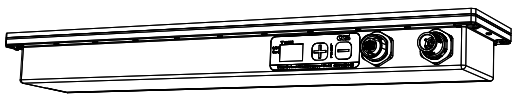
Bar Lights

LDLB/LDLB-IP 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.



Features

- These LED Light Units feature integrated light control and ON/OFF control circuits.
- The LEDs are driven with a constant-current system and the light is set to any of 100 levels with variable-current control.
- You can change between Constant Lighting Mode and Overdrive Mode.
- You can manually set the light intensity from the operating panel or set it with an analog input (0 to 10 V) from an external device.
- You can daisy-chain up to three Light Units to provide power and externally control the light intensity of all of the Light Units together.
- The LDLB-IP Series provides IP67 water resistance.

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 accidents. Observe the following precautions.

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 indicate and classify the precautions in the Instruction Guide.

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 connect or disconnect the Light Unit and cables 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)
Using LDLB-series Light Units (not water resistant) 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 supply. 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 supply. A fire or electric shock may result if the product is kept used. (MANDATORY ACTIONS)	

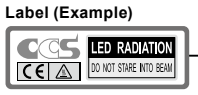
⚠ Caution

Do not drop the product or subject it to impact. Doing so may cause the product to malfunction. (PROHIBITED)	Do not bundle product cables with highvoltage lines or power lines. Doing so may cause the product to malfunction. Allow leeway between the cables when installing them. (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)	Before moving the product, disconnect all connecting cables. Damaging the cables may result in fire or electric shock. (MANDATORY ACTIONS)
Do not bend a cable past its natural bending radius or jam a cable into a narrow space when wiring the product. Doing so may cause product failure. (PROHIBITED)	Always hold onto the plug or connector when disconnecting the cables. Pulling on the cable may damage the cable and result in fire or electric shock. (MANDATORY ACTIONS)
Do not intentionally short-circuit the positive and negative output terminals. (PROHIBITED)	If there is dust or other foreign matter on the electrodes, turn OFF the power supply and then use a dry cloth to remove the dust or foreign matter. Failure to do so may result in fire. (MANDATORY ACTIONS)
Be sure to use the product within the range of input voltage. Applying the voltage beyond the range may cause product failure. (PROHIBITED)	Do not wipe the product with organic solvent s, such as paint thinner or benzene. Discoloration or deterioration of the product surfaces may occur. (PROHIBITED)

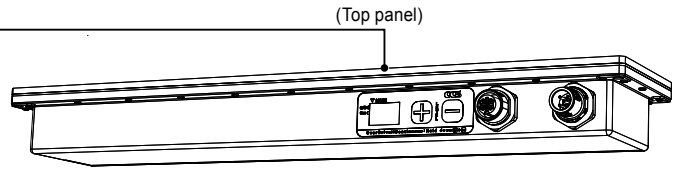
2 Confirming Product Information

The following label is attached to the LED light. The color of the label indicates the luminescence color of the product. The name label specifies the model name, 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.

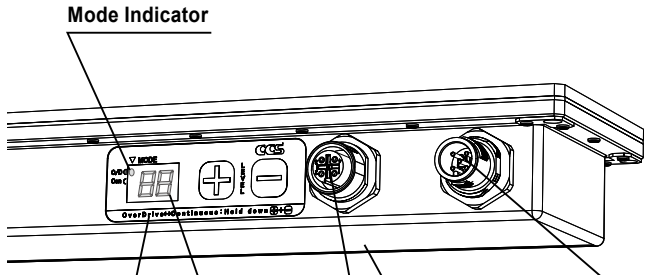
Label (Example)



Name label (Example)



3 Names and Functions of Parts



Note: There are no restrictions in the installation direction. You can install the Light Unit upside down or in any other direction. Refer to *10. Dimensions* for the installation holes.

Operating Panel

- The digital display shows the light intensity between 00 and 99. ("00" is the minimum light level.)
- You can manually set the light intensity with the + and − switches. Refer to *5. Setting the Light Intensity on the Operating Panel* for details.
- You can change the operating mode by holding down the + and − switches at the same time for 3 seconds.

Constant Lighting Mode

You can set the light intensity to any of 100 levels from the operating panel or with an analog input from the input connector. You can turn the light ON and OFF with an ON/OFF input from the input connector.

