



**NO:** PH-175      **PRODUCT:** Legacy E3S Photoelectric Sensors  
**DATE:** April 2013      **TYPE:** Discontinuation Notice

## Legacy E3S Photoelectric Sensors will be Discontinued March 2014; Replace with E3Z Series

Effective Date: March 2014

### Discontinued Series

[Through-beam Sensors]

**Model E3S-2 series**

**Model E3S-5 series**

Retro-reflective Sensors]

**Model E3S-R2 series**

[Diffuse-reflective Sensors]

**Model E3S-DS series**



### Recommended Replacement

[Through-beam Sensors]

**Model E3Z-T series**

Retro-reflective Sensors]

**Model E3Z-R series**

[Diffuse-reflective Sensors]

**Model E3Z-D series**

### Affected Parts

Discontinued Product	Recommended Replacement
E3S-2B41 2M	E3Z-T81 2M
E3S-2DE4 2M	E3Z-T61 2M
E3S-2DE41 2M	E3Z-T61 2M
E3S-2E4 2M	E3Z-T61 2M
E3S-2E41 2M	E3Z-T61 2M
E3S-2LE4 2M	E3Z-T61 2M
E3S-2LE41 2M	E3Z-T61 2M
E3S-5B41 2M	E3Z-T81 2M
E3S-5DE4 2M	E3Z-T61 2M
E3S-5DE41 2M	E3Z-T61 2M
E3S-5E4 2M	E3Z-T61 2M
E3S-5E41 2M	E3Z-T61 2M
E3S-5E41-43-M1J 0.2M	E3Z-T61-M1J 0.3M
E3S-5E4S-45 2M	No recommended replacement
E3S-5LE4 2M	E3Z-T61 2M
E3S-5LE41 2M	E3Z-T61 2M
E3S-DS10B4 2M	E3Z-D81 2M
E3S-DS10B41 2M	E3Z-D81 2M
E3S-DS10E4 2M	E3Z-D61 2M
E3S-DS10E41 2M	E3Z-D61 2M
E3S-DS30B4 2M	E3Z-D82 2M
E3S-DS30B41 2M	E3Z-D82 2M
E3S-DS30E4 2M	E3Z-D62 2M
E3S-DS30E41 2M	E3Z-D62 2M
E3S-R2B4 2M	E3Z-R81 2M
E3S-R2B41 2M	E3Z-R81 2M
E3S-R2E4 2M	E3Z-R61 2M
E3S-R2E4 5M	E3Z-R61 5M
E3S-R2E41 2M	E3Z-R61 2M
E3S-R2E43 2M	E3Z-R61 2M

## Precautions on Installing the Recommended Replacement

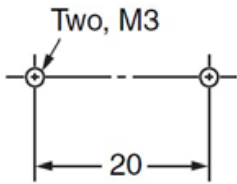
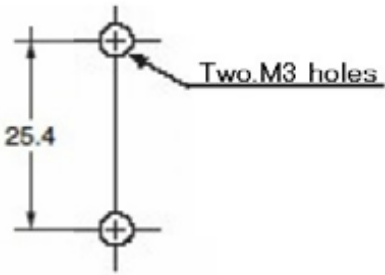
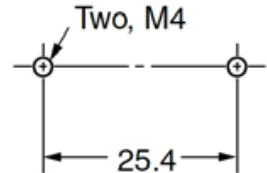
1. The E3Z series sensor output is Open Collector type. Please make sure the circuit you are connecting it to can accept an Open Collector output.
2. For through-beam models, replace the emitter and receiver as a set.

Review the detailed differences on the following pages.

