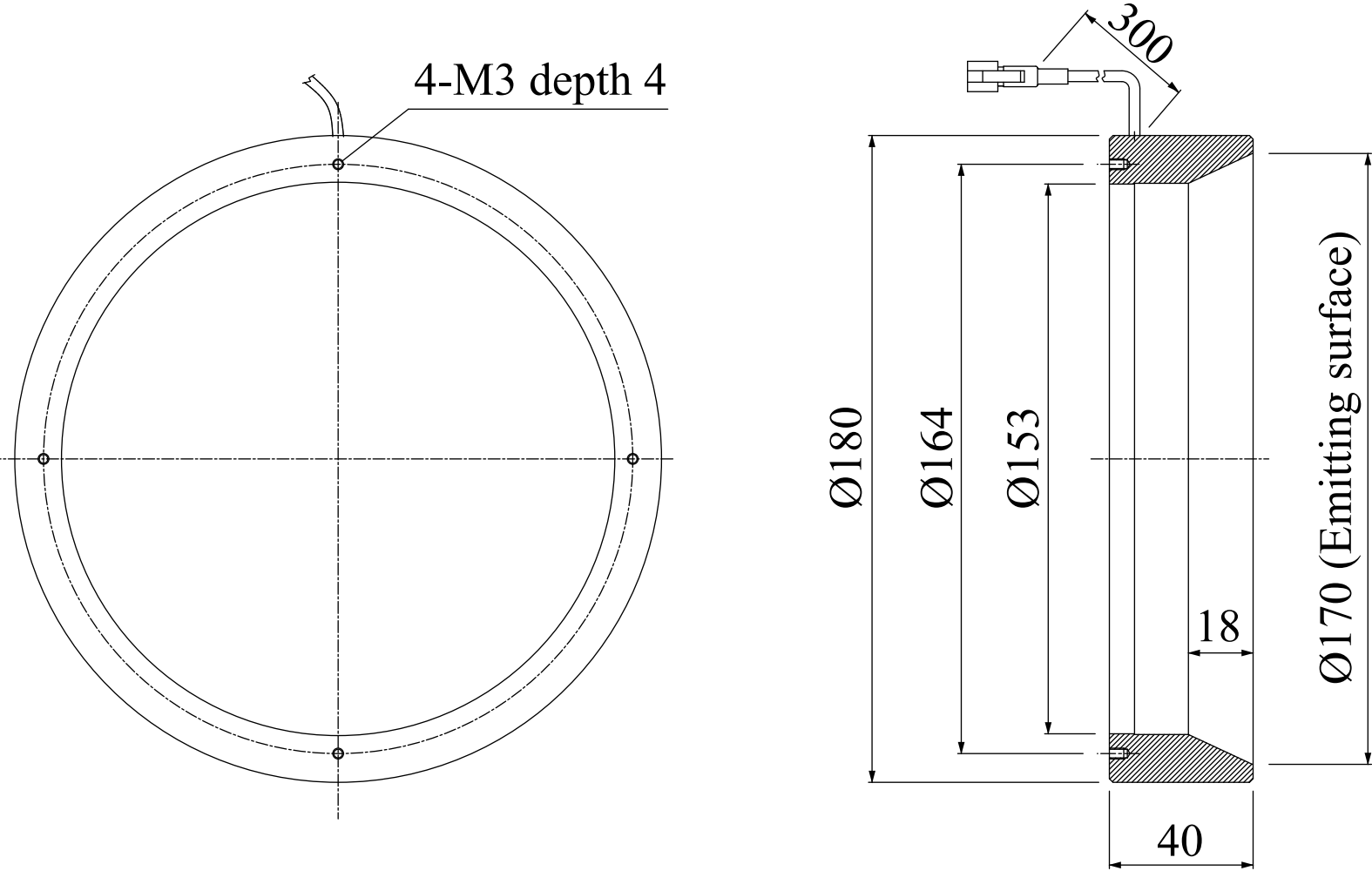


FPR-180/-SW/-GR/-BL

Model	FPR-180	FPR-180-SW/-GR/-BL
Voltage	12V DC	24V DC
Power consumption	13W	17W
Mass	380g	380g
Connector type	2P (1: +, 2: -)	3P (1: +, 2: NC, 3: -)

