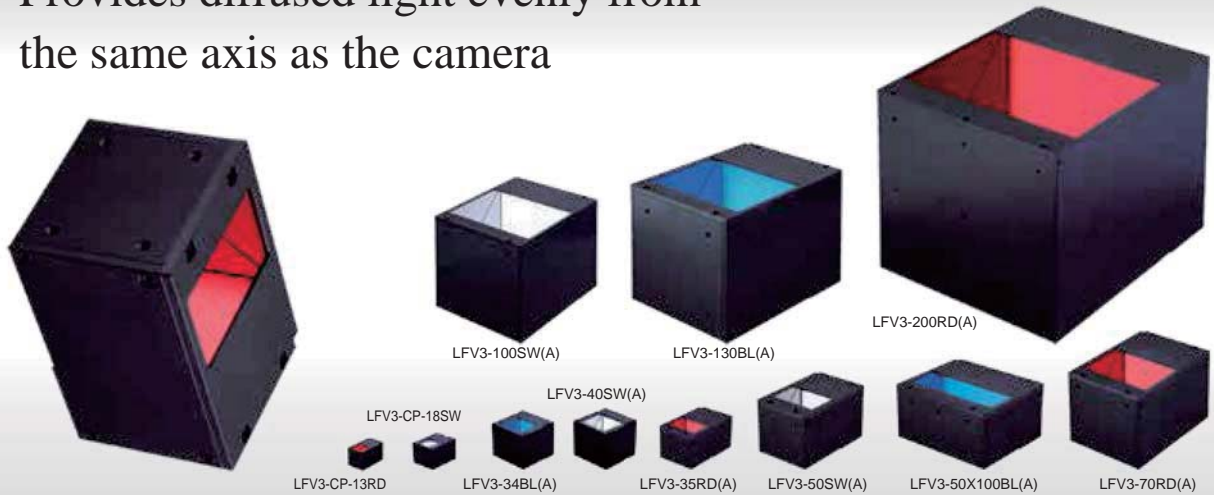


Provides diffused light evenly from the same axis as the camera



For information on change in model names, refer to P.109.

Applications Inspection for fault, damage, scratches, or dents on glossy surfaces or mirrors; pattern inspection on printed circuit boards; dimension measuring of glass; inspection for damage and dents on resin molded products; etc.

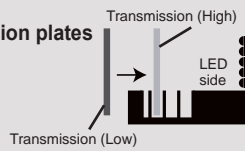
➤ **Freely Customize the Diffusion**

■ **Customize the diffusion**

Diffusion plate status	Result
Change the transmission from (high) to (low)	Increased uniformity
Change the installation position to the LED side	Emphasized directionality

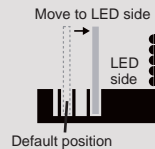
1) Prepared two types of diffusion plates with different transmission.

Replace the diffusion plate to change the transmission.



2) The installation position of the diffusion plate can be adjusted.

Change the position to achieve various imaging effects.



■ **LFV3-CP series**

Replacing the half-mirror with a beam splitter increased accuracy. It is perfect for tiny workpieces and environments with limited installation space.



LFV3-CP-13SW

➤ **Supports High-Resolution Cameras**

Highly-accurate optical glass is used for the camera window and the half-mirror. This allows for stable imaging when using high-resolution cameras.

■ **LFV3 series, a Coaxial Light with improved quality**

■ **Uses optical glass**

For the camera window and half-mirror, we used optical glass which is also used for interference tests for laser sources. Its optical glass with a profile irregularity of 0.3 μm*.

■ **Expanded area for the camera window**

By making the camera window wider, we ensured a larger field of vision.

■ **Used an aluminum body**

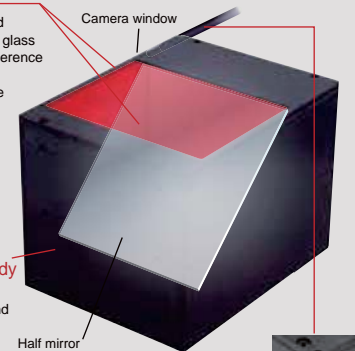
Used aluminum alloy to improve heat dissipation and achieve a durable body.

■ **Increased Light Unit installation holes**

We increased the number of installation holes for the Light Unit. Various installation directions are supported.

■ **Can be installed to the cable surface**

The cable can be bent flat in relation to the installation surface.



This description excludes the LFV3-CP-13 series and the LFV3-CP-18 series.

➤ **Custom Orders**

E.g.: Different shape

Format/material Created a Light Unit that changed the illuminating port from vertical to horizontal

E.g.: Different color

Wavelength/color Creating a full color (RGB) Light Unit

External/internal diameter

Increase output

Illuminating angle

Connector format

Installation/mounting

Wavelength/color

Cable length

Format/material

Etc.

