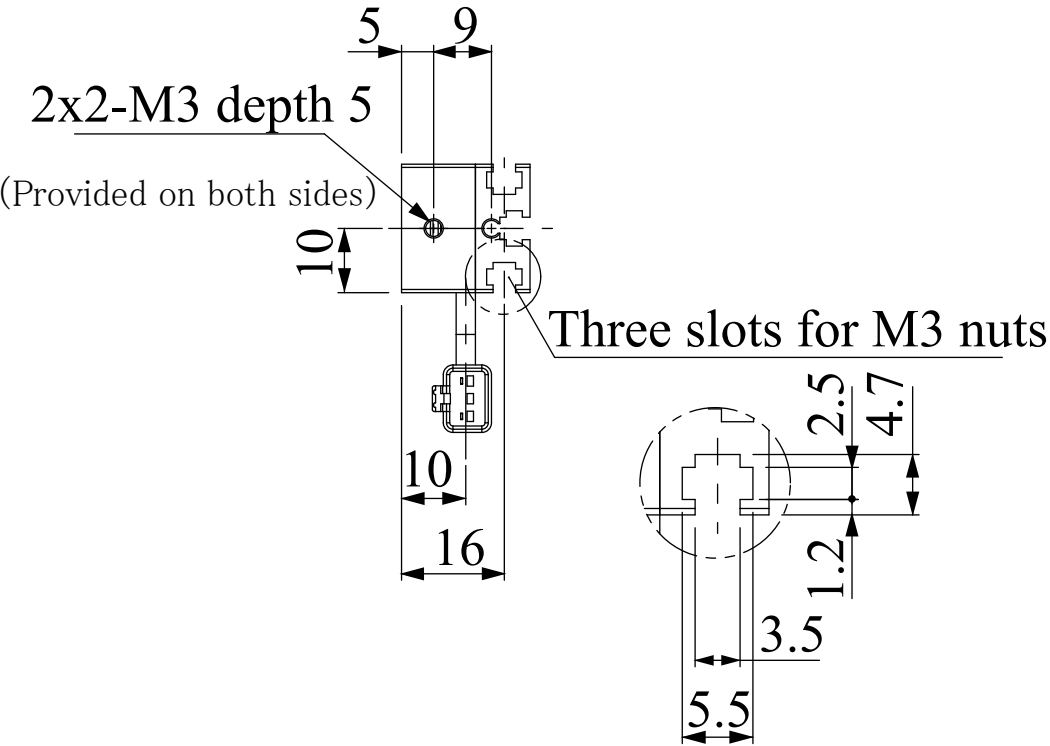
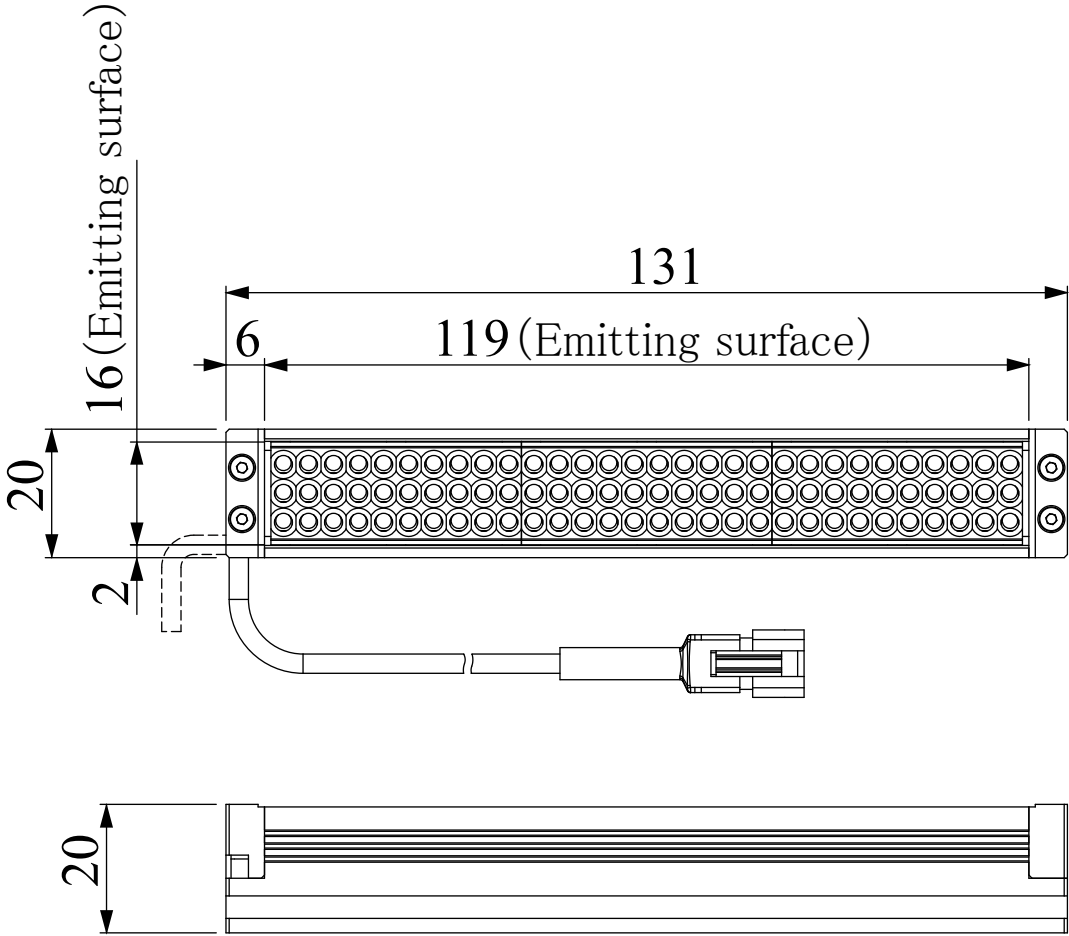
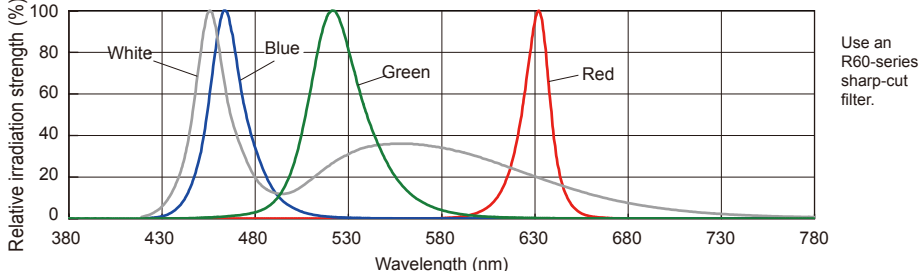


LDL2-119X16BL

Model name	LDL2-119X16BL
LED color	Blue
Input voltage	DC24V
Power consumption	5.7W
Weight	95g
Connector	SMR-03V-B
Polarity and signal	1 : (+) , 2 : NC , 3 : (-)

Third Angle Projection Units: mm



Common Specifications				
LED color	Red (RD)	White (SW)	Blue (BL)	Green (GR)
Input voltage	24 V max.			
Peak wavelength (typ.)	635 nm	—	470 nm	525 nm
Relative color temperature (typ.)	—	6,600 K	—	—
Cable length	0.3 m			
Input connector	SMR-03V-B			
Polarity, signal	1: Anode (+) brown, 2: NC, 3: Cathode (–) blue			
Case material	Aluminum alloy			
Operating temperature and humidity	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)			
Cooling method	Natural air cooling			
Spectral distribution	 <p>Use an R60-series sharp-cut filter.</p>			

Note: The values for irradiation strength and service life given in this catalog are for reference purposes. These values are not ensured.

