



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.

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

 Warning	
Do not disassemble or modify the Spot Light. Doing so may result in fire or electric shock.	 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 Spot Light with wet hands. Doing so may result in electric shock.	 MANDATORY ACTIONS This product generates high temperatures. Do not touch the Spot Light 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 Spot Light is to be used in a closed space.
Make sure that the Spot Light is free of moisture or any liquid. Exposure to water may result in fire or electric shock.	 MANDATORY ACTIONS Connect or disconnect the light cable only after turning off the Control Unit for LED Light Units. 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 Spot Light immediately, turn OFF the Dedicated Control Unit and unplug the power cord. A fire or electric shock may result if the Spot Light is kept used.	 MANDATORY ACTIONS Using Infrared Light Units (HLV3-221R860) Make known to all personnel concerned the risk of IR radiation. Failure to do so may cause incorrect handling.

 Caution	
Do not use user-made cables. Doing so may cause Spot Light failure.	 MANDATORY ACTIONS 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.
Do not use the branch cables. Doing so may cause Spot Light failure.	 MANDATORY ACTIONS Always connect the Spot Lights to the Dedicated Control Units specified by CCS. Not doing so may cause Spot Light failure.
Be careful of static electricity. Damage to the Spot Light may occur, if a person charged with static electricity touches it. Keep the Spot Light away from all items charged with static electricity.	 MANDATORY ACTIONS Do not drop the Spot Light or subject it to impact. Doing so may cause the Spot Light to malfunction.

Do not use the Spot Light 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.

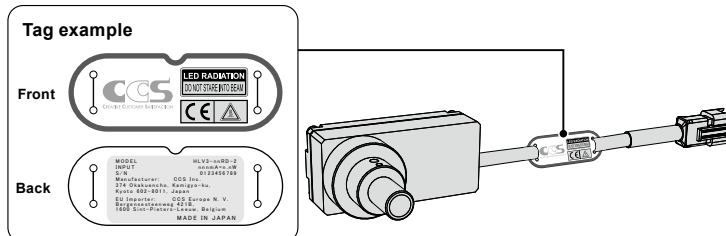
Please install the Spot Light to locations with following conditions. Incorrect installation location may cause Spot Light failure.

- In a flat and stable location with minimal vibration.
- Places free from any water, oil, liquid, chemical, or steam.
- Well-ventilated places with minimal dust.
- Places free from corrosive or combustible gas.
- Places that are not subject to sudden temperature changes.
- 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.

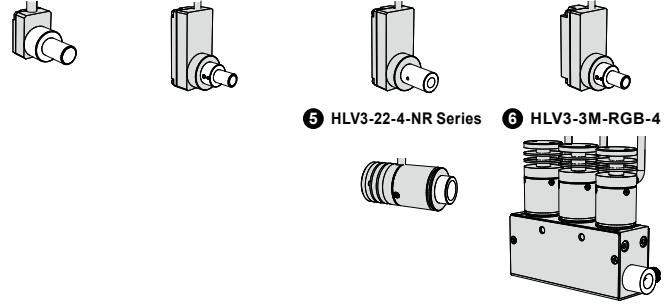
Tag example



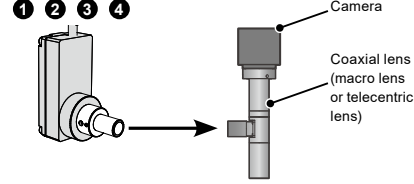
The HLV3-series Spot Lights are used in combination with a coaxial lens or other equipment. Refer to the following figures, mount the Spot Light on a coaxial lens, and fix it with an appropriate torque.

The numbers (1 to 12) in the figures below correspond to those in 7. Main Specifications and 8. Dimensions.

- 1 HLV3-14 Series 2 HLV3-22-1/2 Series 3 HLV3-22-2-1220 Series 4 HLV3-22-4M/4S Series HLV3-221R860

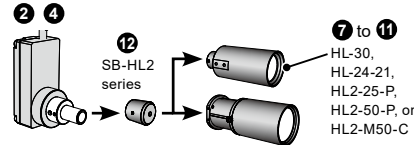


Mounting on a Coaxial Lens



The Spot Light can be mounted on a coaxial lens. The inner diameter of the lens for mounting the Spot Light 1, 2, or 4 must be 8 mm, and that for the Spot Light 3 must be 12 mm.