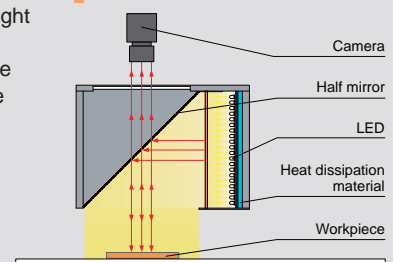


Please contact your sales representative.

➤ **Example Configuration**

By using the half mirror, diffused light from the LED is illuminated on the same axis as the camera axis.

■ **LFV3-100**



Imaging Example: Imaging Engraved Text on Metal Connector Hoods



Description	Character recognition
Workpiece	Connector hoods
Conventional lighting	LED Bar Light
New lighting	LFV3-50RD(A)
Result	Emphasizes the engraved text

Workpiece image



Metal connector hoods

LED Bar Light



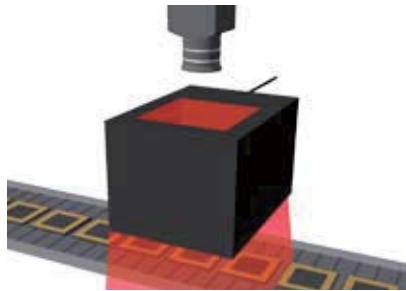
It is difficult to read the text engraved on the surface.

LFV3-50RD(A)



Effect from the surface unevenness is reduced and a clear image of the engraved text can be made.

Imaging Example: Imaging Through-Holes on Circuit Boards



Description	Visual inspection
Workpiece	Circuit boards
Conventional lighting	LED Ring Light
New lighting	LFV3-100RD(A)
Result	Improved uniformity

Workpiece image



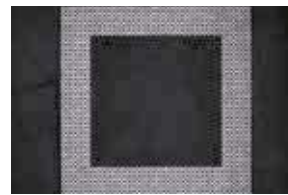
Circuit boards

LED Ring Light



With a Ring Light, it is difficult to form an image of the difference between the foundation and the through hole.

LFV3-100RD(A)



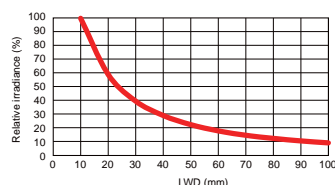
It is possible to form a clear image of the difference between the foundation and the through hole.

Data: Relative Irradiance Graph and Uniformity (Representative Example)

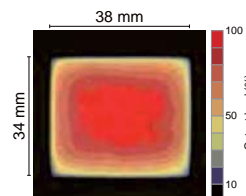
LFV3-35RD(A)

Relative irradiance graph (LWD characteristics)^{*1}

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative radiance)



The data included is for reference only. Actual values may vary.

- Direct Lighting
 - LDR2
 - LDR2-LA
 - LDR-LA1
 - SQR
 - SQR-TP
- Diffused Lighting
 - HPR2
 - LFR
 - LKR
 - FPR
 - FPQ2
- Direct Lighting
 - LDL2
 - LDLB
 - HLDL2
 - HL
 - TH2 (5 types)
 - TH
 - LFL
 - HPD2
 - LDM2
 - LAV
 - PDM
 - LFX3
 - LFX3-PT
 - LFV3
- Diffused Lighting
 - MSU
 - MFU
- Strobe Lighting
 - PF
- Water-proof
 - HLDR-IP/
 - HSL-PCL
- Ultraviolet Lighting
 - UV2
 - UV
 - LNSP-UV-FN
- Infrared Control Lighting
 - IR2
- Intensity Control Lighting
 - IU
- Spot Lighting, Etc.
 - HLV3
 - HLV2
 - LV
 - LSP
 - HFS/HFR
 - HLV3-NR
 - HLV3-3M-RGB-4
 - HLV2-NR
 - HLV2-3M-RGB-3W
 - PFBR
 - PFB3
 - PFB2
- Convergent Lighting
 - LNLP
 - LNSP2
 - LNSP
 - Coaxial Units
 - LNSP-FN
 - LN/LN-HK
- Diffused Lighting
 - LNSD
 - LND2
 - HLND
 - LT
 - LNV
- Oblique-Angled Lighting
 - LNDG
 - LNIS2
 - LNIS
 - LNIS-FN
- Lenses
 - Telecentric Lens
 - Macro Lens

LFV3 Series

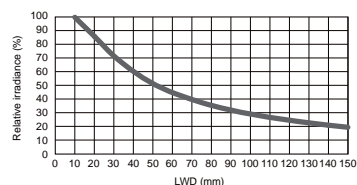


Data: Relative Irradiance Graph and Uniformity (Representative Example)

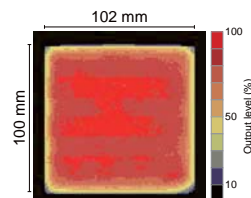
LFV3-100SW(A)

Relative irradiance graph^{*1}
(LWD characteristics)^{*2}

*1 Irradiance on the optical axis
*2 Illuminating distance from the Light Unit to the workpiece



Uniformity (Relative radiance)



The data included is for reference only. Actual values may vary.