Overdrive Mode

The mode indicator on the operating panel will light. A larger current enables a brighter light intensity (100 levels) than in Constant Lighting Mode. However, the light intensities that you can set are restricted as shown below. Refer to *7. ON/OFF Inputs* for details.

- Operating time
- Signal repeat period to light the LEDs

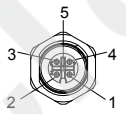
The general relationship between the light intensity and the radiant quantity is shown in the following table.

Light intensity		00	01	…	49	50	…	98	99
Radiant quantity	Constant Lighting Mode	10%	11%	…	55%	55%	…	99%	100%
	Overdrive Mode	100%	102%	…	214%	216%	…	328%	330%

Output Connector (M12 Socket)

If you daisy-chain Light Units, this connector is connected to the input connector on the next Light Unit with a Link Cable.

A Link Cable (model: FECB-0.6-M12-5M-5F, 0.6 m) is available as an option (sold separately).
The LDLB-IP-series Light Units maintain IP67 water resistance when this Cable is connected.



Using LDLB-IP-series Light Units

If you do not use this connector, always attach a Sealing Cap to it to maintain water resistance.

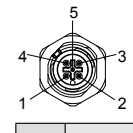
Refer to *9. Optional Products (Sold Separately)* for details on the Link Cable.

If you daisy-chain Light Units, you can supply power, control the light intensity with an analog input, and use an ON/OFF input to control all of the Light Units together. You can also control the light intensity of the Light Units individually from the operating panels. You can connect up to three Light Units.

Input Connector (M12 Plug)

This connector is used to supply power to the Light Unit and to input signals to control the light intensity and turn the light ON and OFF.

Input Cables (models: FECB-M12-5F Series, 1, 2, 3, and 5 m, flying leads) are available as options (sold separately).
The LDLB-IP-series Light Units maintain IP67 water resistance when this Cable is connected.



Pin No.	Signal	Cable FECB-M12-5F Series Wire color
1	24 VDC	Brown
2	ON/OFF input (NPN)	White
3	Common ground	Blue
4	ON/OFF input (PNP)	Black
5	Analog input (0 to 10 V)	Gray

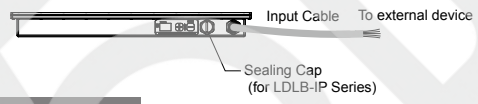
Refer to *6. External Control of the Light Intensity* for information on the analog input.
Refer to *7. ON/OFF Inputs* for information on the ON/OFF inputs.
Refer to *9. Optional Products (Sold Separately)* for details on the Input Cable.

4 Connections

⚠ Warning Before you connect the Input Cable or Link Cable, make sure that the power supply is turned OFF. Making connections with the power supply turned ON may result in fire, electric shock, or breakdown in the Light Unit.

Connecting One Light Unit

1 Connect the Input Cable to the input connector and connect the leads on the end of the Input Cable to an external device.

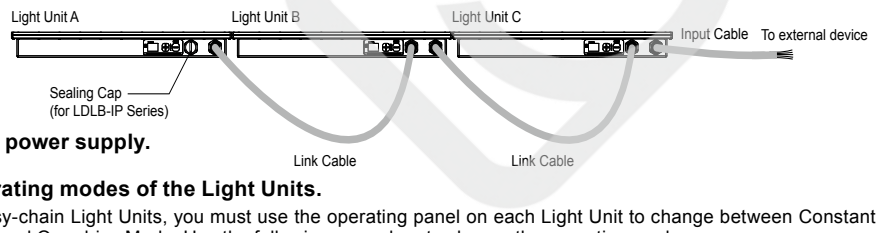


2 Turn ON the power supply.

Daisy-chaining Two or Three Light Units

You can daisy-chain up to three Light Units to set the light intensities or turn ON and OFF all of the Light Units together.

1 Connect the output and input connectors of the Light Units with Link Cables. Also connect the Input Cable to the input connector and connect the leads on the end of the Input Cable to an external device.



2 Turn ON the power supply.

3 Set the operating modes of the Light Units.

When you daisy-chain Light Units, you must use the operating panel on each Light Unit to change between Constant Lighting Mode and Overdrive Mode. Use the following procedure to change the operating mode.

