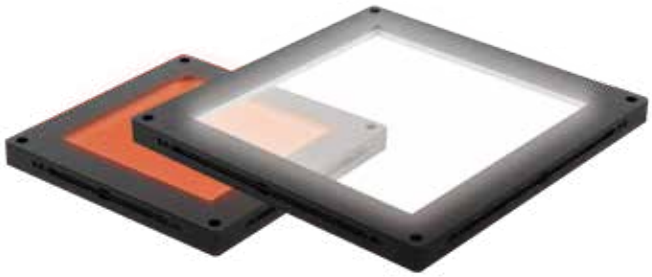
CREATING CUSTOMER SATISFACTION

Flat Dome Lights
LFX3 Series



Triple the Brightness of Conventional White Lights

* Comparison with the conventional 100X100 model.

Expanded Product Lineup: 28 Models in Total

Applications

Reading characters on electronic components
Visual inspection of food containers
Detecting shrink films
Visual inspection of cans

L F X 3

LIGHTING SOLUTION
CCS Inc.

Flat Dome Lights LFX3 Series

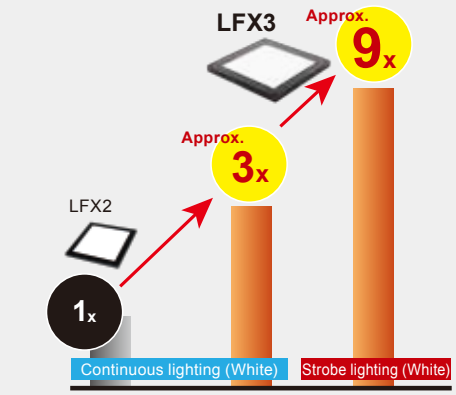
High Output | Abundant Product Lineup | Recreates the Effect of Coaxial Light and Dome Light in a Unit

Approx. 3x* the Brightness for White

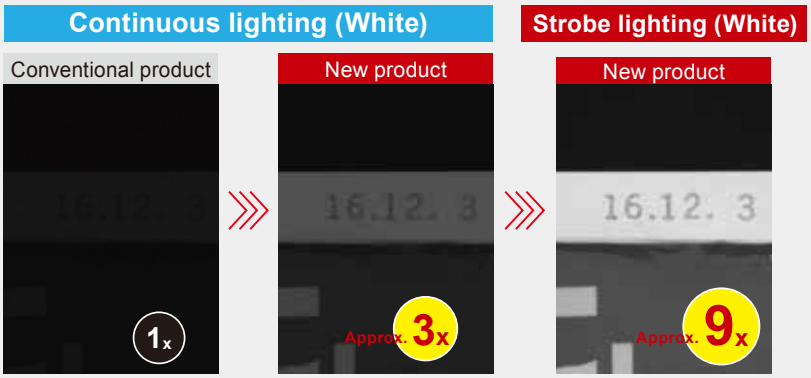
For inspections in fast-moving production lines

* Comparison between the 100X100 models. Approx. 1.3x for red.

Increased brightness with strobe lighting and overdriving.



"Overdriving" is a method for emitting brighter light by applying a large current to an LED Light for a fixed amount of time. This current exceeds the current during continuous ON/OFF emission.



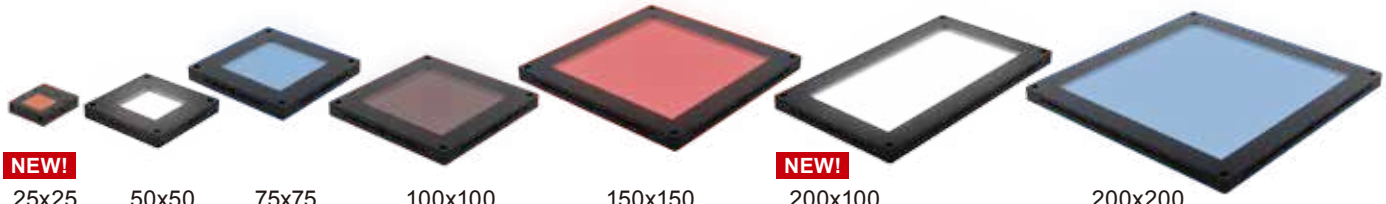
Shutter speed: 1/24,000

Measuring condition: Amount of light: 100% intensity

- Brightness comparison between the LFX2-100SW and LFX3-100SW.
- The data included is for reference only. Results for individual products may vary.

