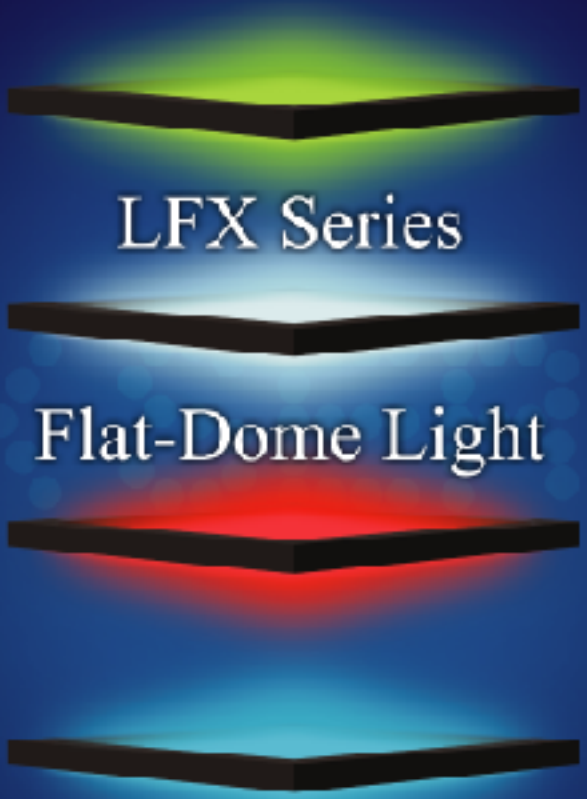
CCS
CREATIVE CUSTOMER SATISFACTION

LIGHTING SOLUTION



LFX Series

Flat-Dome Light

Realizing unform,shadowless scattered lighting with CCS's original design

One Unit Reproduces Both Coaxial Incident Light and Dome Lighting Effects

Lightweight, compact, and thin design enables installation in tighter spaces

50, 100, 200mm lineup for light emitting surface

LED emitting color is selectable from red, white, green and blue

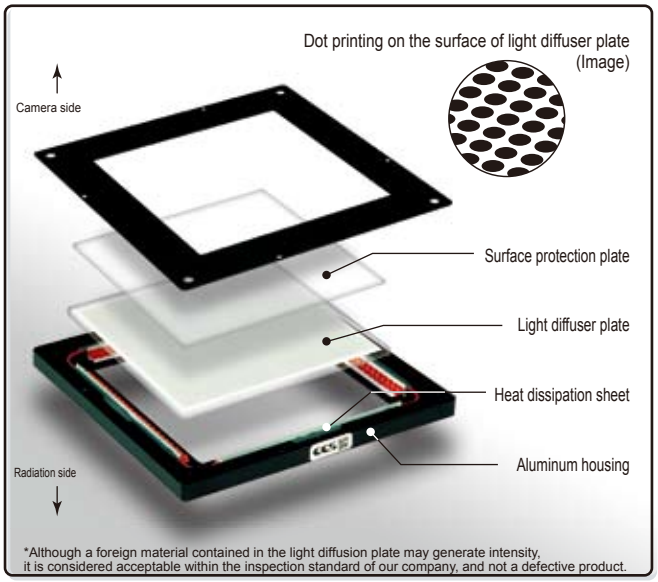
Patent Pending

CCS Inc.

