

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 -

This product has been designed with full consideration of safety. However, incorrect usage of the product 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	These symbols indicate prohibited actions.		MANDATORY ACTIONS	This symbol indicates required actions.
	DISASSEMBLY PROHIBITED				
	DO NOT TOUCH WITH WET HANDS				
	DO NOT SUBJECT TO MOISTURE				

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 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.	

Caution	
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.

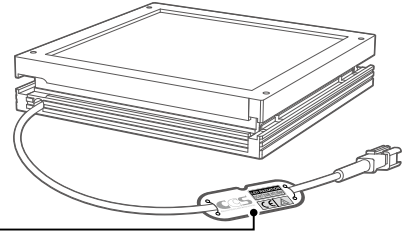
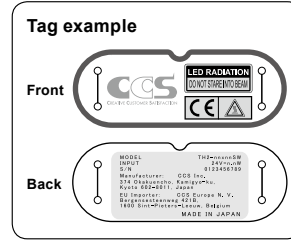
- In a stable location with minimal vibration.
- Well-ventilated places with minimal dust.
- Places that are not subject to sudden temperature changes.
- Places free from any water, oil, liquid, chemical, or steam.
- Places free from corrosive or combustible gas.
- Places away from water faucets, boilers,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



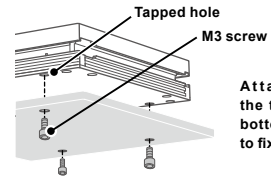
3 Installation

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.



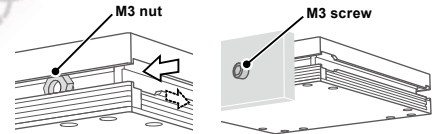
Attach M3 screws to the tapped holes on the bottom of the Light Unit to fix it.

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

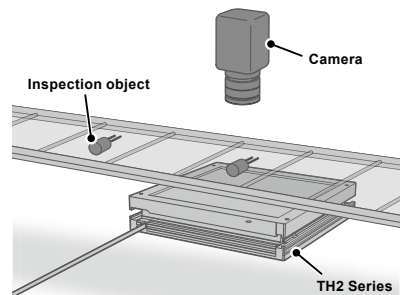
4 Operating Instructions

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.

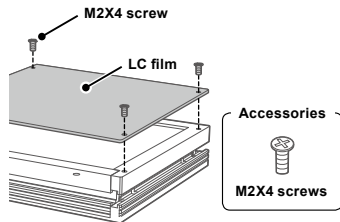
When using white LED lights with color image processing equipment, readjust the white balance of the camera according to the operating conditions.

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 (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 (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

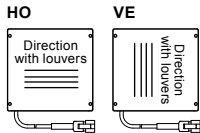
LC-TH-□X□-□

① ②

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

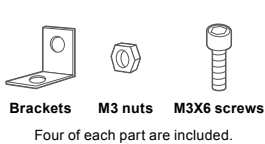
HO: The direction of louvers goes horizontal when installing LC film on the TH2 Series as shown on right-hand side.

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

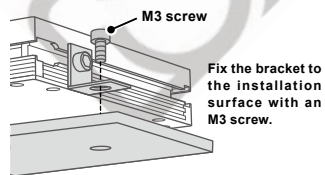
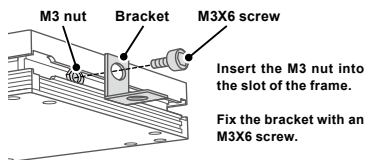
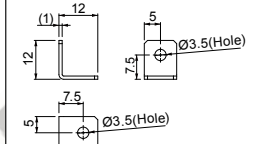
Package Contents



Required Parts



Bracket Dimensions (mm)



* Recommended tightening torque: 0.6 N·m

6 Main Specifications

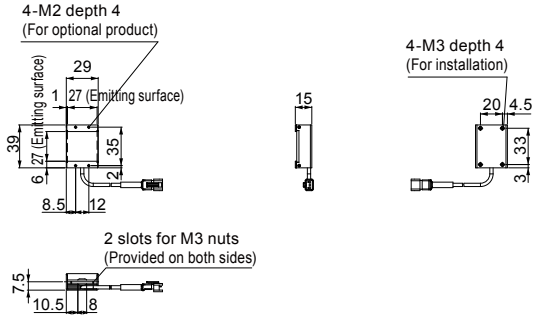
Common Specifications

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
Environmental regulations	RoHS compliant
Case material	Aluminum alloy, Resin

