



NO: PH-176
DATE: April 2013

PRODUCT: E3F3 Photoelectric Sensors
TYPE: Discontinuation Notice

E3F3 Threaded Cylindrical Photoelectric Sensors with Built-in Amplifier to be Discontinued March 2014; Use E3FA or E3FB



E3F3



E3FA

E3FB

Product discontinuation
 E3F3-□□□
 E3F3-□□□M
 E3F3-7□□□ 0.3m



Recommended replacement
 E3FA series plastic body
 E3FB series metal body
 No recommended replacement

Precautions on Applying Replacements

1. Reflector for E3FA/E3FB retro-reflective models is sold separately.
2. Emitter/Receiver of E3FA/E3FB-T□□□ cannot be sold separately.
3. Emitter LED of Through-beam and Diffuse reflective types become red; E3F3 has infrared LED.
4. Switching of L·ON and D·ON depends on connection of the pink jumper wire.

See the following pages for changes in Wiring, Dimensions and Specifications.

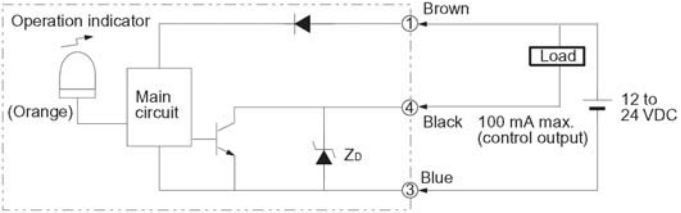
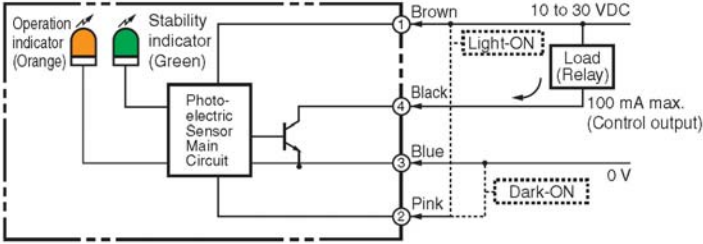
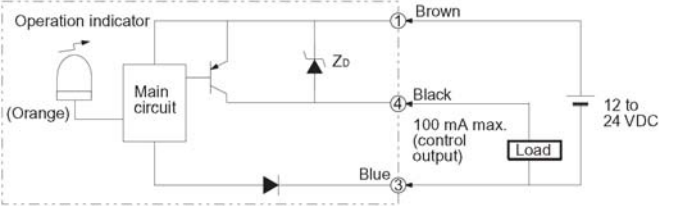
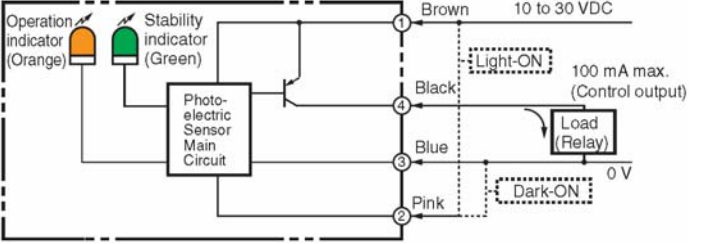
Affected Parts

Product discontinuation	Recommended replacement
E3F3-D11 2M	E3FA-DN11 2M
E3F3-D13 2M	E3FA-DN11 2M
E3F3-D61 2M	E3FA-DN11 2M
E3F3-D12 2M	E3FA-DN12 2M
E3F3-D62 2M	E3FA-DN12 2M
E3F3-D16	E3FA-DN21
E3F3-D66	E3FA-DN21
E3F3-D17	E3FA-DN22
E3F3-D67	E3FA-DN22
E3F3-D31 2M	E3FA-DP11 2M
E3F3-D81 2M	E3FA-DP11 2M
E3F3-D32 2M	E3FA-DP12 2M
E3F3-D82 2M	E3FA-DP12 2M