Changing from Constant Lighting Mode to Overdrive Mode

1) Set the ON/OFF inputs from the external device to the status for turning ON the Light Unit in Constant Lighting Mode. Refer to *7. ON/OFF Inputs* for information on the ON/OFF input.
2) Change the operating modes in order from the Light Unit that is farthest from the power supply. (In the above figure, the order would be Light Unit A, Light Unit B, and then Light Unit C.) Refer to *3. Names and Functions of Parts* for information on changing the operating mode. If the setting status of the ON/OFF inputs is not correct, an overdrive error will occur when you change the operating mode. Also, if the order is not correct, an overload error will occur.

Changing from Overdrive Mode to Constant Lighting Mode

1) Change the operating modes in order from the Light Unit that is nearest to the power supply. (In the above figure, the order would be Light Unit C, Light Unit B, and then Light Unit A.) Refer to *3. Names and Functions of Parts* for information on changing the operating mode. If the order is not correct, an overload error will occur. The setting status of the ON/OFF inputs is not relevant.

Maximum Cable Length

The maximum length of the 24-VDC power supply cable depends on the wire diameter, operating mode, and number of connected Light Units. The maximum cable lengths are given in the following table.
One Light Unit Connected: The table gives the maximum length of the Input Cable.
Two or Three Light Units Connected: The table gives the maximum total length of the Input Cable and Link Cables.

Wire diameter	Number of Light Units connected in Constant Lighting Mode			Number of Light Units connected in Overdrive Mode		
	1	2	3	1	2	3
AWG16	10 m	10 m	10 m	10 m	5.5 m	2 m
AWG18	10 m	10 m	10 m	8 m	3.5 m	1.5 m
AWG20	10 m	10 m	7 m	5.5 m	2 m	Cannot be used.
AWG22	10 m	7 m	4.5 m*	3 m*	1 m*	Cannot be used.*

* The wire diameter is AWG22 for the optional (sold separately) FECB-M12-5F-series Input Cables and FECB-0.6-M12-5M-5F Link Cable. If the maximum length given above is exceeded, shorten the Input Cable or contact CCS.

⚠ Caution

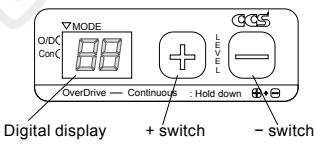
Using LDLB-IP-series Light Units

Observe the following precautions to prevent electrical shock and accidents from water entry.

- Handle the Light Units and connectors with care. Do not deform or damage the connectors.
- Connect the cables correctly to the Light Units.
- Connect a Sealing Cap to any output connectors to which a cable is not connected to maintain water resistance. The Sealing Cap is connected to the output connector when the Light Unit is shipped.
- If the Light Unit is not used for a long period of time with the cable disconnected, attach the Cap to the connector or take other measures to maintain water resistance.

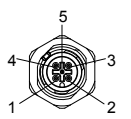
5 Setting the Light Intensity on the Operating Panel

If pin 5 (analog input) and pin 3 (common ground) are not connected on the input connector or if 13 to 24 V (maximum input voltage: 26.4) is input, you can use the + and − switches on the operating panel to manually set the light intensity.



- The light intensity is displayed on the digital display between 00 and 99 (100 levels).
- If you hold down the + or − key for more than 1 second, the value will change faster.
- The manually set light intensity is saved internally even after you turn OFF the power supply or after you change to external light intensity control with an analog input.

Input Connector (M12 Plug) Configuration



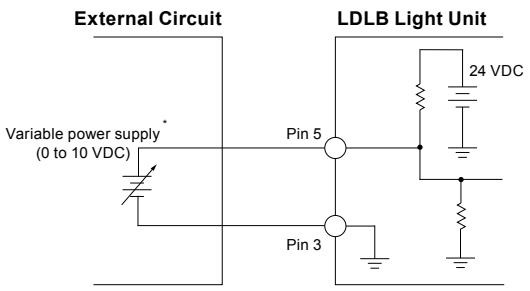
Pin No.	Signal	Cable FECB-M12-5F Series Wire color
1	24 VDC	Brown
2	ON/OFF input (NPN)	White
3	Common ground	Blue
4	ON/OFF input (PNP)	Black
5	Analog input (0 to 10 V)	Gray

6 External Control of the Light Intensity

If 0 to 10 V is applied between pin 5 (analog input) and pin 3 (common ground) on the input connector, you can set the light intensity to any of 100 levels with the voltage of the analog input.

