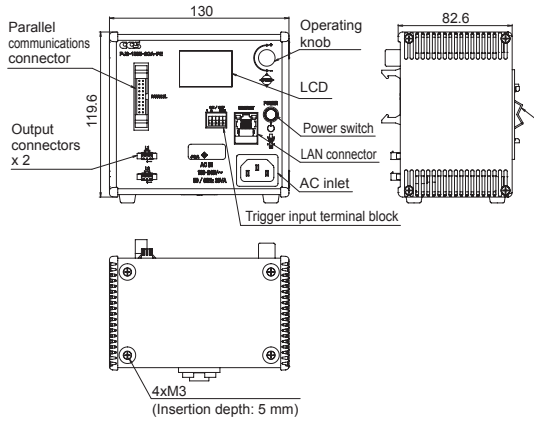
Register to use them.

Specifications

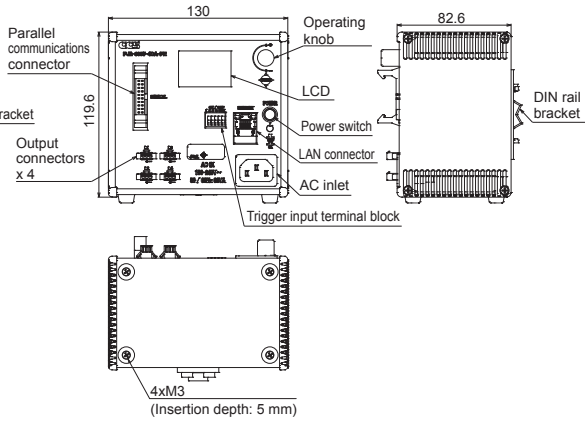
Model name	PJ2-1505-2CA-PE	PJ2-3005-4CA-PE
Lighting method	Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Variable-current control	
Number of channels	2 channels	4 channels
Applicable Light Units	HLV3- and HLV2- series Spot Lights (The type of Spot Light is automatically detected.)	
Output voltage (ratings)	5.5 VDC	
Output current	1,000 mA max./channel (Depends on the maximum input current of the Spot Light.)	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Power consumption	38 VA max.	68 VA max.
Inrush current (typ.)	15 A (at 100 VAC), 36 A (at 240 VAC) from a cold start	
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 10 mA, 500 VDC, 20 MΩ min.	
Overvoltage category	Category II	
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation), Altitude: 2,000 m max., Protective ground class: Class I, Pollution degree: 2, Indoor use only	
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)	
Cooling method	Forced air cooling	Natural air cooling
CE marking	Safety standard: Conforms to EN 61010-1 EMC standard: Conforms to EN61000-6-2, EN61000-6-4	
Material and surface processing	Material: Aluminum and resin, Surface processing: Blue alumite	
Weight	700 g max.	
Accessories	Instruction Guide, 2-m-long 3-prong AC power cord with ground terminal	

Dimensions (mm)

PJ2-1505-2CA-PE



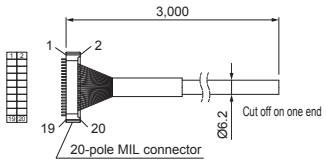
PJ2-3005-4CA-PE



Options

Parallel communication cable

EXCB2-M20-3

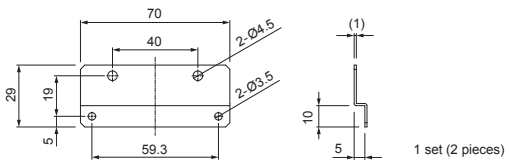


Pin No.	Wire color	Marks	Pin No.	Wire color	Marks
1	Orange	Black 1	11	Orange	Black 2
2	Orange	Red 1	12	Orange	Red 2
3	Gray	Black 1	13	Gray	Black 2
4	Gray	Red 1	14	Gray	Red 2
5	White	Black 1	15	White	Black 2
6	White	Red 1	16	White	Red 2
7	Yellow	Black 1	17	Yellow	Black 2
8	Yellow	Red 1	18	Yellow	Red 2
9	Pink	Black 1	19	Pink	Black 2
10	Pink	Red 1	20	Pink	Red 2

Base brackets

Dimensions (mm)

BK-PD3



1 set (2 pieces)

Control Units

Spot Light Dedicated Control Units
PJ Series

Refer to our website for product details.
CCS PJ ▶Search
Use a search engine.
You can also use your smartphone or cell phone.

Four types to match your use environment

AC Input Types



PJ-1505-2CA
(2 channel model)



PJ-1505-3CA
(3 channel model)

24 VDC Input Types



PJ-1505-2CD24
(2 channel model)



PJ-1505-3CD24
(3 channel model)

CE Compliant model(s)
PJ-1505-2CA / PJ-1505-3CA / PJ-1505-2CD24 / PJ-1505-3CD24

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

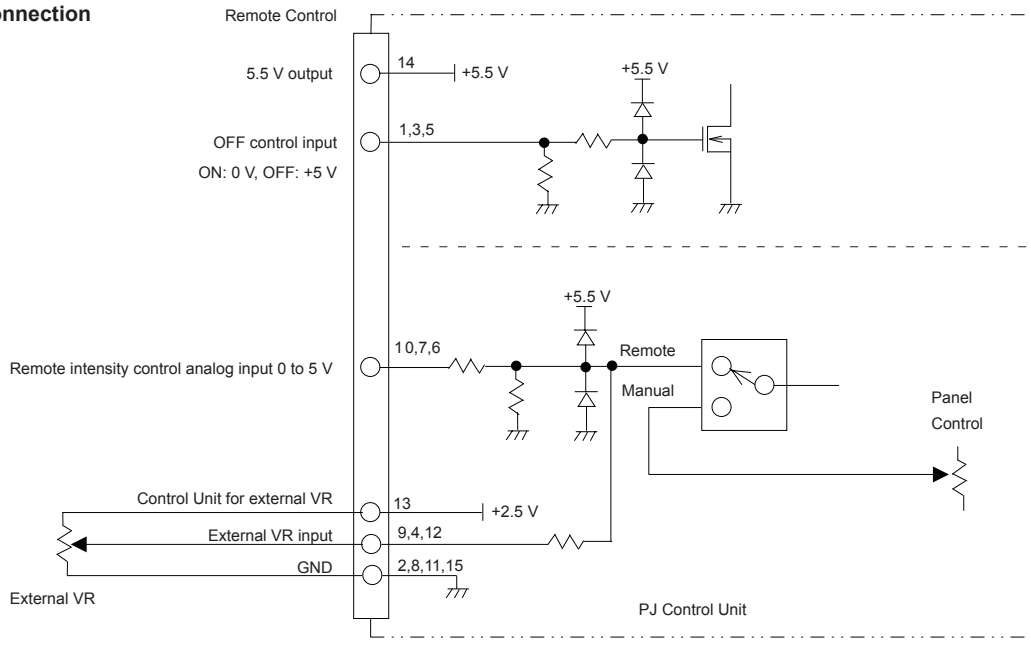
- Dedicated Analog Control Units for the Spot Light HLV3/HLV2 series.
- Stepless intensity control is performed by varying the current.
- There are 2 and 3-channel Light Unit output types.
- You can select AC or DC power supply types.

(Spot Light HLV3 series Product Page ▼ P. 183)
(Spot Light HLV2 series Product Page ▼ P. 189)

Example Connection

Refer to the “Instruction Guide” for details.

PJ series
Example connection



Remote intensity control or external VR can be used. (Cannot be used at same time.)

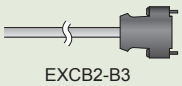
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example System Configuration

Example:

External control device — **External control cable** — **Control Unit** — **Extension cables** — **LED Light (Spot Light)**

External control device
(Analog output)
(0 to 5 V output)



EXCB2-B3
(Intensity analog input)
(OFF control)



PJ-1505-2CA
(AC input)
(2 channels)
(Spot Light dedicated)



FCB-3
Extension Cable (3 m)
(SM Connector)
You cannot connect multiple Spot Lights with a branch cable.



HLV3-22SW-1
(White)



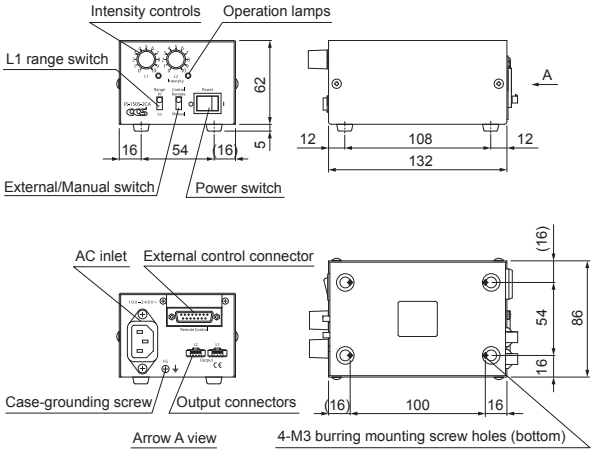
HLV2-22SW
(White)

Specifications

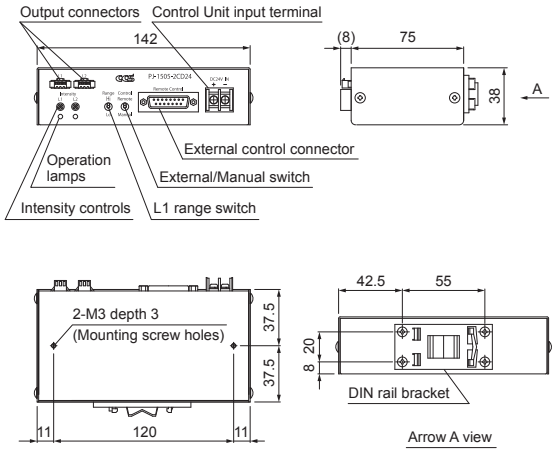
Model name	PJ-1505-2CA	PJ-1505-3CA	PJ-1505-2CD24	PJ-1505-3CD24
Input voltage (rated)	100 to 240 VAC		24 VDC	
Input voltage (range)	85 to 264 VAC		10 to 24 VDC	
Power consumption	27 VA typ.	37 VA typ.	10 W typ.	14.5 W typ.
No. of channels	2	3	2	3
Output voltage (max. rating)	5.5 VDC			
Intensity	Manual: Intensity control on front of unit Remote: Analog input voltage of 0 to 5 V (5.25 V max.)			
ON/OFF control	OFF: 2.5 to 5.0 V (24 V max.), ON: 0.8 to 0 V (pull-down with 4.7 kΩ resistance)			
External control connector	D-sub 15-pin (plug), Optional external control cable: EXCB2-B3 (3 m)			
Weight	640 g	660 g	380 g	
Accessories	AC cord with ground wire (2 m), Instruction Guide x 1		Rubber feet x 4, Instruction Guide x 1	

Dimensions (mm)

PJ-1505-2CA (PJ-1505-3CA is also the same size.)



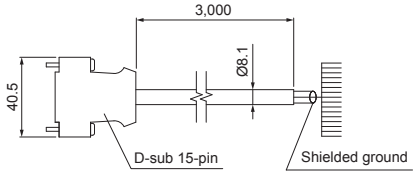
PJ-1505-2CD24 (PJ-1505-3CD24 is also the same size.)



Options

External control cable

EXCB2-B3 (3 m)



Dimensions (mm)

No.	Line color	No.	Line color
1	Black	9	Gray
2	White	10	Pink
3	Red	11	White/Black
4	Green	12	Red/Black
5	Yellow	13	Green/Black
6	Brown	14	Yellow/Black
7	Blue	15	Brown/Black
8	Purple	NC	(Blue/Black)

Controllers

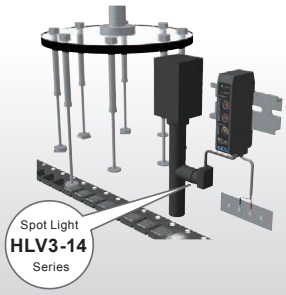
Spot Light Dedicated Controller CC-PJ-0707

Refer to our website for product details.
CCS CC-PJ-0707 ▶Search
For quick access.
You can also use your smartphone or cell phone.

A single unit compatible with continuous, ON/OFF and strobe lighting



Perfect for narrow spaces, used together with a Spot Light to save space.



This is a conceptual image.

CE Compliant

Features

- Dedicated Control Unit for the Spot Light HLV3/HLV2 series.
- Compact size makes them optimal for installation in narrow spaces and for saving space.
- Intensity value can be adjusted in 100 steps.
- Power supply is 24 VDC, optimal for on-site usage.

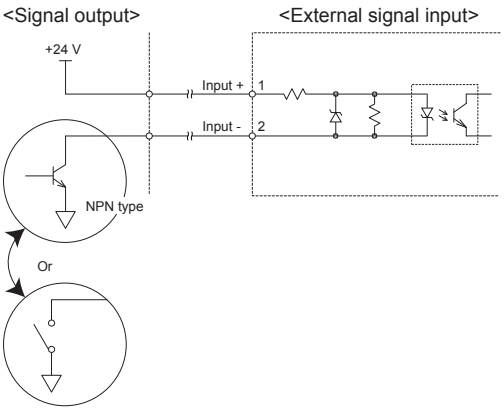
(Spot Light HLV3 series Product Page ▼ P. 183)
(Spot Light HLV2 series Product Page ▼ P. 189)

Example Connections

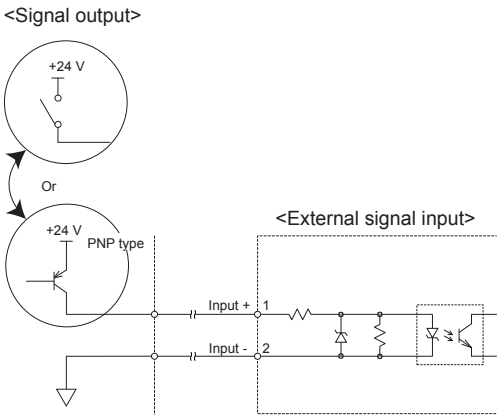
Refer to the “Instruction Guide” for details.

External signal Example connections

■ Sink type (NPN)



■ Source type (PNP)



Becomes HIGH when 24 V is applied to input + and 0 V is applied to input - (applied voltage is 24 V±10%).
Apply a current using the open-collector circuit, high-speed photocoupler, semiconductor relay, or others. (We recommend 10 mA or less.)
If using in an environment where noise is likely to occur, we recommend isolating the signal line and GND line from the drive device using a photocoupler or semiconductor relay.

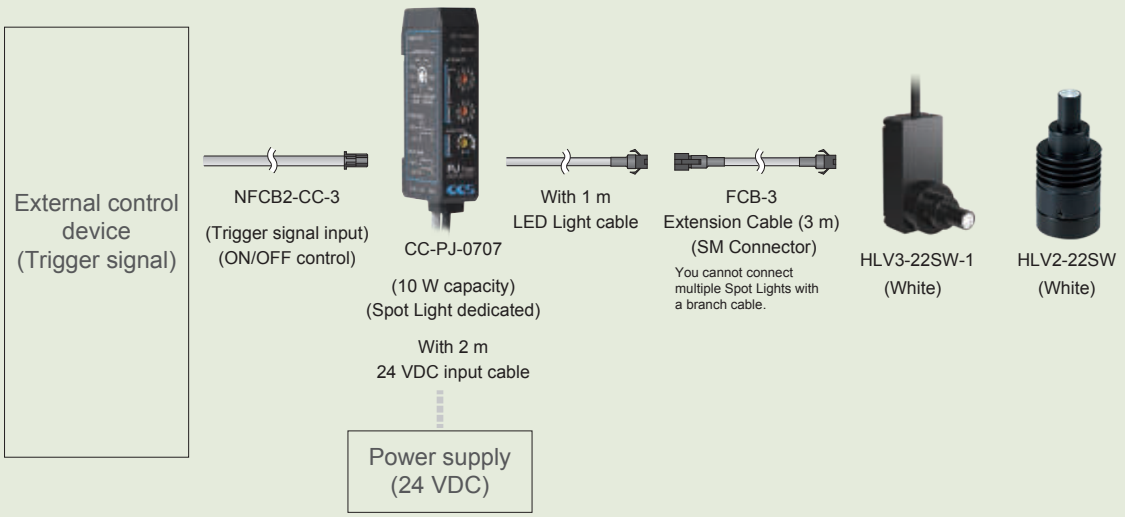
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Example System Configuration

Example:

External control device — **External control cable** — **Controller** — **Extension cables** — **LED Light (Spot Light)**

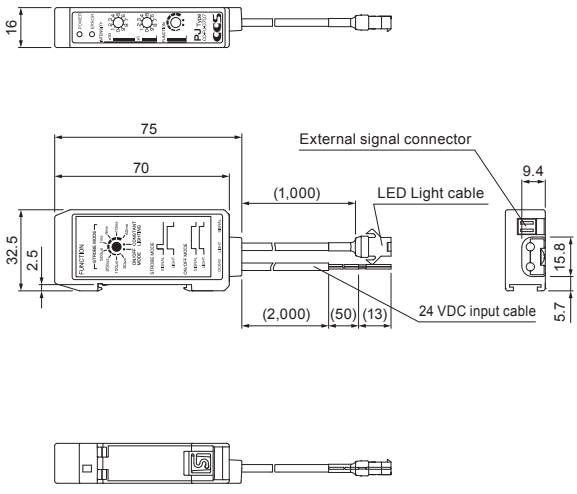
Power supply (24 VDC)



Specifications

Model name	CC-PJ-0707
Drive method	Constant-current system
Intensity control method	Variable-current control method and lighting time control
Input overcurrent protection	Overcurrent protection is provided by fuse interruption.
Input voltage	24 VDC±10%
Power consumption (typ.)	7 W
Output voltage (max.)	7 VDC
Output current (rated)	700 mA
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec², Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: each hour in the X, Y, and Z directions
Impact resistance	Acceleration: 49.0 m/sec², Operation time: 30 m sec, Repetitions: three times for each of the six directions
Cooling method	Natural air cooling
CE marking	EMC standard: Conforms to EN61000-6-2, EN61000-6-4
Environmental regulations	RoHS compliant
Material	ABS
Weight	100 g
Accessories	Instruction Guide x 1, flat-head screwdriver x 1

Dimensions (mm)



Options

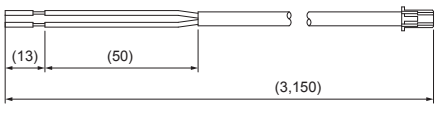
External signal cable

NFCB2-CC-3 (3 m)



This cable is for use with external signals. It is used for intaking HIGH signals (during ON/OFF mode) and trigger signals (during strobe mode) into this product.

Dimensions (mm)



1: White (Input+)
2: Black (Input -)

Housing: PAP-02V-K (JST)
Contact: BPHD-002T-P0.5 (JST)

Control Units

Analog Control Units (Constant Current) PSCC Series

Refer to our website for product details.
CCS PSCC ▶ Search
For quick access.
You can also use your smartphone or cell phone.

High-capacity constant current Analog Control Units

With error detection function
(Common for PSCC series)
- Stopped cooling fan
- LED not lighting up

Ethernet Enabled

Adjust light intensity to 1,000 levels

Detect errors
· LED failure to light.
· Light Unit cooling fan stop, etc.



PSCC-30048(A)
(300 W capacity)

PSCC-60048(A)
(600 W capacity)
With key-lock function
(PSCC-60048(A) only)

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

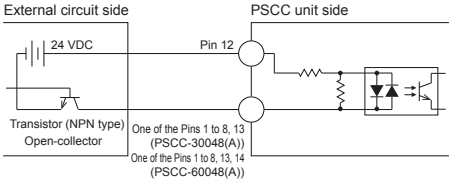
- High-capacity constant current Analog Control Units. 300 W and 600 W models are available.
- The light intensity can be set to any of 256 or 1,000 different levels. (For parallel communications: Set to any of 256 levels)
- You can adjust the light intensity separately for each Light Unit circuit. (With Ethernet or EIA-485 communication)
- External control compatible with parallel, EIA-485 and Ethernet communication using a single unit.
- The error detection function is able to detect insufficient speed or stopping of the Light Unit cooling fan and bulb burn-out errors by disconnected or shorted LED circuit.

Example Connections

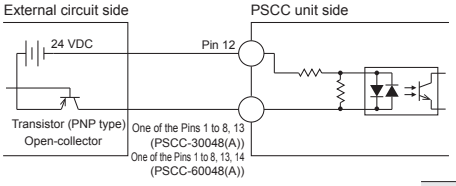
Refer to the “Instruction Guide” for details.

Parallel communication
Example connections of external signal

■ Sink type (NPN)



■ Source type (PNP)



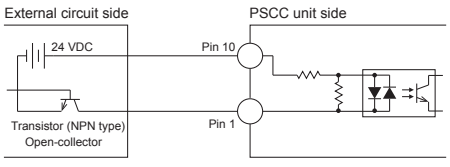
Photocoupler	Data
ON	0
OFF	1

Connection specifications					
Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	6.8 kΩ (per terminal)

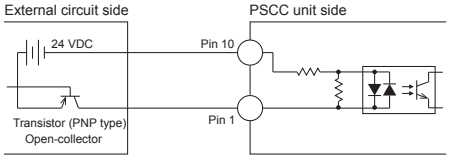
ON/OFF input
Example connections of external signal

You can reverse the operation logic.

■ Sink type (NPN)



■ Source type (PNP)



If an off (on) signal is set from any of the following, the Light Unit will be off (on) regardless of the status of the other signals: ON/OFF input connector, EIA-485 communication, and Ethernet communication.
The descriptions in the parentheses indicate the operation in the reversed logic.

Photocoupler	Light Unit status
ON	Not lit. (Lit.)
OFF	Lit. (Not lit.)

Connection specifications					
Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	6.8 kΩ (per terminal)

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Specifications

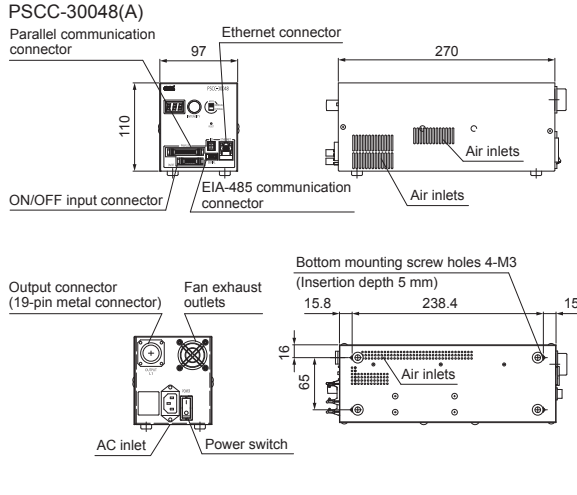
Model name	PSCC-30048(A) / PSCC-60048(A)	
Lighting method	Continuous lighting	
Drive method	Constant-current system	
Intensity control method	Variable-current control	
Number of channels	1 channel	
Number of circuits	PSCC-30048(A): 7 circuits max. (Light intensity can be adjusted for each Light Unit circuit.)	
	PSCC-60048(A): 15 circuits max. (Light intensity can be adjusted for each Light Unit circuit.)	
Applicable Light Unit (rated)	PSCC-30048(A): 43 VDC or less and 293 W max. (36 W max. of which is for the fan)	
	PSCC-60048(A): 43 VDC or less and 602 W max. (50 W max. of which is for the fan)	
Intensity control	Manual and external intensity	Front manual/external switch (MODE)
Manual	Set any of 256 or 1,000 steps via the setting switch. Press and hold the switch for 2 seconds to lock the intensity value.	
External	Parallel communication	8-bit intensity value setting (B0 to B7) and write signal (WR)
	EIA-485 communication	Command input via EIA-485 communication
	Ethernet communication	Command input via TCP/IP or UDP/IP communication
	External control mode can be selected by pushing the setting switch while turning ON the power.	
ON/OFF control	Parallel bit input	OFF signal (ON/OFF)
	EIA-485 communication	Command input via EIA-485 communication
	Ethernet communication	Command input via TCP/IP or UDP/IP communication
	ON/OFF logic can be selected by pushing the setting switch while turning ON the power. 25H or 99H: Normal logic (default) 25L or 99L: Reversed logic	
EIA-485 communication settings	ID	Set via the front ID switch (00 to 03). Maximum of 4 connected units.
	Terminating resistance	Set via the front ID switch (terminating resistance is ON only when the ID is 00).

Parallel communications: Adjustment to 256 levels only

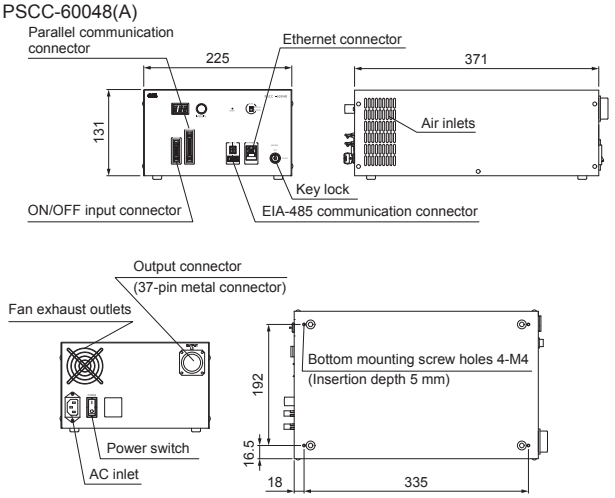
Error detection display	Burnt-out LED detection (open circuit)	"E01" is displayed on the front-panel digital display.
	Burnt-out LED detection (short circuit)	"E02" is displayed on the front-panel digital display.
	Light Unit fan speed decrease/stop detection	"F01 to F07" is displayed on the front-panel digital display (PSCC-30048(A)).
		"F01 to F15" is displayed on the front-panel digital display(PSCC-60048(A)).
	Control Unit fan speed decrease/stop detection	"E03" is displayed on the front-panel digital display.
	Light Unit communication error detection	"E04" is displayed on the front-panel digital display.
	Connector disconnection detection	"E04" is displayed on the front-panel digital display.
	Internal Control Unit error detection	"E05" is displayed on the front-panel digital display (PSCC-60048(A) only).
Error detection output	Parallel communication	Output at pins 19 and 20: Photocoupler insulation, open collector output, short circuit at alert (load current of 10 mA or less)
	EIA-485 communication	Checked by using a status command through EIA-485 communication
	Ethernet communication	Checked by using a status command through TCP/IP or UDP/IP communication
Input power supply	100 to 240 VAC (+10% - 15%), 50/60 Hz	
Power consumption (typ.)	PSCC-30048(A): 360 VA, PSCC-60048(A): 750 VA	
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)	
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)	
Cooling method	Forced air cooling	
CE marking	Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A	
Environmental regulations	RoHS compliant	
Material, coating, surface processing	Steel plate, Thickness of cover: 1.0, Thickness of chassis: 1.6 (PSCC-30048(A)), 2.0 (PSCC-60048(A)), N3 leather tone finish	
Weight	PSCC-30048(A): 3,100 g max., PSCC-60048(A): 7,000 g max.	
Accessories	PSCC-30048(A): 3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1 PSCC-60048(A): 3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1, key x 2	

Dimensions (mm)

PSCC-30048(A)



PSCC-60048(A)



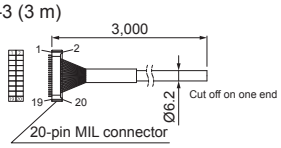
Options

These are cables for parallel and EIA-485 communication. Select yours to match your control method.

