

LDL-PF 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.

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Important Information for Equipment Safety - Read Before Use -










These products have been designed with full consideration of safety. However, incorrect usage of the products may result in fire, electric shock, or other serious damages. Please ensure to follow the conditions below.






The following symbols are used in this document to indicate and classify the relative importance of warnings and cautions.

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

The following symbols in the document indicate and classify the precautions.

|  |   |  |   |  |
|--|---|--|---|--|
|  <b>PROHIBITED</b> |  <b>DISASSEMBLY PROHIBITED</b> |  <b>DO NOT TOUCH WITH WET HANDS</b> |  <b>DO NOT SUBJECT TO MOISTURE</b> |  <b>MANDATORY ACTIONS</b> |
| These symbols indicate prohibited actions.   |   |  |   | This symbol indicates required actions.  |

|  <b>Warning</b>   |  |
|---|--|
| Do not disassemble or modify the Light Unit. Doing so may result in fire or electric shock.   |  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.  <b>MANDATORY ACTIONS</b>  |
| Do not touch the Light Unit with wet hands. Doing so may result in electric shock.  |  To use the Light Unit, connect it to a High Power Strobe Control Unit from CCS. Using any power supply other than a High Power Strobe Control Unit may result in fire or Light Unit failure.  <b>MANDATORY ACTIONS</b>  |
| Make sure that the Light Unit is free of moisture or any liquid. Exposure to water may result in fire or electric shock.  |  Connect or disconnect the light cable only after turning off the High Power Strobe Control Unit. Failure to do so may result in circuit damage, fire caused by a minute spark, or electric shock.  <b>MANDATORY ACTIONS</b>   |
| This Light Unit generates high temperatures. Do not touch the Light Unit 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 Light Unit is to be used in a closed space. |  If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the Light Unit immediately, turn the High Power Strobe Control Unit off, and unplug the power cord. A fire or electric shock may result if the Light Unit is kept used.  <b>MANDATORY ACTIONS</b> |

|  <b>Caution</b>   |  |
|--|--|
| Do not use user-made cables. Doing so may cause Light Unit failure. Use the High Power Strobe Extension Cables from CCS if it is necessary to extend the distance between the Light Unit and the Control Unit. |  Do not drop the Light Unit or subject it to impact. Doing so may cause the Light Unit to malfunction.  <b>PROHIBITED</b>  |
| Be careful of static electricity. Damage to the LED Light Unit may occur, if a person charged with static electricity touches it. Keep the Light Unit away from all items charged with static electricity.     |  Use the High Power Strobe Extension Cables (5 m or shorter). However, if the cable is too long, the light intensity will decrease due to voltage drop caused by the DC resistance of the cable.  <b>MANDATORY ACTIONS</b> |

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.

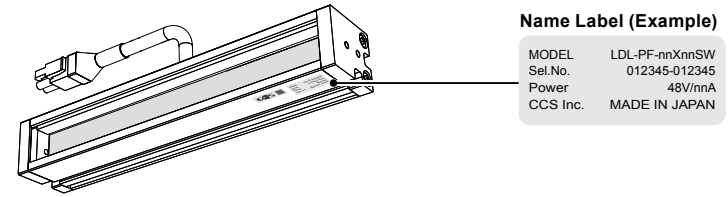
Please install the product to locations with following conditions.  
Incorrect installation location may cause product failure.

- 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

Confirming Product Information

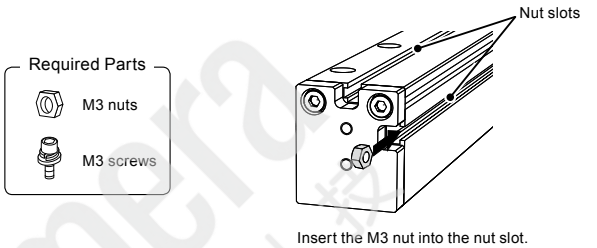
The following label is attached to the LED Light Unit. The name label specifies the model name, power consumption, and serial number. Be sure to check the contents before using the Light Unit and handle the label with care. If the label is damaged and the contents cannot be checked, please contact CCS Inc.



