

KT-MFU Series
Operation 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.

- These products are designed for use with the Spot Lights HLV3-C series. Mount the product on the Light Unit to enable back-lighting.
- Do not mount the product on the Light Unit of any other series. Confirm applicable models and use the product correctly.






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.
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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 Backlight Unit. Doing so may result in fire or electric shock. 	Light from the Backlight Unit mounted on the Light Unit may cause corneal or retinal abnormalities if you look directly at the light. To prevent harmful light exposure, never look directly at the irradiation from the Backlight Unit. 
Make sure that the Backlight Unit is free of moisture or any liquid. Exposure to water may result in fire, electric shock. 	The Backlight Unit becomes very hot in use. Do not touch the Backlight Unit while the Light Unit is turned on or immediately after it is turned off. Doing so may cause burn. Provide cooling with a fan or other ventilation if the Backlight Unit is used in a closed space. 
If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the Backlight Unit immediately, and turn off the power source. A fire or electric shock may result if the Backlight Unit is kept used. 	Disconnect the Light Unit from the Control Unit before mounting or removing the Backlight Unit. Failure to do so may result in fire or electric shock. 

 Caution	
Do not drop the Backlight Unit or subject it to impact. Doing so may cause damage to the Backlight Unit. 	Mount the Backlight Unit onto the applicable model. Mounting the Backlight Unit onto another model is not included in the warranty. 

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.

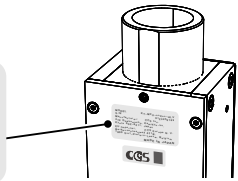
- In a flat and stable location with minimal vibration.
- Well-ventilated places with minimal dust.
- Places that are not subject to sudden temperature changes.
- Places free from any water, oil, liquid, chemical, or steam.
- Places free from corrosive or combustible gas.
- Places away from water faucets,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

2 Confirming Product Information


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


Label (Example)

MODEL KT-MFU-nnXnn-HLV
S/N 0123456789
Manufacturer: CCS Inc.
374 Okakuencho, Kamigyo-ku,
Kyoto 602-8011, Japan
EU Importer: CCS Europe N. V.
Bergensesteenweg 421B
1600 Sint-Pieters-Leeuw, Belgium
MADE IN JAPAN



3 Installation

**Warning** Make sure that the Light Unit is disconnected from the Control Unit before installation.

**Caution** Thin and delicate glasses are used for the Backlight Unit. Do not drop it or subject it to impact. Doing so may cause damage to the Backlight Unit.

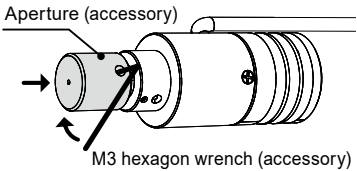
Applicable Light Units

- HLV3-22-1C series, HLV3-22-2C series, HLV3-22-4C series, HLV-22IR series, and other Spot Lights provided with a light emitting tip of the same geometry
- Spot Lights individually specified by CCS

Attaching the Aperture

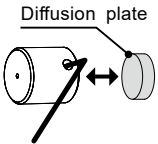
Three types of apertures with different aperture hole diameters come with the Backlight Unit. The amount and distribution of light differ depending on the aperture hole diameter. Select the optimum aperture for your application and attach it to the Light Unit. Insert the light emitting tip of the Light Unit all the way into the aperture.

Aperture hole diameter	Light amount	Light distribution
Small	Small	Narrow
Large	Large	Wide



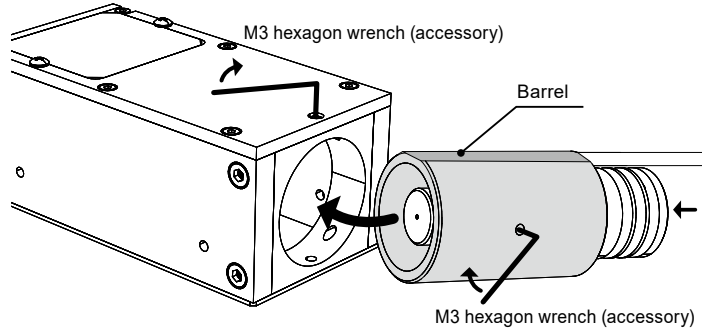
Note:


- When shipped, the diffusion plate is built into the aperture (Ø1). Be sure to transfer the diffusion plate when switching to another aperture.
- Insert the diffusion plate into the aperture with the glossy, smooth side facing the light source.
- When you attach the aperture to the Light Unit, be careful not to drop the diffusion plate from the aperture.



Installing the Light Unit

After removing the barrel from the Backlight Unit, insert the Light Unit attached with the aperture all the way into the barrel, and then insert the barrel into the Backlight Unit. For information on the insertion depth, refer to 6. *Dimensions*.