Dimensions (mm)

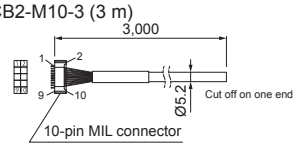
Parallel communication cable

EXCB2-M20-3 (3 m)



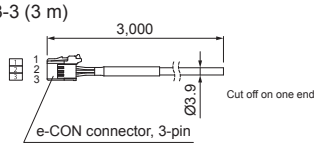
ON/OFF input cable

EXCB2-M10-3 (3 m)



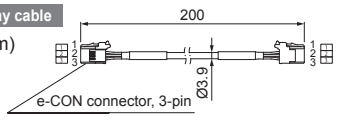
EIA-485 communication cable

EXCB2-E3-3 (3 m)



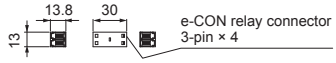
EIA-485 communication relay cable

EXCB2-E3-E3-0.2 (0.2 m)



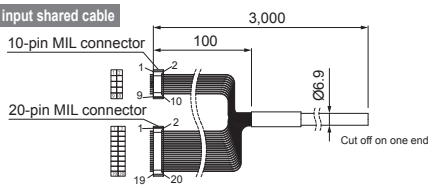
Relay connector

ECNR-E3CN4



Parallel communication / ON/OFF input shared cable

EXCB2-M10M20-3 (3 m)



Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

Control Units

Analog Control Unit (Constant Voltage) PSB4 Series

Refer to our website for product details.
CCS PSB4 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

High-capacity constant current Analog Control Units Ethernet functionality enabled

NEW

Ethernet Enabled



PSB4-30024-PEI
(1 channel model)



PSB4-60024-2-PEI
(2 channel model)

CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

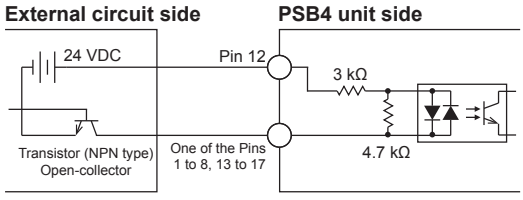
- 1 or 2 channel types are available.
- LCD for improved legibility.
- Uses an operating knob for intuitive operation.
- Dimmer value can be set to 256 or 1,024 levels.
- Dimmer range can be switched between 3 levels.
- External control via EtherNet / parallel communication.
- Equipped with a metal connector and EL connector.

Example Connection

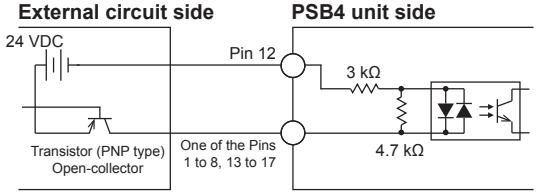
Refer to the “Instruction Guide” for details.

Parallel communication
Example connections of external signal

■ Sink type (NPN)

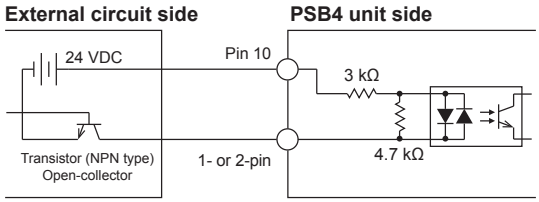


■ Source type (PNP)



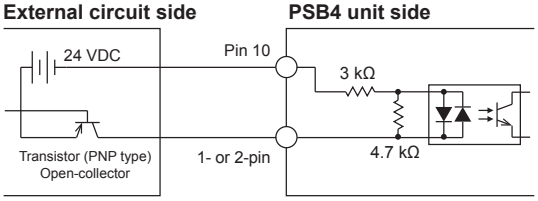
ON/OFF input
Example connections of external signal

■ Sink type (NPN)



* 2-pin only for 2-channel type

■ Source type (PNP)



* 2-pin only for 2-channel type

Photocoupler	Data	
	When the LGC-PAR item on the COM Menu is set to *ACTIVE HI*	When the LGC-PAR item on the COM Menu is set to *ACTIVE LO*
ON	1	0
OFF	0	1

Connection specifications (for each terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.

Setting of the LGC-TRG item on the COM Menu	Photocoupler	Light Unit status
ACTIVE HI	ON	Light Unit OFF
	OFF	Light Unit ON
ACTIVE LO	ON	Light Unit ON
	OFF	Light Unit OFF

Connection specifications (for each terminal)			
Rated input voltage	Maximum input voltage	Photocoupler ON voltage / ON current	Photocoupler OFF voltage / OFF current
24 VDC	26.4 VDC	21.6 VDC min. / 6 mA min.	1.5 VDC max. / 1 mA max.

Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs

Register to use them.

Specifications

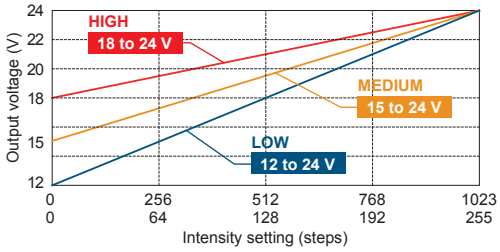
Model name	PSB4-30024-PEI	PSB4-60024-2-PEI
Lighting method	Continuous lighting	
Drive method	Constant-voltage system	
Intensity control method	Variable voltage control	
Number of channels	1 channel	2 channels (L1, L2)
Applicable Light Unit (rated)	Metal connector: 24 V, 300 W (300 W max. per connector) EL connector: 24 V, 300 W (150 W max. per connector) Total for all connectors: 300 W max.	Metal connector (L1-1, L1-2/ L2-1, L2-2): 24 V 300 W (1 connector 300 W or less) EL connector (L1-3, L1-4/L2-3, L2-4): 24 V 300 W (1 connector 150 W or less) All L1 connectors total: 300 W or less (same as L2 connectors)
Intensity control	Manual: Operation on the front panel, 256 or 1,024 levels	
	External: Command input via TCP/IP or UDP/IP communications	
	External: Signal input through parallel port	
ON/OFF control	External: Command input via TCP/IP or UDP/IP communications	
	External: Signal input through parallel port	
Input power	100 to 240 VAC (+10%, -15%), 50/60 Hz	
Output current (rating)	12.5 A	12.5 A/channel, 2 channels total: 25 A
Power consumption (typ.)	388 VA	765 VA
Inrush current (typ.)	55 A (at 100 VAC), 84 A (at 240 VAC) from a cold start	55 A/95 A (primary/secondary value, at 100 VAC), 132 A/132 A (primary/secondary value, at 240 VAC) during cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)	
Insulation withstand voltage (input-output, input-FG)	1500 VAC for one minute, Cutoff current: 20 mA, 500 VDC, 20 MΩ or more	
Operating environment	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)	
Storage environment	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)	

Cooling method	Forced air cooling	
CE marking	Safety standard: Conforms to EN 61010-1 EMC standard: Conforms to EN 61000-6-2, EN 61000-6-4	Low voltage directive (LVD) 2014/35/EU, Standard EN 61010-1 EMC directive 2014/30/EU, Standard EN 61000-6-2, EN 61000-6-4 RoHS directive 2011/65/EU, Standard EN 50581
Environmental regulations	RoHS compliant	
Material, coating, and surface processing	Steel sheet, Cover thickness: 1.0 mm, Chassis thickness: 1.6 mm, N3 (leather tone)	
Weight	2,400 g max.	4,100 g max.
Accessories	Instruction guide, 2-m-long 3-prong AC power cord with ground terminal	

Intensity Range

Dimmer range can be switched between 3 levels.
Select based on lighting characteristics or to suit the application.

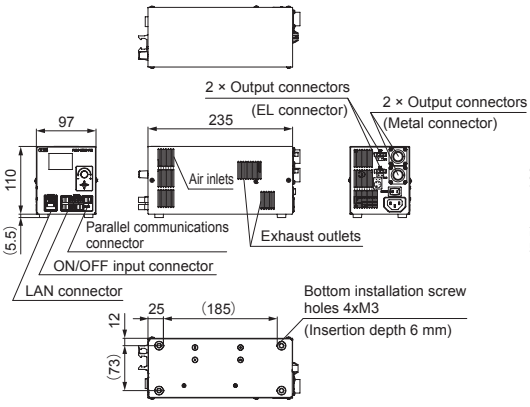
The graph is a conceptual image.



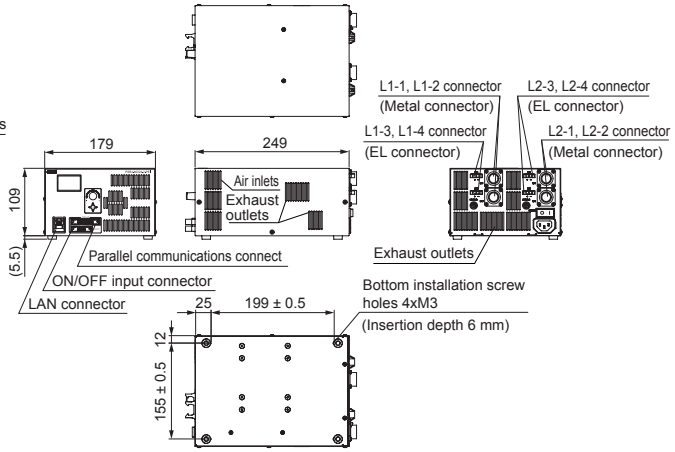
* While the dimmer control is set to 256 steps, even if the dimmer value is 0 the light will illuminate.

Dimensions (mm)

PSB4-30024-PEI



PSB4-60024-2-PEI

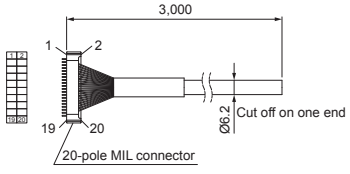


Options (Sold Separately)

Dimensions (mm)

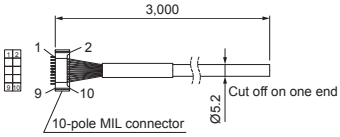
Parallel communications cable

EXCB2-M20-3 (3 m)



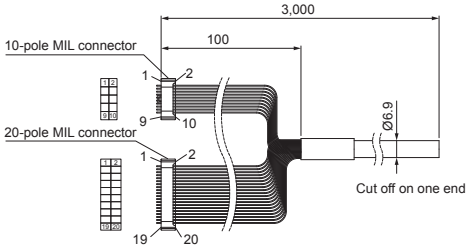
ON/OFF input cable

EXCB2-M10-3 (3 m)



Parallel communication / ON/OFF input cable

EXCB2-M10M20-3 (3 m)



Control Units

Analog Control Unit (Constant Voltage) PSB3-30024

Refer to our website for product details.
CCS PSB3-30024 ▶ Search
For quick access.
You can also use your smartphone or cell phone.

High-capacity 300 W constant voltage Analog Control Units adjustable in 256-step intensity settings



CE Compliant

The supplied AC cord is for use with 100 to 120 VAC.
If you want to use the Control Unit with 200 to 240 VAC, you must procure another appropriate AC power cord.

Features

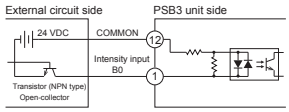
- Light Unit output is compatible with 1 channel / 4 connectors (metal connector x 2, EL connector x 2).
- Each single unit is equipped with parallel, serial and analog control for external control.
- You can select the optimal output according to the Light Unit and optimize the intensity setting by switching the intensity range.

Example Connections

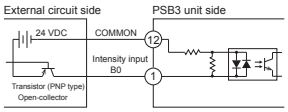
Refer to the “Instruction Guide” for details.

Parallel communication Example connections of external signal

■ Sink type (NPN)



■ Source type (PNP)



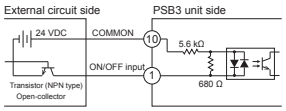
Connection specifications

Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	5.6 kΩ (per terminal)

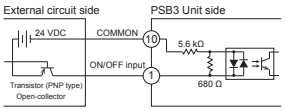
	Input signal	Photocoupler	Data
Sink type	HIGH	OFF	1
	LOW	ON	0
Source type	HIGH	ON	0
	LOW	OFF	1

ON/OFF input Example connections of external signal

■ Sink type (NPN)



■ Source type (PNP)



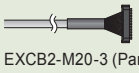
Connection specifications

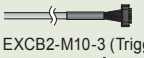
Rated input voltage	Maximum input voltage	Photocoupler ON voltage/current	Photocoupler OFF voltage/current	Response time	Input impedance
24 VDC	26.4 VDC	20 VDC min. / 6 mA min.	3 VDC max. / 1 mA max.	Approx. 100 ms	5.6 kΩ (per terminal)

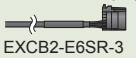
	Input signal	Photocoupler	Light Unit status
Sink type	HIGH	OFF	On
	LOW	ON	Off
Source type	HIGH	ON	Off
	LOW	OFF	On

Example System Configuration

Example:
External control devices — **External control cables** — **Control Unit** — **Extension cable** — **LED Light**

Parallel communication

EXCB2-M20-3 (Parallel communication) (Intensity control)

Trigger signal

EXCB2-M10-3 (Trigger signal input) (ON/OFF control)

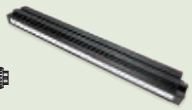
EIA-485 communication

EXCB2-E6SR-3
(EIA-485 communication) (Intensity control)

Analog input

EXCB2-E6AN-3
(Analog input) (Intensity control)


PSB3-30024
(1 channel/300 W capacity)


FCB-3-1.25SQ-ME7
Extension Cable (3 m)
(Metal Connector)


LNSP-600SW
(600 mm size)

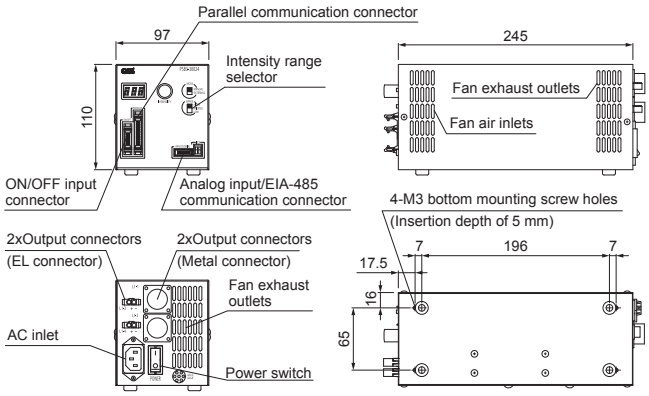
Various technical documents available. PDF Drawings | DXF Drawings | Product Brochures | Instruction Guides | 3D CAD | Data Sheets | Imaging Examples | Digital Catalogs
Register to use them.

Specifications

Model name			PSB3-30024
Lighting method			Continuous lighting
Drive method			Constant-voltage system
Intensity control method			Variable voltage control
Number of channels			1 channel
Applicable Light Unit (rated)			24 V 300 W
Intensity control		Manual and external intensity	Manual/External switch (MODE)
		Variable output voltage range	Select between 3 steps by using the intensity range selector (RANGE).
	Manual		Set any of 256 steps via the setting switch. Press and hold the switch for 2 seconds to lock the intensity value.
	External	Parallel communication	8-bit intensity value setting (B0 to B7) and write signal (WR)
		Serial communication	Command input via EIA-485 communication
		Analog input	Analog voltage (0 V to +5 V)
		External control mode can be selected by pushing the setting switch while turning ON the power.	
ON/OFF control		Parallel bit input	Lighting signal (OFF)
		Serial communication	Command input via EIA-485 communication
EIA-485 communication settings		ID	Set by using the ID switch (00 to 03) Connect up to four units
		Terminating resistance	Set by using the ID switch (Terminating resistance is ON only when ID = 00)
Lighting delay (typ.)			0.1 s
Error detection display			"Err" is displayed on the digital display.
Error detection output			Errors are output and light output is stopped for an internal AC power error.
		External control Connector	Error output terminal (OC, OE), photocoupler insulation, open-collector output, alert open (load current of 10 mA or less), and error status (serial communication)

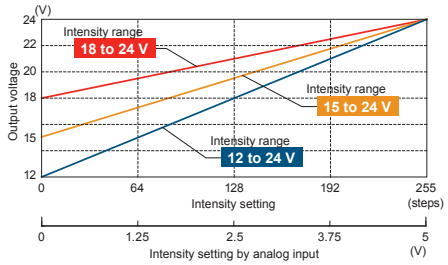
Overcurrent protection	Operates at 105% of the rated current or higher. Resets by cycling the Control Unit.
Overvoltage protection	Operates at 120% to 155% of the rated voltage. Resets by cycling the Control Unit.
Input voltage (rated)	100 to 240 VAC (+10% - 15%), 50/60 Hz
Power consumption (typ.)	410 VA
Frequency	50/60 Hz
Inrush current (typ.)	40 A at cold start
Ground leakage current	3.5 mA max. (264 VAC, 60 Hz, with no load)
Output voltage variation range (typ.)	Select between 3 steps by using the intensity range selector. 12 V to 24 V with no load 15 V to 24 V with no load 18 V to 24 V with no load
Operating temperature and humidity	Temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)
Vibration resistance	Acceleration: 19.6 m/sec², Frequency: 10 to 55 Hz, Cycle: 3 min., Sweep cycle: each hour in the X, Y, and Z directions
Cooling method	Forced air cooling
CE marking	Safety standard: Conforms to EN61010-1, EMC standard: Conforms to EN61326-1 Class A
Environmental regulations	RoHS compliant
Material and surface processing	Steel plate, Thickness of cover: 1.0, Thickness of chassis: 1.6, N3 leather tone finish
Weight	2,300 g max.
Accessories	3-prong AC cord with ground terminal (2 m) x 1, Instruction Guide x 1

Dimensions (mm)



Intensity Range

Optimize your intensity setting with the intensity lower limit selection function.
You can choose an intensity range to match the Light Unit.



The graph is a conceptual image.

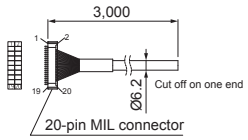
Options

These are cables for parallel communication, EIA-485 communication, and analog input. Select yours to match your control method.

Dimensions (mm)

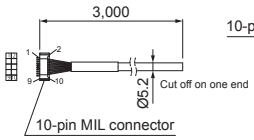
Parallel communication cable

EXCB2-M20-3 (3 m)



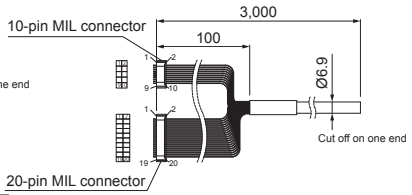
ON/OFF input cable

EXCB2-M10-3 (3 m)



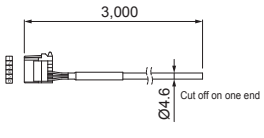
Parallel communication / ON/OFF input shared cable

EXCB2-M10M20-3 (3 m)



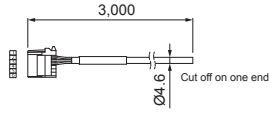
Analog input cable

EXCB2-E6AN-3 (3 m)



EIA-485 communication cable

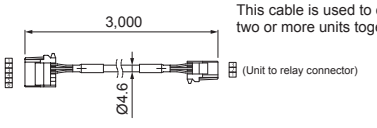
EXCB2-E6SR-3 (3 m)



EIA-485 communication relay cable

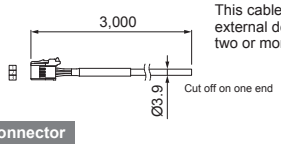
EXCB2-E6SR-E3-3 (3 m)

This cable is used to connect two or more units together.

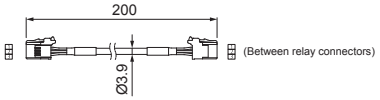


EXCB2-E3-3 (3 m)

This cable is used to connect to an external device when connecting two or more Control Units together.

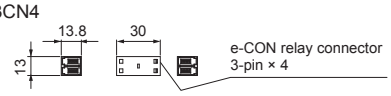


EXCB2-E3-E3-0.2 (0.2 m)



Relay connector

ECNR-E3CN4



Refer to the material "Connecting EIA-485 Communications Cables" on the CCS website for information on multi-drop wiring connections. You can download this information from the product website page.

PD3
PD2
PSB
POD
PTU2
PF
CN-EPOE
CN-4024-2-EIPT
PB-2430-1
CC-ST-1024
PJ2
PJ
CC-PJ-0707
PSCC
PSB4
PSB3-30024
Band-Pass Filters
Lens Filters
Diffusion Plates
Polarizing Plates
Light Control Films
Fixtures, etc.
Brackets
SM/EL Cables
Control Units and Controllers
Options

Options

Band-Pass Filters

Refer to our website for product details.

CCS filters ▶ Search

For quick access.

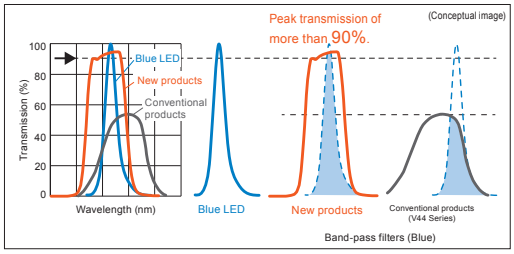
You can also use your smartphone or cell phone.

These camera lens filters transmit light in a specific wavelength region and prevent the influence of ambient light.



Features

- Ideal for LED wavelengths
- Highly transmissive
- Hard-coated filters with superior durability
- 12 different models
- Each filter available in 25 sizes
- Total of 300 Models



Model Name

Example:

F-BP470-□

Wavelength

Filter size

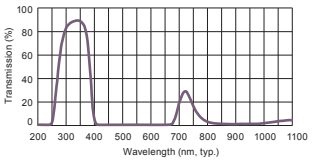
BP: Band-pass filter
LP: Sharp-cut filter or protective filter
SP: Short-pass filter

For Ultraviolet Light Units

F-BP324-□



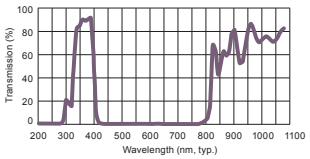
Filter color	Ultraviolet
Lens material	Glass
Useful range	290 to 365 nm
Full width at half max	105 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to Table of Filter Dimensions.



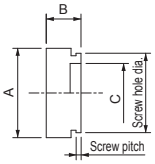
F-BP365-□



Filter color	Ultraviolet
Lens material	Glass
Useful range	335 to 400 nm
Full width at half max	80 nm
Wavelength tolerance	+/-10 nm
Peak transmission	>85%
Filter size	Refer to Table of Filter Dimensions.



● Dimensions (mm)

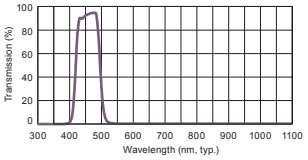


For Blue Light Units

F-BP470-□



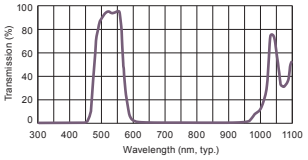
Filter color	Blue
Lens material	Glass
Useful range	425 to 495 nm
Full width at half max	85 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



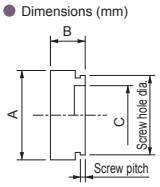
F-BP505-□



Filter color	Cyan
Lens material	Glass
Useful range	485 to 550 nm
Full width at half max	90 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



● Dimensions (mm)

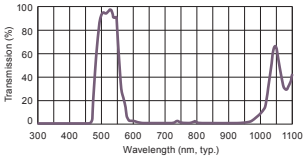


For Green Light Units

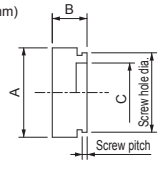
F-BP525-□



Filter color	Light green
Lens material	Glass
Useful range	500 to 555 nm
Full width at half max	80 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



● Dimensions (mm)

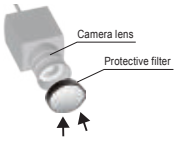


Protective Filter

F-LP340-□



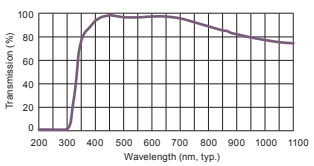
Anti-reflection coating glass is used.



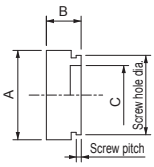
Protects the camera lens from scratches and dust.

Lens material	Glass
Useful range	350 to 800 nm
Cut-on wavelength (50% transmission)	340 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	98%
Filter size	Refer to *Table of Filter Dimensions.*

Note: Please contact your CCS sales representative for information on acrylic protective filters.



● Dimensions (mm)

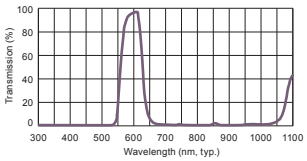


For Red Light Units

F-BP590-☐



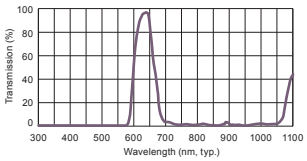
Filter color	Orange
Lens material	Glass
Useful range	560 to 600 nm
Full width at half max	70 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



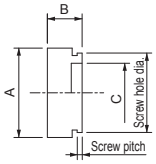
F-BP635-☐



Filter color	Light red
Lens material	Glass
Useful range	615 to 645 nm
Full width at half max	60 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



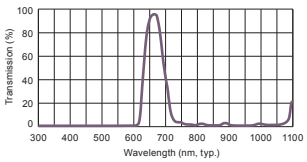
● Dimensions (mm)



F-BP660-☐



Filter color	Dark red
Lens material	Glass
Useful range	640 to 680 nm
Full width at half max	65 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*

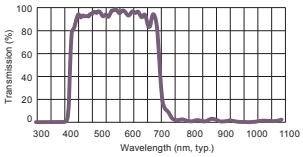


Short-Pass Filter

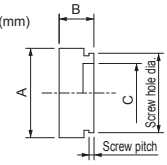
F-SP700-☐



Lens material	Glass
Useful range	410 to 690 nm
Cut-on wavelength (50% transmission)	400/700 nm (Cut-on / cut-off)
Wavelength tolerance	+/-10 nm
Peak transmission	>90 %
Filter size	Refer to *Table of Filter Dimensions.*



● Dimensions (mm)

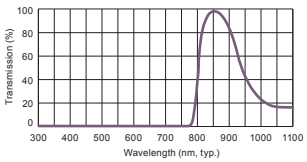


For Infrared Light Units

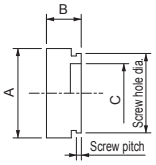
F-BP850-☐



Filter color	Infrared
Lens material	Glass
Useful range	820 to 910 nm
Full width at half max	160 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	>90%
Filter size	Refer to *Table of Filter Dimensions.*



● Dimensions (mm)



F-LP920-☐
(sharp-cut filter)



Filter color	Infrared (sharp-cut)
Lens material	Glass
Useful range	930 to 1,100 nm
Cut-on wavelength (50% transmission)	920 nm
Wavelength tolerance	+/- 10 nm
Peak transmission	90%
Filter size	Refer to *Table of Filter Dimensions.*

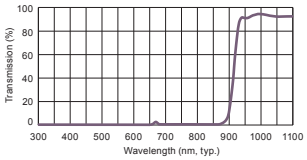


Table of Filter Dimensions (mm)

End of the model name (-☐)	Notes		Dimensions		
	Screw hole diameter	Screw pitch	A	B	C
13.25	M13.25	P0.5	Ø14.3	7.5	Ø10.6
22.5	M22.5		Ø24	7	Ø18.5
25.5	M25.5		Ø27.5		Ø21
27	M27.0		Ø29		Ø22.5
30.5	M30.5		Ø32.5		Ø25.5
34	M34		Ø36		Ø29
35.5	M35.5		Ø37.5		Ø30.5
37	M37	P0.75	Ø39	6.5	Ø32.5
37.5	M37.5	P0.5	Ø39.5	7.2	Ø32.5
39	M39		Ø41	7	Ø34
40.5	M40.5		Ø42.5		Ø35.5
43	M43	P0.75	Ø45		Ø38
46	M46		Ø48		Ø41
49	M49		Ø51		Ø44
52	M52		Ø54		Ø47
55	M55		Ø57		Ø50
58	M58		Ø60		Ø52.9
62	M62		Ø64.1		Ø57.1
67	M67		Ø70	8.3	Ø62.5
72	M72		Ø75		Ø67.5
77	M77		Ø80.1		Ø73
82	M82		Ø84.5	8.0	Ø77.7
86	M86	P1.0	Ø89	8.3	Ø81.7
95	M95		Ø98.2	8.6	Ø89.9
105	M105		Ø107.8	8.5	Ø100

Test Kit



This Kit includes various filters.