Unique Lighting Technology Achieves Uniform, Shadowless Diffused Illumination

Internal structure of flat-dome lighting

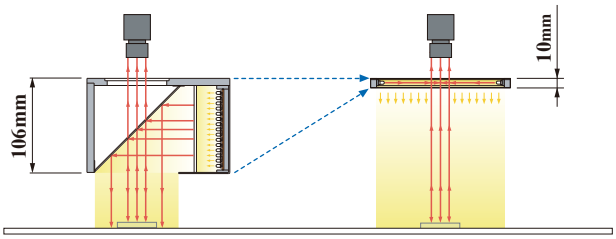
Patent Pending



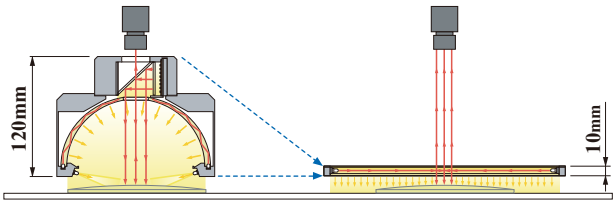
Unique CCS technology has achieved a highly innovative new form of lighting. The dot pattern on the diffuser surface controls light diffusion and transmission to irradiate objects with uniform, shadowless diffused lighting.

The compact, lightweight, and thin design enables installation in tight spaces that were unusable in the past.

Coaxial lighting (LFV2-100) | Flat-dome lighting (LFX-100)



Dome lighting (PDM-150-15) | Flat-dome lighting (LFX-200)



Compared with coaxial lighting or dome lighting, a flat-dome lighting has achieved lightweight, compact and thin design. In addition, irradiating objects with uniform, diffused light from a relatively wide space has become possible, enabling to respond to a variety of uses.

Reproduces Both Coaxial Incident Light and Dome Lighting Effects

Flat-dome lighting LFX series not only provides uniform radiation over glossy surface of the work as coaxial lighting does, but also provides uniform, shadowless diffused radiation with curved or surfaces as dome lighting.

Two effects with one lighting

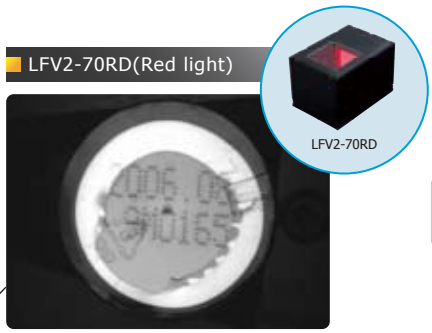
Image comparison with coaxial lighting

Work image

Checking the presence or absence of food packaging film, and stamped date on the bottom of the container

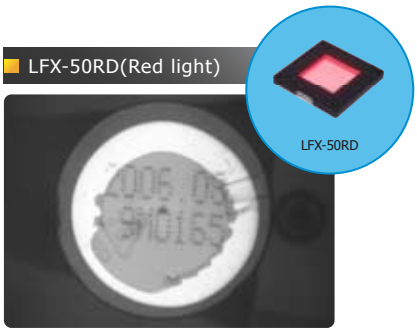
Image comparison with dome lighting

LFV2-70RD(Red light)



Coaxial lighting visualizes the presence or absence of packaging film and break.

LFX-50RD(Red light)

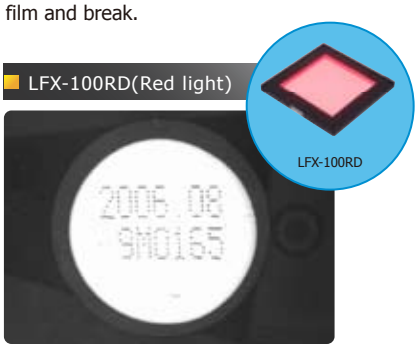


Flat-dome lighting also visualizes the presence or absence of packaging film and break.

PDM-150-15(Red light)

Dome lighting can eliminate the reflection of the film, and capture the stamped date.

LFX-100RD(Red light)



Flat-dome lighting can also capture the stamped date.

