

HLDL3 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.



1 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 instruction guide 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.
--	---	--	---

The following symbols in the Instruction Guide indicate and classify the precautions.

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

 Warning	
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. 
Do not touch the Light Unit or cables with wet hands. Doing so may result in 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. 
Make sure that the Light Unit is free of moisture or any liquid. Exposure to water may result in fire, electric shock.	Connect or disconnect the light cable only after turning off the power source. Failure to do so may result in circuit damage, fire caused by a minute spark, or electric shock. 
If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the Light Unit immediately, and turn off the power source. A fire or electric shock may result if the Light Unit is kept used.	Using Infrared Light Units (HLDL3-<i>nnn</i>X<i>nnn</i>-IR) Make known to all personnel concerned the risk of infrared radiation. Failure to do so may cause incorrect handling. 

 Caution	
Do not use user-made cables. Doing so may cause product failure. Use the CCS extension cable if it is necessary to extend the distance between the Light Unit and the Control Unit.	Use Control Unit that is suitable for the Light Unit ratings. Using an incorrect Control Unit can cause Light Unit failure. 
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.	Use a standard Extension Cable that is manufactured by CCS. However, if the cable is too long, the light intensity will decrease due to the DC resistance of the cable. 
Do not drop the Light Unit or subject it to impact. Doing so may cause the Light Unit to malfunction.	

Do not use the Light Unit in the following situations.

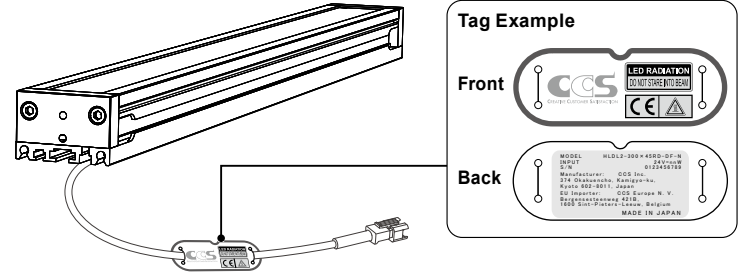
- Under conditions or in an environment not described in this instruction guide.
- In nuclear energy control systems, railroad systems, aviation systems, vehicles, combustion equipment, medical equipment, amusement machines, or safety equipment.
- In applications involving serious risk to life or property,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

Please install the Light Unit to locations with following conditions. Incorrect installation location may cause Light Unit 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.

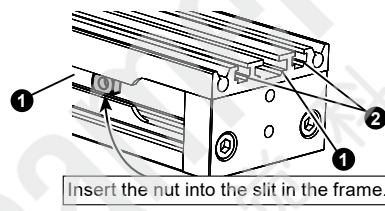
2 Confirming Product Information

The following tag is attached to the cable on the LED Light. The color of the label indicates the luminescence color of the Light. The back of the tag there is a name label that gives the model number, power consumption, and serial number. Be sure to check the contents before using the product and handle the label with care. If the label is missing or damaged and the contents cannot be checked, please contact CCS Inc.



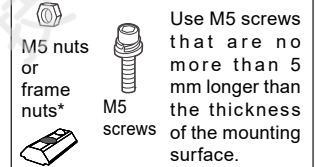
3 Installation

Installation on a Frame



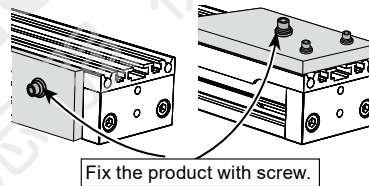
Required Parts

Mounting to a frame ①

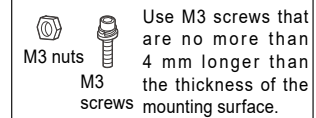


* 5 series (mfg. by MISUMI Group Inc.), SF20 series (mfg. by SUS corp.), etc. (Recommended tightening torque: 0.6 N · m)

Side Installation Rear Installation



Mounting to a frame ②

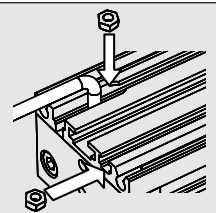


(Recommended tightening torque: 0.3 N · m)

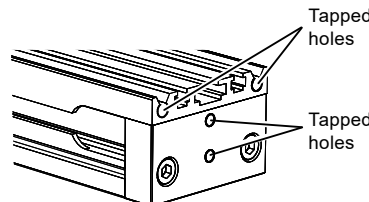
Determine the screw interval according to the application environment and use a suitable number of screws for installation.