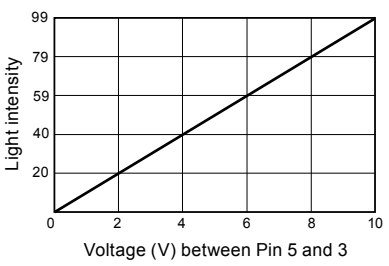
- The light intensity is displayed on the digital display between 00 and 99 (100 levels).
  Note: The digital display will show "--" if the light is turned OFF in Constant Lighting Mode. If you turn the light ON and OFF repeatedly over a short period of time, the digital display may not display numbers correctly.
- To maintain the light intensity, continue to input a constant voltage. The light intensity that is set by the analog input is not stored in the Light Unit.
  Note: Depending on the number of connected Light Units and the cable length, different light intensities may be set for the same analog input voltage.

Connection Example



* You can adjust the light intensity with a variable power supply or a variable resistor.
If you use a variable power supply, use a power supply with a sinking output of 3 mA minimum per Light Unit.
If you use a variable resistor, use the one specified below.
One Light Unit: 15 kΩ
Two Light Units: 10 kΩ
Three Light Units: 5 kΩ
Do not exceed an allowable difference of 20% in the overall resistance.
Note: According to product specifications, the light intensity that is set on the operating panel may be used when the resistance is near the maximum value.

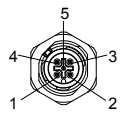
Setting the Light Intensity with an Analog Input



7 ON/OFF Inputs

You can turn the light ON and OFF with a signal input from the input connector. With these Light Units, you can use a sinking input (NPN) or a sourcing input (PNP).

Input Connector (M12 Plug) Configuration



Pin No.	Signal	Cable FECB-M12-5F Series Wire color
1	24 VDC	Brown
2	ON/OFF input (NPN)	White
3	Common ground	Blue
4	ON/OFF input (PNP)	Black
5	Analog input (0 to 10 V)	Gray

Signal from a Sinking Input (NPN)

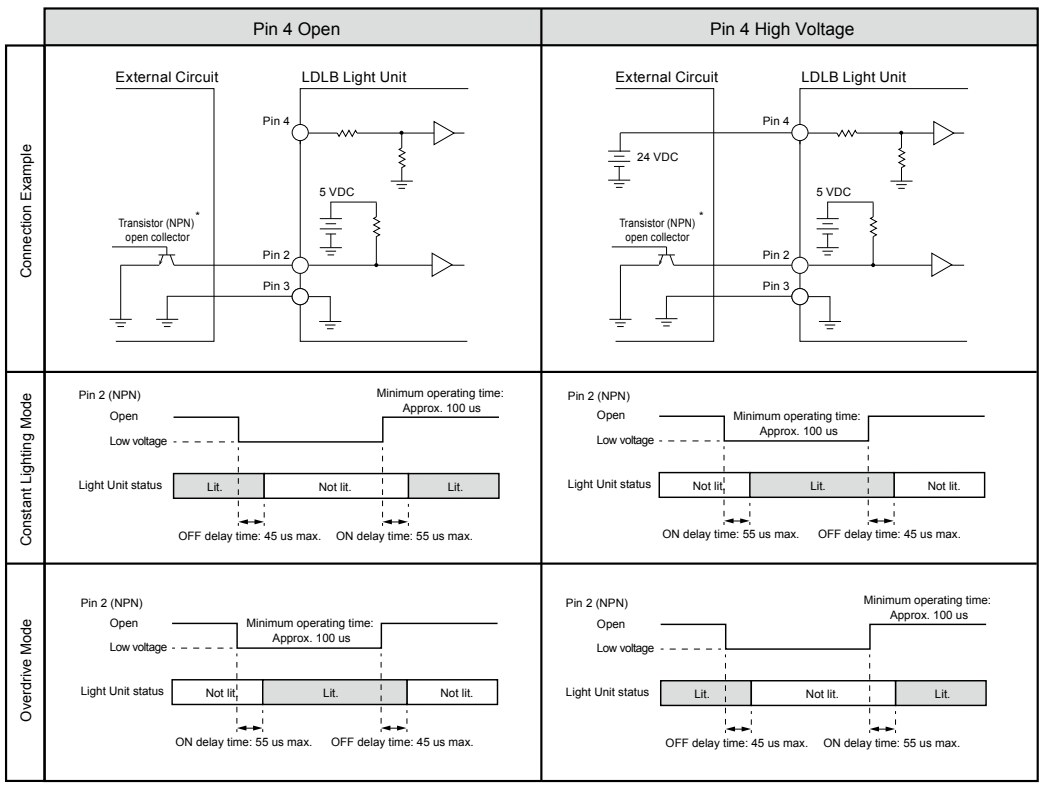
Switch the signal input on pin 2 to turn the light ON and OFF with a signal from a sinking input (NPN). Also, you can input a high voltage on pin 4 to switch the logic for turning the light ON and OFF.

