

# Flat Lights TH2 Series

LED Light for Machine Vision  
and Industrial Inspection

## 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.

|  |                |   |  |                |   |
|--|----------------|---|--|----------------|---|
|  | <b>Warning</b> | Indicates that incorrect usage may result in serious injury or death. |  | <b>Caution</b> | Indicates that incorrect usage may result in injury or property damage. |
|--|----------------|---|--|----------------|---|

The following symbols in the instruction guide indicate and classify the precautions.

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

| <b>Warning</b>  |   |
|---|---|
| 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 and 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 or electric shock.  | If abnormal condition occurs such as fuming, heat, smell, noise, or so on, stop using the Light Unit immediately, and turn the power off. A fire or electric shock may result if the Light Unit is kept used.   |
| Connect or disconnect the light cable only after turning off the Control Unit for the LED Light. Failure to do so may result in circuit damage, fire caused by a minute spark, or electric shock. |   |

| <b>Caution</b>  |   |
|---|---|
| Do not use user-made cables. Doing so may cause Light Unit failure. Use the CCS extension cable if it is necessary to extend the distance between the Light Unit and the Control Unit.                | Use a 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 Light Unit away from all items charged with static electricity. | Make sure that the length of the extension cable is less than 5 m. 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 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 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.

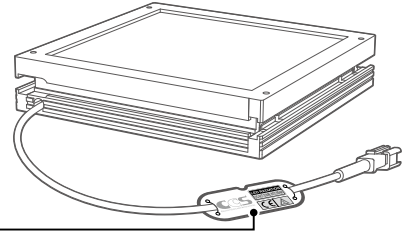
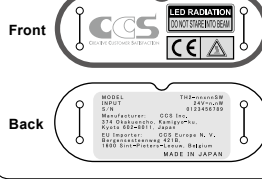
#### Always observe the following precautions when performing maintenance.

- Before performing maintenance, always turn OFF the power. Otherwise, burn injuries or electric shock may occur.
- Wipe the Light Unit with a dry cloth. Do not wipe the Light Unit with a cloth that contains water or volatile agents, such as thinner or benzene, or spray the Light Unit with insecticide. Doing so may result in discoloring or damage.
- Periodically clean the Light Unit so that dust does not collect on it.

### 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



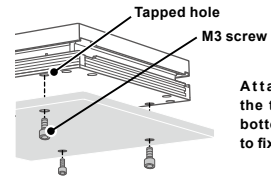
### 3 Installation

#### Bottom Installation

**Required Parts**

**M3 screws**  
Tap depth: 4 mm

Note: Use **M4 screws** (Tap depth: 5 mm) for the TH2-300X75-series Light Unit.



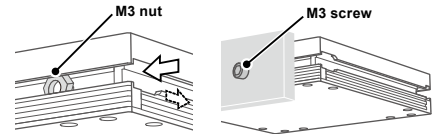
Attach M3 screws to the tapped holes on the bottom of the Light Unit to fix it.

#### Side Installation

**Required Parts**

**M3 nuts**

**M3 screws**  
Nut slot depth: 4 mm



Insert the M3 nut into the slot of the frame.

Fix the Light Unit with M3 screw.

\* Recommended tightening torque: 0.6 N·m

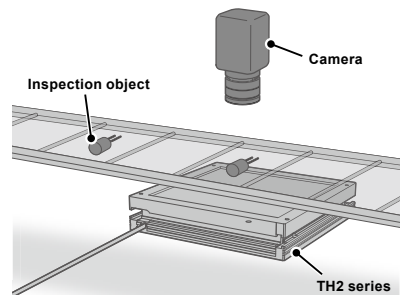
### 4 Operating Instructions

#### 1 Connect the light cable of the Light Unit to the Control Unit output connector.

Use a Control Unit that is suitable for the Light Unit ratings and is equipped with the corresponding power output connectors.

Make sure that the Control Unit is turned OFF before connecting.

Insert the plug all the way into the connector.