Model name: F-FK-10

Contents (total of 12 models)

- Ultraviolet (F-BP324-27)
- Blue (F-BP470-27)
- Cyan (F-BP505-27)
- Light green (F-BP525-27)
- Orange (F-BP590-27)
- Light red (F-BP635-27)
- Dark red (F-BP660-27)
- Infrared: band-pass (F-BP850-27)
- Infrared: sharp-cut (F-LP920-27)
- Protective filter (F-LP340-27)
- Step adapter
  M25.5-M27 (F-SU25.5-27)
  M30.5-M27 (F-SD30.5-27)

Options

Lens Filters

Refer to our website for product details.

CCS filters ▶ Search

For quick access.

You can also use your smartphone or cell phone.


Sharp-cut filter


Blue filter


Polarizing filter


Ultraviolet cutting filter


Ultraviolet transmission filter

Sharp-Cut Filters

Mounted in front of a lens, the R60 series blocks light of 600 nm max., and the R64 series blocks light of 640 nm max., and both transmit the light in a wavelength longer than these.

R60 Series

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R60-16	M16.0	P0.5	Ø18	7	Ø12
R60-25	M25.5		Ø27.5		Ø21
R60-27	M27.0		Ø28.5		Ø23
R60-30	M30.5		Ø32		Ø27

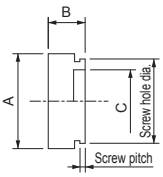
Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R60-40	M40.5	P0.5	Ø42	7	Ø36.5
R60-46	M46.0	P0.75	Ø48		Ø41.5
R60-C	For C-mount attachment		Ø30	9	Ø20.1

R64 Series

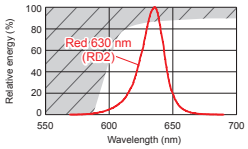
Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R64-16	M16.0	P0.5	Ø18	7	Ø12
R64-25	M25.5		Ø27.5		Ø21
R64-27	M27.0		Ø28.5		Ø23
R64-30	M30.5		Ø32		Ø27

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
R64-40	M40.5	P0.5	Ø42	7	Ø36.5
R64-46	M46.0	P0.75	Ø48		Ø41.5
R64-C	For C-mount attachment		Ø30	9	Ø20.1

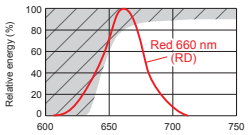
• Dimensions (mm)



Characteristics of R60 series



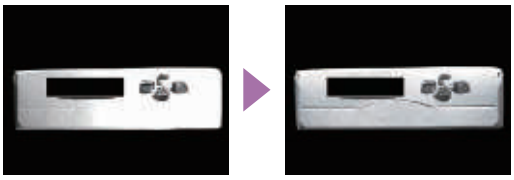
Characteristics of R64 series



Light is transmitted in the white range.

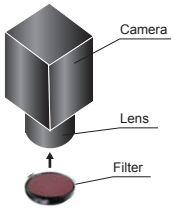
Example of usage

External imaging of candy box


Sharp cut no filter

Sharp cut using filter

Example installation



Blue Filters

Mounted in front of a lens, the V44 series transmits the light in a band centered on 440 nm in a blue wavelength range from 350 to 520 nm.

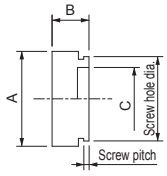
V44 Series

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
V44-25	M25.5	P0.5	Ø27.5	7	Ø21
V44-27	M27.0		Ø28.5		Ø23
V44-30	M30.5		Ø32		Ø27

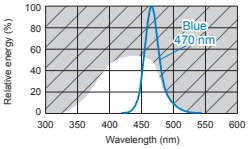
Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
V44-40	M40.5	P0.5	Ø42	7	Ø36.5
V44-46	M46.0	P0.75	Ø48		Ø41.5
V44-C	For C-mount attachment		Ø30	9	Ø20.1

With the V44 series, you cannot attach any other filters or lens attachment rings (MR series) on the workpiece side.

• Dimensions (mm)



Characteristics of V44 series



Light is transmitted in the white range.

Polarizing Filters

These filters are attached to the filter thread part of lens. They are used together with a polarizing plate attached to the Light Unit for the purpose of eliminating surface glare.

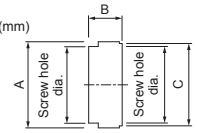
PL Series / PL2 Series

"-NL" models have a locking mechanism.

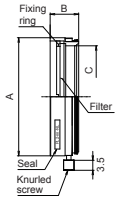
Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
PL-25	M25.5	P0.5	Ø27.4	9.3	Ø27.0
PL-25-NL	M25.5		Ø30.5	12	
PL-27	M27.0		Ø29.4	9.3	Ø28.5
PL-27-NL	M27.0		Ø32	12	
PL-30	M30.5		Ø32.4	9.3	Ø32.0
PL-30-NL	M30.5		Ø32.0	12	Ø35.5
PL-40	M40.5		Ø42.4	9.3	Ø42.0
PL-40-NL	M40.5		Ø42.0	12	Ø45.0
PL-46	M46.0	P0.75	Ø48.5	9.5	Ø48.0
PL2-35.5-NL	M35.5	P0.5	Ø37	9.6	Ø31
PL2-37.5-NL	M37.5		Ø39	9.5	Ø33
PL2-43-NL	M43	P0.75	Ø45	10	Ø38.9
PL2-46-NL	M46		Ø48	10	Ø41.7

Model name	Notes		Dimensions		
	Screw hole diam.	Screw pitch	A	B	C
PL2-48-NL	M48	P0.75	Ø50	10	Ø43.7
PL2-49-NL	M49		Ø51	10	Ø44.8
PL2-52-NL	M52		Ø54	10	Ø47.8
PL2-55-NL	M55		Ø57	10	Ø50.7
PL2-58-NL	M58		Ø60	10	Ø53.7
PL2-62-NL	M62		Ø65	11	Ø57.8
PL2-67-NL	M67		Ø70	11	Ø62.8
PL2-72-NL	M72		Ø75	11	Ø67.8
PL2-77-NL	M77		Ø80	11	Ø72.4
PL2-82-NL	M82		Ø85	11	Ø76.8
PL2-86-NL	M86	P1.0	Ø90	12.5	Ø80
PL2-95-NL	M95		Ø100	14	Ø89.5
PL2-105-NL	M105		Ø109.7	14	Ø99.05

• PL series dimensions (mm)



• PL2 series dimensions (mm)



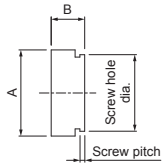
Ultraviolet Cutting Filters

The L42 series blocks light of 420 nm max. and transmits the light in a wavelength longer than this.

L42 Series

Model name	Notes		Dimensions	
	Screw hole dia.	Screw pitch	A	B
L42-25	M25.5	P0.5	Ø27.5	6.5
L42-27	M27.0		Ø28.5	
L42-30	M30.5		Ø32	
L42-40	M40.5		Ø42	
L42-46	M46.0	P0.75	Ø48	7.2

• Dimensions (mm)



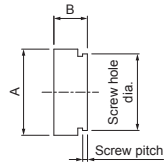
Ultraviolet Transmission Filters

The U-340 series transmits light in a wavelength range from approximately 280 to 380 nm centered on 340 nm.

U-340 Series

Model name	Notes		Dimensions	
	Screw hole dia.	Screw pitch	A	B
U340-25	M25.5	P0.5	Ø27.5	6.5
U340-27	M27.0		Ø28.5	
U340-30	M30.5		Ø32	
U340-40	M40.5		Ø42	
U340-46	M46.0	P0.75	Ø48	7.2

• Dimensions (mm)



UV Transmission Filter, UV Cut Filter Usage Example

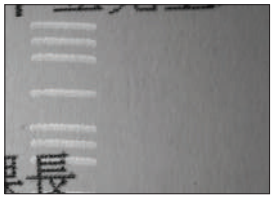
Imaging Invisible Ink on Postcard

Workpiece



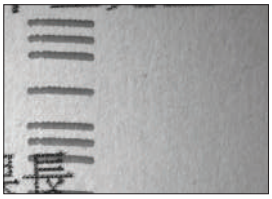
Postcard

No Filter



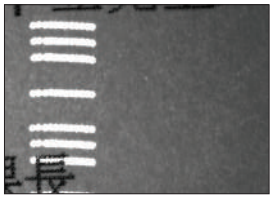
Without a filter, both UV and visible light are captured.

With UV Transmission Filter



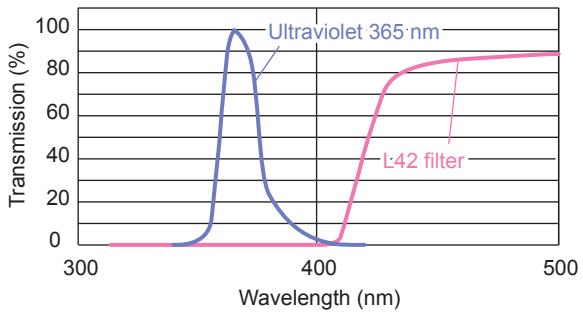
By using a UV transmission filter, it is possible to capture only wavelengths in the UV region.

With UV Cut Filter

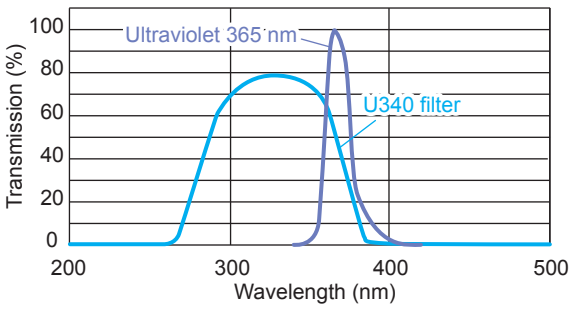


By using a UV cut filter, only the excited scattering light from the ink will be captured.

Comparison of characteristics of ultraviolet cutting filter and light spectrum of ultraviolet LED



Comparison of characteristics of ultraviolet transmission filter and light spectrum of ultraviolet LED



Options

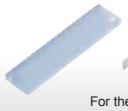
Diffusion Plates

Refer to our website for product details.
CCS diffusion plates ▶ Search
For quick access.
You can also use your smartphone or cell phone.

Can prevent glare, which is a problem when making images of glossy workpieces.


For the Ring Lights
LDR2 / LDR-PF series


For the Low-angle Ring Lights
LDR2-LA series


For the Bar Lights
LDL2-19X4 series
LDL2-33X8 series


LDL2 series
LDL-PF series


For the Coaxial Lights
LFV3 / LFV-PF series


For the Coaxial Lights
LFV3 / LFV-PF series
(End of the model name: -UF)

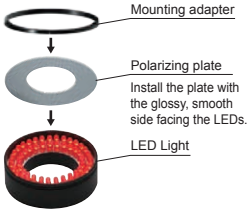
For the Ring Lights LDR2 / SQR / LDR-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
DF-LDR-32˚	LDR2-32	Ø32	Ø9	(2)
DF-LDR-42˚	LDR2-42	Ø42	Ø14	
DF-LDR-50˚	LDR2-50	Ø50	Ø25	
DF-LDR-70	LDR2-70	Ø66	Ø35	
DF-LDR-90˚	LDR2-90	Ø90	Ø40	
DF-LDR-120-45˚	LDR2-120	Ø120	Ø45	
DF-SQR-56	SQR-56	Refer to the drawing		
DF-LDR-PF-36˚	LDR-PF-36	Ø36	Ø10	
DF-LDR-PF-54˚	LDR-PF-54	Ø54	Ø22	
DF-LDR-PF-75˚	LDR-PF-75	Ø75	Ø35	

* An AD series adapter is needed when installing Light Units. (Product Page ▼ P. 362)

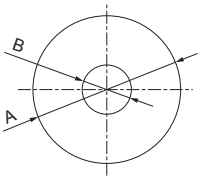
Example installation

Example: Attachment of Ring Lights LDR2 series

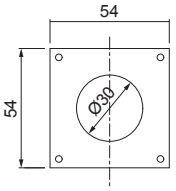


● Dimensions (mm)

DF-LDR-□□
DF-LDR-PF-□□



DF-SQR-56

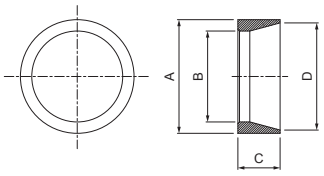


For the Low-Angle Ring Lights LDR2-LA Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions			
		A	B	C	D
DF-LDR-48LA	LDR2-48-LA	Ø22	Ø13	18.5	Ø21.77
DF-LDR-74LA	LDR2-74-LA	Ø48	Ø40	24	Ø50
DF-LDR-100LA	LDR2-100-LA	Ø70	Ø56	26	Ø66
DF-LDR-132LA	LDR2-132-LA	Ø98	Ø82		Ø92
DF-LDR-170LA	LDR2-170-LA	Ø133.5	Ø120		Ø130
DF-LDR-208LA	LDR2-208-LA	Ø173.5	Ø152	32	Ø174.3

* For information on the diffusion plates for LDR-PF-LA series, refer to the product page. (Product Page ▶ P. 140)

● Dimensions (mm)

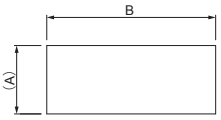


For the Bar Lights LDL2 / LDL-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LDL2-19X4	LDL2-19X4	6.4	28
DF-LDL2-33X8	LDL2-33X8	10.4	44
DF-LDL2-41X16	LDL2-41X16	23.2	46
DF-LDL2-80X16	LDL2-80X16		84.7
DF-LDL2-119X16	LDL2-119X16		123.7
DF-LDL2-158X16	LDL2-158X16		162.7
DF-LDL-PF-52X18	LDL-PF-52X18	22	58
DF-LDL-PF-102X18	LDL-PF-102X18		108
DF-LDL-PF-152X18	LDL-PF-152X18		158

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
DF-LDL2-26X30	LDL2-26X30	37.2	30.7
DF-LDL2-50X30	LDL2-50X30		54.7
DF-LDL2-74X30	LDL2-74X30		79
DF-LDL2-98X30	LDL2-98X30		102.7
DF-LDL2-122X30	LDL2-122X30		126.7
DF-LDL2-146X30	LDL2-146X30		150.7
DF-LDL2-218X30	LDL2-218X30		222.7
DF-LDL2-266X30	LDL2-266X30		270.7
DF-LDL-PF-52X30	LDL-PF-52X30	34	58
DF-LDL-PF-102X30	LDL-PF-102X30		108
DF-LDL-PF-152X30	LDL-PF-152X30		158

● Dimensions (mm)



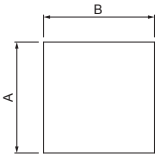
For the Coaxial Lights LFV3 / LFV-PF Series

Model name	Transmission	Applicable Light Unit (Common for all colors)	Dimensions		
			A	B	Thickness
DF-LFV3-35	High	LFV3-35 / LFV-PF-35	34	42	(2)
DF-LFV3-35-UF	Low				
DF-LFV3-50	High	LFV3-50 / LFV-PF-50	52	56	
DF-LFV3-50-UF	Low				
DF-LFV3-50X100	High	LFV3-50X100		106	
DF-LFV3-50X100-UF	Low				
DF-LFV3-70	High	LFV3-70/ LFV-PF-70	73	80	
DF-LFV3-70-UF	Low				

Model name	Transmission	Applicable Light Unit (Common for all colors)	Dimensions		
			A	B	Thickness
DF-LFV3-100	High	LFV3-100 / LFV-PF-100	100	106	(2)
DF-LFV3-100-UF	Low				
DF-LFV3-130	High	LFV3-130	130	138	
DF-LFV3-130-UF	Low				
DF-LFV3-200	High	LFV3-200	202	222	
DF-LFV3-200-UF	Low				

Transmission High: Standard for red and white
Transmission Low (End of the model name: -UF): Standard for blue

● Dimensions (mm)



Example of usage

Imaging of can from above


No diffusion plate


Using diffusion plate

There are two types of diffusion plates with different transmission for the Coaxial Lights LFV3 series. Select one to match your work environment.

E.g.: If changing from a low transmission diffusion plate to a high one:

Intensity value 70%


Bright even though uniformity is low.

E.g.: If changing from a high transmission diffusion plate to a low one:

Intensity value 75%


Brightness decreases as uniformity is increased.

Caution	Diffusion plates are consumables. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

Refer to our website for product details.

CCS polarizing plates ▶ Search

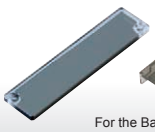
For quick access.

You can also use your smartphone or cell phone.

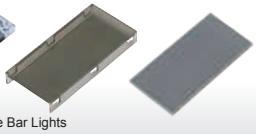
These are used together with a polarizing filter attached to the camera lens for the purpose of eliminating surface glare.



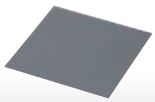
For the Ring Lights
LDR2 / LDR-PF series



For the Bar Lights
LDL2-19X4 series
LDL2-33X8 series



LDL2 series
LDL-PF series



For the Coaxial Lights
LFV3 / LFV-PF series



For the Spot Lights
LSP series

For the Ring Lights LDR2 / SQR / LDR-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
PL-LDR-32*1	LDR2-32	Ø32	Ø9	0.8
PL-LDR-42*1	LDR2-42	Ø42	Ø14	
PL-LDR-50*1	LDR2-50	Ø50	Ø26	
PL-LDR2-70	LDR2-70	Ø76*2	Ø35	
PL-LDR-90*1	LDR2-90	Ø90	Ø40	
PL-LDR-120-40*1	LDR2-120	Ø120	Ø40	
PL-SQR-56	SQR-56	Refer to the drawing		
PL-LDR-PF-36*1	LDR-PF-36	Ø36	Ø10	(2)
PL-LDR-PF-54*1	LDR-PF-54	Ø54	Ø22	
PL-LDR-PF-75*1	LDR-PF-75	Ø75	Ø35	

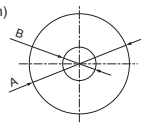
*1 An AD series adapter is needed when installing Light Units. (Product Page ▶ P. 362)

*2 The dimensions are that of the outer diameter of the included mounting adapter.

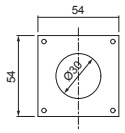
● Dimensions (mm)

PL-LDR-□□

PL-LDR-PF-□□

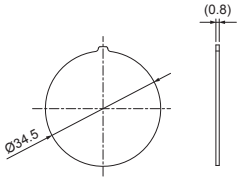


PL-SQR-56



For the Spot Lights LSP Series

Model name	Applicable Light Unit (Common for all colors)
PL-LSP-41	LSP-41



For the Bar Lights LDL2 / LDL-PF Series

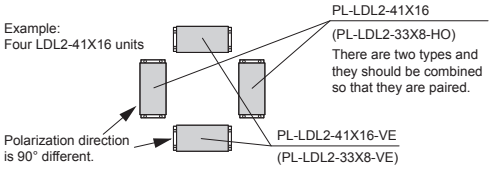
Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL2-19X4-HO	LDL2-19X4	6.4	28
PL-LDL2-19X4-VE			
PL-LDL2-33X8-HO	LDL2-33X8	10.4	44
PL-LDL2-33X8-VE			
PL-LDL2-41X16	LDL2-41X16	23.2	46
PL-LDL2-41X16-VE			
PL-LDL2-80X16	LDL2-80X16		84.7
PL-LDL2-80X16-VE			
PL-LDL2-119X16	LDL2-119X16		123.7
PL-LDL2-119X16-VE			
PL-LDL2-158X16	LDL2-158X16		162.7
PL-LDL2-158X16-VE			
PL-LDL-PF-52X18-HO	LDL-PF-52X18	22	58
PL-LDL-PF-52X18-VE			
PL-LDL-PF-102X18-HO	LDL-PF-102X18		108
PL-LDL-PF-102X18-VE			

Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL-PF-152X18-HO	LDL-PF-152X18	22	158
PL-LDL-PF-152X18-VE			
PL-LDL2-26X30	LDL2-26X30	37.2	30.7
PL-LDL2-26X30-VE			
PL-LDL2-50X30	LDL2-50X30		79
PL-LDL2-50X30-VE			
PL-LDL2-74X30	LDL2-74X30		79
PL-LDL2-74X30-VE			
PL-LDL2-98X30	LDL2-98X30		102.7
PL-LDL2-98X30-VE			
PL-LDL2-122X30	LDL2-122X30		126.7
PL-LDL2-122X30-VE			
PL-LDL2-146X30	LDL2-146X30		150.7
PL-LDL2-146X30-VE			
PL-LDL2-218X30	LDL2-218X30		222.7
PL-LDL2-218X30-VE			

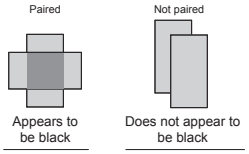
Model name	Applicable Light Unit (Common for all colors)	Dimensions	
		A	B
PL-LDL2-266X30	LDL2-266X30	37.2	270.7
PL-LDL2-266X30-VE			
PL-LDL-PF-52X30-HO	LDL-PF-52X30	34	58
PL-LDL-PF-52X30-VE			
PL-LDL-PF-102X30-HO	LDL-PF-102X30		108
PL-LDL-PF-102X30-VE			
PL-LDL-PF-152X30-HO	LDL-PF-152X30		158
PL-LDL-PF-152X30-VE			

There are two types of polarizing plates for the Bar Lights LDL2 series. They are used together as shown below.

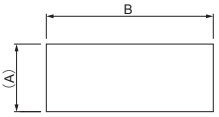
Installation to illuminate the workpiece from all four directions:



● Distinguishing paired polarizing plates



● Dimensions (mm)

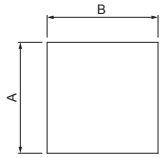


For the Coaxial Lights LFV3 / LFV-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
PL-LFV3-35	LFV3-35 / LFV-PF-35	34	42	0.8
PL-LFV3-50	LFV3-50 / LFV-PF-50	52	56	
PL-LFV3-50X100	LFV3-50X100	52	106	
PL-LFV3-70	LFV3-70 / LFV-PF-70	73	80	

Model name	Applicable Light Unit (Common for all colors)	Dimensions		
		A	B	Thickness
PL-LFV3-100	LFV3-100 / LFV-PF-100	100	106	0.8
PL-LFV3-130	LFV3-130	130	138	
PL-LFV3-200	LFV3-200	202	222	

● Dimensions (mm)



Example of usage

Imaging of QR code



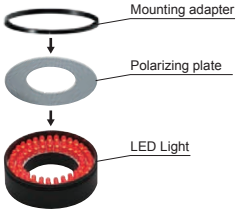
No polarizing plate



Using a polarizing plate

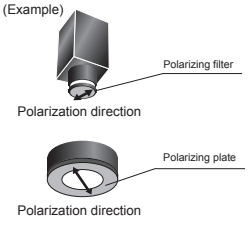
Example installation

Example: Attachment of Ring Lights LDR2 series



● The polarizing filters and plates are used together.

(Example)



Adjustment procedures for polarizing plates and polarizing filters

Specular reflective components are cut out and the effects can be observed when the polarization direction of the polarizing plate installed on the Light Unit and the polarization direction of the filter attached to the camera are at a right angle (90°) to each other.

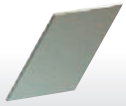
Caution	Polarizing plates are consumables. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.

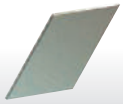
Options

Light Control (LC) Films

Refer to our website for product details.
CCS LC film ▶ Search
For quick access.
You can also use your smartphone or cell phone.

The parallelism of light is improved to reduce light diffraction for performing external inspection of workpieces, and provide sharp imaging of profiles.


For the Flat Lights TH2 series


For the Coaxial Lights LFV3 / LFV-PF series

For the Flat Lights TH2 Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	B	Thickness
LC-TH-27X27-HO	TH2-27X27	39	29	0.63
LC-TH-27X27-VE				
LC-TH-43X35-HO	TH2-43X35	47	45	
LC-TH-43X35-VE				
LC-TH-51X51-HO	TH2-51X51	63	53	
LC-TH-51X51-VE				
LC-TH-63X60-HO	TH2-63X60	72	75	
LC-TH-63X60-VE				
LC-TH-83X75-HO	TH2-83X75	87	95	
LC-TH-83X75-VE				
LC-TH-100X100-HO	TH2-100X100	112	112	
LC-TH-100X100-VE				

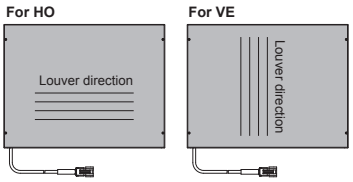
Model name	Applicable Light Unit (Common for all colors)	Dimensions A	B	Thickness
LC-TH-140X105-HO	TH2-140X105	117	152	0.63
LC-TH-140X105-VE				
LC-TH-160X120-HO	TH2-160X120	132	172	
LC-TH-160X120-VE				
LC-TH-200X150-HO	TH2-200X150	162	212	
LC-TH-200X150-VE				
LC-TH-211X200-HO	TH2-211X200	212	223	
LC-TH-211X200-VE				
LC-TH-224X170-HO	TH2-224X170	182	236	
LC-TH-224X170-VE				

For the TH2: These films are not applicable to the high-directivity, large, rectangular, and camera-window type Light Units.

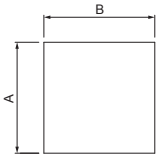
The Flat Lights TH2 series offers a selection of long or short louver directions.

Model names ending with HO:
The direction of louvers is horizontal when attaching with the cable outlet facing downwards as shown in the drawing.

Model names ending with VE:
The direction of louvers is vertical when attaching with the cable outlet facing downwards as shown in the drawing.



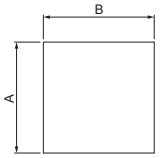
● Dimensions (mm)



For the Flat Lights LFL Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	B	Thickness
LC-LFL-100	LFL-100	120	132	0.63
LC-LFL-180	LFL-180	176.8	213.8	
LC-LFL-200	LFL-200	222	234	

● Dimensions (mm)

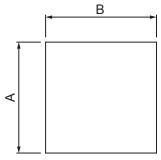


For the Coaxial Lights LFV3 / LFV-PF Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	B	Thickness
LC-LFV3-35	LFV3-35 / LFV-PF-35	34	42	0.63
LC-LFV3-50	LFV3-50 / LFV-PF-50	52	56	
LC-LFV3-50X100	LFV3-50X100	52	106	
LC-LFV3-70	LFV3-70 / LFV-PF-70	73	80	

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	B	Thickness
LC-LFV3-100	LFV3-100 / LFV-PF-100	100	106	0.63
LC-LFV3-130	LFV3-130	130	138	
LC-LFV3-200	LFV3-200	202	222	

● Dimensions (mm)



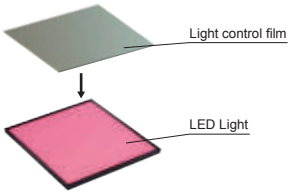
Example of usage

External imaging of a metal rod


No light control film Using light control film

Example installation

Example: Attachment of the Flat Lights TH2 series



Caution	LC film is a consumable. Heat may cause deformation or discoloring depending on the use environment. Make sure that countermeasures against overheating are implemented and that the temperature does not exceed the operating limit.


Protective plate
CV series


Adapter
AD series


Lens attachment rings
MR series


FA series


JP-LDL2

Fixtures

Protective Plates

Protects the emitting part of the Light Unit.

