

## Varied Light Unit lineup using IR-LEDs



### Applications

Visual inspection that cancels the surface pattern, inspection penetrating liquid for foreign material inside, inspections using differences in spectral reflectivity, inspection for the inside of packaged food, etc.

### What Is Infrared Light?

Infrared light is light that has a wavelength longer than that of visible red light and cannot be seen by the human eye. Compared to visible red light, infrared light has a low scattering rate and high transmission, and therefore is used in imaging which penetrates printed patterns or liquids.

#### Imaging example using visible and infrared light

**Features (1) Penetration**

Visible light Imaging with infrared light Infrared irradiation penetrates the liquid to make inside visible.

**Features (2) Cancellation**

Visible light Imaging with infrared light Infrared irradiation cancels out the printing to image the surface evenly.

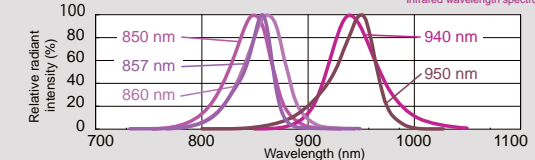
### Merits

Irradiation of the Infrared LED includes only the energy of specific region of wavelength, so that the irradiation heat is extremely low compared to the halogen lights and gives less damage on the workpiece.

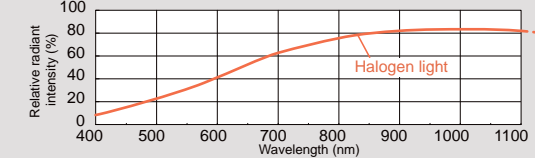
	Infrared LED	Regular halogen light
Irradiation heat	Extremely low	Heat-generating
Influence on the workpiece	Small heat damage	Huge heat damage



#### Standard products



#### Region of regular halogen light



### Custom Orders

Please contact your sales representative.

E.g.: Different wavelength

**Customizable items**

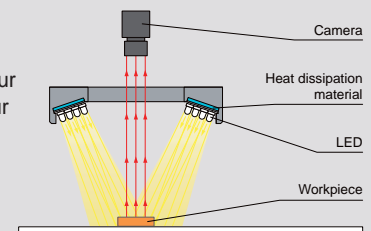
- Wavelength: Equipped with LEDs that are 1,000 nm and higher
- External/internal diameter
- Wavelength/color
- Increase output
- Cable length
- Illuminating angle
- Format/material
- Connector format
- Installation/mounting

Etc.

### Example Configuration

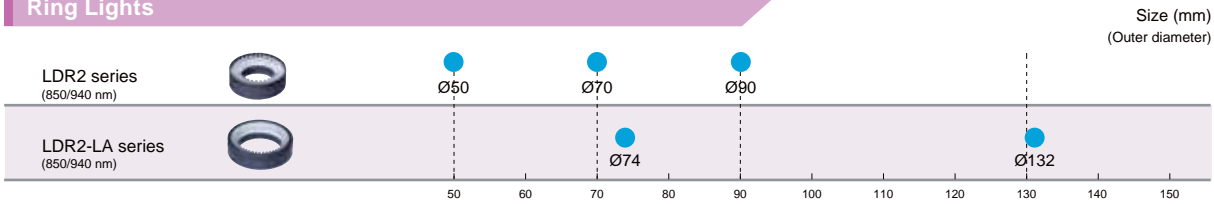
Ring Lights that use infrared LEDs. Bar types and coaxial types are also available. Select your format to match your needs.

