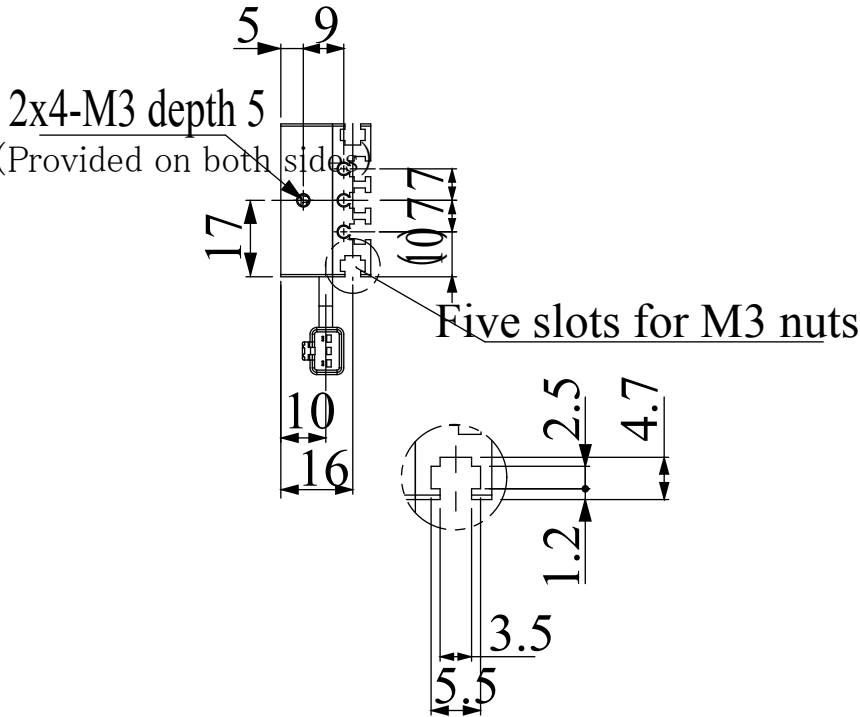
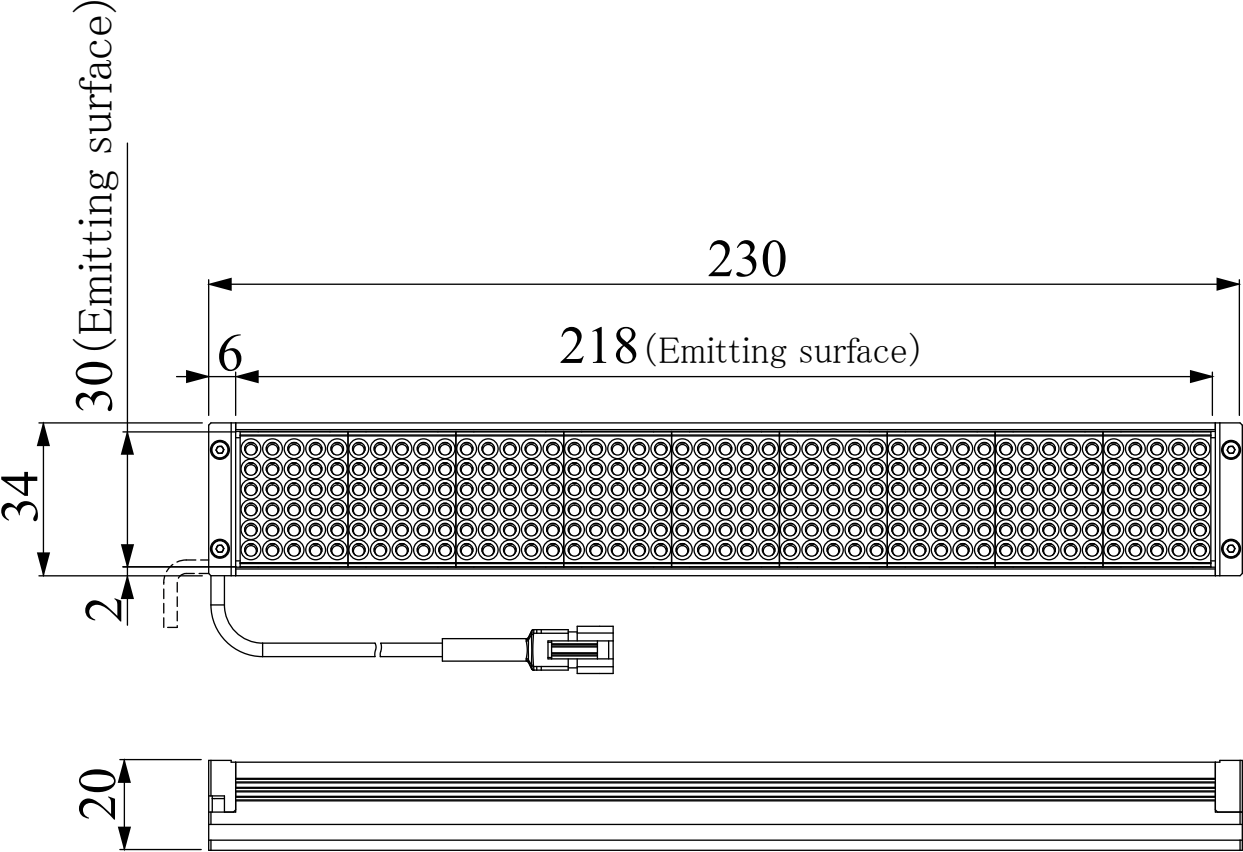
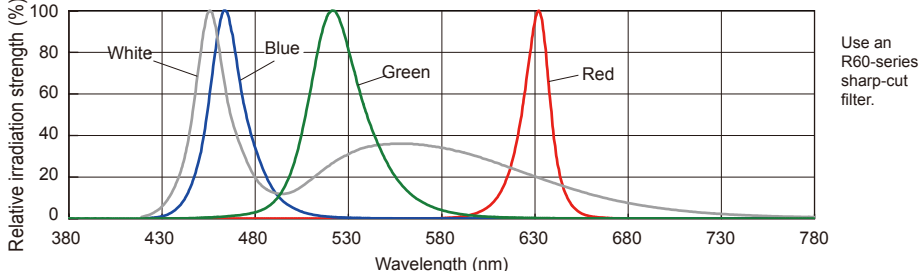


# LDL2-218X30RD

|                     |                            |
|---------------------|----------------------------|
| Model name          | LDL2-218X30RD              |
| LED color           | Red                        |
| Input voltage       | DC24V                      |
| Power consumption   | 18W                        |
| Weight              | 240g                       |
| Connector           | SMR-03V-B                  |
| Polarity and signal | 1 : (+) , 2 : NC , 3 : (-) |

Third Angle Projection      Units: mm



| Common Specifications              |                                                                                                                               |            |           |            |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------|-----------|------------|
| LED color                          | Red (RD)                                                                                                                      | White (SW) | Blue (BL) | Green (GR) |
| Input voltage                      | 24 V max.                                                                                                                     |            |           |            |
| Peak wavelength (typ.)             | 635 nm                                                                                                                        | —          | 470 nm    | 525 nm     |
| Relative color temperature (typ.)  | —                                                                                                                             | 6,600 K    | —         | —          |
| Cable length                       | 0.3 m                                                                                                                         |            |           |            |
| Input connector                    | SMR-03V-B                                                                                                                     |            |           |            |
| Polarity, signal                   | 1: Anode (+) brown, 2: NC, 3: Cathode (–) blue                                                                                |            |           |            |
| Case material                      | Aluminum alloy                                                                                                                |            |           |            |
| Operating temperature and humidity | Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)                                                           |            |           |            |
| Storage temperature and humidity   | Temperature: -20 to 60°C, Humidity: 20% to 85% (with no condensation)                                                         |            |           |            |
| Cooling method                     | Natural air cooling                                                                                                           |            |           |            |
| Spectral distribution              |  <p>Use an R60-series sharp-cut filter.</p> |            |           |            |

