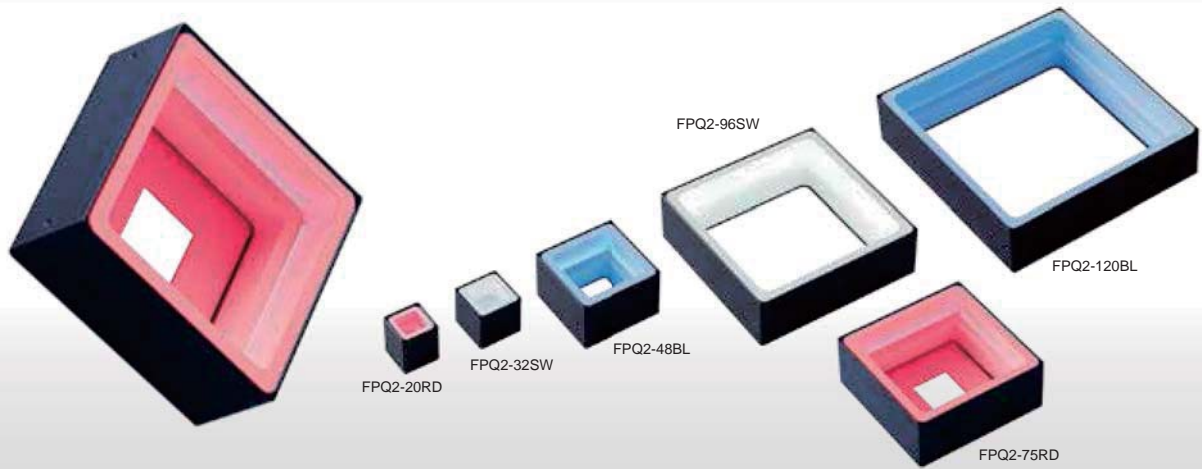


Provides diffused light at a low angle from four directions



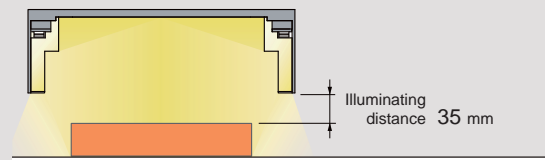
Applications

Visual inspection for electronic parts; character recognition; inspection for bending, slipping, and staining of pins or leads; visual and pattern inspections for circuit boards; fault inspection for LCDs; IC lead inspection; etc.

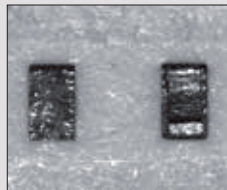
Perfect for Square Workpieces

The FPQ2 series is a low angle Light Unit perfect for square workpieces. It can detect the outline of corners and prevents glare, which are difficult with Ring Lights.

Imaging example for the FPQ2-48RD: Imaging for detecting electronics parts



LED Ring Light



There is glare from the surface film and it is difficult to determine if the part is there.

FPQ2-48RD

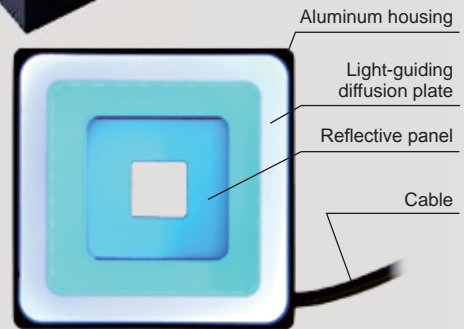


Film glare is removed, making it possible to determine if the part is there.

Illuminates Diffused Light from Four Directions

It is a diffused lighting with a square case. Light from the LEDs installed above is transmitted through the light-guiding diffusion plate and diffused light is illuminated from four directions on the workpiece from a low angle.

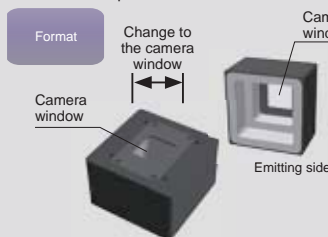
Illumination image for the FPQ2-48BL



Custom Orders

Please contact your sales representative.