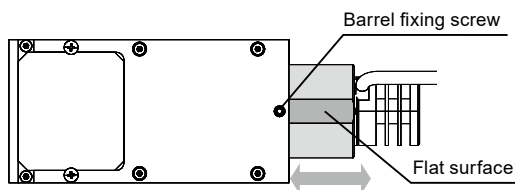
**Caution**

- Do not insert the barrel all the way into the Backlight Unit. The barrel may come into contact with the lens inside the Backlight Unit and cause a malfunction.
- Do not reverse the position of the barrel. The thicker pipe wall must face the Light Unit.

3 Installation (Continued)

Adjusting the Light Source Position

Loosen the barrel fixing screw to adjust the position of the barrel. Tighten the barrel fixing screw with the flat surface of the barrel facing upward.



4 Operating Instructions



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

1 Connect the light cable of the Light Unit to the Control Unit.

For information on the available Control Units, refer to the instruction guide of the Light Unit.

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 web pages.

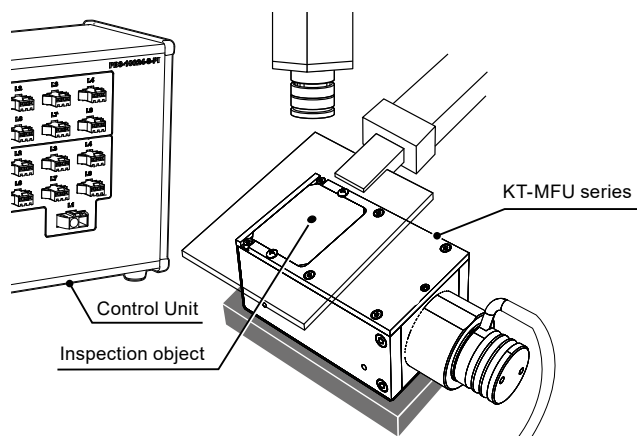
2 Turn ON the Control Unit to turn ON the light.

Read the instruction guide of the Control Unit before use.

3 Adjust light range and radiant quantity to optimize images.



For capturing the image using the Backlight Unit, it is necessary to use a goniometer stage and others to precisely locate the equipment. For detailed information on imaging procedures, refer to *MFU series Operating Procedures* on the CCS web page.



- Conceptual Diagram -

Precautions

Dust, dirt, or fingerprints on the glass portions of the Backlight Unit may affect the captured image. In that case, clean the Backlight Unit as follows:

- Remove dust and dirt by blowing it off with air. Do not touch the Backlight Unit with your hand.
- Use a soft, finely woven cloth to wipe away any marks, such as fingerprints.
- Use a soft, finely woven cloth soaked with diluted neutral detergent to remove any heavy dirt.

Handle the Backlight Unit with care during daily use. Make sure no dust, dirt, or fingerprints adhere to the Backlight Unit.

5 Main Specifications

Common Specifications

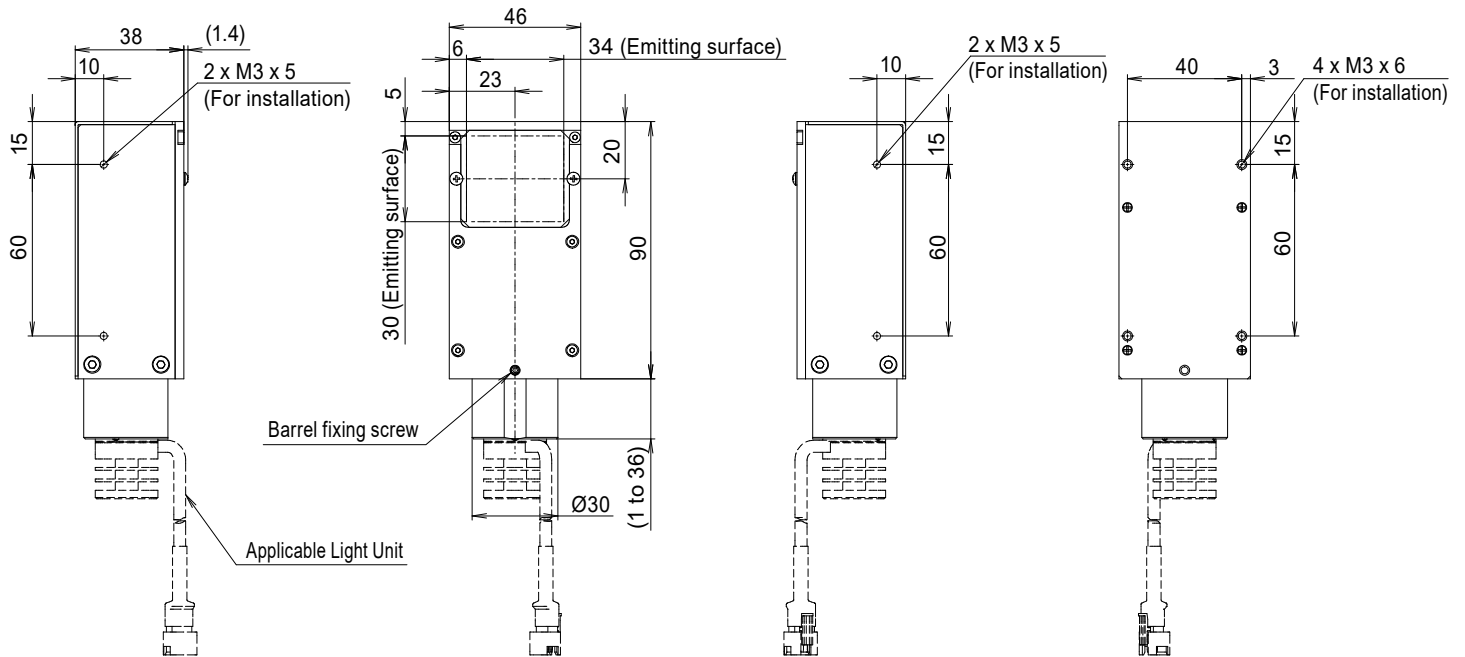
Operating environment (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)
Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)
Case material	Aluminum alloy, steel plate, resin
Accessories	Aperture (Ø0.5) x 1 pc., aperture (Ø1)* x 1 pc., aperture (Ø2) x 1 pc., set screws (M3 x 3 mm, black) x 4 pcs., M3 hexagon wrench x 1 pc.