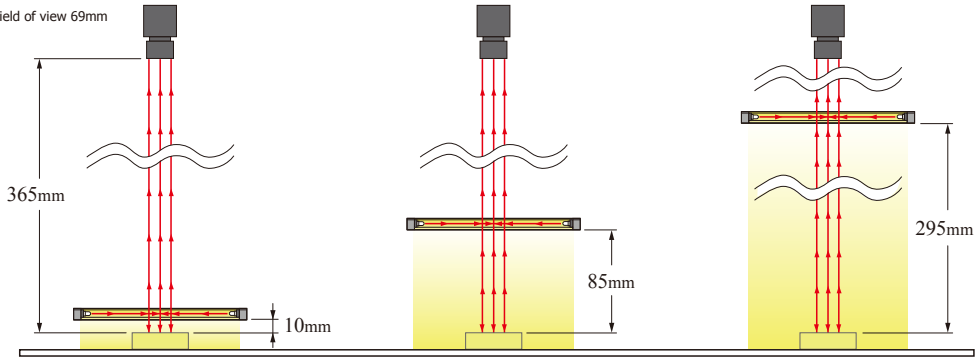
LFX's new features support a variety of applications.

LFX boasts its performance to provide even scattered light while keeping uniform distance between the work and the light emitting surface. This feature enables to providing shadowless scattered light in broader area than conventional products.

*Image environment: LFX-100RD, F25 lens, WD365mm, Field of view 69mm

Image comparison

By changing the distance between the light emitting surface and the work (LWD), different types of images can be captured.



Work Image

Original image of the can's lid.

With radiation from LWD 10mm, it can capture the object uniformly without convex-concave.

With radiation from LWD 85mm, the convex-concave of the pull-tab part is emphasized.

With radiation from LWD 295mm, the convex-concave of the entire surface is emphasized.

Recommended use

Types of inspection	Recommendation	Application
Exterior inspection	◎	Exterior inspection of glossy work on curved surface, convex-concave, and flat surface detection of dent, dirt, burn, break, and nick, foreign shape identification, presence or absence inspection, surface inspection, etc.
Character recognition	○	Character reading of glossy work, recognition of barcode/2D code
Dimensional measurement	△	Dimensional measurement (not requiring high accuracy)
Exterior inspection	×	Detection of microscopic dent, detection of subtle nick, detection of small foreign material

◎...Most appropriate
○...appropriate
△...possible to use
×...difficult

To gain the most appropriate image

*1.The dot pattern on the light diffusion plate may cause uneven image or moire.**

* Although a foreign material contained in the light diffusion plate may generate intensity, it is considered acceptable within the inspection standard of our company, and not a defective product.

Moire..... Moire is a cyclic linear pattern caused by mutual interference between the dot pattern etched geometrically on the light and the CCD pixel pattern

How to reduce uneven image caused by dot pattern

- Open lens diaphragm slightly
- Bring the object work into focus
- When there is too much amount of light, adjust to increase the shutter speed of a camera
- Adjust the light position (positioning outside of depth of field)
- Adjust the amount of light (control reflection and shining)

2.Disturbance light may cause the surface of the light or the work to reflect, affecting the captured image.

How to prevent the influence by the disturbance light

- Attach a sharp-cut filter to the lens (effective for red light)
- Increase shutter speed of a camera and adjust dimmer volume(Open lens diaphram slightly and adjust to 50-70%)
- Prevent disturbance light with a hood

3.Dirt and dust on the surface of the light may affect the captured image.

How to prevent the influence by dirt and dust

- Be careful of handling the light, and be sure that dirt, dust or finger prints do not get stuck on the surface of the light
- Do not touch the dirt and dust by hand, and remove them by blowing air
- Remove finger prints with fine-mesh, soft cloth
- If the dirt is persistent, wipe it softly with diluted, mild detergent

CCS lighting technologies

Semiconductors and Electronic Components Industries

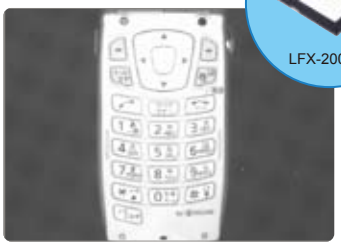
Work Image

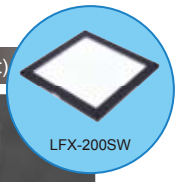
Cellular phone

Indirect lighting (White light)

Indirect lighting cannot illuminate the whole object uniformly.