Note: The values for irradiation strength and service life given in this catalog are for reference purposes. These values are not ensured.

| Precautions                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>●Carefully read the product's instruction manual before use to ensure correct operation.</li> <li>●Product specifications and design are subject to change without notice.</li> <li>●Examples of workpiece imaging in this catalog are a guide that may be informative for choosing Light Units. Please check the functions of the equipment and requirements before choosing a Light Unit.</li> </ul> |





LIGHTING SOLUTION

LED Illuminators for Machine Vision



Patent Pending

Full Model Change

New Generation LED Bar Light

New Bar Light Units with Direct Illumination

The New LDL2 Series

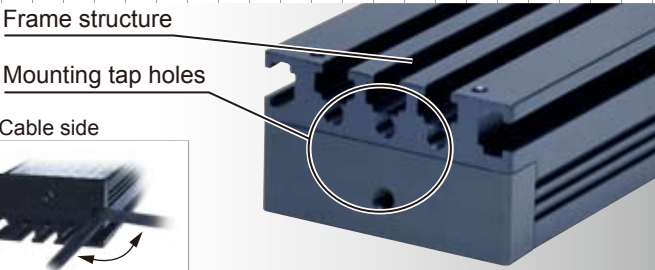
CCS Inc.

# Full Model Change — Five New Points —

## Point 1 — New Mounting Method

The new mounting method enables versatile mounting to match the installation environment.

+ Heat Dissipation Enhanced



You can select from two methods for greater mounting versatility to match your installation environments: the new frame structure mounting method or the conventional mounting holes.

With the new mounting method, you have freedom in adjusting the lighting position and mounting location by sliding the securing nuts into the internal grooves in the frame structure. The size of the internal grooves complies with JIS standard M3 nuts, which are commonly used. (Use JIS standard M3 nuts for mounting.)

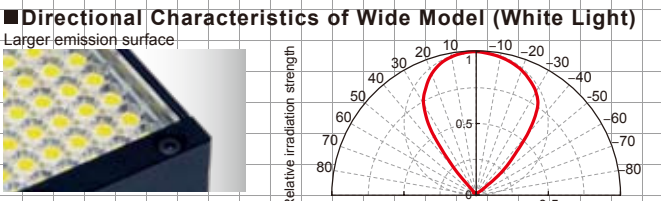
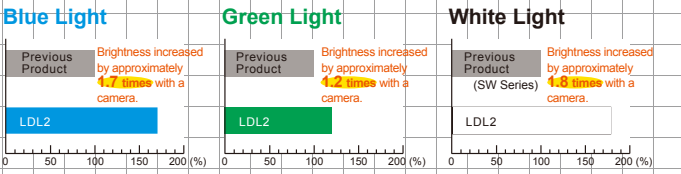
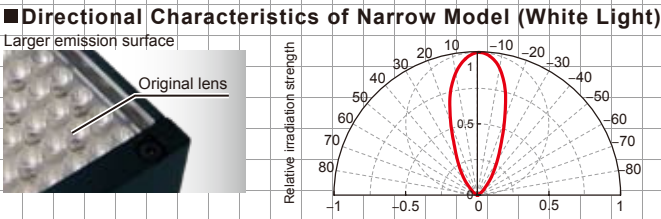
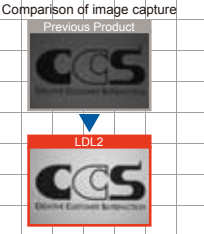
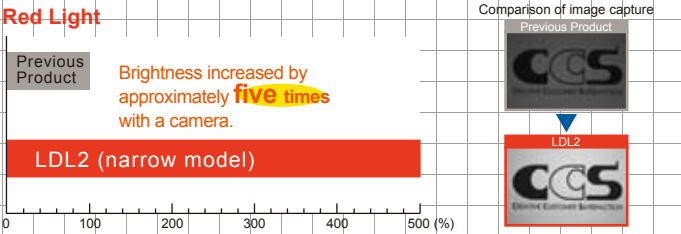
## Point 2 — High Output

Enhanced Output with Improved Light Emission Efficiency

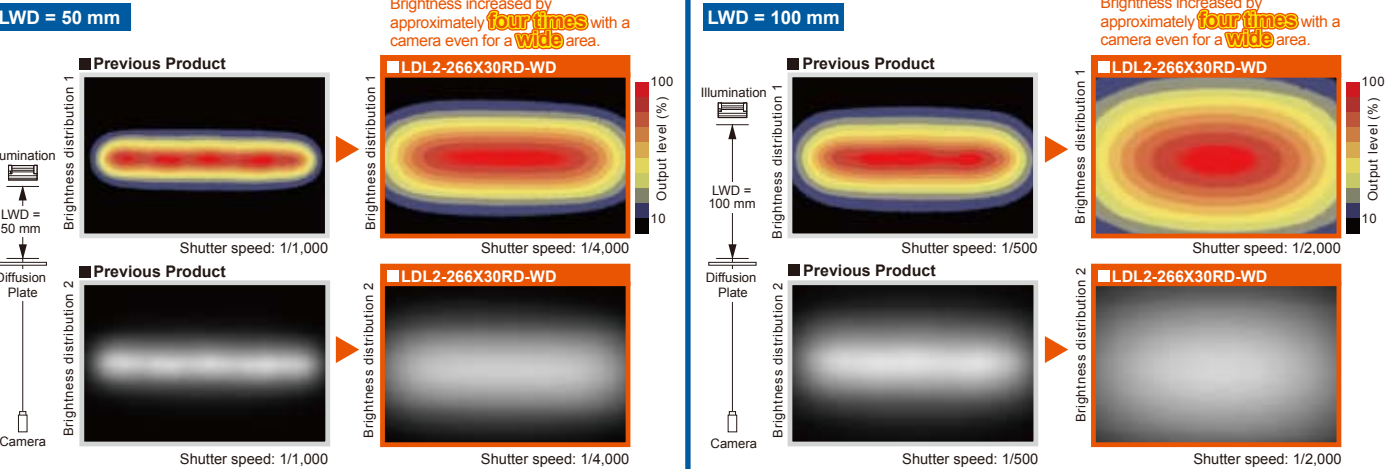
+ Selectable Directional Characteristics

A brightness of approximately five times is achieved over previous products for red light with a camera. Brightness has also been enhanced for white, blue, and green light.

Two models are available with different directional characteristics: the narrow model, which uses the original lens with directional characteristics similar to previous models, and a wide model, which has diffuse illumination in a wide range.