You can also insert the M3 nut in the vicinity of the light cable outlet.



Installation Using a Tap Hole

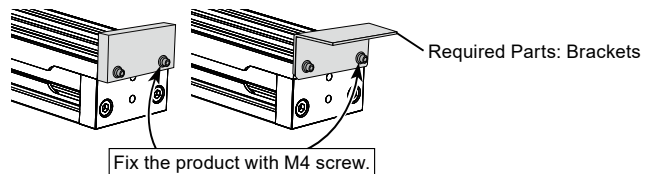


Required Parts



(Recommended tightening torque: 0.6 N · m)

Direct Installation Installation with Brackets



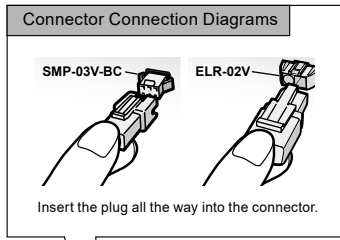
4 Operating Instructions



Make sure that the Control Unit for the LED Light is turned off.

1 Connect the light cable of the product to the control unit output connector.

- If the light emitting surface of the Bar Light is 600 mm or shorter, connect the power output connector to an **SMP-03V-BC** Connector.
- If the light emitting surface of the Bar Light is 750 mm or longer, connect the power output connector to an **ELR-02V** Connector.



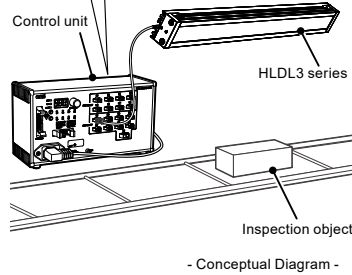
Caution

Using Infrared Light Units (HLDL3-*nnnXnnn-IR*)

Do not expose human eyes to infrared radiation. Also, make known to all personnel concerned the risk of infrared radiation.

2 Turn ON the Control Unit to turn ON the light.

3 Adjust light range, light angle, and radiant quantity to optimize images. Adjust the radiant quantity at the Control Unit.



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

- Read the instruction guide of the control unit before use.
- For information on applicable Control Units and cables, refer to the product catalogs or the CCS website.



Caution

Using Infrared Light Units (HLDL3-*nnnXnnn-IR*)

The LEDs that appear to be not lit radiate infrared light. Do not look at the radiated light directly with your naked eyes. To check for LED radiation, use an infrared-enabled camera to look at the LEDs indirectly.

5 Optional Products (Sold Separately)

The following products are available for the Light Units. Obtain the required product.

Diffusion Plates

A diffusion plate of low uniformity and high transmission is built into the Light Unit at factory shipment*.

You can replace the diffusion plate to adjust the characteristics of light.

* Only for the wide-type Light Units in white, a DF-HLDL3-series diffusion plate (uniformity: medium, transmission: medium) is built into the Light Unit.

Model name	Uniformity	Transmission
DF-HLDL3 series	Medium	Medium
DF-HLDL3-HU series	High	Low

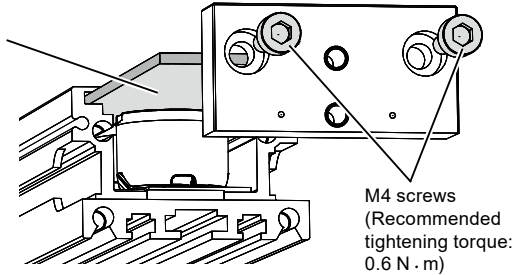
DF-HLDL3 series	DF-HLDL3-HU series	Applicable Light Units
DF-HLDL3-150	DF-HLDL3-150-HU	HLDL3-150X28 series
DF-HLDL3-300	DF-HLDL3-300-HU	HLDL3-300X28 series
DF-HLDL3-450	DF-HLDL3-450-HU	HLDL3-450X28 series
DF-HLDL3-600	DF-HLDL3-600-HU	HLDL3-600X28 series
DF-HLDL3-750	DF-HLDL3-750-HU	HLDL3-750X28 series
DF-HLDL3-900	DF-HLDL3-900-HU	HLDL3-900X28 series
DF-HLDL3-1050	DF-HLDL3-1050-HU	HLDL3-1050X28 series
DF-HLDL3-1200	DF-HLDL3-1200-HU	HLDL3-1200X28 series
DF-HLDL3-1350	DF-HLDL3-1350-HU	HLDL3-1350X28 series
DF-HLDL3-1500	DF-HLDL3-1500-HU	HLDL3-1500X28 series
DF-HLDL3-1650	DF-HLDL3-1650-HU	HLDL3-1650X28 series
DF-HLDL3-1800	DF-HLDL3-1800-HU	HLDL3-1800X28 series

5 Optional Products (Sold Separately, Continued)

Diffusion Plates (Continued)

Loosen the M4 screws and replace the diffusion plate.

The diffusion plate has a front side and a back side. Install it with the glossy, smooth side facing the LEDs.

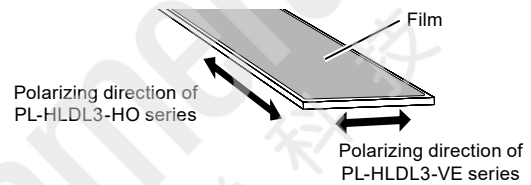


Model name	Material	Package Contents
DF-HLDL3 series, DF-HLDL3-HU series	Resin	Diffusion plate x 1 pc.

For information on the dimensions, refer to the CCS website.

Polarizing Plates

These plates are used to linearly polarize the light. You can prevent light reflection by using the polarizing plate together with the polarizing filter (PL series, PL2 series) mounted to the lens.

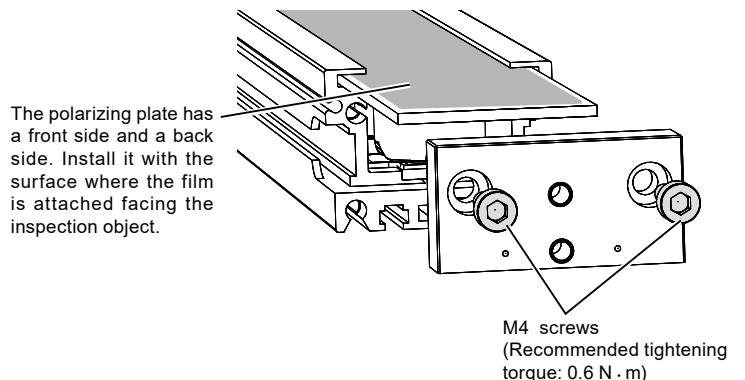


PL-HLDL3-VE series	PL-HLDL3-HO series	Applicable Lights (excluding infrared models)
PL-HLDL3-150-VE	PL-HLDL3-150-HO	HLDL3-150X28 series
PL-HLDL3-300-VE	PL-HLDL3-300-HO	HLDL3-300X28 series
PL-HLDL3-450-VE	PL-HLDL3-450-HO	HLDL3-450X28 series
PL-HLDL3-600-VE	PL-HLDL3-600-HO	HLDL3-600X28 series
PL-HLDL3-750-VE	PL-HLDL3-750-HO*	HLDL3-750X28 series
PL-HLDL3-900-VE	PL-HLDL3-900-HO*	HLDL3-900X28 series
PL-HLDL3-1050-VE*	PL-HLDL3-1050-HO*	HLDL3-1050X28 series
PL-HLDL3-1200-VE*	PL-HLDL3-1200-HO*	HLDL3-1200X28 series
PL-HLDL3-1350-VE*	PL-HLDL3-1350-HO*	HLDL3-1350X28 series
PL-HLDL3-1500-VE*	PL-HLDL3-1500-HO*	HLDL3-1500X28 series
PL-HLDL3-1650-VE*	PL-HLDL3-1650-HO*	HLDL3-1650X28 series
PL-HLDL3-1800-VE*	PL-HLDL3-1800-HO*	HLDL3-1800X28 series

* The film on these polarizing plates has seams. For detailed information, refer to the corresponding drawings on the CCS website.

Note: The attachment of the film to the resin plate may be affected by changes in the environment, but this does not impact the function or performance.

Loosen the M4 screws and replace the polarizing plate.



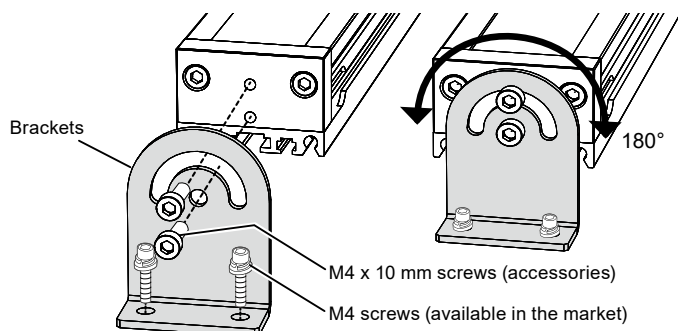
Model name	Material	Package Contents
PL-HLDL3-VE series, PL-HLDL3-HO series	Resin	Polarizing plate x 1 pc.

For information on the dimensions, refer to the CCS website.

Installation Brackets

These brackets are used to install the HLDL3 series Light Unit.

- For the long Light Units, support the middle part by other means if necessary.
- These brackets are not intended to be used together with Compatible Installation Bracket.



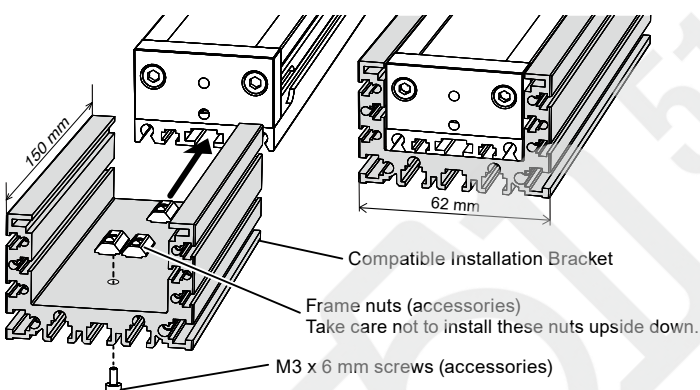
Model name	Material	Package Contents
BK-HLDL3	Aluminum alloy	Brackets x 2 pcs., M4 x 10 mm screws x 5 pcs.

For information on the dimensions, refer to the CCS website.

Compatible Installation Bracket

This bracket is used to install the HLDL3 series Light Unit (body width: 44 mm) in the same way as for the HLDL2 series Light Unit (body width: 62 mm). For details on how to install the HLDL2 series Light Unit, refer to the instruction guide for HLDL2 series.

Note: For the wide-type-HLDL2-series Light Units, note that the light emitting surface is 16 mm closer to the inspection object than before.



First, temporarily secure the three frame nuts to the bracket with M3 screws. Then attach the bracket to the HLDL3 series Light Unit so that these frame nuts pass through the slit in the frame. Finally, move the bracket to the proper position and then fully tighten the M3 screws. (Recommended tightening torque: 0.3 N·m)

Model name	Material	Accessories
AD-HLDL3	Aluminum alloy	M3 x 6 mm screws x 4 pcs., Frame nuts x 4 pcs.

For information on the dimensions, refer to the CCS website.

Common Specifications

Input voltage	24 VDC
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 EN 62471
Case material	Aluminum alloy
Accessories	Instruction guide x1

Specifications by Model (LED Color)

Identifier	LED color	Peak wavelength / correlated color temperature (typ.)
RD-DF	Red	625 nm
SW-DF	White	5700 K
BL-DF	Blue	465 nm
IR-DF	Infrared	860 nm