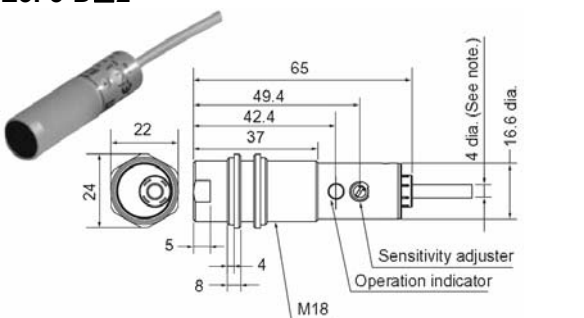
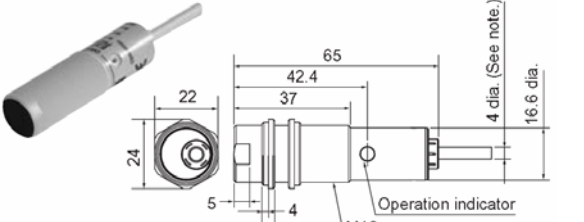
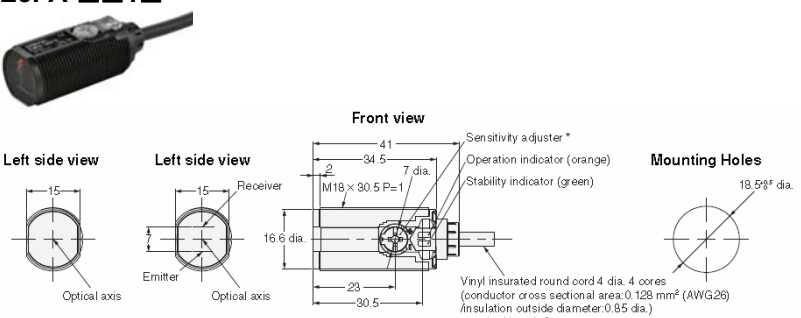
Product discontinuation	Recommended replacement
E3F3-D36	E3FA-DP21
E3F3-D86	E3FA-DP21
E3F3-D37	E3FA-DP22
E3F3-D87	E3FA-DP22
E3F3-R11 2M	E3FA-RN11 2M
E3F3-R12 2M	E3FA-RN11 2M
E3F3-R61 2M	E3FA-RN11 2M
E3F3-R61-C 2M	E3FA-RN11 2M
E3F3-R61-E 2M	E3FA-RN11 2M
E3F3-R62 2M	E3FA-RN11 2M
E3F3-R16	E3FA-RN21
E3F3-R17	E3FA-RN21
E3F3-R66	E3FA-RN21
E3F3-R67	E3FA-RN21
E3F3-R31 2M	E3FA-RP11 2M
E3F3-R32 2M	E3FA-RP11 2M
E3F3-R81 2M	E3FA-RP11 2M
E3F3-R82 2M	E3FA-RP11 2M
E3F3-R36	E3FA-RP21
E3F3-R37	E3FA-RP21
E3F3-R86	E3FA-RP21
E3F3-R87	E3FA-RP21
E3F3-T11 0.2M	E3FA-TN11 2M
E3F3-T11 2M	E3FA-TN11 2M
E3F3-T11-D 2M	E3FA-TN11 2M
E3F3-T11-L 2M	E3FA-TN11 2M
E3F3-T61 2M	E3FA-TN11 2M
E3F3-T61 5M	E3FA-TN11 2M
E3F3-T16	E3FA-TN21
E3F3-T66	E3FA-TN21
E3F3-T31 2M	E3FA-TP11 2M
E3F3-T81 2M	E3FA-TP11 2M
E3F3-T36	E3FA-TP21
E3F3-T86	E3FA-TP21
E3F3-D11M 2M	E3FB-DN11 2M
E3F3-D13M 2M	E3FB-DN11 2M
E3F3-D13M 2M	E3FB-DN11 2M
E3F3-D61M 2M	E3FB-DN11 2M
E3F3-D12M 2M	E3FB-DN12 2M
E3F3-D62M 2M	E3FB-DN12 2M
E3F3-D16M	E3FB-DN21
E3F3-D66M	E3FB-DN21
E3F3-D17M	E3FB-DN22
E3F3-D67M	E3FB-DN22
E3F3-D31M 2M	E3FB-DP11 2M
E3F3-D81M 2M	E3FB-DP11 2M
E3F3-D32M 2M	E3FB-DP12 2M
E3F3-D82M 2M	E3FB-DP12 2M
E3F3-D36M	E3FB-DP21
E3F3-D86M	E3FB-DP21
E3F3-D37M	E3FB-DP22
E3F3-D87M	E3FB-DP22
E3F3-R11M 2M	E3FB-RN11 2M
E3F3-R12M 2M	E3FB-RN11 2M
E3F3-R61M 2M	E3FB-RN11 2M
E3F3-R62M 2M	E3FB-RN11 2M

Product discontinuation	Recommended replacement
E3F3-R16M	E3FB-RN21
E3F3-R17M	E3FB-RN21
E3F3-R66M	E3FB-RN21
E3F3-R67M	E3FB-RN21
E3F3-R31M 2M	E3FB-RP11 2M
E3F3-R32M 2M	E3FB-RP11 2M
E3F3-R81M 2M	E3FB-RP11 2M
E3F3-R82M 2M	E3FB-RP11 2M
E3F3-R82M-1 5M	E3FB-RP11 2M
E3F3-R36M	E3FB-RP21
E3F3-R37M	E3FB-RP21
E3F3-R86M	E3FB-RP21
E3F3-R87M	E3FB-RP21
E3F3-T11M 2M	E3FB-TN11 2M
E3F3-T61M 2M	E3FB-TN11 2M
E3F3-T61M-D 2M	E3FB-TN11 2M
E3F3-T61M-L 2M	E3FB-TN11 2M
E3F3-T16M	E3FB-TN21
E3F3-T66M	E3FB-TN21
E3F3-T31M 2M	E3FB-TP11 2M
E3F3-T81M 2M	E3FB-TP11 2M
E3F3-T36M	E3FB-TP21
E3F3-T86M	E3FB-TP21
E3F3-7DC1-1 0.3M	No recommended replacement
E3F3-7L-1 0.3M	No recommended replacement

Wiring Diagrams

Product discontinuation Model E3F3 series	Recommended replacement Model E3FA/E3FB series
<p>E3F3-T1□□ / E3F3-D1□□ / E3F3-R1□□ E3F3-T6□□ / E3F3-D6□□ / E3F3-R6□□</p> 	<p>E3F□-T□□1 / E3F□-D□□□ / E3F□-R□□□ Light-ON: Connect the pink wire (Pin 2) to the brown (Pin 1) or open the pink wire (Pin 2) Dark-ON: Connect the pink wire (Pin 2) to the blue (Pin 3)</p> 
<p>E3F3-T3□□ / E3F3-D3□□ / E3F3-R3□□ E3F3-T8□□ / E3F3-D8□□ / E3F3-R8□□</p> 	<p>E3F□-T□□1 / E3F□-D□□□ / E3F□-R□□□ Light-ON: Connect the pink wire (Pin 2) to the brown (Pin 1) Dark-ON: Connect the pink wire (Pin 2) to the blue (Pin 3) or open the pink wire (Pin 2)</p> 