LFX-200SW (White light)





Flat-dome lighting with light emitting surface of 200mmx200mm enables to illuminate the whole object uniformly.

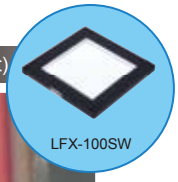
Work Image

Wiring pattern image

Direct lighting (White light)

With direct lighting, the top surface of the wire glares and shines in white color.

LFX-100SW (White light)



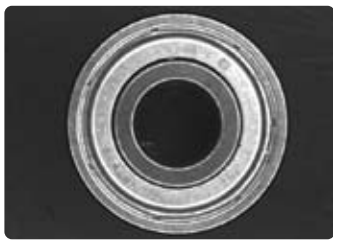
Flat-dome lighting enables to illuminate the top surface of the work from all directions.

Automotive Industry

Work Image

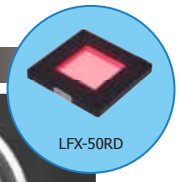
Stamped characters on bearing

Fluorescent ring lighting



With coaxial lighting, it is difficult to make the stamped characters stand out clearly.

LFX-50RD(Red light)

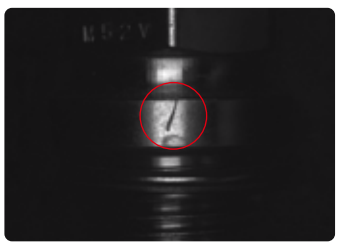


Flat-dome lighting enables to capture the stamped characters standing out.

Work Image

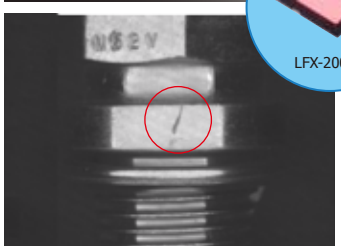
Exterior image of plug

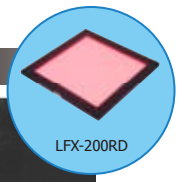
Indirect lighting (Red light)



Indirect lighting illuminates only the tip of the curved surface, and it is difficult to capture a dent on the plug.

LFX-200RD(Red light)





Flat-dome lighting enables to capture a dent on the plug standing out with scattering light radiation from a wide light emitting surface.

*The sample works used in this catalog were purchased and processed by CCS, and they do not represent their original qualities and performances.

for diverse industries!

Packaging, Food and Pharmaceutical Industries

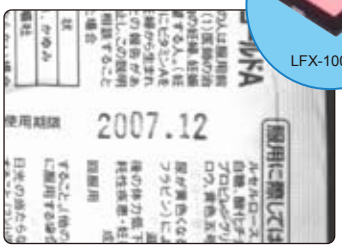
Work Image

Stamped date on aluminum package

Fluorescent ring lighting

With fluorescent ring lighting, it is difficult to capture a clear image because the surface of the package glares.

LFX-100RD(Red light)



Flat-dome lighting enables to capture the stamped characters by irradiating the top surface of the work from all directions.

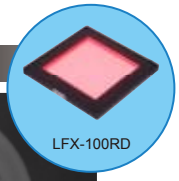
Work Image

Aluminum cap

Indirect lighting (Red light)

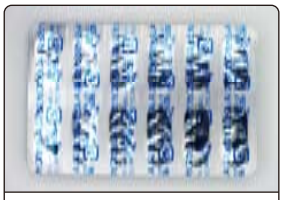
With indirect lighting, the characters on the surface remain a little bit, and a pinhole is captured larger than its actual size.

LFX-100RD(Red light)



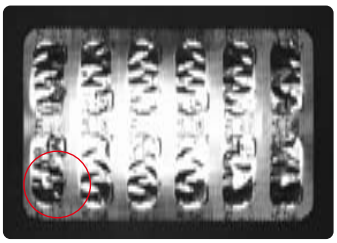
Flat-dome lighting can illuminate the surface uniformly and capture the size of a pinhole accurately.

