

High Power Strobe Low-Angle Ring Lights

LED Light for Machine Vision
and Industrial Inspection

LDR-PF-LA Series



Instruction Guide

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.






2 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.

 Warning	Indicates that incorrect usage may result in serious injury or death.	 Caution	Indicates that incorrect usage may result in injury or property damage.
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The following symbols in the document indicate and classify the precautions.

 PROHIBITED  DISASSEMBLY PROHIBITED  DO NOT TOUCH WITH WET HANDS  DO NOT SUBJECT TO MOISTURE These symbols indicate prohibited actions.	 MANDATORY ACTIONS This symbol indicates required actions.
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 Warning	
Do not disassemble or modify the Light Unit. Doing so may result in fire or electric shock.	 DISASSEMBLY PROHIBITED  MANDATORY ACTIONS 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 touch the Light Unit and cables with wet hands. Doing so may result in electric shock.	 DO NOT TOUCH WITH WET HANDS  MANDATORY ACTIONS 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.
Make sure that the Light Unit is free of moisture or any liquid. Exposure to water may result in fire or electric shock.	 DO NOT SUBJECT TO MOISTURE  MANDATORY ACTIONS 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.
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.	 MANDATORY ACTIONS  MANDATORY ACTIONS 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.

 Caution	
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.	 PROHIBITED  PROHIBITED Do not drop the Light Unit or subject it to impact. Doing so may cause the Light Unit to malfunction.
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.	 PROHIBITED  MANDATORY ACTIONS 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.

Do not use the Light Unit in the following situations.

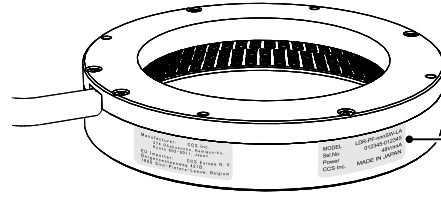
- Under conditions or in an environment not described in this instruction guide.
- In nuclear energy control systems, railroad systems, aviation systems, vehicles, combustion equipment, medical equipment, amusement machines, or safety equipment.
- In applications involving serious risk to life or property, 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, peak current, 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.



Name Label (Example)

MODEL LDR-PF-nnnSW-LA
 Sel.No. 012345-012345
 Power 48V/nnA
 CCS Inc. MADE IN JAPAN

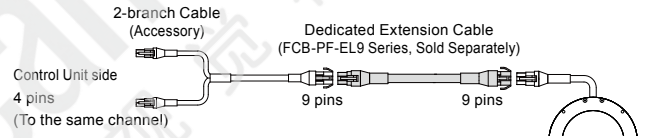
3 Operating Instructions

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

1 Connect the light cable to a High Power Strobe Control Unit.

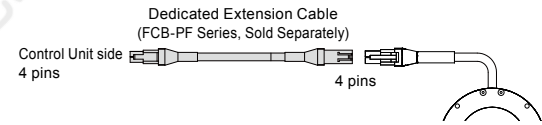
For the LDR-PF-100-LA or LDR-PF-150-LA-series Light Units

- 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.
- Use a 2-branch cable that comes with the Light Unit and connect the Light Unit and a High Power Strobe Control Unit. Connect both of the 4-pin connectors of the 2-branch cable to the output connectors that supply power on the same channel of a Control Unit. For example, connect the 4-pin connectors to the L1-1 and L1-2 output connectors on a PF-A4048-2 Control Unit.
- Insert the plug all the way into the connector.
- Dedicated Extension Cables are optionally available for the Light Units. For details, refer to 5. *Dedicated Extension Cables FCB-PF-EL9 Series (Sold Separately)*.



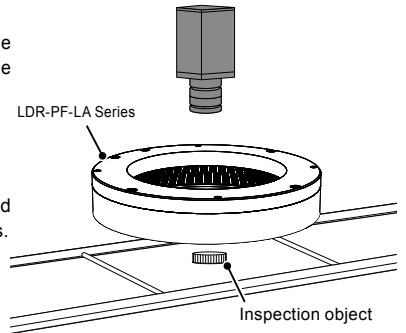
For the LDR-PF-75-LA-series Light Units

- 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.
- High Power Strobe Extension Cables (FCB-PF Series, sold separately) are available for the Light Units.
- Insert the plug all the way into the connector.



For information on High Power Strobe Control Unit and Extension Cables (FCB-PF Series), refer to the instruction guide for the High Power Strobe Control Unit.

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



- Conceptual Diagram -

3 Adjust the Light Unit position and radiant quantity to optimize images.

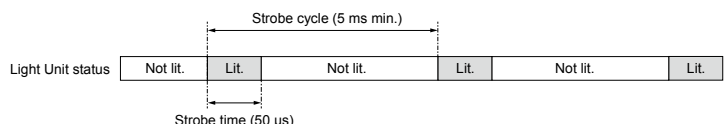
Warning

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 6. *Main Specifications*.