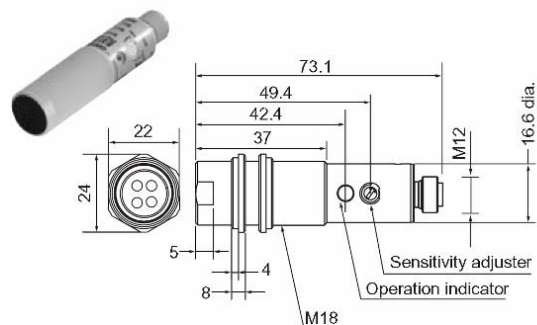
Dimensions

Product discontinuation Model E3F3 series	Recommended replacement Model E3FA/E3FB series
<p>Sensor E3F3-D□□</p>  <p>E3F3-T□1 / E3F3-R□1T□2 / E3F3-D□1</p> 	<p>Sensor E3FA-□□1□</p>  <p>Suitable models E3FA-T□11</p> <p>Suitable models E3FA-R□1 E3FA-D□□</p> <p>* Suitable models E3FA-T□1-D E3FA-D□1□</p>

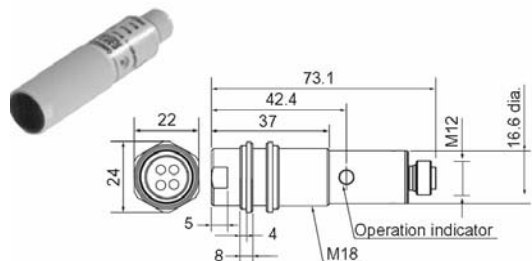
Product discontinuation

Model E3F3 series

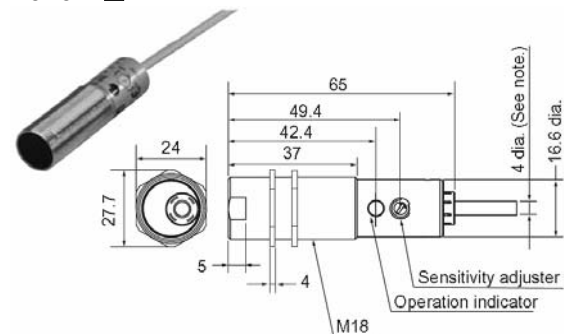
E3F3-D□7



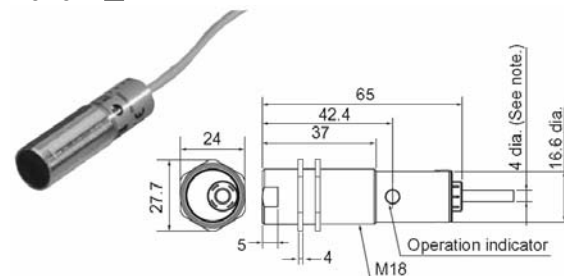
E3F3-T□6/ E3F3-R□6/ E3F3-R□7/ E3F3-D□6



E3F3-D□2M



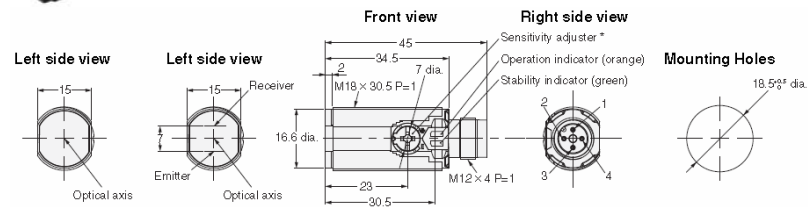
E3F3-T□1M / E3F3-T□2M / E3F3-R□1M / E3F3-D□1M



