



NO: PH-178 **PRODUCT:** E3FZ/E3FR Photoelectric Sensor
DATE: May 2013 **TYPE:** Discontinuation Notice

E3FZ/E3FR Compact M18 Cylindrical Photoelectric Sensors to be Discontinued March 2014; Replace with E3FA/E3RA

Effective March 1, 2014, E3FZ straight and E3FR right-angle radial photoelectric sensors will be discontinued and replaced by the new E3FA and E3RA.



Precautions on Installing the Recommended Replacement

1. Reflector E39-R1S is sold separately; it is used with retro-reflective models of E3FA/E3RA.
2. Operation selection for PNP output models has changed:
 When the pink wire is open, E3FZ/E3RZ operates in Light-ON mode.
 When the pink wire is open, E3FA/E3RA models operate in Dark-ON mode.
3. Radial versions of new E3RA have no background suppression (BGS) types. A conditional replacement of E3FR-LS would be E3RA-D diffuse reflective types.

Affected Parts

| Product discontinuation | Recommended replacement |
|-------------------------|-------------------------|
| E3FZ-B61 2M | E3FA-BN11 2M |
| E3FZ-B66 | E3FA-BN21 |
| E3FZ-B81 2M | E3FA-BP11 2M |
| E3FZ-B86 | E3FA-BP21 |
| E3FZ-B86Y-1 | E3FA-BP21 |
| E3FZ-D62 2M | E3FA-DN13 2M |
| E3FZ-D67 | E3FA-DN23 |
| E3FZ-D82 2M | E3FA-DP13 2M |
| E3FZ-D82-M1TJ 0.1M | E3FA-DP23 |
| E3FZ-D82-M1TJ 0.3M | E3FA-DP23 |
| E3FZ-D87 | E3FA-DP23 |
| E3FZ-LS61H 2M | E3FA-LN11 2M |

| Product discontinuation | Recommended replacement |
|-------------------------|-------------------------|
| E3FZ-T61H 2M | E3FA-TN11 2M |
| E3FZ-T66H | E3FA-TN21 |
| E3FZ-T81H 2M | E3FA-TP11 2M |
| E3FZ-T81H-M1TJ 0.3M | E3FA-TP21 |
| E3FZ-T86H | E3FA-TP21 |
| E3FZ-T86H-L | None available |
| E3FZ-T86H-D | None available |
| E3FR-D62 2M | E3RA-DN13 2M |
| E3FR-D67 | E3RA-DN23 |
| E3FR-D82 2M | E3RA-DP13 2M |
| E3FR-D87 | E3RA-DP23 |
| E3FR-LS61H 2M | E3RA-DN11 2M |

| Product discontinuation | Recommended replacement |
|-------------------------|-------------------------|
| E3FZ-LS64H 2M | E3FA-LN12 2M |
| E3FZ-LS66H | E3FA-LN21 |
| E3FZ-LS69H | E3FA-LN22 |
| E3FZ-LS81H 2M | E3FA-LP11 2M |
| E3FZ-LS84H 2M | E3FA-LP12 2M |
| E3FZ-LS81H-M1TJ 0.3M | E3FA-LP21 |
| E3FZ-LS84H-M1TJ 0.3M | E3FA-LP22 |
| E3FZ-LS86H | E3FA-LP21 |
| E3FZ-LS89H | E3FA-LP22 |
| E3FZ-LS89H-50 | None available |
| E3FZ-R61H 2M | E3FA-RN11 2M |
| E3FZ-R66H | E3FA-RN21 |
| E3FZ-R81H 2M | E3FA-RP11 2M |
| E3FZ-R81H-M1TJ 0.3M | E3FA-RP21 |
| E3FZ-R86H | E3FA-RP21 |

| Product discontinuation | Recommended replacement |
|-------------------------|-------------------------|
| E3FR-LS64H 2M | E3RA-DN12 2M |
| E3FR-LS66H | E3RA-DN21 |
| E3FR-LS69H | E3RA-DN22 |
| E3FR-LS81H 2M | E3RA-DP11 2M |
| E3FR-LS84H 2M | E3RA-DP12 2M |
| E3FR-LS86H | E3RA-DP21 |
| E3FR-LS89H | E3RA-DP22 |
| E3FR-R61H 2M | E3RA-RN11 2M |
| E3FR-R66H | E3RA-RN21 |
| E3FR-R81H 2M | E3RA-RP11 2M |
| E3FR-R86H | E3RA-RP21 |
| E3FR-T61H 2M | E3RA-TN11 2M |
| E3FR-T66H | E3RA-TN21 |
| E3FR-T81H 2M | E3RA-TP11 2M |
| E3FR-T86H | E3RA-TP21 |

Reference Documentation

| Description | Media | Publication number |
|--------------------------------|-------|----------------------------|
| E3FA/E3RA/E3FB/E3RB Data Sheet | PDF | E53I-E-01 |
| E3FZ/E3FR Data Sheet | PDF | E55E-EN-01 |

See the following pages for a detailed comparison.