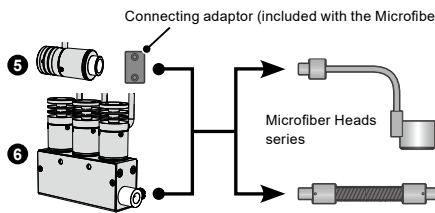
Mounting on a Condenser Lens (Optional Product, Sold Separately)



The Spot Light can be mounted on a Condenser Lens (7 to 11). Use a Light Aperture Adapter (12) as needed.


For detailed dimensions of the Condenser Lenses and Light Aperture Adapters, refer to 8. Dimensions.


Mounting on a Microfiber Head



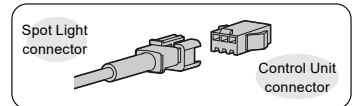
Light Sources 5 and 6 are dedicatedly designed for Microfiber Head. For detailed information, refer to the instruction guide for Microfiber Heads.

4 Operating Instructions

 **MANDATORY ACTIONS** Make sure that the Dedicated Control Unit is turned OFF before you connect the Spot Light.

 **Caution** **Using Infrared Spot Light (HLV3-221R860)** Do not expose human eyes to IR radiation. Also, make known to all personnel concerned the risk of IR radiation.

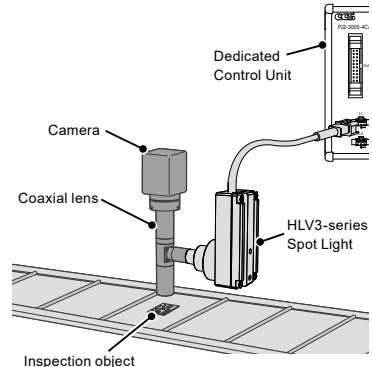
1) Connect the light cable of the Spot Light to the Dedicated Control Unit output connector.




2) Turn ON the Dedicated Control Unit, and then turn ON the Spot Light.

3) Focus the imaging device, such as a camera, onto the inspection object.

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



Read the instruction guide for the Dedicated Control Unit before use.

 **MANDATORY ACTIONS** **Using RGB Spot Lights (HLV3-3M-RGB-4)** 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.

5 Dedicated Control Units

The HLV3-series Spot Lights are available with the following Dedicated Control Units:

- PJ2-series Control Units
- PJ-series Control Units
- PD3-series Control Units (models with HLV LIGHT output connectors)
- CC-PJ-0707 Controller

Note that the Spot Lights with an input current of 1,000 mA (④ to ⑥) are available only with the PJ2-series Control Units.

For detailed information, refer to the instruction guide for the Dedicated Control Unit.

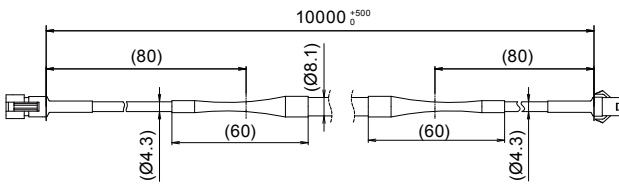
6 Extension Cables

The FCB- and FRCB-series standard Extension Cables are available to connect the HLV3-series Spot Light and the Dedicated Control Unit.

When the PJ2-series Control Unit is used, the Extension Cables shown below are applicable to the Spot Lights.

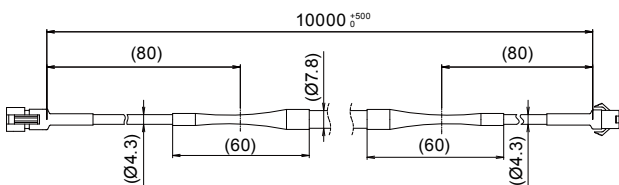
FCB-HLV3-10

(Unit: mm)



Weight: 1.20 kg max., Cable permitted bending radius: 65 mm

FRCB-HLV3-10 (Robot Cable)