Recommended replacement

Model E3FA/E3FB series

E3FA-□□2□



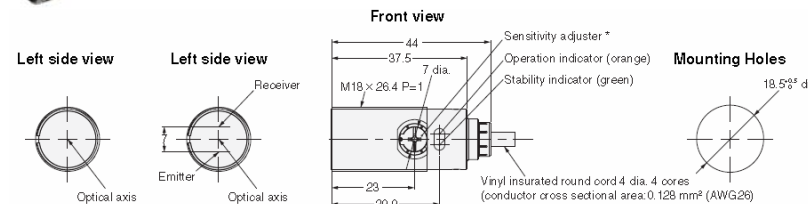
Suitable models
E3FA-T□21

Suitable models
E3FA-R□21
E3FA-D□2□

* Suitable models
E3FA-T□21-D
E3FA-D□2□

Terminal No.	Specification
1	+V
2	L/on · D/on selectable
3	0V
4	Output

E3FB-□□1□

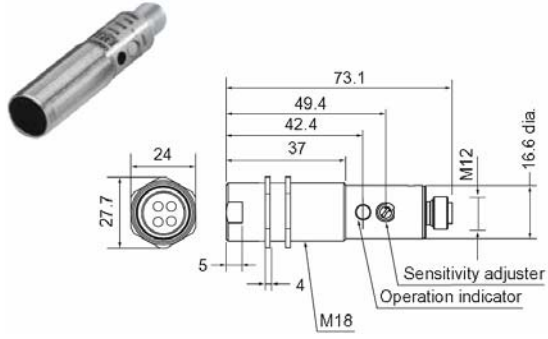
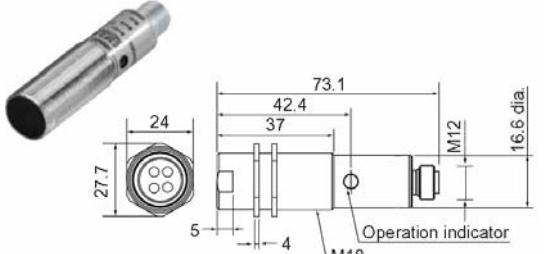
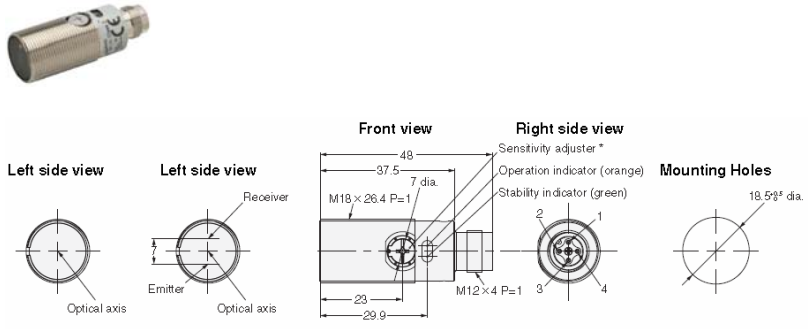
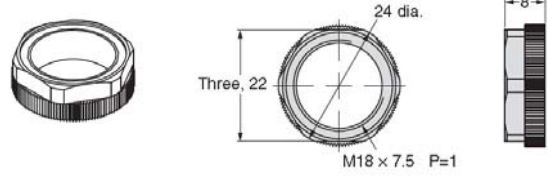
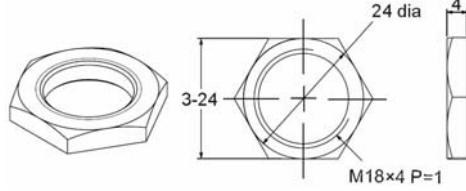


Suitable models
E3FB-T□11

Suitable models
E3FB-R□11
E3FB-D□1□

* Suitable models
E3FB-T□11-D
E3FB-D□1□

Vinyl insulated round cord 4 dia. 4 cores
(conductor cross sectional area: 0.128 mm² (AWG26)
/insulation outside diameter: 0.85 dia.)
standard length 2 m

Product discontinuation Model E3F3 series	Recommended replacement Model E3FA/E3FB series										
<p>E3F3-D□7M</p>  <p>E3F3-T□6M/ E3F3-R□6M/ E3F3-R□7M/ E3F3-D□6M</p> 	<p>E3FB-□□2□</p>  <p>Suitable models E3FB-T□21</p> <p>Suitable models E3FB-R□21 E3FB-D□2□</p> <p>* Suitable models E3FB-T□21-D E3FB-D□2□</p> <table border="1" data-bbox="1250 598 1510 693"> <thead> <tr> <th>Terminal No.</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+V</td> </tr> <tr> <td>2</td> <td>L/on · D/on selectable</td> </tr> <tr> <td>3</td> <td>0V</td> </tr> <tr> <td>4</td> <td>Output</td> </tr> </tbody> </table>	Terminal No.	Specification	1	+V	2	L/on · D/on selectable	3	0V	4	Output
Terminal No.	Specification										
1	+V										
2	L/on · D/on selectable										
3	0V										
4	Output										
<p>Nut E3F3-□□□</p> 	<p>Nut E3FA-□□□□</p> 										