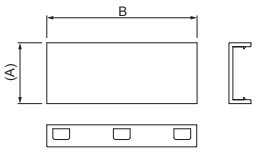
It is not intended to protect against dust or water.

CV Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	Dimensions B
CV-LDL2-41X16	LDL2-41X16	23.2	46
CV-LDL2-80X16	LDL2-80X16		84.7
CV-LDL2-119X16	LDL2-119X16		123.7
CV-LDL2-158X16	LDL2-158X16		162.7
CV-LDL2-26X30	LDL2-26X30	37.2	30.7
CV-LDL2-50X30	LDL2-50X30		79
CV-LDL2-74X30	LDL2-74X30		79

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	Dimensions B
CV-LDL2-98X30	LDL2-98X30	37.2	102.7
CV-LDL2-122X30	LDL2-122X30		126.7
CV-LDL2-146X30	LDL2-146X30		150.7
CV-LDL2-218X30	LDL2-218X30		222.7
CV-LDL2-266X30	LDL2-266X30		270.7

● Dimensions (mm)



Adapters

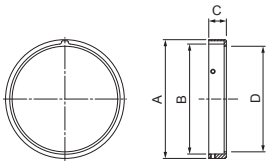
Use when installing a diffusion plate or polarizing plate to the Light Unit.

AD Series

Model name	Applicable Light Unit (Common for all colors)	Dimensions A	Dimensions B	Dimensions C	Dimensions D
AD-LDR-32	LDR2-32	Ø36	Ø32.2	7	Ø28
AD-LDR-42	LDR2-42	Ø46	Ø42.2		Ø38
AD-LDR-50	LDR2-50	Ø54	Ø50.2	8	Ø48
AD-LDR-90	LDR2-90	Ø96	Ø90.2		Ø84
AD-LDR-120	LDR2-120	Ø126	Ø120		Ø114
AD-LDR-PF-36	LDR-PF-36	Ø42	Ø36.6		Ø30
AD-LDR-PF-54	LDR-PF-54	Ø60	Ø54.3		Ø50
AD-LDR-PF-75	LDR-PF-75	Ø81	Ø75.3		Ø71

For information on adapters used for LDR-PF-LA series, refer to the product page. (Product Page ▶ P. 140)

● Dimensions (mm)



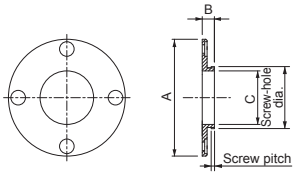
Lens Attachment Rings

You can directly install the Light Unit to the filter thread part of lens.
Perfect for environments with narrow installation spots.

MR Series

Model name	Applicable Light Unit (Common for all colors)	Notes Screw hole dia.	Notes Screw pitch	Dimensions A	Dimensions B	Dimensions C
MR-LDR-32-M25	Common for LDR2-32	M25.5	P0.5	Ø36	10	Ø12
MR-LDR-32-M27		M27				
MR-LDR-32-M30		M30.5				
MR-LDR-50-M25	Common for LDR2-50	M25.5		Ø48	5	Ø22
MR-LDR-50-M27		M27				Ø24
MR-LDR-50-M30		M30.5				Ø27

● Dimensions (mm)



Fixtures

These fixtures are optimal for workpiece testing and temporary setting.

FA Series

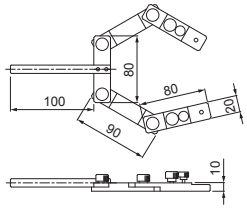
Model name	Notes
FA-10	Rod part Ø10 mm
FA-12	Rod part Ø12 mm

JP-LDL2 Series

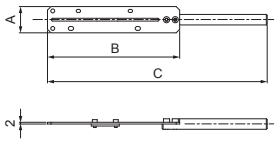
Model name	Notes	Dimensions A	Dimensions B	Dimensions C
JP-LDL2-LE70WT20	Rod part Ø12 mm	20	71	171
JP-LDL2-LE100WT30		30	101	201
JP-LDL2-LE150WT30		30	151	251

● Dimensions (mm)

FA-10/12



JP-LDL2



Caution	Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information.

Options

Brackets

Refer to our website for product details.

CCS brackets ▶ Search

For quick access.

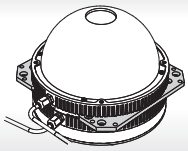
You can also use your smartphone or cell phone.


For the Bar Lights LDL2 / LDL-PF series


For the Bar Lights LDL2-33X8


For the Bar Lights LDL2 series


For the Flat Lights TH2 series


Light joint bracket

For the Bar Lights LDL2 / LDL-PF Series



The angle of illumination can be adjusted as you desire when securing the Light Unit.

L-model bracket

Model name	Applicable Light Unit (Common for all colors)
BK-LDL2	For the LDL2 series
BK-LDL-PF	For the LDL-PF series

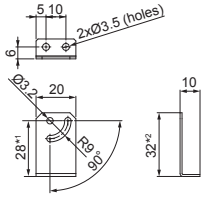
Four-way mounting brackets

Model name	Applicable Light Unit (Common for all colors)
BK-LDQ2-33X8	For LDL2-33X8

Model name	Applicable Light Unit (Common for all colors, four-unit use)	Dimensions	
		A	B
BK-LDQ2-41X16	LDL2-41X16 series	108	60
BK-LDQ2-80X16	LDL2-80X16 series	148	100
BK-LDQ2-119X16	LDL2-119X16 series	186	138
BK-LDQ2-158X16	LDL2-158X16 series	225	177
BK-LDQ2-74X30	LDL2-74X30 series	150	100
BK-LDQ2-98X30	LDL2-98X30 series	174	124
BK-LDQ2-122X30	LDL2-122X30 series	198	148
BK-LDQ2-146X30	LDL2-146X30 series	222	172
BK-LDQ2-218X30	LDL2-218X30 series	294	244
BK-LDQ2-266X30	LDL2-266X30 series	342	292

● Dimensions (mm)

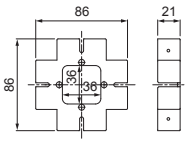
BK-LDL2 / BK-LDL-PF



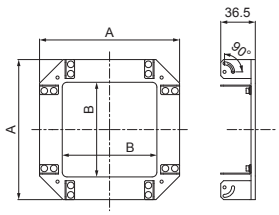
(Two brackets are included.)

*1 For BK-LDL-PF: 32
*2 For BK-LDL-PF: 36

BK-LDQ2-33X8



BK-LDQ2



For the Flat Lights TH2 Series



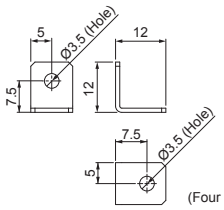
This is a dedicated bracket for securing the TH2 Series Light Units. You can secure the Light Units at four points.

Model name	Applicable Light Unit (Common for all colors)
BK-TH-LE12	For the TH2 series

For TH2: This bracket is not applicable to the camera-window type Light Units with a 300x300 mm emitting surface and to the large type Light Units.

● Dimensions (mm)

BK-TH-LE12



(Four brackets are included.)

Light Joint Brackets

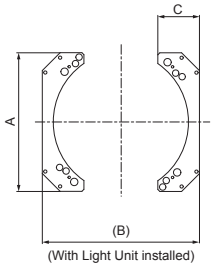


You can combine Dome and Ring Lights. Imaging can be performed by lighting switching or simultaneous lighting.

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)	Dimensions			
			A	B	C	Thickness
BK-75-JO	HPD2-75 series HPD-PF-75 series	HPR2-75 series HPR2-PF-75 series LDR2-100-LA series LDR-96-LA1 series	84	91	35	4
BK-100-JO	HPD2-100 series HPD-PF-100 series	HPR2-100 series HPR-PF-100 series LDR2-132-LA series LDR-146-LA1 series	106	116	32	
BK-150-JO	HPD2-150 series HPD-PF-150 series	HPR2-150 series HPR-PF-150 series LDR2-170-LA series LDR-176-LA1 series	140	166	42	
BK-200-JO	HPD2-200 series HPD-PF-200 series	HPR2-200 series HPR-PF-200 series LDR2-208-LA series LDR-206-LA1 series	170	216	52	
BK-250-JO	HPD2-250 series	HPR2-250 series	210	266	56	

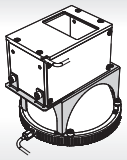
● Dimensions (mm)

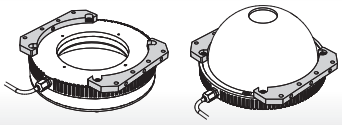
BK-75-JO
BK-100-JO
BK-150-JO
BK-200-JO
BK-250-JO



(With Light Unit installed)

Caution	Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information.


Coaxial Light joint bracket


Expansion mounting bracket

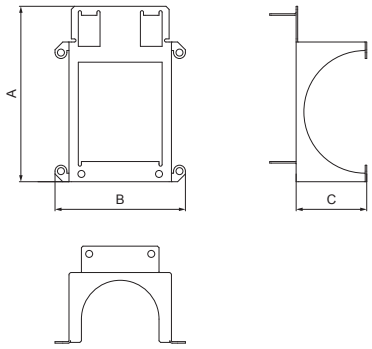
Coaxial Light Joint Brackets

You can combine Dome and Coaxial Lights. Uniform illumination can be provided from all directions. Illumination irregularities are eliminated.

Model name	Applicable Light Unit 1 (Common for all colors)	Applicable Light Unit 2 (Common for all colors)	Dimensions		
			A	B	C
BK-HPD2-75-LFV	HPD2-75 series HPD-PF-75 series	LFV3-35 series LFV-PF-35 series	95	66	33
BK-HPD2-100-LFV	HPD2-100 series HPD-PF-100 series	LFV3-50 series LFV-PF-50 series	113	84	45.5
BK-HPD2-150-LFV	HPD2-150 series HPD-PF-150 series	LFV3-50 series LFV-PF-50 series	129.5	119	70.5
BK-HPD2-200-LFV	HPD2-200 series	LFV3-70 series	164	155	95.5
BK-HPD2-250-LFV	HPD2-250 series	LFV3-70 series	200	190	116.5

● Dimensions (mm)

BK-HPD2-75-LFV
BK-HPD2-100-LFV
BK-HPD2-150-LFV
BK-HPD2-200-LFV
BK-HPD2-250-LFV



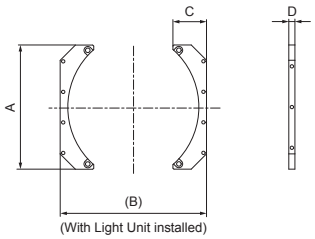
Expansion Mounting Brackets

These brackets are for expanding the mounting methods of Light Units. You can mount on horizontal as well as vertical surfaces.

Model name	Applicable Light Unit 1 (Common for all colors)	Dimensions			
		A	B	C	D
BK-50-CI	HPR2-50 series	40	50	13	5
BK-75-CI	HPR2-75 series	70	91	22	6
	HPR-PF-75 series				
	HPD2-75 series				
	HPD-PF-75 series				
BK-100-CI	HPR2-100 series	90	116	25	
	HPR-PF-100 series				
	HPD2-100 series				
	HPD-PF-100 series				
BK-150-CI	HPR2-150 series	122	166	33	
	HPR-PF-150 series				
	HPD2-150 series				
	HPD-PF-150 series				
BK-200-CI	HPR2-200 series	160	216	40	
	HPR-PF-200 series				
	HPD2-200 series				
	HPD-PF-200 series				
BK-250-CI	HPD2-250 series	210	266	60	
	HPR2-250 series				

● Dimensions (mm)

BK-50-CI
BK-75-CI
BK-100-CI
BK-150-CI
BK-200-CI
BK-250-CI



(With Light Unit installed)

● Example of the expansion mounting bracket in use


Ring Light: Image of usage with HPR2-200RD

● Example of the expansion mounting bracket in use


Dome Light: Image of usage with HPD2-250SW

Caution	Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information.

Options

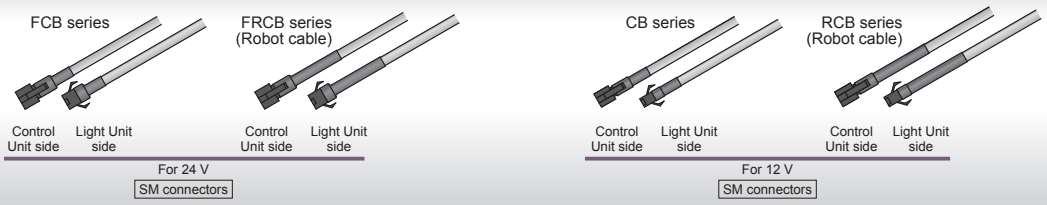
SM / EL Cables

Refer to our website for product details.

CCS cables ▶ Search

For quick access.

You can also use your smartphone or cell phone.



SM Connector Type

The cable permitted bending radii shown below are for reference only. Actual values may vary.

Straight Cables

This extension cable connects an LED Light and Control Unit.

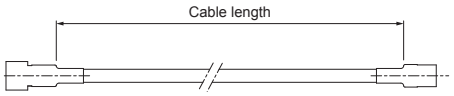
FCB Series (For 24 V / HLV)

Model name	Cable length	Notes
FCB-1	1 m	Used for 24 V input LED Lights or the HLV series Spot Lights, and 24 V output Control Units.
FCB-2	2 m	
FCB-3	3 m	
FCB-5	5 m	

CB Series (For 12 V)

Model name	Cable length	Notes
CB-1	1 m	Used for 12 V input LED Lights and 12 V output Control Units.
CB-2	2 m	
CB-3	3 m	
CB-5	5 m	

● Dimensions (mm)



24 V / HLV series cable permitted bending radius: 28.8 mm
12 V cable permitted bending radius: 27.6 mm

2-Branch Cables

Spot Light HLV3/HLV2 series cannot be used.

This 2-branch cable connects two LED Lights and a Control Unit.

FCB-W Series (For 24 V)

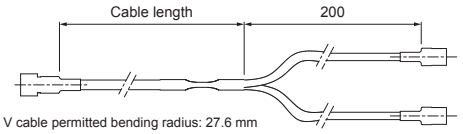
Model name	Cable length	Notes
FCB-W-1	1 m	Used for 24 V input LED Lights and 24 V output Control Units.
FCB-W-2	2 m	
FCB-W-3	3 m	
FCB-W-5	5 m	

CB-W Series (For 12 V)

Model name	Cable length	Notes
CB-W-1	1 m	Used for 12 V input LED Lights and 12 V output Control Units.
CB-W-2	2 m	
CB-W-3	3 m	
CB-W-5	5 m	

Total power consumption of the connected Light Units must not exceed the output of the Control Unit.
CCS recommends using a multi-channel Control Unit if you wish to set intensity separately for each Light Unit.

● Dimensions (mm)



24 V cable permitted bending radius: 27.6 mm
12 V cable permitted bending radius: 27.6 mm

4-Branch Cables

Spot Light HLV3/HLV2 series cannot be used.

This 4-branch cable connects four LED Lights and a Control Unit.

FCB-F Series (For 24 V)

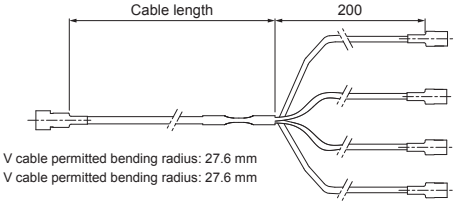
Model name	Cable length	Notes
FCB-F-1	1 m	Used for 24 V input LED Lights and 24 V output Control Units.
FCB-F-2	2 m	
FCB-F-3	3 m	
FCB-F-5	5 m	

CB-F Series (For 12 V)

Model name	Cable length	Notes
CB-F-1	1 m	Used for 12 V input LED Lights and 12 V output Control Units.
CB-F-2	2 m	
CB-F-3	3 m	
CB-F-5	5 m	

Total power consumption of the connected Light Units must not exceed the output of the Control Unit.
CCS recommends using a multi-channel Control Unit if you wish to set intensity separately for each Light Unit.

● Dimensions (mm)



24 V cable permitted bending radius: 27.6 mm
12 V cable permitted bending radius: 27.6 mm

Robot Cables

These robot cables have excellent flexibility and durability.

FRCB Series (For 24 V / HLV)

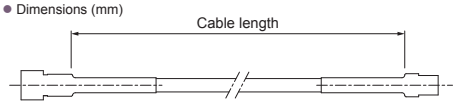
Model name	Cable length	Notes
FRCB-1	1 m	Used for 24 V input LED Lights or the HLV series Spot Lights, and 24 V output Control Units.
FRCB-2	2 m	
FRCB-3	3 m	
FRCB-5	5 m	

RCB Series (For 12 V)

Model name	Cable length	Notes
RCB-1	1 m	Used for 12 V input LED Lights and 12 V output Control Units.
RCB-2	2 m	
RCB-3	3 m	
RCB-5	5 m	

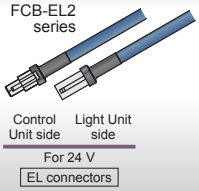
If using robot cables, affix the cable section on the Light Unit side (including the connector section).

● Dimensions (mm)



24 V / HLV series cable permitted bending radius: 28.8 mm
12 V cable permitted bending radius: 27.6 mm

Caution	The light intensity might be unstable if you join cables.



EL Connector Type

The cable permitted bending radii shown below are for reference only. Actual values may vary.

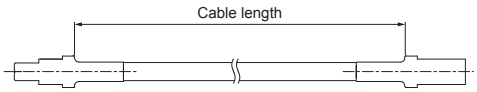
Straight Cables

This extension cable connects an LED Light and Control Unit.

FCB-EL2 Series (For 24 V)

Model name	Cable length	Notes
FCB-1-EL2	1 m	Use for LED Lights and Control Units that have an EL connector.
FCB-2-EL2	2 m	
FCB-3-EL2	3 m	
FCB-5-EL2	5 m	
FCB-10-EL2	10 m	
FCB-15-EL2	15 m	

• Dimensions (mm)



Cable permitted bending radius: 29.6 mm

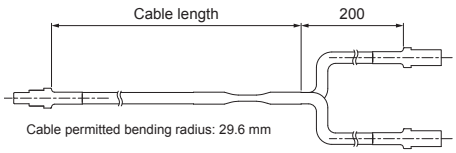
2-Branch Cables

This 2-branch cable connects two LED Lights and a Control Unit.

FCB-W-EL2 Series (For 24 V)

Model name	Cable length	Notes
FCB-W-1-EL2	1 m	Use for LED Lights and Control Units that have an EL connector.
FCB-W-2-EL2	2 m	
FCB-W-3-EL2	3 m	
FCB-W-5-EL2	5 m	
FCB-W-10-EL2	10 m	
FCB-W-15-EL2	15 m	

• Dimensions (mm)



Cable permitted bending radius: 29.6 mm

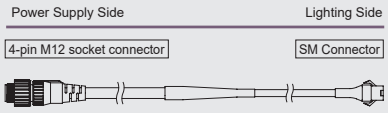
Guide to Custom Cable Manufacturing

Cables can be custom ordered in accordance with customer requests. Inquiries are welcomed.

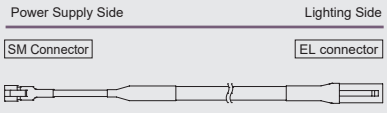
(n = Cable length)

● Conversion Cable

Example: FCB-n-M12-OC

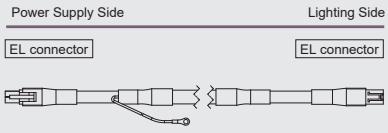


Example: FCB-n-EL2SM3
(Reverse connector specifications type: FCB-n-EL2-SM3-OC)

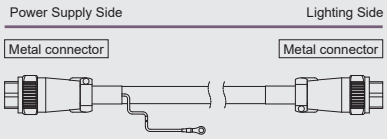


● Cable with Ground Terminal

Example: FCB-n-PF-2.0SQ-SH
(Power Flash Light PF Series Dedicated Cable)



Example: FRCB-n-2SQ-SH-ME7
(Line Sensor Light Dedicated Cable)

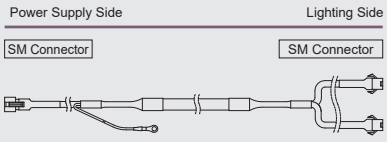


● Voltage Drop Countermeasure Cable

Example: FRCB-n-1.25SQ
(Robot Cable 1.25sq)



Example: FRCB-W-n-1.25SQ-SH
(2-Branch Robot Cable 1.25sq with Ground Terminal)



As the length of the cable gets longer, the brightness decreases due to voltage drops, potentially causing the dimmer to become unstable.
In such cases, a wire with a thicker core is needed to reduce the effect of voltage drops.
If you are having issues, we are happy to consult on a solution to suit your usage conditions.

Caution	The light intensity might be unstable if you join cables.

Introduction to CCS Custom Ordered Products

Presenting examples of custom ordered Light Units manufactured by CCS in the past.
We can manufacture a wide variety of Light Units to meet your needs.

High-Power Dome Light Units for Line Scan Sensors (Tunnel Dome Light Units)

HLDN series



Manufactured Products

- HLDN-200SW
- HLDN-300SW
- HLDN-500SW
- HLDN-600SW
- HLDN-700SW
- HLDN-800SW

HLDN-300SW-TN55AREL

Achieves higher output through the use of compressed air cooling. The light emitting section is configured with white SMD LEDs in a high-density layout.

LDFTP series





LDFTP300X50SWACLMSL4

Using two Flat Lights provided with high output and high uniformity to illuminate the workpiece at the optimum angle from both lateral sides.

Delivers a long, stable dome effect and uniform diffused light irradiation with high output.

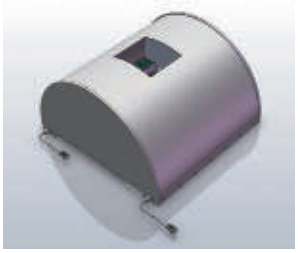
Custom Ordered Product Page ▶ P.252

High-Power Dome Light Units for Area Scan Sensors (Tunnel Dome Light Units)

HLDN series

Manufactured Products

- HLDN-400RD
- HLDN-600SW
- HLDN-500X400SW



HLDN-300RD

Designed with a square opening for the camera.
The light emitting section is configured with red bar lights.



HLDN-500SW

Designed with two square openings for the cameras.
The light emitting section is configured with white SMD LEDs in a high-density layout.



HLDN-516X408SW

Designed with two round openings for the cameras.
The light emitting section is configured with white COB LEDs in a high-density layout.

Optimized design for multiple fields of view suited to area scan sensor arrays. Ensures uniform diffused light using the dome effect.

Custom Ordered Product Page ▶ P.252

Multi-Wavelength Split Emission Light Units

DV series



HPR2-150FC-DV04

The four segments can be individually controlled. Delivers high-output diffused light irradiation with full-color (RGB) light emissions.

HPR2 Custom Ordered Base Light Unit Page ▶ P.45

Manufactured Products

4-Segment Types

- HPR2-50SW-DV04
- HPR2-50FC-DV04 (full color type)
- HPR2-75SW-DV04
- HPR2-150SW-DV04

8-Segment Types

- HPR2-100SW-DV08
- HPR2-150SW-DV08
- HPR2-100RDBL-DV08 (Mixed two-color type)

12-Segment Types

- LDR2-120SW2-DV12

16-Segment Types

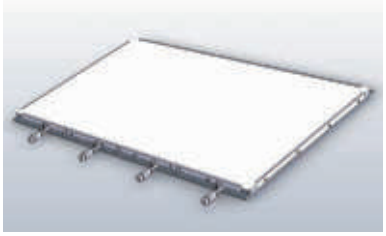
- LDR2-88RD2-DV16

LDR2 Custom Ordered Base Light Unit Page ▶ P.31

Efficiently designed to set the light emission area and switch the light emission color.
Delivers advanced Light Unit control in combination with a Control Unit.

Large Flat Light Units

LDF-TP series



LDF-TP-1100X600SW

Achieves higher output through the use of compressed air cooling.
The light emitting section is configured with white SMD LEDs in a high-density layout.

Manufactured Products

- LDF-TP-1100X600SW
- LDF-TP-2000X1500SW

Ensures uniformity in the effective range with high output.
Implements optimal measures for heat dissipation.

TH2 Standard Flat Light Unit Page ▶ P.79

Coaxial Light Units (Changeable Irradiation Port Type)

LFV3-RA series

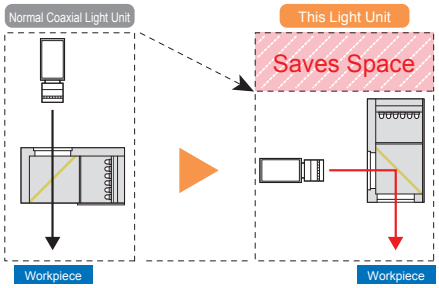


LFV3-35SW-RA24

Changes the position of the irradiation port of the normal Coaxial Light Unit by 90°.
Optimized products for use in test subject conveyance systems and environments with constrained camera installation conditions.

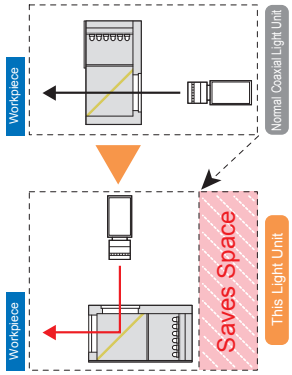
Note: Captured images will be mirrored.

1. Reduces vertical installation space.



When compared to a normal Coaxial Light Unit, this Light Unit helps reduce vertical installation space.

2. Reduces horizontal installation space.



When compared to a normal Coaxial Light Unit, this Light Unit helps reduce horizontal installation space.

LFV3 Custom Ordered Base Light Unit Page ▶ P.121

CCS offers optimal Light Unit designs for the installation conditions of cameras and Light Units.

Introduction to CCS Custom Ordered Products

Presenting examples of custom ordered Light Units manufactured by CCS in the past.
We can manufacture a wide variety of Light Units to meet your needs.

Infrared Light Units (1,200 nm / 1,450 nm / 1,550 nm)

IR series



Bar type

Uses 1,200, 1,450, and 1,550 nm LEDs.

LDL2 Custom Ordered Base Light Unit Page ▶ P.59



Dome type

Uses 1,200 nm and 1,450 nm LEDs.

HPD2 Custom Ordered Base Light Unit Page ▶ P.99

CCS offers Light Units that feature optimal wavelength regions to fully utilize the capabilities of InGaAs cameras.

Manufactured Products

Bar Light Units

- LDL-74X27IR1200
- LDL-74X27IR1450
- LDL-74X27IR1550

Dome Light Units

- HPD-100IR1450
- HPD-150IR1450
- HPD-400IR1450

Full Color (RGB) Light Units

HPR2 Standard Full Color Light Units Product Page ▶ P.45

HPD2 Standard Full Color Light Units Product Page ▶ P.99

FC series



LDL2-146X30FC-WD

Bar Light Unit with a light emission width of 30 mm. Wide and narrow types can be selected for the directional characteristics of the LEDs.

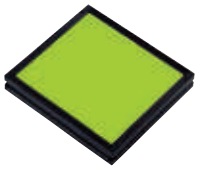
LDL2 Custom Ordered Base Light Unit Page ▶ P.59



LFV3-50FC

Full color Coaxial Light Unit.

LFV3 Custom Ordered Base Light Unit Page ▶ P.121



TH2-100X100FC

Full color Flat Light Unit.

TH2 Custom Ordered Base Light Unit Page ▶ P.79

Single Light Units that control red, blue, and green to deliver the desired color of irradiated light.