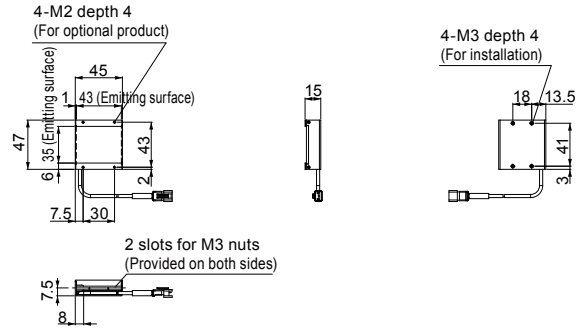
Specifications by Model

Model name	LED color	Power consumption (max.)	Weight (max.)	Input connector/ Polarity
TH2-27X27RD	Red	2.3 W	30 g	SMR-03V-B 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	ELP-02V 1:(+), 2:(-)
TH2-300X75SW	White	68 W		

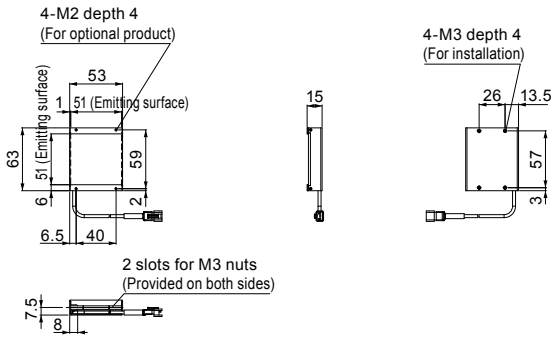
TH2-27X27RD/SW/BL



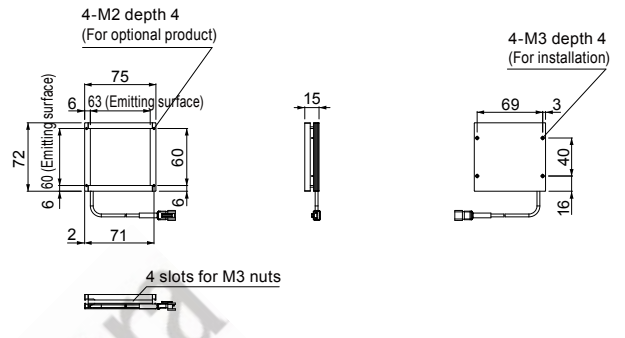
TH2-43X35RD/SW/BL



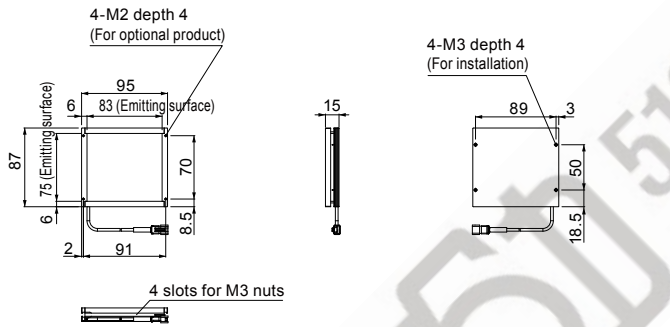
TH2-51X51RD/SW/BL



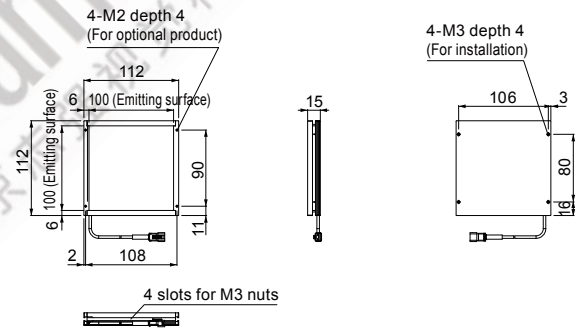
TH2-63X60RD/SW/BL



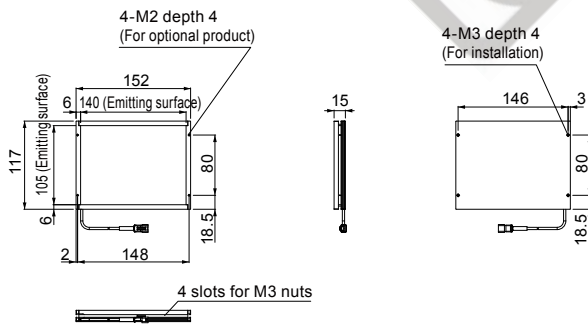
TH2-83X75RD/SW/BL



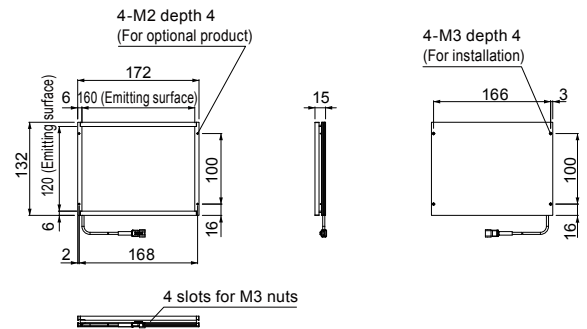
TH2-100X100RD/SW/BL



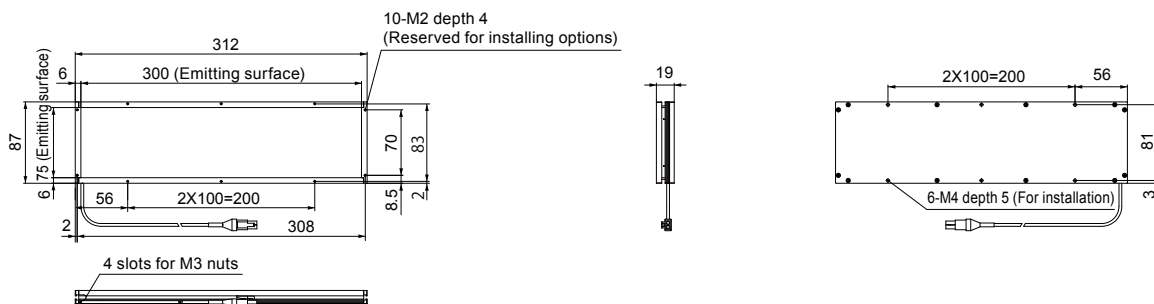
TH2-140X105RD/SW/BL



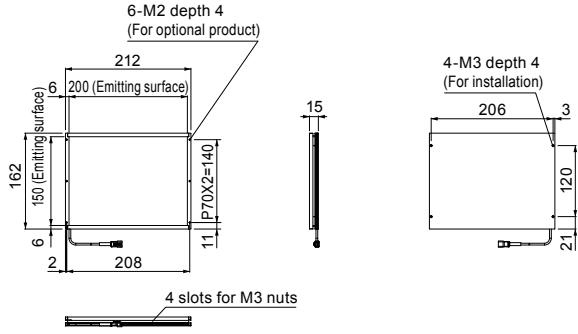
TH2-160X120RD/SW/BL



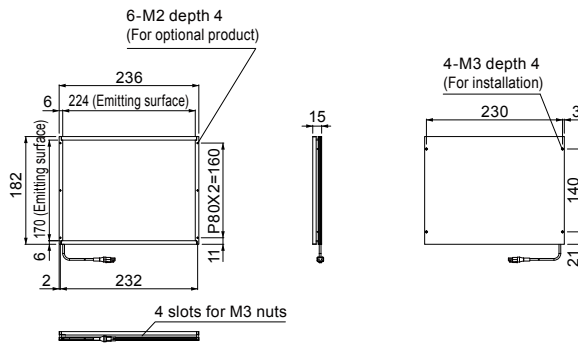
TH2-300X75RD/SW



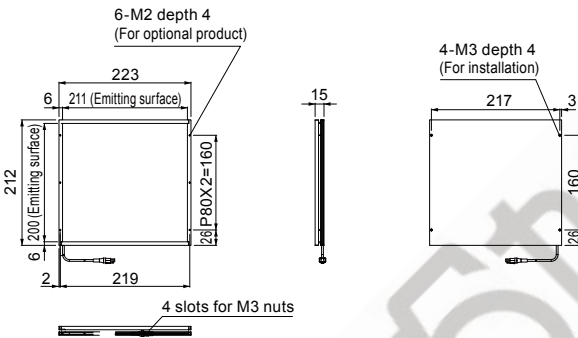
TH2-20X150RD/SW/BL



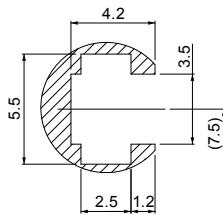
TH2-224X170RD/SW/BL



TH2-211X200RD/SW/BL



Nut slot detail diagram



EU RoHS Directive

The RoHS Directive is short for the "Restriction of use of certain Hazardous Substances in electrical and electronic equipment." As a directive, it restricts the use of specific hazardous substances for new electrical and electronic equipment marketed in the EU on or after July 1, 2006, and restricts the use of six substances, which are (1) lead, (2) mercury, (3) cadmium, (4) hexavalent chromium, (5) polybrominated biphenyl (PBB), and (6) polybrominated diphenyl ether (PBDE).

*Standards for "RoHS Directive-Compliant Products"

Lead	Mercury	Cadmium	Hexavalent chromium	PBB	PBDE
1000ppm max.	1000ppm max.	100ppm max.	1000ppm max.	1000ppm max.	1000ppm max.

(Items that are exempted in the RoHS Directive are excluded from these standards.)

China RoHS Directive

