

Photoelectric Sensors

## E3FA-DN12 2M

Photoelectric Sensor, Diffuse-reflective, Sensing distance: 300 mm, NPN output, Pre-wired, 2 m



Image

<b>Sensing method</b>	Diffuse-reflective
<b>Sensing distance</b>	White paper 300 x 300 mm: 300 mm
<b>Light source</b>	Red LED (624 nm)
<b>Connection method</b>	Pre-wired models

### Ratings/Performance

As of November 10, 2025

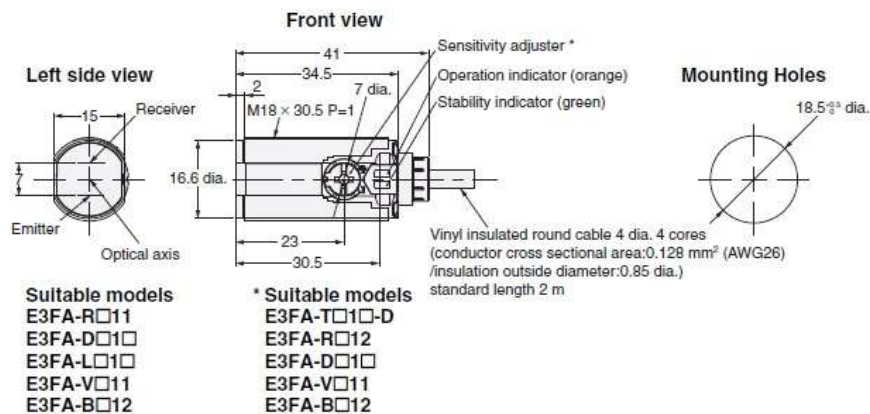
<b>Shape</b>	Cylinder type
<b>Sensing method</b>	Diffuse-reflective
<b>Sensing distance</b>	White paper 300 x 300 mm: 300 mm
<b>Spot size</b>	40 x 50 mm (sensing distance: 300 mm)
<b>Differential distance</b>	20% max.
<b>Light source</b>	Red LED (624 nm)
<b>Power supply voltage</b>	10 to 30 VDC±10% ripple (p-p) 10% included
<b>Current consumption</b>	25 mA max.
<b>Control output</b>	NPN open collector 30 VDC max. 100 mA max. Residual voltage: 3 V max.
<b>Operation mode</b>	Light-ON/Dark-ON selectable
<b>Protective circuit</b>	Output short-circuit protection, Output reverse polarity protection, Power supply reverse polarity protection
<b>Response time</b>	Operate or reset: 0.5 ms max.
<b>Sensitivity setting</b>	Single-turn adjustment
<b>Ambient illuminance</b>	Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.
<b>Ambient temperature range (Operating)</b>	-25 to 55 °C (with no freezing or condensation)
<b>Ambient temperature range (Storage)</b>	-40 to 70 °C (with no freezing or condensation)

<b>Ambient humidity range (Operating)</b>	35 to 85 % (with no condensation)
<b>Ambient humidity range (Storage)</b>	35 to 95 % (with no condensation)
<b>Insulation resistance</b>	20 MΩ min. (500 VDC megger)
<b>Dielectric strength</b>	1000 VAC 50/60 Hz 1 min
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz, 1.5 mm double amplitude each in X, Y, and Z directions for 2 h
<b>Shock resistance</b>	Destruction: 500 m/s <sup>2</sup> 3 times each in X, Y and Z directions
<b>Degree of protection</b>	IEC: IP67 DIN40050-9: IP69K
<b>Connection method</b>	Pre-wired models (Cable length 2 m)
<b>Indicator</b>	Operation indicator (orange), Stability indicator (green)
<b>Weight</b>	Package: Approx. 60 g Main Unit: Approx. 50 g
<b>Accessories</b>	Instruction sheet, M18 nuts
<b>Material</b>	Case: ABS Lens: Methacrylate resin (PMMA) Display: Methacrylate resin (PMMA) Adjustment: POM Nut: POM

As of November 10, 2025

Dimensions

As of November 10, 2025



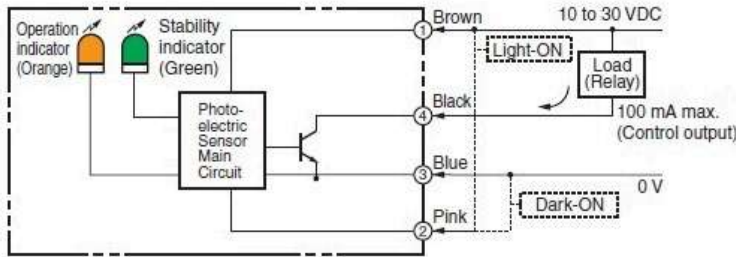
As of November 10, 2025

Output circuit diagram

As of November 10, 2025

### Output circuit

Through-beam Receivers, Retro-reflective Models, Diffuse-reflective Models, Limited reflective Models.  
Transparent detected with P-opaquiring function.