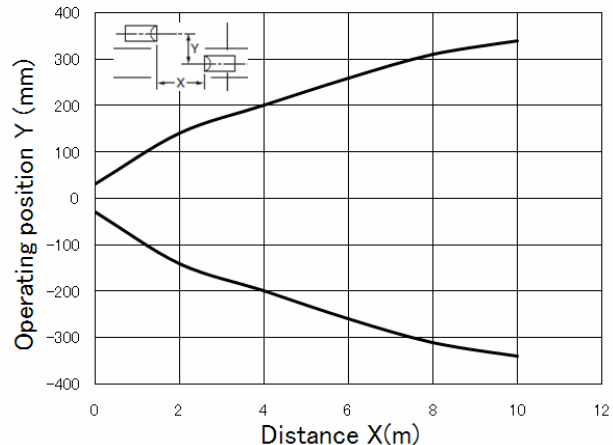
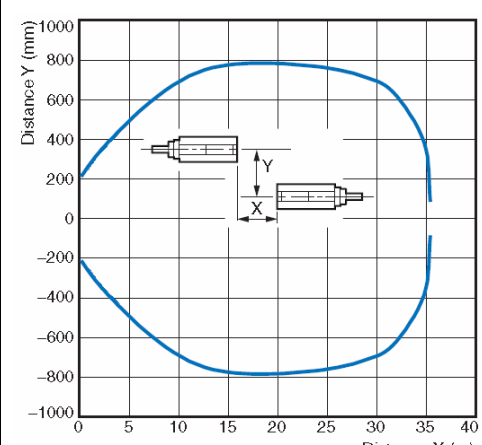
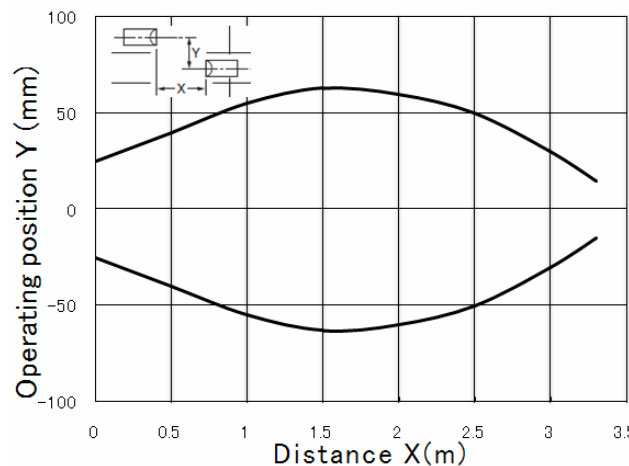
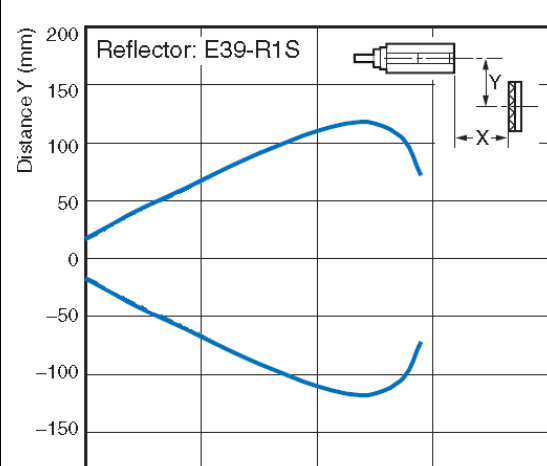
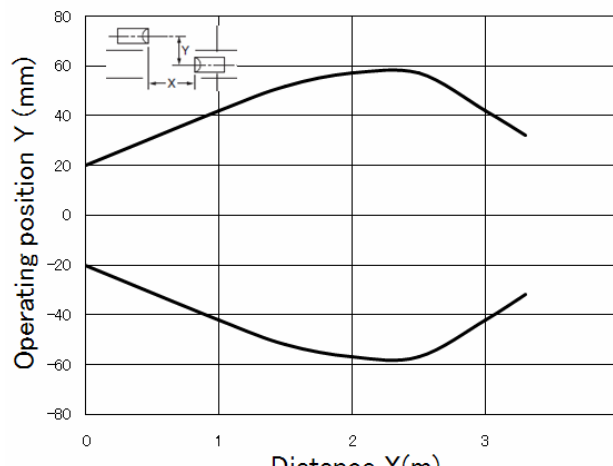
Specifications

Item	Product discontinuation Model E3F3 series	Recommended replacement Model E3FA/E3FB series
Sensing distance	E3F3-T□□□ 5 m	E3F□-T□□1 20 m
	E3F3-R□1/-R□6/-R□1M/-R□6M 3 m (Non-polarized when using E39-R1)	E3F□-R□□1 0.1 to 4 m (with E39-R1S)
	E3F3-R□2/-R□7/-R□2M/-R□7M 2m (Non-polarized when using E39-R1)	
	E3F3-D□1/-D□6/-D□1M/-D□6M E3F3-D13/D13M 100 mm (white paper:100 × 100 mm)	E3F□-D□□1 100 mm (white paper:300 × 300 mm)
	E3F3-D□2/-D□7/-D□2M/-D□7M 300 mm (white paper:100 × 100 mm)	E3F□-D□□2 300 mm (white paper:300 × 300 mm)
Standard sensing object	E3F3-T□□□ Opaque object:11 mm min.	E3F□-T□□1 Opaque: 7 mm dia. min.
	E3F3-R□□□ Opaque object: 56 mm min.	E3F□-R□□1 Opaque: 75 mm dia. min.
Light source (wavelength)	E3F3-T□□□ Infrared LED (860 nm)	Red LED (624 nm)
	E3F3-R□□□ Red LED (680 nm)	
	E3F3-D□□□ Infrared LED (860 nm)	
Power supply voltage	12 to 24 VDC±10% (include voltage ripple of 10% (p-p) max.)	10 to 30 VDC (include voltage ripple of 10% (p-p) max.)

