

# Coaxial Lights

## LFV3 series

Refer to our website for product details.

CCS LFV3

Search



You can also use your smartphone or cell phone.

Use a search engine.

Provides diffused light evenly from the same axis as the camera



### Applications

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

LFV3 series

- LDR2
- LDR2-LA
- LDR-LA1
- SQR
- SQR-TP
- HLDR-IP
- HPR2
- HPR
- LFR
- LKR
- FR
- FPQ2
- LDL2
- HLDL2
- TH
- LFL
- HPD2
- HPD
- LDM2
- LAV
- PDM
- LFX2
- LFV3**
- LFV2/LFV
- MSU
- MFU
- UV2
- UV
- LNSP-UV-FN
- IR
- HLV2
- LV
- LSP
- HFS/HFR
- HLV2-NR
- HLV2-3M- RGB-3W
- PFB2
- PFBR
- LNSP
- CU-LNSP
- LNSP-FN
- LN/LN-HK
- LND2
- HLND
- LT
- LNV
- Telecentric Lens
- Macro Lens

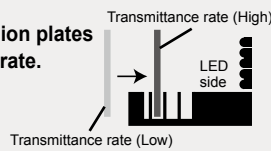
### Freely customize the diffusion

#### Customize the diffusion

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

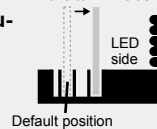
#### 1) Prepared two types of diffusion plates with different transmittance rate.

Replace the diffusion plate to change the transmittance rate.



#### 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.



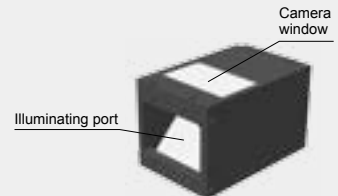
LFV3-CP-13SW

### Custom orders

Please contact your CCS sales representative.

E.g.: Different shape

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



#### Customizable items

- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting
- Etc.

### Coaxial Light that 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  $\mu\text{m}$ .  
\* In our evaluation

##### Expanded area for the camera window

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

##### Used an aluminum body

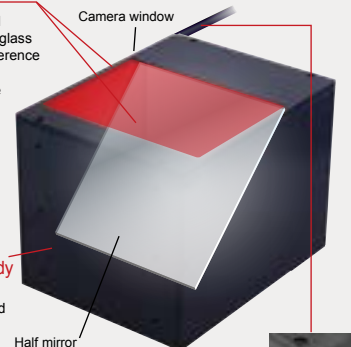
Used aluminum alloy to improve heat dissipation and achieve a durable body.

##### 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.

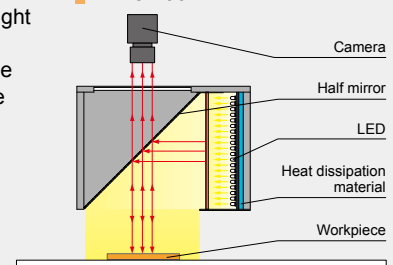


\* This description excludes the LFV3-CP-13 series and the LFV3-CP-18 series.

### Example configuration

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

#### LFV3-100



We have various materials.

PDF Drawings

DXF Drawings

3D CAD

Instruction Guides

Product Filers

Imaging Samples

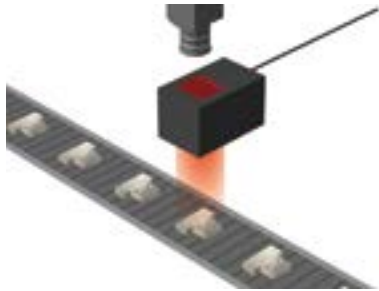
Data Sheets

Examples of Custom Ordered Products

Download here.

<http://www.ccs-grp.com/dl/>

## Imaging example : Imaging of engraved text on a metal connector hood



Description	Character recognition
Workpiece	Connector hood
Before the proposal	LED Bar Light
After the proposal	LFV3-50RD
Result	Emphasizes the engraved text

Workpiece image



Metal connector hood

LED Bar Light



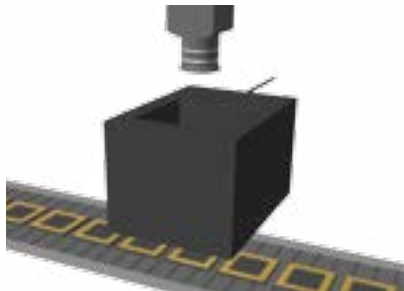
It is difficult to read the text engraved on the surface.