Lineup

Model name	LED color	Power consumption	Peak wavelength / correlated color temperature	Options	Extension cables	Recommended Control Units	Weight
LFV3-34RD(A)	Red	24 V / 3.7 W	635 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">CC-ST-1024</div> </div>	80 g
LFV3-34SW(A)	White	24 V / 3.2 W	6,000 K				
LFV3-34BL(A)	Blue	470 nm					
LFV3-35RD(A)	Red	24 V / 3.1 W	630 nm	<div style="border: 1px solid black; padding: 2px;">Diffusion plate</div>		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PSB</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	175 g
LFV3-35SW(A)	White	24 V / 3.7 W	6,500 K	<div style="border: 1px solid black; padding: 2px;">Polarizing plate</div>			
LFV3-35BL(A)	Blue	24 V / 3.1 W	460 nm	<div style="border: 1px solid black; padding: 2px;">Light control film</div>			
LFV3-40RD(A)	Red	24 V / 4.6 W	635 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">CC-ST-1024^{*2}</div> </div>	100 g
LFV3-40SW(A)	White		6,000 K				
LFV3-40BL(A)	Blue		470 nm				
LFV3-50RD(A)	Red	24 V / 8.1 W	630 nm	<div style="border: 1px solid black; padding: 2px;">Diffusion plate</div> <div style="border: 1px solid black; padding: 2px;">Polarizing plate</div> <div style="border: 1px solid black; padding: 2px;">Light control film</div>	<div style="border: 1px solid black; padding: 2px;">FCB^{*4} Straight Cable</div> <div style="border: 1px solid black; padding: 2px;">FCB-W^{*5} 2-branch Cable</div> <div style="border: 1px solid black; padding: 2px;">FCB-F 4-branch Cable</div> <div style="border: 1px solid black; padding: 2px;">FRCB Robot Cable</div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">CC-ST-1024^{*2}</div> </div>	335 g
LFV3-50SW(A)	White	24 V / 11 W	6,500 K				
LFV3-50BL(A)	Blue	24 V / 9.1 W	460 nm				
LFV3-50X100RD(A)	Red	24 V / 17 W	630 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	530 g
LFV3-50X100SW(A)	White	24 V / 20 W	6,500 K				
LFV3-50X100BL(A)	Blue	24 V / 17 W	460 nm				
LFV3-70RD(A)	Red	24 V / 13 W	630 nm	<div style="border: 1px solid black; padding: 2px;">Diffusion plate</div> <div style="border: 1px solid black; padding: 2px;">Polarizing plate</div> <div style="border: 1px solid black; padding: 2px;">Light control film</div>	<div style="border: 1px solid black; padding: 2px;">FCB^{*4} Straight Cable</div> <div style="border: 1px solid black; padding: 2px;">FCB-W^{*5} 2-branch Cable</div> <div style="border: 1px solid black; padding: 2px;">FCB-F 4-branch Cable</div> <div style="border: 1px solid black; padding: 2px;">FRCB Robot Cable</div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">CC-ST-1024^{*2}</div> </div>	620 g
LFV3-70SW(A)	White	24 V / 19 W	6,500 K				
LFV3-70BL(A)	Blue	24 V / 16 W	460 nm				
LFV3-100RD(A)	Red	24 V / 22 W	630 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PSB</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	1,060 g
LFV3-100SW(A)	White	24 V / 27 W	6,500 K				
LFV3-100BL(A)	Blue	460 nm					
LFV3-130RD(A)	Red	24 V / 31 W	630 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	1,750 g
LFV3-130SW(A)	White	24 V / 46 W	6,500 K				
LFV3-130BL(A)	Blue	24 V / 38 W	460 nm				
LFV3-200RD(A)	Red	24 V / 43 W	630 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	4,350 g
LFV3-200SW(A)	White	24 V / 60 W	6,500 K				
LFV3-200BL(A)	Blue	24 V / 53 W	460 nm				
LFV3-CP-13RD	Red	24 V / 2.1 W	635 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">POD^{*1}</div> </div>	37 g
LFV3-CP-13SW	White	24 V / 2.3 W	6,000 K				
LFV3-CP-13BL	Blue	24 V / 1.3 W	470 nm				
LFV3-CP-18RD	Red	24 V / 3.3 W	635 nm	-		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">PD3</div> <div style="border: 1px solid black; padding: 2px;">CC-ST-1024</div> </div>	70 g
LFV3-CP-18SW	White	24 V / 4.1 W	6,000 K				
LFV3-CP-18BL	Blue	24 V / 3.4 W	470 nm				