Manufactured Products

Low-Angle Square Light Units

- FPQ2-48FC
- FPQ2-75FC

FPQ3 Custom Ordered Base Light Unit Page ▶ P.55

Coaxial Light Units

- LFV3-CP-18FC
- LFV3-34FC(A)
- LFV3-35FC(A)
- LFV3-50FC(A)
- LFV3-70FC(A)
- LFV3-100FC(A)
- LFV3-130FC(A)
- LFV3-200FC(A)
- LFV3-50X100FC(A)

Special Wavelength Light Units (Yellow Light Units / Orange Light Units)

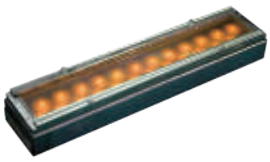
OR series



LDR2-74-OR-LA

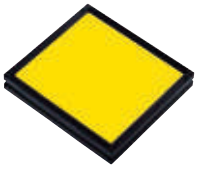
Low-angle Ring Light Unit that uses LEDs with a peak emission wavelength of 590 nm.

LDR2-LA Custom Ordered Base Light Unit Page ▶ P.35



MLDL-325X70OR

Bar Light Unit in a IP67-rated waterproof specification.



TH2-100X100OR

Yellow Flat Light Unit.

TH2 Custom Ordered Base Light Unit Page ▶ P.79

CCS also offers optimized products that use LEDs of specific wavelengths for special test applications.

Manufactured Products

Ring Light Units

- LDR2-70-OR

LDR2 Custom Ordered Base Light Unit Page ▶ P.31

Bar Light Units

- LDL2-74X30-OR

LDL2 Custom Ordered Base Light Unit Page ▶ P.59

Spot Lights

- HLV2-22-OR590-3W

HLV2 Custom Ordered Base Light Unit Page ▶ P.189

Line Lights

- LNSP-1000-OR

LNSP Custom Ordered Base Light Unit Page ▶ P.221

12-V Light Units

Ring Lights
LDR2 series

LDR2 Custom Ordered Base Light Unit Page ▶ P.31



Low-Angle Ring Lights
LDR2-LA series

LDR2-LA Custom Ordered Base Light Unit Page ▶ P.35



Ring Lights for Diffused Lighting
HPR2 series

HPR2 Custom Ordered Base Light Unit Page ▶ P.45



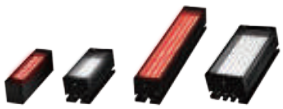
Low-Angle Square Lights
FPQ2 series

FPQ3 Custom Ordered Base Light Unit Page ▶ P.55



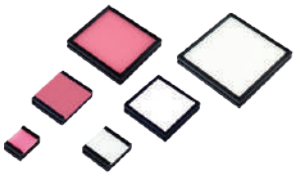
Bar Lights
LDL2 series

LDL2 Custom Ordered Base Light Unit Page ▶ P.59



Flat Lights
TH series

TH2 Custom Ordered Base Light Unit Page ▶ P.79



Coaxial Lights
LFV3 series

LFV3 Custom Ordered Base Light Unit Page ▶ P.121



Lineup

Series name	Model name	LED color	Power consumption
LDR2 (8 models)	LDR2-32RD2-12V	Red	1.6 W
	LDR2-32SW2-12V	White	1.9 W
	LDR2-42RD2-12V	Red	2.1 W
	LDR2-42SW2-12V	White	2.7 W
	LDR2-50RD2-12V	Red	3.8 W
	LDR2-50SW2-12V	White	3.8 W
	LDR2-70RD2-12V	Red	6.1 W
	LDR2-70SW2-12V	White	7.6 W
LDR2-LA (6 models)	LDR2-74RD2-LA-12V	Red	4.6 W
	LDR2-74SW2-LA-12V	White	5.7 W
	LDR2-100RD2-LA-12V	Red	9.1 W
	LDR2-100SW2-LA-12V	White	12 W
	LDR2-132RD2-LA-12V	Red	13 W
	LDR2-132SW2-LA-12V	White	16 W
HPR2 (4 models)	HPR2-100RD-12V	Red	20 W
	HPR2-100SW-12V	White	23 W
	HPR2-150RD-12V	Red	28 W
	HPR2-150SW-12V	White	27 W
FPQ2 (4 models)	FPQ2-32RD-12V	Red	3.8 W
	FPQ2-32SW-12V	White	3.6 W
	FPQ2-48RD-12V	Red	5.8 W
	FPQ2-48SW-12V	White	7.6 W
LDL2 (14 models)	LDL2-33X8RD-12V	Red	1.0 W
	LDL2-33X8SW2-12V	White	2.6 W
	LDL2-41X16RD-12V	Red	1.9 W
	LDL2-41X16SW2-12V	White	3.8 W
	LDL2-41X16RD-WD-12V	Red	1.9 W
	LDL2-41X16SW2-WD-12V	White	3.8 W

Series name	Model name	LED color	Power consumption
LDL2 (14 models)	LDL2-74X30RD-12V	Red	5.7 W
	LDL2-74X30SW2-12V	White	12 W
	LDL2-74X30RD-WD-12V	Red	5.7 W
	LDL2-74X30SW2-WD-12V	White	12 W
	LDL2-119X16RD-12V	Red	5.7 W
	LDL2-119X16SW2-12V	White	12 W
	LDL2-119X16RD-WD-12V	Red	5.7 W
	LDL2-119X16SW2-WD12V	White	12 W
TH/TH2 (12 models)	TH-27X27RD-12V	Red	1.9 W
	TH2-27X27SW-12V	White	2.9 W
	TH-43X35RD-12V	Red	4.5 W
	TH2-43X35SW-12V	White	4.8 W
	TH-51X51RD-12V	Red	5.7 W
	TH2-51X51SW-12V	White	8.2 W
	TH-63X60RD-12V	Red	9.1 W
	TH2-63X60SW-12V	White	9.7 W
	TH-83X75RD-12V	Red	11 W
	TH2-83X75SW-12V	White	16 W
	TH-100X100RD-12V	Red	21 W
	TH2-100X100SW-12V	White	25 W
LFV3 (6 models)	LFV3-CP-18RD-12V	Red	3.3 W
	LFV3-CP-18SW-12V	White	3.6 W
	LFV3-35RD-12V(A)	Red	4.1 W
	LFV3-35SW-12V(A)	White	3.7 W
	LFV3-50RD-12V(A)	Red	9.1 W
	LFV3-50SW-12V(A)	White	11 W

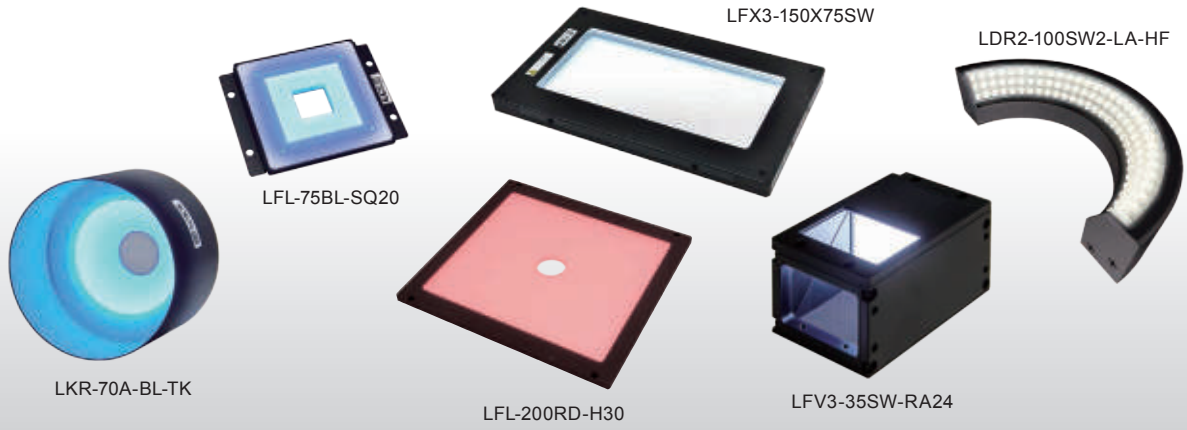
External dimensions, weight, and options (diffusion plates and polarizing plates) are the same as 24-V Light Units.
Use 12-V extension cables (CB and RCB series).

CCS offers Light Units optimized for various usage environments.

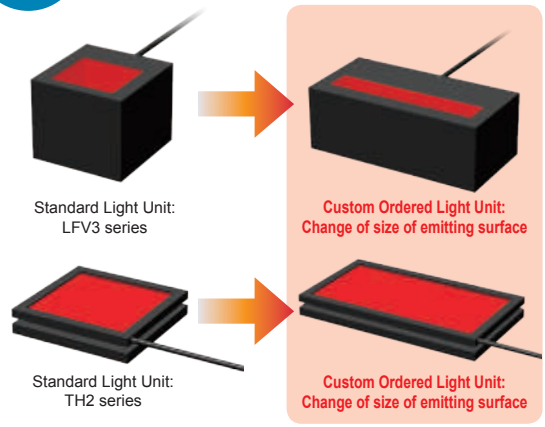
Recommended Custom Ordered Products

Size Change | Change to Illuminating Angle | Shape Change | Increased Brightness

Please feel free to consult with us about anything else.



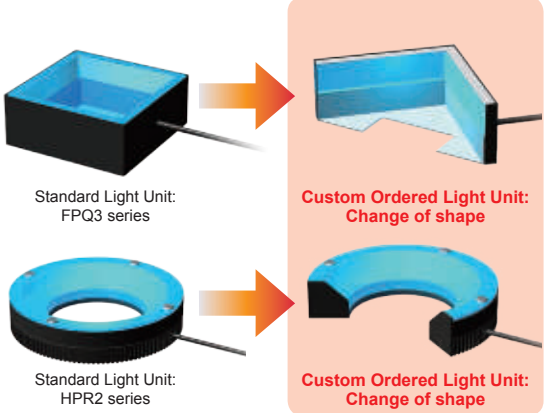
CASE.1 With a standard product, there are no Light Units with a length or thickness that is suitable for the workpiece or device



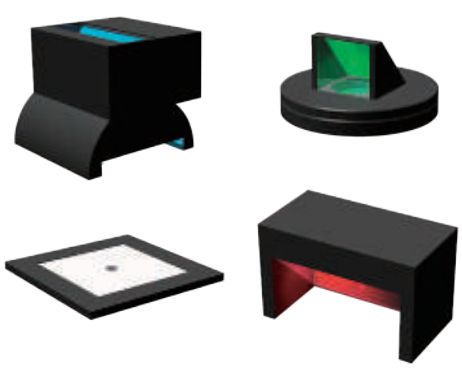
CASE.2 When the size is good but you want to illuminate the workpiece at a different angle



CASE.3 With a standard product, light is irradiated up to the unnecessary part and contrast drops



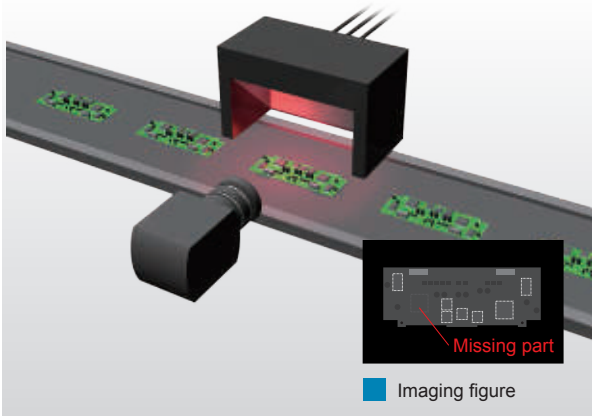
CASE.4 Examples of other custom ordered items



We Suggest Light Units That Are Optimal for Your Inspection Procedures and Environment

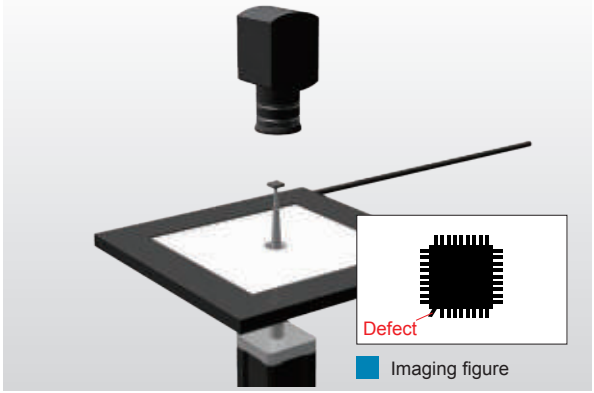
Light Units for External Inspection of Electronic Parts on Circuit Boards

The Light Unit design is optimized to match your desired camera position or split imaging. Changing the position of the irradiation port of Coaxial Lights and distributed control of the emitting surface are achieved.



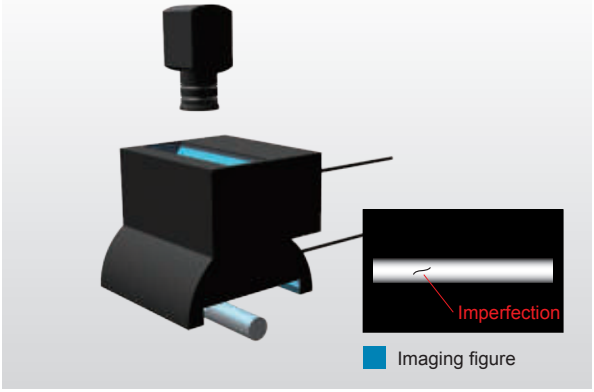
Light Units for External Inspection of Minute Electronic Parts

Creating a hole in the center of a Flat Light provides a passage for the operating section of a suction nozzle. This can be used for external inspection of electronic parts held by suction at the tip.



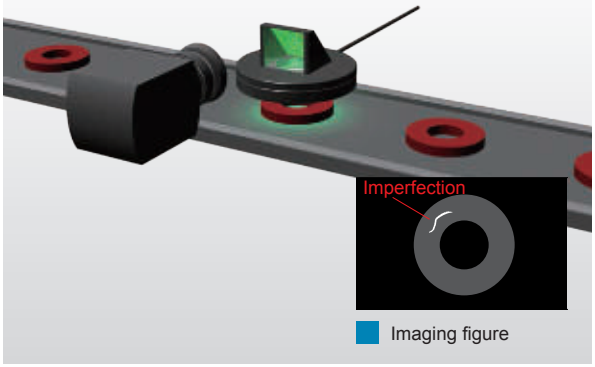
Light Units for Damage Inspection of Metal Rods

You can combine Coaxial and Dome Lights to create an optimal configuration for imaging using line sensor cameras. They can be used for damage inspection of metal rods with glossy surfaces.



Light Units for External Inspection of Metal Parts

Light Unit design is optimized to match your camera installation requirements.
Allows for the combining of a mirror with a low-angle Ring Light.



Examples of Items That Can Be Custom Ordered

Light Unit

- Size
- Width and thickness
- Brightness
- Illuminating mechanism
- Wavelength and color temperature
- Mounting position and securing method
- Cable length
- Connector format

Other products

- Changes in specifications of Control Unit
- Changes in cable specifications
- Optional products can also be custom ordered.

Please feel free to inquire about anything else that is not mentioned above.

Flow of Custom Orders

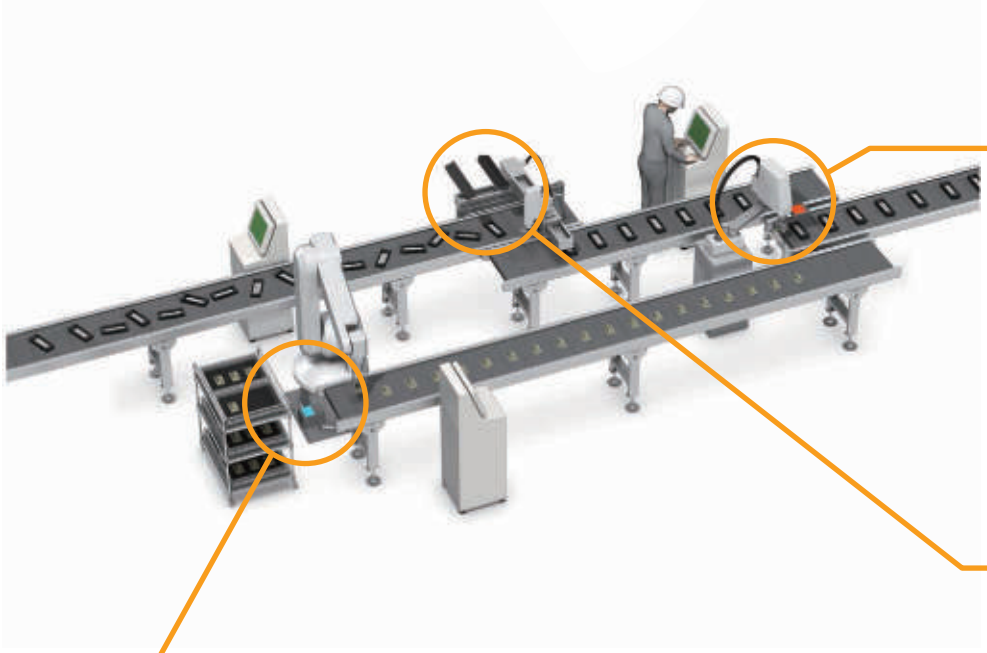
Inquiry ▶ Specifications study (Verification of required specifications; Verification of product realization; Proposal of approximate costs) ▶ Design procedures (Specifications fixed; Drawing creation) ▶ Proposal of specifications and costs (Dimensions; Specifications; Estimate) ▶ Order ▶ Production, inspection and shipping (Production procedures; Inspection performed; Shipping procedures) ▶ Delivery

Optimum LED Light Units for Robot Vision Systems



Conceptual image

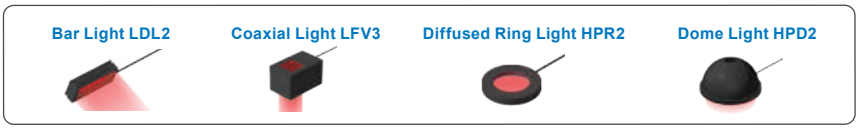
CCS Light Units for Robot Vision Can Be Used in a Variety of Situations.

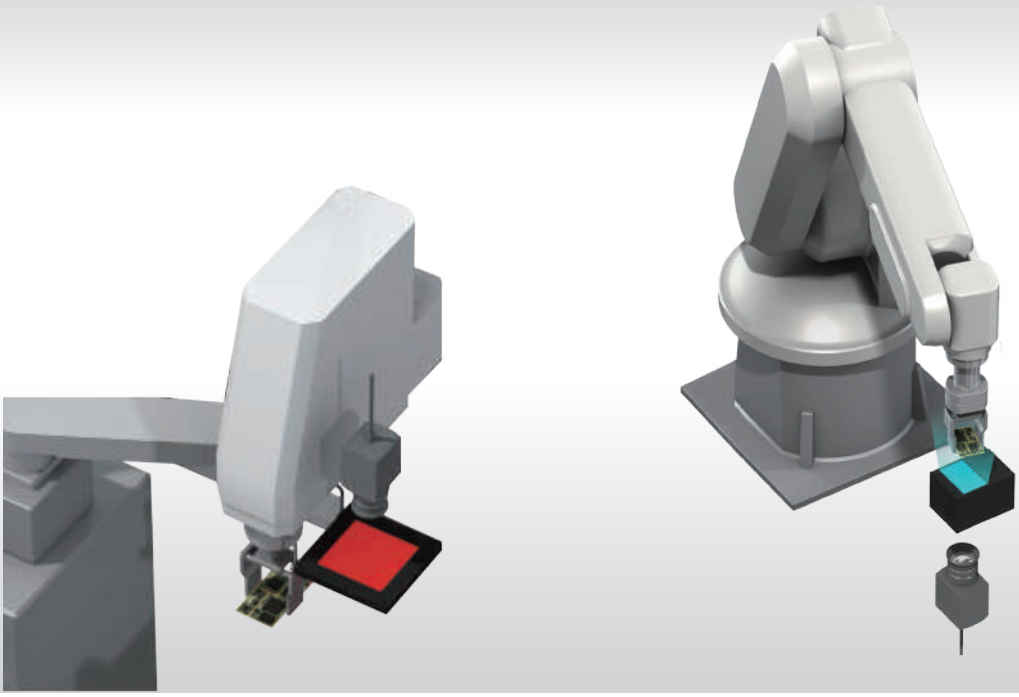


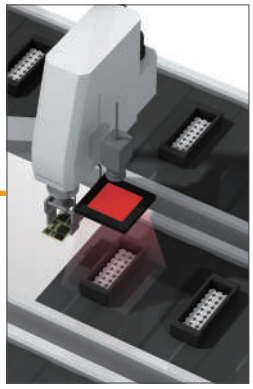


Line-Mounted Light Units

Light Units optimized to the type of inspection are indispensable for line-mounted cameras used to inspect the appearance of picked up workpieces.
We offer optimum Light Units based on our knowledge of lighting cultivated in visual inspections.

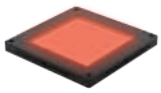






Hand-Eye Light Units

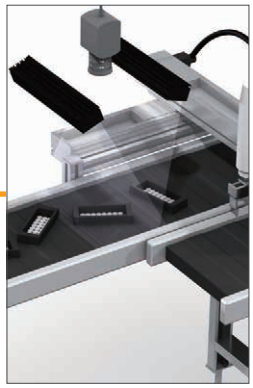
Compact, light-weight Light Units that will not interfere with operation are available for hand-eye systems with built-in cameras on robot hands.



Flat Dome Light Unit LFX3
13 mm thick Light Units with a dome-light effect at short distances and a coaxial-light effect at long distances from workpieces. Works well for imaging glossy workpieces.



Diffused Ring Light HPR2
General-purpose Ring Lights that achieve brightness and ease-of-use. Easy-to-use diffused Light Units for a variety of applications, from front/back determination and reading symbols to visual inspections.



Top-Mounted Light Units

We offer Light Units for top-mounted cameras frequently used with pick-and-place machines that can brightly illuminate the picking area, even when mounted at the same height as the camera.



Large Bar Light HLDL2
Bar Lights that can brightly illuminate a wide area at a distance.
Optimal for lines on which robots work in a wide area and lines with a fast conveyance speed.



Long-Distance Light Unit LDLB
High-intensity, long-distance Light Units that can illuminate workpieces at 2 m. Dust-proof IP67 models also available.

Optimized Solutions with Custom Light Units

- Designs for screw fall prevention
- Use robot cables with superior flexibility and durability
- We can custom build Light Units for your needs.
  (Emitting surface size, emission wavelength, brightness, illuminating mechanism, cable length, connector shape, mounting method, and other specifications.)

HPR2-75SW-QPRCB3



- Measures implemented to prevent screws from falling
- Threaded cover
- Robot cable 3 m

HPR2-75SW-QPLMRCB3



- Measures implemented to prevent screws from falling
- Threaded cover
- Robot cable 3 m

Custom Ordered Light Units

We can manufacture custom Light Units to meet your needs. We can also offer optimum Light Units from examples of custom ordered Light Units we have manufactured in the past. Contact your CCS sales representative for more information.

Contact your CCS sales representative for product specifications and other detailed information.

High-Output UV-LED Lights

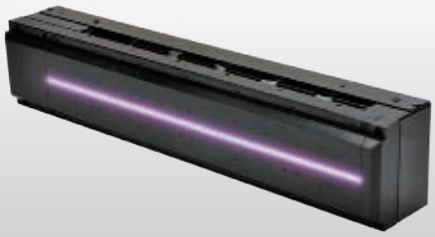


Example of line-type product





Example of area-type product



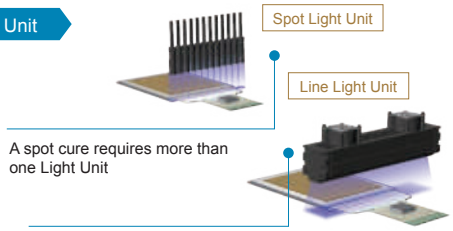


Example of spot-type product

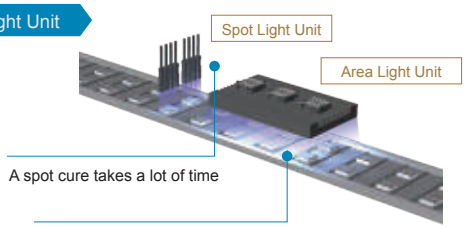
New Solutions Provided by Area Cures (Wide Range)

You can use area and line lights to efficiently illuminate wide-range areas that are difficult to illuminate using spot lights.
The area cure serves to reduce man-hours as well as the number of Light Unit.

Line Light Unit



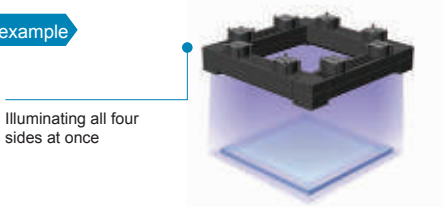
Area Light Unit

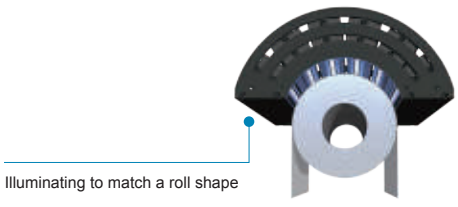


Custom Orders

Based on the technology we have accumulated producing Light Units for image processing, we can provide high-output UV-LED Lights that meet a wide variety of requirements.
To meet those requirements, we have our standard line and area type lights, and can provide any other shape or format by custom order.

Illuminating example





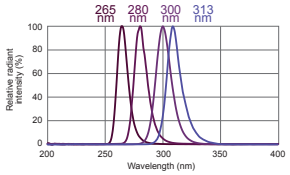
Range Covered by CCS's UV-LED Lights

Various peak wavelength fitting your needs are available. Mixed wavelengths are also available.

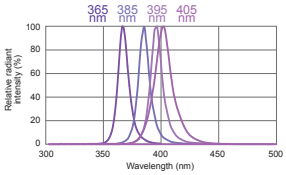


Wavelength ranges from UV-C to UV-A are available.

Deep UV type



UV type



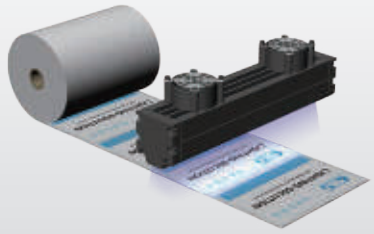
Examples of Use of Ultraviolet Curing

You can use area and line lights to efficiently illuminate wide-range areas that are difficult to illuminate using spot lights.
The area cure serves to reduce man-hours as well as the number of Light Unit.

Curing of Label and Sticker Ink

UV ink curing

Line type

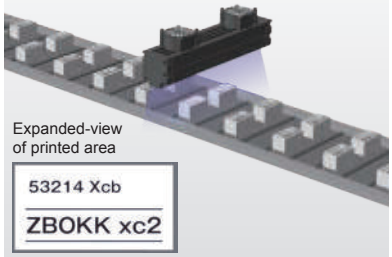


Labels and stickers

Curing of Electronic Parts Printing

Printing ink drying

Line type

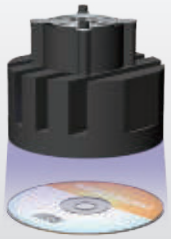


Electronic part (relays)

Curing of Label and Sticker Ink

UV ink curing and surface coating

Area type

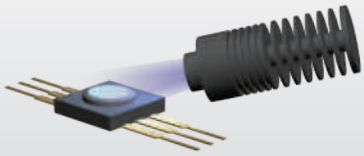


CD and DVD discs

Camera Lens Adhering

Curing adhesive

Spot type



Lens units

Adhering and Sealing Panels

Gluing together of panels

Line type

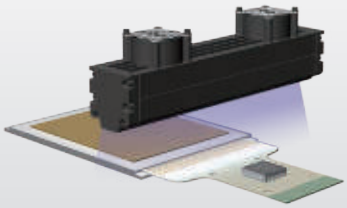


Panels

Electronic Parts Adhering

Adhering of liquid crystals and substrates

Line type



Liquid crystal substrates

Merits of Ultraviolet Irradiation Using LEDs

Reduce system size

Our LED systems consist only of LED Lights and Control Units, allowing you to create a compact system.