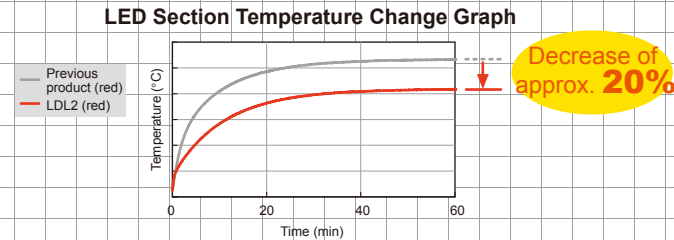
The wide model can provide uniform illumination in a wide area, which offers new usage of bar light. We recommend this new method using Bar Light Units



Note: 1)Relative sensor brightness distribution measurement conditions: Intensity: 100%, Lens: F16-mm, Width: 775 mm, Field of vision: 303 x 227 mm 2)The brightness depends on the spectral sensitivity characteristics of the camera. 3)The values given here are for reference purposes. Actual values may vary.

## Point 3 — Enhanced Heat Dissipation

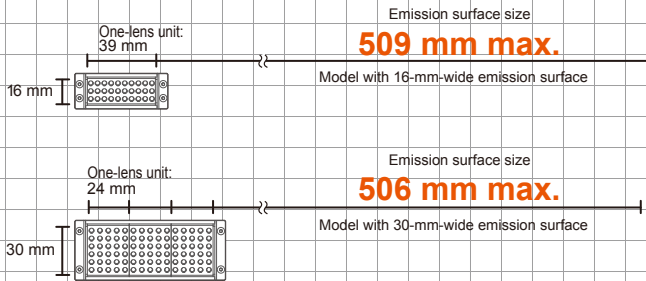
Stable long-term performance with high-efficiency heat dissipation



Using heat radiating fins and the frame structure increases the surface area by 40% over the previous model. This enables a decrease by approximately 20% of the LED mounting section temperature due to highly efficient heat radiation.

## Point 4 — Enhanced Customizability

Maximum emission surface size of 500 mm.



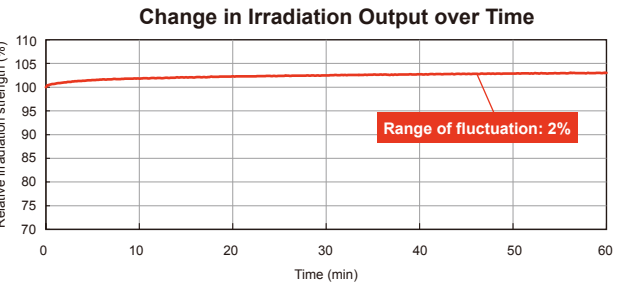
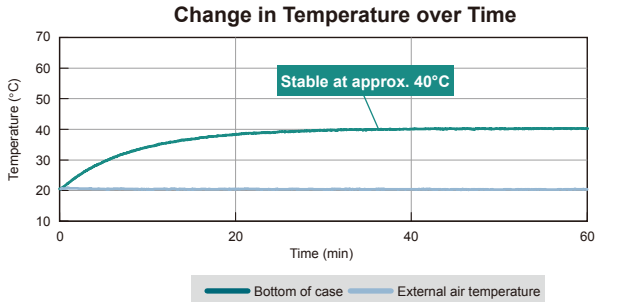
Using one lens of a standardized size enables flexible customizability. The specified length of light unit can be produced in the unit of one lens. Note: For other lengths, contact your CCS sales representative.

## Point 5 — 24-V Input For All Colors

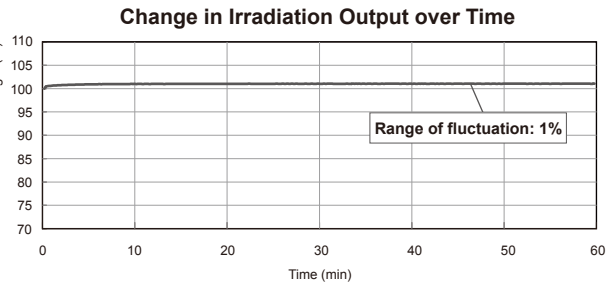
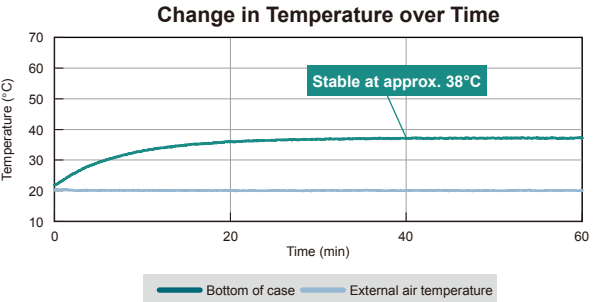
The power that is supplied is the same for all light colors. Previously, 12 V was used only for red light, but the voltage is now 24 V for all colors.

Data Typical Examples. There are virtually no changes in the graph values for the narrow model or changes that depend on whether optional products are mounted.

LDL2-41X16RD-WD (Red Light) Actual values were measured using the LDL2-41X16RD-WD. (These values are for reference only.)



LDL2-41X16SW-WD (White Light) Actual values were measured using the LDL2-41X16SW-WD. (These values are for reference only.)



Note: Graph measurement conditions: Actual measurement values: Intensity: 100%, External air temperature: 20°C (These values are for reference only.)



Options

The Diffusion Plate and Polarizing Plate have been redesigned to use insertion fixing rather than the previous screw fixing method. Upgraded materials for the Diffusion Plate improve the rate of diffusion. Protective Plate is available protect the emission area of the Light Unit as well as bracketss for securing the Light Unit to enable flexible adjustment of the emission direction.

Diffusion Plate

DF-LDL2 Series

Polarization Plate

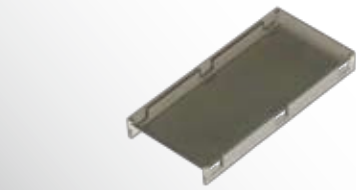
PL-LDL2 Series

Protective Plate

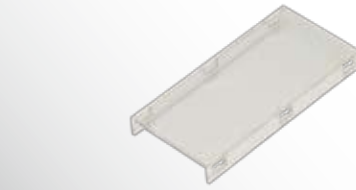
CV-LDL2 Series



The irradiated light is diffused to limit workpiece glare and reflections.



The light is polarized. You can prevent light reflection by fixing a PL-series polarization filter to the lens.



The plate protects the emission section of the Light Unit.

Note: The Protective Plate is not intended to provide protection against dust or water droplets.

Mounting

Removal

For details, refer to the instruction manual.

Light Fixing Brackets

BK-LDL2 (for all models in Series)



Accessories  
Fixing screws (M3): 8 + 1 (spare)

When you secure the light, the angle of the irradiation can be adjusted as desired. A variety of methods are available for securing the Light Units, such as parallel emission from two directions or enveloped emission from four directions.

Mounting

For details, refer to the instruction manual.

Specifications of Special Options

| Name                                                 | Diffusion Plate | Polarizing Plate    | Protective Plate | Light Fixing Brackets                 |
|------------------------------------------------------|-----------------|---------------------|------------------|---------------------------------------|
| Model name<br>(for both narrow model and wide model) | DF-LDL2-41X16   | PL-LDL2-41X16(-VE)  | CV-LDL2-41X16    | BK-LDL2<br>(for all models in Series) |
|                                                      | DF-LDL2-80X16   | PL-LDL2-80X16(-VE)  | CV-LDL2-80X16    |                                       |
|                                                      | DF-LDL2-119X16  | PL-LDL2-119X16(-VE) | CV-LDL2-119X16   |                                       |
|                                                      | DF-LDL2-74X30   | PL-LDL2-74X30(-VE)  | CV-LDL2-74X30    |                                       |
|                                                      | DF-LDL2-146X30  | PL-LDL2-146X30(-VE) | CV-LDL2-146X30   |                                       |
|                                                      | DF-LDL2-218X30  | PL-LDL2-218X30(-VE) | CV-LDL2-218X30   |                                       |
|                                                      | DF-LDL2-266X30  | PL-LDL2-266X30(-VE) | CV-LDL2-266X30   |                                       |
| Heat resistance                                      | 80°C            | 60°C                | 80°C             | —                                     |

Two types of Polarizing Plate are available. Use combinations for the following cases.