#### LDR2-90IR2-850/940

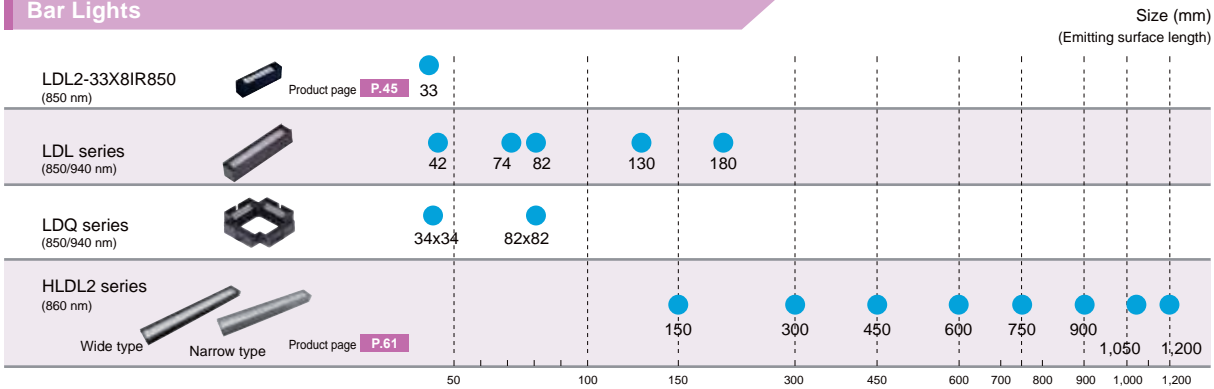


## Extensive Lineup of Infrared Lights

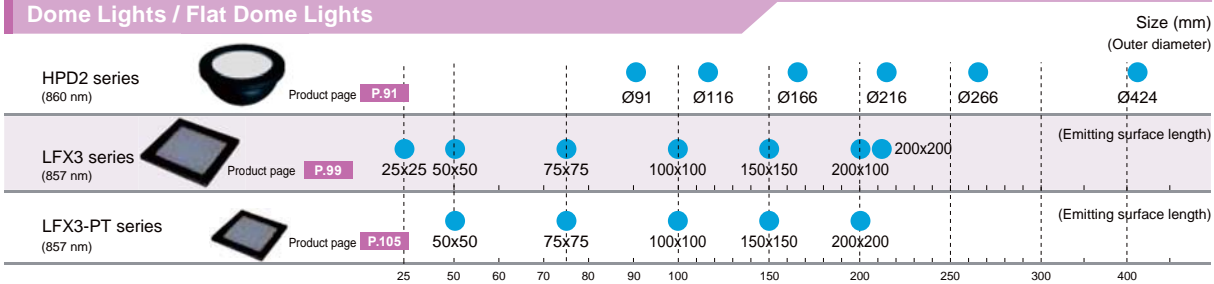
### Ring Lights



### Bar Lights



### Dome Lights / Flat Dome Lights



### Flat Lights



### Coaxial Lights



The LFX3-CP series and LFX3 series have different wavelengths.

Custom products with a wavelength of 1,000 nm or more are available, please contact your sales representative for details.

## Near-Infrared Cameras in the Testing Rooms

### Ready for the test with infrared light over 1,000 nm wavelength

Is deploying infrared-sensitive cameras in the testing rooms where you can perform workpiece tests directly for yourself using our LED Lights. Please feel free to make an appointment. We are looking forward to helping you.

Near-infrared camera



Optimal for infrared imaging

#### Specifications

ABA-003IR-GE (manufactured by AVALDATA)

- InGaAs sensor
- Wavelength: 950 to 1,700 nm
- 640 x 512 pixels
- Gig-E vision
- C mount



Our personalized staff will be happy to suggest the lighting solution for getting optimal images.

Direct Lighting	LDR2 LDR2-LA LDR-LA1 SQR SQR-TP
Diffused Lighting	HPR2 LFR LKR FPR FFQ2
Direct Lighting	LDL2 LDLB HLDL2 HL
Diffused Lighting	TH2 (5 types) TH LFL HPD2 LDM2 LAV PDM LFX3 LFX3-PT LFV3
Collimated Lighting	MSU MFU
Strobe Lighting	PF
Water-proof Lighting	HLDL-IP/ HSL-PCL
Ultraviolet Lighting	UV2 UV LNSP-UV-FN
Infrared Lighting	IR2
Intensity Control	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 LNS2 LNIS LNIS-FN
Lenses	Telecentric Lens Macro Lens

# IR2 Series



## ➤ Imaging Example: Imaging for Foreign Materials in Disinfectant Products



Description	Foreign materials inspection
Workpiece	Disinfectant products
Conventional lighting	LED visible light lighting
New lighting	LFL-100IR2-940
Result	Infrared lighting penetrates the liquid

Workpiece image



Disinfectant products

LED visible light lighting



It is difficult to check the inside with visible light imaging.

LFL-100IR2-940



Imaging with infrared light penetrates the liquid and captures the foreign materials.

This workpiece was processed by for sample imaging.

