

# Coaxial Lights

## LFV3 series

Refer to our website for product details.

CCS LFV3

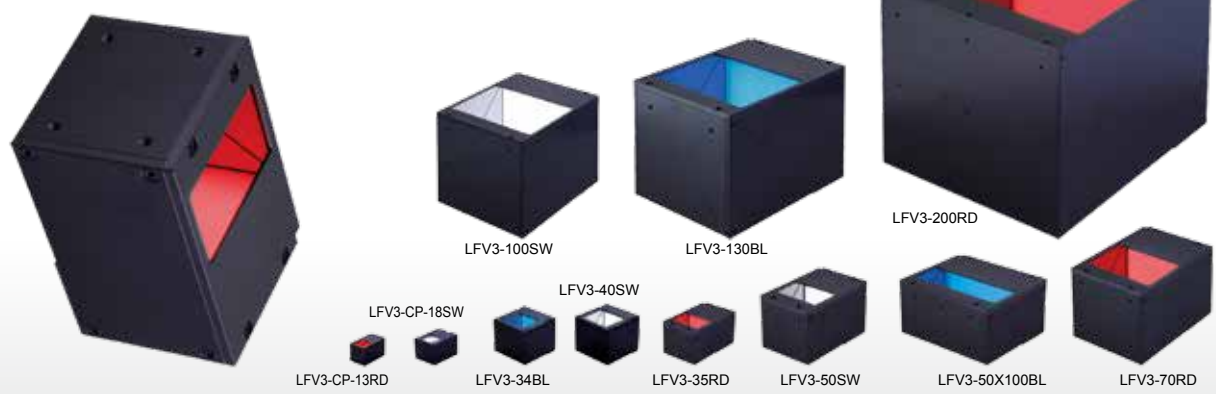
Search



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.

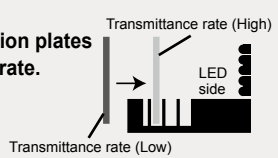
### Freely customize the diffusion

#### Customize the diffusion

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

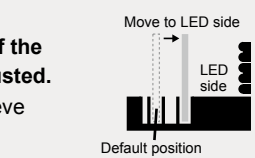
#### 1) Prepared two types of diffusion plates with different transmittance rate.

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.



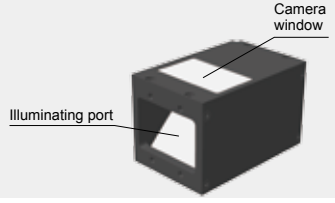
LFV3-CP-13SW

### 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 μm. \* 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

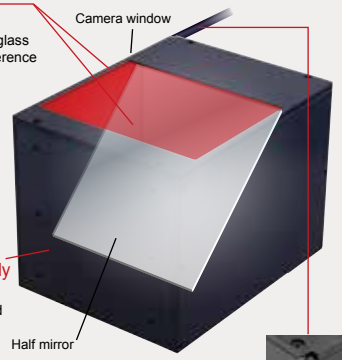
Used aluminum alloy to improve heat dissipation and achieve a durable body.

##### 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.

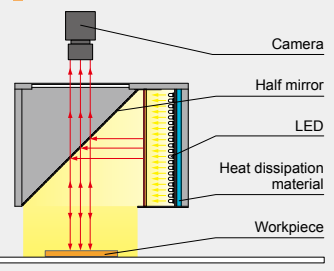


\* This description excludes the LFV3-CP-13 series and the LFV3-CP-18 series.