Weight: 1.20 kg max., Cable permitted bending radius: 35 mm

7 Main Specifications

Common Specifications for the HLV3 Series

Connector	SMR-03V-B
Polarity	1: Signal, 2: (+), 3: (-)
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

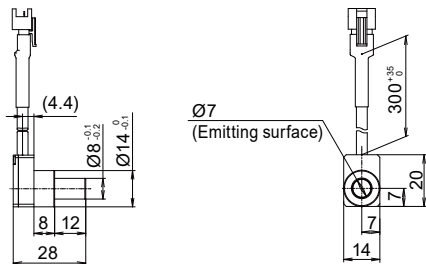
Specifications by Model

#	Model name	LED color	Peak wavelength / correlated color temperature (typ.)	Input current (max.)	Power consumption (max.)	Weight (max.)
①	HLV3-14RD	Red	635 nm	275 mA	0.7 W	18 g
	HLV3-14SW	White	5000 K		0.9 W	
	HLV3-14BL	Blue	465 nm		0.9 W	
	HLV3-14GR	Green	525 nm		1.1 W	
	HLV3-14RD-HU ^{*1}	Red	635 nm		0.7 W	
	HLV3-14SW-HU ^{*1}	White	4900 K		0.9 W	
	HLV3-14BL-HU ^{*1}	Blue	465 nm		0.9 W	
	HLV3-14GR-HU ^{*1}	Green	525 nm		1.1 W	
②	HLV3-22RD-1	Red	630 nm	385 mA	1.1 W	46 g
	HLV3-22SW-1	White	5600 K		1.4 W	
	HLV3-22BL-1	Blue	465 nm		1.5 W	
	HLV3-22GR-1	Green	520 nm		1.5 W	
	HLV3-22RD-2	Red	630 nm	700 mA	2.1 W	
	HLV3-22SW-2	White	5600 K		2.5 W	
	HLV3-22BL-2	Blue	465 nm		2.7 W	
	HLV3-22GR-2	Green	520 nm		2.8 W	
③	HLV3-22RD-2-1220	Red	630 nm	700 mA	2.1 W	47 g
	HLV3-22SW-2-1220	White	5600 K		2.5 W	
	HLV3-22BL-2-1220	Blue	465 nm		2.7 W	
	HLV3-22GR-2-1220	Green	520 nm		2.8 W	
④	HLV3-22RD-4M ^{*2}	Red	630 nm	1000 mA	3.2 W	53 g
	HLV3-22SW-4M ^{*2}	White	5600 K		3.7 W	
	HLV3-22BL-4M ^{*2}	Blue	465 nm		4.0 W	
	HLV3-22GR-4M ^{*2}	Green	520 nm		4.1 W	
	HLV3-22RD-4S	Red	630 nm		3.2 W	
	HLV3-22SW-4S	White	5600 K		3.7 W	
	HLV3-22BL-4S	Blue	465 nm		4.0 W	
	HLV3-22GR-4S	Green	520 nm		4.1 W	
HLV3-22IR860	Infrared	860 nm	4.1 W			
⑤	HLV3-22RD-4-NR	Red	630 nm	1000 mA	3.0 W	37 g
	HLV3-22SW-4-NR	White	5600 K		3.5 W	
	HLV3-22BL-4-NR	Blue	465 nm		3.8 W	
	HLV3-22GR-4-NR	Green	520 nm		4.0 W	
⑥	HLV3-3M-RGB-4	Red	630 nm	1000 mA	11 W	232 g
		Blue	465 nm			
		Green	520 nm			

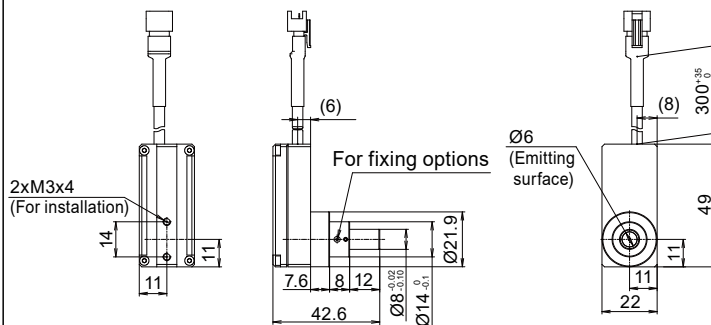
*1 These Spot Lights are uniform-type lights.