Mounting with Emission from Four Directions

Differentiating Paired Polarizing Plates

Dimensional diagrams (mm)

DF/PL/CV-LDL2 Series

BK-LDL2

Product Lineup

The standard lineup now includes models with a length of 200 mm or more as well as models with an emission surface of 30 mm. The lineup includes combination of over 50 models with light colors in red, white, blue, and green, various sizes, and narrow models or wide models.

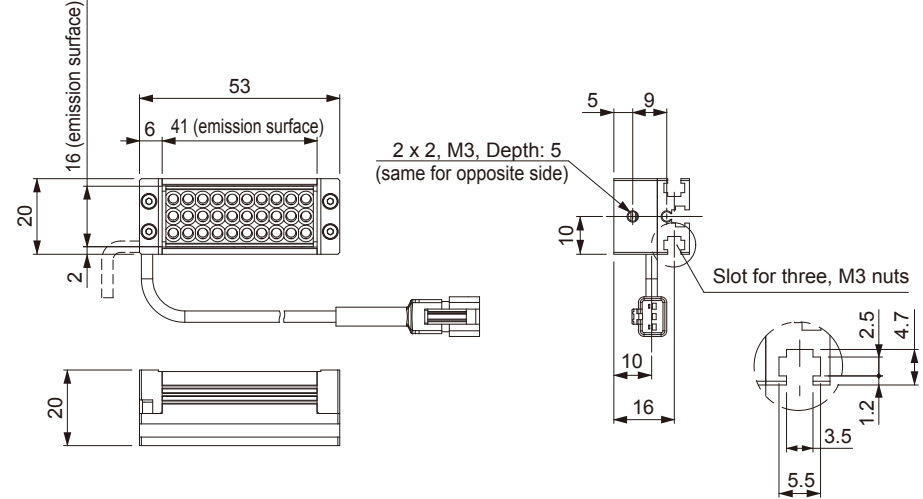
You can easily access information for the desired product by visiting the CCS website (Machine Vision Applications) and entering the seven-digit number into the direct number input space.

|                                        | Direct number | Model            | LED color        | Emission surface size | Input voltage | Power consumption | Weight | Supported options     |                                    |                                    |
|----------------------------------------|---------------|------------------|------------------|-----------------------|---------------|-------------------|--------|-----------------------|------------------------------------|------------------------------------|
| Model with 16-mm-wide emission surface | Narrow model  | 1003702          | LDL2-41X16RD     | Red                   | 41x16 mm      | 24 V              | 1.9 W  | 50 g                  | Diffusion Plate                    | DF-LDL2-41X16                      |
|                                        |               | 1003705          | LDL2-41X16SW     | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-41X16 (PL-LDL2-41X16-VE)   |
|                                        |               | 1003704          | LDL2-41X16BL     | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-41X16                      |
|                                        |               | 1003703          | LDL2-41X16GR     | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
|                                        | Wide model    | 1003706          | LDL2-41X16RD-WD  | Red                   | 41x16 mm      | 24 V              | 1.9 W  | 50 g                  | Diffusion Plate                    | DF-LDL2-41X16                      |
|                                        |               | 1003709          | LDL2-41X16SW-WD  | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-41X16 (PL-LDL2-41X16-VE)   |
|                                        |               | 1003708          | LDL2-41X16BL-WD  | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-41X16                      |
|                                        |               | 1003707          | LDL2-41X16GR-WD  | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
|                                        | Narrow model  | 1003710          | LDL2-80X16RD     | Red                   | 80x16 mm      | 24 V              | 3.8 W  | 75 g                  | Diffusion Plate                    | DF-LDL2-80X16                      |
|                                        |               | 1003713          | LDL2-80X16SW     | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-80X16 (PL-LDL2-80X16-VE)   |
|                                        |               | 1003712          | LDL2-80X16BL     | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-80X16                      |
|                                        |               | 1003711          | LDL2-80X16GR     | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
|                                        | Wide model    | 1003714          | LDL2-80X16RD-WD  | Red                   | 80x16 mm      | 24 V              | 3.8 W  | 75 g                  | Diffusion Plate                    | DF-LDL2-80X16                      |
|                                        |               | 1003717          | LDL2-80X16SW-WD  | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-80X16 (PL-LDL2-80X16-VE)   |
|                                        |               | 1003716          | LDL2-80X16BL-WD  | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-80X16                      |
|                                        |               | 1003715          | LDL2-80X16GR-WD  | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
|                                        | Narrow model  | 1003718          | LDL2-119X16RD    | Red                   | 119x16 mm     | 24 V              | 5.7 W  | 95 g                  | Diffusion Plate                    | DF-LDL2-119X16                     |
|                                        |               | 1003721          | LDL2-119X16SW    | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-119X16 (PL-LDL2-119X16-VE) |
|                                        |               | 1003720          | LDL2-119X16BL    | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-119X16                     |
|                                        |               | 1003719          | LDL2-119X16GR    | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
|                                        | Wide model    | 1003722          | LDL2-119X16RD-WD | Red                   | 119x16 mm     | 24 V              | 5.7 W  | 95 g                  | Diffusion Plate                    | DF-LDL2-119X16                     |
|                                        |               | 1003725          | LDL2-119X16SW-WD | White                 |               |                   |        |                       | Polarizing Plate                   | PL-LDL2-119X16 (PL-LDL2-119X16-VE) |
|                                        |               | 1003724          | LDL2-119X16BL-WD | Blue                  |               |                   |        |                       | Protective Plate                   | CV-LDL2-119X16                     |
|                                        |               | 1003723          | LDL2-119X16GR-WD | Green                 |               |                   |        |                       | Light Fixing Brackets              | BK-LDL2                            |
| Narrow model                           | 1003726       | LDL2-74X30RD     | Red              | 74x30 mm              | 24 V          | 5.7 W             | 100 g  | Diffusion Plate       | DF-LDL2-74X30                      |                                    |
|                                        | 1003729       | LDL2-74X30SW     | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-74X30 (PL-LDL2-74X30-VE)   |                                    |
|                                        | 1003728       | LDL2-74X30BL     | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-74X30                      |                                    |
|                                        | 1003727       | LDL2-74X30GR     | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Wide model                             | 1003730       | LDL2-74X30RD-WD  | Red              | 74x30 mm              | 24 V          | 5.7 W             | 100 g  | Diffusion Plate       | DF-LDL2-74X30                      |                                    |
|                                        | 1003733       | LDL2-74X30SW-WD  | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-74X30 (PL-LDL2-74X30-VE)   |                                    |
|                                        | 1003732       | LDL2-74X30BL-WD  | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-74X30                      |                                    |
|                                        | 1003731       | LDL2-74X30GR-WD  | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Narrow model                           | 1003734       | LDL2-146X30RD    | Red              | 146x30 mm             | 24 V          | 12 W              | 170 g  | Diffusion Plate       | DF-LDL2-146X30                     |                                    |
|                                        | 1003737       | LDL2-146X30SW    | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-146X30 (PL-LDL2-146X30-VE) |                                    |
|                                        | 1003736       | LDL2-146X30BL    | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-146X30                     |                                    |
|                                        | 1003735       | LDL2-146X30GR    | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Wide model                             | 1003738       | LDL2-146X30RD-WD | Red              | 146x30 mm             | 24 V          | 12 W              | 170 g  | Diffusion Plate       | DF-LDL2-146X30                     |                                    |
|                                        | 1003741       | LDL2-146X30SW-WD | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-146X30 (PL-LDL2-146X30-VE) |                                    |
|                                        | 1003740       | LDL2-146X30BL-WD | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-146X30                     |                                    |
|                                        | 1003739       | LDL2-146X30GR-WD | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Narrow model                           | 1003742       | LDL2-218X30RD    | Red              | 218x30 mm             | 24 V          | 18 W              | 240 g  | Diffusion Plate       | DF-LDL2-218X30                     |                                    |
|                                        | 1003745       | LDL2-218X30SW    | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-218X30 (PL-LDL2-218X30-VE) |                                    |
|                                        | 1003744       | LDL2-218X30BL    | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-218X30                     |                                    |
|                                        | 1003743       | LDL2-218X30GR    | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Wide model                             | 1003746       | LDL2-218X30RD-WD | Red              | 218x30 mm             | 24 V          | 18 W              | 240 g  | Diffusion Plate       | DF-LDL2-218X30                     |                                    |
|                                        | 1003749       | LDL2-218X30SW-WD | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-218X30 (PL-LDL2-218X30-VE) |                                    |
|                                        | 1003748       | LDL2-218X30BL-WD | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-218X30                     |                                    |
|                                        | 1003747       | LDL2-218X30GR-WD | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Narrow model                           | 1003750       | LDL2-266X30RD    | Red              | 266x30 mm             | 24 V          | 21 W              | 280 g  | Diffusion Plate       | DF-LDL2-266X30                     |                                    |
|                                        | 1003753       | LDL2-266X30SW    | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-266X30 (PL-LDL2-266X30-VE) |                                    |
|                                        | 1003752       | LDL2-266X30BL    | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-266X30                     |                                    |
|                                        | 1003751       | LDL2-266X30GR    | Green            |                       |               |                   |        | Light Fixing Brackets | BK-LDL2                            |                                    |
| Wide model                             | 1003754       | LDL2-266X30RD-WD | Red              | 266x30 mm             | 24 V          | 21 W              | 280 g  | Diffusion Plate       | DF-LDL2-266X30                     |                                    |
|                                        | 1003757       | LDL2-266X30SW-WD | White            |                       |               |                   |        | Polarizing Plate      | PL-LDL2-266X30 (PL-LDL2-266X30-VE) |                                    |
|                                        | 1003756       | LDL2-266X30BL-WD | Blue             |                       |               |                   |        | Protective Plate      | CV-LDL2-266X30                     |                                    |
|                                        | 1003755       | LDL2-266X30GR-WD | Green            |                       |               |                   |        | Light fixing Brackets | BK-LDL2                            |                                    |