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

$$\text{Duty cycle (\%)} = 100 \times \text{Strobe time} / \text{Strobe cycle}$$

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



4 Diffusion Plates (Sold Separately)

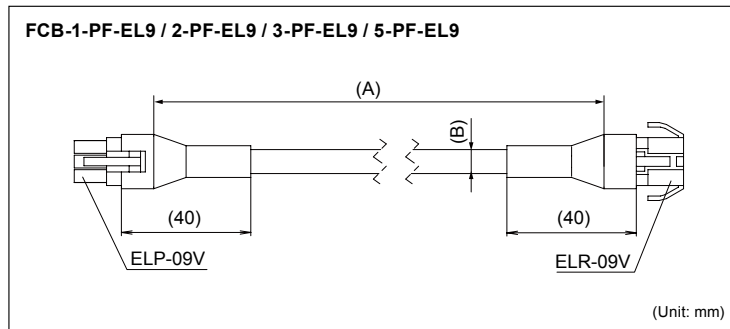
An optional Diffusion Plate can be installed on the Light Unit with a Mounting Adapter.

Optional accessories	For the LDR-PF-75-LA series	For the LDR-PF-100-LA series	For the LDR-PF-150-LA series
Diffusion Plate	DF-LDR-PF-75-LA	DF-LDR-PF-100-LA	DF-LDR-PF-150-LA
Mounting Adapter	AD-LDR-PF-75-LA	AD-LDR-PF-100-LA	AD-LDR-PF-150-LA

For details, refer to *LDR-PF-LA-series Operation Guide for Optional Products*.

5 Dedicated Extension Cables FCB-PF-EL9 Series (Sold Separately)

These extension cables are used for connecting the LDR-PF-100-LA- or LDR-PF-150-LA-series Light Unit and the High Power Strobe Control Unit.



Model name	FCB-1-PF-EL9	FCB-2-PF-EL9	FCB-3-PF-EL9	FCB-5-PF-EL9
Dimension A	1,000	2,000	3,000	5,000
Dimension B	Ø7.4	Ø7.4	Ø7.4	Ø9.1
Weight	100 g max.	190 g max.	270 g max.	680 g max.
Permitted bending radius	44.4 mm	44.4 mm	44.4 mm	54.6 mm

6 Main Specifications

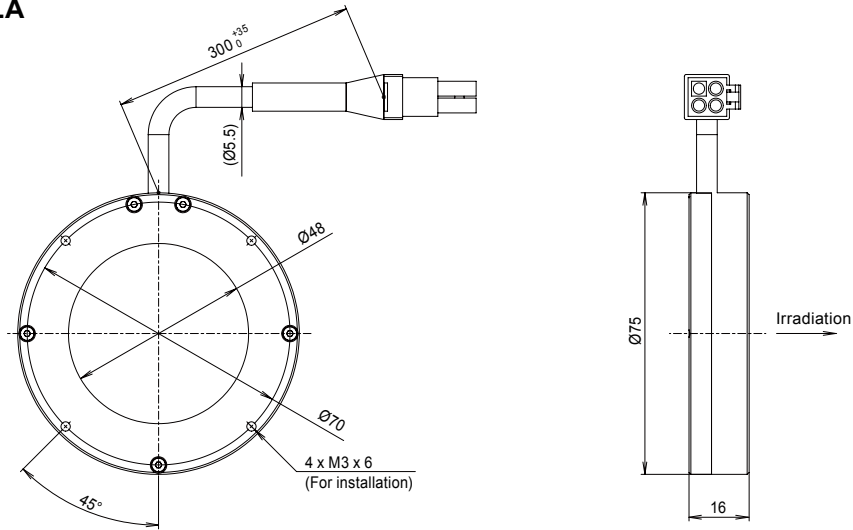
Common Specifications

Input voltage	48 VDC max.
Lighting conditions	Maximum strobe time: 500 μ s, Maximum duty cycle: 1%
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