## ➤ Imaging Example: Imaging the Appearance of Leatherware



Description	Visual inspection
Workpiece	Leatherware
Conventional lighting	LED visible light lighting
New lighting	LDR2-132IR2-850-LA
Result	Infrared lighting penetrates the dye on the threads

Workpiece image



Leatherware

LED visible light lighting



The leather and the threads are of the same color, so that it is difficult to capture the stitching.

LDR2-132IR2-850-LA



Infrared light penetrates the dye to highlight the threads and captures the stitching.

## ➤ Cautionary Information regarding Infrared Products

- This product uses infrared LEDs. You cannot visually sense the brightness, but infrared radiation comes out of the LEDs when they are on.
- The peak wavelength range corresponds to IR-A (780 to 1,400 nm).
- Infrared radiation in the IR-A range can damage your eyes. Never look at the infrared radiation directly.
- Inform all persons in the area around this product of the dangers of infrared LED.

## Lineup

Series	Model name	LED color	Power consumption	Peak wavelength	Options	Extension cables	Recommended Control Units	Weight
LDR2	LDR2-50IR2-850	Infrared	24 V / 3.8 W	850 nm	-			50 g
	LDR2-50IR2-940			940 nm				
	LDR2-70IR2-850		24 V / 7.6 W	850 nm				
	LDR2-70IR2-940			940 nm				
	LDR2-90IR2-850		24 V / 14 W	850 nm				
	LDR2-90IR2-940			940 nm				
LDR2-LA	LDR2-74IR2-850-LA	Infrared	24 V / 6.9 W	850 nm	-		PD3 PSB    POD*2	90 g
	LDR2-74IR2-940-LA			940 nm				
	LDR2-132IR2-850-LA		24 V / 16 W	850 nm				
	LDR2-132IR2-940-LA			940 nm				
LDL	LDL-42X15IR2-850	Infrared	24 V / 2.3 W	850 nm	-	FCB*4 Straight Cable  FCB-W*5 2-branch Cable  FCB-F 4-branch Cable  FRCB Robot Cable	PD3*1 PSB*1    POD*2	40 g
	LDL-42X15IR2-940			940 nm				
	LDL-74X27IR2-850		24 V / 6.9 W	850 nm				
	LDL-74X27IR2-940			940 nm				
	LDL-82X15IR2-850		24 V / 3.8 W	850 nm				
	LDL-82X15IR2-940			940 nm				
	LDL-130X15IR2-850		24 V / 6.1 W	850 nm				
	LDL-130X15IR2-940			940 nm				
	LDL-180X15IR2-850		24 V / 8.4 W	850 nm				
	LDL-180X15IR2-940			940 nm				
LDQ	LDQ-78IR2-850	Infrared	24 V / 6.1 W	850 nm	-		PD3*1 PSB*1    POD*2	110 g
	LDQ-78IR2-940			940 nm				
	LDQ-150IR2-850		24 V / 16 W	850 nm				
	LDQ-150IR2-940			940 nm				
LDL	LDL-60X60IR2-850	Infrared	24 V / 7.6 W	850 nm	-			140 g
	LDL-60X60IR2-940			940 nm				
	LDL-100X100IR2-850		24 V / 21 W	850 nm				
	LDL-100X100IR2-940			940 nm				
LFL	LFL-100IR2-850	Infrared	24 V / 7.6 W	850 nm	-		PD3 PSB    POD*2	220 g
	LFL-100IR2-940			940 nm				
LFV3-CP	LFV3-CP18IR2-860	Infrared	24 V / 2.6 W	860 nm	-			70 g
	LFV3-CP18IR2-950			950 nm				
LFV3	LFV3-35IR2-850(A)*3	Infrared	24 V / 3.1 W	850 nm	-			175 g
	LFV3-35IR2-940(A)*3			940 nm				
	LFV3-50IR2-850(A)*3		24 V / 9.1 W	850 nm				
	LFV3-50IR2-940(A)*3			940 nm				

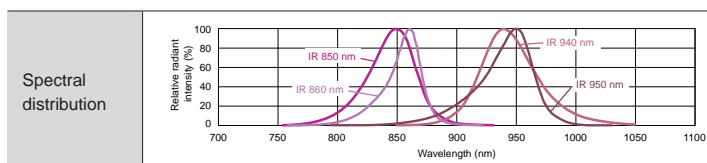
\*4 The cables with a model name that ends with "4ME7", "EL2", "PF", or "PF-EL9" are not included.  
\*5 The cables with a model name that ends with "EL2" are not included.