Precautions
<ul style="list-style-type: none"> ●Carefully read the product's instruction manual before use to ensure correct operation. ●Product specifications and design are subject to change without notice. ●Examples of workpiece imaging in this catalog are a guide that may be informative for choosing Light Units. Please check the functions of the equipment and requirements before choosing a Light Unit.





LIGHTING SOLUTION

LED Illuminators for Machine Vision



Patent Pending

Full Model Change

New Generation LED Bar Light

New Bar Light Units with Direct Illumination

The New LDL2 Series

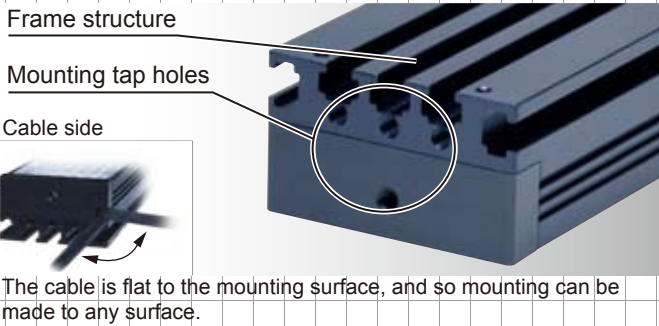
CCS Inc.

Full Model Change — Five New Points —

Point 1 — New Mounting Method

The new mounting method enables versatile mounting to match the installation environment.

+ Heat Dissipation Enhanced



You can select from two methods for greater mounting versatility to match your installation environments: the new frame structure mounting method or the conventional mounting holes.

With the new mounting method, you have freedom in adjusting the lighting position and mounting location by sliding the securing nuts into the internal grooves in the frame structure. The size of the internal grooves complies with JIS standard M3 nuts, which are commonly used. (Use JIS standard M3 nuts for mounting.)

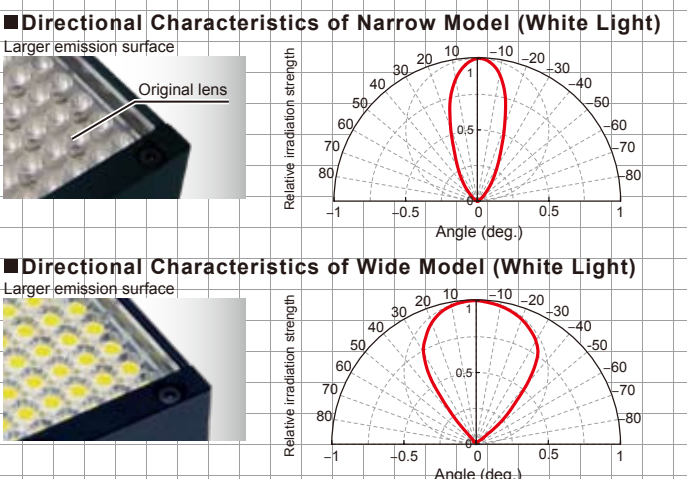
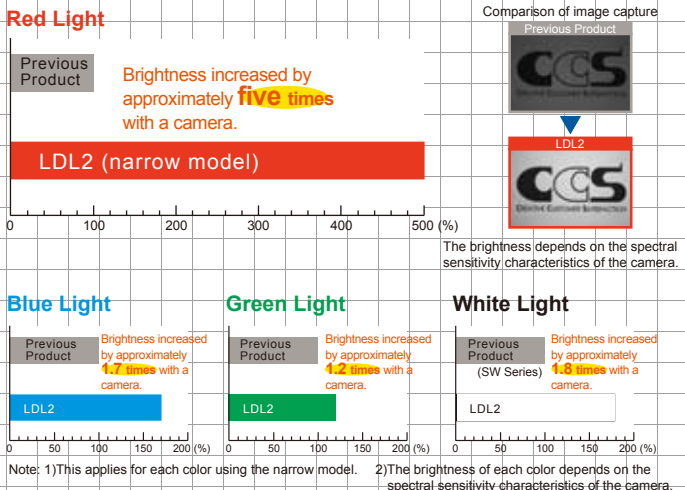
Point 2 — High Output

Enhanced Output with Improved Light Emission Efficiency

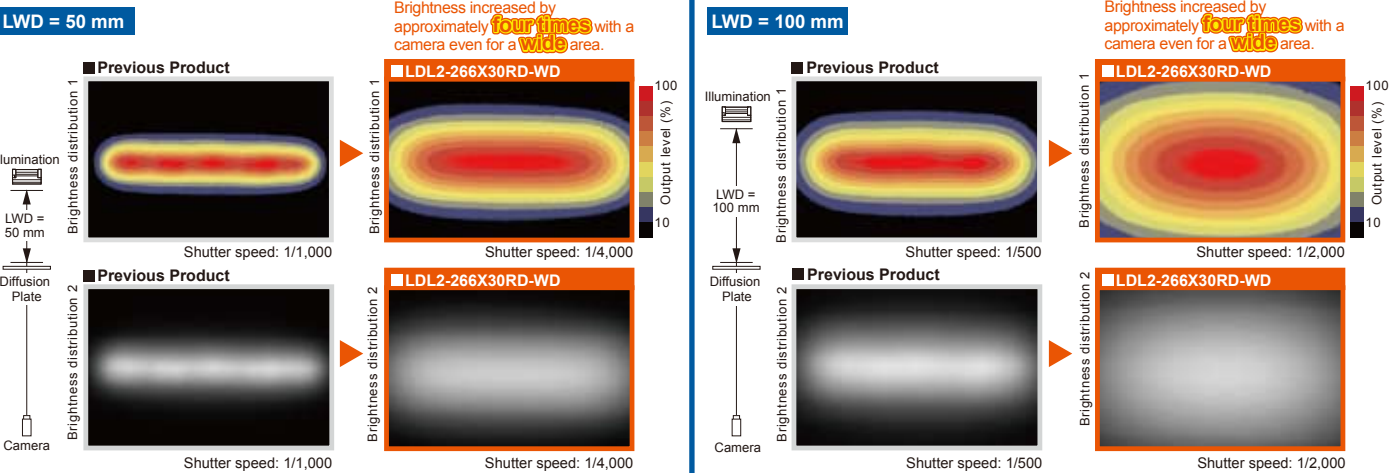
+ Selectable Directional Characteristics

A brightness of approximately five times is achieved over previous products for red light with a camera. Brightness has also been enhanced for white, blue, and green light.