Work Image



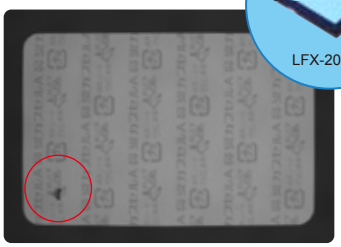
Blister pack

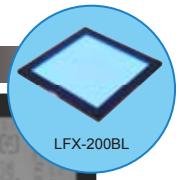
Fluorescent ring lighting



Fluorescent ring lighting cannot illuminate the whole object uniformly, and it is difficult to distinguish a pinhole.

LFX-200BL(Blue light)





Flat-dome lighting enables to capture a pinhole clearly with scattering light radiation from a wide light emitting surface.

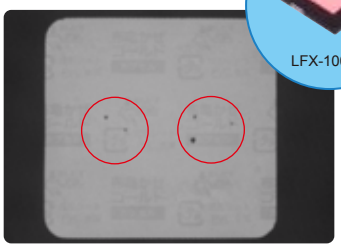
Work Image

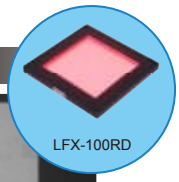
Blister pack

Dome lighting (Red light)

Dome lighting can capture a pinhole, but the visual field is narrow, and it is difficult to visualize the whole object.

LFX-100RD(Red light)





Flat-dome lighting enables to capture a pinhole clearly with scattering light radiation in the same distance as the work from a wide light emitting surface.

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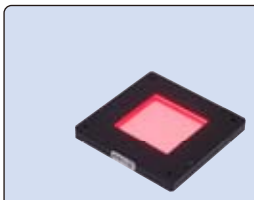
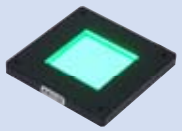
Model Lineup

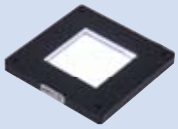
LFX-50 Series



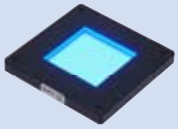
Model	*LFX-50RD*
LED Color	Red
Emitting surface	50X50mm
Input Voltage	DC24V
Power consumption	2.4W
Weight	180g



Model	*LFX-50GR*
LED Color	Green
Emitting surface	50X50mm
Input Voltage	DC24V
Power consumption	3.3W
Weight	180g

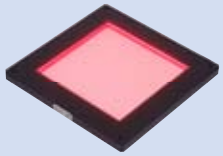


Model	*LFX-50SW*
LED Color	White
Emitting surface	50X50mm
Input Voltage	DC24V
Power consumption	3.3W
Weight	180g

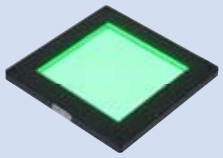


Model	*LFX-50BL*
LED Color	Blue
Emitting surface	50X50mm
Input Voltage	DC24V
Power consumption	3.3W
Weight	180g

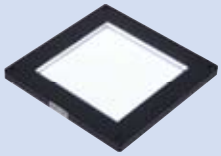
LFX-100 Series



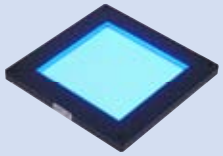
Model	*LFX-100RD*
LED Color	Red
Emitting surface	100X100mm
Input Voltage	DC24V
Power consumption	4.8W
Weight	370g



Model	*LFX-100GR*
LED Color	Green
Emitting surface	100X100mm
Input Voltage	DC24V
Power consumption	6.5W
Weight	370g

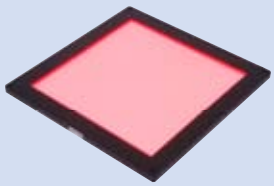


Model	*LFX-100SW*
LED Color	White
Emitting surface	100X100mm
Input Voltage	DC24V
Power consumption	6.5W
Weight	370g