### Example configuration

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

#### LFV3-100



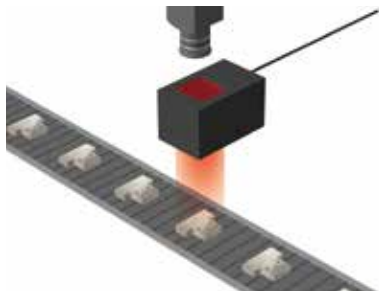
LDR2	Direct Lighting
LDR2-LA	Direct Lighting
LDR-LA1	Direct Lighting
SQR	Direct Lighting
SQR-TP	Direct Lighting
HLDR-IP	Convergent Lighting
HPR2	Diffused Lighting
HPR	Diffused Lighting
LFR	Diffused Lighting
LKR	Diffused Lighting
FPR	Diffused Lighting
FPQ2	Diffused Lighting
LDL2	Direct Lighting
LDLB	Direct Lighting
HLDL2	Direct Lighting
TH	Direct Lighting
LFL	Direct Lighting
HPD2	Diffused Lighting
HPD	Diffused Lighting
LDM2	Diffused Lighting
LAV	Diffused Lighting
PDM	Diffused Lighting
LFX2	Diffused Lighting
LFV3	Diffused Lighting
LFV2	Diffused Lighting
MSU	Collimated Lighting
MFU	Collimated Lighting
UV2	Ultraviolet Lighting
UV	Ultraviolet Lighting
LNSP-UV-FN	Ultraviolet Lighting
IR2	Infrared Lighting
HLV2	Infrared Lighting
LV	Infrared Lighting
LSP	Spot Lighting, Etc.
HFS/HFR	Spot Lighting, Etc.
HLV2-NR	Spot Lighting, Etc.
HLV2-3M-RGB-3W	Spot Lighting, Etc.
PFB2	Spot Lighting, Etc.
PFBR	Spot Lighting, Etc.
LNSP	Convergent Lighting
CU-LNSP	Convergent Lighting
LNSP-FN	Convergent Lighting
LN/LN-HK	Convergent Lighting
LNSD	Diffused Lighting
LND2	Diffused Lighting
HLND	Diffused Lighting
LT	Diffused Lighting
LNW/HLDN	Diffused Lighting
LNIS	Oblique Angled Lighting
LNIS-FN	Oblique Angled Lighting
Telecentric Lens	Lenses
Macro Lens	Lenses

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## ➤ 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



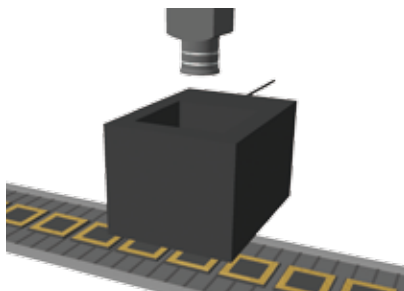
It is difficult to read the text engraved on the surface.

LFV3-50RD



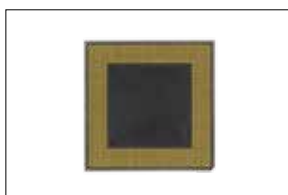
Effect from the surface unevenness is reduced and a clear image of the engraved text can be made.

## ➤ 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.

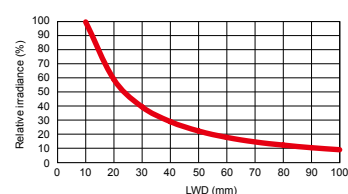
## ➤ Data: Relative irradiance graph/Uniformity graph (Representative example)

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

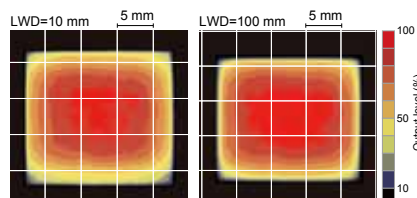
### LFV3-35RD

Relative irradiance graph<sup>\*1</sup>  
(LWD Characteristics)<sup>\*2</sup>

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



### Uniformity graph (Relative irradiance)



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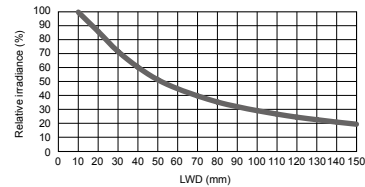
## Data: Relative irradiance graph/Uniformity graph (Representative example)