Two models are available with different directional characteristics: the narrow model, which uses the original lens with directional characteristics similar to previous models, and a wide model, which has diffuse illumination in a wide range.



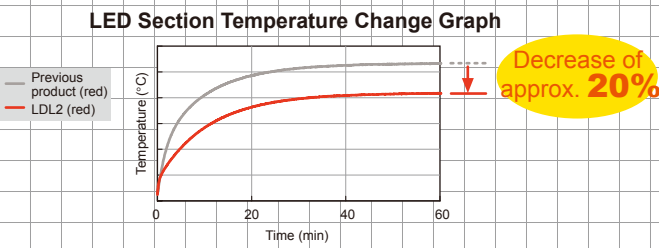
The wide model can provide uniform illumination in a wide area, which offers new usage of bar light. We recommend this new method using Bar Light Units



Note: 1)Relative sensor brightness distribution measurement conditions: Intensity: 100%, Lens: F16-mm, Width: 775 mm, Field of vision: 303 x 227 mm 2)The brightness depends on the spectral sensitivity characteristics of the camera. 3)The values given here are for reference purposes. Actual values may vary.

Point 3 — Enhanced Heat Dissipation

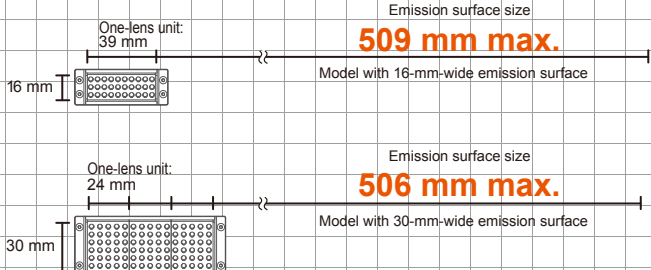
Stable long-term performance with high-efficiency heat dissipation



Using heat radiating fins and the frame structure increases the surface area by 40% over the previous model. This enables a decrease by approximately 20% of the LED mounting section temperature due to highly efficient heat radiation.

Point 4 — Enhanced Customizability

Maximum emission surface size of 500 mm.

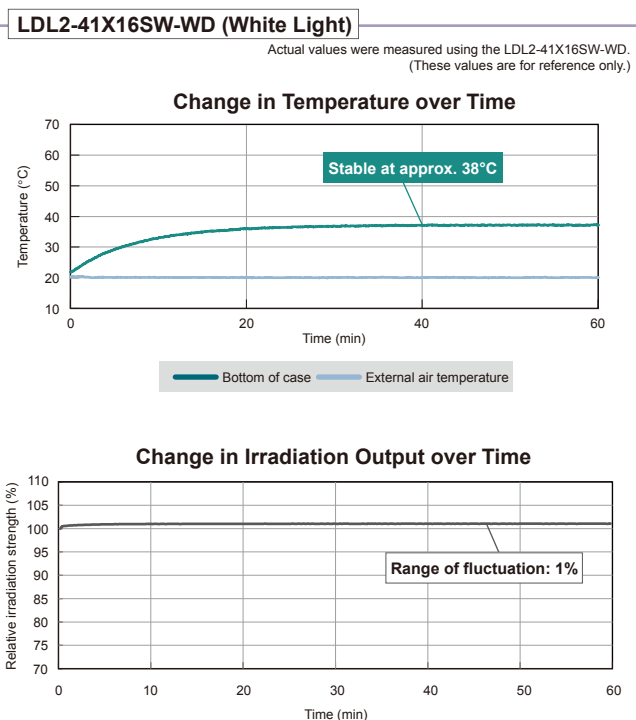
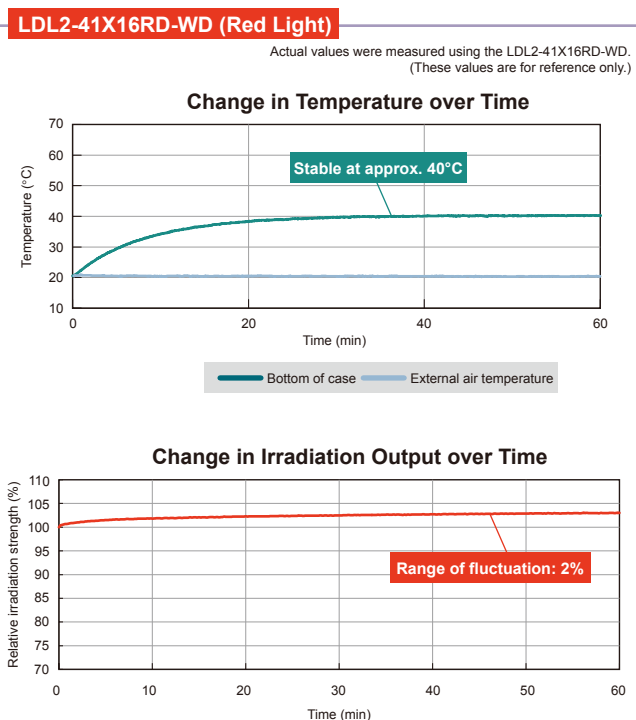


Using one lens of a standardized size enables flexible customizability. The specified length of light unit can be produced in the unit of one lens. Note: For other lengths, contact your CCS sales representative.

Point 5 — 24-V Input For All Colors

The power that is supplied is the same for all light colors. Previously, 12 V was used only for red light, but the voltage is now 24 V for all colors.

Data Typical Examples. There are virtually no changes in the graph values for the narrow model or changes that depend on whether optional products are mounted.



Note: Graph measurement conditions: Actual measurement values: Intensity: 100%, External air temperature: 20°C (These values are for reference only.)

Options

The Diffusion Plate and Polarizing Plate have been redesigned to use insertion fixing rather than the previous screw fixing method. Upgraded materials for the Diffusion Plate improve the rate of diffusion. Protective Plate is available protect the emission area of the Light Unit as well as bracketss for securing the Light Unit to enable flexible adjustment of the emission direction.

Diffusion Plate

DF-LDL2 Series

Polarization Plate

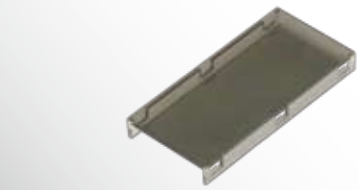
PL-LDL2 Series

Protective Plate

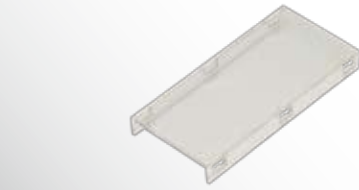
CV-LDL2 Series



The irradiated light is diffused to limit workpiece glare and reflections.