Extension Cables ▶ P.308

Control Unit Selection Guide ▶ P.251

List of Control Unit Specifications ▶ P.253

Change in model names

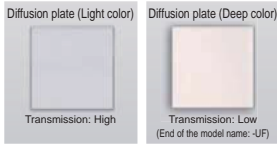
The suffix "(A)" has been added to the end of several model names, e.g. "LFV3-34RD" has been changed to "LFV3-34RD(A)".

Reason	Effect on functions and performance	Relevant models (applicable to all colors)
Due to part manufacturer's circumstances, some optical parts were expected to become difficult to obtain. CCS has changed these parts with those of comparable performance.	The functions and performance of the Light Units have not been affected.	LFV3-34(A)/LFV3-35(A)/LFV3-40(A)/LFV3-50(A)/LFV3-50X100(A)/LFV3-70(A)/LFV3-100(A)/LFV3-130(A)/LFV3-200(A)

Various technical documents available.

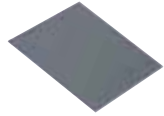
- PDF Drawings
- DXF Drawings
- Product Brochures
- Instruction Guides
- 3D CAD
- Data Sheets
- Imaging Examples
- Digital Catalogs

Options

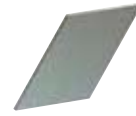


Replace the default diffusion plate to change the transmission.

When selecting, be aware that the default diffusion plate varies based on the emitted color.



Use with a polarizing filter to remove the light's surface reflection.



In this plastic film are fine louvers with extremely narrow gaps between them. It reduces light diffusion in a particular direction and increases parallelism.

Diffusion plate

Model name	Applicable Light Unit (Common for all colors)
DF-LFV3-35	LFV3-35(A)
DF-LFV3-50	LFV3-50(A)
DF-LFV3-50X100	LFV3-50X100(A)
DF-LFV3-70	LFV3-70(A)
DF-LFV3-100	LFV3-100(A)
DF-LFV3-130	LFV3-130(A)
DF-LFV3-200	LFV3-200(A)

Model name	Applicable Light Unit (Common for all colors)
DF-LFV3-35-UF	LFV3-35(A)
DF-LFV3-50-UF	LFV3-50(A)
DF-LFV3-50X100-UF	LFV3-50X100(A)
DF-LFV3-70-UF	LFV3-70(A)
DF-LFV3-100-UF	LFV3-100(A)
DF-LFV3-130-UF	LFV3-130(A)
DF-LFV3-200-UF	LFV3-200(A)

▶ P.302

Polarizing plate

Model name	Applicable Light Unit (Common for all colors)
PL-LFV3-35	LFV3-35(A)
PL-LFV3-50	LFV3-50(A)
PL-LFV3-50X100	LFV3-50X100(A)
PL-LFV3-70	LFV3-70(A)
PL-LFV3-100	LFV3-100(A)
PL-LFV3-130	LFV3-130(A)
PL-LFV3-200	LFV3-200(A)

▶ P.303

Light control film

Model name	Applicable Light Unit (Common for all colors)
LC-LFV3-35	LFV3-35(A)
LC-LFV3-50	LFV3-50(A)
LC-LFV3-50X100	LFV3-50X100(A)
LC-LFV3-70	LFV3-70(A)
LC-LFV3-100	LFV3-100(A)
LC-LFV3-130	LFV3-130(A)
LC-LFV3-200	LFV3-200(A)

▶ P.304

Regarding Changing the Diffusion Plate and Adjusting the Position

Models that support replacing the diffusion plate

Model (Common for all colors)

LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200

LFV3-34 / 40 / CP-13 / CP-18 does not support this feature.

Models that support adjusting the position of the diffusion plate

Model (Common for all colors)

LFV3-50 / 50X100 / 70 / 100 / 130 / 200

LFV3-34 / 35 / 40 / CP-13 / CP-18 does not support this feature.