LFV3-50RD



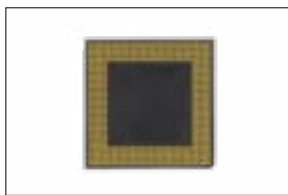
Effect from the surface unevenness is reduced and a clear image of the engraved text can be made.

## Imaging example : Imaging for circuit board through holes



Description	Visual inspection
Workpiece	Circuit board
Before the proposal	LED Ring Light
After the proposal	LFV3-100RD
Result	Improved uniformity

Workpiece image



Circuit board

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



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

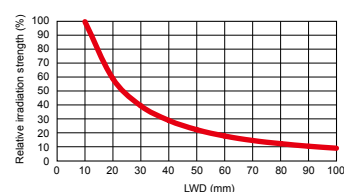
## Data: Relative irradiation strength graph/Uniformity graph (Representative example)

\* The graph included is for reference only and does not guarantee the quality of this product.

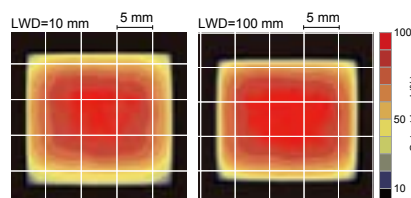
### LFV3-35RD

#### Relative irradiation strength<sup>\*1</sup> graph (LWD Characteristics)<sup>\*2</sup>

\*1: Irradiation strength on the optical axis  
\*2: Illuminating distance from the Light Unit to the workpiece



#### Uniformity graph (Relative irradiation brightness)



# LFV3 series



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CCS LFV3

Search



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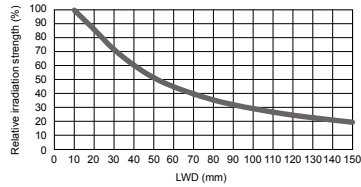
## Data: Relative irradiation strength graph/Uniformity graph (Representative example)

\* The graph included is for reference only and does not guarantee the quality of this product.

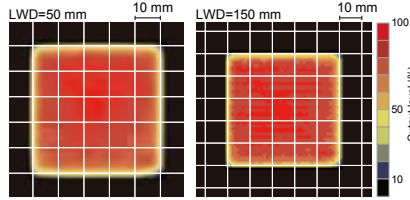
### LFV3-100SW

Relative irradiation strength<sup>1</sup> graph  
(LWD Characteristics)<sup>2</sup>

\*1: Irradiation strength on the optical axis  
\*2: Illuminating distance from the Light Unit to the workpiece



Uniformity graph (Relative irradiation brightness)



## Lineup

Model name	LED color	Power consumption	Peak wavelength/ correlated color temperature	Options	Recommended Control Units	Weight
LFV3-34RD	Red	24 V / 3.7 W	635 nm	-	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	80 g
LFV3-34SW	White	24 V / 3.2 W	6,000 K			
LFV3-34BL	Blue		470 nm			
LFV3-35RD	Red	24 V / 3.1 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	175 g
LFV3-35SW	White	24 V / 3.7 W	6,500 K			
LFV3-35BL	Blue	24 V / 3.1 W	460 nm			
LFV3-40RD	Red	24 V / 4.6 W	635 nm	-	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	100 g
LFV3-40SW	White		6,000 K			
LFV3-40BL	Blue		470 nm			
LFV3-50RD	Red	24 V / 8.1 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024* <input type="checkbox"/> PSB <input type="checkbox"/> PTU2 * Can only use red and blue.	335 g
LFV3-50SW	White	24 V / 11 W	6,500 K			
LFV3-50BL	Blue	24 V / 9.1 W	460 nm			
LFV3-50X100RD	Red	24 V / 17 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	530 g
LFV3-50X100SW	White	24 V / 20 W	6,500 K			
LFV3-50X100BL	Blue	24 V / 17 W	460 nm			
LFV3-70RD	Red	24 V / 13 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	620 g
LFV3-70SW	White	24 V / 19 W	6,500 K			
LFV3-70BL	Blue	24 V / 16 W	460 nm			
LFV3-100RD	Red	24 V / 22 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	1,060 g
LFV3-100SW	White	24 V / 27 W	6,500 K			
LFV3-100BL	Blue		460 nm			
LFV3-130RD	Red	24 V / 31 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3	1,750 g
LFV3-130SW	White	24 V / 46 W	6,500 K			
LFV3-130BL	Blue	24 V / 38 W	460 nm			
LFV3-200RD	Red	24 V / 43 W	630 nm	<input type="checkbox"/> Diffusion plate <input type="checkbox"/> Polarization plate <input type="checkbox"/> Light control film	<input type="checkbox"/> PD3	4,350 g
LFV3-200SW	White	24 V / 64 W	6,500 K			
LFV3-200BL	Blue	24 V / 53 W	460 nm			
LFV3-CP-13RD	Red	24 V / 2.1 W	635 nm	-	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	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	-	<input type="checkbox"/> PD3 <input type="checkbox"/> CC-ST-1024 <input type="checkbox"/> PSB <input type="checkbox"/> PTU2	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.196

