



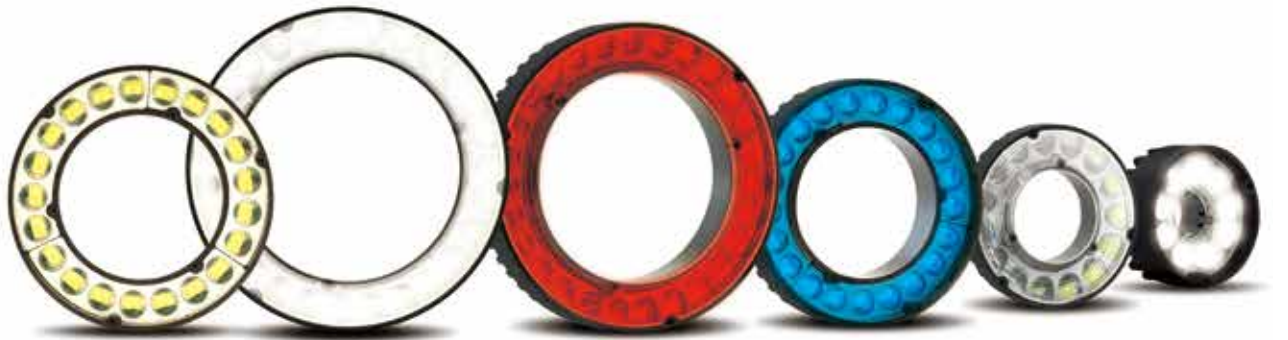
Sensing LED Ring Lighting

# OPR Series

## Lighting that manages brightness on its own

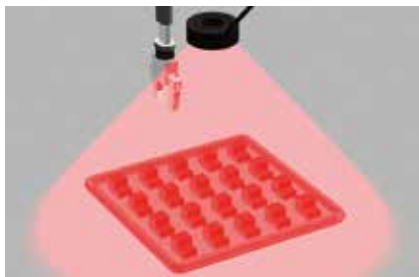
- “FALUX sensing” enables monitoring of brightness and feedback control
- Using the attachment lens allows switching between 3 illumination angles

OPR	Ring
OPR-SF	
OPB-S	Bar
OPF	Backlight
OPX	Coaxial
OPS-S	Spot
OPPD-15	Controllers
OPPD-30	
OPPF	
CB/RCB	Options



### Applications

Picking up from pallets



Alignment of electronic components on suction nozzle tips



Visual inspection of medical endoscope tubes



### Specifications

Model *1	FALUX SENSING *2	FALUX	Attachment Lens *3	Weight [g]	White	Red	Blue	Outline Drawing
					Power Consumption [W]	Power Consumption [W]	Power Consumption [W]	
OPR-S55-28□	Applicable	Applicable	Applicable	60	5.1	4.2	3.6	①
OPR-S70-43□	Applicable	Applicable	Applicable	75	7.2	6.2	4.9	②
OPR-S85-58□	Applicable	Applicable	Applicable	90	9.2	7.2	6.2	③

\*1 □: W (white), R (red), B (blue) \*2 For "FALUX sensing," connect only to an OPF Series LED lighting controller.

\*3 A condensing attachment is installed at purchase. The tightening torque for screws during replacement should be 5 cN·m or less.



Features

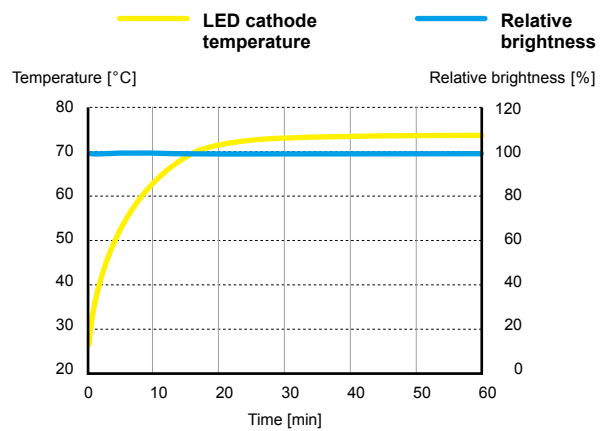
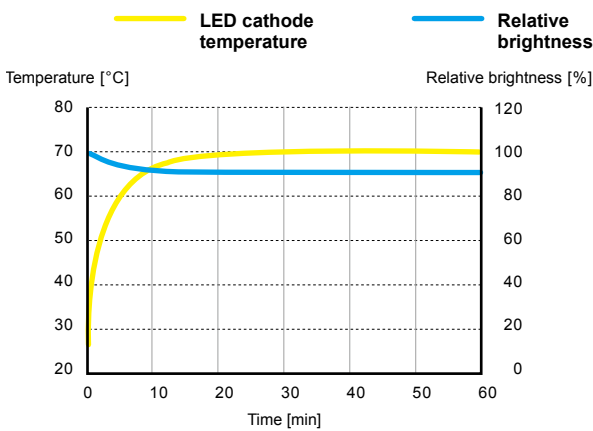
**FALUX** Built-in “FALUX” circuit to correct variations in brightness

\*Included in all models.