The light is polarized. You can prevent light reflection by fixing a PL-series polarization filter to the lens.



The plate protects the emission section of the Light Unit.

Note: The Protective Plate is not intended to provide protection against dust or water droplets.

Mounting

● Insert the tabs into the side grooves.

Removal

● Use a flat-blade screwdriver or other tool with a narrow point to catch the tabs and remove the Plate.

For details, refer to the instruction manual.

Light Fixing Brackets

BK-LDL2 (for all models in Series)



Accessories
Fixing screws (M3): 8 + 1 (spare)

When you secure the light, the angle of the irradiation can be adjusted as desired. A variety of methods are available for securing the Light Units, such as parallel emission from two directions or enveloped emission from four directions.

Mounting

● Install the bracketss on both ends of the Light Unit.

● Adjust the emission angle and then firmly secure the Light Unit.

For details, refer to the instruction manual.

Specifications of Special Options

Name	Diffusion Plate	Polarizing Plate	Protective Plate	Light Fixing Brackets
Model name (for both narrow model and wide model)	DF-LDL2-41X16	PL-LDL2-41X16(-VE)	CV-LDL2-41X16	BK-LDL2 (for all models in Series)
	DF-LDL2-80X16	PL-LDL2-80X16(-VE)	CV-LDL2-80X16	
	DF-LDL2-119X16	PL-LDL2-119X16(-VE)	CV-LDL2-119X16	
	DF-LDL2-74X30	PL-LDL2-74X30(-VE)	CV-LDL2-74X30	
	DF-LDL2-146X30	PL-LDL2-146X30(-VE)	CV-LDL2-146X30	
	DF-LDL2-218X30	PL-LDL2-218X30(-VE)	CV-LDL2-218X30	
	DF-LDL2-266X30	PL-LDL2-266X30(-VE)	CV-LDL2-266X30	
Heat resistance	80°C	60°C	80°C	—

Two types of Polarizing Plate are available. Use combinations for the following cases.

Mounting with Emission from Four Directions

Example

Use a combination of two pairs of the two types.

The polarization direction differs by 90°.

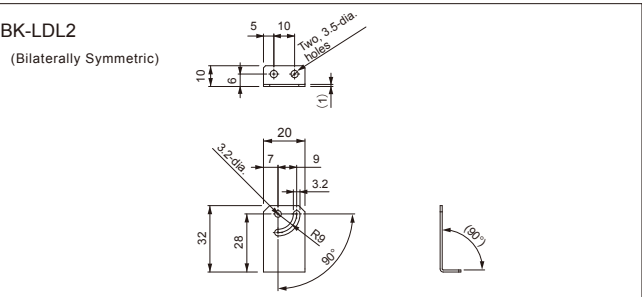
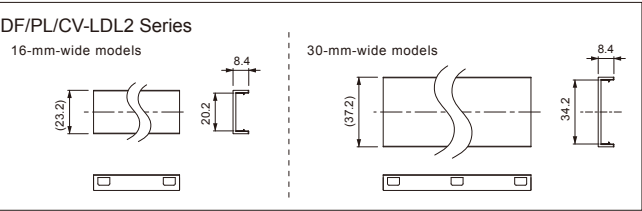
Differentiating Paired Polarizing Plates

Black

Not black

Paired Polarizing Plates will turn black when they overlap in opposite directions and will not be black when they overlap in the same direction.

Dimensional diagrams (mm)



Product Lineup

The standard lineup now includes models with a length of 200 mm or more as well as models with an emission surface of 30 mm. The lineup includes combination of over 50 models with light colors in red, white, blue, and green, various sizes, and narrow models or wide models.

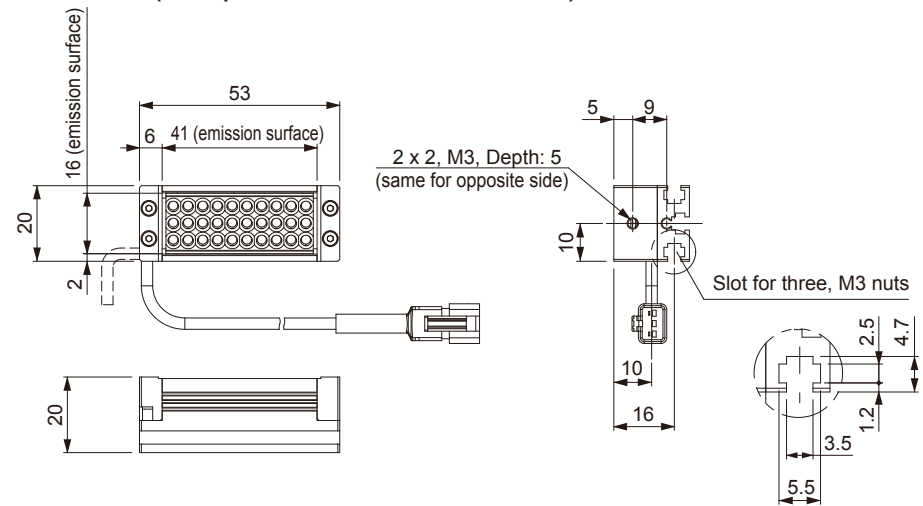
You can easily access information for the desired product by visiting the CCS website (Machine Vision Applications) and entering the seven-digit number into the direct number input space.