Control Unit Selection Guide ▶ P.155

Control Unit Page ▶ P.159

For details about determining the field of vision for the Coaxial Light, refer to "Determining the field of view of coaxial lighting" on P. 205 in the Technical Guide.

We have various materials.

PDF Drawings

DXF Drawings

3D CAD

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Data Sheets

Examples of Custom Ordered Products

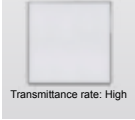
Download here.

<http://www.ccs-grp.com/dl/>

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- HLDL2
- TH
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- HPD2
- HPD
- LDM2
- LAV
- PDM
- LFV3
- LFV2/LFV
- MSU
- MFU
- UV2
- UV
- LNSP-UV-FN
- IR
- HLV2
- LV
- LSP
- HFS/HFR
- HLV2-NR
- HLV2-3M- RGB-3W
- PFB2
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- Macro Lens

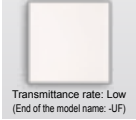
## Options

Diffusion plate (Light color)



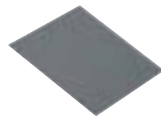
Transmittance rate: High

Diffusion plate (Deep color)

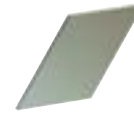
Transmittance rate: Low  
(End of the model name: -UF)

Replace the default diffusion plate to change the transmittance rate.

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



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



This is a plastic film which lines up fine louvers with an extremely narrow gap between them. It reduces light diffusion in a certain direction and increases parallelism.

### Diffusion plate

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

▶ P.190

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

### Polarization plate

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

▶ P.191

### Light control film

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

▶ P.192

## 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

\* The 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

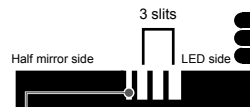
\* The LFV3-34/35/40/CP-13/CP-18 does not support this feature.

### 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
Transmittance rate: High	Transmittance rate: Low (End of the model name: -UF)

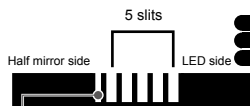
### Position adjustment slit

For the LFV3-50/50X100/70

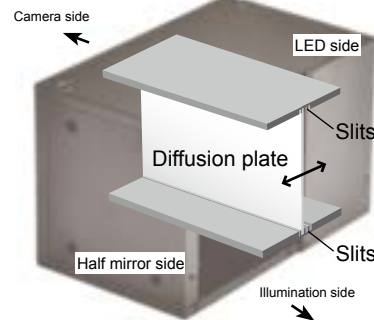


Slit for installing a polarization plate or light control film

For the LFV3-100/130/200



Slit for installing a polarization plate or light control film

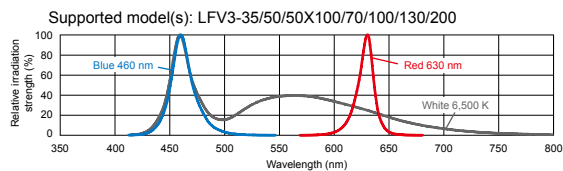


\* Conceptual image

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

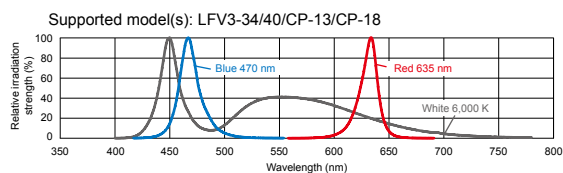
## LED properties

### Light spectrum



If using a sharp-cut filter, please use the R60 (option).

For details about the sharp-cut filter, refer to P.189.