Using the constant current circuit dependent on the input voltage, variations in the forward current of individual LEDs are corrected for uniform brightness. Meanwhile, the temperature compensation circuit compensates for fluctuations in brightness due to increases in temperature after lighting or changes in the ambient temperature.

**FALUX not included** In order to reduce LED forward voltage variations, the LEDs needed to be sorted according to their Vf measurement. Moreover, illumination efficiency dropped as the temperature increased, reducing the brightness.

**FALUX included** The brightness of each LED is fixed, virtually eliminating variations in brightness following increases in temperature. Whether with continuous illumination or ON/OFF control, brightness remains fixed.



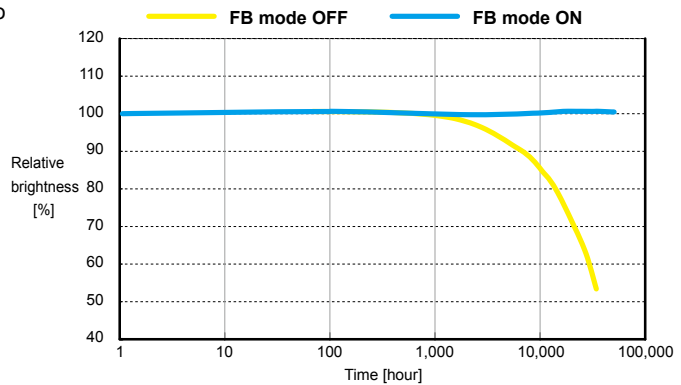
**FALUX SENSING** Equipped with “FALUX sensing” for monitoring brightness and temperature through sensing

LED brightness sensing is performed using multiple built-in photodiodes. This allows for accurate measurement of LED brightness not only during continuous illumination but also with short period illumination. Absolute brightness is stored in the lighting’s internal memory to allow for instrumental error adjustment.

“FALUX sensing” also makes it possible to measure both the LED brightness of lighting and the internal temperature, and then to monitor those measurements on the controller side. Based on the monitored values, feedback control can also be performed from the OPPF Series controller, making it possible to maintain the factory default brightness for around 40,000 hours.

Comparison of relative brightness with and without feedback control (estimated values)

Measurement lighting: OPR-S55-28W Light intensity: 100% Extension cable: 5 m Ta = 30°C



Ring	OPR
	OPR-SF
Bar	OPB-S
Backlight	OPF
Coaxial	OPX
Spot	OPS-S
Controllers	OPPD-15
	OPPD-30
	OPPF
Options	CB/RCB

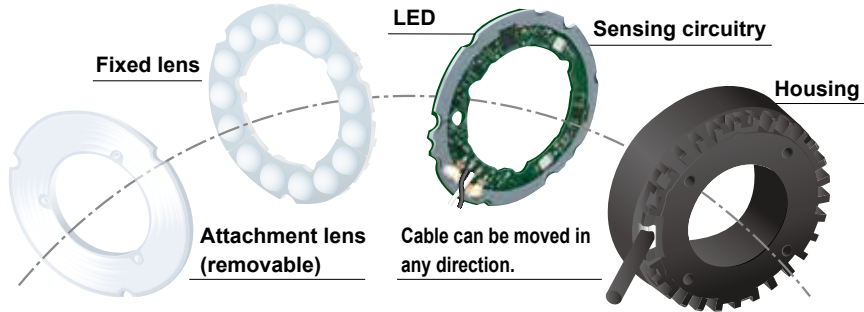
Sensing Ring Lighting — OPR Series



■ 3-way illumination with attachment lenses — wide, condensed, and low-angle

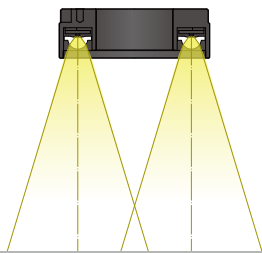
The aluminum die-cast case is equipped with an LED board with a built-in sensor.