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

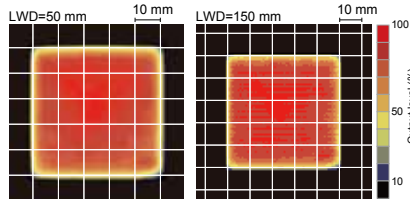
### LFV3-100SW

Relative irradiance graph (LWD Characteristics)<sup>\*1</sup>  
\*2

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



### Uniformity graph (Relative irradiance)



## 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	-	PD3 CC-ST-1024 PSB 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	Diffusion plate Polarization plate Light control film	PD3 CC-ST-1024 PSB 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	-	PD3 CC-ST-1024 PSB PTU2	100 g
LFV3-40SW	White		6,000 K			
LFV3-40BL	Blue		470 nm			
LFV3-50RD	Red	24 V / 8.1 W	630 nm	Diffusion plate Polarization plate Light control film	PD3 CC-ST-1024* PSB PTU2	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	Diffusion plate Polarization plate Light control film	PD3 PSB 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	Diffusion plate Polarization plate Light control film	PD3 PSB 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	Diffusion plate Polarization plate Light control film	PD3 PSB 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	Diffusion plate Polarization plate Light control film	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	Diffusion plate Polarization plate Light control film	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	-	PD3 CC-ST-1024 PSB 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	-	PD3 CC-ST-1024 PSB 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.222

Control Unit Selection Guide ▶ P.181

Control Unit Page ▶ P.185

For details about determining the field of vision for the Coaxial Light, refer to "Determining the field of view of coaxial lighting" on P. 231 in the Technical Guide.

We have various materials.

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## Options

Diffusion plate (Light color)



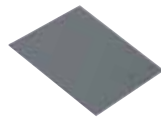
Transmittance rate: High

Diffusion plate (Deep color)

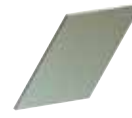
Transmittance rate: Low  
(End of the model name: -UF)

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

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

### 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.216

▶ P.217

▶ P.218

## 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.

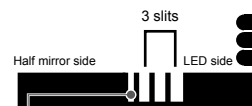
### Regarding the default diffusion plate

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)

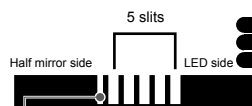
### Position adjustment slit

For the LFV3-50/50X100/70

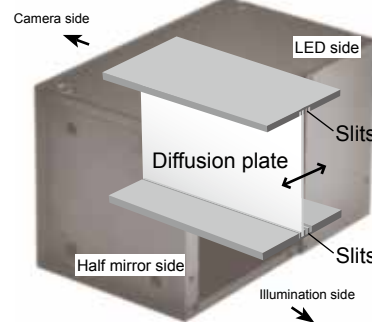


Slit for installing a polarization plate or light control film

For the LFV3-100/130/200



Slit for installing a polarization plate or light control film

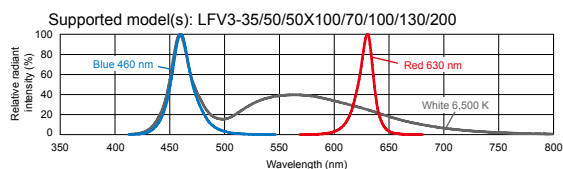


\* Conceptual image

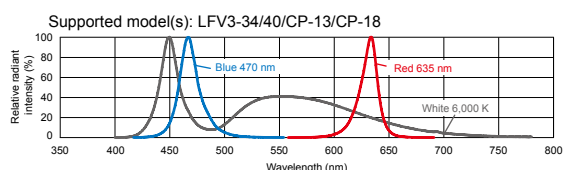
For details about replacing the diffusion plate or adjusting the position, refer to the "Instruction Guide" included with the product.

## 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.215.



Be sure to read the "Instruction Guide" included with the product before use and observe cautionary information.  
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CCS LFV3

Search

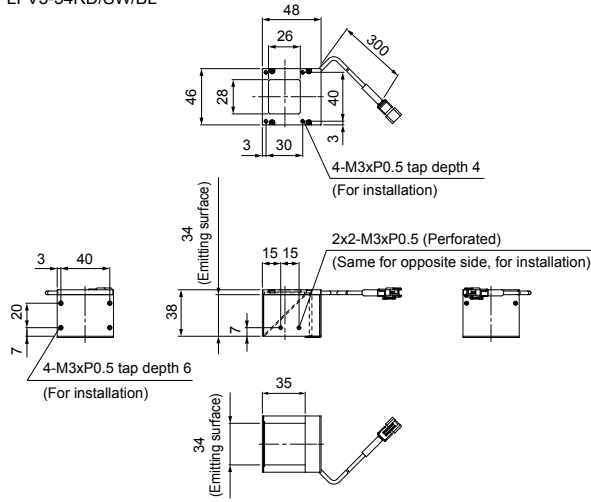


You can also use your smartphone or cell phone.