Specifications by Model

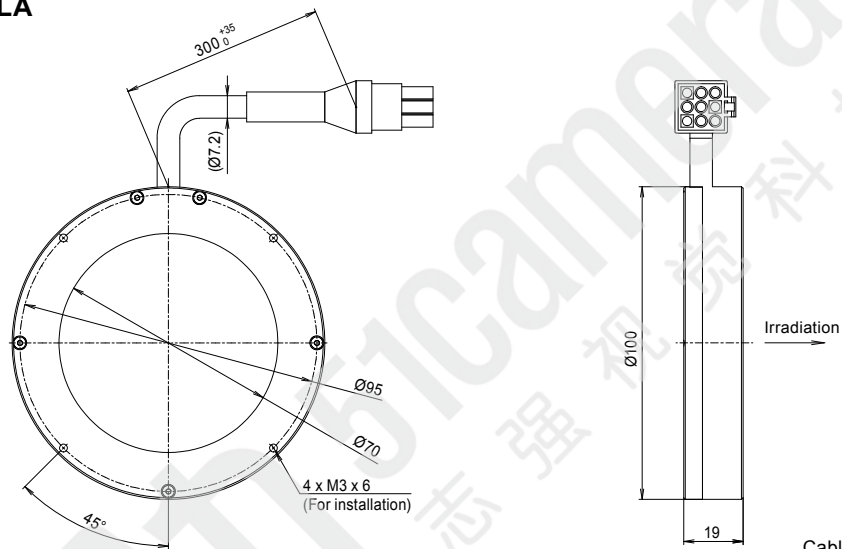
Model name	LED color	Peak wavelength / correlated color temperature (typ.)	Peak current	Connector	Polarity	Weight (max.)	Accessories
LDR-PF-75RD-LA	Red	622 nm	16.2 A	ELP-04NV	1: (+), 2: (+), 3: (-), 4: (-)	125 g	Instruction guide
LDR-PF-75SW-LA	White	8,000 K					
LDR-PF-100RD-LA	Red	622 nm	28.8 A	ELP-09V	1: (+), 2: (+), 3: (-), 4: (-), 5: (+), 6: (+), 7: (-), 8: (-), 9: NC	200 g	Instruction guide, 2-branch cable (Model: FCB-0.3-PF-W-EL4-EL9)
LDR-PF-100SW-LA	White	8,000 K					
LDR-PF-150RD-LA	Red	622 nm	42.0 A			350 g	
LDR-PF-150SW-LA	White	8,000 K					

LDR-PF-75RD-LA / SW-LA



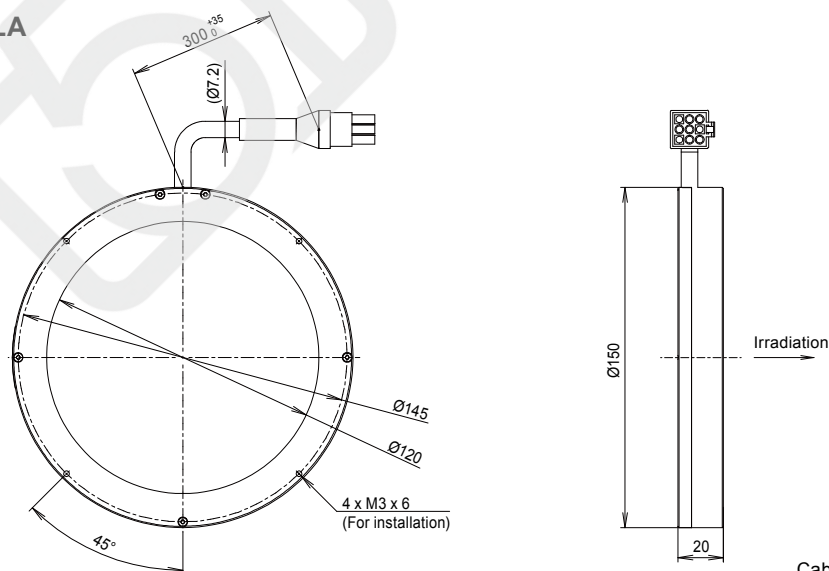
Cable permitted bending radius: 22mm

LDR-PF-100RD-LA / SW-LA



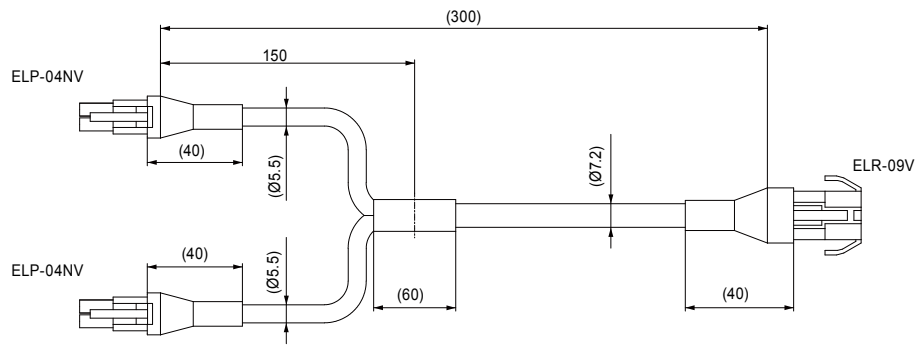
Cable permitted bending radius: 43.2mm

LDR-PF-150RD-LA / SW-LA



Cable permitted bending radius: 43.2mm

2-Branch Cable (Accessory for the LDR-PF-100-LA- and LDR-PF-150-LA-Series Light Units)



Model: FCB-0.3-PF-W-EL4-EL9
 Cable permitted bending radius: 43.2 mm



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