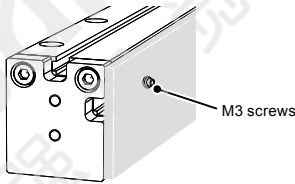
3

Installation

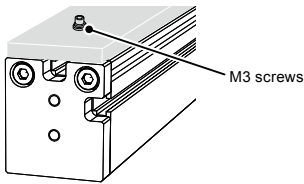
Installation on a Frame



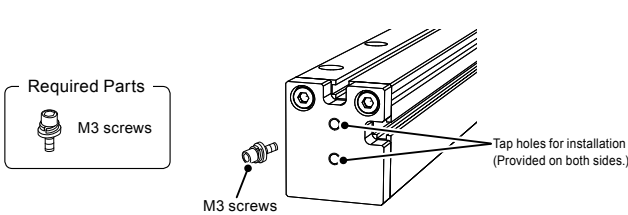
Side Installation



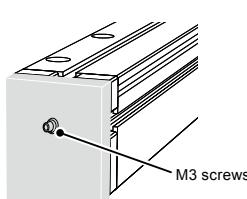
Rear Installation



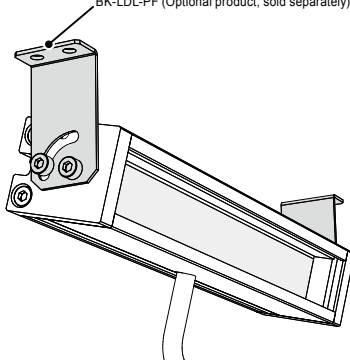
Installation Using a Tap Hole



Direct Installation



Installation with Brackets



## 4 Operating Instructions



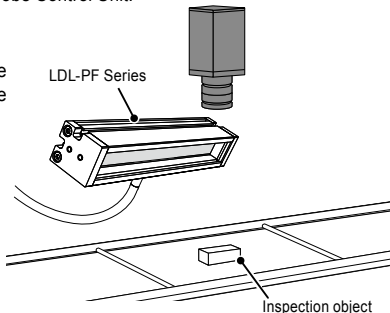
Make sure that the High Power Strobe Control Unit is turned OFF before you connect the Light Unit.

- Connect the light cable to a High Power Strobe Control Unit.
    - Connect the light cable to a High Power Strobe Control Unit. The High Power Strobe Control Unit must be equipped with **ELR-04NV** connectors for power output.
    - Insert the plug all the way into the connector.
    - High Power Strobe Extension Cables are available for the Light Units (FCB-PF Series, sold separately).
    - There are two input connectors on an LDL-PF-152X30-series Light Unit. Before using the Light Unit, refer to *Using LDL-PF-152X30-series Light Units*.
- For information on High Power Strobe Control Unit and Extension Cables, refer to the instruction guide for the High Power Strobe Control Unit.

- Turn ON the High Power Strobe Control Unit, and then turn ON the Light Unit.

- Adjust light range, light angle, and radiant quantity to optimize images.

When using color image processing equipment, readjust the white balance of the camera according to the operating conditions.



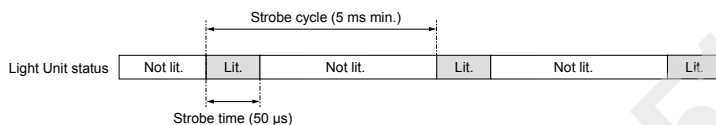
- Conceptual Diagram -

**Warning** Use the Light Unit within the lighting conditions (maximum strobe time and maximum duty cycle\*). Exceeding the lighting conditions, such as performing continuous lighting using a power supply other than a High Power Strobe Control Unit, may result in fire or Light Unit failure. For the lighting conditions, refer to 5. *Main Specifications*.