	Direct number	Model	LED color	Emission surface size	Input voltage	Power consumption	Weight	Supported options		
Model with 16-mm-wide emission surface	Narrow model	1003702	LDL2-41X16RD	Red	41x16 mm	24 V	1.9 W	50 g	Diffusion Plate	DF-LDL2-41X16
		1003705	LDL2-41X16SW	White					Polarizing Plate	PL-LDL2-41X16 (PL-LDL2-41X16-VE)
		1003704	LDL2-41X16BL	Blue					Protective Plate	CV-LDL2-41X16
		1003703	LDL2-41X16GR	Green					Light Fixing Brackets	BK-LDL2
	Wide model	1003706	LDL2-41X16RD-WD	Red	41x16 mm	24 V	1.9 W	50 g	Diffusion Plate	DF-LDL2-41X16
		1003709	LDL2-41X16SW-WD	White					Polarizing Plate	PL-LDL2-41X16 (PL-LDL2-41X16-VE)
		1003708	LDL2-41X16BL-WD	Blue					Protective Plate	CV-LDL2-41X16
		1003707	LDL2-41X16GR-WD	Green					Light Fixing Brackets	BK-LDL2
	Narrow model	1003710	LDL2-80X16RD	Red	80x16 mm	24 V	3.8 W	75 g	Diffusion Plate	DF-LDL2-80X16
		1003713	LDL2-80X16SW	White					Polarizing Plate	PL-LDL2-80X16 (PL-LDL2-80X16-VE)
		1003712	LDL2-80X16BL	Blue					Protective Plate	CV-LDL2-80X16
		1003711	LDL2-80X16GR	Green					Light Fixing Brackets	BK-LDL2
	Wide model	1003714	LDL2-80X16RD-WD	Red	80x16 mm	24 V	3.8 W	75 g	Diffusion Plate	DF-LDL2-80X16
		1003717	LDL2-80X16SW-WD	White					Polarizing Plate	PL-LDL2-80X16 (PL-LDL2-80X16-VE)
		1003716	LDL2-80X16BL-WD	Blue					Protective Plate	CV-LDL2-80X16
		1003715	LDL2-80X16GR-WD	Green					Light Fixing Brackets	BK-LDL2
	Narrow model	1003718	LDL2-119X16RD	Red	119x16 mm	24 V	5.7 W	95 g	Diffusion Plate	DF-LDL2-119X16
		1003721	LDL2-119X16SW	White					Polarizing Plate	PL-LDL2-119X16 (PL-LDL2-119X16-VE)
		1003720	LDL2-119X16BL	Blue					Protective Plate	CV-LDL2-119X16
		1003719	LDL2-119X16GR	Green					Light Fixing Brackets	BK-LDL2
	Wide model	1003722	LDL2-119X16RD-WD	Red	119x16 mm	24 V	5.7 W	95 g	Diffusion Plate	DF-LDL2-119X16
		1003725	LDL2-119X16SW-WD	White					Polarizing Plate	PL-LDL2-119X16 (PL-LDL2-119X16-VE)
		1003724	LDL2-119X16BL-WD	Blue					Protective Plate	CV-LDL2-119X16
		1003723	LDL2-119X16GR-WD	Green					Light Fixing Brackets	BK-LDL2
Narrow model	1003726	LDL2-74X30RD	Red	74x30 mm	24 V	5.7 W	100 g	Diffusion Plate	DF-LDL2-74X30	
	1003729	LDL2-74X30SW	White					Polarizing Plate	PL-LDL2-74X30 (PL-LDL2-74X30-VE)	
	1003728	LDL2-74X30BL	Blue					Protective Plate	CV-LDL2-74X30	
	1003727	LDL2-74X30GR	Green					Light Fixing Brackets	BK-LDL2	
Wide model	1003730	LDL2-74X30RD-WD	Red	74x30 mm	24 V	5.7 W	100 g	Diffusion Plate	DF-LDL2-74X30	
	1003733	LDL2-74X30SW-WD	White					Polarizing Plate	PL-LDL2-74X30 (PL-LDL2-74X30-VE)	
	1003732	LDL2-74X30BL-WD	Blue					Protective Plate	CV-LDL2-74X30	
	1003731	LDL2-74X30GR-WD	Green					Light Fixing Brackets	BK-LDL2	
Narrow model	1003734	LDL2-146X30RD	Red	146x30 mm	24 V	12 W	170 g	Diffusion Plate	DF-LDL2-146X30	
	1003737	LDL2-146X30SW	White					Polarizing Plate	PL-LDL2-146X30 (PL-LDL2-146X30-VE)	
	1003736	LDL2-146X30BL	Blue					Protective Plate	CV-LDL2-146X30	
	1003735	LDL2-146X30GR	Green					Light Fixing Brackets	BK-LDL2	
Wide model	1003738	LDL2-146X30RD-WD	Red	146x30 mm	24 V	12 W	170 g	Diffusion Plate	DF-LDL2-146X30	
	1003741	LDL2-146X30SW-WD	White					Polarizing Plate	PL-LDL2-146X30 (PL-LDL2-146X30-VE)	
	1003740	LDL2-146X30BL-WD	Blue					Protective Plate	CV-LDL2-146X30	
	1003739	LDL2-146X30GR-WD	Green					Light Fixing Brackets	BK-LDL2	
Narrow model	1003742	LDL2-218X30RD	Red	218x30 mm	24 V	18 W	240 g	Diffusion Plate	DF-LDL2-218X30	
	1003745	LDL2-218X30SW	White					Polarizing Plate	PL-LDL2-218X30 (PL-LDL2-218X30-VE)	
	1003744	LDL2-218X30BL	Blue					Protective Plate	CV-LDL2-218X30	
	1003743	LDL2-218X30GR	Green					Light Fixing Brackets	BK-LDL2	
Wide model	1003746	LDL2-218X30RD-WD	Red	218x30 mm	24 V	18 W	240 g	Diffusion Plate	DF-LDL2-218X30	
	1003749	LDL2-218X30SW-WD	White					Polarizing Plate	PL-LDL2-218X30 (PL-LDL2-218X30-VE)	
	1003748	LDL2-218X30BL-WD	Blue					Protective Plate	CV-LDL2-218X30	
	1003747	LDL2-218X30GR-WD	Green					Light Fixing Brackets	BK-LDL2	
Narrow model	1003750	LDL2-266X30RD	Red	266x30 mm	24 V	21 W	280 g	Diffusion Plate	DF-LDL2-266X30	
	1003753	LDL2-266X30SW	White					Polarizing Plate	PL-LDL2-266X30 (PL-LDL2-266X30-VE)	
	1003752	LDL2-266X30BL	Blue					Protective Plate	CV-LDL2-266X30	
	1003751	LDL2-266X30GR	Green					Light Fixing Brackets	BK-LDL2	
Wide model	1003754	LDL2-266X30RD-WD	Red	266x30 mm	24 V	21 W	280 g	Diffusion Plate	DF-LDL2-266X30	
	1003757	LDL2-266X30SW-WD	White					Polarizing Plate	PL-LDL2-266X30 (PL-LDL2-266X30-VE)	
	1003756	LDL2-266X30BL-WD	Blue					Protective Plate	CV-LDL2-266X30	
	1003755	LDL2-266X30GR-WD	Green					Light fixing Brackets	BK-LDL2	