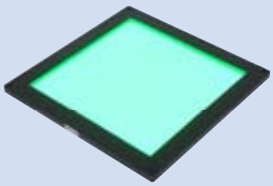


Model	*LFX-100BL*
LED Color	Blue
Emitting surface	100X100mm
Input Voltage	DC24V
Power consumption	6.5W
Weight	370g

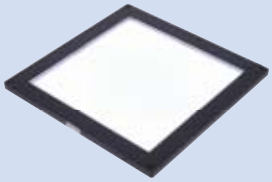
LFX-200 Series



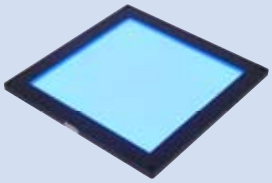
Model	*LFX-200RD*
LED Color	Red
Emitting surface	200X200mm
Input Voltage	DC24V
Power consumption	9.6W
Weight	900g



Model	*LFX-200GR*
LED Color	Green
Emitting surface	200X200mm
Input Voltage	DC24V
Power consumption	13W
Weight	900g



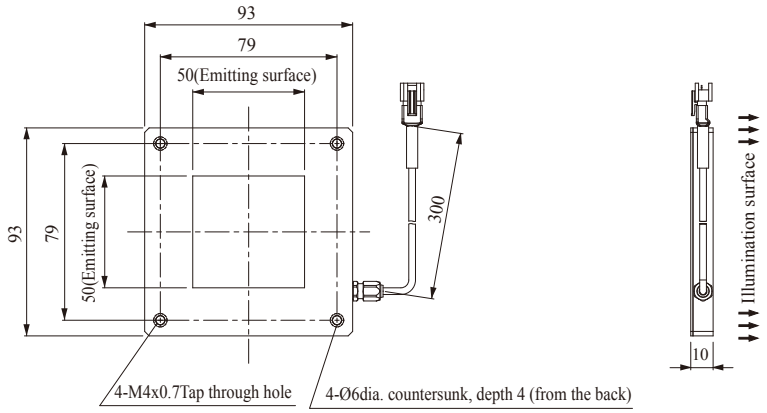
Model	*LFX-200SW*
LED Color	White
Emitting surface	200X200mm
Input Voltage	DC24V
Power consumption	13W
Weight	900g



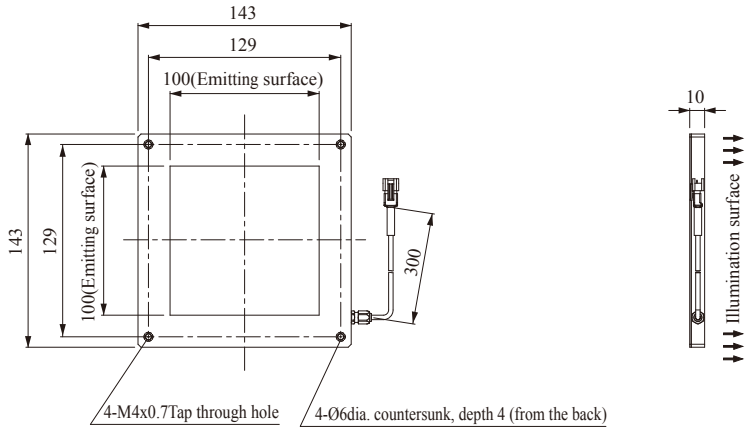
Model	*LFX-200BL*
LED Color	Blue
Emitting surface	200X200mm
Input Voltage	DC24V
Power consumption	13W
Weight	900g

Dimensions(mm)