The first fixed lens optimizes the directivity angle of the LED, and the attachment lens can be used to switch the illumination angle. At the same time, the fixed lens guides the light toward the photodiodes, which makes highly accurate sensing possible.



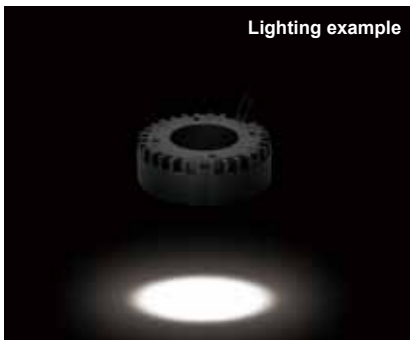
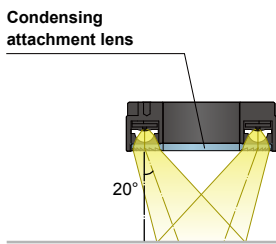
**Wide**

The condensing attachment lens can be removed for direct illumination with a wider field of view obtainable as the distance is increased.



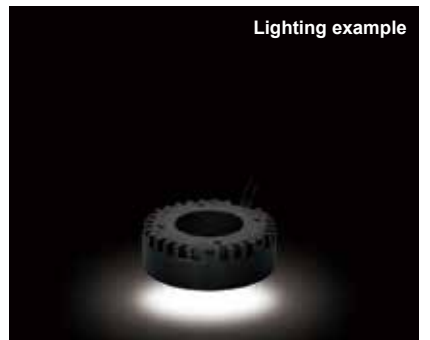
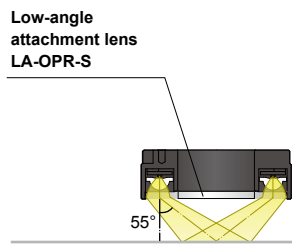
**Condensed (at purchase)**

Using the condensing attachment lens to tilt the illumination angle 20° to the inside allows for short-range, high-illuminance focusing.

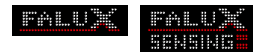


**Low-angle (options)**

The low-angle attachment lens can be used to tilt the illumination angle 55° to the inside for compatibility with dark-field illumination to facilitate detection of scratches, dirt, and other factors.