China RoHS Directive is formally known as "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products", which was implemented on July 1, 2016 in China. Same as EU RoHS Directive, this regulation restricts the usage of six substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). This regulation requires electronic information products which are manufactured or imported, and sold in China, to clearly disclose contents of the 6 restricted substances listed below.

Names and contents of hazardous substances

Usage Deadline for Environmental Protection	Product name	Names and contents of hazardous substances					
		Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	PBB	PBDE
10	LED Lights	×	○	×	○	○	○

(This table is made in compliance with SJ/T11364 regulations.)

○: Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to GB/T26572 is within the limit requirement.

×: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to GB/T26572, is over the limit requirement.

*Lead and cadmium are excluded in EU RoHS.

Usage deadline for environmental protection

The number used in this logo is based on "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products" and related regulations from People's Republic of China. It shows the product usage duration in years for environmental protection. After finishing a product usage, the product needs to be re-used or discarded appropriately following local law and regulations, complying with safety and usage caution.

产品中有毒物质的名称及含量

环保使用期限	产品	有害物质的名称及含量					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
10	LED 照明	×	○	×	○	○	○

(本表格依据 SJ/T11364 的规定编制。)

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T26572 标准规定的限量要求以下。

×: 表示该有毒有害物质在该部件的某一均质材料中的含量超出 GB/T26572 标准规定的限量要求。

(注) 铅和镉中的 "X", 因欧洲 RoHS 没有限定, 故用 "O" 表示。

环保使用期限

此标志的数字是根据中华人民共和国电器电子产品有害物质限制使用管理办法以及有关标准等, 表示该产品的环保使用期限的年限。遵守产品的安全和使用的注意, 在产品使用后采取适当的方法根据各地法律, 规定, 回收再利用或进行废弃处理。