\* The duty cycle is the strobe operation ratio expressed by the following equation:

Duty cycle (%) = 100 X Strobe time/Strobe cycle

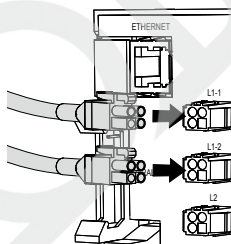
For example, if you want to restrict the duty cycle to 1% or less when the strobe time is 50  $\mu$ s, you must make the Light Unit flash with a cycle of 5 ms or longer.



### Using LDL-PF-152X30-Series Light Units

There are two input connectors on an LDL-PF-152X30-series Light Unit. Use the Light Unit as follows:

- Connect each of the input connectors to one of the two output connectors that supply power on the same channel of a Control Unit. For example, connect the input connectors to the L1-1 and L1-2 output connectors on a PF-series Control Unit.
- Use two High Power Strobe Extension Cables of the same length to connect the Light Unit. Using cables of different lengths may cause uneven light emission due to different cable specifications.



### Optional Accessories (Sold Separately)

The following optional products are available as required.

#### Emitting Width: 18 mm

| Applicable Light Unit | Polarizing Plate | Diffusion Plate  | Bracket   |
|-----------------------|------------------|------------------|-----------|
| LDL-PF-52X18 Series   | PL-LDL-PF-52X18  | DF-LDL-PF-52X18  | BK-LDL-PF |
| LDL-PF-102X18 Series  | PL-LDL-PF-102X18 | DF-LDL-PF-102X18 |           |
| LDL-PF-152X18 Series  | PL-LDL-PF-152X18 | DF-LDL-PF-152X18 |           |

#### Emitting Width: 30 mm

| Applicable Light Unit | Polarizing Plate | Diffusion Plate  | Bracket   |
|-----------------------|------------------|------------------|-----------|
| LDL-PF-52X30 Series   | PL-LDL-PF-52X30  | DF-LDL-PF-52X30  | BK-LDL-PF |
| LDL-PF-102X30 Series  | PL-LDL-PF-102X30 | DF-LDL-PF-102X30 |           |
| LDL-PF-152X30 Series  | PL-LDL-PF-152X30 | DF-LDL-PF-152X30 |           |

For details, refer to *LDL-PF Series Operation Guide for Optional Products*.

## 5 Main Specifications

### Common Specifications

|                                      |  |
|--------------------------------------|--|
| Input voltage                        | 48 VDC max.  |
| Lighting conditions                  | Maximum strobe time: 500 $\mu$ s, Maximum duty cycle: 1%               |
| Connector                            | ELP-04NV   |
| Cable length                         | 300 mm   |
| Cooling method                       | Natural air-cooling  |
| 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) |
| CE marking                           | Safety standard: Conforms to EN62471                                   |
| Case material                        | Aluminum alloy, Resin  |
| Accessories                          | Instruction Guide  |

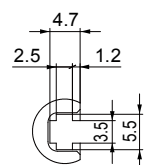
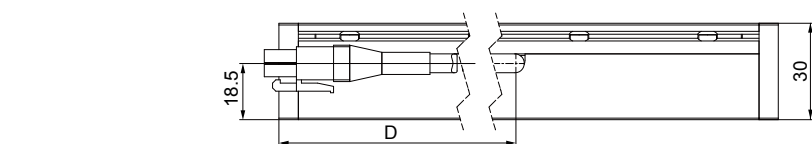
### Specifications by Model (Emitting Width: 18 mm)

| Model name      | LED color | Peak wavelength / correlated color temperature (typ.) | Peak current | Number of connectors | Polarity                                | Weight (max.) |
|-----------------|-----------|---|--------------|----------------------|---|---------------|
| LDL-PF-52X18RD  | Red       | 627 nm  | 5.4 A        | 1                    | 1: (+),<br>2: (+),<br>3: (-),<br>4: (-) | 140 g         |
| LDL-PF-52X18SW  | White     | 7500 K  | 10.8 A       |                      |   | 210 g         |
| LDL-PF-102X18RD | Red       | 627 nm  |              |                      |   |               |
| LDL-PF-102X18SW | White     | 7500 K  | 16.2 A       |                      |   | 290 g         |
| LDL-PF-152X18RD | Red       | 627 nm  |              |                      |   |               |
| LDL-PF-152X18SW | White     | 7500 K  |              |                      |   |               |