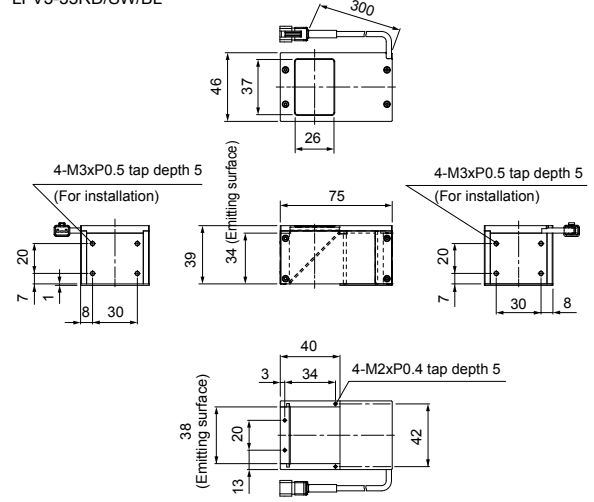
Use a search engine.

## Dimensions (mm)

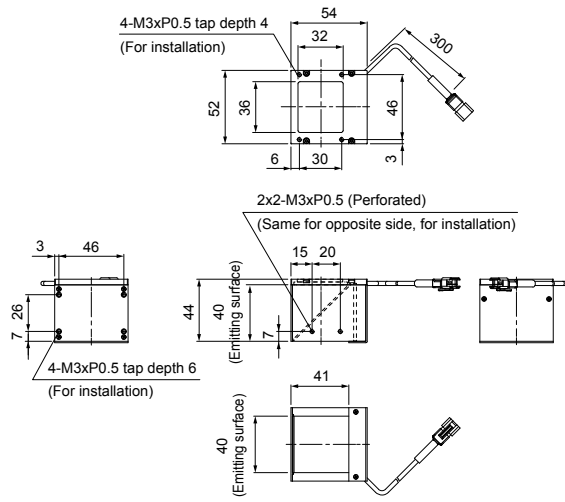
LFV3-34RD/SW/BL



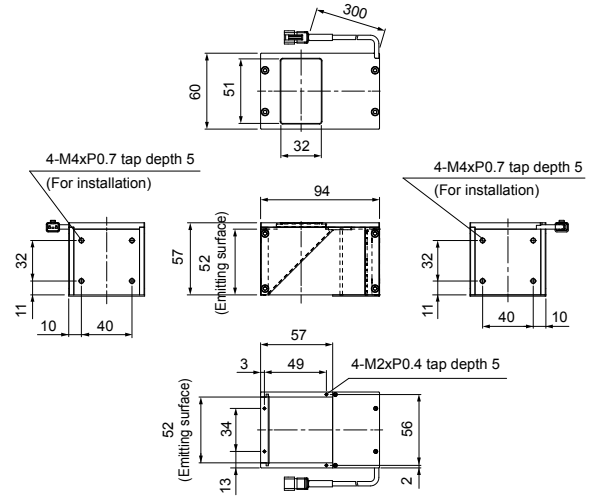
LFV3-35RD/SW/BL



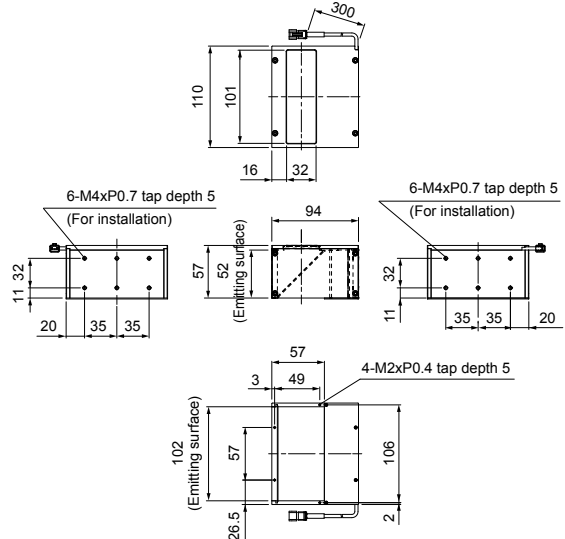
LFV3-40RD/SW/BL



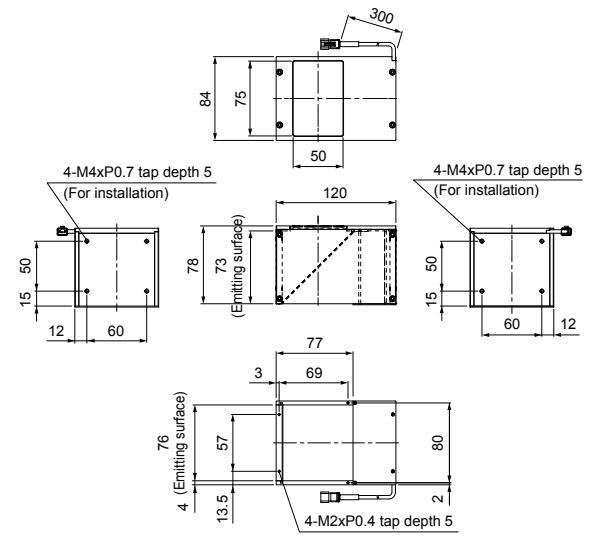
LFV3-50RD/SW/BL



LFV3-50X100RD/SW/BL