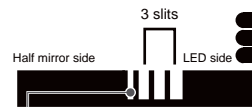
Regarding the default diffusion plate

LFV3-35 / 50 / 50X100 / 70 / 100 / 130 / 200

Red light, white light	Blue light
Diffusion plate (Light color) is default	Diffusion plate (Deep color) is default
Transmission: High	Transmission: Low (End of the model name: -UF)

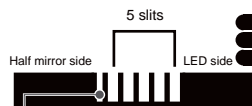
Position adjustment slit

For LFV3-50 / 50X100 / 70

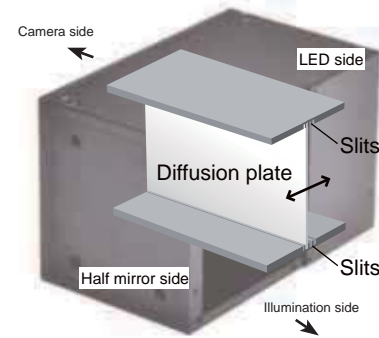


Slit for installing a polarizing plate or light control film

For LFV3-100 / 130 / 200



Slit for installing a polarizing plate or light control film

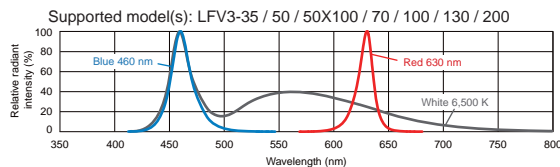


Conceptual image

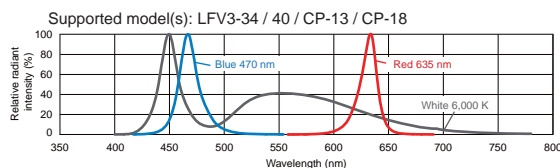
For details about replacing the diffusion plate or adjusting the position, refer to the "Instruction Guide" included with the product.

LED Properties

Spectral distribution



Offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.299.



Be sure to read the "Instruction Guide" included with the product before use and follow the safety precautions upon use. The data included is for reference only. Actual values may vary.

For details about determining the field of view for the Coaxial Light, refer to "Determining the Field of View of Coaxial Lighting" on P. 323 in the Technical Guide.

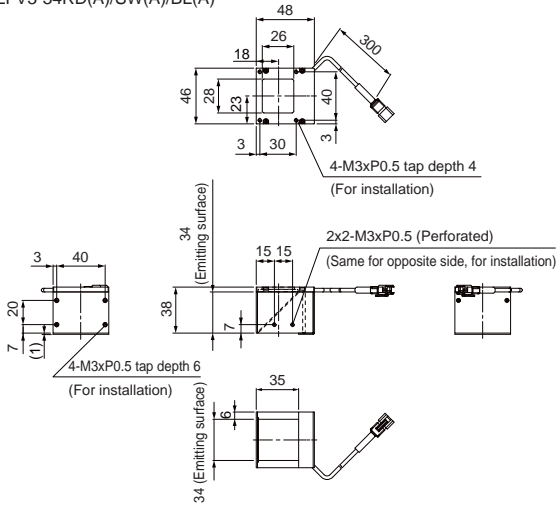
- Direct Lighting
 - LDR2
 - LDR2-LA
 - LDR-LA1
 - SQR
 - SQR-TP
- Diffused Lighting
 - HPR2
 - LFR
 - LKR
 - FPR
 - FPQ2
- Direct Lighting
 - LDL2
 - LDLB
 - HLDL2
 - HL
 - TH2 (5 types)
 - TH
 - LFL
 - HPD2
 - LDM2
 - LAV
 - PDM
 - LFX3
 - LFX3-PT
 - LFV3
- Diffused Lighting
 - MSU
 - MFU
- Strobe Lighting
 - PF
- Water-proof
 - HLDR-IP/ HSL-PCL
- Ultraviolet Lighting
 - UV2
 - UV
 - LNSP-UV-FN
- Infrared Control Lighting
 - IR2
 - IU
- Spot Lighting, Etc.
 - HLV3
 - HLV2
 - LV
 - LSP
 - HFS/HFR
 - HLV3-NR
 - HLV3-3M-RGB-4
 - HLV2-NR
 - HLV2-3M-RGB-3W
 - PFBR
 - PFB3
 - PFB2
- Convergent Lighting
 - LNLP
 - LNSP2
 - LNSP
 - Coaxial Units
 - LNSP-FN
 - LN/LN-HK
- Diffused Lighting
 - LNSD
 - LND2
 - HLND
 - LT
 - LN
- Oblique/Angled Lighting
 - LNDG
 - LNIS2
 - LNIS
 - LNIS-FN
- Lenses
 - Telecentric Lens
 - Macro Lens

LFV3 Series

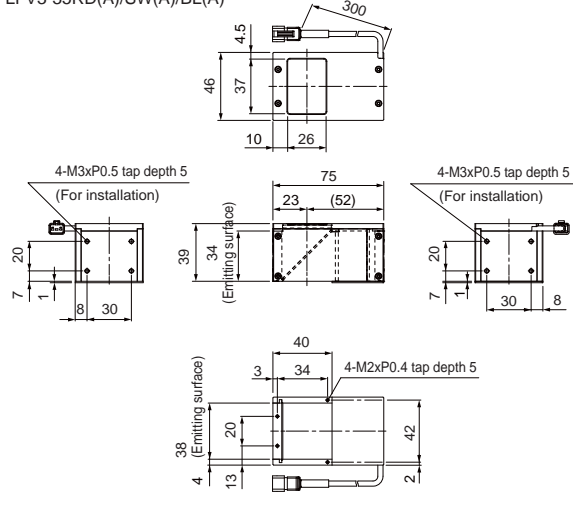


Dimensions (mm)