E.g.: Changed format so that the Light Unit did not overlap with the field of view.



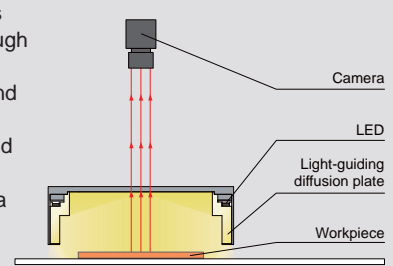
Customizable items

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

Example Configuration

Light illuminated from the LEDs is transmitted through the light-guiding diffusion plate and uniform diffused light is illuminated centrally on the workpiece from a low angle.

FPQ2-96



Imaging Example: Imaging the Appearance of Extremely Small Coils



| | |
|-----------------------|---------------------|
| Description | Visual inspection |
| Workpiece | Coils |
| Conventional lighting | LED Ring Light |
| New lighting | FPQ2-20SW |
| Result | Improved uniformity |

Workpiece image



Coils

LED Ring Light



It is difficult to evenly form an exterior image of the coil.

FPQ2-20SW



It is possible to evenly form an exterior image of the coil.

Imaging Example: Imaging Printed Date on Food Containers



| | |
|-----------------------|---------------------|
| Description | Text inspection |
| Workpiece | Food containers |
| Conventional lighting | LED Ring Light |
| New lighting | FPQ2-120RD |
| Result | Improved uniformity |

Workpiece image



Food containers

LED Ring Light



Due to effect from the glossiness and bumps on the surface, it is difficult to get a clear image of the text.

FPQ2-120RD

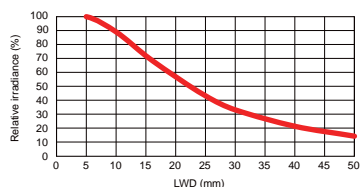


The surface is illuminated evenly, allowing for a clear image of the text.

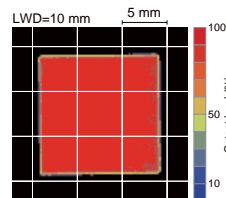
Data: Relative Irradiance Graph and Uniformity (Representative Example)

FPQ2-48RD
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 irradiance)



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

Direct Lighting

- LDR2
- LDR2-LA
- LDR-LA1
- SQR
- SQR-TP
- HPR2

Diffused Lighting

- LFR
- LKR
- FPR
- FPQ2
- LDL2
- LDLB
- HLDL2
- HL
- TH2 (5 types)
- TH
- LFL
- HPD2
- LDM2
- LAV
- PDM
- LFX3
- LFX3-PT
- LFV3