Total of 28 Models

New sizes and blue color now supported.

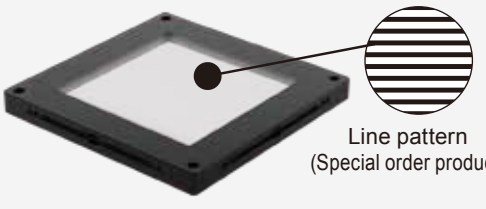


NEW! 25x25 | 50x50 | 75x75 | 100x100 | 150x150 | NEW! 200x100 | 200x200 (Emitting surface size)

Conventional products		
Series	Emitting surface size (mm)	LED color
—	—	—
LFX2-50 Series	50 x 50	Red/White/IR
LFX2-75 Series	75 x 75	
LFX2-100 Series	100 x 100	
LFX2-150 Series	150 x 150	
—	—	—
LFX2-200 Series	200 x 200	Red/White/IR

New products		
Series	Emitting surface size (mm)	LED color
LFX3-25 Series	25 x 25	NEW! Red/White/Blue/IR
LFX3-50 Series	50 x 50	
LFX3-75 Series	75 x 75	
LFX3-100 Series	100 x 100	
LFX3-150 Series	150 x 150	
LFX3-200X100 Series	200 x 100	
LFX3-200 Series	200 x 200	

Line Pattern Lights Are Also Available



We altered the dot printings on the light-guiding diffusion plate surface to a line pattern.

Line pattern
(Special order product)

Line Pattern Lights LFX3-PT-A/B Series

Application	Inspection for bumps on a reflective surface
LED color	Red (RD), White (SW), Blue (BL), Infrared (IR)
Emitting surface size (mm)	50 x 50, 75 x 75, 100 x 100, 150 x 150, 200 x 200
Dimensions and other specs.	The same as those of the standard products.

Imaging example using Line Pattern Lights

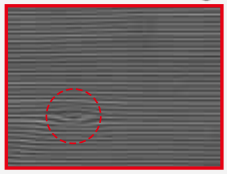
Detecting bumps on a metal surface

Inspection object: Metal plate

Coaxial Light

Coaxial Lights illuminate the whole surface evenly, making it difficult to detect the bumps.

Line Pattern Light



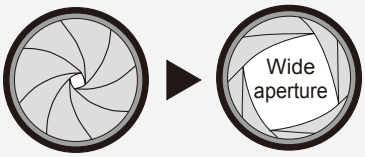
Line Pattern Lights highlight the bumps as curved lines.

Operating Instructions - For obtaining a perfect image -

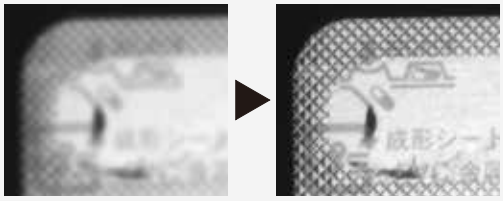
Workpiece: Pharmaceutical product (Blister pack)

Reducing image unevenness caused by the dot pattern

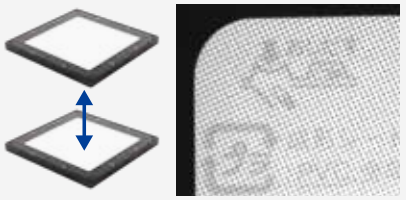
1. Widen the lens aperture slightly more than usual.



2. Focus the lens on the target workpiece.



3. If the dot pattern is visible, adjust the position of the Light Unit.



An example of the dot pattern in an image

4. Finely adjust the light intensity.

Complete!

If there is too much light, increase the camera's shutter speed.

Ambient light may reflect off the Light Unit surface or workpiece surface, affecting the imaging.

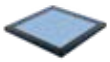
To prevent effects from ambient light

- Equip a lens filter to the lens.
- Increase the shutter speed, or slightly increase the light intensity.
- Prevent ambient light from entering with a hood or cover.