Specifications continued

Item	Product discontinuation Model E3F3 series	Recommended replacement Model E3FA/E3FB series
Current consumption	E3F3-T□□□ 45 mA max. (light source and receiver)	E3FA-T□□1/E3FB-T□□1 40 mA max. Emitter: 25 mA max. Receiver: 15 mA max.
Control output	Open collector transistor output, 100 mA max. Residual voltage: 1 V max. at 100 mA	NPN/PNP (open collector) Load current: 100 mA max. Residual voltage: 3 V max. Load power supply voltage: 30 VDC max.
Protection circuits	Output short-circuit protection, DC power supply reverse polarity protection	Output short-circuit protection Reversed power supply polarity protection, Reversed output Polarity protection
Response time	1.0 ms max.	0.5 ms
Differential travel	E3F3-D13□: 30% max.	E3F□-D□□1: 20% max.
		E3F□-D□□2: —
Sensitivity adjustment	E3F3-T□□□ E3F3-R□□□□	One-turn adjuster
	E3F3-D□1□/-D□6□ None	
	E3F3-D□2□/D□7□ One-turn adjuster	
Ambient humidity range	Operating: 45% to 85% (with no condensation) Storage: 35% to 95% (with no condensation)	Operating: 35 to 85%RH Storage: 35 to 95%RH (with no condensation)
Vibration resistance (destruction)	10 to 55 Hz, 1.5 mm double amplitude for 1 hour each in X, Y, and Z directions	Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y and Z directions
Degree of protection	IEC 60529 IP66	IEC: IP67, DIN 40050-9: IP69K
Indicators	Operation indicator (orange) [Power indicator of emitter (orange)]	Operation indicator (orange) Stability indicator (green) Power indicator (green): only Emitter of Through-beam
Weight	E3F3-T□1 170 g max.	E3FA--T□11 Approx.110 g Packed Approx.50 g only sensor respectively
	E3F3-T□6 40 g max.	E3FA--T□21 Approx.30 g Packed Approx.10 g only sensor respectively
	E3F3-D□1/-D□2/-D□3 E3F3-R□1/-R□2 85 g max.	E3FA-D□1□/-R□11 Approx.60g Packed Approx.50 g only sensor
	E3F3-D□6/-D□7 E3F3-R□6/-R□7 20 g max.	E3FA-D□2□/-R□21 Approx.20 g Packed Approx.10 g only sensor
	E3F3-T□1M 200 g max.	E3FB--T□11 Approx.175 g Packed Approx.65 g only sensor
	E3F3-T□6M 120 g max.	E3FB--T□21 Approx. 85 g Packed Approx.20 g only sensor
	E3F3-D□1M/-D□2M/-D□3M E3F3-R□1M/-R□2M 100 g max.	E3FB-D□1□/-R□11 Approx. 95 g Packed Approx.65 g only sensor
	E3F3-D□6M/-D□7M E3F3-R□6M/-R□7M 60 g max.	E3FB-D□2□/-R□21 Approx. 50 g Packed Approx.20 only sensor
Accessories	E3F3-R□□□ includes E39-R1 reflector	E3FA-R□□1 Reflector sold separately
	E3F3-D□2□/D□7□ includes Adjusting driver	E3FA-D□□□ No adjusting driver

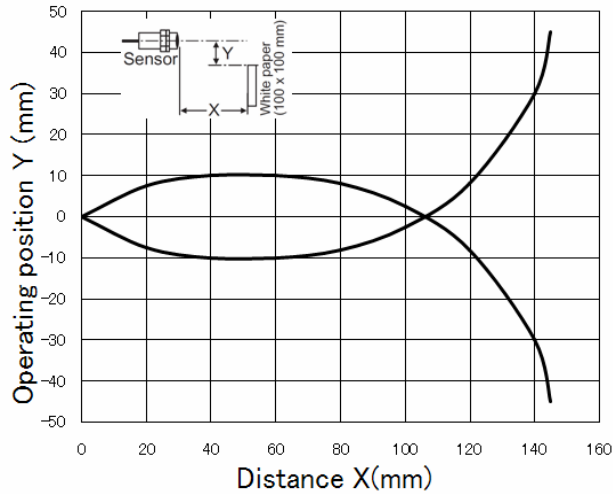
Operation Ratings

<p>Product discontinuation Model E3F3 series</p>	<p>Recommended replacement Model E3FA/E3FB series</p>
<p>Parallel Operating Range (Typical) Through-beam Models E3F3-T□1□/-T□6□</p> 	<p>Parallel Operating Range (Typical) Through-beam Models E3F□-T□</p> 
<p>Parallel Operating Range (Typical) Retroreflective Models E3F3-R□1□/-R□6□ + E39-R1</p> 	<p>Parallel Operating Range (Typical) Retroreflective Models E3F□-R□1 + E39-R1S</p> 
<p>E3F3-R□2□/-R□7□ + E39-R1</p> 	

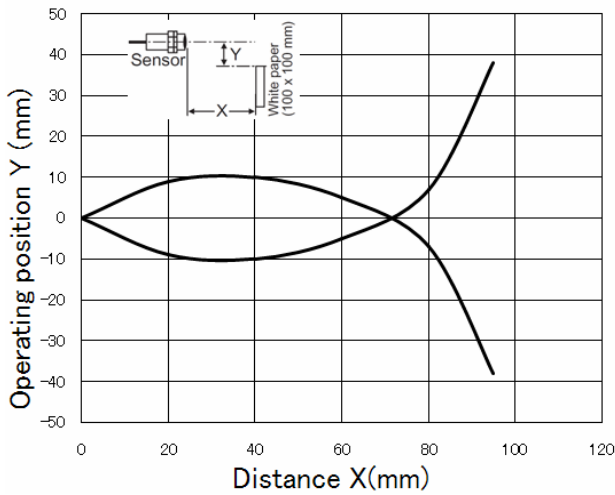
Operation Ratings continued

**Product discontinuation
Model E3F3 series**

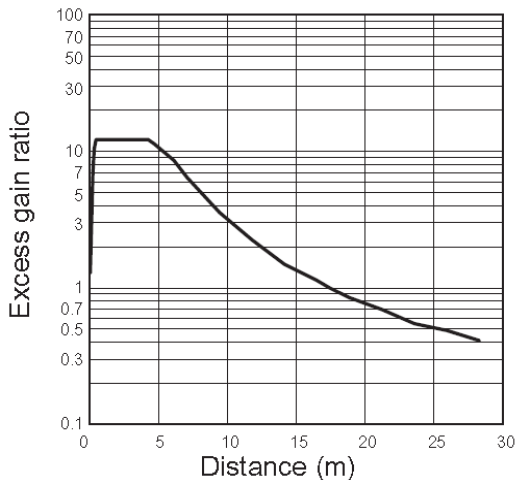
**Operating Range (Typical)
Diffuse-reflective Models
E3F3-D□1□/-D□6□**