*2 These Spot Lights are nice to use with the SE-65- or SE-110-series lens, low-magnification (0.3 to 0.8x) Telecentric Lens manufactured by CCS.

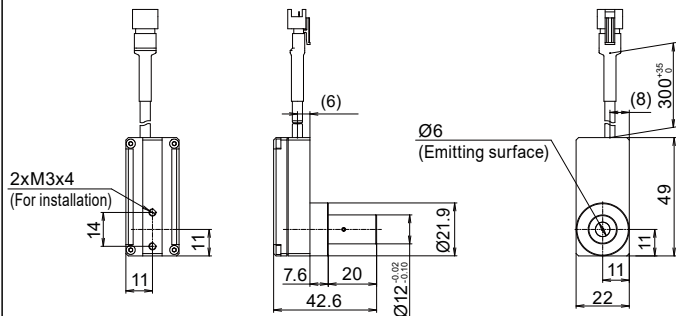
1 HLV3-14RD/SW/BL/GR
HLV3-14RD-HU/SW-HU/BL-HU/GR-HU



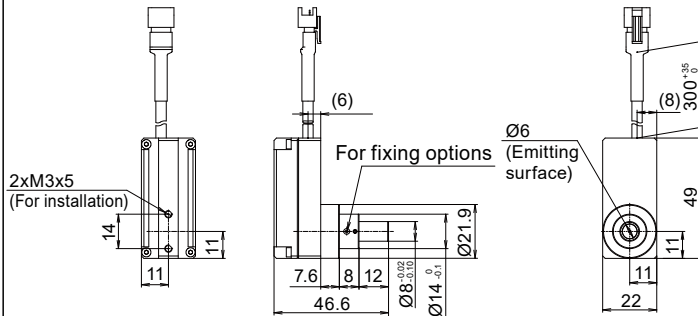
2 HLV3-22RD-1/SW-1/BL-1/GR-1
HLV3-22RD-2/SW-2/BL-2/GR-2



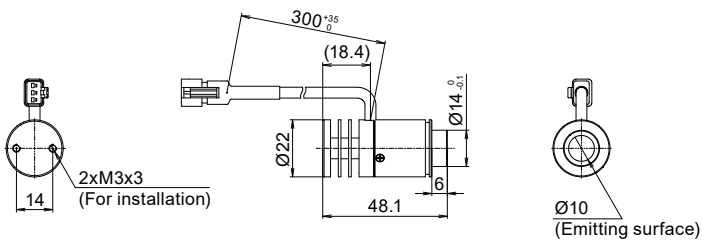
3 HLV3-22RD-2-1220/SW-2-1220/BL-2-1220/GR-2-1220



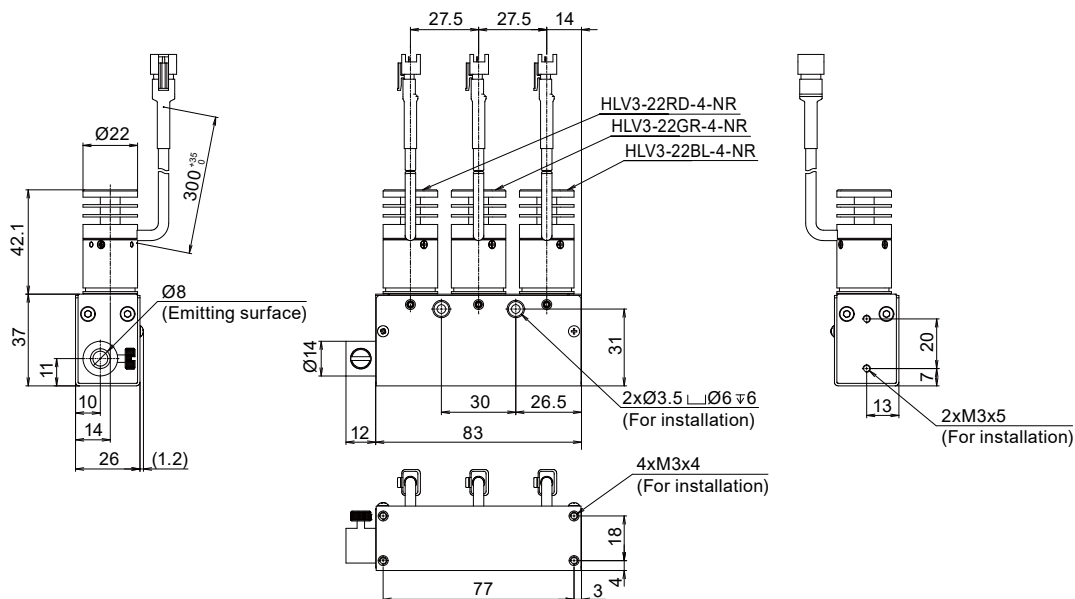
4 HLV3-22RD-4M/SW-4M/BL-4M/GR-4M
HLV3-22RD-4S/SW-4S/BL-4S/GR-4S
HLV3-22IR860