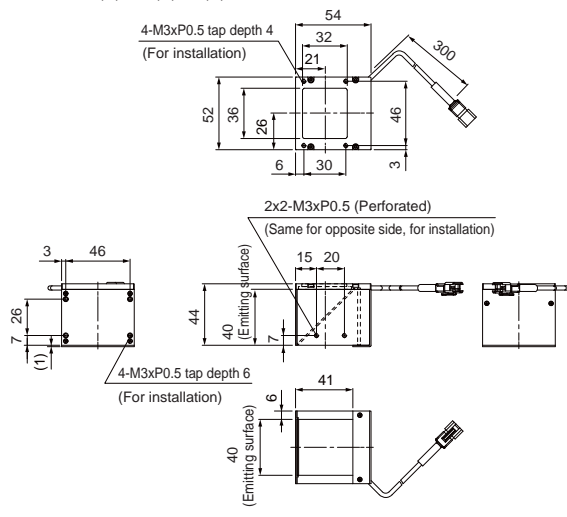
LFV3-34RD(A)/SW(A)/BL(A)



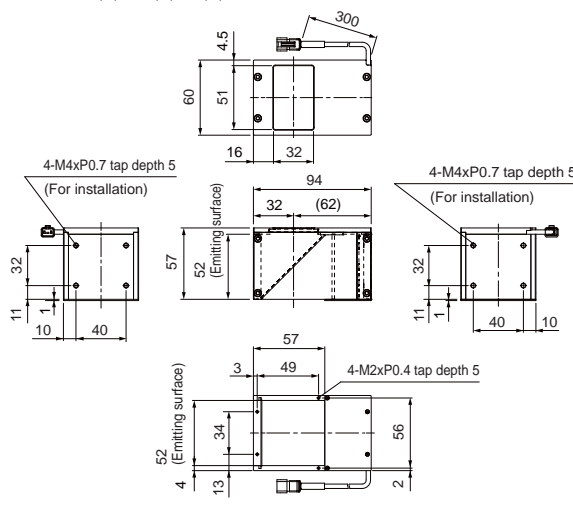
LFV3-35RD(A)/SW(A)/BL(A)



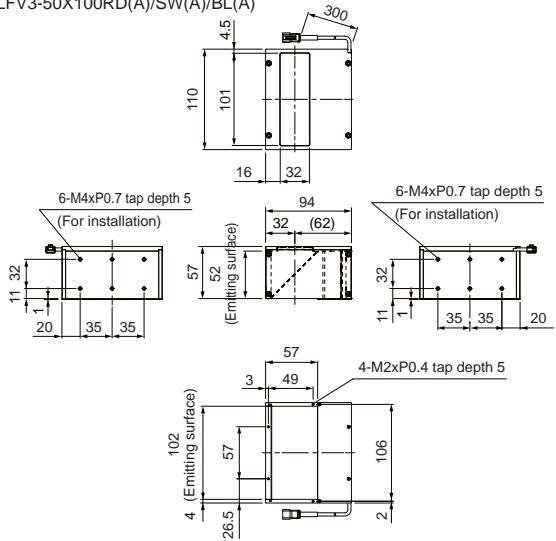
LFV3-40RD(A)/SW(A)/BL(A)



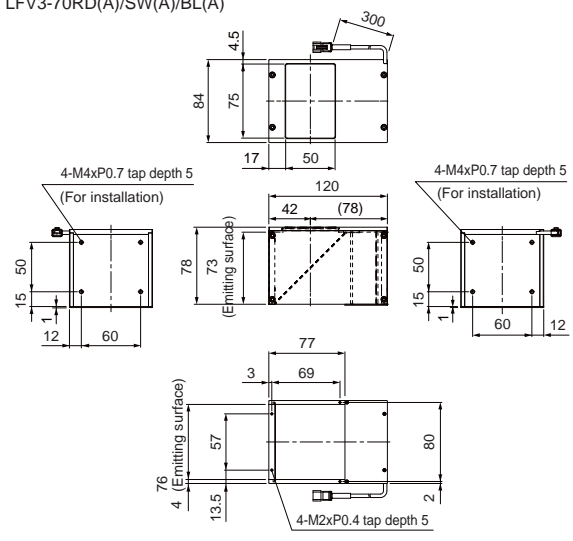
LFV3-50RD(A)/SW(A)/BL(A)