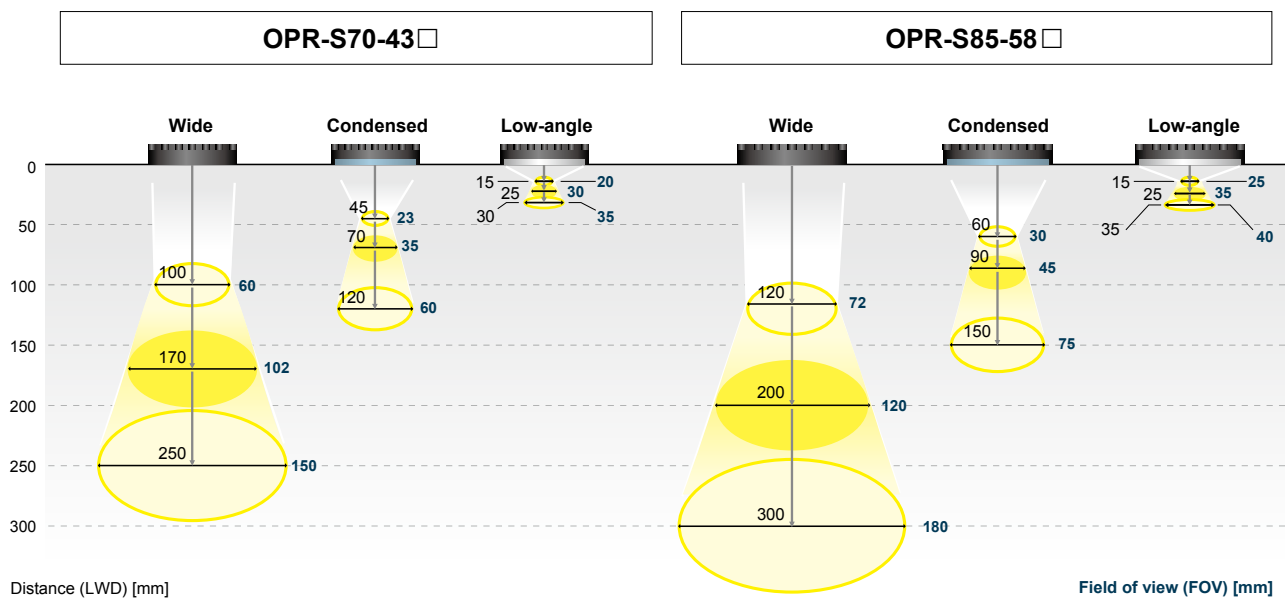
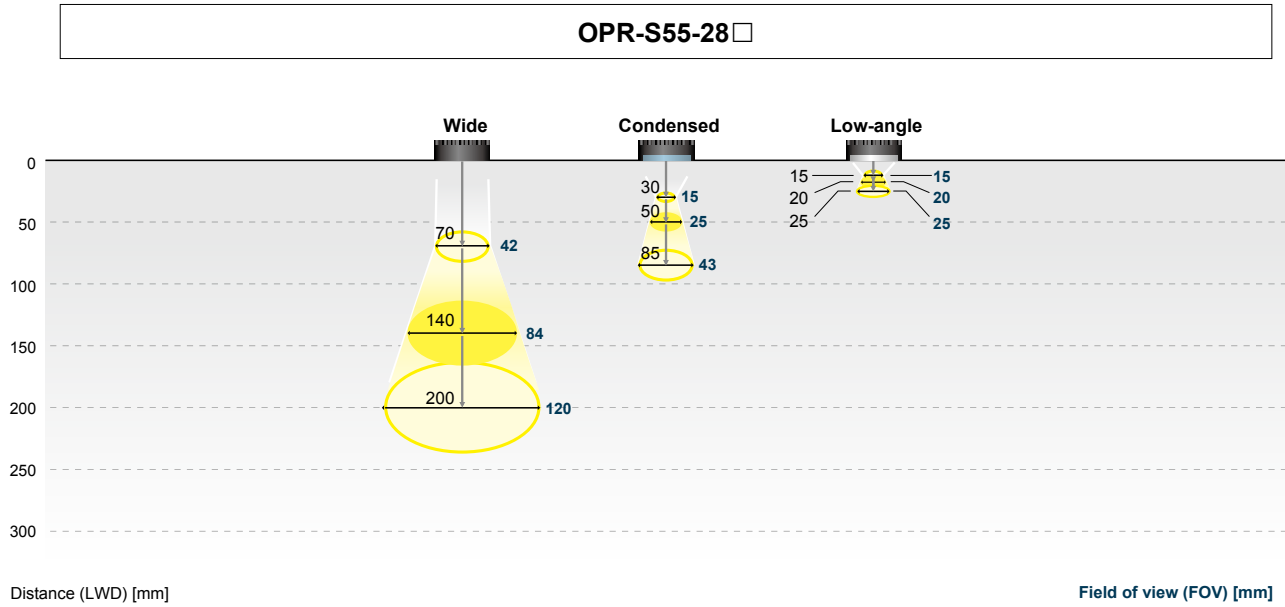


OPR	Ring
OPR-SF	Ring
OPB-S	Bar
OPF	Backlight
OPX	Coaxial
OPS-S	Spot
OPPD-15	Controllers
OPPD-30	
OPPF	
CB/RCB	Options



## Lighting Work-Distance (LWD) and Field of View (FOV)

The optimum light working distance and field of view can be selected in the condensed and low-angle modes with the attachment lens attached or in the wide mode with the lens removed.



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	OPR-SF
Bar	OPB-S
Backlight	OPF
Coaxial	OPX
Spot	OPS-S
Controllers	OPPD-15
	OPPD-30
	OPPF
Options	CB/RCB



## Specifications

Illumination color	White	Red	Blue
Color temperature / Peak wavelength	6,000 K	635 nm	470 nm
Input voltage	12 VDC		
Degradation of LED	The brightness will drop by 10% (typical value) for accumulated time of 7,000 hours. Conditions: Light intensity setting = 100%, ambient environment = 30°C		
Classification (IEC62471: 2006)	Risk Group 1 (Low-Risk)		
Regulations/standards	Conforms to EMC (2014/30/EU), RoHS (2011/65/EU, MIIT Order No.32) / EN 61326-1:2013		
Protection rating	IP40 (IEC 60529: 1989 / A1: 1999 + A2: 2013)		
Ambient temperature/humidity	0 to 40°C / 35 to 85% RH (no condensation)		
Storage temperature/humidity	-20 to 70°C / 35 to 95% RH (no condensation)		
Vibration resistance	10 to 55 Hz; amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions		
Shock resistance	10 G, 3 times in each of the X, Y, and Z directions		
Material	Housing: ADC12 and PC, Lens: PC (UV-resistant) and PMMA		
Options	Low-angle attachment, diffusion plate (60% or 80%), transparent cover, polarizing plate, dual-side scratch-resistant cover		

● See p. 69 for spectrum distribution diagrams.