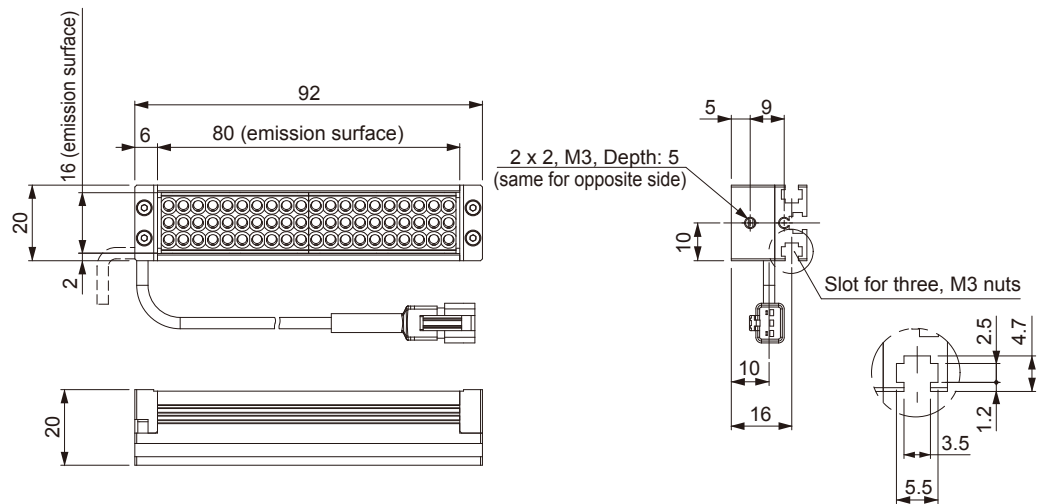
# Dimensional diagrams (mm)

Model with 16-mm-wide emission surface

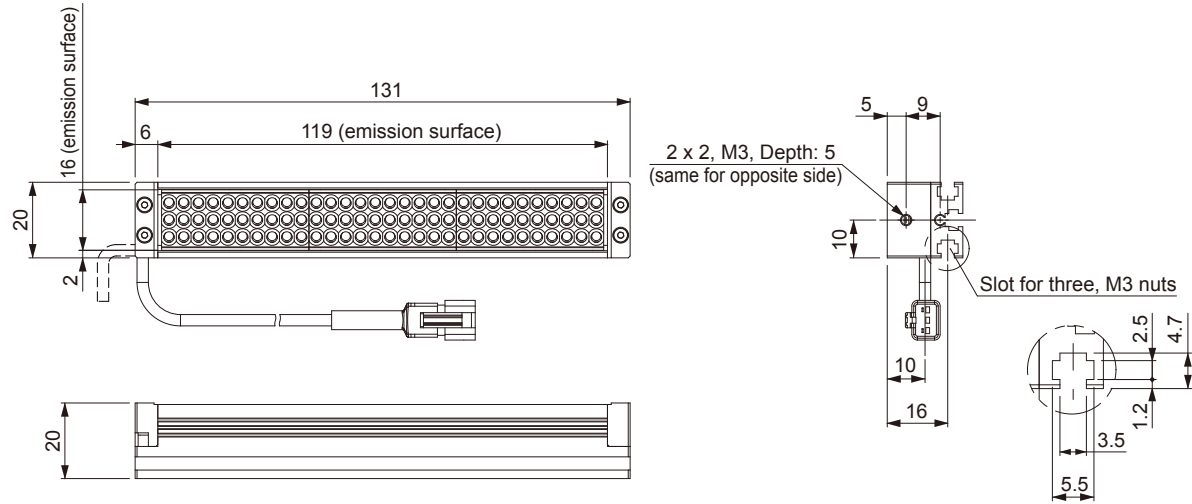
LDL2-41X16RD/SW/BL/GR (compatible with -WD models)



LDL2-80X16RD/SW/BL/GR (compatible with -WD models)

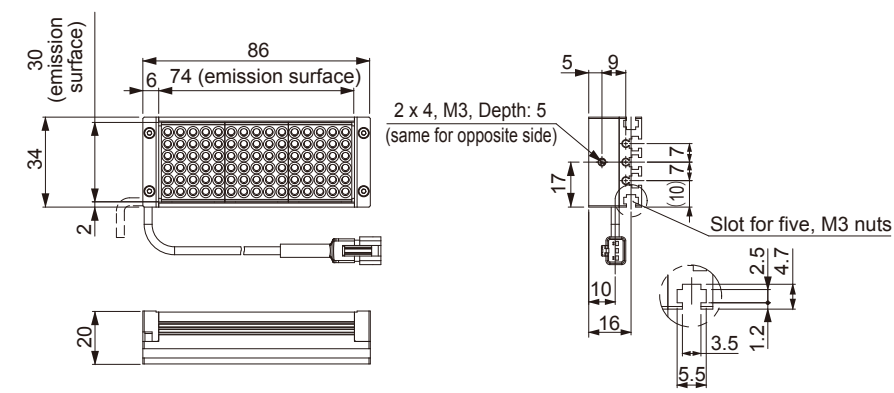


LDL2-119X16RD/SW/BL/GR (compatible with -WD models)