LFV3-70RD/SW/BL



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LDR2-LA	Direct Lighting
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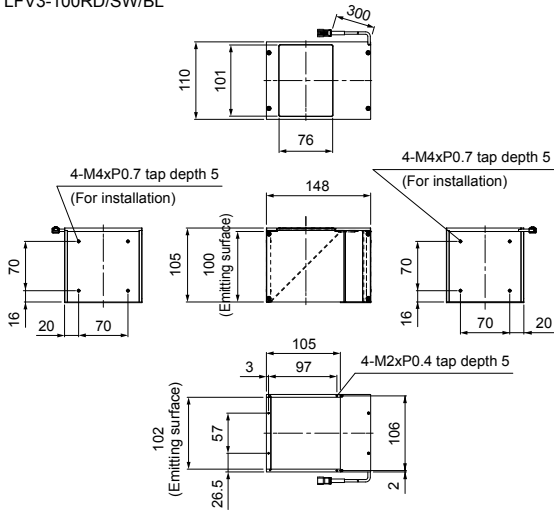
Examples of Custom Ordered Products

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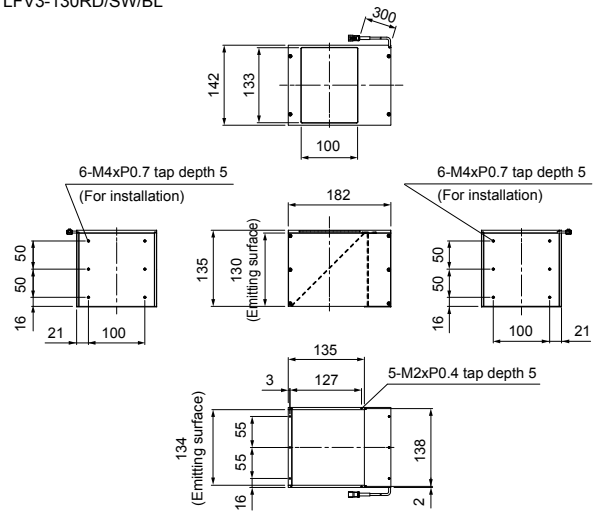
<http://www.ccs-grp.com/dl/>