Third Angle Projection Units: mm



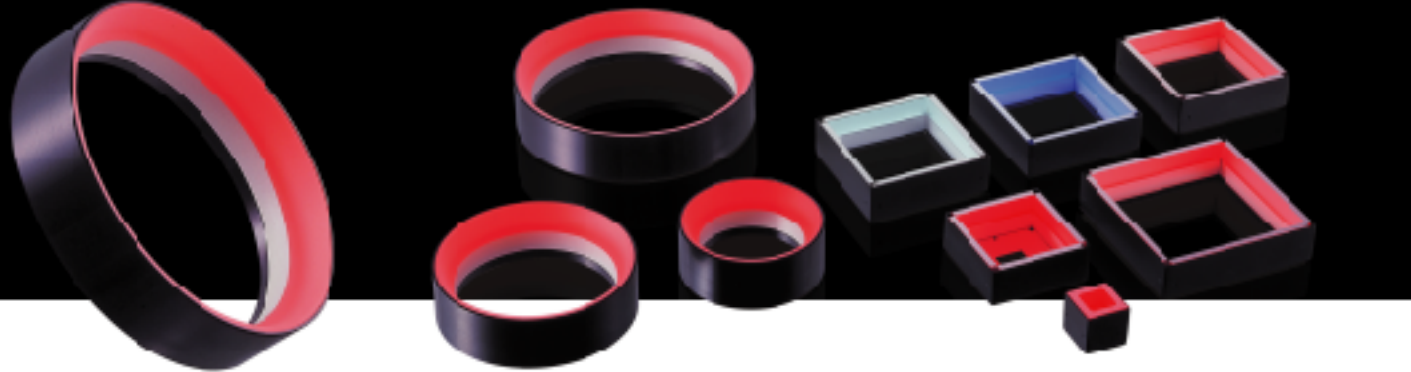


Low-angle Ring Lights / Low-angle Square Lights

FPR Series / FPQ Series

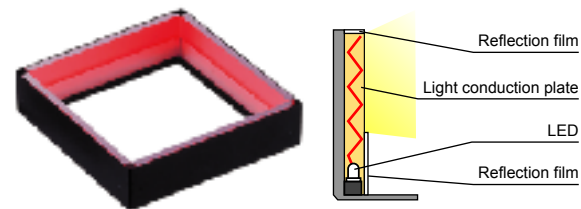
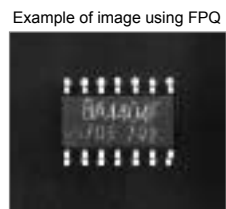
Even, diffused side lighting

Low-angle, diffuse illumination enables characters and defects to be uniformly illuminated with no LED glare.



The FPQ Series provides even four-sided lighting for rectangular target inspection

When you need to illuminate a rectangular object such as a BGA or Quad Flat Pack uniformly, the corners of the object will be too close to the lighting if a round array is used. For this type of application, the rectangular FPQ Series is ideal.



Selectable lighting colors for optimal images

White, blue, and green colors are supported along with red. By selecting the illumination color to match the material and color of the work, a higher level of detection precision is possible.

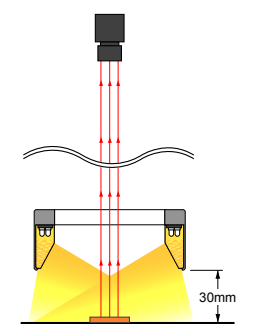


Even diffuse light enables optimal imaging.

The image will vary depending on the distance between the workpiece and the light (light-workpiece distance = LWD) even when the light is the same. It is key to successful image processing to find the best illumination according to the surface state and the content of inspection.

Inspection of engraved letters on metal surface (Lighting: FPR-136)

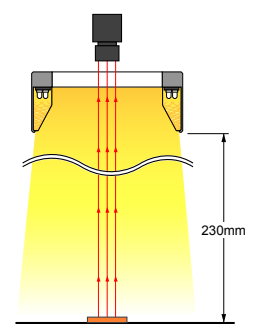
Imaging with LWD 30mm



Illumination from a low angle highlights the engraved letters white.



Imaging with LWD 230mm

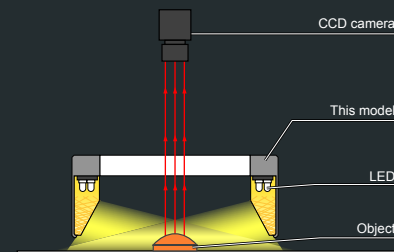


With diffuse light illuminated from LWD 230mm, the entire area is imaged in bright field.



Illumination structure of FPR-100

The object is illuminated from a low angle by uniform diffuse light through the light conduction plate.



Examples of low-angle images

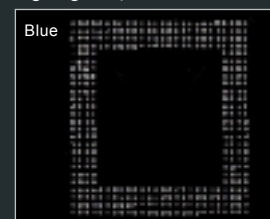
Inspecting a BGA solder balls

Blue light is used to eliminate the background gold pattern and to enhance the visibility of the solder balls.

Lighting: FPQ-96



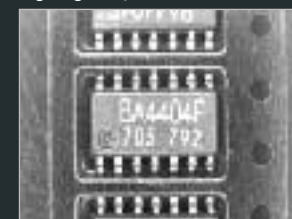
Lighting: FPQ-96-BL



Inspecting SOP leads in embossed tape

There is minimal glare from the sides of the embossed tape.