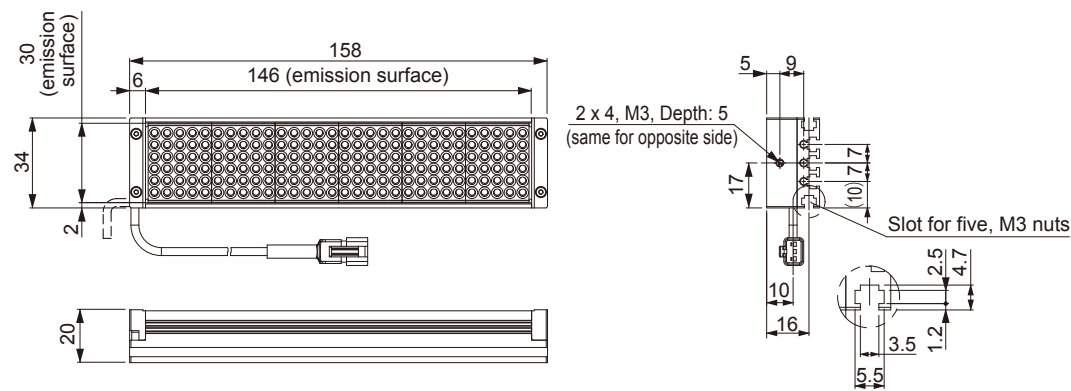


Model with 30-mm-wide emission surface

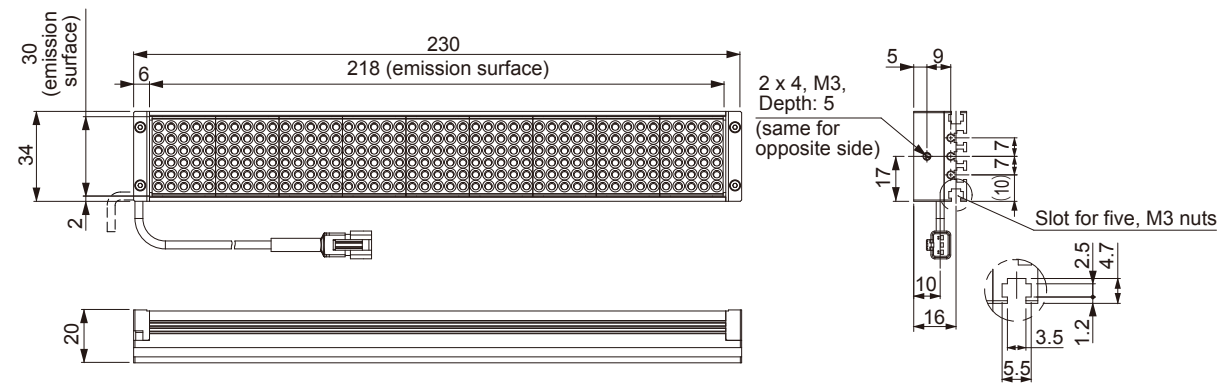
LDL2-74X30RD/SW/BL/GR (compatible with -WD models)



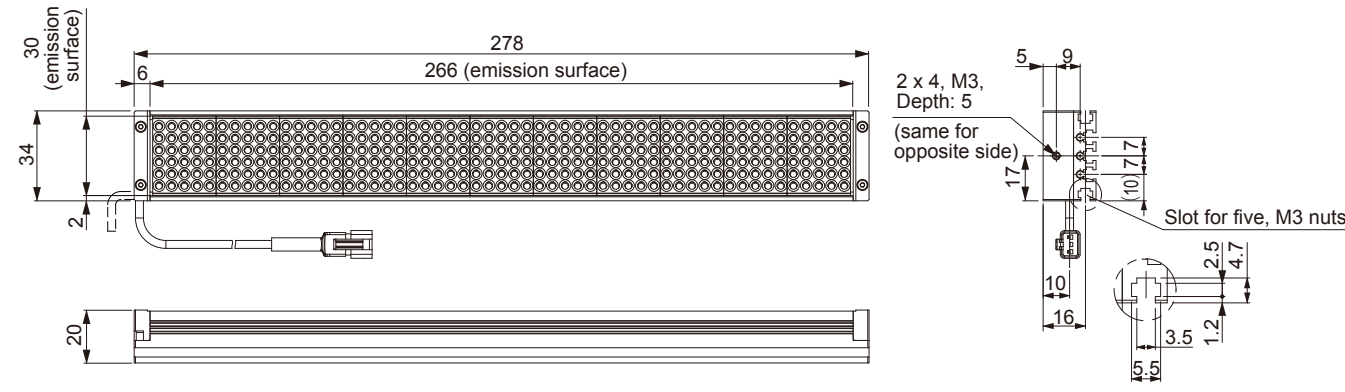
LDL2-146X30RD/SW/BL/GR (compatible with -WD models)



LDL2-218X30RD/SW/BL/GR (compatible with -WD models)



LDL2-266X30RD/SW/BL/GR (compatible with -WD models)





Direct Lighting  
Bar Lights

LDL2 Series Instruction Guide

CE

Thank you for purchasing a CCS product. To ensure proper use of the product, please read this instruction guide before use and keep it for your future reference.

1.Introduction

This product is an LED light used for machine vision and industrial inspection. Do not use the product for other applications, and be sure to follow the instructions below.

- Do not use the product in the following situations.
  - Under conditions or in an environment not described in this instruction guide.
  - In nuclear energy control systems, railroad systems, aviation systems, vehicles, combustion equipment, medical equipment, amusement machines, or safety equipment.
  - In applications involving serious risk to life or property, particularly applications demanding a high level of safety.
- Use and Storage temperature and humidity  
Use the product only in the following environment.

|                                                   |                                                                        |
|---------------------------------------------------|------------------------------------------------------------------------|
| Operating temperature and humidity (indoors only) | 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) |

- Installation location  
Please install products to locations with following conditions. Incorrect installation location may cause product failure.
  - In a flat and stable location with minimal vibration.
  - Well-ventilated places with minimal dust.
  - Places that are not subject to sudden temperature changes.
  - Places free from any water, oil, liquid, chemical, or steam.
  - Places free from corrosive or combustible gas.
  - Places away from water faucets, boilers, humidifiers, air conditioners, heaters, or stoves.