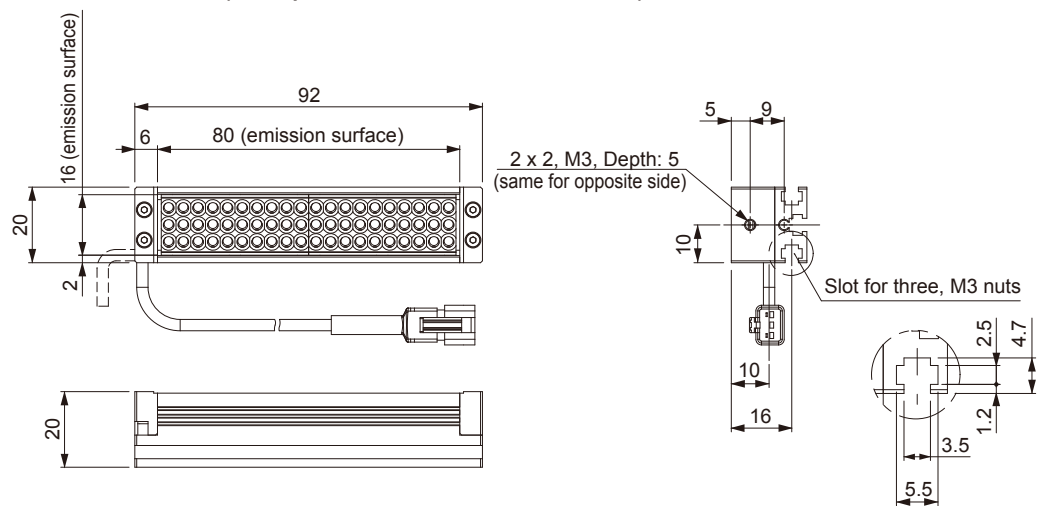
Dimensional diagrams (mm)

Model with 16-mm-wide emission surface

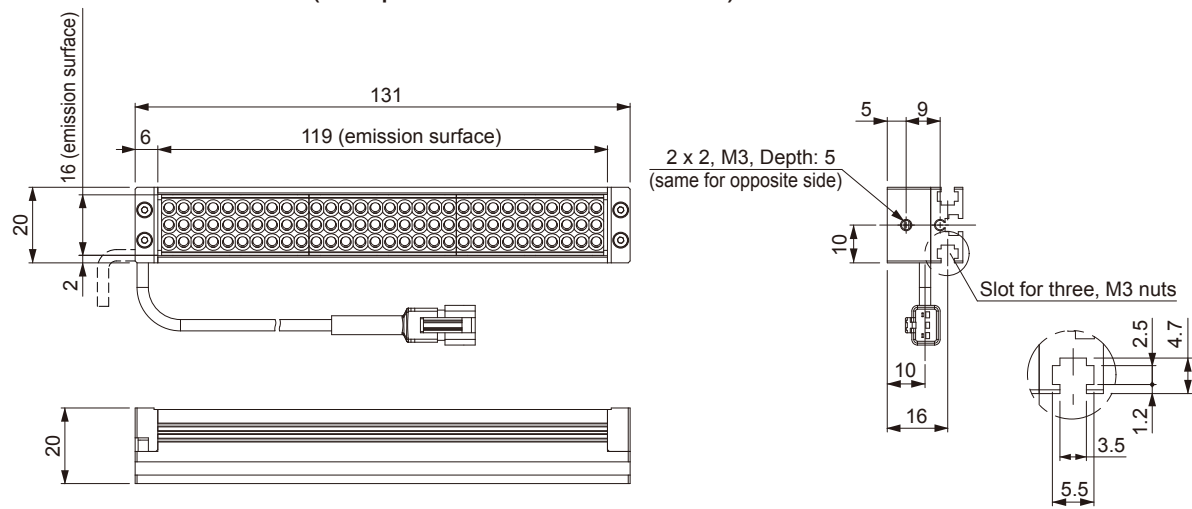
LDL2-41X16RD/SW/BL/GR (compatible with -WD models)



LDL2-80X16RD/SW/BL/GR (compatible with -WD models)

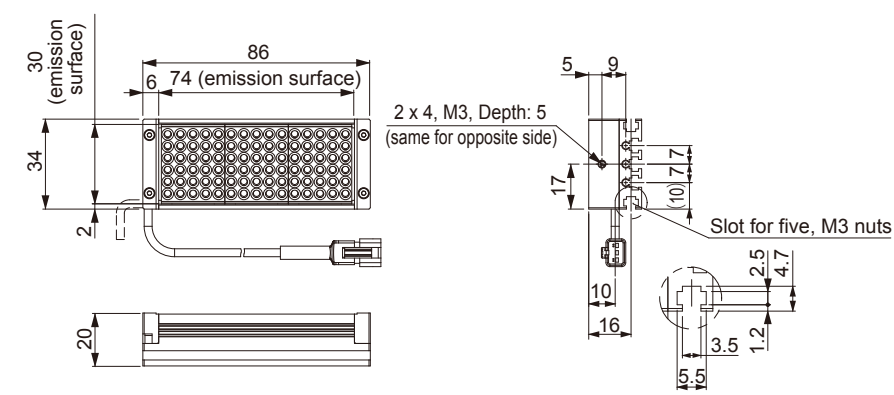


LDL2-119X16RD/SW/BL/GR (compatible with -WD models)

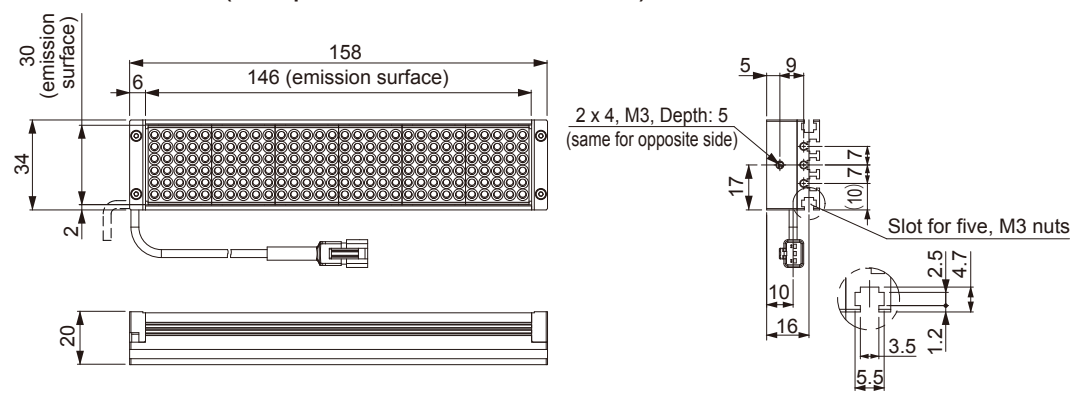


Model with 30-mm-wide emission surface

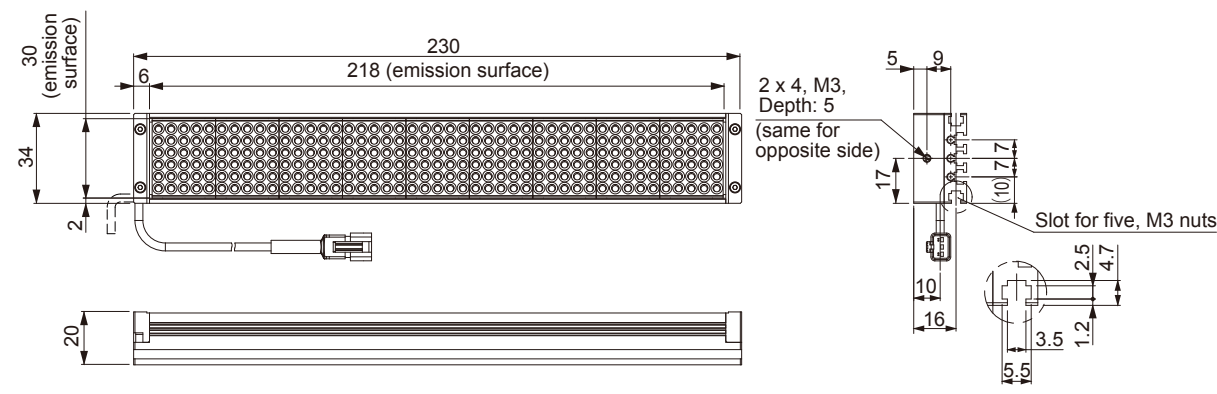
LDL2-74X30RD/SW/BL/GR (compatible with -WD models)