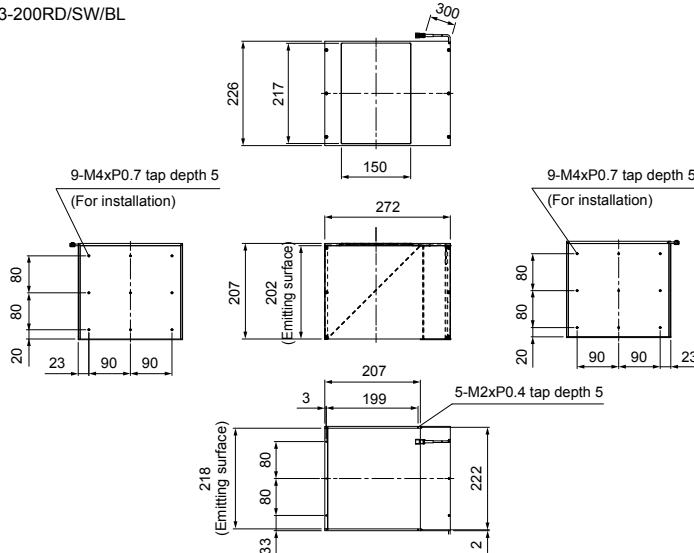
LFV3-100RD/SW/BL



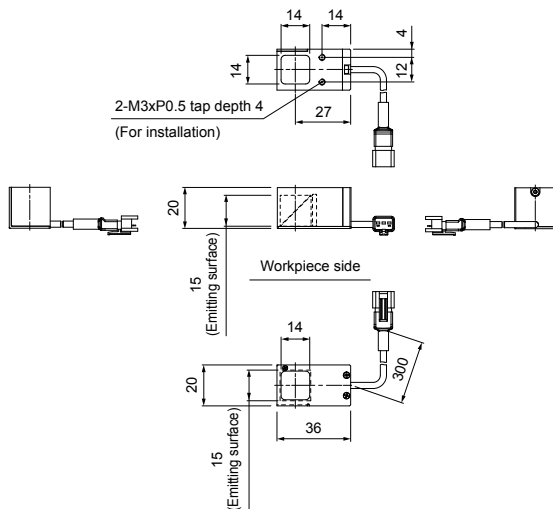
LFV3-130RD/SW/BL



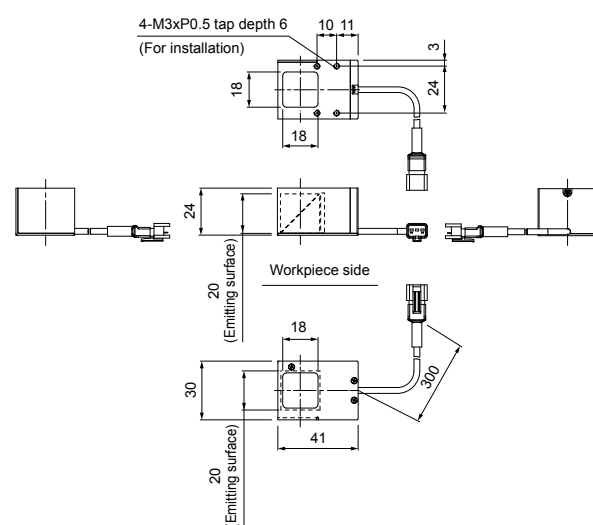
LFV3-200RD/SW/BL



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.125 for details.

Direct Lighting

LDR2  
LDR2-LA  
LDR-LA1  
SQR  
SQR-TPConvergent  
Lighting

HLDR-IP

Diffused Lighting

HPR2  
HPR  
LFR  
LKR  
FPR  
FPQ2Direct  
LightingLDL2  
LDLB  
HLDL2  
TH  
LFL  
HPD2  
HPD  
LDM2  
LAV  
PDM  
LFX2  
LFV3  
LFV2

Diffused Lighting

MSU  
MFU  
UV2  
UV  
LNSP-UV-FN  
IR2  
HLV2  
LV  
LSP  
HFS/HFR  
HLV2-NR  
HLV2-3M-RGB-3W  
PFB2  
PFBRCollimated  
LightingMSU  
MFUUltraviolet  
LightingUV2  
UV  
LNSP-UV-FNInfrared  
Lighting

IR2

Spot Lighting, Etc.

HLV2  
LV  
LSP  
HFS/HFR  
HLV2-NR  
HLV2-3M-RGB-3W  
PFB2  
PFBRConvergent  
LightingLNSP  
CU-LNSP  
LNSP-FN  
LN/LN-HKDiffused  
LightingLNSD  
LND2  
HLND  
LT  
LNV/HLDNOblique  
Angled  
LightingLNIS  
LNIS-FN

Lenses

Telecentric Lens  
Macro Lens