Logic Table

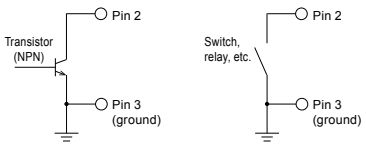
Logic switching	Pin 4	Open		High voltage	
Signal input	Pin 2 (NPN)	Open	Low voltage	Open	Low voltage
Operating mode	Constant Lighting Mode	Lit.	Not lit.	Not lit.	Lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

Pin	Signal input status	Range
Pin 2 (NPN)	Low voltage	0 to 1.1 VDC
Pin 4	High voltage	20.7 to 26.4 VDC



* Use an element or switch with a current flow of approximately 1 mA in the external circuit.



7 ON/OFF Inputs (Continued)

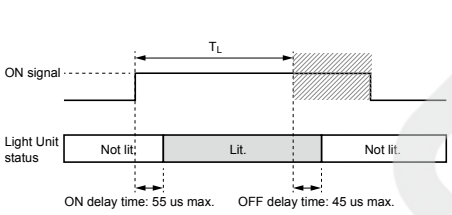
Restrictions in Overdrive Mode

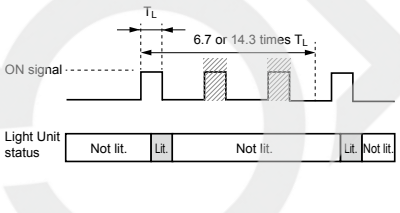
Depending on the set light intensity, the operating time and the repeat period of the signal that lights the Light Unit (i.e., the ON signal) are restricted. Input ON signals that meet the conditions given in the following table.

Light intensity	Operating time (T_L)*1	ON signal repeat period*2
0 to 28	125 ms max.	At least 6.7 times the operating time
29 to 99	10 ms max.	At least 14.3 times the operating time

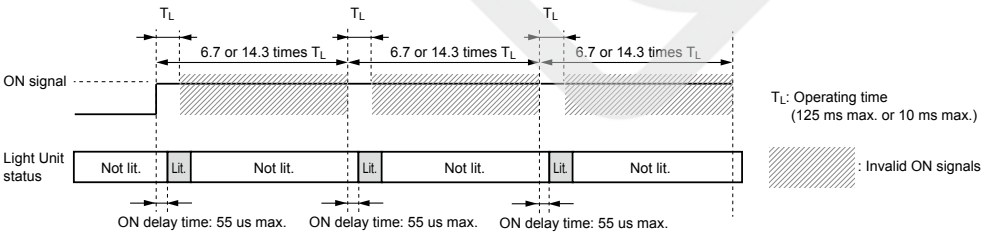
*1 If the ON signal exceeds the above operating time (T_L), the light will be turned OFF automatically.

*2 If the ON signal is input in less time than the above period, it will be ignored.





If the ON signal is input continuously, the light will repeatedly turn ON and OFF.



8 Error Displays

If an error occurs, it will be shown on the digital display on the operating panel.

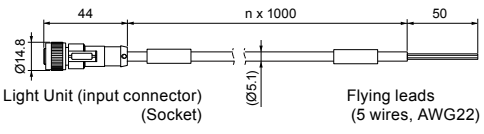
Digital display	Status	
E1	Overdrive error	In Overdrive Mode, the operating time or the ON signal repeat period limit was exceeded. This error is shown on the digital display for 3 seconds. The mode indicator on the upper left of the digital display will flash continuously. (The mode indicator will stop flashing when you change to Constant Lighting Mode or when you cycle the power supply.)
E2	Overload error	An overload occurred, e.g., four or more Light Units were connected. Outputting light will be stopped and automatic recovery will be attempted after 3 seconds.