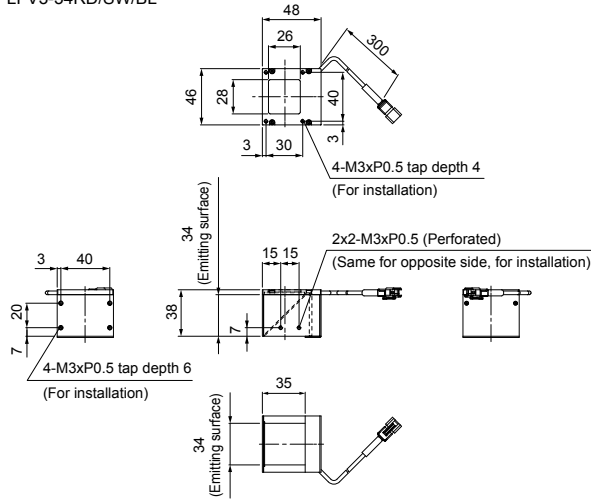


Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information. The data included is for reference only and does not guarantee the quality of this product.

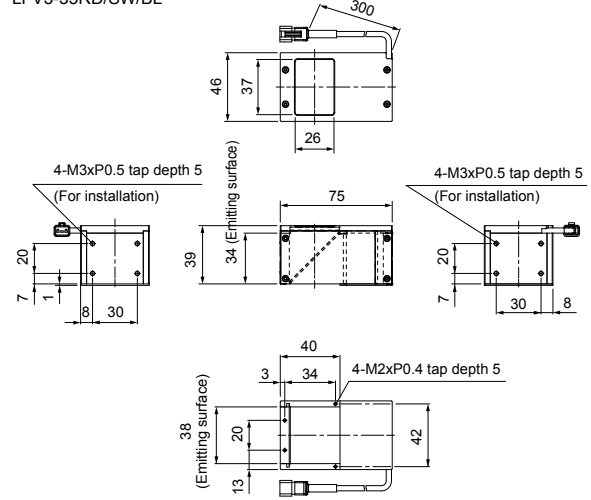


## Dimensions (mm)

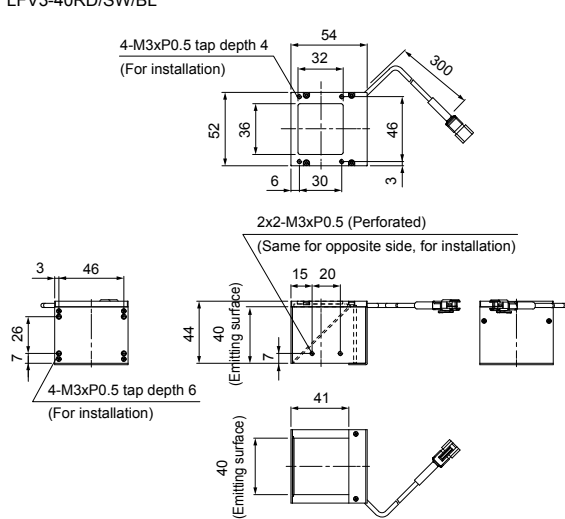
LFV3-34RD/SW/BL



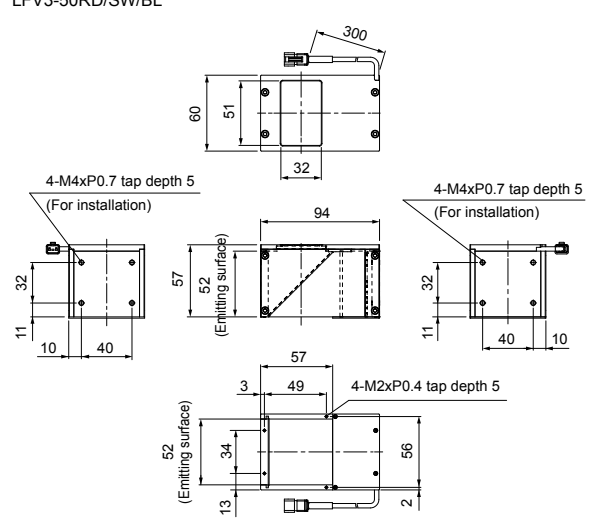
LFV3-35RD/SW/BL



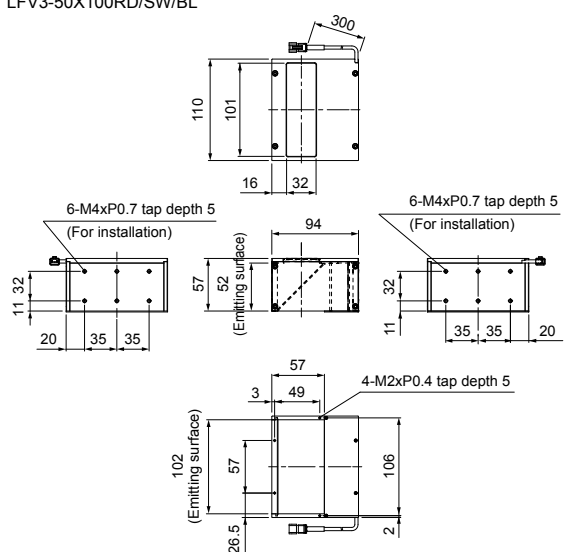
LFV3-40RD/SW/BL



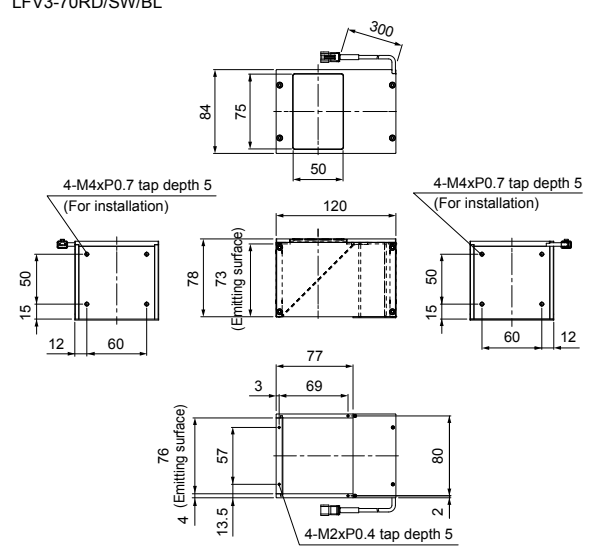