Reduced running costs

Due to the long service life of LEDs, lamp replacement costs and replacement labor times are reduced, as well as management man-hours.

Great responsiveness and stability

The excellent ON/OFF responsiveness of LED Lights allow for illuminating control that matches the given medium.

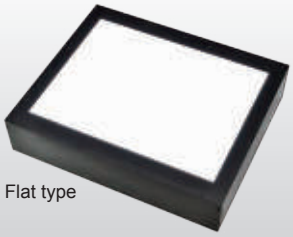
High Color Rendering (Natural-Light) LED Lights

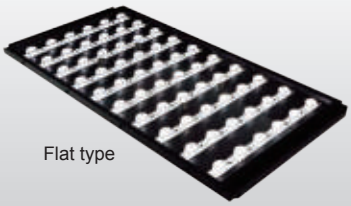
Color determining inspection | Colorimetric inspection | Color evaluation inspection and other applications


Ring type


Bar type


Dome type


Flat type


Flat type

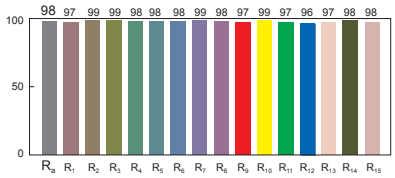

Spot type

What are High Color Rendering (Natural-light) LED Lights?

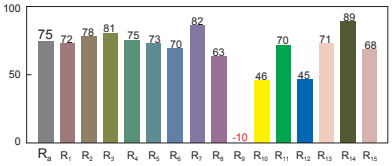
Achievement of the General Color Rendering Index at Ra 98

CCS's high color rendering (natural-light) LED Lights use our specially developed LEDs that reproduce natural-light colors that are close to standard light sources (such as sunlight or white light bulbs). At Ra 98, we have achieved the general color rendering index (CRI), demonstrating just how close the light is to sunlight. Additionally, even when the light color is changed, our unique technology makes it possible to maintain a CRI of Ra 95 or more. In addition to the high general CRI, CCS has also achieved high special CRI values, such as those for primary colors and flesh tones. Specifically for red (R_9), yellow (R_{10}) and blue (R_{12}), you can see colors rendered to a level that was not possible for previous light sources.*

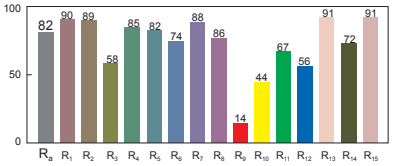
Example of high color rendering (natural-light) LED [correlated color temperature: 5,000 K]



Example of regular white LED [correlated color temperature: 5,000 K]



Example of three-wavelength fluorescent light (daylight) [Correlated color temperature: 5,000 K]

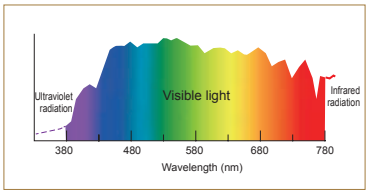


* A color rendering index is used to evaluate the ability to render each of 15 colors against a standard value of 100.
General color rendering index Ra: Avg. value of R_1 to R_8
Special color rendering index Ri: Individual evaluation of colors R_1 to R_{15} (evaluation gives precedence to R_9 to R_{15}). (According to JIS Z 8726, "Method of Specifying Colour Rendering Properties of Light Sources".)

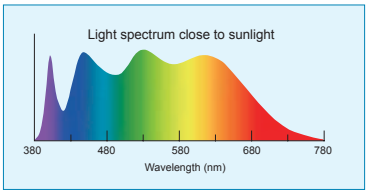
Light Spectrum Characteristics Close to Sunlight

High color rendering (natural-light) LEDs produce a smooth continuous light spectrum characteristics across all wavelengths that is similar to the light spectrum of sunlight. While normal white LEDs and fluorescent lights have some wavelength regions that are very strong or even missing, CCS's high color rendering LEDs cover almost the entire range of visible light.

Example of light spectrum of sunlight

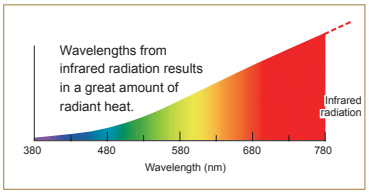


Example of light spectrum of high color rendering (natural-light) LEDs

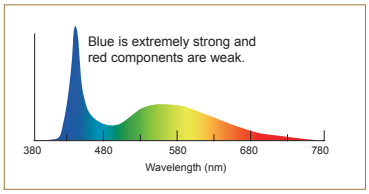


Light spectrum of other light sources

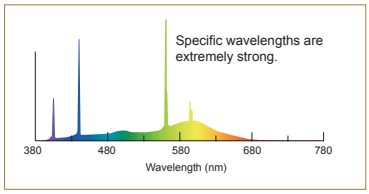
Example of light spectrum of halogen bulb



Example of light spectrum of regular white LED light



Example of light spectrum of three-wavelength fluorescent light



What are Color Rendering Properties?

"Color rendering" refers to how the way the colors of an object are affected when a light or other light source illuminates said object, and "color rendering properties" are the light source properties that determine how the colors of the object will appear.
In general, a "good light source of color rendering properties" refers to a light source that can faithfully reproduce the color tint when illuminated by a standard light source* with the same correlated color temperature.
In Japan, the color rendering indices (Ri and Ra) are defined according to JIS standards and the way objects appear are expressed numerically with a maximum of 100. The higher the value is, the closer the colors of the object appear to the natural colors.

* Refers to sunlight (CIE daylight), white light bulb light and similar types of light.

Comparison of color rendering properties



High color rendering (natural-light) LED Light



Standard white LED

Tuning the Correlated Color Temperature and Light Spectrum

With CCS's high color rendering (natural-light) LED Lights, the correlated color temperature and light spectrum can be tuned to fit customer needs. We can provide the ideal LED Lights with our completely integrated manufacturing system from LED device development through final product manufacturing.

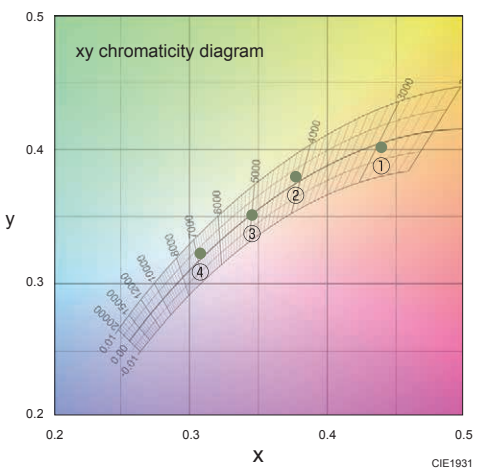
Tuning Examples

- Correlated color temperature close to illuminant A (2,856 K)
- Correlated color temperature close to illuminant D65 (6,504 K)
- Correlated color temperature of 5,500 K
- Correlated color temperature of 2,700 or 5,000 K
- Light spectrum with few green wavelength components
- Products to prevent variations in chromaticity

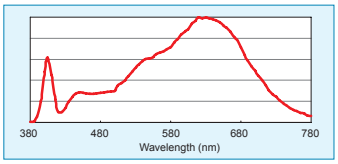
Our specially developed high color rendering (natural-light) LED devices



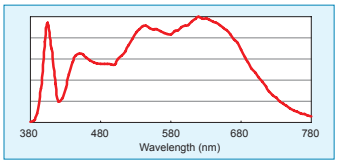
Example of tuning the correlated color temperature and light spectrum



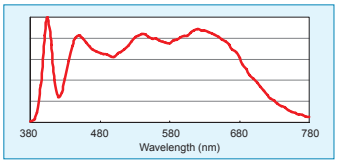
① Correlated color temperature: 2,800 K, General color rendering index: Ra 97



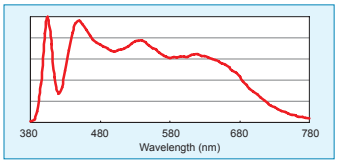
② Correlated color temperature: 4,000 K, General color rendering index: Ra 97



③ Correlated color temperature: 4,700 K, General color rendering index: Ra 97



④ Correlated color temperature: 6,500 K, General color rendering index: Ra 97



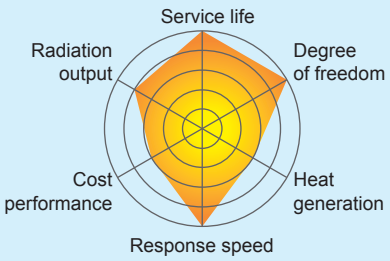
Y axis: Relative radiant intensity

LED Characteristics

- High degree of freedom in lighting design
- Long service life
- Fast response
- Selectable color
- Low total running cost

Comparison of Light Sources for Image Processing

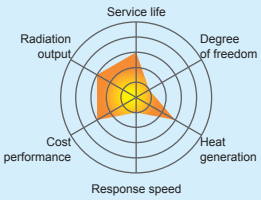
LED



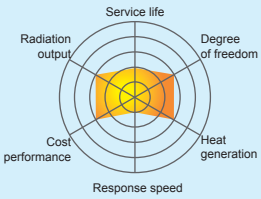
The characteristics of LED Lights are that they are compact, save energy, and have a long service life and a high degree of design freedom. Using LED Lights allows for lighting design that is optimal for various workpieces (samples).

Other main light sources

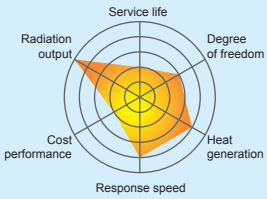
Fluorescent lamp



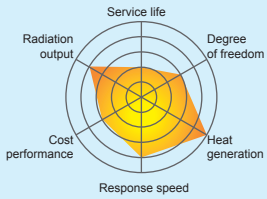
Halogen bulb



Xenon lamp



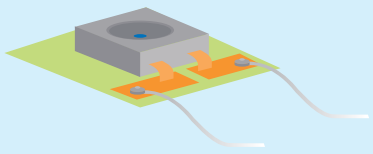
Metal halide



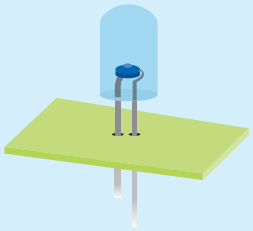
LED Type

Although the emitting principles are basically the same, they are available in the following types of shapes.

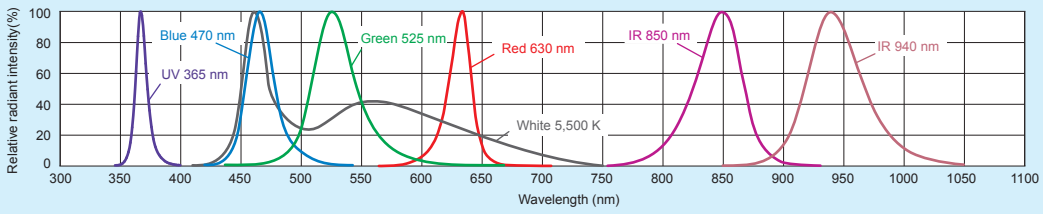
Surface-mounted (high-watt)



Cannonball shape (low-watt)



Light Spectrum (representative sample of the products in this catalog)



Skillful Use of LED Lights

The service life of LED Lights is shorter at high temperatures

Using LEDs at high temperatures for an extended period of time will cause them to deteriorate and the radiation output will decline. (The normal radiation output will not return even after they cool down.)

How to prevent LED deterioration and reduction in radiation output due to heat generated by LEDs

Avoid using at the maximum intensity

When used with a low Control Unit intensity value, the Light Unit is supplied with a lower amount of current, which therefore reduces the heat given off as well as LED deterioration. As a guideline, we recommend that you set the intensity value low at first and then turn it up gradually as the radiant output of the Light Unit decreases.

Turn on the light only when capturing images

LED Lights can withstand being turned on and off frequently. Turning on the Light Unit only when taking images using a strobe emitting or external signal input will reduce heat generation, provide a more stable radiation output, and increase the service life of the Light Unit.

Important Points of LED Lights

LED service life

Unlike a light bulb, an LED Light does not burn out suddenly but rather gradually deteriorates. Replace when captured images are dark and increasing the intensity value does not improve the conditions.

LED variations

LED Lights have different individual radiant quantities. There are also differences in the emitted color.

Wavelength shift

The LED emission spectrum varies due to ambient temperature and heat generated when energized. Temperature rising causes a shift towards the long-wavelength side.

Items You Must Check When Selecting a Light Unit

Workpiece (sample) shape, conditions, color and related items

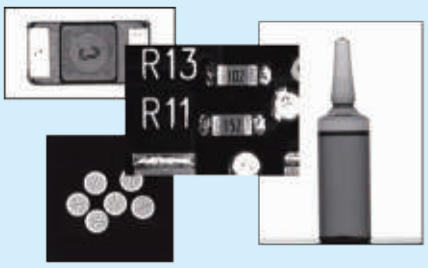


Applications

External inspection	Part count inspection
Character recognition	Liquid volume inspection
Foreign material inspection	Detection inspection
Dimension measurement	Code recognition

Etc.

Large field of view (resolution)



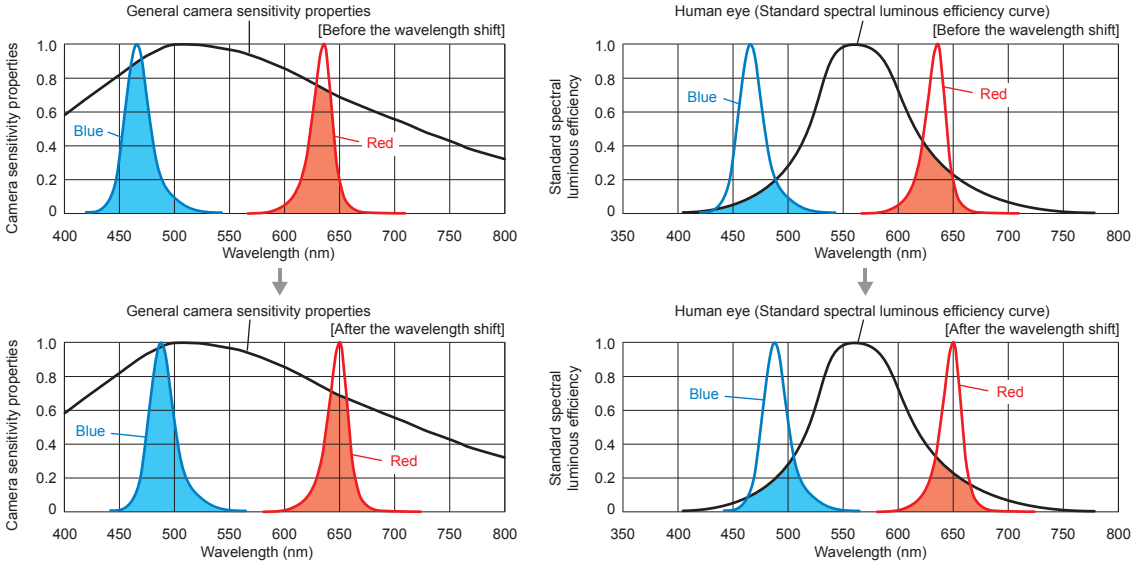
Installation conditions and ambient environment

- Production line conveyor speed
- Types of surrounding devices and similar items
- Separation of Light Units and workpiece



Changes in Brightness for Camera and the Human Eye

By only slightly shifting the wavelength of blue or red, the value for the human eye (illuminance and luminance) changes greatly.



Determining the Field of View of Coaxial Lighting

Figure 1 shows a cross-section of a Coaxial Light. Light from the LED is reflected using a half-mirror, so that the position of the emitting surface can be treated as if it were directly behind the mirror (See “Virtual emitting surface” in the figure). In this case, the distance from the emitting surface to the workpiece is LWD'.

The effective field of view of a Coaxial Light is determined by 1) the LWD (distance from the Light Unit to the workpiece) and 2) the WD (distance from the workpiece to the camera). Figure 2 shows how to determine the field of view "V" when the WD is held constant and the LWD (distance to the Light Unit) is varied. The following is an explanation of what the effective field of view will be when the virtual emitting surface is at positions A and B.

In the case of position A, if we assume that the workpiece is a reflecting surface, we can say that there is an emitting surface at A opposite to the workpiece (position A' of the LWD'a distance). Therefore, when the workpiece is viewed through the camera, it appears as if the emitting surface is at A', and thus the effective field of view is Va.

In the same way, in the case of B, the emitting surface is at B' and the effective field of view is Vb. Comparing Va to Vb, we find that Va, which has a shorter LWD, has a greater effective field of view. In this way, the effective field of view grows larger as the LWD becomes smaller.

What is the effective field of view?

For example, when reading characters engraved on a shiny piece of metal, if we assume that the virtual emitting surface is at position B, the effective field of view of Vb will be determined, in regards to the camera field of view V as shown in Figure 3 below, by the virtual emitting surface position B'. For this reason, only the letters CDEFG will be visible as dark letters against a light background, and the letters AB and HI, which appear dark against a dark background, will not be discernible. In this way, the effective field of view Vb is smaller than the field of view V.

Figure 1. Cross-section of Coaxial Light

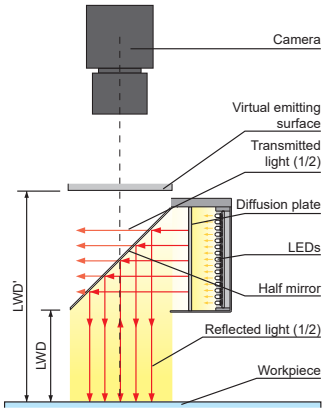


Figure 2. Determining the field of view by LWD

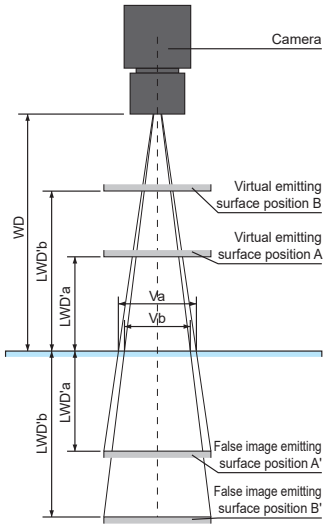
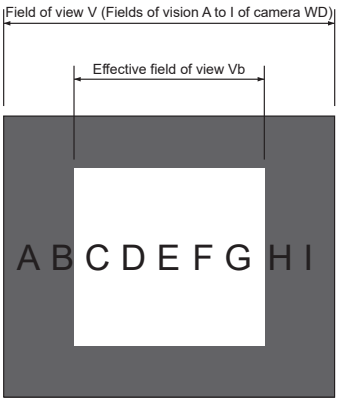


Figure 3. Field of view and effective field of view



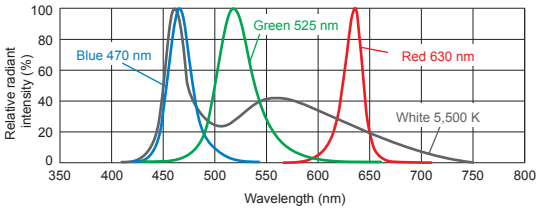
Objects Appear Differently Depending on the Emitted Color of a Light Unit

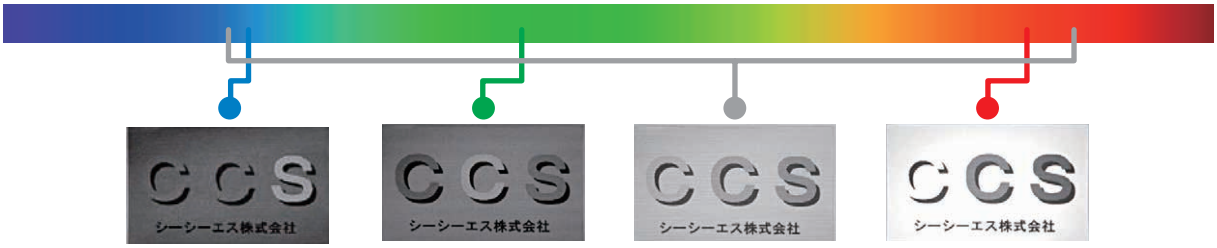
Imaged sample workpiece (printed card)



Background — Orange
Left-side C — Red
Center C — Green
S — Blue
Shadow and kana/kanji characters — Black

Light spectrum of colored LEDs (representative sample)







Imaging with Blue

When using blue lighting, parts that are the same color as the lighting become white and other colors become black.



Imaging with Green

Although, when using green lighting, there are some variations in color strength, green (same color as the lighting), as well as orange, yellow and blue all become white. The remaining red-colored area become black.



Imaging with White

As white lighting covers all three primary colors (red, blue and green), color brightness is even resulting in all colors appearing as gray with the same brightness. By comparing with other imaging, it is apparent that there is little strength of color. If using white lighting when imaging with a color camera or when imaging a multicolored workpiece, it is possible to perceive the particularities of the workpiece as their are no effects from color.



Imaging with Red

When using red lighting, parts that are the same color as the light (red) as well as orange and yellow become white and other colors (green and blue) become black. This is due to the property of the light expressed as, “Color reflects light of similar colors and absorbs light of complementary colors.”

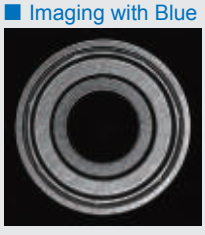
(Using a monochrome camera)

Example of workpieces which don't relate to the emitted color

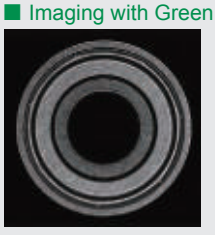
Imaged sample workpiece
Metal (bearing)



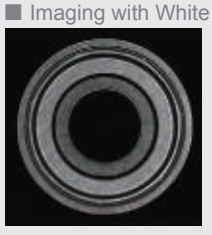
Imaging with Blue



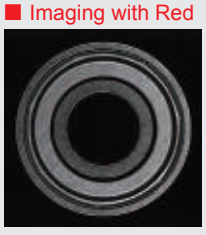
Imaging with Green



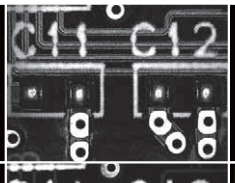
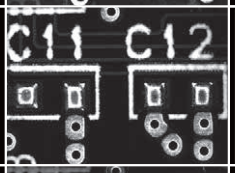
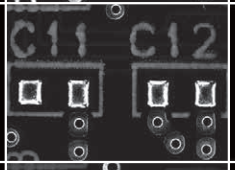
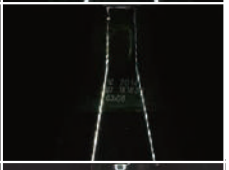
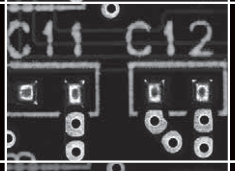
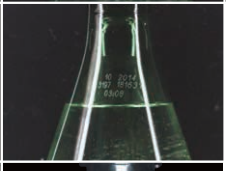
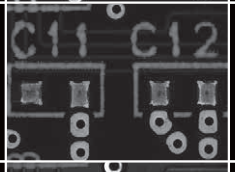
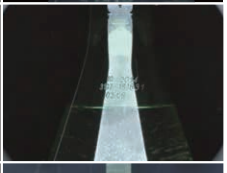
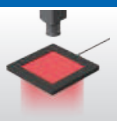
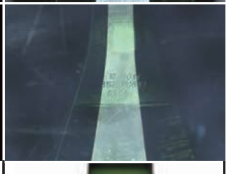
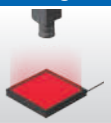
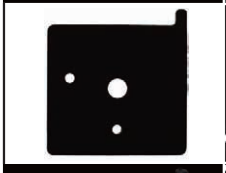
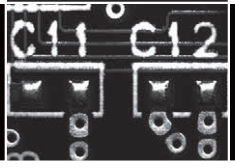
Imaging with White



Imaging with Red



Imaging Differs Depending on the Combination of the Light Unit and Workpiece

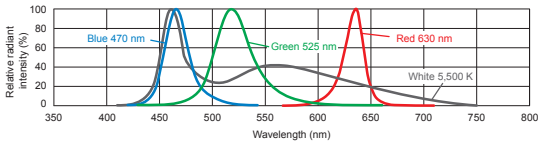
Light Unit in use \ Imaged workpiece	Metal part (automotive part)	Circuit board (electronic part)	Can (food)	PET bottle (drink)
Ring Lights				
 **LDR2** series ▼ P.31				
 **LDR2-LA** series ▼ P.35				
 **LDR-LA1** series ▼ P.39				
 High-angle **HPR2** series ▼ P.45				
 Low-angle **HPR2** series ▼ P.45				
Coaxial Lights				
 **LFV3** series ▼ P.121				
Dome Lights				
 **HPD2** series ▼ P. 99				
Flat Dome Lights				
 **LFX3** series ▼ P. 113				
Flat Lights				
 **TH2** series ▼ P. 79				
Bar Lights				
 **LDL2** series ▼ P.59				

There are great differences in imaging results depending on the shape of the Light Unit, emitted color, illuminating method and similar conditions.
Please inquire with CCS so that we can use our vast knowledge and experience to help you with imaging.