#### 2 Turn ON the Control Unit and turn ON the Light Unit.

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

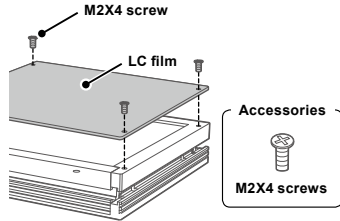
When using white LED lights with color image processing equipment, readjust the white balance of the camera according to the operating conditions.

Read the instruction guide of the Control Unit before use.

## 5 Options for TH2 Series (Sold Separately)

### 1 Light Control Films (LC Films)

Note: These optional products are **not applicable** to the TH2-300X75-series Light Unit. We accept custom orders for the optional products.



Attach M2X4 screws to the tapped holes in the top surface to fix the LC film.

\* Recommended tightening torque: 0.1 N·m

| Model name       |                  | Accessories                                 |
|------------------|------------------|---|
| LC-TH-27X27-HO   | LC-TH-27X27-VE   | M2X4 screws<br>(Five screws are included.)  |
| LC-TH-43X35-HO   | LC-TH-43X35-VE   |   |
| LC-TH-51X51-HO   | LC-TH-51X51-VE   |   |
| LC-TH-63X60-HO   | LC-TH-63X60-VE   |   |
| LC-TH-83X75-HO   | LC-TH-83X75-VE   |   |
| LC-TH-100X100-HO | LC-TH-100X100-VE |   |
| LC-TH-140X105-HO | LC-TH-140X105-VE |   |
| LC-TH-160X120-HO | LC-TH-160X120-VE | M2X4 screws<br>(Seven screws are included.) |
| LC-TH-200X150-HO | LC-TH-200X150-VE |   |
| LC-TH-224X170-HO | LC-TH-224X170-VE |   |
| LC-TH-211X200-HO | LC-TH-211X200-VE |   |

#### Description of Model Names

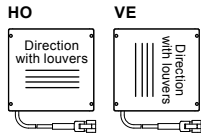
LC-TH-□X□-□

① ②

- ① Applicable TH2-series model name  
② Direction of louver on LC Film

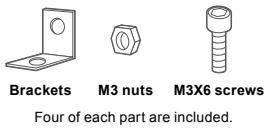
HO: The direction of louvers goes horizontal when installing LC film on the TH2 Series as shown on right-hand side.

VE: The direction of louvers goes vertical when installing LC film on the TH2 Series as shown on right-hand side.



### 2 Bracket BK-TH-LE12

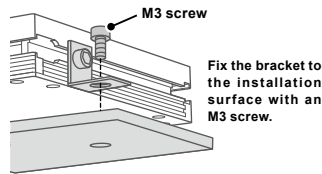
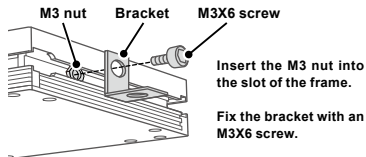
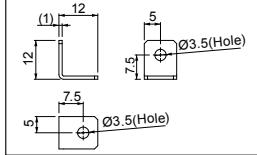
#### Package Contents



#### Required Parts



#### Bracket Dimensions (mm)



\* Recommended tightening torque: 0.6 N·m

## 6 Main Specifications

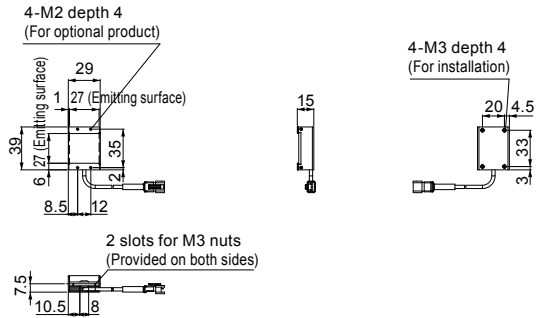
### Common Specifications

|   |  |
|---|--|
| Input voltage   | 24 VDC   |
| Peak wavelength / correlated color temperature (typ.) | Red: 635 nm, White: 5800 K, Blue: 465 nm                               |
| 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  |