Extension Cables ▶ P.308

Control Unit Selection Guide ▶ P.251

List of Control Unit Specifications ▶ P.253

## LED Properties



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.

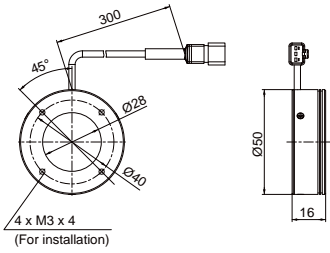
- Direct Lighting
  - LDR2
  - LDR2-LA
  - LDR-LA1
  - SQR
  - SQR-TP
- Diffused Lighting
  - HPR2
  - LFR
  - LKR
  - FPR
  - FFQ2
- Direct Lighting
  - LDL2
  - LDLB
  - HLDL2
  - HL
- Diffused Lighting
  - TH2 (5 types)
  - TH
  - LFL
  - HPD2
  - LDM2
  - LAV
  - PDM
  - LFX3
  - LFX3-PT
  - LFV3
- Collimated Lighting
  - MSU
  - MFU
- Stroke Lighting
  - PF
- Water-proof Lighting
  - HLDR-IP/
  - HSL-PCL
- Ultraviolet Lighting
  - UV2
  - UV
  - LNSP-UV-FN
- Infrared Lighting
  - IR2
- Intensely 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
  - LNS2
  - LNIS
  - LNIS-FN
- Lenses
  - Telecentric Lens
  - Macro Lens