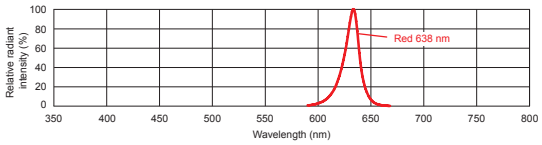
LED Properties: Spectral Distribution

(part not described on each product page)

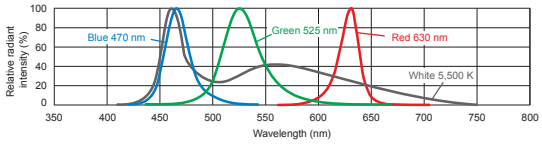
SQR series
Product Page ► P. 43



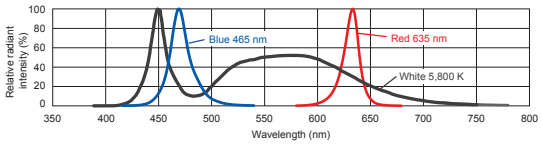
SQR-TP series
Product Page ► P. 44



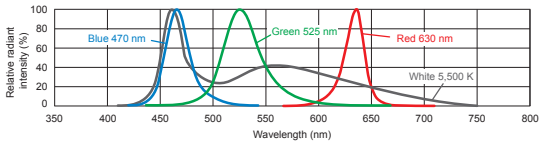
LFR series
Product Page ► P. 49



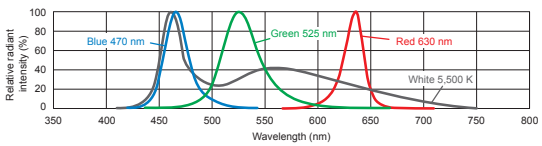
TH2 series
Product Page ▼ P. 79



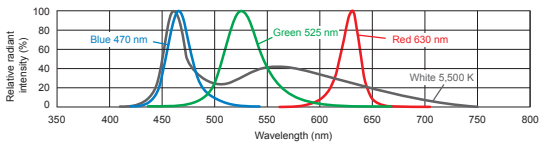
LFL series
Product Page ► P. 95



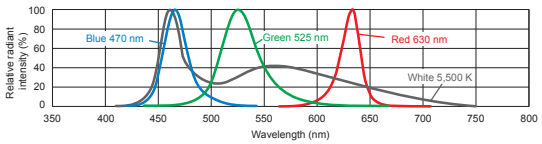
LAV series
Product Page ► P. 105



PDM series
Product Page ► P. 106

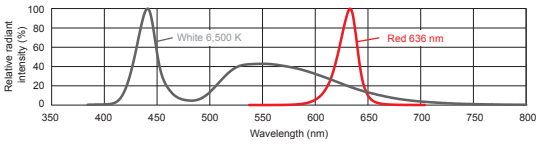


MSU series
Product Page ► P. 131



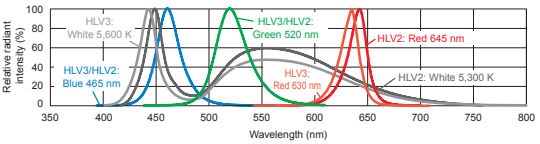
HPR-PF series
Product Page ▼ P. 143

HPD-PF series
Product Page ▼ P. 149



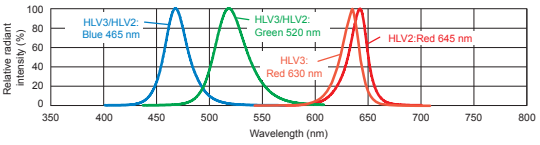
HLV3-22-4-NR series
Product Page ▼ P. 197

HLV2-22-NR-3W series
Product Page ▼ P. 199

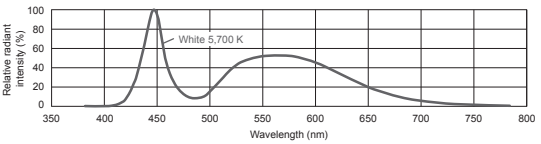


HLV3-3M-RGB-4
Product Page ▼ P. 198

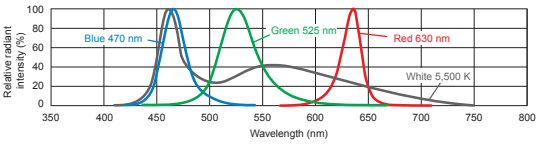
HLV2-3M-RGB-3W
Product Page ▼ P. 200



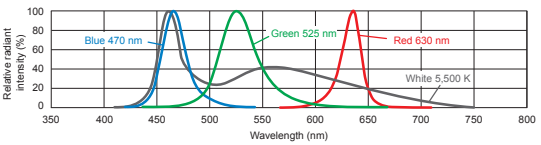
PFB3 series
Product Page ▼ P. 207



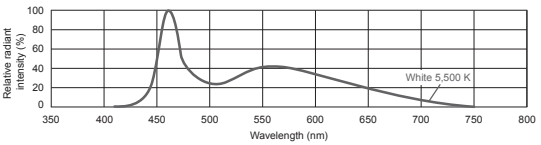
LV series
Product Page ► P. 193



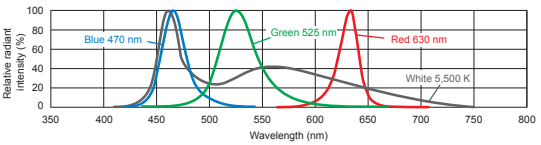
LN series
Product Page ► P. 231



LN-HK series
Product Page ► P. 232

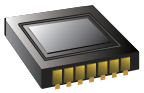
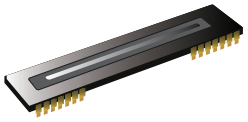


LNV series
Product Page ► P. 251



Basic Line Sensor Camera Knowledge

1 Differences between area sensor cameras and line sensor cameras

	Area sensor camera	Line sensor camera
Shape of imaging element		
Lens mount	C mount, F mount, etc.	F mount, M72 mount, etc.
Pixel expression	2M (1,600 × 1,200 pix)	8 K (8,192 pix)
Capture expression	Shutter speed 1/4,000 (250 µsec) 1/60 (16.67 msec)	Charge storage time 4,000 Hz (250 µsec) 1,000 Hz (1 msec)

Imaging methods for the area sensor camera and the line sensor camera (Conceptual image)



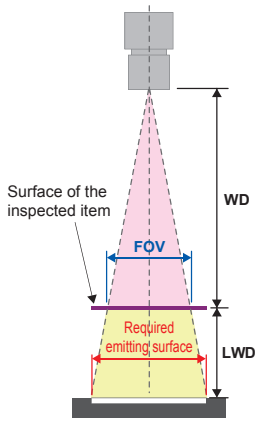
2 Pixel count for line cameras

Pixel count	Pixel size	Ratio of receiving surface area
2K (2,048)	14×14 µm	16
4K (4,096)	10×10 µm	8
8K (8,192)	7×7 µm	4
12K (12,228)	5×5 µm	2
16K (16,384)	3.5×3.5 µm	1

Note: Brightness varies based on the wavelength of the light source and the receiving sensitivity of the image sensor. Brightness does not necessarily correspond to the receiving surface area ratio.

3 How to find the required emitting surface when selecting a line sensor Light

Setup examples



Information required when selecting the length of your Light Unit

(1) WD (Working distance):
Distance from the camera to the surface of the inspected item

(2) LWD (Light working distance):
Distance from the Light Unit to the surface of the inspected item

(3) FOV (Field of vision)

Calculate the require emitting surface using the items above

Solve Use the trigonometric ratio and calculate using the following procedure.

WD : FOV = (WD + LWD) : Required emitting surface

$$\text{Required emitting surface} = \frac{\text{FOV} \times (\text{WD} + \text{LWD})}{\text{WD}}$$

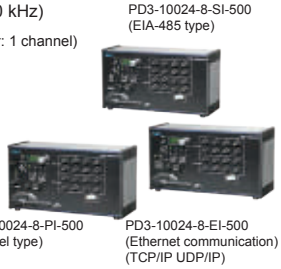
Note: The above is only valid for applications using direct light transmission or direct light reflection. The emitting surface must be uniform. Select a Light Unit longer than the emitting surface you calculated.

When selecting a Digital Control Unit, be sure to consider high-frequency types as well. A Control Unit with a PWM frequency of 500 kHz can be made for custom orders. Please contact your CCS sales representative for details.

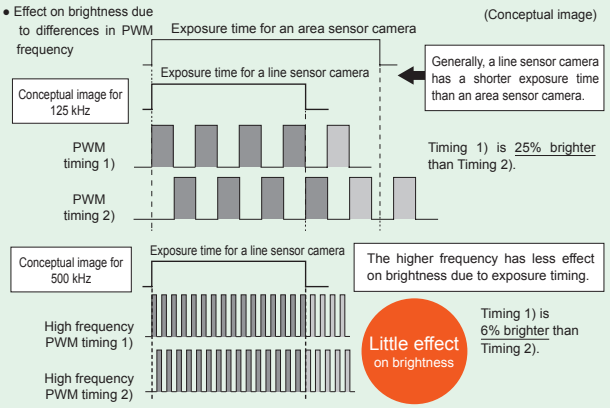
Introduction to the High-Frequency Digital Control Units (Custom Order)

PD3-10024-8 Series

- PWM intensity control (500 kHz)
- 95 W capacity (EL connector: 1 channel)
- AC input
- 3 types of external control
  - Parallel communication
  - Ethernet communication
  - EIA-485 communication



See the PD3 series (standard) product page ▸P.311



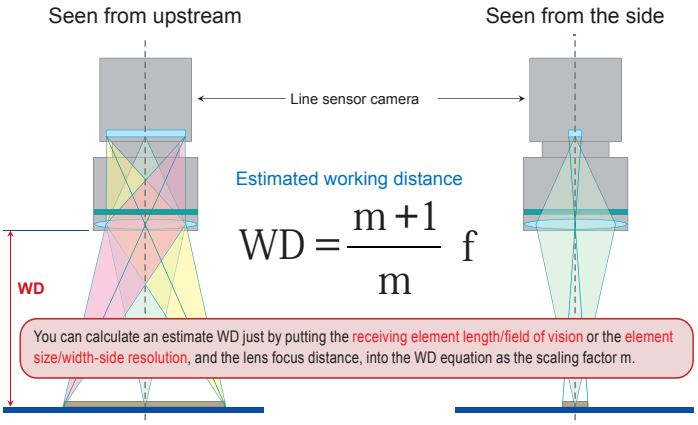
For details about PWM, refer to P.388 in the technical guide.

Setting Optical and Lighting Conditions

1 How to find the working distance (WD) (Reference value)

Optical system for the line sensor camera (Wide-side resolution)

It is necessary to calculate the working distance in advance.



Method for testing line sensor image input

When using a line sensor camera, calculate the working distance (WD), carrying speed, and scan rate before starting the test.

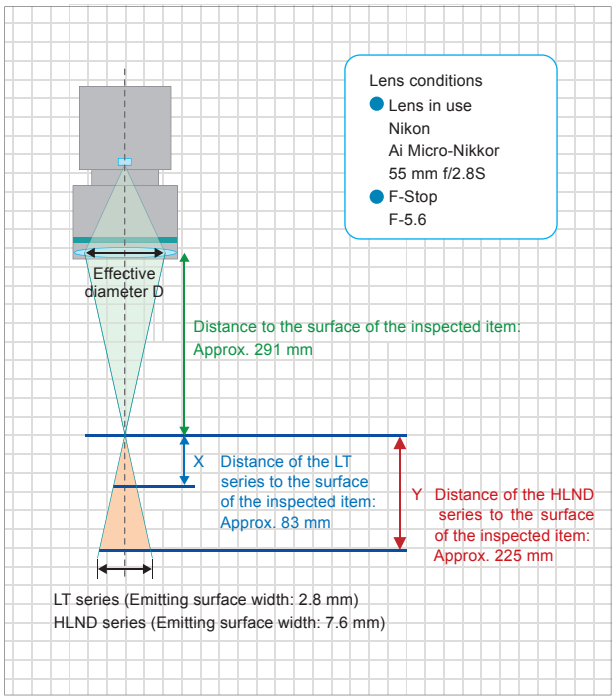
■ Example calculation with the following camera specs and conditions

Pixel size: 7 µm × 7 µm (Pixel count: 8,192)
The scan rate and working distance when performing an image input test with the following conditions for a lens where focus distance f = 55 mm is calculated as follows:

Cond. 1 Carrying speed: 200 mm/sec
Cond. 2 Resolution: 30 µm (Moving direction) × 30 µm (Lateral direction)

Scan rate = 0.03 mm ÷ 200 mm/sec = 0.00015 sec
= 150 µsec
Working distance = {(7/30 + 1) / (7/30)} × 55 mm
= Aprox. 291 mm

2 Relationship between the lens' effective diameter and the Light Unit's installation distance (Reference value)



■ What is the effective diameter for the lens in the conditions on the left?
D = Lens focus distance ÷ F-stop = 55 ÷ 5.6 = 9.8

■ What is the longest distance where the most efficient brightness can be achieved for the emitting width (short side) of each Light Unit?
⇒Find it using similar relationships

1) If using the LT series
9. 8: 291 = 2. 8 : X
X = (291 x 2. 8) ÷ 9. 8 = Approx. 83 mm

2) If using the HLND series
9. 8: 291 = 7. 6 : Y
Y = (291 x 7. 6) ÷ 9. 8 = Approx. 225 mm

For both the above Light Units, if the Light Unit is farther than the distance above, it will be darker, but if the Light Unit is closer than the distance above, there will be virtually no change in the brightness. (However, this assumes that the inspected item is limited to something transparent where the illuminated light can be observed directly. This cannot be applied to an inspected item with a possibility for diffusion.) Also, if the lens in use or the F-stop changes, various conditions such as the effective diameter and WD change. Therefore, please consider this only as a reference value under certain conditions. Furthermore, the camera's pixel size is a large factor regarding brightness.

3 Comparison of the images for the area sensor camera and the line sensor camera

■ Imaging sample (Metal bar)

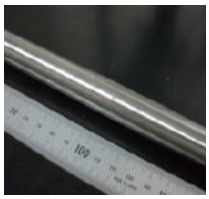
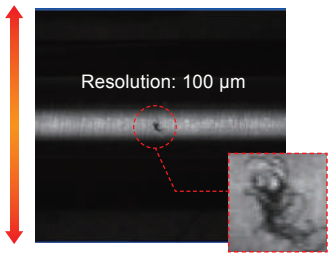


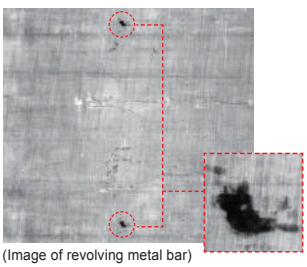
Image of scratches on a metal bar

- Sample size: Length 150 mm, Ø20 mm
- Resolution: 100 µm
- Pixels of the camera in use
  - Line camera: 8,192 pixels
  - Area camera: 300,000 pixels

■ Imaging with the area sensor camera



■ Imaging with the line sensor camera



(Image of revolving metal bar)

Maintenance and Inspection

LED Lights (Be careful not to touch the casing during or after use as the temperature is high and can cause burns.)

Use a dry soft cloth to wipe away any dust, grime or other foreign material from the emitting surface. If there is any oil or similar substance adhering, use a soft cloth that has been dampened with a neutral cleaner to wipe it off. Do not use thinner, benzene or any similar liquids. Doing so could result in discoloration and deformation.

Control Units for LED Lights (Always be sure that the Control Unit is turned off before cleaning.)

Use a dry soft cloth to wipe away any dust, grime or other foreign material from the electrodes. If there is any oil or similar substance adhering, use a soft cloth that has been dampened with a neutral cleaner to wipe it off. Do not use thinner, benzene or any similar liquids. Doing so could result in discoloration and deformation.

Options

Periodically inspect option parts such as polarizing and diffusion plates as all of these are consumables. Replace any parts that show discoloration or deformation during inspection. CCS recommends maintaining extra option parts on-hand in order to be prepared for replacement.

Always be sure to consult the “Instruction Guide” when performing maintenance and inspection.

Operating and Storage Environments

These products are LED Lights that are mainly used for image processing and industrial inspection. Do not use these for other purposes. Always be sure to obey the following precautions.

Absolutely never use under the following conditions.

- Use under conditions or in an environment not described in the “Instruction Guide”
- Use for nuclear power control, railroads, aircraft, automobiles, combustion devices, medical equipment, home entertainment equipment, safety equipment. or any similar devices or equipment
- Use where it is thought that human life or property will be greatly affected, especially application where safety is required

Install in a location that satisfies the following conditions. An improper installation location can result in product malfunction.

- Low vibration and stable
- Water, oil, liquid, chemicals, steam or similar substances cannot contact or otherwise affect the product*
- Low level of dust and good ventilation
- No corrosive or flammable gases
- No sudden changes in temperature
- Far away from water lines, water heaters, humidifiers, air conditioners, heaters and similar equipment

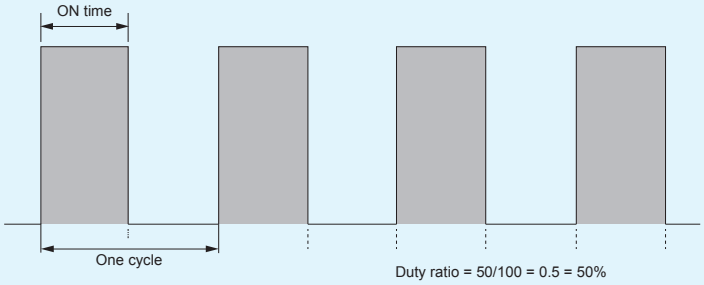
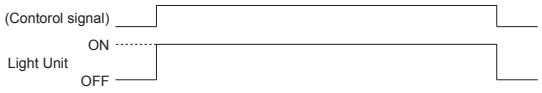
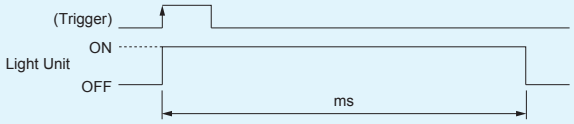
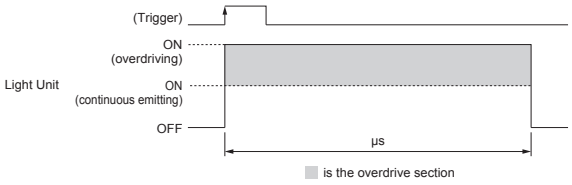
* Install IP-compatible products in a range that permits performance.

Use in the following environments.
An improper operating environment can result in product malfunction.

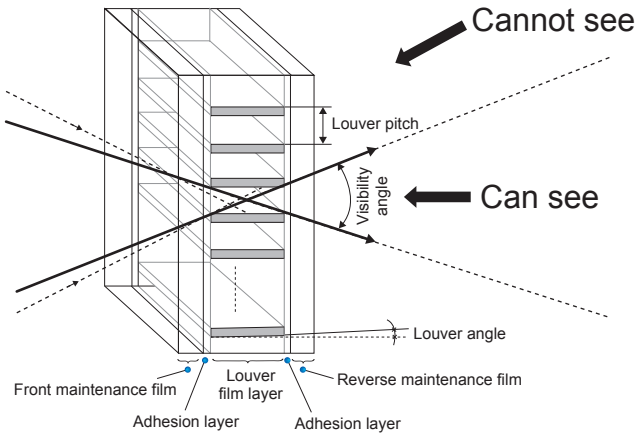
- Operating temperature: 0 to 40°C, Humidity: 20% to 85%RH (with no condensation)
- Storage temperature: -20 to 60°C, Humidity: 20% to 85%RH (with no condensation)

Operating and storage environments of products that are different from these are described on the corresponding product page.

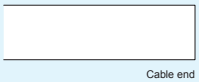
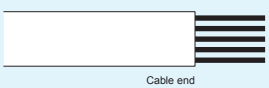
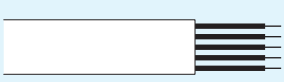
Explanation of Terminology

No.	Classification	Term	Explanation of Terminology
1	Control Unit	Digital control (Duty control)	This is a method of intensity control of the PD series. Intensity control is performed by varying the duty of the pulse on (proportion of time it is on (lit up) during a single pulse). With 8-bit control, you can perform 256-step linear intensity control. If using a high-speed shutter, you must be careful of frequency interference.
2	Control Unit	PWM control	PWM: An abbreviation of pulse width modulation, one pulse modulation method in which the period and amplitude are maintained at a constant, and only the pulse width is changed. Duty ratio: Expresses the amount of time a pulse wave is ON during a cycle as a ratio. Relational expression: Duty ratio = ON time/Period Products with this mark at the top of their product introduction page can be customized for a PWM frequency of 500 kHz. 
3	Control Unit	External ON/OFF control (ON/OFF emitting)	 A method for emitting light for the time during which the ON signal of an ON/OFF signal is received.
4	Control Unit	Strobe emitting	"Strobe" refers to light being emitted for a specified amount of time in synchronization with a trigger signal. This additionally includes emitting light for a fixed amount of time after a delay has been applied for a fixed amount of time. 
5	Control Unit	Overdrive	“Overdrive” is a use method for emitting brighter light by applying a large current to an LED Light for a fixed amount of time. This current exceeds the current during continuous ON/OFF emitting. Products with this mark at the top of their product introduction page support overdrive. 

Explanation of Terminology

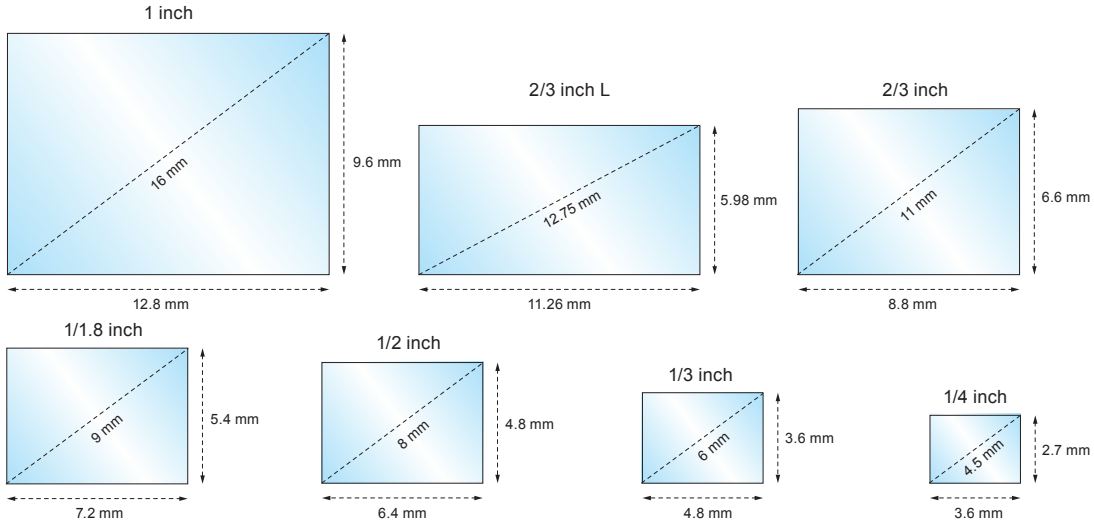
No.	Classification	Term	Explanation of Terminology
6	Options	Sharp-cut filter	This filter sharply cuts off light of wavelengths that are less (or more) than the specified wavelength. At CCS, we mainly use these attached to the lens.
7	Options	Light control film	This plastic film is arranged as a minute louver with extremely small gaps. It functions to reduce the diffusion of light in a specific direction and improves parallelism.  **Basic structure of light controller film (cross-section)**
8	Other	LWD	The distance from the tip of the light source to the surface of the workpiece (sample). Abbreviation for light-work-distance. Note: Although this term is used in our website, catalogs and other materials with the above meaning, care must be paid if it is used for other publications as it is not a term that is officially defined by standards or a similar document.

Supplement

Category	Description		
About the cable condition	Cut off on one end		The cable end has the wiring cut off. This does not have loose wires.
	Loose wires		This has loose wires. (Flying lead)
	Conductor exposure		This has loose wires with exposed conductors.

Camera Image Sensor Size

These are examples of image sensor sizes for use with a camera of an image processing inspection system.



Field of Vision Chart

These values are for reference. (Unit: mm)

Refer to the field of vision chart for the following products:
High-resolution telecentric lenses (SE-65-M/SE-110-M) ▼ P.269 Telecentric lenses (SE-65/SE-110) ▼ P.273 Macro lenses (SE-16/SE-18) ▼ P.275

Optical magnification	Camera image sensor size														
	2/3 inch L			2/3 inch			1/1.8 inch			1/2 inch			1/3 inch		
	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal	Length	Width	Diagonal
0.1x	59.84	112.64	127.55	66.00	88.00	110.00	53.20	71.80	89.30	48.00	64.00	80.00	36.00	48.00	60.00
0.2x	29.92	56.32	63.77	33.00	44.00	55.00	26.60	35.90	44.65	24.00	32.00	40.00	18.00	24.00	30.00
0.3x	19.95	37.55	42.52	22.00	29.33	36.67	17.73	23.93	29.77	16.00	21.33	26.67	12.00	16.00	20.00
0.4x	14.96	28.16	31.89	16.50	22.00	27.50	13.30	17.95	22.33	12.00	16.00	20.00	9.00	12.00	15.00
0.5x	11.97	22.53	25.51	13.20	17.60	22.00	10.64	14.36	17.86	9.60	12.80	16.00	7.20	9.60	12.00
0.6x	9.97	18.77	21.26	11.00	14.67	18.33	8.87	11.97	14.88	8.00	10.67	13.33	6.00	8.00	10.00
0.7x	8.55	16.09	18.22	9.43	12.57	15.71	7.60	10.26	12.76	6.86	9.14	11.43	5.14	6.86	8.57
0.8x	7.48	14.08	15.94	8.25	11.00	13.75	6.65	8.98	11.16	6.00	8.00	10.00	4.50	6.00	7.50
0.9x	6.65	12.52	14.17	7.33	9.78	12.22	5.91	7.98	9.92	5.33	7.11	8.89	4.00	5.33	6.67
1x	5.98	11.26	12.75	6.60	8.80	11.00	5.32	7.18	8.93	4.80	6.40	8.00	3.60	4.80	6.00
1.5x	3.99	7.51	8.50	4.40	5.87	7.33	3.55	4.79	5.95	3.20	4.27	5.33	2.40	3.20	4.00
2x	2.99	5.63	6.38	3.30	4.40	5.50	2.66	3.59	4.47	2.40	3.20	4.00	1.80	2.40	3.00
3x	1.99	3.75	4.25	2.20	2.93	3.67	1.77	2.39	2.98	1.60	2.13	2.67	1.20	1.60	2.00
4x	1.50	2.82	3.19	1.65	2.20	2.75	1.33	1.80	2.23	1.20	1.60	2.00	0.90	1.20	1.50
5x	1.20	2.25	2.55	1.32	1.76	2.20	1.06	1.44	1.79	0.96	1.28	1.60	0.72	0.96	1.20
6x	1.00	1.88	2.13	1.10	1.47	1.83	0.89	1.20	1.49	0.80	1.07	1.33	0.60	0.80	1.00
7x	0.85	1.61	1.82	0.94	1.26	1.57	0.76	1.03	1.28	0.69	0.91	1.14	0.51	0.69	0.86
8x	0.75	1.41	1.59	0.83	1.10	1.38	0.67	0.90	1.12	0.60	0.80	1.00	0.45	0.60	0.75
9x	0.66	1.25	1.42	0.73	0.98	1.22	0.59	0.80	0.99	0.53	0.71	0.89	0.40	0.53	0.67
10x	0.60	1.13	1.28	0.66	0.88	1.10	0.53	0.72	0.89	0.48	0.64	0.80	0.36	0.48	0.60
12x	0.50	0.94	1.06	0.55	0.73	0.92	0.44	0.60	0.74	0.40	0.53	0.67	0.30	0.40	0.50

Regulations

Photobiological safety evaluation of LED Lights for image processing

In order to ensure the safe usage of LED Lights, CCS has categorized the risks related to each Light Unit.
When you are considering the purchase of LED Lights or are checking risk information of a product you have purchased, please refer to the specifications section of the product information page of our website.

List of products conforming to EU standard CE

The following CCS products comply with the corresponding standards.

	Series name	Safety standard	EMC standard	
			EMS	EMI
Light Units	LDR2, LDR2-LA, LDR-LA-1, SQR, SQR-TP, HLDR-IP, HSL-PCL, HPR2, LFR, LKR, FPR, FPQ3, LDL2, HLDL2, TH2, TH2-PM, TH2-CR, LFL, HPD2, LDM2, LAV, PDM, LFXV, LFX3, LFX3-PT, LFV3, LFV3-G, MSU, MFU, PF, UV2, UV, IR2, HLV3-14, HLV3-22, HLV3-22-4-NR, HLV3-3M-RGB-4, HLV2-14, HLV2-22, HLV2-22-3W, HLV2-22-NR-3W, HLV2-3M-RGB-3W, LV, LNSP2, LNSP, LN, LN-HK, LNSD, LND2, HLND, LT, LNV, LNIS2, LNIS	EN62471	—	—
	LNLP, LDLB, LNSP-FN, LNSP-UV-FN, LNIS-FN, LNDG, IU, triniti-enabled LED Lights	EN62471	EN61000-6-2	EN61000-6-4
Integrated Control Units for Light Units	PFBR-600SW-LL, PFBR-600SW-LLCF*, PFBR-600SW-LL-XF, PFBR-600SW-LLCF-XF*	EN61010-1 EN62311-2008	EN61000-6-2	EN61000-6-4
	PFBR-150SW-MN	EN61010-1	EN61000-6-2	EN61000-6-4
	PFB3-20SW-F-AJT, PJT, SJT	—	EN61000-6-2	EN61000-6-4
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Control Units	PD2-1012, PD2-1024, PSB-524(A), PSB-1012, PSB-1024, PSB-3012, PSB-3024	—		
	PD2-3012, PD2-3024, PD2-5012, PD2-5024, PD3 (AC input types), PTU2, PSCC, PSB3-30024, PSB-1012V-WW, PSB-1024V-WW	EN61010-1	EN61326-1 Class A	
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	PD3 (DC input types), CC-ST-1024	—	EN61326-1 Class A	

* Conforms to the environmental regulation standard, EN50581-2012.