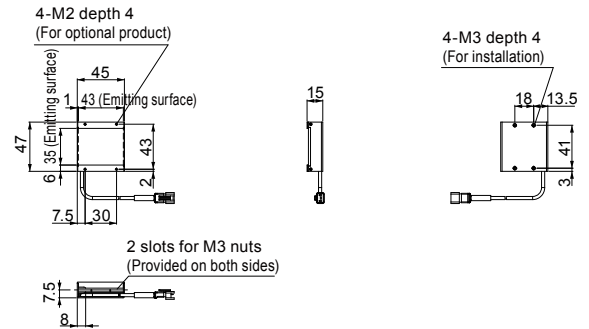
### Specifications by Model

| Model name    | LED color | Power consumption (max.) | Weight (max.) | Input connector / polarity      |
|---------------|-----------|--------------------------|---------------|---------------------------------|
| TH2-27X27RD   | Red       | 2.3 W                    | 30 g          | SMR-03V-B<br>1:(+), 2:NC, 3:(-) |
| TH2-27X27SW   | White     | 2.9 W                    |               |                                 |
| TH2-27X27BL   | Blue      | 2.7 W                    |               |                                 |
| TH2-43X35RD   | Red       | 4.9 W                    | 40 g          |                                 |
| TH2-43X35SW   | White     | 4.8 W                    |               |                                 |
| TH2-43X35BL   | Blue      | 4.8 W                    |               |                                 |
| TH2-51X51RD   | Red       | 6.5 W                    | 60 g          |                                 |
| TH2-51X51SW   | White     | 8.2 W                    |               |                                 |
| TH2-51X51BL   | Blue      | 8.2 W                    |               |                                 |
| TH2-63X60RD   | Red       | 9.9 W                    | 100 g         |                                 |
| TH2-63X60SW   | White     | 9.7 W                    |               |                                 |
| TH2-63X60BL   | Blue      | 9.7 W                    |               |                                 |
| TH2-83X75RD   | Red       | 15 W                     | 140 g         |                                 |
| TH2-83X75SW   | White     | 16 W                     |               |                                 |
| TH2-83X75BL   | Blue      | 16 W                     |               |                                 |
| TH2-100X100RD | Red       | 26 W                     | 200 g         |                                 |
| TH2-100X100SW | White     | 25 W                     |               |                                 |
| TH2-100X100BL | Blue      | 25 W                     |               |                                 |
| TH2-140X105RD | Red       | 28 W                     | 260 g         |                                 |
| TH2-140X105SW | White     | 28 W                     |               |                                 |
| TH2-140X105BL | Blue      | 28 W                     |               |                                 |
| TH2-160X120RD | Red       | 35 W                     | 310 g         |                                 |
| TH2-160X120SW | White     | 35 W                     |               |                                 |
| TH2-160X120BL | Blue      | 35 W                     |               |                                 |
| TH2-200X150RD | Red       | 45 W                     | 440 g         |                                 |
| TH2-200X150SW | White     | 44 W                     |               |                                 |
| TH2-200X150BL | Blue      | 44 W                     |               |                                 |
| TH2-224X170RD | Red       | 66 W                     | 540 g         |                                 |
| TH2-224X170SW | White     | 66 W                     |               |                                 |
| TH2-224X170BL | Blue      | 66 W                     |               |                                 |
| TH2-211X200RD | Red       | 67 W                     | 580 g         |                                 |
| TH2-211X200SW | White     | 65 W                     |               |                                 |
| TH2-211X200BL | Blue      | 65 W                     |               |                                 |
| TH2-300X75RD  | Red       | 54 W                     | 650 g         |                                 |
| TH2-300X75SW  | White     | 68 W                     |               |                                 |