## Body Color

<b>Discontinued Product</b> <b>Model E3S-2 series / E3S-DS10 series</b> <b>Color: Black</b> <b>Material (Case): Polybutylene terephthalate</b> <b>Material (Lens): Polycarbonate</b>	<b>Recommended Replacement</b> <b>Model E3Z-T series /E3Z-D series</b> <b>Color: Black</b> <b>Material (Case): Polybutylene terephthalate</b> <b>Material (Lens): Modified polyarylate</b>
<b>Discontinued Product</b> <b>Model E3S-5 series /E3S-DS30 series</b> <b>Color: Black/Yellow</b> <b>Material (Case): Zinc die-cast</b> <b>Material (Lens): Polycarbonate</b>	<b>Recommended Replacement</b> <b>Model E3Z-T series /E3Z-D series</b> <b>Color: Black</b> <b>Material (Case): Polybutylene terephthalate</b> <b>Material (Lens): Modified polyarylate</b>
<b>Discontinued Product</b> <b>Model E3S-R2 series</b> <b>Color: Black/Yellow</b> <b>Material (Case): Zinc die-cast</b> <b>Material (Lens): Polycarbonate</b>	<b>Recommended Replacement</b> <b>Model E3Z-R series</b> <b>Color: Black</b> <b>Material (Case): Polybutylene terephthalate</b> <b>Material (Lens): Polymethylmethacrylate</b>

## Mounting Dimensions

Discontinued Product	Recommended Replacement
<b>Model E3S-2,-DS10 series</b>  <p>Two, M3 20</p>	<b>Model E3Z-T,-D,-R series</b>  <p>Two M3 holes 25.4</p>
<b>Model E3S-5,-DS30,-R2 series</b>  <p>Two, M4 25.4</p>	

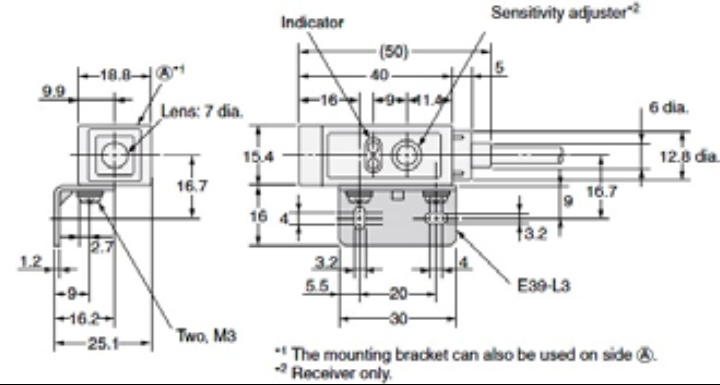
# Wiring Connection

<p><b>Discontinued Product</b>  <b>Model E3S-2E4 / E3S-5E4 series</b>  <b>Model E3S-DS10E4 / E3S-DS30E4 series</b>  <b>Model E3S-R2E4 series</b></p> <p><b>&lt;Receiver&gt;</b></p> <p>1. Reverse the polarity of the power supply to switch the operating mode.          2. Voltage output (when connecting transistor circuit).</p> <p><b>&lt;Emitter&gt;</b></p> <p><b>M12 Connector Pin Arrangement</b></p> <p>Note. Receiver/Emitter: Pin ② is not used.</p> <p>It becomes <b>Power indicator</b>,          if the pink cord of the emitter connects with the 0V of the emitter.          It becomes <b>Light indicator</b>,          if the pink cord of the emitter connects with the output of the receiver.</p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-T6 series</b>  <b>Model E3Z-D6 series</b>  <b>Model E3Z-R6 series</b></p> <p><b>&lt;Receiver&gt;</b></p> <p><b>&lt;Emitter&gt;</b></p> <p><b>M12 Connector Pin Arrangement</b></p> <p>Note. Receiver: Pin ② is not used.          Emitter: Pin ② and ④ are not used.</p>
<p><b>Discontinued Product</b>  <b>Model E3S-2B4 / E3S-5B4 series</b>  <b>Model E3S-DS10B4 / E3S-DS30B4 series</b>  <b>Model E3S-R2B4 series</b></p> <p><b>&lt;Receiver&gt;</b></p> <p>1. Reverse the polarity of the power supply to switch the operating mode.</p> <p><b>&lt;Emitter&gt;</b></p> <p>It becomes <b>Power indicator</b>,          if the pink cord of the emitter connects with the brown cord of the emitter.          It becomes <b>Light indicator</b>,          if the pink cord of the emitter connects with the output of the receiver.</p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-T8 series</b>  <b>Model E3Z-D8 series</b>  <b>Model E3Z-R8 series</b></p> <p><b>&lt;Receiver&gt;</b></p> <p><b>&lt;Emitter&gt;</b></p>