Wiring Diagram

| Product discontinuation | Recommended replacement |
|---|---|
| <p>E3FZ (NPN models) Light-ON: Connect the pink Pin (2) and blue Pin (3) wires or open the pink wire Pin (2). Dark-ON: Connect the pink Pin (2) and brown Pin (3) wires.</p> | <p>E3FA (NPN models) 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>E3FZ (PNP models) 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>E3FA (PNP models) 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

Cable types E3FZ-□

Labels: Emitter, Receiver, Optical Axis, Stability indicator (green), Operation indicator (yellow), Sensitivity adjuster, M18x1 6g.

Dimensions: 15, 3.50, 4 dia, 5.20, 16.25, 22.55, 30.25.

Note: T-, R- and LS-types have no sensitivity adjuster. T-types have centric optical axis

Recommended replacement

Cable types E3FA-□□1□

Labels: Receiver, Emitter, Optical axis, Sensitivity adjuster *, Operation indicator (orange), Stability indicator (green), Mounting Holes, 18.51" dia.

Dimensions: 15, 16.6 dia, 23, 30.5, 41, 34.5, 7 dia, 2, M18 x 30.5 P=1.

Suitable models: E3FA-R□11, E3FA-D□1□, E3FA-L□11

* Suitable models: E3FA-R□11, E3FA-D□1□

Vinyl insulated round cord 4 dia. 4 cores (conductor cross sectional area: 0.128 mm² (AWG26) / insulation outside diameter: 0.95 dia.) standard length 2 m

Note: LS-types have no sensitivity adjuster. T-types have centric optical axis

Connector types E3FZ-□

Labels: Emitter, Receiver, Optical Axis, Stability indicator (green), Operation indicator (yellow), Sensitivity adjuster, M18x1 6g, M12x1 6g.

Dimensions: 15, 3.50, 16.25.

Note: T-, R- and LS-types have no sensitivity adjuster. T-types have centric optical axis

E3FA-□□2□

Labels: Receiver, Emitter, Optical axis, Sensitivity adjuster *, Operation indicator (orange), Stability indicator (green), Mounting Holes, 18.51" dia.

Dimensions: 15, 16.6 dia, 23, 30.5, 45, 34.5, 7 dia, 2, M18 x 30.5 P=1, M12 x 4 P=1.

Suitable models: E3FA-R□21, E3FA-D□2□, E3FA-L□21

* Suitable models: E3FA-R□21, E3FA-D□2□

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

Note: L-types have no sensitivity adjuster. T-types have centric optical axis

Cable types E3FR-□

Labels: Stability indicator (green), Operation indicator (yellow), Sensitivity adjuster, Receiver, Optical axis, Emitter, M18x1 6g.

Dimensions: 30.35, 22.55, 16.25, 1.5, 3.50, 25.75, 18.25, 10.75, 40.40, 4 dia, 5.20.

Note: T-, R- and LS-types have no sensitivity adjuster. T-types have centric optical axis

E3RA-□□1□

Labels: Optical axis, Receiver, Optical axis, Emitter, Sensitivity indicator (green), Sensitivity adjuster, Operation indicator (orange).

Dimensions: 14.1 dia, M18 x 30.5 P=1, 14.9, 35.9, 43.4, 47.4, 53.9, 7 dia.

Suitable models: E3RA-T□11, E3RA-R□11, E3RA-D□1□

Vinyl insulated round cord 4 dia. 4 cores (conductor cross sectional area: 0.128 mm² (AWG26) / insulation outside diameter: 0.95 dia.) standard length 2 m

Connector types E3FR-□

Labels: Stability indicator (green), Operation indicator (yellow), Sensitivity adjuster, Receiver, Optical axis, Emitter, M18x1 6g, M12x1 6g.