### Specifications by Model (Emitting Width: 30 mm)

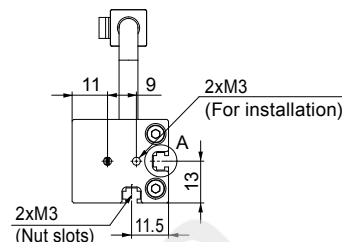
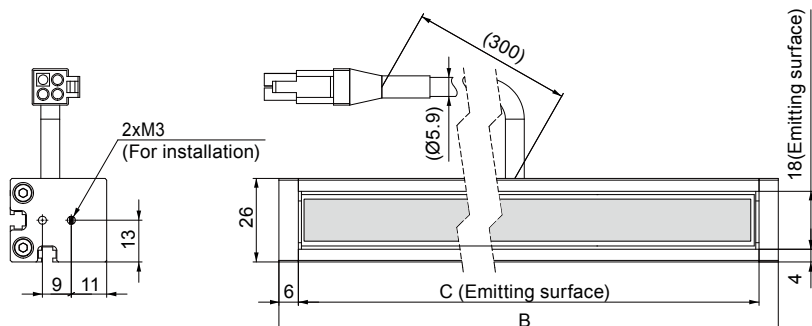
| Model name      | LED color | Peak wavelength / correlated color temperature (typ.) | Peak current | Number of connectors | Polarity                                | Weight (max.) |   |                            |
|-----------------|-----------|---|--------------|----------------------|---|---------------|---|----------------------------|
| LDL-PF-52X30RD  | Red       | 627 nm  | 9 A          | 1                    | 1: (+),<br>2: (+),<br>3: (-),<br>4: (-) | 180 g         |   |                            |
| LDL-PF-52X30SW  | White     | 7500 K  |              |                      |   | 270 g         |   |                            |
| LDL-PF-102X30RD | Red       | 627 nm  | 27 A         |                      |   |               | 2 | Refer to 6.<br>Dimensions. |
| LDL-PF-102X30SW | White     | 7500 K  |              |                      |   |               |   |                            |
| LDL-PF-152X30RD | Red       | 627 nm  | 27 A         | 2                    | Refer to 6.<br>Dimensions.              | 380 g         |   |                            |
| LDL-PF-152X30SW | White     | 7500 K  |              |                      |   |               |   |                            |

# LDL-PF-52X18RD/SW, 102X18RD/SW, 152X18RD/SW



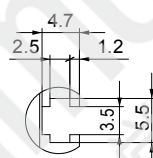
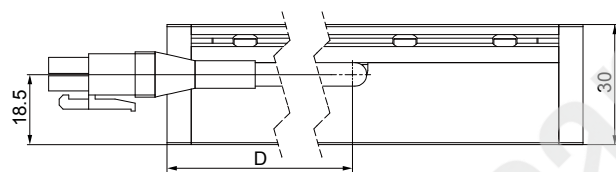
Detail diagram A

| Model         | B   | C   | D  |
|---------------|-----|-----|----|
| LDL-PF-52X18  | 64  | 52  | 32 |
| LDL-PF-102X18 | 114 | 102 | 57 |
| LDL-PF-152X18 | 164 | 152 | 82 |