As of November 10, 2025

### Timing chart

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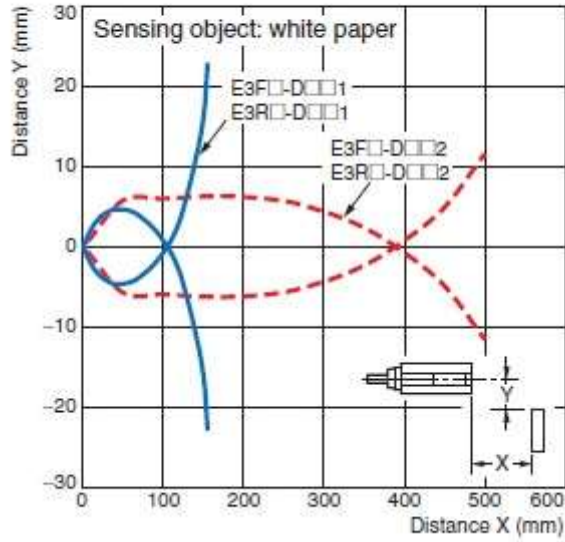
Operation mode	Timing charts	
Light-ON	Light incident	
	Light interrupted	
	Operation indicator (orange)	ON: OFF:
	Output transistor	ON: OFF:
	Load (e.g., relay)	Operate: Reset:
	(Between brown and black leads)	
Dark-ON	Light incident	
	Light interrupted	
	Operation indicator (orange)	ON: OFF:
	Output transistor	ON: OFF:
	Load (e.g., relay)	Operate: Reset:
	(Between brown and black leads)	

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Operating range

As of November 10, 2025

**Diffuse-reflective Models**  
**E3F□-D□1, E3F□-D□2**  
**E3R□-D□1, E3R□-D□2**



As of November 10, 2025

Setting distance

As of November 10, 2025

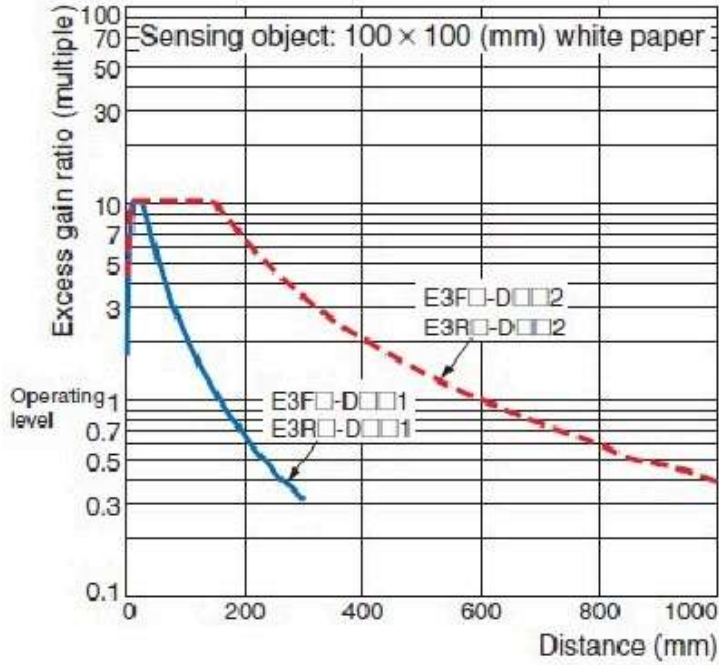
Excess gain ratio vs. setting distance

## Excess Gain vs. Distance

### Diffuse-reflective Models

E3F□-D□1, E3F□-D□2

E3R□-D□1, E3R□-D□2

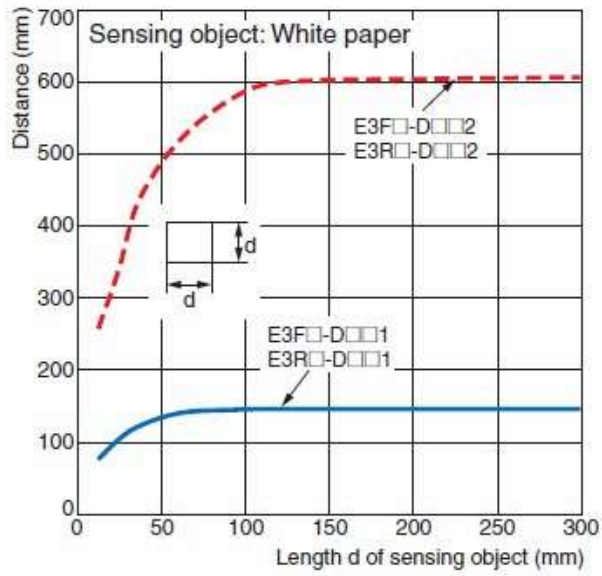


Sensing object size vs. setting distance

### Sensing Object Size vs. Distance

#### Diffuse-reflective Models

E3F□-D□1, E3F□-D□2  
E3R□-D□1, E3R□-D□2



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