Coaxial Lighting

- MSU
- MFU

Strobe Lighting

- PF

Water-proof

- HLDR-IP/ HSL-PCL

Ultraviolet Lighting

- UV2
- UV
- LNSP-UV-FN

Infrared Control

- IR2

Intensity

- 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



Lineup

| Model name | LED color | Power consumption | Peak wavelength / correlated color temperature | Options | Extension cables | Recommended Control Units | Weight | |
|------------|-----------|-------------------|--|---------|--|---|--------|--|
| FPQ2-20RD | Red | 24 V / 1.5 W | 630 nm | - | FCB* ⁴ Straight Cable FCB-W* ⁵ 2-branch Cable FCB-F 4-branch Cable FRCB Robot Cable | PD3 CC-ST-1024 PSB POD* ¹ | 25 g | |
| FPQ2-20SW | White | 24 V / 2.6 W | 6,000 K | | | | | |
| FPQ2-20BL | Blue | 24 V / 1.8 W | 465 nm | | | PD3 CC-ST-1024* ² PSB POD* ¹ | 50 g | |
| FPQ2-32RD | Red | 24 V / 6.1 W | 630 nm | | | | | |
| FPQ2-32SW | White | 24 V / 5.1 W | 6,000 K | | | PD3 CC-ST-1024* ² PSB POD* ¹ | 85 g | |
| FPQ2-32BL | Blue | 24 V / 3.1 W | 465 nm | | | | | |
| FPQ2-48RD | Red | 24 V / 5.8 W | 630 nm | | | PD3 CC-ST-1024* ³ PSB POD* ¹ | 145 g | |
| FPQ2-48SW | White | 24 V / 11 W | 6,000 K | | | | | |
| FPQ2-48BL | Blue | 24 V / 7.1 W | 465 nm | | | PD3 PSB POD* ¹ | 160 g | |
| FPQ2-75RD | Red | 24 V / 17 W | 630 nm | | | | | |
| FPQ2-75SW | White | 24 V / 16 W | 6,000 K | | | PD3 PSB POD* ¹ | 200 g | |
| FPQ2-75BL | Blue | 24 V / 9.1 W | 465 nm | | | | | |
| FPQ2-96RD | Red | 24 V / 15 W | 630 nm | | | | | |
| FPQ2-96SW | White | 24 V / 21 W | 6,000 K | | | | | |
| FPQ2-96BL | Blue | 24 V / 13 W | 465 nm | | | | | |
| FPQ2-120RD | Red | 24 V / 18 W | 630 nm | | | | | |
| FPQ2-120SW | White | 24 V / 21 W | 6,000 K | | | | | |
| FPQ2-120BL | Blue | 24 V / 11 W | 465 nm | | | | | |

*4 The cables with a model name that ends with "-ME7", "-EL2", "-PF", or "-PF-EL0" are not included.
*5 The cables with a model name that ends with "-EL2" are not included.

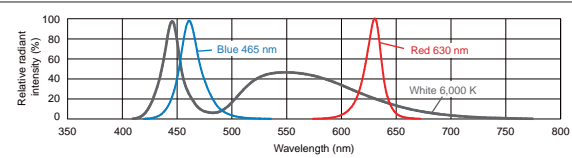
*2 Can only use red and blue.

*3 Can only use blue.

Extension Cables ▶ P.308 Control Unit Selection Guide ▶ P.251 List of Control Unit Specifications ▶ P.253

LED Properties

Spectral distribution



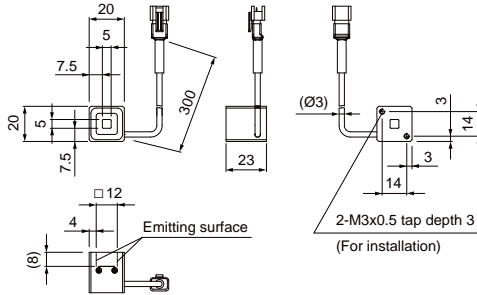
Offers you the most suitable lens filter for each wavelength. For details about the lens filter, refer to P.299.

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.

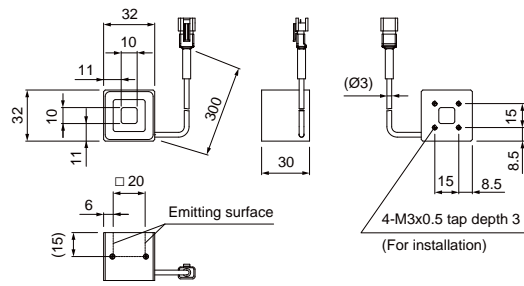
- LDR2
- LDR2-LA
- LDR-LA1
- SQR
- SQR-TP
- HPR2
- LFR
- LKR
- FPR
- FPQ2
- LDL2
- LDLB
- HLDL2
- HL
- TH2 (5 types)
- TH
- LFL
- HPD2
- LDM2
- LAV
- PDM
- LFX3
- LFX3-PT
- LFV3
- MSU
- MFU
- PF
- HLDR-IP/
- HSL-PCL
- UV2
- UV
- LNSP-UV-FN
- IR2
- IU
- HLV3
- HLV2
- LV
- LSP
- HFS/HFR
- HLV3-NR
- HLV3-3M-RGB-4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

Dimensions (mm)