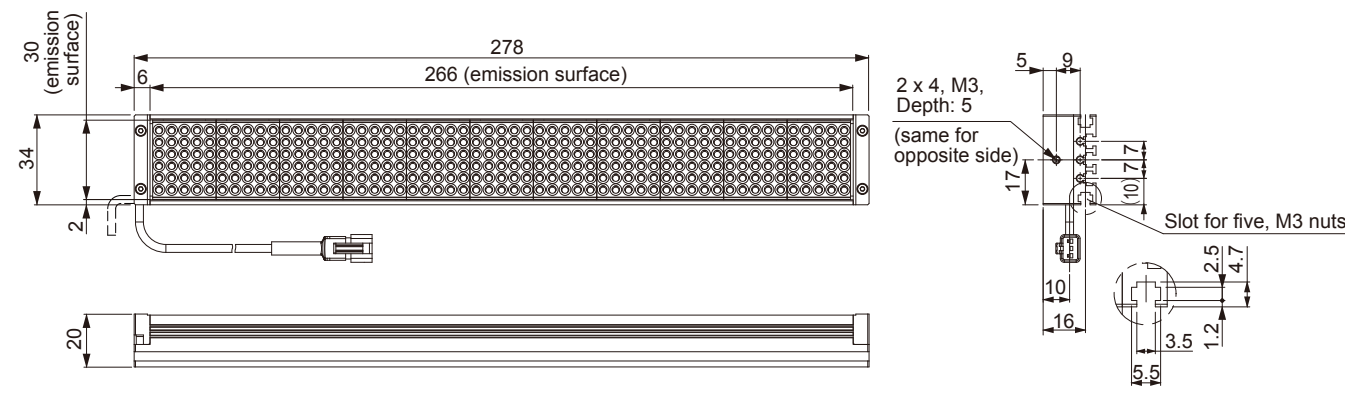
LDL2-146X30RD/SW/BL/GR (compatible with -WD models)



LDL2-218X30RD/SW/BL/GR (compatible with -WD models)



LDL2-266X30RD/SW/BL/GR (compatible with -WD models)



Direct Lighting
Bar Lights

LDL2 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.

1.Introduction

This product is an LED light used for machine vision and industrial inspection. Do not use the product for other applications, and be sure to follow the instructions below.

- Do not use the product 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.
- Use and Storage temperature and humidity
Use the product only in the following environment.

Operating temperature and humidity (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)
Storage temperature and humidity	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)

- Installation location
Please install products to locations with following conditions. Incorrect installation location may cause product 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.Important Information for Equipment Safety -Read Before Use-

Incorrect usage of the product may result in fire, electric shock, or other serious damages. Please ensure to follow the conditions below.

Symbol Descriptions

	Indicates that incorrect usage may result in serious injury or death.
	Indicates that incorrect usage may result in injury or property damage.

Symbol Examples

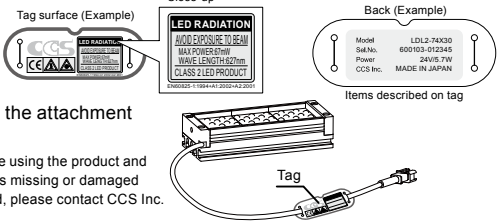
	△ symbols indicate caution (also including danger and warning). The example shown here indicates a fire caution.
	⊘ symbols indicate prohibited acts. The example shown here indicates prohibition to disassemble.
	● symbols indicate instructions for specific actions. The example shown here indicates that the power cord must be disconnected.

Warning		
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 disassemble or modify the product. Doing so may result in fire or electric shock.		Do not touch the product with wet hands. Doing so may result in electric shock.
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.		Make sure that the product is free of moisture or any liquid. Exposure to water may result in fire, electric shock, or product failure.
Connect or disconnect the light cable only after turning off the power supply for the LED light. 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 product immediately, and turn the power off. A fire or electric shock may result if the product is kept used.		

Caution		
Do not use user-made cables. Doing so may cause product failure. Use the optional extension cable if it is necessary to extend the distance between the light and the power supply.		Do not drop the product or subject it to impact. Doing so may cause the product to malfunction.
Make sure that the length of the extension cable is less than 5m. If the extension cable is longer than 5m, the voltage applied to both ends of the LED light will drop due to the DC resistance of the cable. The rated voltage will not be attained for 100% radiant ability, and the radiant quantity will drop as a result.		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.

3.Product Information

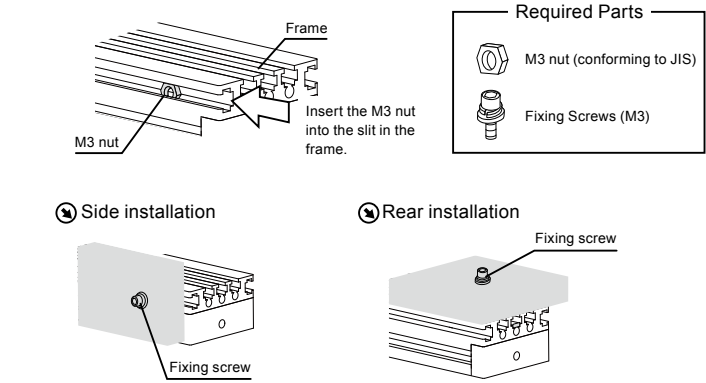
The product is provided with a tag specifying the class of risk, maximum output, and wavelength of LED light. The surface of the tag is classified by color according to the luminescence color. The back of the tag specifies the model name, power consumption, and serial number.