Note: Our Light Units that were designed and developed in September 2011 or later comply with the EU standard and bear the CE marking.
For information on the cabling products, refer to the product web pages.

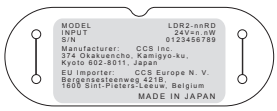
Examples of label tags

LED Lights of CCS have label tags as shown below attached to their cables or case bodies. These labels are color-coded according to the emitted light of the corresponding Light Unit. The model, serial number, CE marking and related information are shown on the rear of the label.

Front

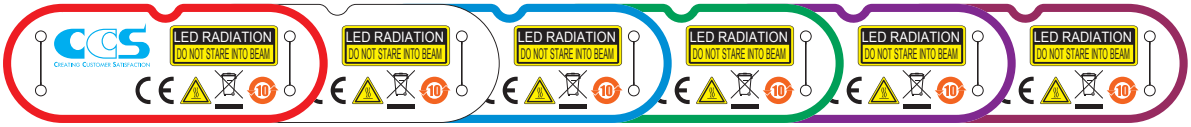


Back



These label tags are attached to the case bodies for the LED Lights which do not have cables.
Not applicable to custom ordered lighting.

Red lighting | White lighting | Blue lighting | Green lighting | Ultraviolet lighting | Infrared lighting



Environmental Regulations

EU RoHS Directive

The products described in this catalog are compliant with EU RoHS Directive.
Refer to our website or the “Instruction Guide” included with the product for details regarding EU RoHS Directive.

China RoHS

The products described in this catalog are compliant with China RoHS.
Refer to our website or the “Instruction Guide” included with the product for details regarding the China RoHS.

REACH Regulations

To perform appropriate risk management for the chemical materials included in the products listed in this catalog, we have established efforts related to reducing the burden on the environment from procured parts, and we strive to select more environmentally-friendly procured parts. Also, as a response to REACH regulations, we have newly constructed an assessment/information transmission system for the chemical materials included in our products, and we are performing autonomous management.
Inquire with your CCS sales representative regarding products and each product’s use of materials designated as SVHC (substances of very high concern) under REACH regulations.

Warranty Information

Warranty Period: Two years* from the date the product is shipped from CCS. (However, radiant quantity warranty is one year)

* Excluding some optional products.

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS DOCUMENT, CCS MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY AND ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, CCS MAKES NO WARRANTIES WITH RESPECT TO THE PRODUCTS.

WARRANTY PERIOD: TWO YEARS (ONE YEAR FOR RADIANT QUANTITY), STARTING FROM CCS Inc. SHIPPING DATE.

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION OR IF THE RADIANT QUANTITY OF THE PRODUCT SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY WITHIN THE SPECIFIED WARRANTY PERIOD.
IF EITHER OF THESE CONDITIONS OCCURS, PLEASE TAKE THE PRODUCT TO YOUR CCS SALES REPRESENTATIVE.

WARRANTY TERMS

1. CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE INSTRUCTION GUIDE AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF TWO YEARS.

2. CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF ITS RADIANT QUANTITY SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE INSTRUCTION GUIDE AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF ONE YEAR.

3. CCS Inc. WILL CHARGE A REPAIR FEE UNDER THE FOLLOWING CONDITIONS:
1) IF THE PRODUCT HAS BEEN SUBJECTED TO MISUSE, UNAUTHORIZED REPAIRS, OR MODIFICATION FROM ITS ORIGINAL DESIGN.
2) IF THE PRODUCT HAS BEEN DAMAGED FROM IMPACTS DUE TO INAPPROPRIATE HANDLING.
3) IF DAMAGE TO THE PRODUCT RESULTS FROM EXTERNAL CAUSES INCLUDING ACCIDENTS, FIRE, POLLUTION, RIOTS, COMMUNICATION FAILURES, EARTHQUAKES, THUNDERSTORMS, WIND AND FLOOD DAMAGE, OR ANY OTHER ACT OF PROVIDENCE, OR FROM ANY EXTRAORDINARY CONDITIONS SUCH AS ELECTRICAL SURGES, WATER LEAKAGE, CONDENSATION, OR THE USE OF CHEMICALS.
4) IF THE DAMAGE RESULTS FROM CONNECTION TO ANY POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.

4. CCS ASSUMES NO LIABILITY FOR ANY PURCHASER’S SECONDARY DAMAGE (DAMAGE OF EQUIPMENT, LOSS OF OPPORTUNITIES, LOSS OF PROFITS, ETC.) OR ANY OTHER DAMAGE RESULTING FROM A FAILURE OF OUR PRODUCT.

THIS WARRANTY INFORMATION PROVIDES THE SCOPE OF CCS’S PRODUCT WARRANTY WITHIN THE SPECIFIED PERIOD, AND DOES NOT INDICATE OR IMPLY ANY FURTHER GUARANTEE BEYOND THE WARRANTY TERMS.
CONTACT CCS FOR INQUIRIES OR INFORMATION ON REPAIRS TO THE PRODUCT AFTER THE EXPIRATION OF THE WARRANTY.

NOTE: THE RADIANT QUANTITY REFERS TO THE WATTAGE OF PHYSICAL ENERGY RADIATED FROM AN LED. IT REFERS TO THE RADIATION LUMINOSITY OF THE LED MEASURED UNDER CONDITIONS SPECIFIED BY CCS OR THE RADIATION ILLUMINATION OF THE LED UNDER SPECIFIED IRRADIATION CONDITIONS. CCS SPECIFIES THE RADIANT QUANTITY FOR EACH LED LIGHT BECAUSE THE MEASUREMENT AND IRRADIATION CONDITIONS VARY FROM THE FORM, THE APPLICATION AND THE IRRADIATION WAVELENGTH.

Repairs and Returns

Inquire at your CCS sales representative about repairs and returns.

Notes

- To ensure proper and safe use of the product, please read the “Instruction Guide” completely before using the product.
- The design and specifications of this product are subject to change without notification for product improvement.
- The workpiece imaging examples included in this catalog are intended to serve only as references to help you select a suitable Light Unit. Please verify the functionality and conditions required for your particular application before you make a final selection. The sample workpieces used in this catalog have been processed specifically for sample imaging. They are not intended to represent product quality and performance.
- Before purchasing the Light Unit, consider the functionality and use conditions of the corresponding equipment and examine the Light Unit.

“CCS” and “LIGHTING SOLUTION” are registered trademarks or trademarks of CCS Inc.

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PSB-3012VB		
PSB-3012VBL		
PSB-3024VB		
PSB-3024VBL		
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QCBM-■	PSCC-30048(A) connection cable	
QCB-■-DA	PSCC-60048(A) connection cable	214
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R64-■		
R64-C		
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SE-16MS	Macro lens SE-16 series	275
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SE-16VM■		
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SE-18SM■		
SE-18VM■		
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SE-65VT■		
SE-65ST■-M	High-resolution telecentric lens SE-65-M series	269
SE-65VT■-M		
SE-110ST■	Telecentric lens SE-110 series	273
SE-110VT■		
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SQR-56UV365	Ultraviolet Light ring type	169
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TH2-■×■□-PM		83
U340-■	Ultraviolet transmission filter	358
V44-■	Blue filter	357
V44-C		
Model names that end with **"TR"**	triniti-enabled LED Light	295
Model names that end with **"IU"**	Light Unit with Intensity Control Unit IU series	181

Discontinued Products Information

Discontinued products				Successor		
Series			Note	Series		
F	FPQ series, FPQ2 series		Obsolete	FPQ3 series		P.55
	FPR series	RD type (Red)	Obsolete	FPR series	RD2 type (Red)	P.53
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
H	HLND series	T type	Obsolete	HLND series	TT type	P.241
		R type	Obsolete		RR type	
	HLV series		Obsolete	HLV3 series		P.183 / P.189
	HPD series		Obsolete	HPD2 series		P.99
	HPR series		Obsolete	HPR2 series		P.45
	HSL series		Obsolete	HSL-PCL series		P.160
I	IR series		Obsolete	IR2 series		P.175
L	LDL series		Obsolete	LDL2 series		P.59
	LDL series (Flat type)		Obsolete	TH2 series (high-luminance type)		P.79
	LDL-TP series		Obsolete			
	LDM2 series	RD type (Red)	Obsolete	LDM2 series	RD2 type (Red)	P.103
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LDQ series		Obsolete	LDL2 series		P.59
	LDR-LA-1 series	RD type (Red)	Obsolete	LDR-LA1 series	RD2 type (Red)	P.39
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LDR2 series	RD type (Red)	Obsolete	LDR2 series	RD2 type (Red)	P.31
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LDR2-LA series	RD type (Red)	Obsolete	LDR2-LA series	RD2 type (Red)	P.35
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LFL series	RD type (Red)	Obsolete	LFL series	RD2 type (Red)	P.95
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LFR series	RD type (Red)	Obsolete	LFR series	RD2 type (Red)	P.49
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	

Discontinued products				Successor		
Series			Note	Series		
L	LFV series		Obsolete	LFV3 series		P.121
	LFV-34-M series		Obsolete	—		–
	LFV2 series		Obsolete	LFV3 series		P.121
	LFX series		Obsolete	LFX3 series		P.113
	LFX2 series		Obsolete			
	LKR series	RD type (Red)	Obsolete	LKR series	RD2 type (Red)	P.51
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LN series	RD type (Red)	Obsolete	LN series	RD2 type (Red)	P.231
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LN-HK series	SW type (White)	Obsolete	LN-HK series	SW2 type (White)	P.232
	LND series		Obsolete	LND2 series		P.237
	LNV series	RD type (Red)	Obsolete	LNV series	RD2 type (Red)	P.251
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	LV series	RD type (Red)	Obsolete	LV series	RD2 type (Red)	P.193
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
M	MSU series	RD type (Red)	Obsolete	MSU series	RD2 type (Red)	P.131
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
P	PFB series		Obsolete	PFB3 series		P.207
	PFB2 series		Obsolete			
	PHL-0508-CD24		Obsolete	CC-PJ-0707		P.347
	PSB-512V, PSB-512VL		Obsolete	—		–
	PSB2 series		Obsolete	PSB4-30024-PEI / PSB3-30024		P.351 / P.353
S	SQR series	RD type (Red)	Obsolete	SQR series	RD2 type (Red)	P.43
		SW type (White)			SW2 type (White)	
		BL type (Blue)			BL2 type (Blue)	
		GR type (Green)			GR2 type (Green)	
	SQR-TP-28-OR		Obsolete	SQR-TP-28-RD		P.44
	SQR-TP-34-OR		Obsolete	SQR-TP-34-RD		P.44
	STU-3000		Obsolete	—		–
T	TH series		Obsolete	TH2 series (high-luminance type)		P.79

Company Information

Motto

The Spirit of Love and Appreciation for Customers

Philosophy

Advancing Society with the Science of Light

Company Overview

Company name	:	CCS Inc.
Established	:	October 6, 1993
Capital	:	462.15 million yen
Business operations	:	Development, manufacturing and sales of LED Lights and control equipment for image processing. Development, manufacturing and sales of other LED Lights for applications such as microscope light sources, plant cultivation, and art and other museums.

Provide Services Appropriate to All of Our Customers' Needs

Customers in the field of LED Light for image processing choose CCS because of our lighting solutions and product development capabilities. Customers who are thinking, "I want to capture this image" or "I need to solve this problem," can select the optimal Light Unit from our product lineup that is replete with approximate 2,400 models of products. Additionally, we can create prototypes, and perform design and development of custom ordered products to match your exact needs.

Since we established our company in 1993, we have become a leading company in the industry by accumulating over 50,000 captured workpiece images, and providing design, development and manufacturing of over 10,000 models of custom ordered Light Units. The optical, heat, control, evaluation and other similar technology and know-how that we have accumulated from these results allow us to provide "Optimal Images" to our customers.





Based on the know-how and skills we have accumulated since our founding, CCS combines various elements, such as light wavelength, illuminating distance, and illuminating angle, to provide a "lighting solution" environment that is perfect for our customers.

We Believe Strongly in Our Promise of Product Quality

Under the key words of "Quality First", we create products that thoroughly meet our exacting standards of product quality. In order to maintain and improve that product quality, we have introduced ISO 9001 and are developing products based on a design review system. We conduct internal examination throughout all process of product planning, design and production, and also perform our own rigorous quality control from LED selection up until manufacturing, inspection and shipping. Additionally, we secure traceability of the components, assembly, measurement results, shipping and other aspects of each individual product to create a system that can provide support to our customers even after the product is delivered.

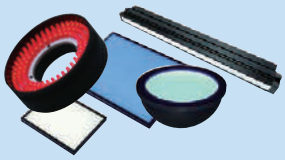
At the time CCS was established, we focused on the great potential of LEDs that were only used for display devices and have continuously developed products since then in order to provide reliable product quality that only CCS, with our vast knowledge of LED Lights, can offer.





Achievements — Leading company in the field of LED Lights for image processing

- Largest standard products lineup in the industry with approximate 2,400 models
- Design, development and manufacturing of over 10,000 models of custom ordered Light Units
- More than 50,000 captured workpiece images
- More than 18,000 free loan products
- 13 locations in Japan, 15 locations outside of Japan, for offering service & support



Standard products

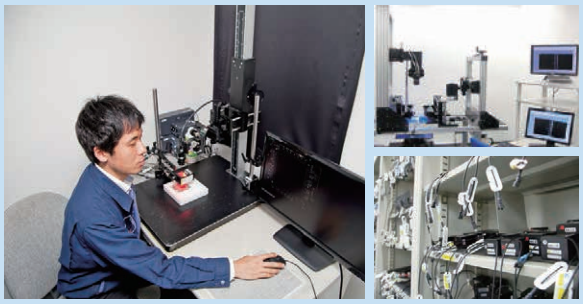


Custom ordered Light Units



Consulting — Pursuing precision lighting

We provide consulting regarding our top world class lighting technology. Each office has a laboratory (Tokyo, Nagoya, and Kyoto are fully equipped with line sensor laboratories) that can be hired for imaging experiments. We suggest Light Units that are optimal for all of your needs.



Development — Design without compromises

CCS carries out design and development of Light Units by applying optical, heat, control, evaluation and other technology such as optical, heat and other simulation. We give form to lighting technology by using our unique development capabilities.



Production — High-quality domestic manufacturing

All of our products are manufactured in Japan. We produce small quantities of a large variety of products in order to develop products that match a wide range of needs. Each of our workers have their own individual work station where they take responsibility for all aspects from mounting and assembly to inspection using our own unique inspection equipment.



Application — Discovering new lighting

We are also applying the technology and know-how accumulated in the field of LED Light for image processing in order to advance into new fields such as the development of UV-LED Lights used in manufacturing processes such as panel affixing, and the development of an original "natural light LED" with characteristics near to those of sunlight.



Business Locations

CCS America, Inc. (USA)

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Email: info@ccsamerica.com
https://www.ccsamerica.com/





Detroit Testing Room (USA)

2701 Cambridge Crt., Suite 100,
Auburn Hills, MI 48326, U.S.A.

El Paso Texas Testing Room (USA)

5959 Gateway Blvd. West, Suite 554,
El Paso, TX 79925, U.S.A.

CCS Europe N.V. (Belgium)

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CCS Asia PTE. LTD. (Singapore)

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CCS Asia Malaysia Representative Office

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11900 Penang, Malaysia
Email: sales@ccs-asia.com.sg

CCS Asia Kuala Lumpur Testing Room (Malaysia)

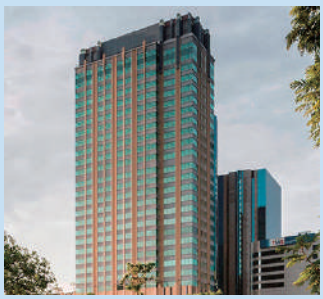
Suite 705, Level 7, Oasis Wing, Brunsfield Oasis Tower 3, No. 2, Jalan PJU 1A/7A, Oasis Square, Oasis Damansara,
47301 Petaling Jaya, Selangor, Malaysia
(Contact: CCS Asia Malaysia Representative Office)





CCS MV (Thailand) Co., Ltd.

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Vibhavadi-rangsit Road, Kwaeng Chompol,
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Email: sales@ccs-asia.com.sg





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Korea Office

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https://www.ccs-inc.cn/





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CCS China Inc. Dongguan Branch (China)

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http://www.ccs-inc.cn/



Affiliated Companies

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TEL: +33 9 72 38 17 80, FAX: +33 9 72 11 21 69
URL: https://www.effilux.fr/
Email: contact@effilux.fr

EFFILUX GmbH (Germany)

Robert-Bosch-Str. 2A,
50354 HÜRTH, Deutschland
TEL: +49 (0)221 28887010

Business Locations

Japan Domestic Offices

Kyoto Head Office / Seibu Sales Office / Testing Room / Kyoto AI Lab

38 Konoe-cho, Demizu-Agaru, Muromachi-dori, Kamigyo-ku, Kyoto 602-8019, Japan
TEL: +81-75-415-8277 (Sales), FAX: +81-75-415-8278 (Sales)



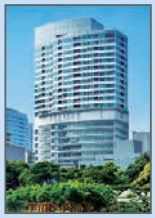
<Access Information>
From JR Kyoto Station, take the Subway Karasuma Line to Marutamachi Station. 7 minutes walk to left.

Fully-equipped line sensor testing room

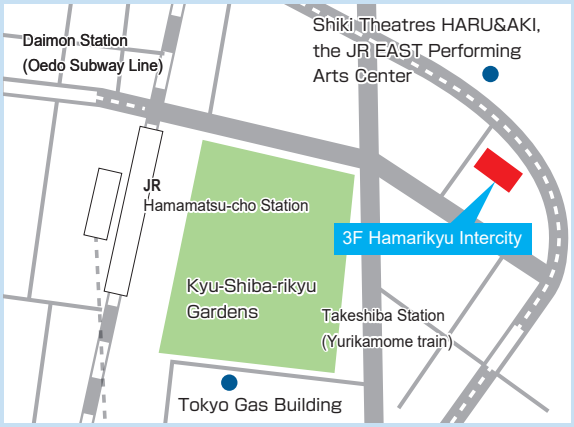


Tokyo Sales Office

3F Hamarikyu Intercity 1-9-1, Kaigan, Minato-ku, Tokyo 105-0022, Japan
TEL: +81-3-4346-0560, FAX: +81-3-4346-0561



<Access Information>
6 minutes walk from Hamamatsu-cho Station(JR)
7 minutes walk from Daimon Station (Oedo Subway Line)
4 minutes walk from Takeshiba Station (Yurikamome train)



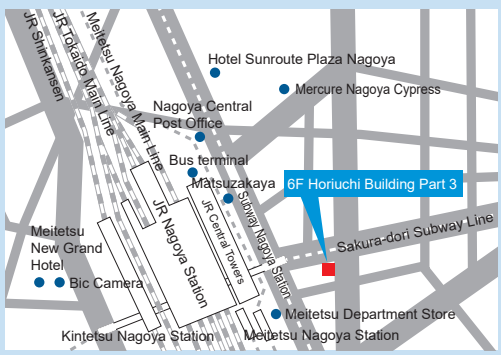
Nagoya Sales Office / Testing Room

6F Horiuchi Building Part 3, 4-6-23 Meieki, Nakamura-ku, Nagoya, Aichi 450-0002, Japan
TEL: +81-52-541-6550, FAX: +81-52-541-6050



< Access Information>
3 minutes walk from JR Nagoya Station (Right outside exit 5 of the underground Unimall)

Fully-equipped line sensor testing room

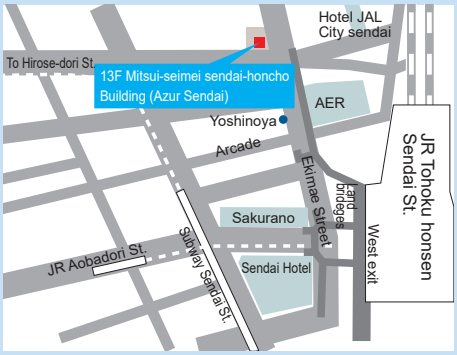


Sendai Sales Office / Testing Room

13F Mitsui-seimei sendai-honcho Building (Azur Sendai), 1-1-1 Honcho, Aoba-ku, Sendai, Miyagi 980-0014, Japan
TEL: +81-22-224-9101, FAX: +81-22-224-9102



<Access Information>
3 minutes walk from the West exit of JR Sendai Station
/3 minutes walk from subway Sendai Station
/3 minutes walk from subway Hirose-dori Station



Business Locations



Sapporo (Hokkaido) Testing Room

Room #201 Sun Court Kita 7-jo Ichibankan, 21-3, Kita 7-jo Higashi 7-chome, Higashi-ku, Sapporo, Hokkaido 060-0907, Japan
TEL: +81-22-224-9101
(Contact: Sendai Sales Office)
<Access Information>
14 minutes walk from JR Sapporo station
/9 minutes walk from exit 4 of Subway Higashi-Kuyakusho-Mae Station

Ebisu Testing Room / Tokyo AI Lab

11F Asahi Mutual Life Insurance Co. Ebisu Building
1-3-1, Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
TEL : +81-3-4346-0560
(Contact: Tokyo Sales Office)
<Access Information>
3 minutes walk from Ebisu Station, of both JR Yamanote Line and Hibiya Subway Line

Mikawa Testing Room

Room#1401 Casa Verde, 2-3-8 Mikawa Anjo hon-machi, Anjo City, Aichi 446-0059, Japan
TEL : +81-52-541-6550
(Contact: Nagoya Sales Office)
<Access Information>
6 minutes walk from JR Mikawa anjo station

Yodoyabashi (Osaka) Testing Room

Room #1101 3F Exe Tower Doshomachi 3-3-8, Doshomachi, Chuo-ku, Osaka, 541-0045, Japan
TEL : +81-6-6203-8886 FAX : +81-75-415-8281
(Contact: Seibu Sales Office)
<Access Information>
2 minutes walk from Midosuji Line Yodoyabashi Station

Kumamoto Testing Room

Room #203 Lurashu-toroku, 6-10-51 Toroku, Chūō-ku, Kumamoto, 862-0970, Japan
TEL : +81-75-415-8277
(Contact: Seibu Sales Office)
<Access Information>
10 minutes walk from JR Tōkai-Gakuen-mae Station

Kanazawa (Ishikawa) Testing Room

Room #301 Royal Park Plaza 1-13-38, Kitayasue, Kanazawa, Ishikawa, 920-0022, Japan
TEL : +81-52-541-6550
(Contact: Nagoya Sales Office)
<Access Information>
9 minutes walk from JR Kanazawa Station by West exit

Yokohama (Kanagawa) Testing Room

Room #201 Grand Chariot, 1-32-18 Hiranuma, Nishi-ku, Yokohama-shi, Kanagawa 220-0023, Japan
TEL : +81-3-5791-3701
(Contact: Tokyo Sales Office)
< Access Information>
9 minutes walk from JR Yokohama station by East exit.
4 minutes walk from Sagami Railway Hiranumabashi Station by South exit.
6 minutes wlak from Keikyu Tobe Station.

Moriyama (Shiga) Testing Room

3F Umeda Sky Building 10-1, Umeda-Cho, Moriyama, Shiga, 524-0037, Japan
TEL : +81-75-415-8277
(Contact: Seibu Sales Office)
<Access Information>
7 minutes walk from JR Moriyama Station by West exit

Hakata (Fukuoka) Testing Room

Room #703 1-14-3 Hakataekihigashi, Hakata-ku, Fukuoka, 812-0013, Japan
TEL : +81-75-415-8277
(Contact: Seibu Sales Office)
< Access Information>
5 minutes walk from JR Hakata Station

Development Center (Kyoto) / Production Center (Kyoto)

Kyoto King bldg., 2-1 Higashi Shiokouji Takakura-cho, Simogyo-ku, Kyoto 600-8214, Japan (1F: front counter)
4F: Development Center
TEL: +81-75-555-3479, FAX: +81-75-555-3480
1F/2F: Production Center
TEL: +81-75-691-5600, FAX: +81-75-691-5601

Lighting Technology Institute (Kyoto)

33 Konoemachi, Demizu-Agaru, Muromachi-dori, Kamigyo-ku, Kyoto 602-8019, Japan
TEL: +81-75-415-2101, FAX: +81-75-432-0101

Service and Support

I want to verify some various Light Units but **our company doesn't have a proper environment.**

Resolve by free loan products

I need to **change the wavelength and size of the Light Unit** for defect testing of electronic parts...

Resolve by custom ordering

These worries can be resolved.

I'm not sure that the Light Units mounted on my existing testing equipment are okay... **I want to make them more stable.**

Resolve by free consulting

Can the shiny lettering on the surface of a workpiece **be clearly read?**

Resolve by free testing

We can do it because CCS is number one in the industry.

Light Unit design
is the key to success in Image Processing!



Testing Room Information

We can satisfy all of your requirements with our rich product assortment.

Testing Rooms





CCS has fully-equipped testing rooms where we can find out the optimum inspection conditions for your workpieces. The equipment includes LED lights for machine vision, Control Units, cameras, lenses, and other peripherals from various manufacturers.
If you want to test a workpiece, send us a sample. We will provide you with the optimal image to meet your needs.
You can use this service free of charge. We are looking forward to helping you.

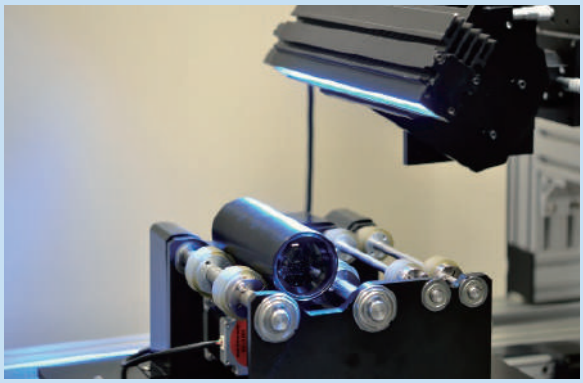




Line-Sensor Testing Rooms

We have testing rooms especially for Line Sensor Light.

Cylindrical sample test bench

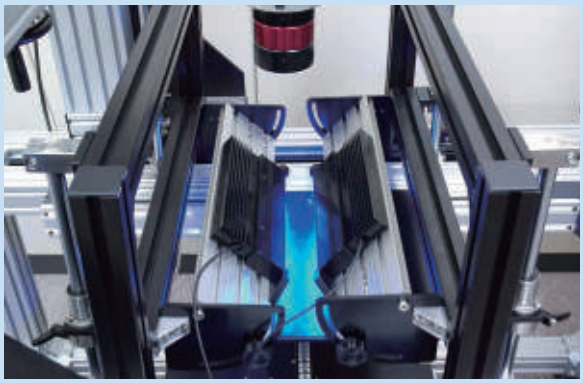


We perform tests that nearly recreate your imaging environment.
We suggest the lighting solution for getting optimal images using our LED Lights, Control Units, and options.

- For customers without line-sensor testing equipment who are concerned about workpiece testing
- Customers who want to bring in line cameras

It is also applicable to various other imaging environments.

Flat sample test bench



Installation example

Optical system (Lens)	Nikon Ai Micro-Nikkor 55 mm f/2.8S Large format lens x 0.7
Camera	8,192 pixel line sensor camera
Image processing	Hardware image processing board
Uniaxial table	Stepping motor Stroke: 600 mm max, 50 mm/sec to 400 mm/sec
Resolution	10 µm x 10 µm to 100 µm x 100 µm
Variety of setups	Direct light setup, diffused light setup, transmitted light setup

In addition to the above, we have a wide variety of lenses and cameras. Please feel free to inquire.

CCS website
www.ccs-grp.com

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