Lighting: FPQ-48

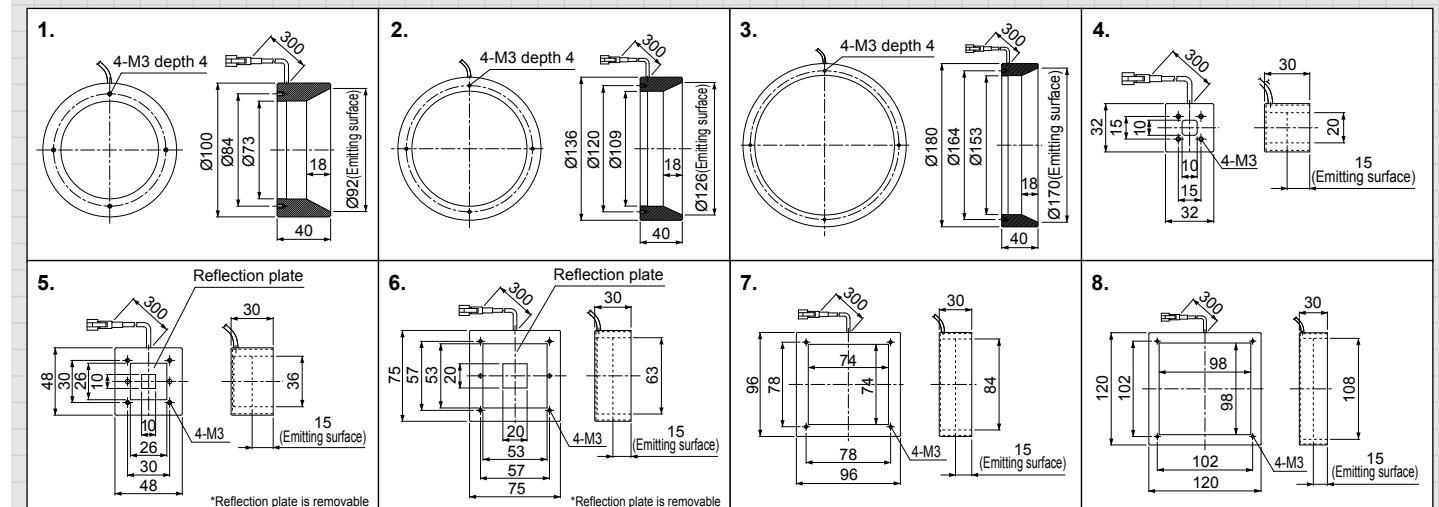


Product Lineup Table

Series	Model Name	Color	Power Consumption	Options	Dimension
FPR	FPR-100	●	12V/6.0W	—	1
	FPR-100-SW/-GR/-BL	○/●/●	24V/8.2W	—	
	FPR-136	●	12V/9.3W	—	2
	FPR-136-SW/-GR/-BL	○/●/●	24V/13W	—	
	FPR-180	●	12V/13W	—	
	FPR-180-SW/-GR/-BL	○/●/●	24V/17W	—	3

Series	Model Name	Color	Power Consumption	Options	Dimension
FPQ	FPQ-32	●	12V/1.2W	—	4
	FPQ-32-SW/-GR/-BL	○/●/●	24V/1.6W	—	
	FPQ-48	●	12V/2.4W	—	5
	FPQ-48-SW/-GR/-BL	○/●/●	24V/3.3W	—	
	FPQ-75	●	12V/3.6W	—	6
	FPQ-75-SW/-GR/-BL	○/●/●	24V/4.9W	—	
	FPQ-96	●	12V/4.8W	—	7
	FPQ-96-SW/-GR/-BL	○/●/●	24V/6.5W	—	
	FPQ-120	●	12V/6.0W	—	8
	FPQ-120-SW/-GR/-BL	○/●/●	24V/8.2W	—	

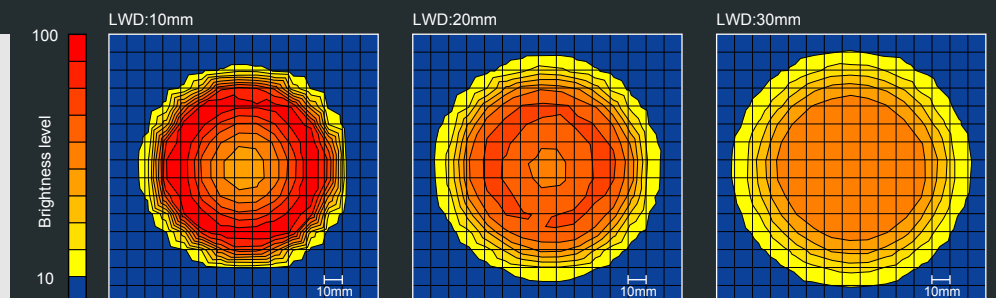
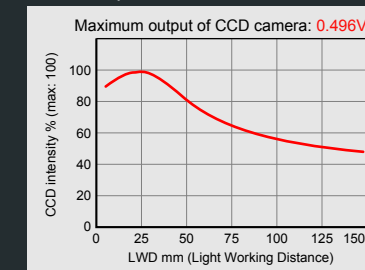
Dimensions (Unit: mm)



CCD Sensitivity Chart and Brightness Distribution FPR-100

A broad even distribution appears from approximately LWD 15 mm. If a high light intensity is not particularly required, evenness is maintained to approximately LWD 30 mm.

CCD intensity vs LWD



CCD Sensitivity Chart and Brightness Distribution FPQ-96

Diffused light from four sides provides a uniform area. Ideal for rectangular objects.

CCD intensity vs LWD