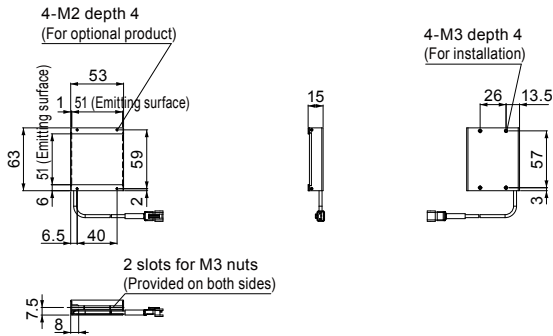
**TH2-27X27RD/SW/BL**



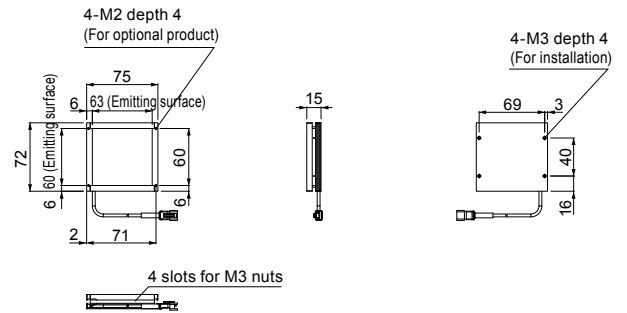
**TH2-43X35RD/SW/BL**



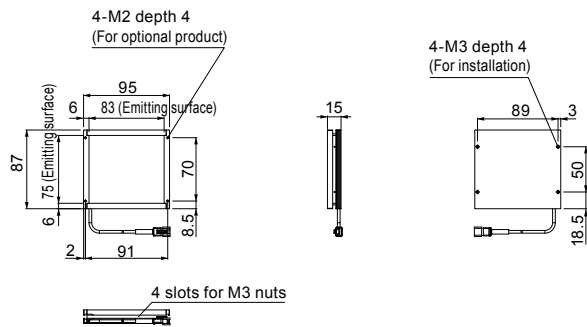
**TH2-51X51RD/SW/BL**



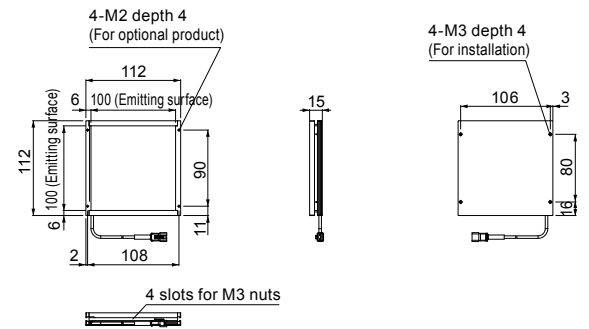
**TH2-63X60RD/SW/BL**



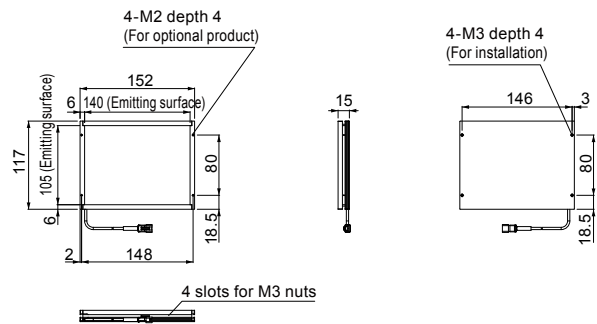
**TH2-83X75RD/SW/BL**



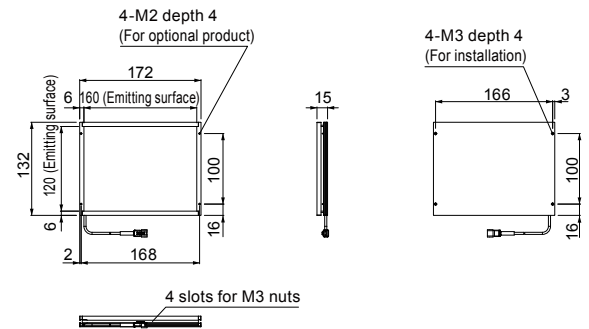
**TH2-100X100RD/SW/BL**



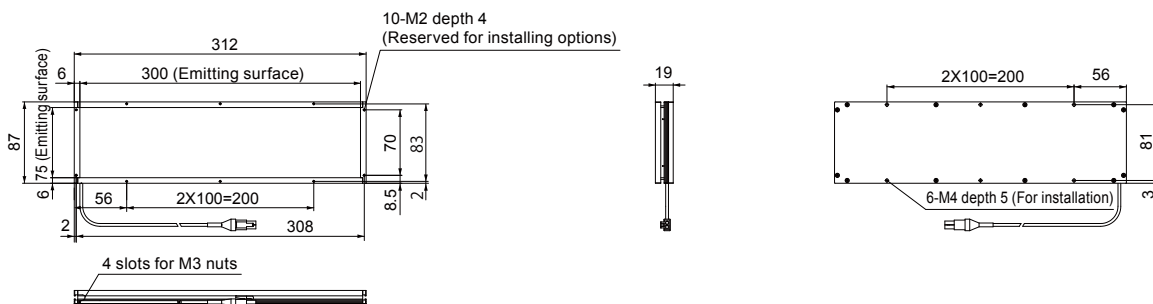