## Options/Accessories

### Low-angle attachment

Model	Weight [g]
LA-OPR-S55-28	10
LA-OPR-S70-43	15
LA-OPR-S85-58	20



### Diffusion plate (transmittance: 80%) t2 mm

Model	Weight [g]
DF80-OPR-S55-28	10
DF80-OPR-S70-43	15
DF80-OPR-S85-58	20



### Transparent cover t1.8 mm

Model	Weight [g]
TC-OPR-S55-28	10
TC-OPR-S70-43	15
TC-OPR-S85-58	20



### Diffusion plate (transmittance: 60%) t2 mm

Model	Weight [g]
DF-OPR-S55-28	10
DF-OPR-S70-43	15
DF-OPR-S85-58	20



### Polarizing plate (with transparent cover) t2 mm (0.2 + 1.8)

Model	Weight [g]
PL-OPR-S55-26	10
PL-OPR-S70-40	15
PL-OPR-S85-54	20



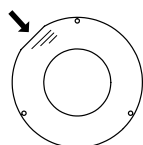
### Dual-side scratch-resistant cover t2 mm

Model	Weight [g]
TCSR-OPR-S55-28	20
TCSR-OPR-S70-43	25
TCSR-OPR-S85-58	30



### Polarizing Plate

- The polarizing plate has flat edges on the outside.
- The direction of polarization is parallel to these edges.



Use this cover as a protective cover for the LED lighting and the camera lens.

The cover is also effective against dust when installed on upward-facing lighting and cameras.

To prevent abrasions when cleaning, both sides feature scratch-resistant surfaces.

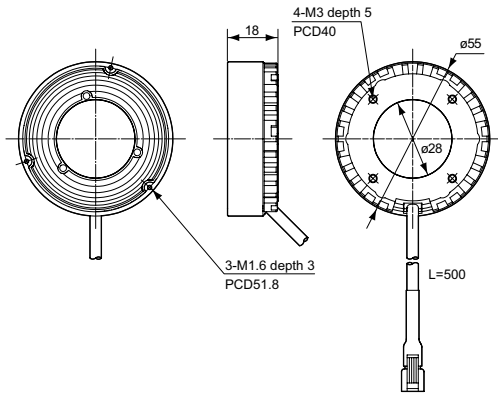
(Pencil hardness: 6H)



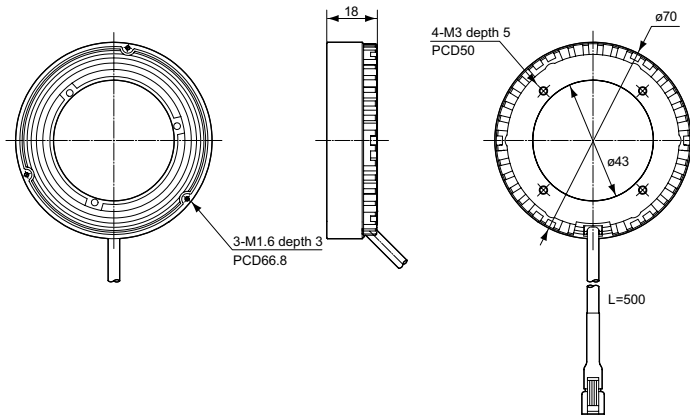
Dimensions

(unit: mm)

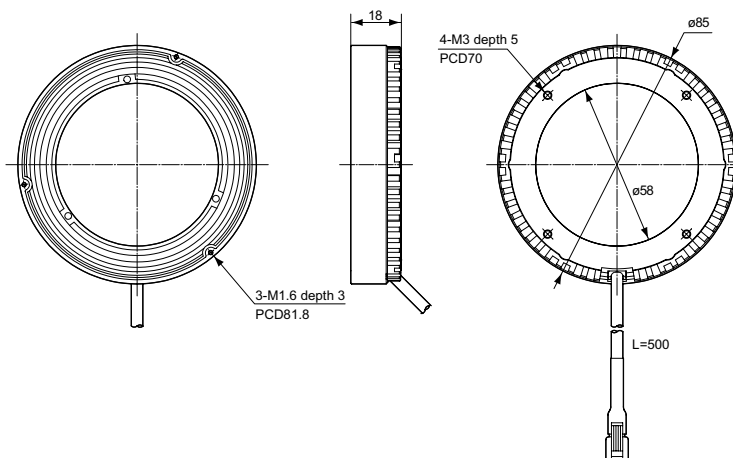
1 OPR-S55-28



2 OPR-S70-43



3 OPR-S85-58



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