Light-weight Compact Design, Space-saving Installation, and Wide Field of View

Imaging example: Printed characters

Workpiece: Medicine (Individual packaging)



Flat Dome Light
LFX3-200BL

Dome Light (HPD2-250BL) + **Coaxial Light** (LFV3-70BL)

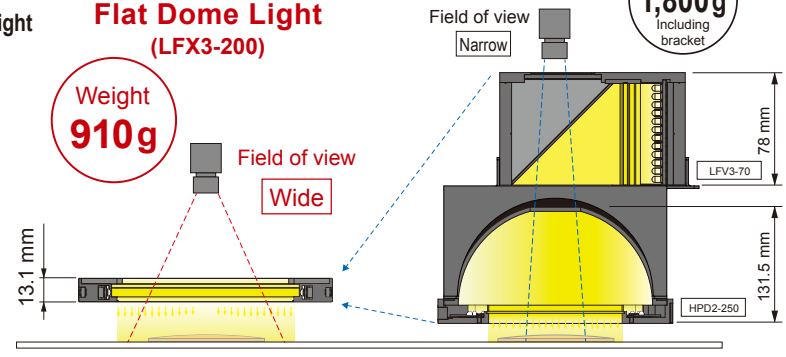
Recreating the effect of Dome Lights with a thin case design

Dome Light (HPD2-250) + Coaxial Light (LFV3-70)

Total weight 1,800g Including bracket

Flat Dome Light (LFX3-200)

Weight 910g

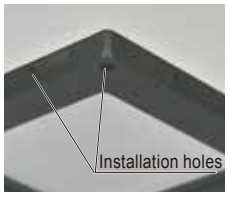


Installation Using Nut Slots

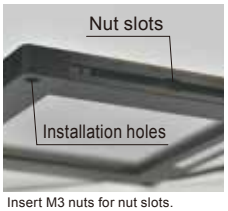
Nut Slots are provided on the sides of the Light Unit for a high degree of freedom in installation to match the environment.

Note: Not applicable for the LFX3-25-series Light Unit.

Conventional product



LFX3-series Light Unit

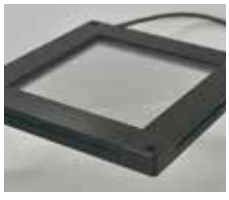


Insert M3 nuts for nut slots.

Designed to Prevent Falling Screws

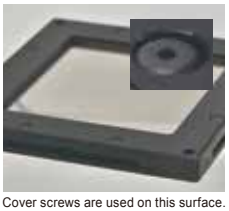
No worries of screws loosening and falling.
Cover screws are not used on the light projection side of the Light Unit.

Light projection side



Cover screws are not used.

Camera side



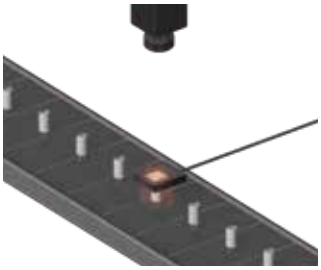
Cover screws are used on this surface.

Imaging Examples

Introducing various examples using unique characteristics of the Flat Dome Lights

Electronic Components Industry

Imaging Characters on a Textured Metal Surface



Workpiece

Capacitor

Conventional product

Ring Light (Red)

The surface texture makes it difficult to read the characters clearly.

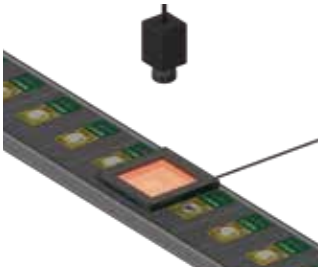
New product

LFX3-25RD (Red)

Effects from the surface texture are suppressed so that the characters stand out clearly.

Electronic Components Industry

Imaging Characters on Button Batteries



Workpiece

Button battery in a retail package

Conventional product

Dome Light (Red)

The textured surface makes it impossible to read the printed characters.

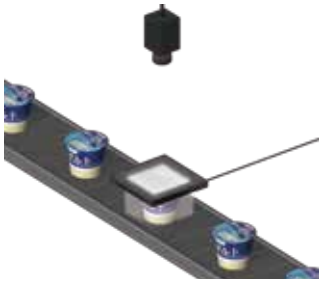
New product

LFX3-100RD (Red)

Effects from the textured surface are suppressed so that the characters stand out clearly.

Food Industry

Imaging the External Appearance of Containers



Workpiece

Food (Yogurt container)

Conventional product

Ring Light (White)

It is difficult to image the surface evenly.

New product

LFX3-100SW (White)

The printed patterns on the surface are clearly captured.