**TH2-140X105RD/SW/BL**



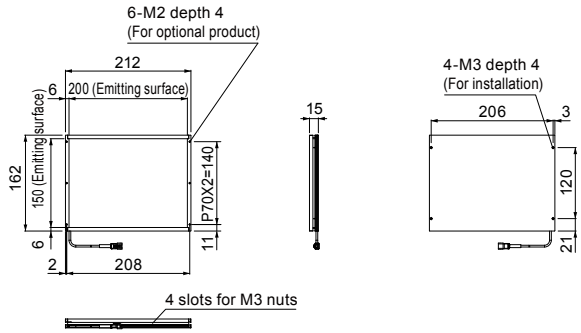
**TH2-160X120RD/SW/BL**



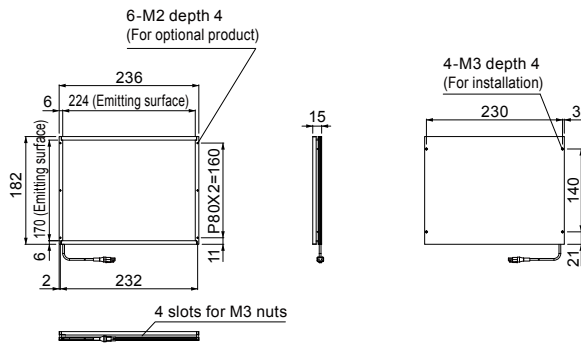
**TH2-300X75RD/SW**



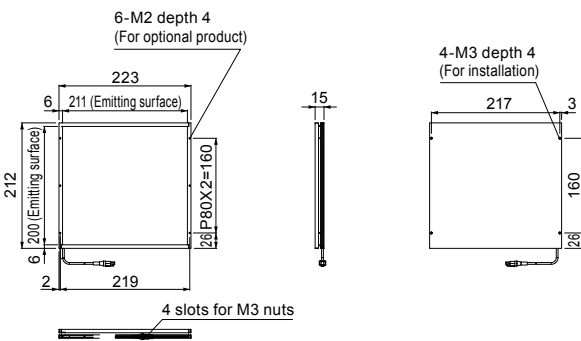
**TH2-20X150RD/SW/BL**



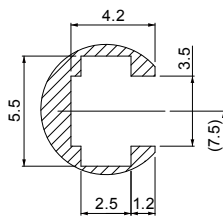
**TH2-224X170RD/SW/BL**



**TH2-211X200RD/SW/BL**



**Nut slot detail diagram**



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