9 Optional Products (Sold Separately)

Input Cable

Model: FECB-n-M12-5F (n=1, 2, 3, 5)

This cable is used to supply power to the Light Unit and to input signals to control the light intensity and turn the light ON and OFF.



Select the required cable length.

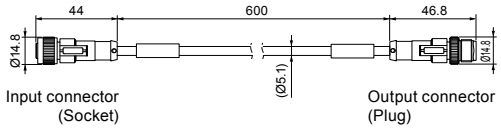
Model	FECB-1-M12-5F	FECB-2-M12-5F	FECB-3-M12-5F	FECB-5-M12-5F
Length	1 m	2 m	3 m	5 m
Weight	55 g max.	90g max.	130g max.	210g max.

Link Cable

(Unit: mm)

Model: FECB-0.6-M12-5M-5F

Use this cable for daisy-chain connections.



Weight: 50 g max.

Information Required for China RoHS Directive

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.

产品中有害物质的名称及含量

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至少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"×"，因欧洲 RoHS 没限定，故用"○"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数。
遵守产品的安全和使用上的注意，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。

Signal from a Sourcing Input (PNP)

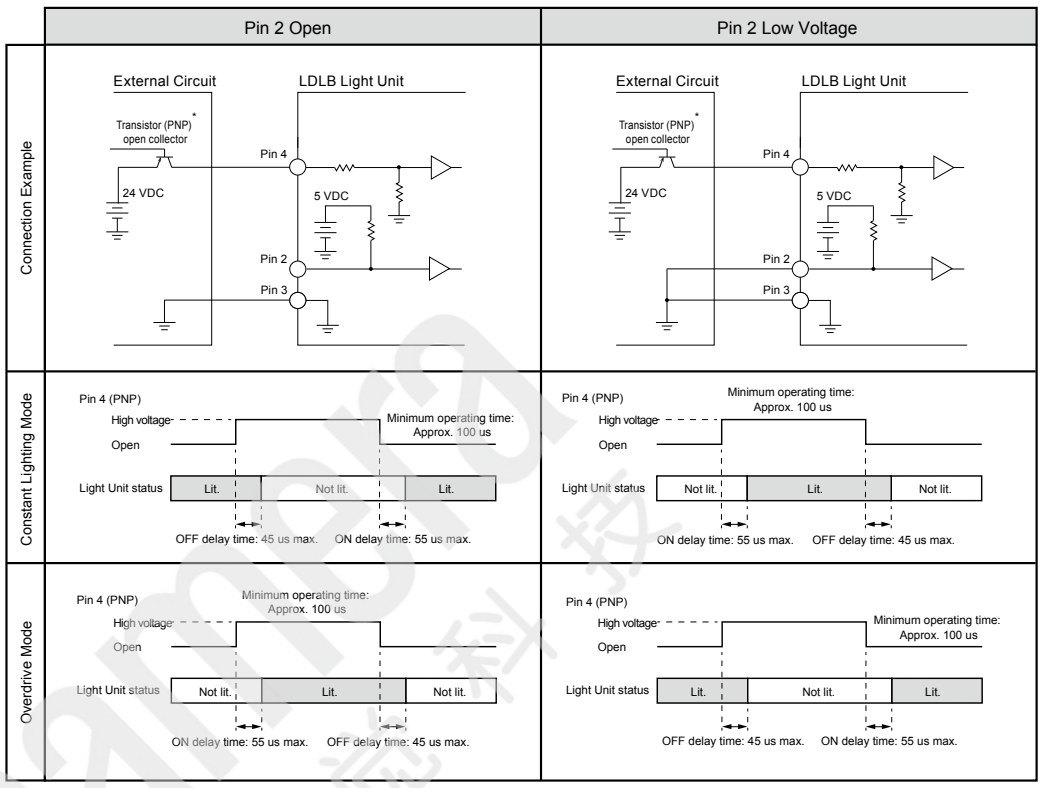
Switch the signal input on pin 4 to turn the light ON and OFF with a signal from a sourcing input (PNP). Also, you can input a low voltage on pin 2 to switch the logic for turning the light ON and OFF.