# IR2 Series

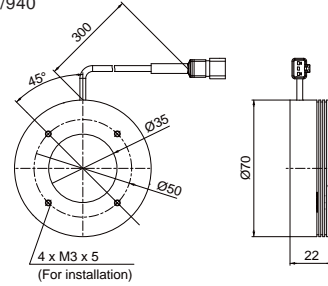


## Dimensions (mm)

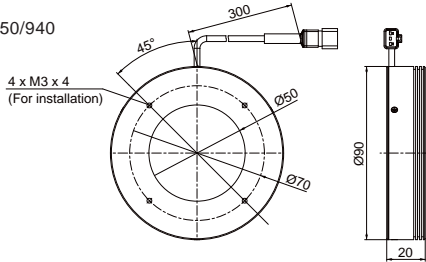
LDR2-50IR2-850/940



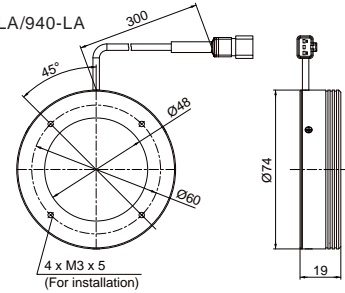
LDR2-70IR2-850/940



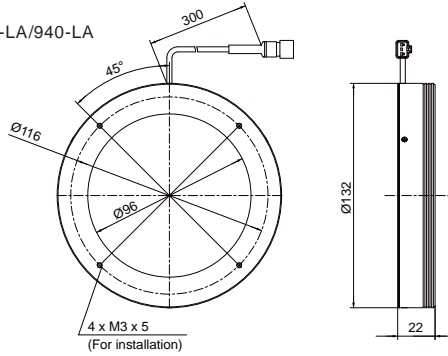
LDR2-90IR2-850/940



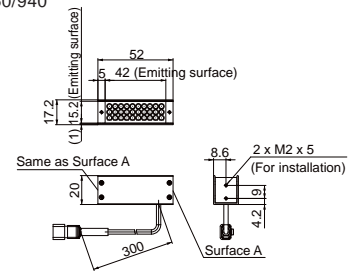
LDR2-74IR2-850-LA/940-LA



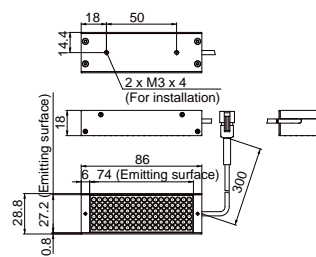
LDR2-132IR2-850-LA/940-LA



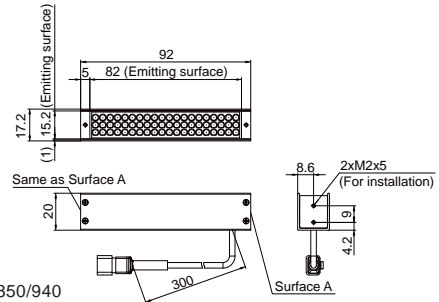
LDL-42X15IR2-850/940



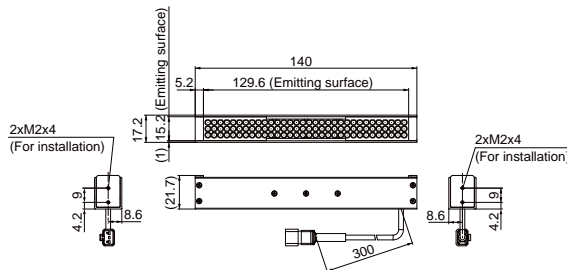
LDL-74X27IR2-850/940



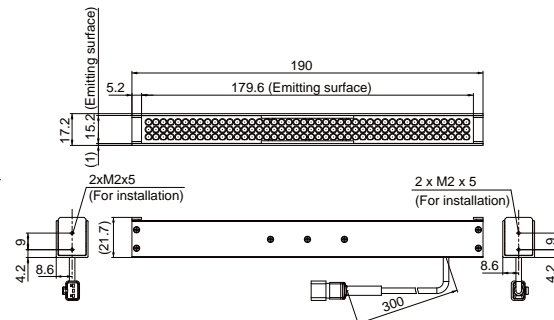
LDL-82X15IR2-850/940



LDL-130X15IR2-850/940

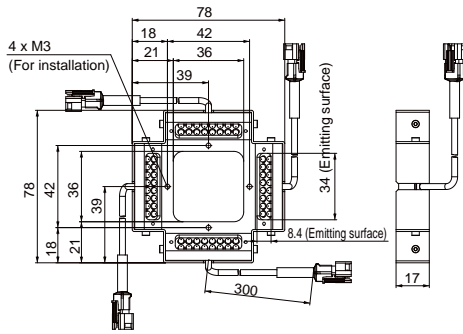


LDL-180X15IR2-850/940

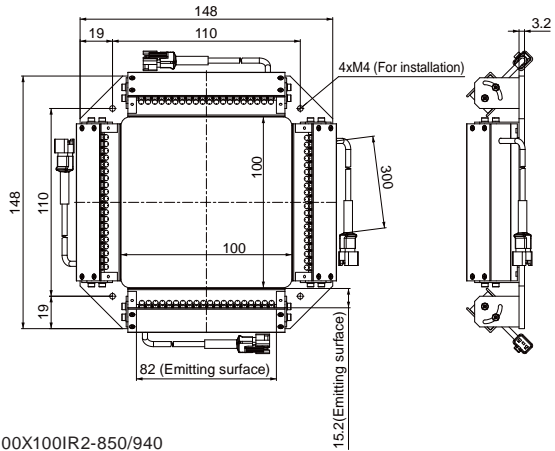


LDR2	Direct Lighting
LDR2-LA	Direct Lighting
LDR-LA1	Direct Lighting
SQR	Direct Lighting
SQR-TP	Direct Lighting
HPR2	Diffused Lighting
LFR	Diffused Lighting
LKR	Diffused Lighting
FPR	Diffused Lighting
FPQ2	Diffused Lighting
LDL2	Direct Lighting
LDLB	Direct Lighting
HLDL2	Direct Lighting
HL	Diffused Lighting
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
HLDR-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	Coaxial Units
LNSP2	Coaxial Units
LNSP	Coaxial Units
LNSP-FN	Coaxial Units
LN/LN-HK	Coaxial Units
LNSD	Coaxial Units
LND2	Coaxial Units
HLND	Coaxial Units
LT	Coaxial Units
LNV	Coaxial Units
LNDG	Coaxial Units
LNIS2	Coaxial Units
LNIS	Coaxial Units
LNIS-FN	Coaxial Units
Telecentric Lens	Lenses
Macro Lens	Lenses