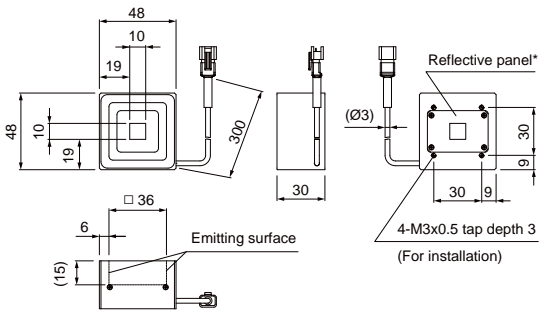
FPQ2-20RD/SW/BL



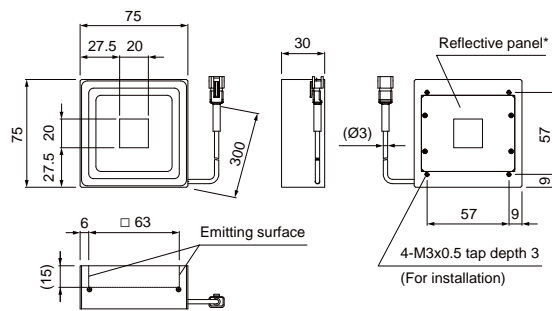
FPQ2-32RD/SW/BL



FPQ2-48RD/SW/BL



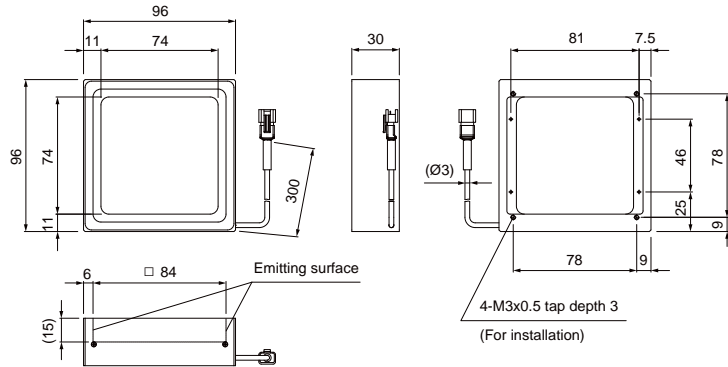
FPQ2-75RD/SW/BL



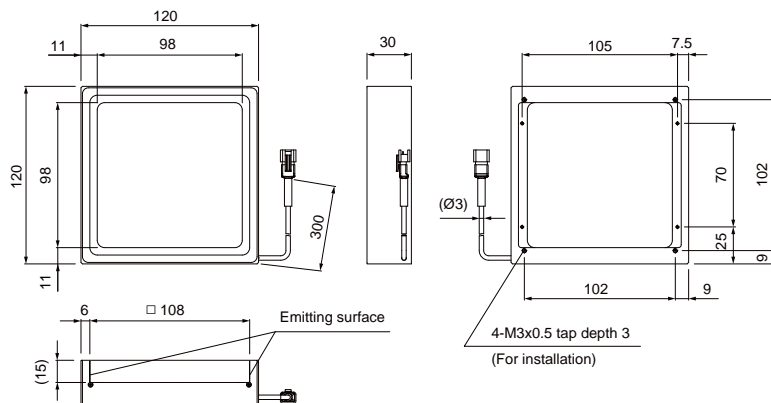
* The reflective panel can be removed.

* The reflective panel can be removed.

FPQ2-96RD/SW/BL



FPQ2-120RD/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 |
| | SQR |
| | SQR-TP |
| Diffused Lighting | HPR2 |
| | LFR |
| | LKR |
| | FPR |
| | FPQ2 |
| | LDL2 |
| | LDLB |
| | HLDL2 |
| | HL |
| | TH2 (5 types) |
| | TH |
| | LFL |
| | HPD2 |
| | LDM2 |
| | LAV |
| | PDM |
| | LFX3 |
| | LFX3-PT |
| | LVF3 |
| Coaxial Lighting | MSU |
| | MFU |
| Strobe Lighting | PF |
| Water-proof | HLDR-IP/ |
| | HSL-PCL |
| Ultraviolet Lighting | UV2 |
| | UV |
| | LNSP-UV-FN |
| Infrared | 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 |
| | LNIS2 |
| | LNIS |
| | LNIS-FN |
| Lenses | Telecentric Lens |
| | Macro Lens |