E3F3-D□2□/-D□7□

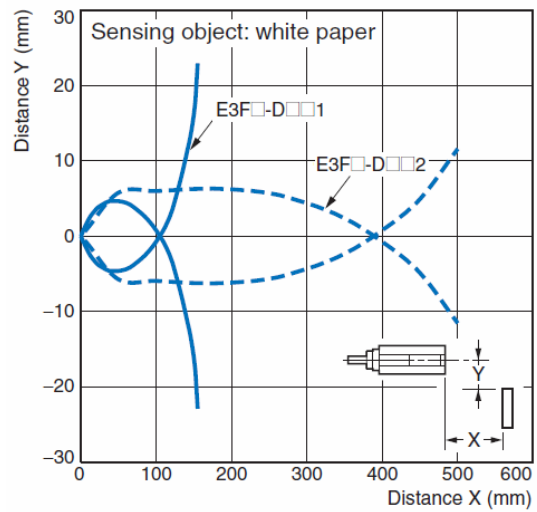


**Excess Gain Ratio vs. Set Distance (Typical)
Through-beam Models
E3F3-T□1□/-T□6□**

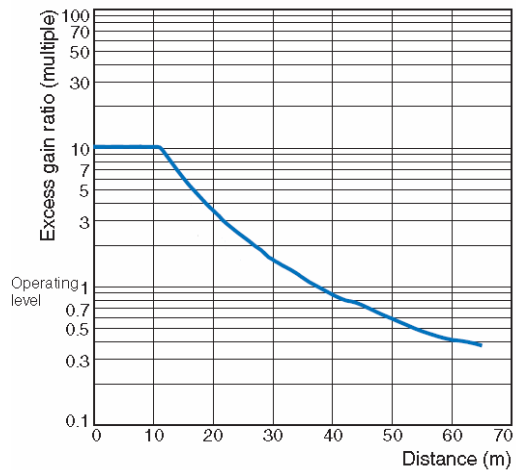


**Recommended replacement
Model E3FA/E3FB series**

**Operating Range (Typical)
Diffuse-reflective Models
E3F□-D□□1/-D□□2**



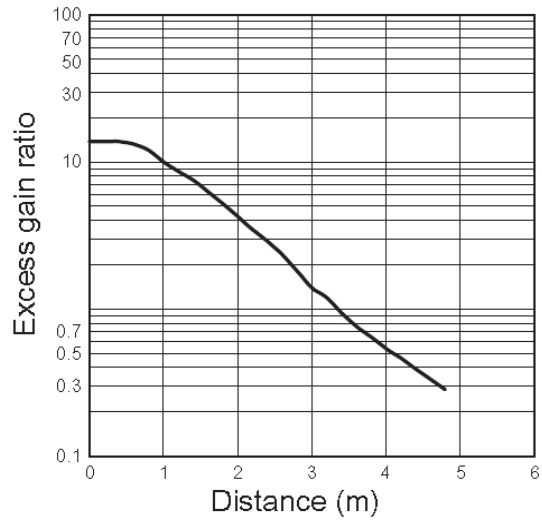
**Excess Gain Ratio vs. Set Distance (Typical)
Through-beam Models
E3F□-T□□1**



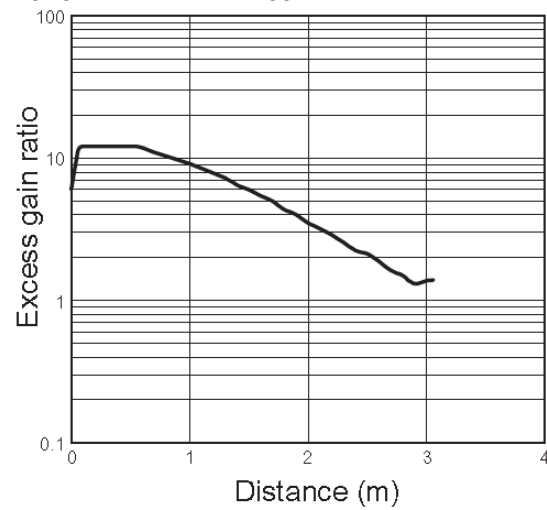
Excess Gain Ratio vs. Set Distance (Typical)

Product discontinuation
Model E3F3 series

Retroreflective Models
E3F3-R□1□/-R□6□+E39-R1

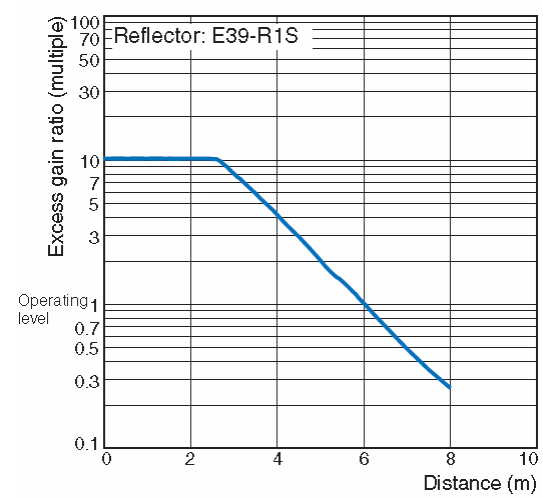


E3F3-R□2□/-R□7□+E39-R1



Recommended replacement
Model E3FA/E3FB series

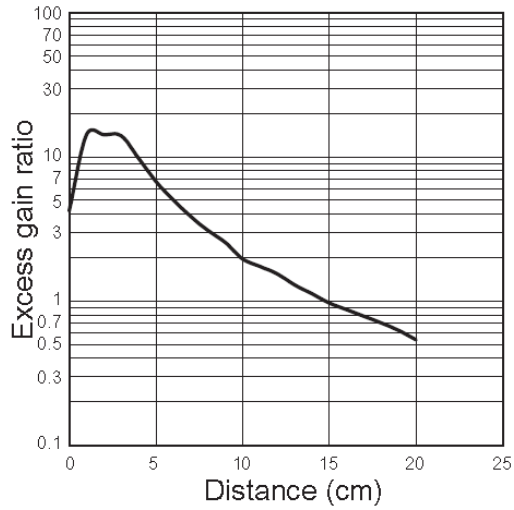
Retroreflective Models
E3F□-R□□1+E39-R1S