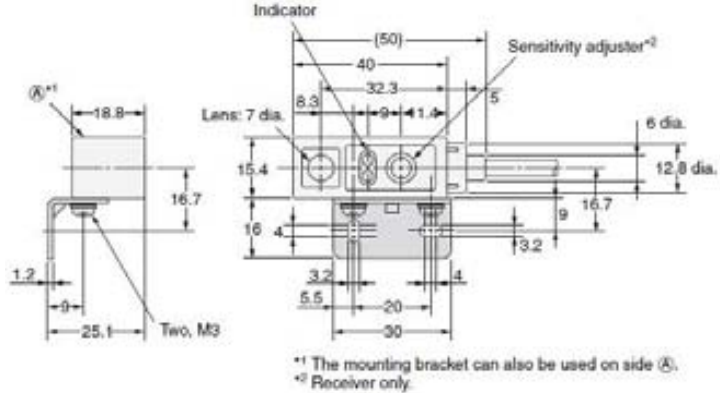
# Mounting Dimensions

## Discontinued Product Model E3S-2 series / E3S-5 series

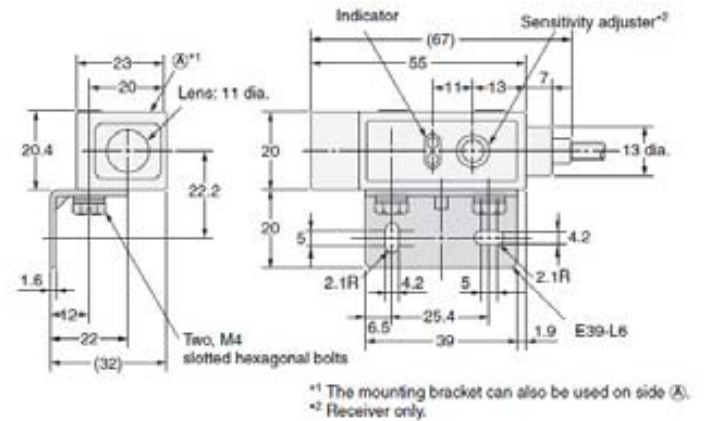
### E3S-2E4



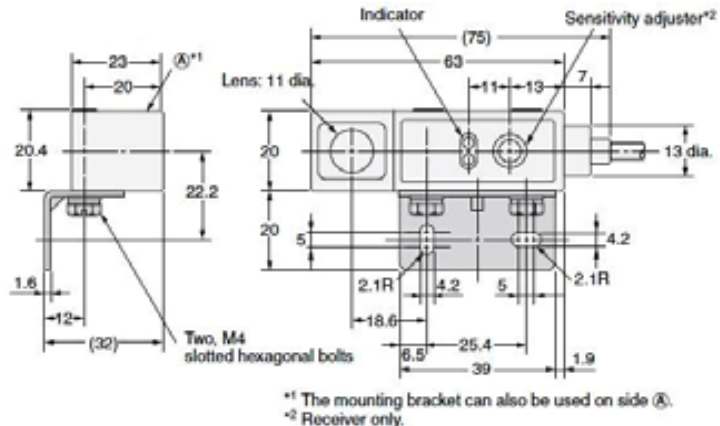
### E3S-2E41 / E3S-2B41



### E3S-5E4

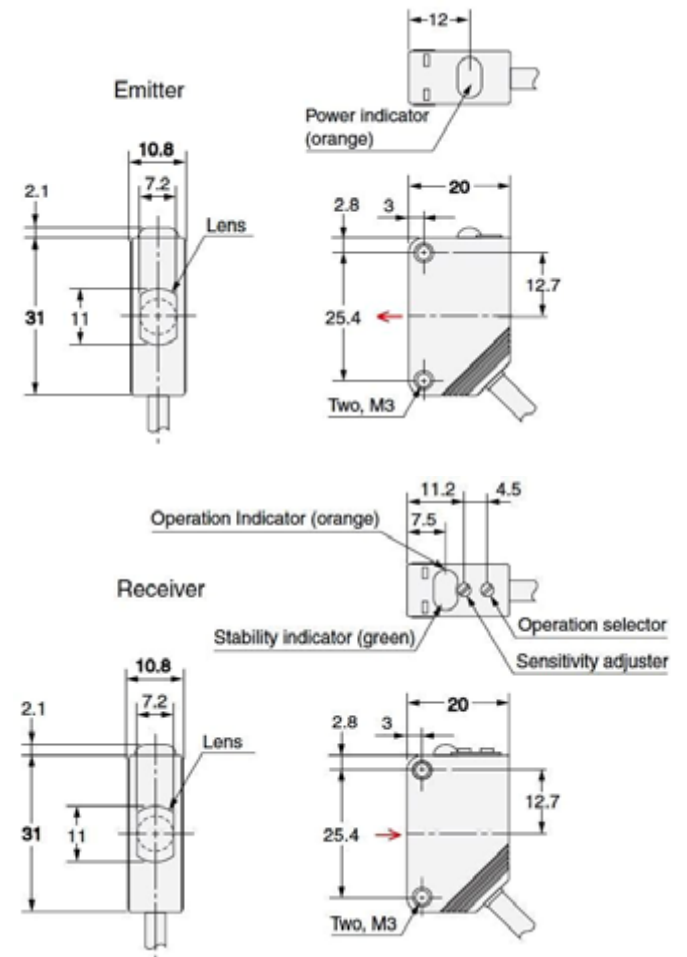


### E3S-5E41 / E3S-5B41



## Recommended Replacement Model E3Z-T series

### E3Z-T61 / E3Z-T81



# Mounting Dimensions

<p><b>Discontinued Product</b>  <b>Model E3S-DS10 series</b>  <b>E3S-DS10E4 / E3S-DS10B4</b></p> <p>* The mounting bracket can also be used on side (A).</p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-D series</b>  <b>E3Z-D61 / E3Z-D81</b></p>
<p><b>E3S-DS10E41 / E3S-DS10B41</b></p> <p>* The mounting bracket can also be used on side (A).</p>	
<p><b>Discontinued Product</b>  <b>Model E3S-DS30 / E3S-R2 series</b>  <b>E3S-DS30E4 / E3S-DS30B4</b>  <b>E3S-R2E4 / E3S-R2B4</b></p> <p>* The mounting bracket can be attached to this side.</p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-D / E3Z-R series</b>  <b>E3Z-D62 / E3Z-D82</b>  <b>E3Z-R61 / E3Z-R81</b></p>
<p><b>E3S-DS30E41 / E3S-DS30B41</b>  <b>E3S-R2E41 / E3S-R2B41</b></p> <p>* The mounting bracket can be attached to this side.</p>	

## Characteristics

Item	Discontinued Product		Recommended Replacement