Food Industry

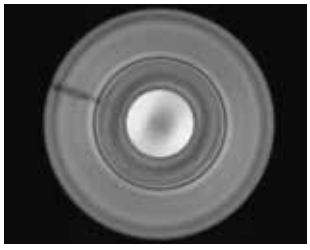
Imaging the Inner Surface of Cans

Workpiece

Can (Inner surface)

Conventional product

Dome Light (Red)



Inner surface of the can is not evenly illuminated.

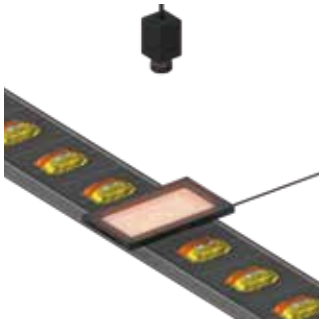
New product

LFX3-200RD (Red)

Inner surface including the bottom of the can is evenly illuminated.

Packaging Industry

Imaging Characters on Packages



Workpiece

Household item (Package)

Conventional product

Low-angle Square Light (Red)

It is difficult to read the characters due to the bumps on the sealed part of the package.

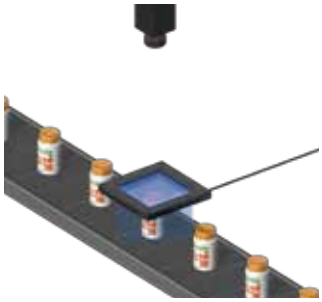
New product

LFX3-200X100RD (Red)

Effects from the bumps on the sealed part are suppressed so that the characters stand out clearly.

Packaging Industry

Imaging Shrink Film of Containers

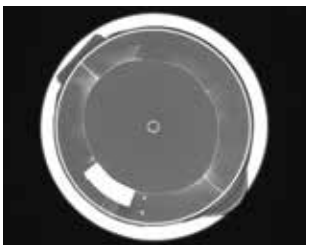


Workpiece

Foodstuff (Plastic container)

Conventional product

Ring Light (Blue)



The shrink film is poorly imaged.

New product

LFX3-100BL (Blue)

The shrink film is clearly imaged.

Can Industry

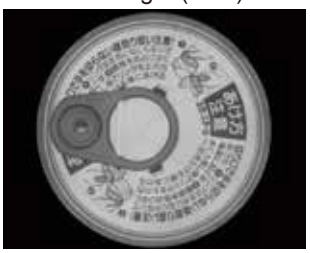
Imaging the External Appearance of Cans

Workpiece

Can (Top surface)

Conventional product

Flat Dome Light (Blue)



It is difficult to image the texture of the top surface.

New product

LFX3-100IR860 (Infrared)

The printed ink transmits an infrared light so that the texture of the top surface is evenly imaged.

Dirt or dust on the surface of the emitting surface may affect the captured image.

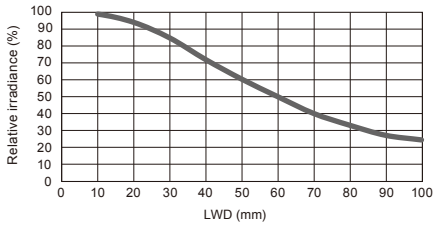
Handle the emitting surface with care. Make sure no dirt, dust, or fingerprints get on the Light Unit.

- Remove dirt and dust by blowing air rather than touching by hand.
- Use a soft, finely woven cloth to wipe away any marks, such as fingerprints.
- Use a soft, finely woven cloth soaked with diluted neutral detergent to remove any heavy dirt.

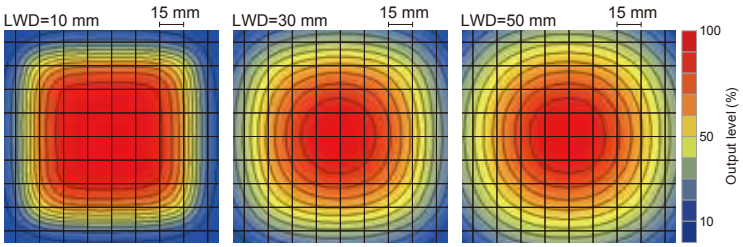
Data (Typical examples)

Light Unit in use: LFX3-100SW

Relative irradiance graph (LWD characteristics)

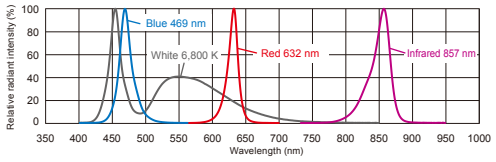


Uniformity (Relative irradiance)



Note: The data included is for reference only. Results for individual products may vary.