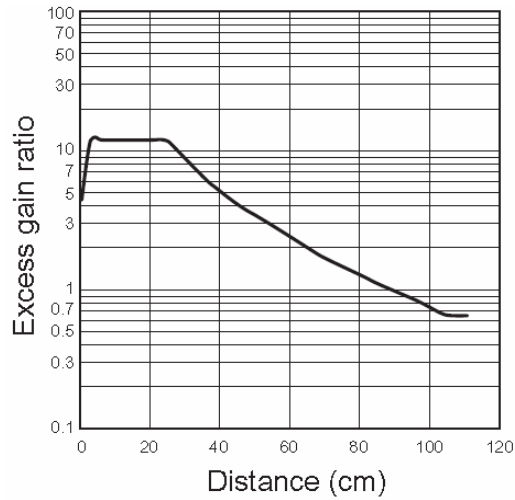
Excess Gain Ratio vs. Set Distance (Typical)

Product discontinuation
Model E3F3 series

Diffuse-reflective Models
E3F3-D□1□/-D□6□

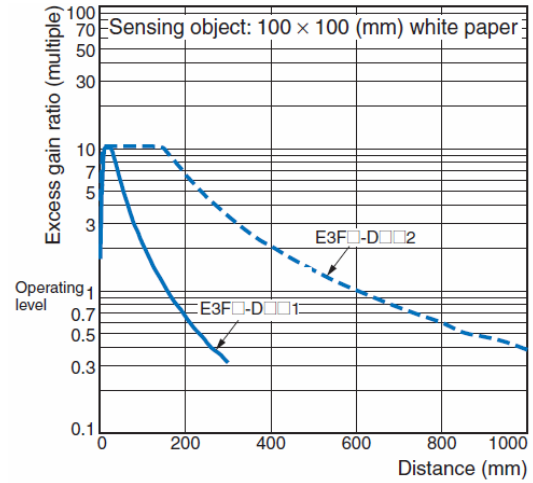


E3F3-D□2□/-D□7□



Recommended replacement
Model E3FA/E3FB series

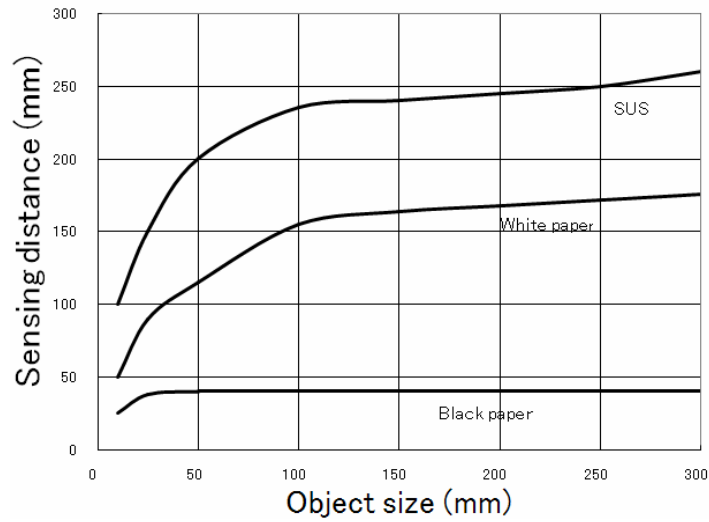
Diffuse-reflective Models
E3F□-D□□□



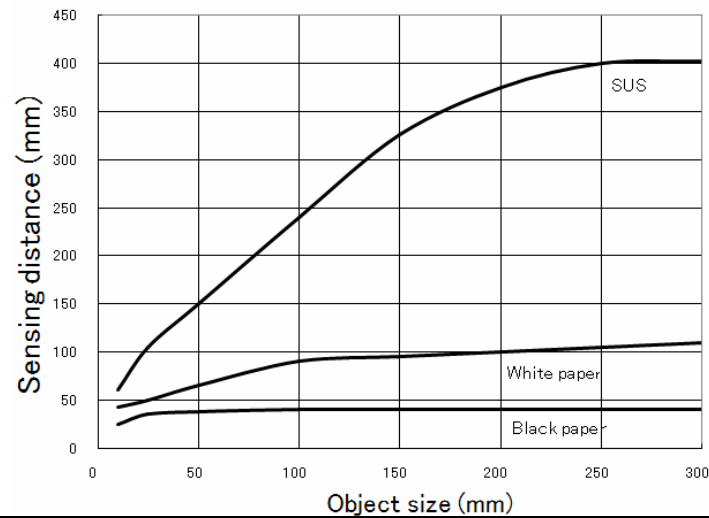
Sensing Distance vs. Object Size (Typical)

Product discontinuation
Model E3F3 series

Diffuse-reflective Models
E3F3-D□1□/-D□6□



E3F3-D□2□/-D□7□



Recommended replacement
Model E3FA/E3FB series

Diffuse-reflective Models
E3F□-D□□□