LFV3-50RD/SW/BL



LFV3-50X100RD/SW/BL

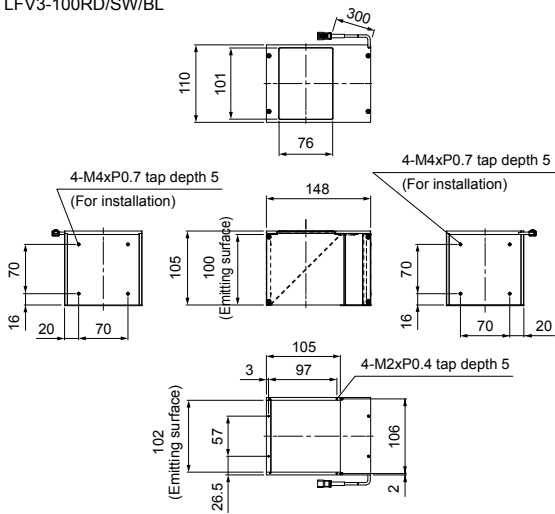


LFV3-70RD/SW/BL

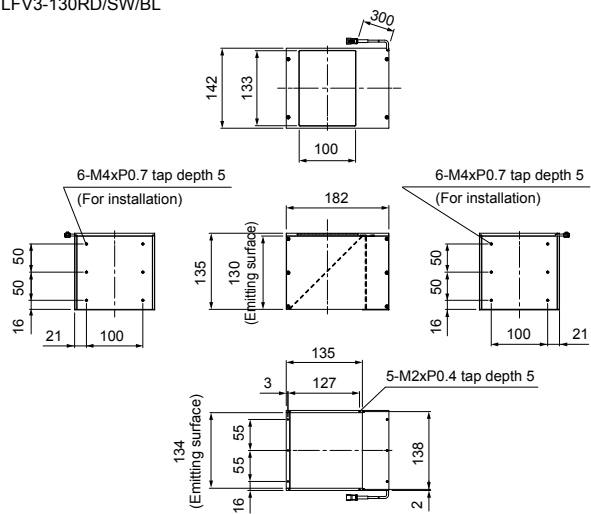


LDR2
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SQR-TP
HLDR-IP
HPR2
HPR
LFR
LKR
FPR
FPO2
LDL2
HLDL2
TH
LFL
HPD2
HPD
LDM2
LAV
PDM
LFX2
<b>LFV3</b>
LFV2/LFV
MSU
MFU
UV2
UV
LNSP-UV-FN
IR
HLV2
LV
LSP
HFS/HFR
HLV2-NR
HLV2-3M- RGB-3W
PFB2
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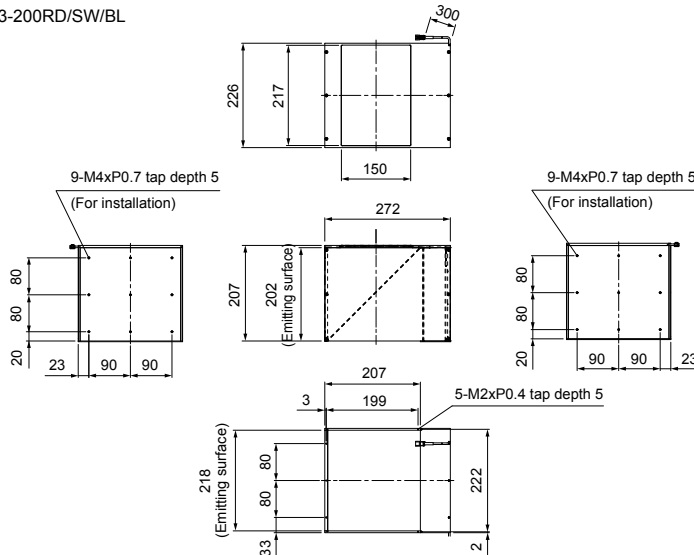
LFV3-100RD/SW/BL