Logic Table

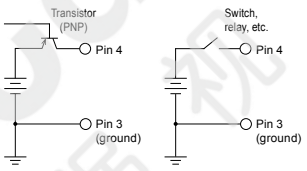
Logic switching	Pin 2	Open		Low voltage	
Signal input	Pin 4 (PNP)	Open	High voltage	Open	High voltage
Operating mode	Constant Lighting Mode	Lit.	Not lit.	Not lit.	Lit.
	Overdrive Mode	Not lit.	Lit.	Lit.	Not lit.

Refer to the following table for the low and high voltages.

Pin	Signal input status	Range
Pin 2	Low voltage	0 to 1.1 VDC
Pin 4 (PNP)	High voltage	20.7 to 26.4 VDC

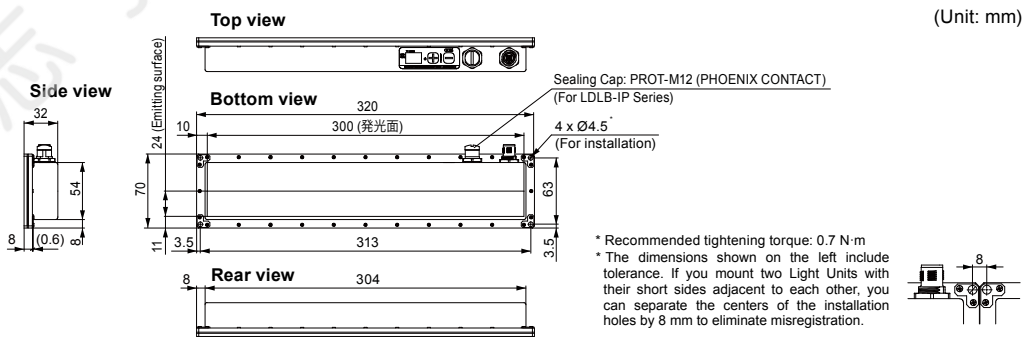


* Use an element or switch with a current flow of approximately 1 mA in the external circuit.



10 Dimensions

(Unit: mm)



* Recommended tightening torque: 0.7 N·m
* The dimensions shown on the left include tolerance. If you mount two Light Units with their short sides adjacent to each other, you can separate the centers of the installation holes by 8 mm to eliminate misregistration.

11 Main Specifications

Common Specifications

Input voltage (rating)	24 VDC
Input voltage (range)	22.8 to 26.4 VDC
Input current (rating)*	Constant lighting mode: 1.3A max. Overdrive mode: 6A max.
Input connector	M12 (5 pins, plug)
Output connector	M12 (5 pins, socket)
Lighting mode	Constant lighting mode, overdrive mode
Inrush current (max.)	6 A from a cold start
Insulation withstand voltage (input and output-case)	250 VAC for one minute, cutoff current: 10 mA, 500 VDC, 1MΩ min.
Operating temperature and humidity (indoors only)	Temperature: 0 to 40°C, Humidity: 20% to 85% (with no condensation)
Storage temperature and humidity	Temperature: −20 to 60°C, Humidity: 20% to 85% (with no condensation)
Vibration resistance	Acceleration: 19.6 m/s^2, frequency: 10 to 55 Hz, cycles: 3 minutes,sweep cycle: for 1 hour each in X, Y, and Z directions
Shock	Acceleration: 800 m/s^2, Application time: 11 ms, Repetitions: 3 times each in 6 directions
Cooling method	Natural air cooling
CE Marking	Safety standard: Conforms to EN62471 EMS standard: Conforms to EN61000-6-2 EMI standard: Conforms to EN61000-6-4
Environmental regulations	RoHS compliant
Case material	Aluminum alloy, resin
Weight	500 g
Accessories	Instruction Guide

* The power supply for daisy-chained Light Units must provide sufficient output for all of the Light Units.

Specifications by Model

Model	LED color	Peak wavelength / Correlated color temperature (typ.)	Power consumption (W)(max.)	Protective structure
LDLB-300SW-N	White	6100 K	31	–
LDLB-300RD-N	Red	630 nm	24	–
LDLB-IP-300SW-N	White	6100 K	31	Conforms to IP67 (JIS C 0920)
LDLB-IP-300RD-N	Red	630 nm	24	Conforms to IP67 (JIS C 0920)

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 Control Unit 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.

Address 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

Descriptions in this instruction guide are based on information available as of July 2016. KZ06922-T001-003