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 (ONE YEAR FOR RADIANT QUANTITY), STARTING FROM CCS Inc. SHIPPING DATE.

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION OR IF THE RADIANT QUANTITY OF THE PRODUCT SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY 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 REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF ITS RADIANT QUANTITY SHOULD DROP TO 50% OR LESS OF ITS INITIAL RADIANT QUANTITY UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE INSTRUCTION GUIDE AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF ONE YEAR.
- 3 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 POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.
- 4 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.

NOTE: THE RADIANT QUANTITY REFERS TO THE WATTAGE OF PHYSICAL ENERGY RADIATED FROM AN LED. IT REFERS TO THE RADIATION LUMINOSITY OF THE LED MEASURED UNDER CONDITIONS SPECIFIED BY CCS OR THE RADIATION ILLUMINATION OF THE LED UNDER SPECIFIED IRRADIATION CONDITIONS. CCS SPECIFIES THE RADIANT QUANTITY FOR EACH LED LIGHT BECAUSE THE MEASUREMENT AND IRRADIATION CONDITIONS VARY FROM THE FORM, THE APPLICATION AND THE IRRADIATION WAVELENGTH.

- Contents of this Instruction Guide may be changed without prior notice.
- Illustrations used in this Instruction Guide may differ from actual products.
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- Instruction Guide and Dimensional Diagrams in PDF or CAD can be downloaded from the CCS website. <http://www.ccs-grp.com>

Ask any product queries to the following address or to your nearest CCS representative.



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 Use our website to find your nearest CCS representative. <http://www.ccs-grp.com/mvad>