LFV3-50X100RD(A)/SW(A)/BL(A)

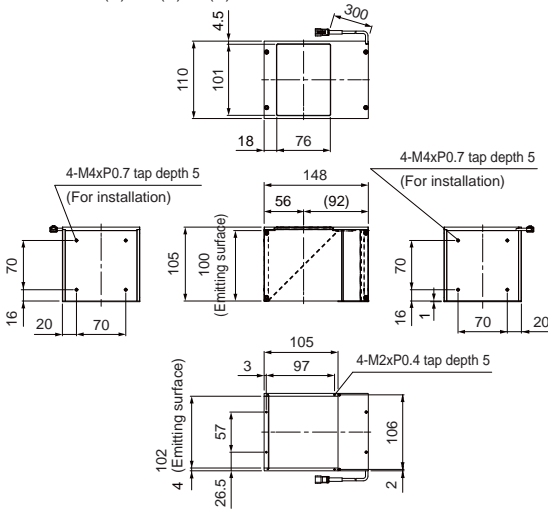


LFV3-70RD(A)/SW(A)/BL(A)

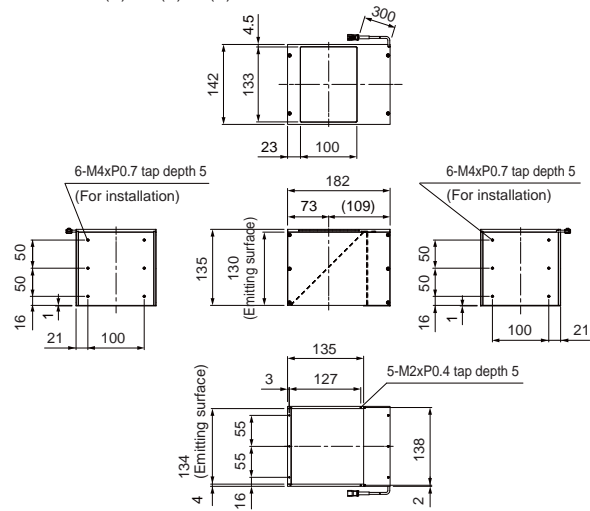


LDR2	Direct Lighting
LDR2-LA	Direct Lighting
LDR-LA1	Direct Lighting
SQR	Direct Lighting
SQR-TP	Direct Lighting
HPR2	Diffused Lighting
LFR	Diffused Lighting
LKR	Diffused Lighting
FPR	Diffused Lighting
FPQ2	Diffused Lighting
LDL2	Direct Lighting
LDLB	Direct Lighting
HDL2	Direct Lighting
HL	Direct Lighting
TH2 (5 types)	Diffused Lighting
TH	Diffused Lighting
LFL	Diffused Lighting
HPD2	Diffused Lighting
LDM2	Diffused Lighting
LAV	Diffused Lighting
PDM	Diffused Lighting
LFX3	Diffused Lighting
LFX3-PT	Diffused Lighting
LFV3	Diffused Lighting
MSU	Strobe Colored Lighting
MFU	Strobe Colored Lighting
PF	Strobe Colored Lighting
HLDL-IP/ HSL-PCL	Waterproof Lighting
UV2	Ultraviolet Lighting
UV	Ultraviolet Lighting
LNSP-UV-FN	Ultraviolet Lighting
IR2	Infrared Control Lighting
IU	Infrared Control Lighting
HLV3	Spot Lighting, Etc.
HLV2	Spot Lighting, Etc.
LV	Spot Lighting, Etc.
LSP	Spot Lighting, Etc.
HFS/HFR	Spot Lighting, Etc.
HLV3-NR	Spot Lighting, Etc.
HLV3-3M-RGB-4	Spot Lighting, Etc.
HLV2-NR	Spot Lighting, Etc.
HLV2-3M-RGB-3W	Spot Lighting, Etc.
PFBR	Spot Lighting, Etc.
PFB3	Spot Lighting, Etc.
PFB2	Spot Lighting, Etc.
LNLP	Convergent Lighting
LNSP2	Convergent Lighting
LNSP	Convergent Lighting
LNSP-FN	Convergent Lighting
LN/LN-HK	Convergent Lighting
LNSD	Convergent Lighting
LND2	Convergent Lighting
HLND	Convergent Lighting
LT	Convergent Lighting
LNV	Oblique Anched Lighting
LNDG	Oblique Anched Lighting
LNIS2	Oblique Anched Lighting
LNIS	Oblique Anched Lighting
LNIS-FN	Oblique Anched Lighting
Telecentric Lens	Lenses
Macro Lens	Lenses