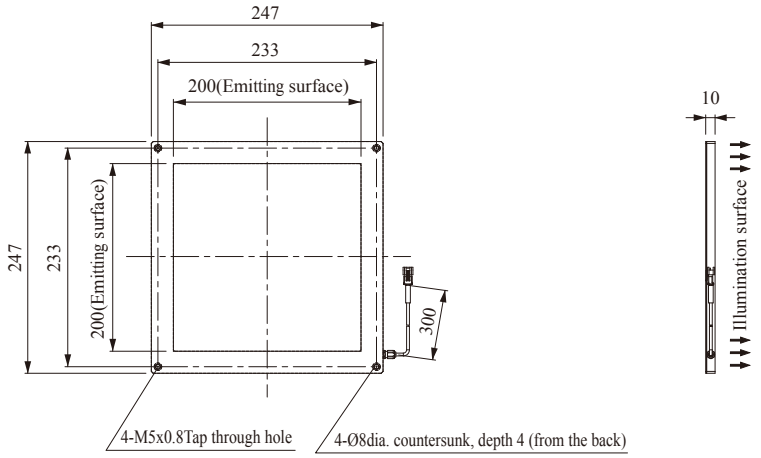
LFX-50RD/SW/GR/BL



LFX-100RD/SW/GR/BL



LFX-200RD/SW/GR/BL



Specifications RoHS-compliant products

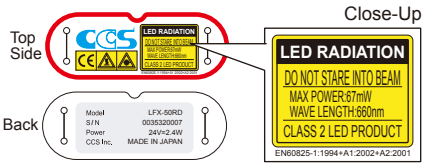
Series	LFX-50Series				LFX-100Series				LFX-200Series			
Model	LFX-50RD	LFX-50SW	LFX-50GR	LFX-50BL	LFX-100RD	LFX-100SW	LFX-100GR	LFX-100BL	LFX-200RD	LFX-200SW	LFX-200GR	LFX-200BL
LED Color	Red	White	Green	Blue	Red	White	Green	Blue	Red	White	Green	Blue
Input Voltage	DC24V											
Power consumption	2.4W Max	3.3W Max			4.8W Max	6.5W Max			9.6W Max	13W Max		
Peak wavelength (color temperature)	660nm	(5500K)	530nm	470nm	660nm	(5500K)	530nm	470nm	660nm	(5500K)	530nm	470nm
Cable	0.3m											
Connector	SMR-03V-B											
Polarity, signal	1:Anode(+)brown , 2:NC , 3:cathodes(-)blue											
Case material	Aluminum,SPCC,PMMA											
Cooling method	Natural air cooling(Original heat dissipation structure)											
Weight	180g				370g				900g			
Operating conditions	Temperature: 0 to 40 ℃, humidity: 20% to 85% RH (with no condensation)											
Storage conditions	Temperature: 20 to 60 ℃, humidity: 20% to 85% RH(with no condensation)											
Laser class	Class 2 LED: Do not stare into the light beam.											

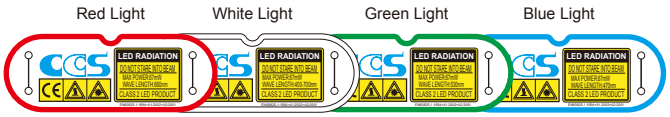
Information

A hazard label indicating the hazard class rating is attached to LFX series lights. Refer to the label when handling the product, and do not remove it as it contains important information for the safe operation of the product.

Hazard Label Example

LFX series lightings are provided with a hazard label such as the followings. The hazard labels are color-coded corresponding to the LED emitting color of each product. Information such the LED class, maximum output, and wavelength is described on the front of the label, and the model number, serial number, and other details are described on the back.





LED class described in the LFX series (IEC60825-1, Amd.2)

Class	Series names and model names
Class2	LFX-50RD,LFX-50SW,LFX-50GR,LFX-50BL,LFX-100RD,LFX-100SW,LFX-100GR,LFX-100BL,LFX-200RD, LFX-200SW,LFX-200GR,LFX-200BL

For RoHS-compliant products and other detail information, visit ***http://www.ccs-grp.com***

Caution

- Read the "Instruction Manual" before use.
- All specifications or design are subject to change without notice
- Samples of the work images described in this catalog are referential for our customers to select lights. When selecting, be sure to check the functions and conditions of the equipment. In addition, the sample works were purchased and processed by our company, and they do not represent their original qualities and performances.

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