Common Specifications

LED color	Red	White	Blue NEW!	Infrared	Cable length	300 mm
Correlated color temp. (typ.)	–	6,800 K	–	–	Operating env. (indoors only)	Temperature: 0 to 40°C, Humidity: 20 to 85%RH (with no condensation)
Peak wavelength (typ.)	632 nm	–	469 nm	857 nm	Storage environment	Temperature: -20 to 60°C, Humidity: 20 to 85%RH (with no condensation)
Input voltage (max.)	24 VDC				Cooling method	Natural air-cooling
Connector	SM connector (SMR-03V-B)				Light spectrum	
Polarity, signal	1: (+), 2: NC, 3: (–)					
CE marking	Safety standard: Conforms to EN 62471					
Environmental regulations	RoHS compliant					
Case material	Aluminum alloy, Resin (protective plate, light-guiding diffusion plate)					

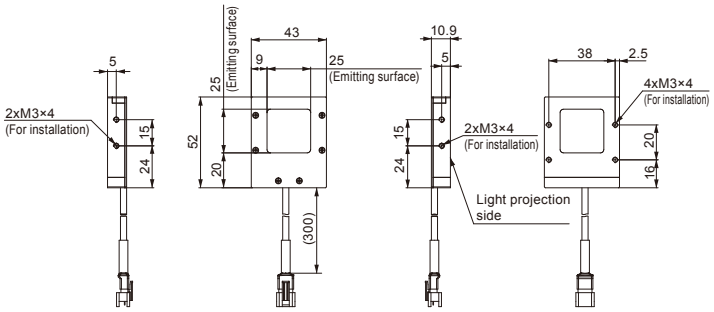
Note: The data included is for reference only. Results for individual products may vary.

Product Lineup

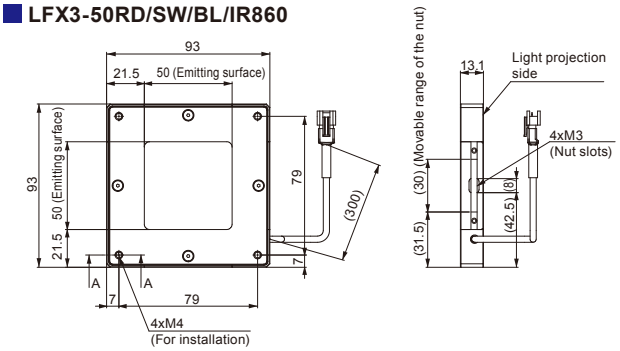
Model	LED color	Emitting surface size	Power consumption (max.)	Peak wavelength/Correlated color temperature (typ.)	Weight (max.)
LFX3-25RD	Red	NEW! 25 mm x 25 mm	1.6 W	632 nm	80 g
LFX3-25SW	White		1.5 W	6,800 K	
LFX3-25BL	Blue		0.8 W	469 nm	
LFX3-25IR860	Infrared		1.4 W	857 nm	
LFX3-50RD	Red	50 mm x 50 mm	13 W	632 nm	230 g
LFX3-50SW	White		12 W	6,800 K	
LFX3-50BL	Blue		6.1 W	469 nm	
LFX3-50IR860	Infrared		6.6 W	857 nm	
LFX3-75RD	Red	75 mm x 75 mm	13 W	632 nm	320 g
LFX3-75SW	White		18 W	6,800 K	
LFX3-75BL	Blue		9.1 W	469 nm	
LFX3-75IR860	Infrared		14 W	857 nm	
LFX3-100RD	Red	100 mm x 100 mm	19 W	632 nm	400 g
LFX3-100SW	White		23 W	6,800 K	
LFX3-100BL	Blue		13 W	469 nm	
LFX3-100IR860	Infrared		14 W	857 nm	
LFX3-150RD	Red	150 mm x 150 mm	25 W	632 nm	620 g
LFX3-150SW	White		35 W	6,800 K	
LFX3-150BL	Blue		19 W	469 nm	
LFX3-150IR860	Infrared		20 W	857 nm	
LFX3-200X100RD	Red	NEW! 200 mm x 100 mm	28 W	632 nm	620 g
LFX3-200X100SW	White		35 W	6,800 K	
LFX3-200X100BL	Blue		19 W	469 nm	
LFX3-200X100IR860	Infrared		20 W	857 nm	
LFX3-200RD	Red	200 mm x 200 mm	37 W	632 nm	910 g
LFX3-200SW	White		46 W	6,800 K	
LFX3-200BL	Blue		25 W	469 nm	
LFX3-200IR860	Infrared		27 W	857 nm	