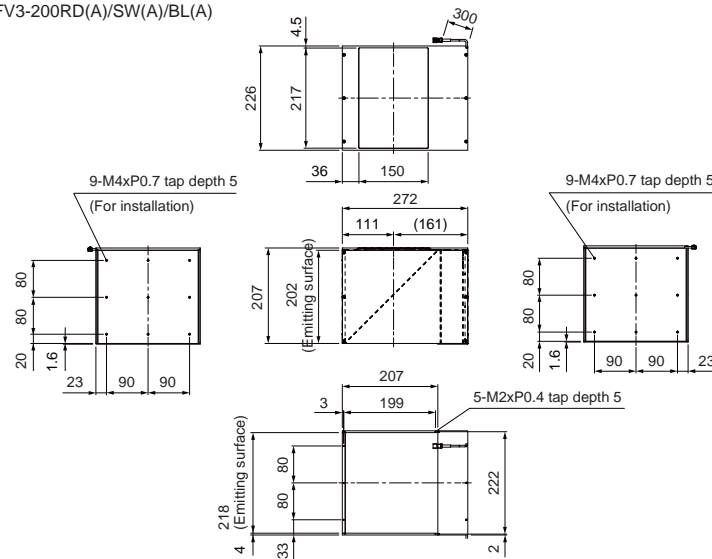
Lfv3-100RD(A)/SW(A)/BL(A)



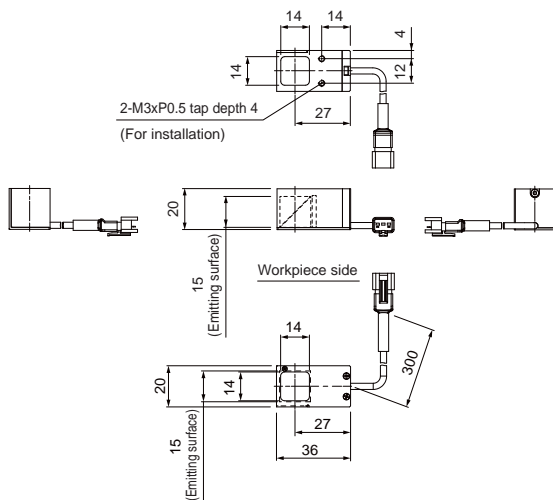
Lfv3-130RD(A)/SW(A)/BL(A)



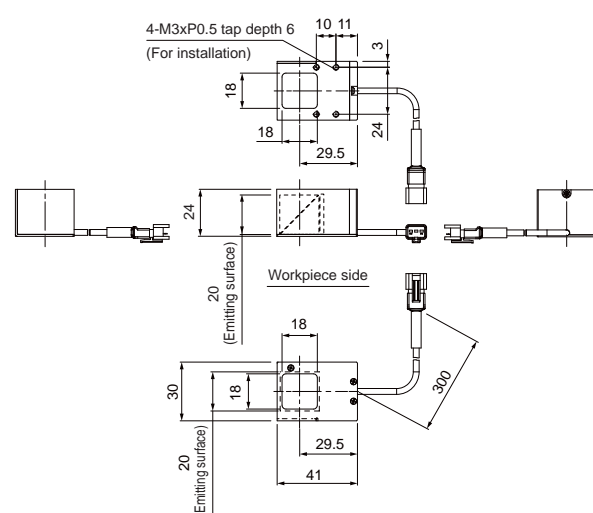
Lfv3-200RD(A)/SW(A)/BL(A)



Lfv3-CP-13RD/SW/BL



Lfv3-CP-18RD/SW/BL



You can change the connectors of the Light Unit cable. Choose between M12 connectors and flying leads. Refer to P.5 for details.

Direct Lighting	LDR2 LDR2-LA LDR-LA1 SOR SOR-TP
Diffused Lighting	HPR2 LFR LKR FPR FPQ2
Direct Lighting	LDL2 LDLB HLDL2 HL
Diffused Lighting	TH2 (5 types) TH LFL HPD2 LDM2 LAV PDM LFX3 LFX3-PT Lfv3
Command Lighting	MSU MFU
Strobe Lighting	PF
Water-proof	HLDR-IP/ HSL-PCL
Ultraviolet Lighting	UV2 UV LNSP-UV-FN
Infrared Control Lighting	IR2
Spot Lighting, Etc.	IU HLV3 HLV2 LV LSP HFS/HFR HLV3-NR HLV3-3M-RGB-4 HLV2-NR HLV2-3M-RGB-3W PFBR PFB3 PFB2
Convergent Lighting	LNLP LNSP2 LNSP Coaxial Units LNSP-FN LN/LN-HK
Diffused Lighting	LNSD LND2 HLND LT
Oblique/Angled Lighting	LNV LNDG LNS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens