High-Power Dome Lights

LED Light for Machine Vision and Industrial Inspection

HPD2 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 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.

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.

Warning

Do not disassemble or modify the product. Doing so may result in fire or electric shock. (DISASSEMBLY PROHIBITED)	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. (MANDATORY ACTIONS)
Do not touch the product with wet hands. Doing so may result in electric shock. (DO NOT TOUCH WITH WET HANDS)	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. (MANDATORY ACTIONS)
Make sure that the product is free of moisture or any liquid. Exposure to water may result in fire, electric shock. (DO NOT SUBJECT TO MOISTURE)	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. (MANDATORY ACTIONS)
If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the product immediately, and turn off the power source. A fire or electric shock may result if the product is kept used.	**Using Infrared Light Units (HPD2-nnnIR860)** Make known to all personnel concerned the risk of ultraviolet radiation. Failure to do so may cause incorrect handling. (MANDATORY ACTIONS)

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 and the Control Unit. (PROHIBITED)	Use a Control Unit that is suitable for the product ratings. Using an incorrect Control Unit can cause product failure. (MANDATORY ACTIONS)
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)	Use a standard Extension Cable that is manufactured by CCS. However, if the cable is too long, the light intensity will decrease due to voltage drop caused by the DC resistance of the cable. (MANDATORY ACTIONS)
Do not drop the product or subject it to impact. Doing so may cause the product to malfunction. (PROHIBITED)	

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.

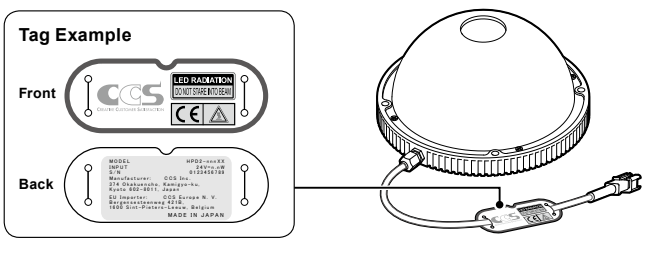
Please install the product to locations with following conditions. Incorrect installation location may cause product failure.

- 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 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.

Tag Example



3 Operating Instructions

MANDATORY ACTIONS — 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.

- Connect to the control unit equipped with **SMP-03V-BC** Connectors for power output. Insert the plug all the way into the connector.

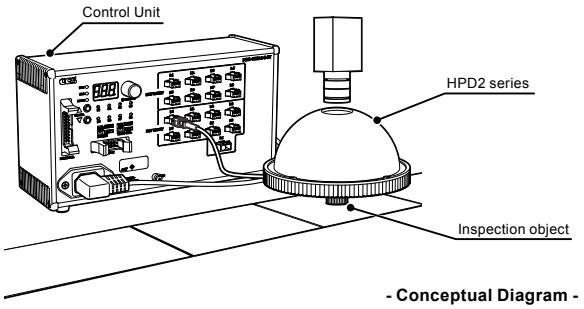
For information on applicable Control Units and cables, refer to the product catalogs or the CCS website.

Caution **Using Infrared Light Units (HPD2-nnnIR860)**
Do not expose human eyes to IR radiation. Also, make known to all personnel concerned the risk of IR radiation.

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

Read the instruction guide of the Control Unit before use.

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



- Conceptual Diagram -

MANDATORY ACTIONS

- When using color image processing equipment, readjust the white balance of the camera according to the operating conditions.
- **Using RGB Light Units (HPD2-nnnFC)**
  Changes in radiant quantities over time are different for different colors (red, green, and blue). If you use different colors at the same time, you will need to adjust them periodically.

Caution **Using Infrared Light Units (HPD2-nnnIR860)**
If you look at the LEDs in the Light Unit, it may appear that some of the LEDs are lit and some of them are not lit. This is because some of the LEDs radiate visible light. 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 unlit LEDs, use a camera to look at the LEDs indirectly. You can also look at the LEDs through the LCD monitor on a normal digital camera or cellphone.

4 Brackets (Sold Separately)

The following Brackets are available to mount the Light Units. Obtain the required Brackets.

1 Expansion Mounting Brackets

These Brackets are used to install an HPD2-series or HPR2-series Light Unit with mounting holes at intervals that are larger than the mounting holes on the Light Units, and they are used to install these Light Units to a vertical installation surface.

2 Light Joint Brackets

These Brackets are used to join a Ring Light Unit with an HPD2-series Light Unit. You can use the Brackets to add low-angle illumination.

3 Coaxial Light Joint Brackets

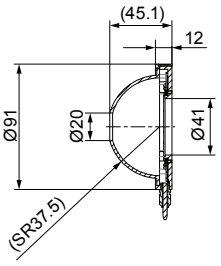
These Brackets are used to join an LFV3-series Coaxial Light Unit with an HPD2-series Dome Light Unit. You can use the Brackets to achieve omnidirectional irradiation, which compensates for the absence of irradiation due to the camera-side opening of the Dome Light Unit, for the workpiece.

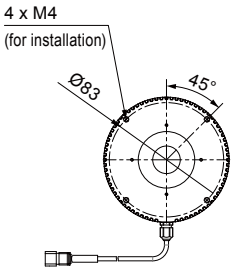
The Brackets that can be used depend on the size of the Light Unit. For details, refer to *HPD2/HPR2/HPD-PF/HPR-PF-series Optional Bracket Operation Guide*.

5 Dimensions (mm)

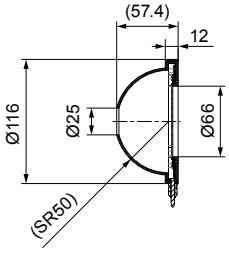
The dimensions of the side and bottom of the product are provided below.

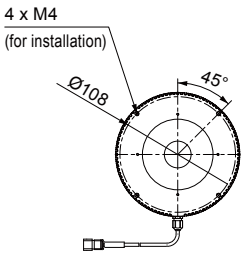
HPD2-75RD/SW/BL/FC/IR860



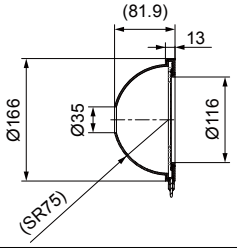


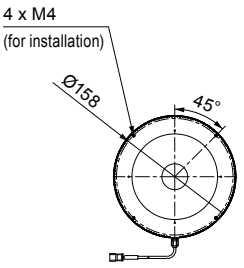
HPD2-100RD/SW/BL/FC/IR860



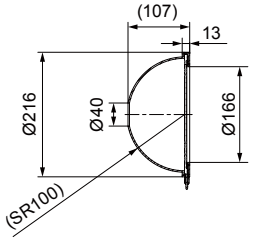


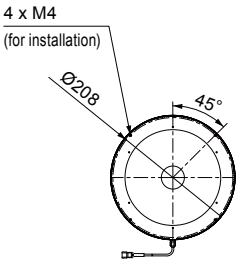
HPD2-150RD/SW/BL/FC/IR860



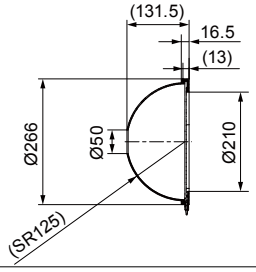


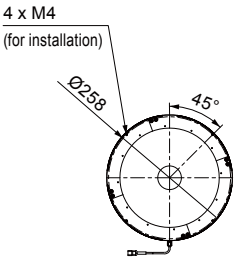
HPD2-200RD/SW/BL/FC/IR860



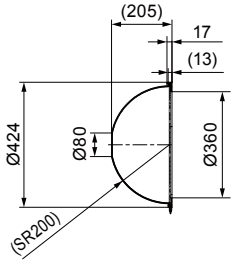


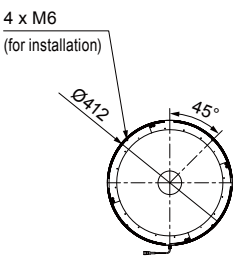
HPD2-250RD/SW/BL/FC/IR860



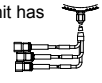


HPD2-400RD/SW/BL/FC/IR860





* An HPD2-nnnFC RGB Light Unit has three connectors.



* Tighten the product mounting screws to1 N•m or less. The product may be damaged if the screws are overtightened.

6 Main Specifications

Common Specifications

Input voltage	24 VDC
Connector	SMR-03V-B*
Polarity	1:(+), 2:NC, 3:(–)
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

* An HPD2-nnnFC RGB Light Unit has three connectors.

Specifications by Model (LED Color)

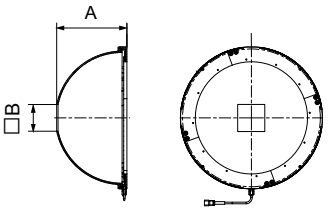
End of model name	LED color	Peak wavelength / correlated color temperature (typ.)
RD	Red	635 nm
SW	White	6500 K
BL	Blue	470 nm

End of model name	LED color	Peak wavelength (typ.)
FC	Red	622 nm
	Green	525 nm
	Blue	470 nm
IR860	Infrared	860 nm

Specifications by Model

Model name	Power consumption (max.)	Weight (max.)	Model	Power consumption (max.)	Weight (max.)
HPD2-75RD	17 W	140 g	HPD2-200RD	34 W	460 g
HPD2-75SW	16 W		HPD2-200SW	41 W	
HPD2-75BL			HPD2-200BL		
HPD2-75FC	6.0 W		HPD2-200FC	19 W	
HPD2-75IR860	12 W		HPD2-200IR860	46 W	
HPD2-100RD	17 W	160 g	HPD2-250RD	45 W	650 g
HPD2-100SW	23 W		HPD2-250SW	46 W	
HPD2-100BL			HPD2-250BL		
HPD2-100FC	11 W		HPD2-250FC	24 W	
HPD2-100IR860	23 W		HPD2-250IR860	46 W	
HPD2-150RD	27 W	285 g	HPD2-400RD	45 W	1300 g
HPD2-150SW			HPD2-400SW	46 W	
HPD2-150BL			HPD2-400BL		
HPD2-150FC	15 W		HPD2-400FC	30 W	
HPD2-150IR860	35 W		HPD2-400IR860	46 W	

Square Type Dimensions



Model name	A dimension	B dimension
HPD2-75□-SQ20	45.1 mm	20 mm
HPD2-100□-SQ30	56.7 mm	30 mm
HPD2-150□-SQ40	81.3 mm	40 mm
HPD2-200□-SQ50	105.8 mm	50 mm
HPD2-250□-SQ60	130.3 mm	60 mm
HPD2-400□-SQ80	205 mm	80 mm

* □ is a placeholder for letters that indicate the color of the emitted light.
* Dimensions are subject to change.

CCS Inc.

http://www.ccs-grp.com/

Descriptions in this instruction guide are based on information available as of May 2017. KZ06201-T001-003