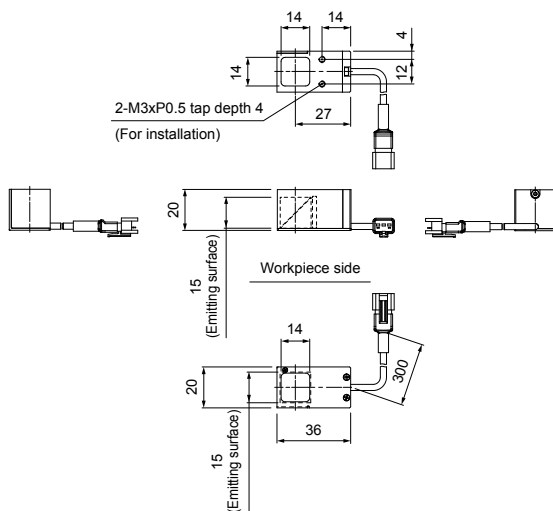
LFV3-130RD/SW/BL



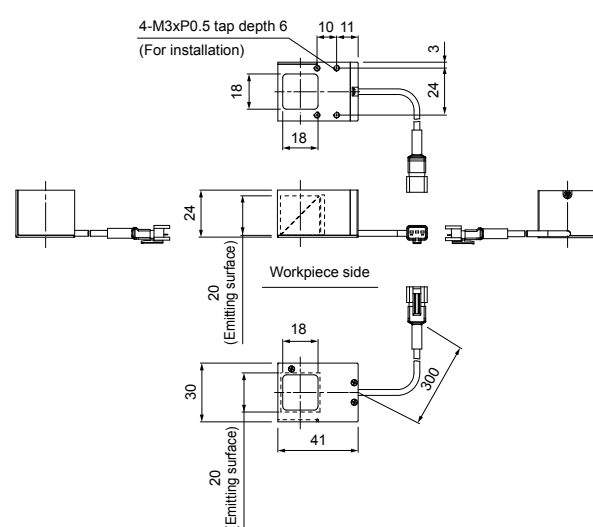
LFV3-200RD/SW/BL



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.115 for details.

Diffused  
Lighting

Coaxial Lights

LFV3  
series

LDR2
LDR2-LA
LDR-LA1
SQR
SQR-TP
HLDR-IP
HPR2
HPR
LFR
LKR
PFR
FPQ2
LDL2
HLDL2
TH
LFL
HPD2
HPD
LDM2
LAV
PDM
LFX2
LFV3
LFV2/LFV
MSU
MFU
UV2
UV
LNSP-UV-FN
IR
HLV2
LV
LSP
HFS/HFR
HLV2-NR
HLV2-3M- RGB-3W
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