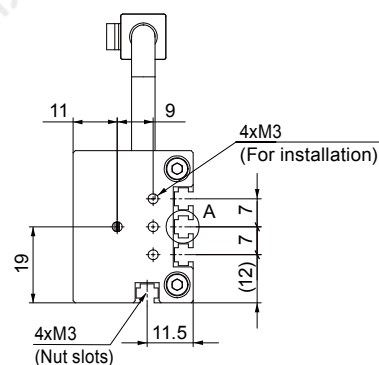
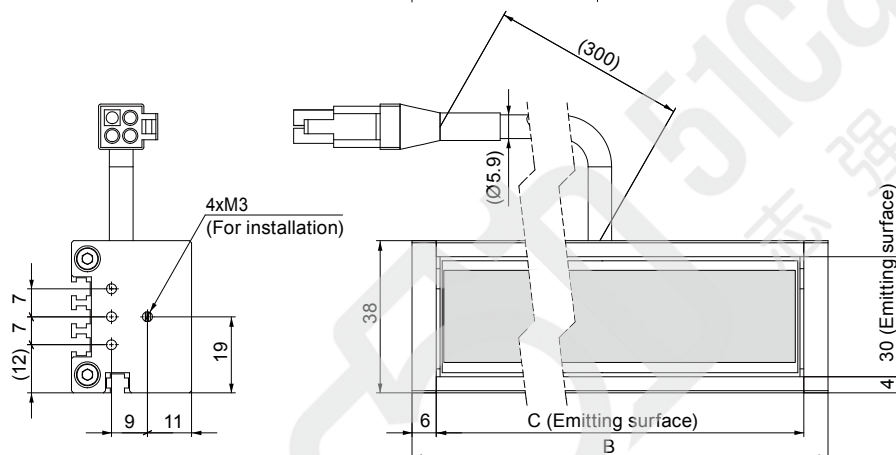
Cable permitted bending radius: 35.4 mm

# LDL-PF-52X30RD/SW, 102X30RD/SW



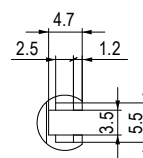
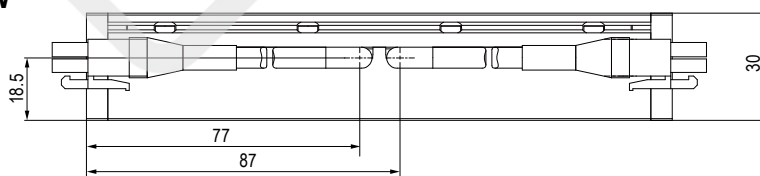
Detail diagram A

| Model         | B   | C   | D  |
|---------------|-----|-----|----|
| LDL-PF-52X30  | 64  | 52  | 32 |
| LDL-PF-102X30 | 114 | 102 | 57 |

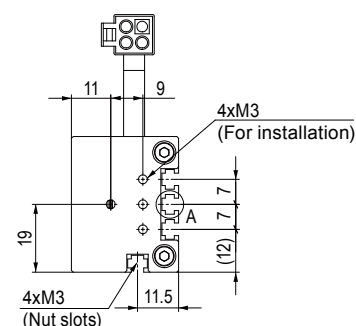
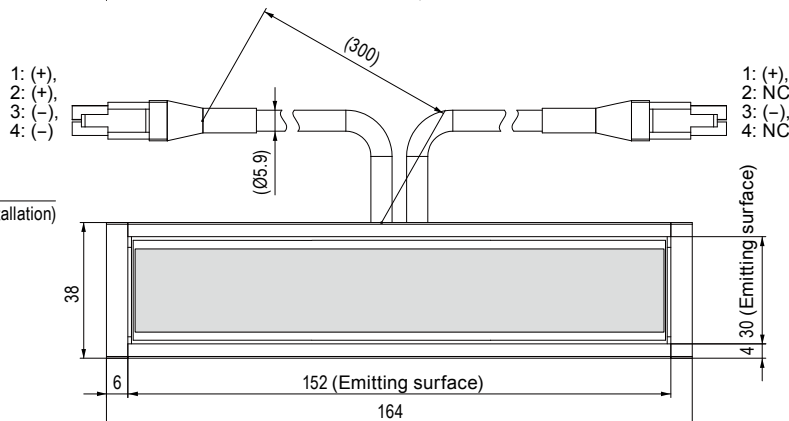


Cable permitted bending radius: 35.4 mm

# LDL-PF-152X30RD/SW



Detail diagram A



Cable permitted bending radius: 35.4 mm



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