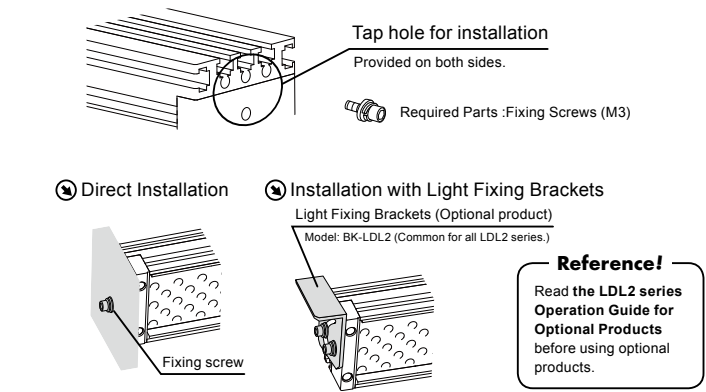
The right illustration shows the attachment position of the tag.
Be sure to check the contents before using the product and handle the tag with care. If the tag is missing or damaged and the contents cannot be checked, please contact CCS Inc.

4.Installation

Installation on a Frame



Installation Using a Tap Hole



Caution The tap holes on the back surface are for factory use. Do not use them for installation.

5.Operating Instructions

Wire Connection

- 1 Make sure that the power is turned OFF.
 - 2 Connect light cable to power supply output connector.
- Reference!**
Read the instruction guide of the power supply for the LED light before use.
- Insert the connector completely.

Capture Images

- 1 Turn the power on.
 - 2 The Light will come on.
- Preparations!**
Focus imaging devices such as cameras, microscopes, etc. to inspection objects.
- Adjustment!**
Adjust light range, light angle, and light quantity to optimize images.
Note:Use the power supply for the LED light to adjust the radiant quantity.

- Reference!**
Read the LDL2 series Operation Guide for Optional Products before using optional products.
- ③ Lighting at a Fixed Angle
- ③ Lighting When Using the Light Fixing Brackets
- ③ Other Applications
Backlight Lighting Using a Diffusion Plate
- The lighting angle is adjustable.

6.Specifications

Common Specifications

LED color	Red (RD)	White (SW)	Blue (BL)	Green (GR)
Input voltage	24V max.			
Peak wavelength (typ.)	635nm	—	470nm	525nm
Relative color temperature (typ.)	—	6600K	—	—
Cable	0.3m			
Connector	SMR-03V-B			
Polarity and signal	1: Anode (+) brown, 2: NC, 3: Cathode (-) blue			
Case material	Aluminum alloy			
Cooling method	Natural air cooling			

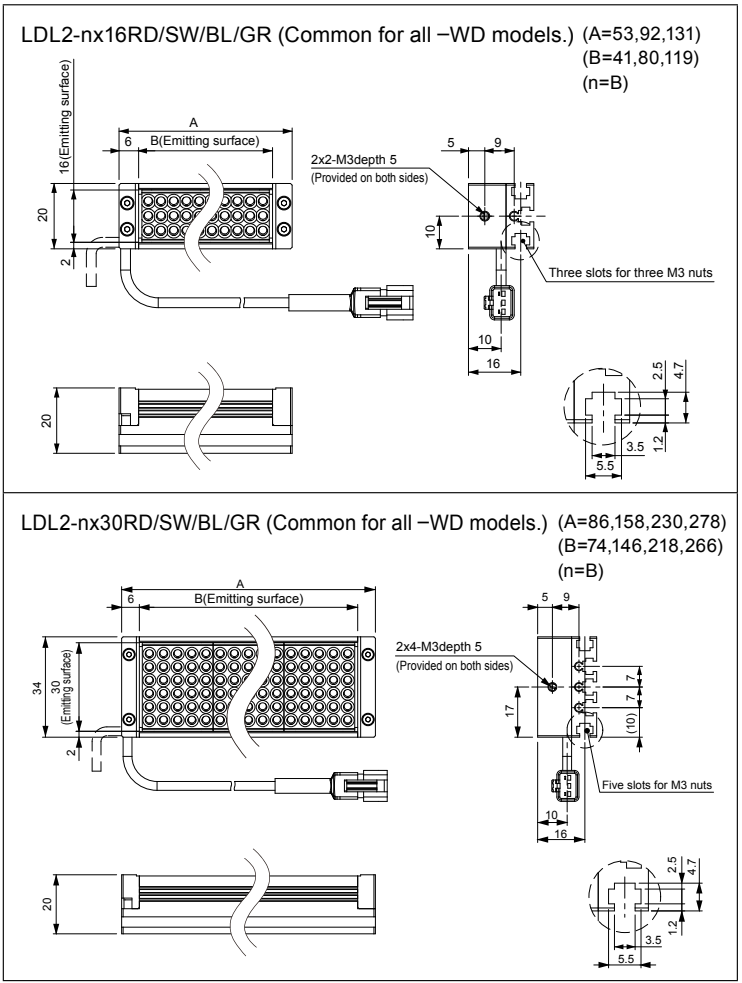
LDL2-41x16 Series		LDL2-74x30 Series	
Power consumption	1.9W max.	Power consumption	5.7W max.
Weight	50g	Weight	100g

LDL2-80x16 Series		LDL2-146x30 Series	
Power consumption	3.8W max.	Power consumption	12W max.
Weight	75g	Weight	170g

LDL2-119x16 Series		LDL2-218x30 Series	
Power consumption	5.7W max.	Power consumption	18W max.
Weight	95g	Weight	240g

LDL2-266x30 Series	
Power consumption	21W max.
Weight	280g

7.Dimensional diagrams (mm)



8.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 Min	1000ppm Min	100ppm Min	1000ppm Min	1000ppm Min	1000ppm Min

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

9.China RoHS Directive

China RoHS Directive is formally known as "Management Methods for Controlling Pollution by Electronic Information Products", which was implemented on March 1, 2007 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.

Name and amount of toxic and hazardous substances or elements, which products contain		Toxic or Hazardous Substances and Elements					
Usage Deadline for Environmental Protection	Product name	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	PBB	PBDE
	LED Lights	×	○	×	○	○	○
○: Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to SJ/T11363-2006 is within the limit requirement. ×: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to SJ/T11363-2006, 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 Controlling Pollution by Electronic Information 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 need to be re-used or discard appropriately following local law and regulations, complying with safety and usage caution.							

产品中有害有害物质或元素名称及含量		有害有害物质或元素					
环保使用期限	产品	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	LED 照明	×	○	×	○	○	○
○: 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 SJ/T11363-2006 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 SJ/T11363-2006 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子产品污染控制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。							

10.Laser Safety Standards (IEC60825-1 Amd.2)

LED illumination devices are laser products as stipulated by IEC (International Electrotechnical Commission) and JIS (Japanese Standards Association). A brief summary of the hazard classes is provided below.

Class	Outline of risk evaluation
Class 2	Low-output visible light (400 to 700 nm). The eyes are generally protected by an aversion reaction, such as blinking.

Warranty Information

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS AGREEMENT, COMPANY MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, COMPANY 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 A 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.

Please contact CCS for product information, and further information.
The Instruction Guide is available from CCS's website as well.
<http://www.ccs-inc.co.jp>

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