Dimensions: 30.35, 22.55, 16.25, 1.5, 3.50, 25.75, 18.25, 10.75, 40.40, 9.30.

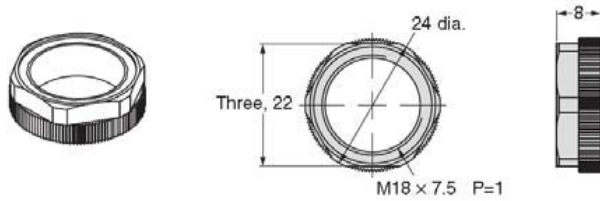
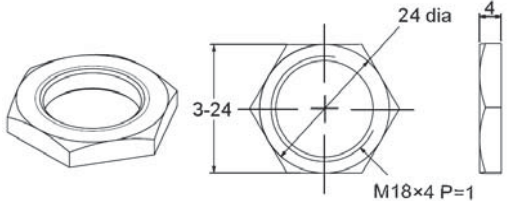
E3RA-□□2□

Labels: Optical axis, Receiver, Optical axis, Emitter, Sensitivity indicator (green), Sensitivity adjuster, Operation indicator (orange), Mounting Holes, 18.51" dia.

Dimensions: 14.1 dia, M18 x 30.5 P=1, 14.9, 35.9, 43.4, 47.4, 57.9, 7 dia.

Suitable models: E3RA-T□21, E3RA-R□21, E3RA-D□2□

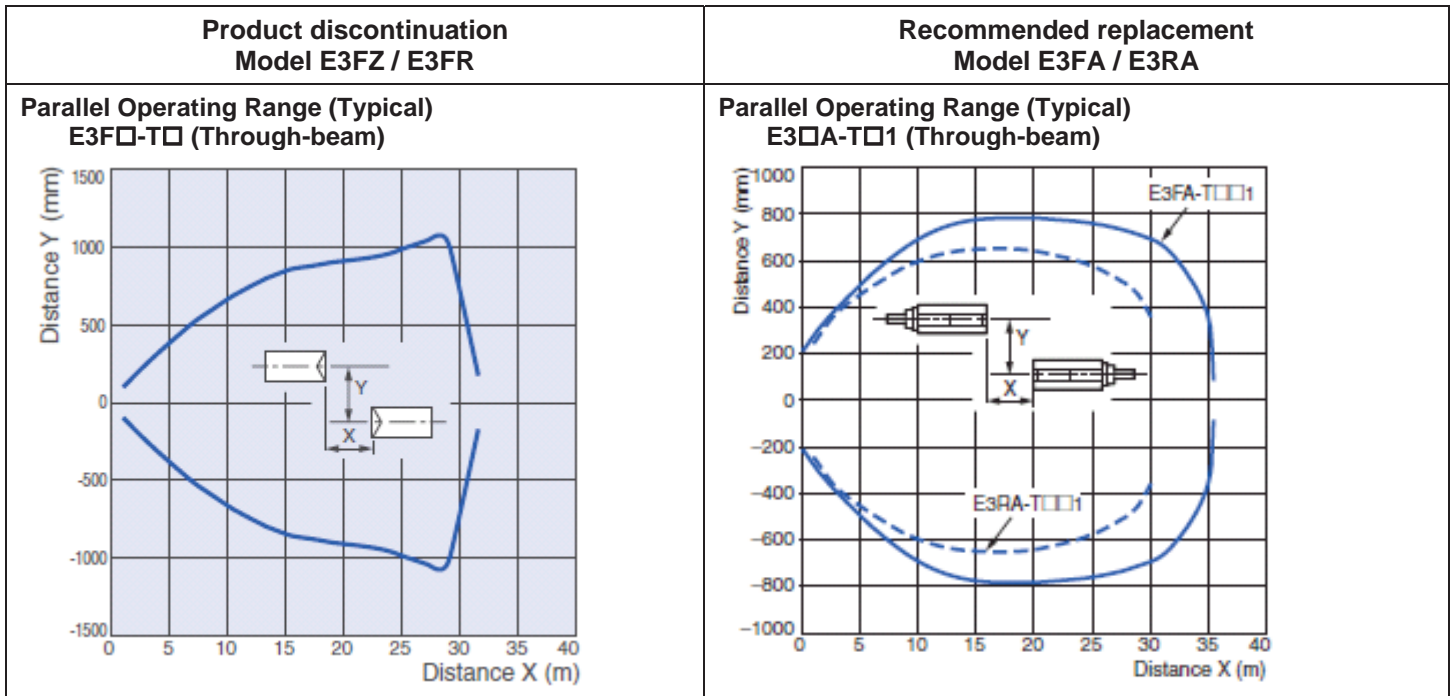
| Terminal No. | Specification |
|--------------|------------------------|
| 1 | +V |
| 2 | L/on - D/on selectable |
| 3 | 0V |
| 4 | Output |

| Product discontinuation | Recommended replacement |
|--|---|
| Nut E3FZ / E3FR  | Nut E3FA / E3RA  |