	Model E3S-2 series	Model E3S-5 series	Model E3Z-T series
Sensing distance	2 m	5 m	15 m
Standard sensing object	Opaque: 7 mm.dia.min.	Opaque: 11 mm.dia.min.	Opaque: 12 mm dia. min.
Directional angle	Both emitter and receiver: 3° to 10°		Both emitter and receiver: 3° to 15°
Light source	Infrared LED (950 nm)		Infrared LED (870 nm)
Power supply voltage	12 to 24 VDC -10% to 10% ripple (p-p): 10% max.		12 to 24 VDC -10% to 10% ripple (p-p): 10% max.
Current consumption	50 mA max. (Emitter: 25 mA max., Receiver: 25 mA max.)		35 mA max. (Emitter: 15 mA max., Receiver: 20 mA max.)
Control output	(E3S-□E4 type) NPN voltage-current output Output current: 1.5 to 4 mA Load current: 80 mA max Residual voltage: 2 V max  (E3S-□B4 type) PNP open collector output (2B4) Load current: 100 mA max. Residual voltage: 2 V max		Open collector output E3Z-T61:NPN open collector output E3Z-T81:PNP open collector output  Load current: 100 mA max Residual voltage: Load current of less than 10mA: 1 V max. Load current of 10 to 100 mA: 2 V max.
Response time	Operate or reset 3 ms max.		Operate or reset: 1 ms max.
Degree of protection	IEC60529: IP65	IEC60529: IP67	IEC60529: IP67
Indicators	Light indicator (red), Stability indicator (green)		Operation indicator (orange) Stability indicator (green) Through-beam Emitter has power indicator (orange) only.