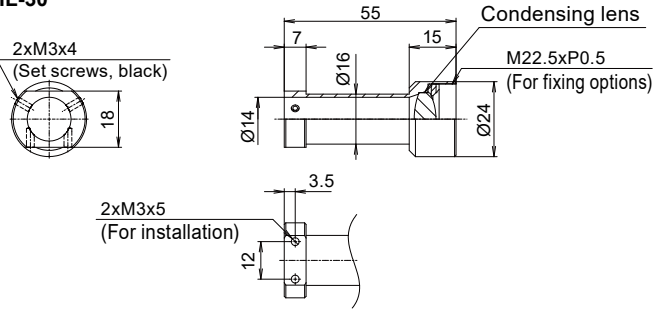
5 HLV3-22RD-4-NR/SW-4-NR/BL-4-NR/GR-4-NR



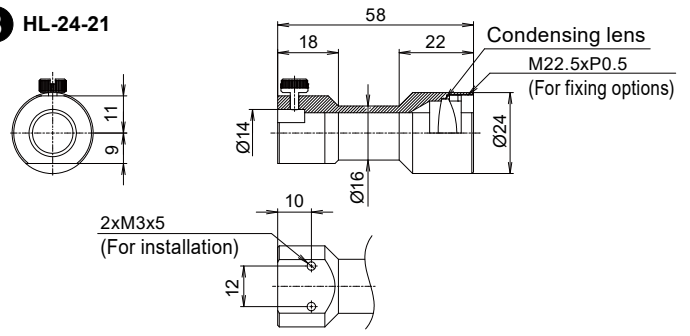
6 HLV3-3M-RGB-4



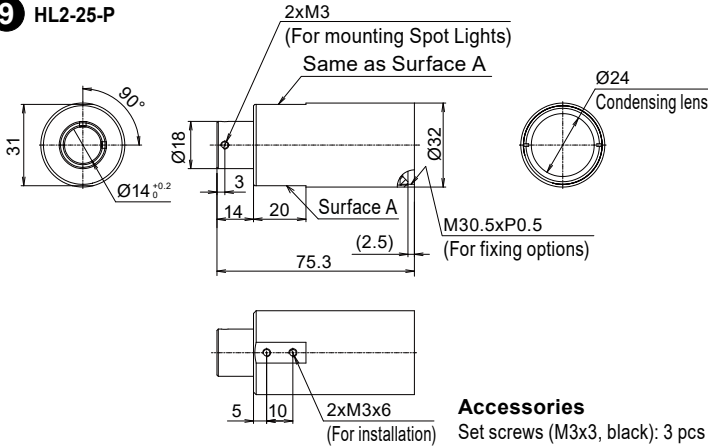
7 HL-30



8 HL-24-21



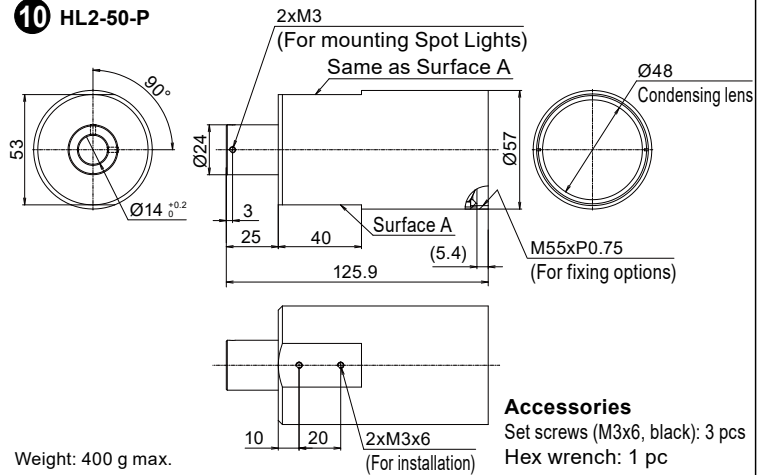
9 HL2-25-P



Weight: 85 g max.

Accessories
 Set screws (M3x3, black): 3 pcs
 Hex wrench: 1 pc

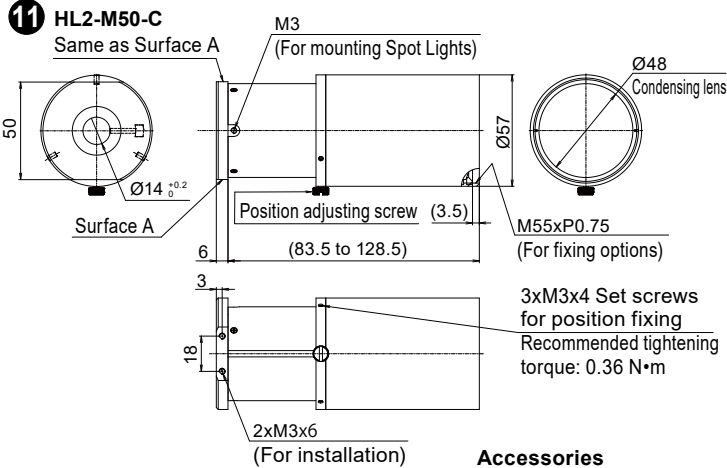
10 HL2-50-P



Weight: 400 g max.

Accessories
 Set screws (M3x6, black): 3 pcs
 Hex wrench: 1 pc

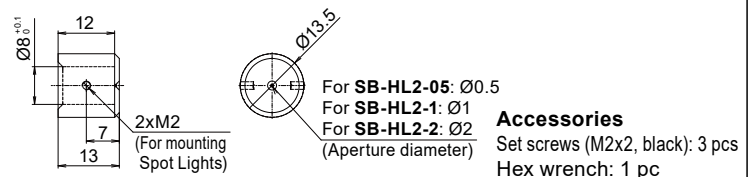
11 HL2-M50-C



Weight: 350 g max.

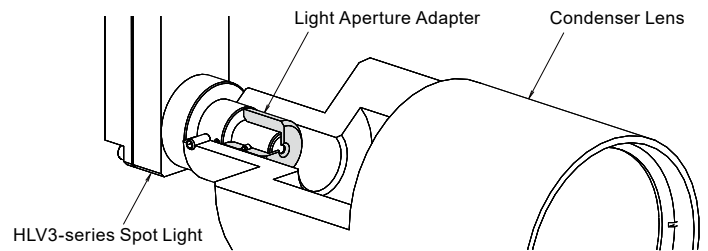
Accessories
 Set screws (M3x6, black): 2 pcs
 Hex wrench: 1 pc

12 Light Aperture Adapter (Sold Separately)



Accessories
 Set screws (M2x2, black): 3 pcs
 Hex wrench: 1 pc

Put the Light Aperture Adapter and Condenser Lens all the way onto the tip of the Spot Light.



Warranty Information (For the HL and HL2 Series)

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS DOCUMENT, CCS MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY AND ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, CCS MAKES NO WARRANTIES WITH RESPECT TO THE PRODUCTS.

WARRANTY PERIOD: ONE YEAR, STARTING FROM CCS Inc. SHIPPING DATE.

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION 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 ONE YEAR.

2 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 EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.

3 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.

- 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.