Specifications

| Item | Product discontinuation Model E3FZ / E3FR | Recommended replacement Model E3FA / E3RA |
|--|--|--|
| Sensing distance / Sensitivity adjustment | E3FZ-T□: 15 m (no adjustment) E3FZ-D□1: 1 m (adjustable) E3FZ-R□: 4 m (no adjustment) E3FZ-LS□1/-□6: 100 m (no adjustment) E3FZ-LS□3/-□9: 200 m (no adjustment) E3FZ-B□: 700 mm (adjustable) E3FR-T□: 15 m (no adjustment) E3FR-D□1: 1 m (adjustable) E3FR-R□: 4 m (no adjustment) E3FR-LS□1/-□6: 100 m (no adjustment) E3FR-LS□3/-□9: 200 m (no adjustment) | E3FA-T□□1: 20 m (adjustable) E3FA-D□□3: 1 m (adjustable) E3FA-R□□1: 4 m (adjustable) E3FA-L□□1: 100 mm (no adjustment) E3FA-L□□2: 200 mm (no adjustment) E3FA-B□1: 500 mm (adjustable) E3RA-T□□1: 15 m (adjustable) E3RA-D□□3: 700 mm (adjustable) E3RA-R□□1: 3 m (adjustable) E3RA-D□□1: 100 mm (adjustable) E3RA-D□□2: 300 mm (adjustable) |
| Light source (wavelength) | E3F□-T□□/-D□□: Infrared LED E3F□-R□/-LS□/-B□: Red LED | Red LED (624 nm) |
| Current consumption | E3F□-T□: 45 mA max. E3F□-D□/-R□/-LS□/-B□: 25 mA max. | E3□A-T□□1: 40 mA max. E3□A-R□/-D□: 25 mA max. |
| Response time | 1 ms max. | 0.5 ms |
| Degree of protection | IEC: IP67; NEMA 1, 2, 4; DIN 40050-9: IP69K | IEC: IP67, DIN 40050-9: IP69K |
| Indicators | Operation indicator (orange) Stability indicator (green) | Operation indicator (orange) Stability indicator (green) |

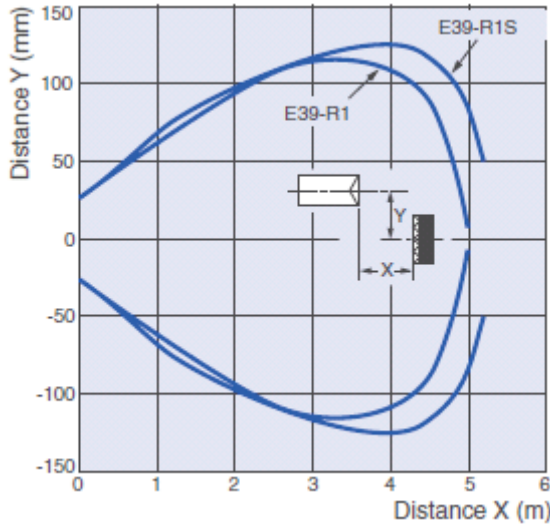
Operation Rating



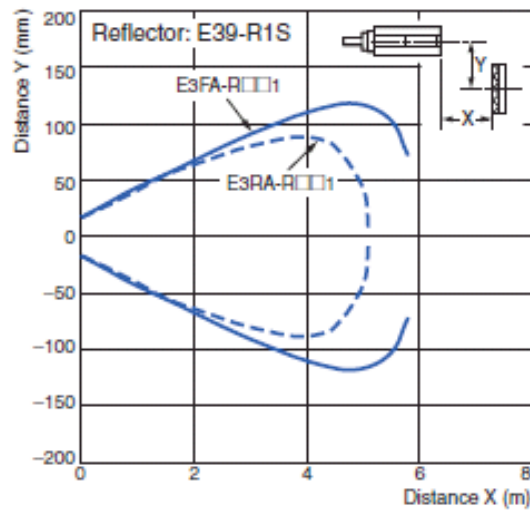
Product discontinuation
Model E3FZ / E3FR

Recommended replacement
Model E3FA / E3RA

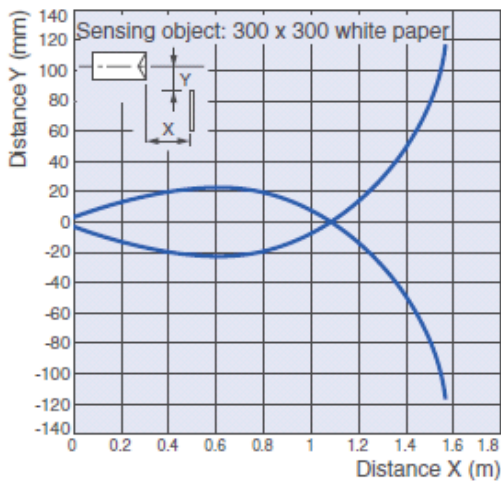
Parallel Operating Range (Typical)
E3F□-R□ (Retro-reflective)



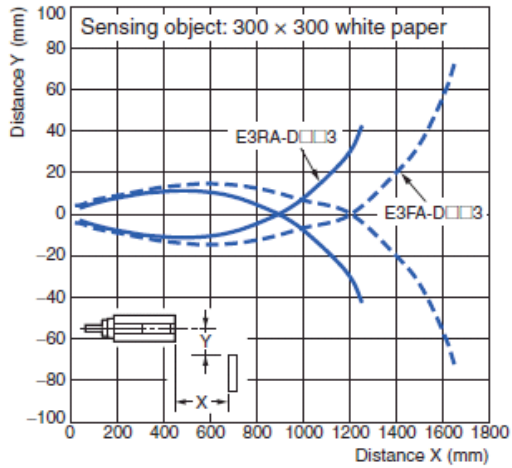
Parallel Operating Range (Typical)
E3□A-R□1 (Retro-reflective)



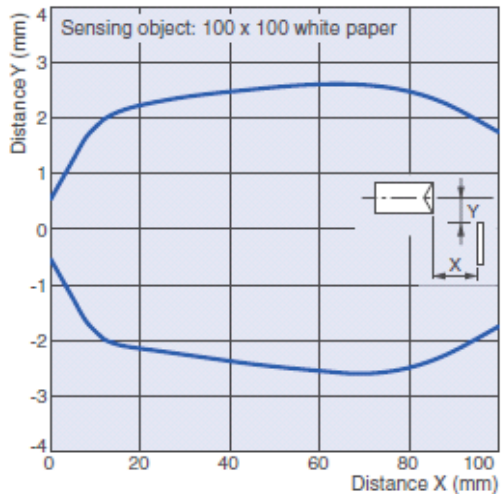
Operating Range (Typical)
E3F□-D□ (Diffuse Reflective adjustable range)



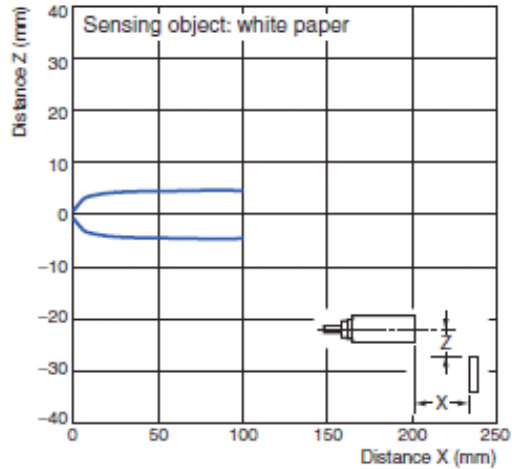
Operating Range (Typical)
E3□A-D□□3 (Diffuse Reflective adjustable range)



Operating Range (Typical)
E3F□-LS□1/-□6 (Background Suppression)



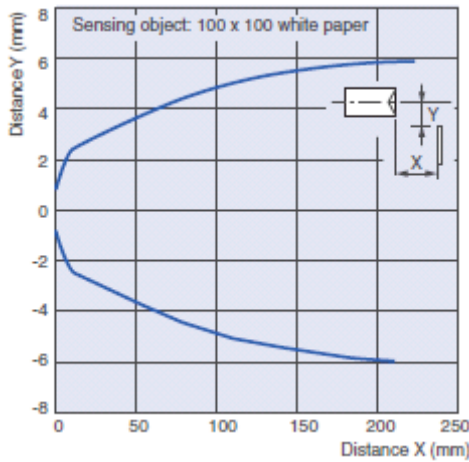
Operating Range (Typical)
E3FA-L□□1 (Background Suppression)



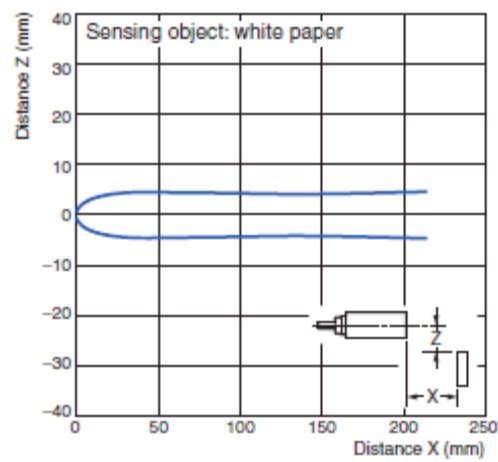
**Product discontinuation
Model E3FZ / E3FR**

**Recommended replacement
Model E3FA / E3RA**

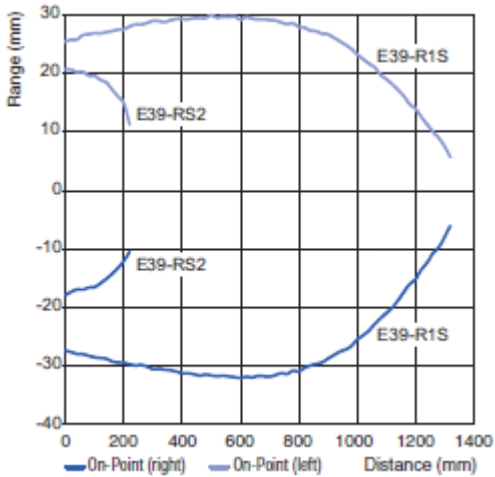
**Operating Range (Typical)
E3F□-LS□3/-□9 (Background Suppression)**



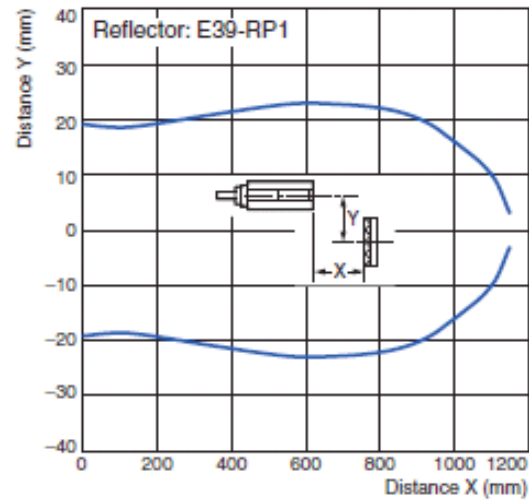
**Operating Range (Typical)
E3FA-L□□2 (Background Suppression)**



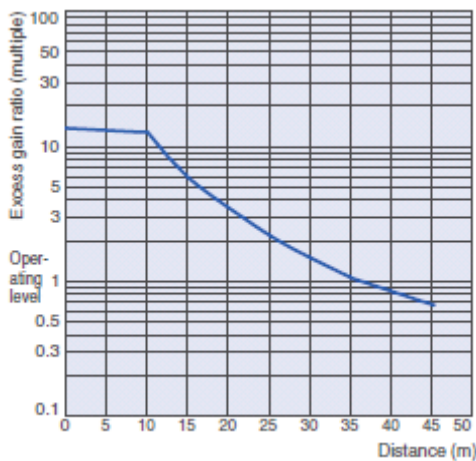
**Operating Range (Typical)
E3F□-B□ (Transparent Object Detection)**



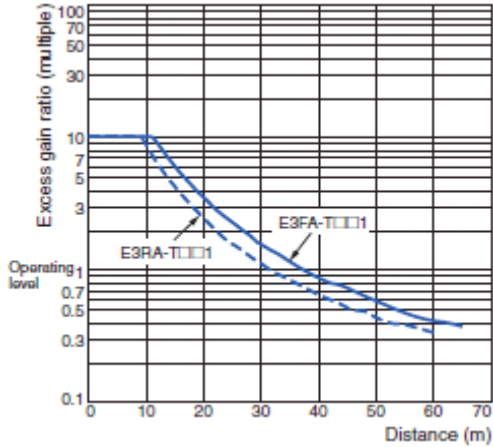
**Operating Range (Typical)
E3FA-B□□1 (Transparent Object Detection)**



**Excess Gain vs. Distance (Typical)
E3F□-T□ (Through-beam)**



**Excess Gain vs. Distance (Typical)
E3□A-T□1 (Through-beam)**

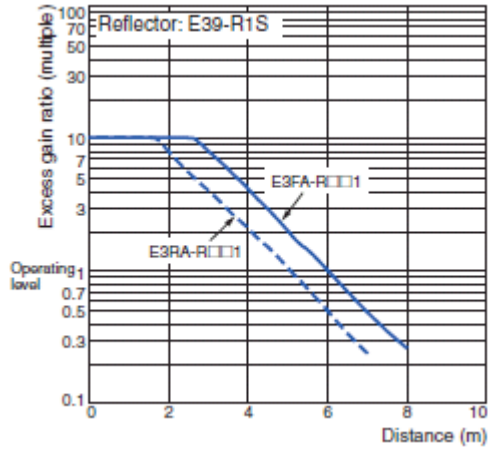
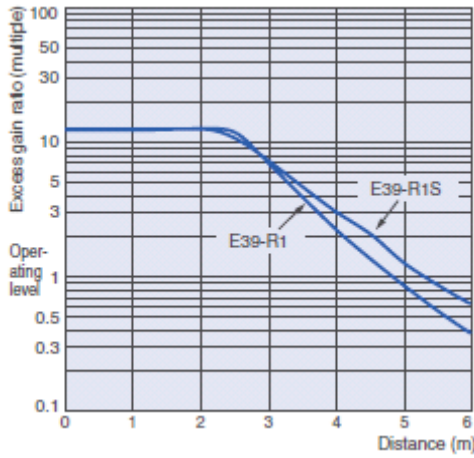


**Product discontinuation
Model E3FZ / E3FR**

**Recommended replacement
Model E3FA / E3RA**

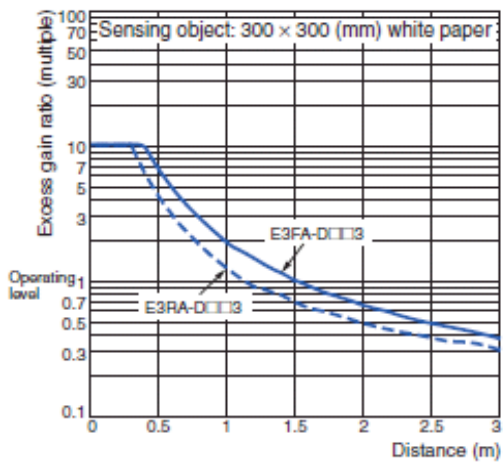
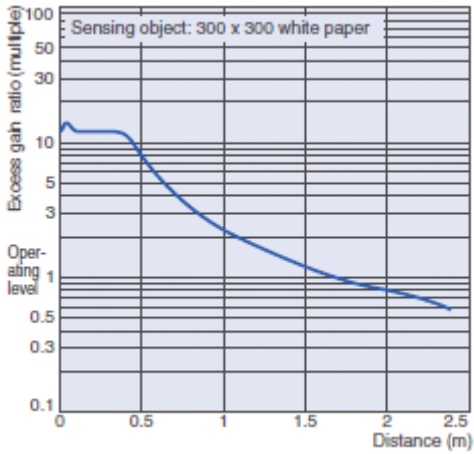
**Excess Gain vs. Distance (Typical)
E3F□-R□ (Retro-reflective)**

**Excess Gain vs. Distance (Typical)
E3□A-R□1 (Retro-reflective)**



**Excess Gain vs. Distance (Typical)
E3F□-D□2/-D□7 (Diffuse Reflective)**

**Excess Gain vs. Distance (Typical)
E3□A-D□□3 (Diffuse Reflective)**



**Excess Gain vs. Distance (Typical)
E3F□-B□ (Transparent Object Detection)**

**Excess Gain vs. Distance (Typical)
E3□A-B□□1 (Transparent Object Detection)**