Specifications by Model

Model name*1	Power consumption (max.)	Weight (max.)	Polarity
HLDL3-150X28RD-DF-□	15 W	Wide type: 370 g Medium/narrow type: 350 g	SMR-03V-B 1 : (+) 2 : NC 3 : (-)
HLDL3-150X28SW-DF-□			
HLDL3-150X28BL-DF-□			
HLDL3-150X28IR-DF-□			
HLDL3-300X28RD-DF-□	30 W	Wide type: 620 g Medium/narrow type: 600 g	
HLDL3-300X28SW-DF-□			
HLDL3-300X28BL-DF-□			
HLDL3-300X28IR-DF-□			
HLDL3-450X28RD-DF-□	44 W	Wide type: 940 g Medium/narrow type: 910 g	
HLDL3-450X28SW-DF-□			
HLDL3-450X28BL-DF-□			
HLDL3-450X28IR-DF-□			
HLDL3-600X28RD-DF-□	59 W	Wide type: 1240 g Medium/narrow type: 1200 g	
HLDL3-600X28SW-DF-□			
HLDL3-600X28BL-DF-□			
HLDL3-600X28IR-DF-□			
HLDL3-750X28RD-DF-□	74 W	Wide type: 1560 g Medium/narrow type: 1510 g	
HLDL3-750X28SW-DF-□			
HLDL3-750X28BL-DF-□			
HLDL3-750X28IR-DF-□			
HLDL3-900X28RD-DF-□	88 W	Wide type: 1860 g Medium/narrow type: 1800 g	
HLDL3-900X28SW-DF-□			
HLDL3-900X28BL-DF-□			
HLDL3-900X28IR-DF-□			
HLDL3-1050X28RD-DF-□	103 W	Wide type: 2180 g Medium/narrow type: 2110 g	
HLDL3-1050X28SW-DF-□			
HLDL3-1050X28BL-DF-□			
HLDL3-1050X28IR-DF-□			
HLDL3-1200X28RD-DF-□	117 W	Wide type: 2480 g Medium/narrow type: 2400 g	
HLDL3-1200X28SW-DF-□			
HLDL3-1200X28BL-DF-□			
HLDL3-1200X28IR-DF-□			

(Continued to the next page.)

Specifications by Model (Continued)

Model name*1	Power consumption (max.)	Weight (max.)	Polarity
HLDL3-1350X28RD-DF-□	132 W	Wide type: 2800 g Medium/narrow type: 2710 g	ELP-02V 1 : (+) 2 : (-) Two cables*2
HLDL3-1350X28SW-DF-□			
HLDL3-1350X28BL-DF-□			
HLDL3-1350X28IR-DF-□			
HLDL3-1500X28RD-DF-□	147 W	Wide type: 3100 g Medium/narrow type: 3000 g	
HLDL3-1500X28SW-DF-□			
HLDL3-1500X28BL-DF-□			
HLDL3-1500X28IR-DF-□			
HLDL3-1650X28RD-DF-□	161 W	Wide type: 3420 g Medium/narrow type: 3310 g	
HLDL3-1650X28SW-DF-□			
HLDL3-1650X28BL-DF-□			
HLDL3-1650X28IR-DF-□			
HLDL3-1800X28RD-DF-□	176 W	Wide type: 3720 g Medium/narrow type: 3600 g	
HLDL3-1800X28SW-DF-□			
HLDL3-1800X28BL-DF-□			
HLDL3-1800X28IR-DF-□			