* A diffusion plate is built-in at the time of factory shipment.

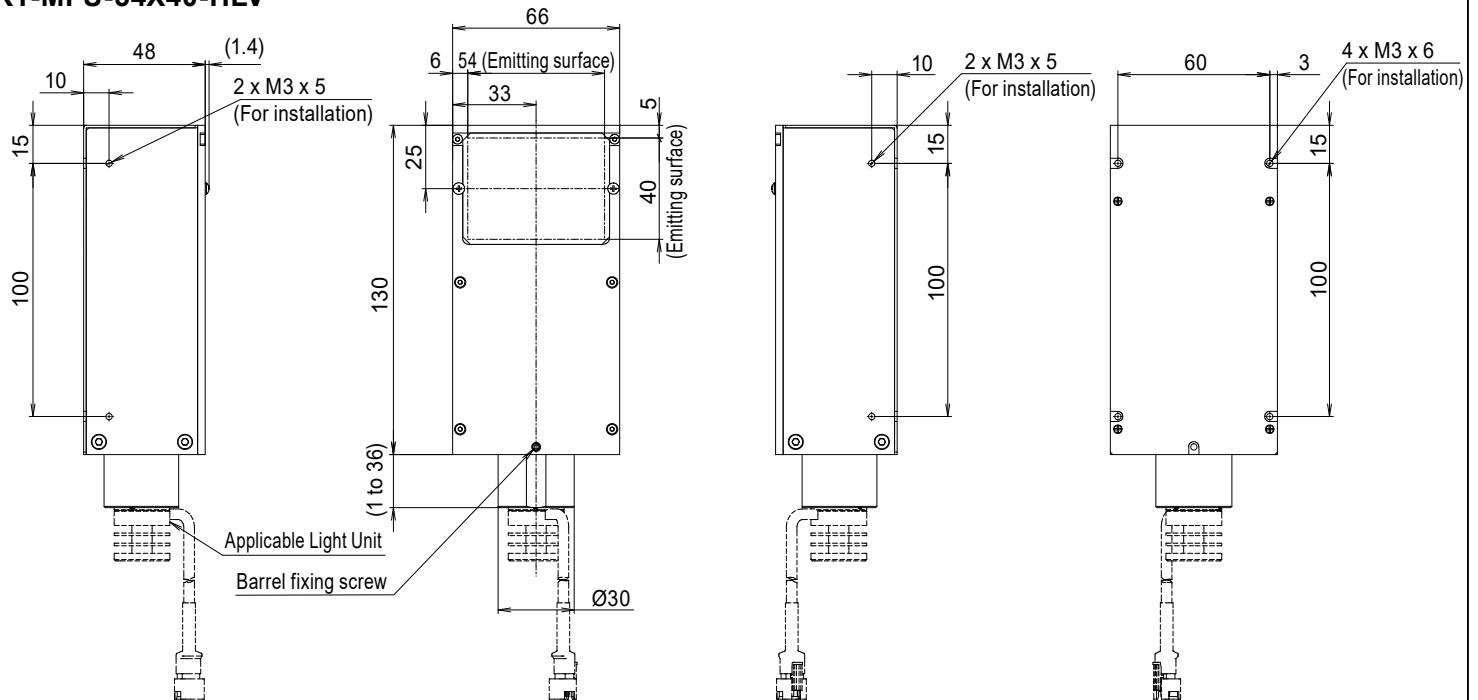
Specifications by Model

Model name	Weight
KT-MFU-34X30-HLV	Approx. 0.2 kg
KT-MFU-54X40-HLV	Approx. 0.4 kg

KT-MFU-34X30-HLV



KT-MFU-54X40-HLV



Warranty Information

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: TWO YEARS, 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 TWO YEARS.

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 LIGHT UNIT OR 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.

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