2.Important Information for Equipment Safety -Read Before Use-

Incorrect usage of the product may result in fire, electric shock, or other serious damages. Please ensure to follow the conditions below.

|         |                                                                         |
|---------|-------------------------------------------------------------------------|
| Warning | Indicates that incorrect usage may result in serious injury or death.   |
| Caution | Indicates that incorrect usage may result in injury or property damage. |

|                        |                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| PRECAUTION             | △ symbols indicate caution (also including danger and warning). The example shown here indicates a fire caution.                 |
| DISASSEMBLY PROHIBITED | ⊘ symbols indicate prohibited acts. The example shown here indicates prohibition to disassemble.                                 |
| UNPLUG                 | ● symbols indicate instructions for specific actions. The example shown here indicates that the power cord must be disconnected. |

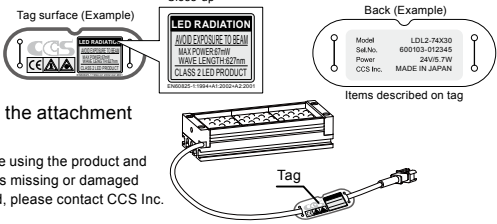
- 1 -

|                                                                                                                                                                                                                                                        |                                 |                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------|
| Warning                                                                                                                                                                                                                                                |                                 |                                                                                 |
| LED light radiation may cause corneal or retinal abnormalities if you look directly at the light. To prevent harmful light exposure, never look directly at the LED light.                                                                             |                                 |                                                                                 |
| Do not disassemble or modify the product. Doing so may result in fire or electric shock.                                                                                                                                                               | DISASSEMBLY PROHIBITED          | Do not touch the product with wet hands. Doing so may result in electric shock. |
| This product generates high temperatures. Do not touch the product while it is turned on or immediately after it is turned off, or burning may result. Provide cooling with a fan or other ventilation if the product is to be used in a closed space. | BE CAREFUL OF HIGH TEMPERATURES | DO NOT TOUCH WITH WET HANDS                                                     |
| Connect or disconnect the light cable only after turning off the power supply for the LED light. Failure to do so may result in circuit damage, fire caused by a minute spark, or electric shock.                                                      | FIRE HAZARD                     | SHOCK HAZARD                                                                    |
| If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the product immediately, and turn the power off. A fire or electric shock may result if the product is kept used.                                                |                                 |                                                                                 |
| UNPLUG                                                                                                                                                                                                                                                 |                                 |                                                                                 |

|                                                                                                                                                                                                                                                                                                                                 |             |                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Caution                                                                                                                                                                                                                                                                                                                         |             |                                                                                                                                                                                                    |
| Do not use user-made cables. Doing so may cause product failure. Use the optional extension cable if it is necessary to extend the distance between the light and the power supply.                                                                                                                                             | PROHIBITED  | Do not drop the product or subject it to impact. Doing so may cause the product to malfunction.                                                                                                    |
| Make sure that the length of the extension cable is less than 5m. If the extension cable is longer than 5m, the voltage applied to both ends of the LED light will drop due to the DC resistance of the cable. The rated voltage will not be attained for 100% radiant ability, and the radiant quantity will drop as a result. | INSTRUCTION | Be careful of static electricity. Damage to the LED light may occur, if a person charged with static electricity touches it. Keep the product away from all items charged with static electricity. |
| PROHIBITED                                                                                                                                                                                                                                                                                                                      |             |                                                                                                                                                                                                    |

3.Product Information

The product is provided with a tag specifying the class of risk, maximum output, and wavelength of LED light. The surface of the tag is classified by color according to the luminescence color. The back of the tag specifies the model name, power consumption, and serial number.



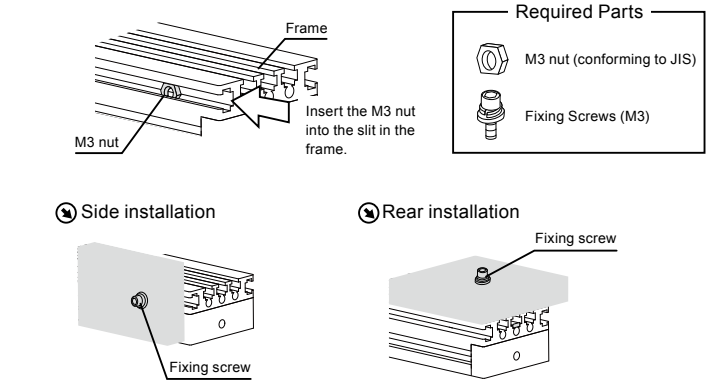
The right illustration shows the attachment position of the tag.

Be sure to check the contents before using the product and handle the tag with care. If the tag is missing or damaged and the contents cannot be checked, please contact CCS Inc.

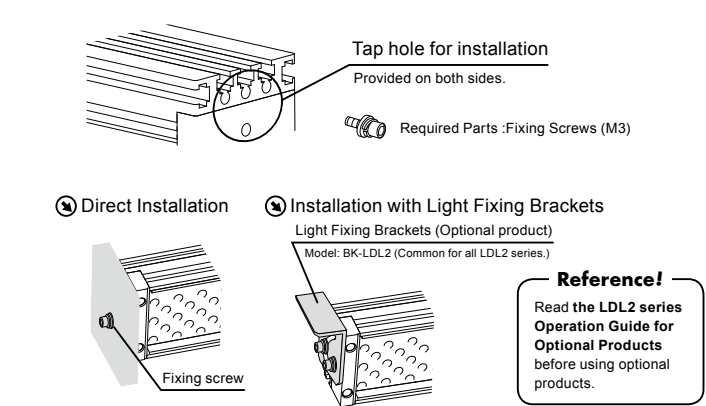
- 2 -

4.Installation

Installation on a Frame



Installation Using a Tap Hole



Caution The tap holes on the back surface are for factory use. Do not use them for installation.

- 3 -

5.Operating Instructions

Wire Connection

- 1 Make sure that the power is turned OFF.
  - 2 Connect light cable to power supply output connector.
- Reference!  
Read the instruction guide of the power supply for the LED light before use.
- INSTRUCTION  
Insert the connector completely.

Capture Images

- 1 Turn the power on.
  - 2 The Light will come on.
- Preparations!  
Focus imaging devices such as cameras, microscopes, etc. to inspection objects.
- Adjustment!  
Adjust light range, light angle, and light quantity to optimize images.  
Note:Use the power supply for the LED light to adjust the radiant quantity.

- Lighting at a Fixed Angle
- Lighting When Using the Light Fixing Brackets
- Other Applications  
Backlight Lighting Using a Diffusion Plate
- Reference!  
Read the LDL2 series Operation Guide for Optional Products before using optional products.
- Diffusion plate (Optional product)  
Model:DF-LDL2 series
- Diffusion plates, polarizing plates, and protective plates cannot be stacked for installation or used together.

- 4 -

6.Specifications

Common Specifications

|                                   |                                                |            |           |            |
|-----------------------------------|------------------------------------------------|------------|-----------|------------|
| LED color                         | Red (RD)                                       | White (SW) | Blue (BL) | Green (GR) |
| Input voltage                     | 24V max.                                       |            |           |            |
| Peak wavelength (typ.)            | 635nm                                          | —          | 470nm     | 525nm      |
| Relative color temperature (typ.) | —                                              | 6600K      | —         | —          |
| Cable                             | 0.3m                                           |            |           |            |
| Connector                         | SMR-03V-B                                      |            |           |            |
| Polarity and signal               | 1: Anode (+) brown, 2: NC, 3: Cathode (-) blue |            |           |            |
| Case material                     | Aluminum alloy                                 |            |           |            |
| Cooling method                    | Natural air cooling                            |            |           |            |

|                   |           |                   |           |
|-------------------|-----------|-------------------|-----------|
| LDL2-41x16 Series |           | LDL2-74x30 Series |           |
| Power consumption | 1.9W max. | Power consumption | 5.7W max. |
| Weight            | 50g       | Weight            | 100g      |