Dimensions (mm)

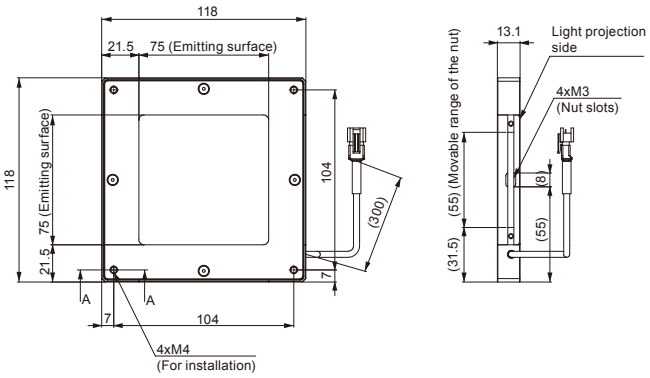
LFX3-25RD/SW/BL/IR860



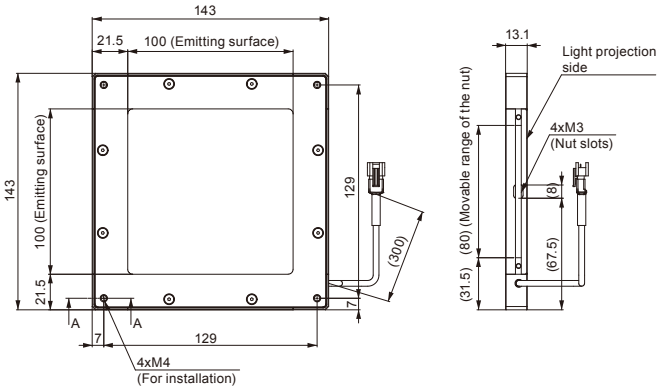
LFX3-50RD/SW/BL/IR860



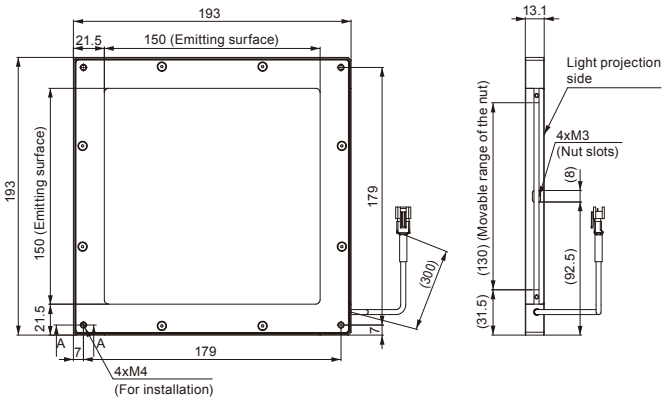
LFX3-75RD/SW/BL/IR860



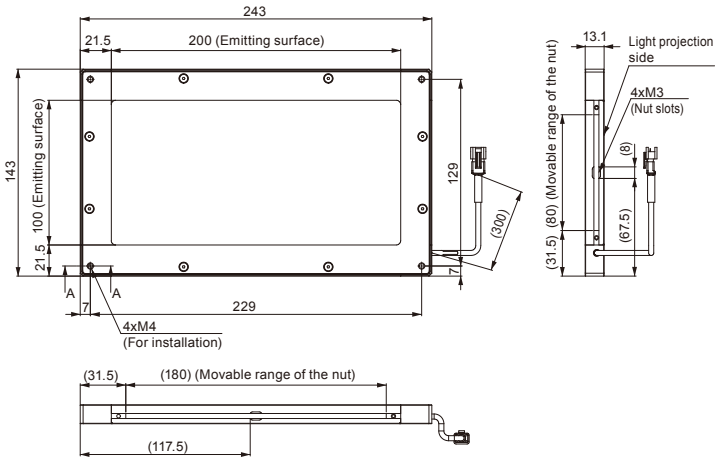
LFX3-100RD/SW/BL/IR860



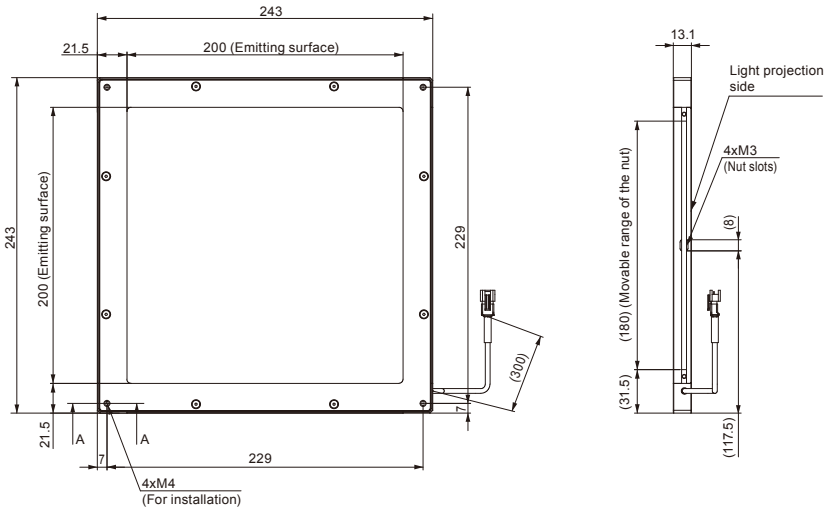
LFX3-150RD/SW/BL/IR860



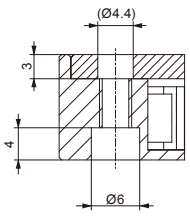
LFX3-200X100RD/SW/BL/IR860



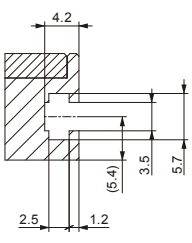
LFX3-200RD/SW/BL/IR860



Detail Diagram for the A-A Surface



Detail Diagram for the M3 Nut Slot



Note: These detail diagrams are not applicable for the LFX3-25-series Light Units.

Optional Accessories

Band-pass Filters

Camera lens filters to transmit light in a specific wavelength range

● Transmission of 90% or more ● Hard-coated filters with superior durability ● Each filter available in 23 sizes ● Total of 230 models

For Blue LED Light Units

F-BP470

Blue

Effective range: 435 to 495 nm

For Red LED Light Units

F-BP635

Light red

Effective range: 610 to 650 nm

For IR LED Light Units

F-BP850

IR (Band-pass)

Effective range: 820 to 910 nm

Protective Filter for Camera Lens

F-LP340

Protective filter

Effective range: 390 to 800 nm

The product lineup also includes the following:

UV (290 to 365 nm)	● F-BP324	Orange (560 to 600nm)	● F-BP590
Cyan (485 to 550 nm)	● F-BP505	Dark red (640 to 680 nm)	● F-BP660
Light green (500 to 555 nm)	● F-BP525	IR (Sharp-cut) (930 to 1,100 nm)	● F-LP920

For details, please contact your CCS sales representative.

Sharp-cut Filters

Blocks light in a specific wavelength range

● Each filter available in 7 sizes ● Total of 14 models

R60 series

Blocks wavelengths of 600 nm and shorter.

R64 series

Blocks wavelengths of 640 nm and shorter.

We accept custom orders for filter wavelength.
Please feel free to ask your CCS sales representative for more details.

● For using infrared products

CAUTION

- Do not expose human eyes to infrared radiation. Also, make known to all personnel concerned the risk of infrared radiation.
- When you see the LEDs of the product, you may find some LEDs lit and others do not. This is because irradiation from the LEDs sometimes include visible light. The LED emits infrared radiation even when it seems not to light, so that do not look at the radiating surface of the product directly by the naked eye. To check out the lighting failure of the LED, use a camera to do it by indirect means. You can also check it out through an LCD display of the general-purpose digital camera or mobile phone.

CAUTION

- To ensure proper and safe use of the product, please read the Instruction Guide completely before using the product.
- The design and specifications of this product are subject to change without notification for product improvement.
- The workpiece imaging examples included in this pamphlet are intended to serve only as references to help you select a suitable Light Unit. Please verify the functionality and conditions required for your particular application before you make a final selection. The sample workpieces used in this pamphlet have been processed specifically for sample imaging. They are not intended to represent product quality and performance.

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