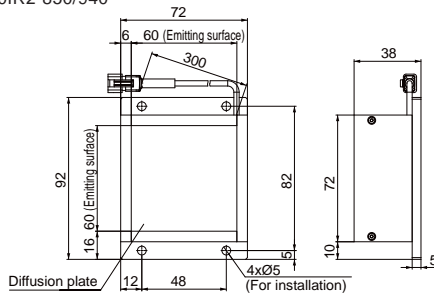
LDQ-78IR2-850/940



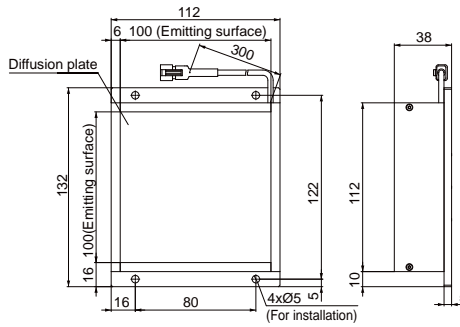
LDQ-150IR2-850/940



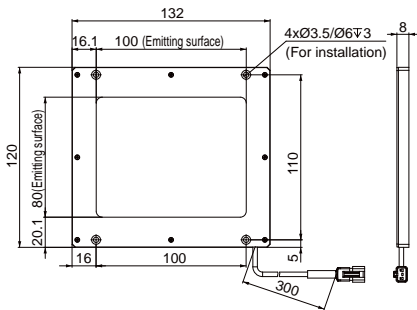
LDL-60X60IR2-850/940



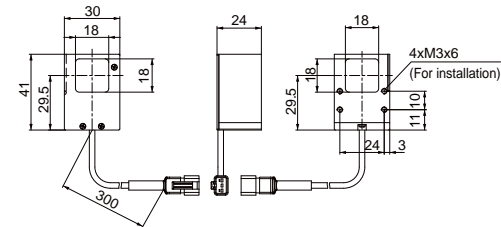
LDL-100X100IR2-850/940



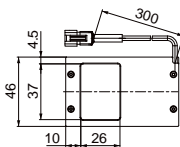
LFL-100IR2-850/940



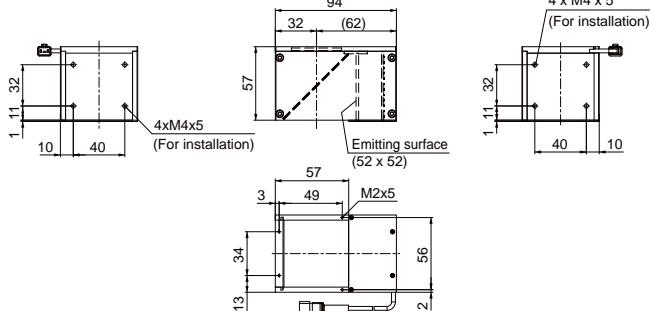
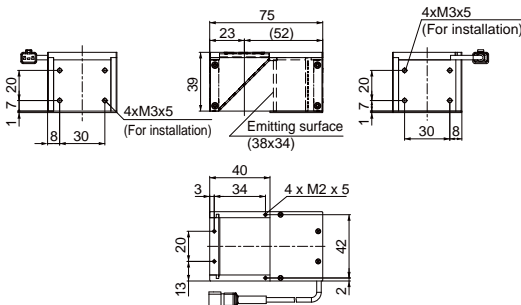
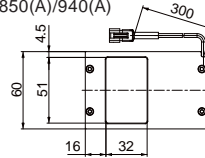
LFV3-CP18IR2-860/950



LFV3-35IR2-850(A)/940(A)



LFV3-50IR2-850(A)/940(A)



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 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
Coloured Lighting	PF
Strobe Lighting	HLDR-IP/ HSL-PCL
Water-proof Lighting	UV2 UV LNSP-UV-FN
Ultraviolet Lighting	IR2
Infrared Lighting	IU HLV3 HLV2 LV LSP HFS/HFR HLV3-NR HLV3-3M-RGB-4 HLV2-NR HLV2-3M-RGB-3W
Intensify Control	PFB3 PFB2
Spot Lighting, Etc.	LNSP LNSP2 LNSP Coaxial Units LNSP-FN LN/LN-HK
Convergent Lighting	LNSD LND2 HLND
Diffused Lighting	LT LNV LNDG LNS2 LNIS LNIS-FN
Oblique/Angled Lighting	Telecentric Lens Macro Lens