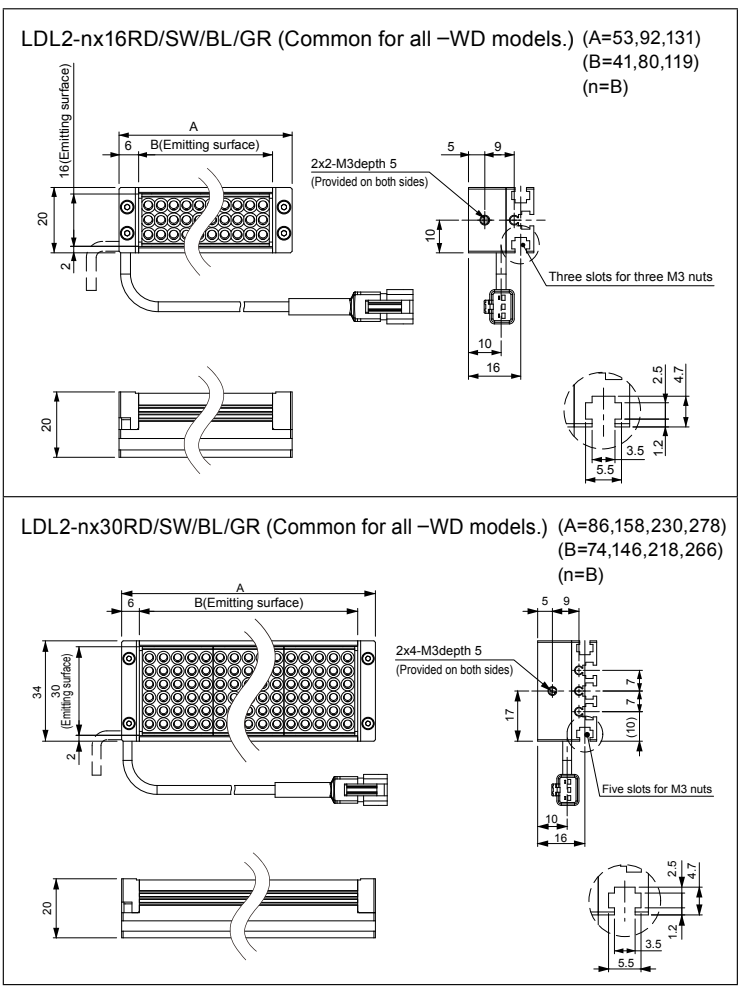
|                   |           |                    |          |
|-------------------|-----------|--------------------|----------|
| LDL2-80x16 Series |           | LDL2-146x30 Series |          |
| Power consumption | 3.8W max. | Power consumption  | 12W max. |
| Weight            | 75g       | Weight             | 170g     |

|                    |           |                    |          |
|--------------------|-----------|--------------------|----------|
| LDL2-119x16 Series |           | LDL2-218x30 Series |          |
| Power consumption  | 5.7W max. | Power consumption  | 18W max. |
| Weight             | 95g       | Weight             | 240g     |

|                    |  |                   |          |
|--------------------|--|-------------------|----------|
| LDL2-266x30 Series |  | Power consumption | 21W max. |
|                    |  | Weight            | 280g     |

- 5 -

7.Dimensional diagrams (mm)



8.EU RoHS Directive

The RoHS Directive is short for the "restriction of use of certain hazardous substances in electrical and electronic equipment." As a directive, it restricts the use of specific hazardous substances for new electrical and electronic equipment marketed in the EU on or after July 1, 2006, and restricts the use of six substances, which are (1) lead, (2) mercury, (3) cadmium, (4) hexavalent chromium, (5) polybrominated biphenyl (PBB), and (6) polybrominated diphenyl ether (PBDE).

\*Standards for "RoHS Directive-Compliant Products"

|             |             |            |                     |             |             |
|-------------|-------------|------------|---------------------|-------------|-------------|
| Lead        | Mercury     | Cadmium    | Hexavalent chromium | PBB         | PBDE        |
| 1000ppm Min | 1000ppm Min | 100ppm Min | 1000ppm Min         | 1000ppm Min | 1000ppm Min |

(Items that are exempted in the RoHS Directive are excluded from these standards.)

9.China RoHS Directive

China RoHS Directive is formally known as "Management Methods for Controlling Pollution by Electronic Information Products", which was implemented on March 1, 2007 in China. Same as EU RoHS Directive, this regulation restricts the usage of six substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). This regulation requires electronic information products which are manufactured or imported, and sold in China, to clearly disclose contents of the 6 restricted substances listed below.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |                                            |              |              |                              |     |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------|--------------|--------------|------------------------------|-----|------|
| Name and amount of toxic and hazardous substances or elements, which products contain                                                                                                                                                                                                                                                                                                                                                                                                |              | Toxic or Hazardous Substances and Elements |              |              |                              |     |      |
| Usage Deadline for Environmental Protection                                                                                                                                                                                                                                                                                                                                                                                                                                          | Product name | Lead (Pb)                                  | Mercury (Hg) | Cadmium (Cd) | Hexavalent chromium (Cr(VI)) | PBB | PBDE |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | LED Lights   | ×                                          | ○            | ×            | ○                            | ○   | ○    |
| ○: Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to SJ/T11363-2006 is within the limit requirement.<br>×: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to SJ/T11363-2006, is over the limit requirement.<br>*Lead and cadmium are excluded in EU RoHS.                                                                               |              |                                            |              |              |                              |     |      |
| Usage deadline for environmental protection<br>The number used in this logo is based on "Management Methods for Controlling Pollution by Electronic Information Products" and related regulations from People's Republic of China. It shows the product usage duration in years for environmental protection. After finishing a product usage, the product need to be re-used or discard appropriately following local law and regulations, complying with safety and usage caution. |              |                                            |              |              |                              |     |      |

|                                                                                                                                                                  |        |           |        |        |              |            |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|--------|--------|--------------|------------|--------------|
| 产品中有害有害物质或元素名称及含量                                                                                                                                                |        | 有害有害物质或元素 |        |        |              |            |              |
| 环保使用期限                                                                                                                                                           | 产品     | 铅 (Pb)    | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 10                                                                                                                                                               | LED 照明 | ×         | ○      | ×      | ○            | ○          | ○            |
| ○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。<br>×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。<br>(注) 铅和镉中的 "×", 因欧洲 RoHS 没限定, 故用 "○" 表示。 |        |           |        |        |              |            |              |
| 环保使用期限<br>此标志的数字是根据中华人民共和国电子产品污染控制管理办法以及有关标准等, 表示该产品的环保使用期限的年数。<br>遵守产品的安全和使用上的注意, 在产品使用后采取适当的方法根据各地法律, 规定, 回收再利用或进行废弃处理。                                        |        |           |        |        |              |            |              |

10.Laser Safety Standards (IEC60825-1 Amd.2)

LED illumination devices are laser products as stipulated by IEC (International Electrotechnical Commission) and JIS (Japanese Standards Association). A brief summary of the hazard classes is provided below.

- 7 -

|         |                                                                                                                       |
|---------|-----------------------------------------------------------------------------------------------------------------------|
| Class   | Outline of risk evaluation                                                                                            |
| Class 2 | Low-output visible light (400 to 700 nm). The eyes are generally protected by an aversion reaction, such as blinking. |

Warranty Information

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS AGREEMENT, COMPANY MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, COMPANY 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 A 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.

Please contact CCS for product information, and further information.  
The Instruction Guide is available from CCS's website as well.  
http://www.ccs-inc.co.jp

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- 8 -