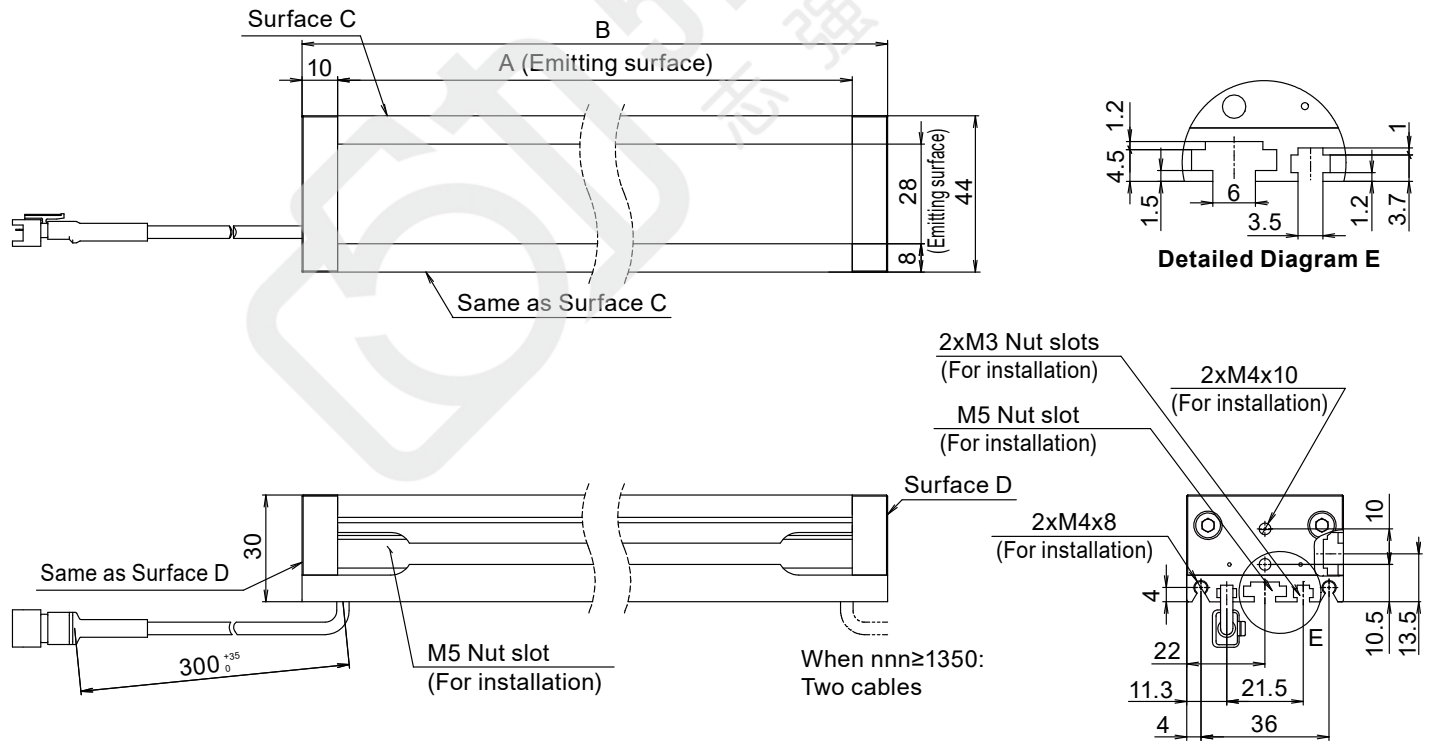
*1 □ : The light distribution angle is indicated by any one of the following letters:
 W: Wide angle (wide type) E.g.: HLDL3-150X28RD-DF-W
 M: Medium angle (medium type) E.g.: HLDL3-150X28RD-DF-M
 N: Narrow angle (narrow type) E.g.: HLDL3-150X28RD-DF-N

*2

- Connect these connectors to the two output connectors that supply power on the same channel of a Control Unit. For example, connect these connectors to the L1-3 and L1-4 output connectors on a PSB4-series Control Unit.
- 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 different cable specifications.

7 Dimensions (mm)

HLDL3-nnnX28RD-DF-W / SW-DF-W / BL-DF-W / IR-DF-W (nnn=150 to 1800)
 HLDL3-nnnX28RD-DF-M / SW-DF-M / BL-DF-M / IR-DF-M
 HLDL3-nnnX28RD-DF-N / SW-DF-N / BL-DF-N / IR-DF-N (Common Dimensions)



nnn	Dimension A	Dimension B	nnn	Dimension A	Dimension B
150	150	170	1050	1050	1070
300	300	320	1200	1200	1220
450	450	470	1350	1350	1370
600	600	620	1500	1500	1520
750	750	770	1650	1650	1670
900	900	920	1800	1800	1820

• Contents of this Instruction Guide may be changed without prior notice.
 • Illustrations used in this Instruction Guide may differ from actual products.
 • CCS maintains the copyright on this Instruction Guide. Unauthorized transfer or reproduction is strictly prohibited.