Item	Discontinued Product		Recommended Replacement	
	Model E3S-DS10 series	Model E3S-DS30 series	Model E3Z-D□1 series	Model E3Z-D□2 series
Sensing distance	100 mm (White paper 50×50 mm)	300 mm (White paper 100×100 mm)	100 mm (White paper 100×100 mm)	1 m (White paper 300×300 mm)
Differential distance	20% max. of sensing distance		20% max. of sensing distance	
Light source	Infrared LED (950nm)		Infrared LED (860nm)	
Power supply voltage	12 to 24 VDC -10% to 10% ripple (p-p): 10% max.		12 to 24 VDC -10% to 10% ripple (p-p): 10% max.	
Current consumption	40 mA max.		30 mA max.	
Control output	(E3S-□E4 type) NPN voltage-current output Output current: 1.5 to 4 mA Load current: 80 mA max Residual voltage: 2 V max  (E3S-□B4 type) PNP open collector output (2B4) Load current: 100 mA max. Residual voltage: 2 V max		Open collector output E3Z-T61:NPN open collector output E3Z-T81:PNP open collector output  Load current: 100 mA max Residual voltage: Load current of less than 10mA: 1 V max. Load current of 10 to 100 mA: 2 V max.	
Response time	Operate or reset: 1 ms max.		Operate or reset: 1 ms max.	
Degree of protection	IEC60529: IP65	IEC60529: IP67	IEC60529: IP67	
Indicators	Light indicator (red) Stability indicator (green)		Operation indicator (orange) Stability indicator (green)	

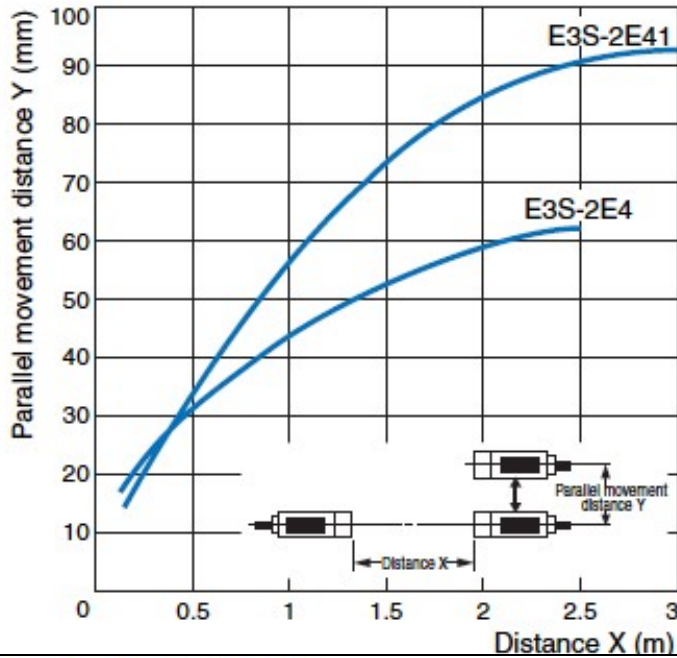
## Characteristics

Item	Discontinued Product	Recommended Replacement
	Model E3S-R2 series	Model E3Z-R series
Sensing distance	0.1 to 2 m (When using the E39-R1)	4 m (When using the E39-R1S)
Standard sensing object	Opaque: 30-mm dia. min.	Opaque: 75-mm dia. min.
Light source	Infrared LED (950nm)	Red LED (660nm)
Power supply voltage	12 to 24 VDC -10% to 10% ripple (p-p): 10% max.	12 to 24 VDC -10% to 10% ripple (p-p): 10% max.
Current consumption	40 mA max.	30 mA DC max.
Control output	(E3S-□E4 type) NPN voltage-current output Output current: 1.5 to 4 mA Load current: 80 mA max Residual voltage: 2 V max  (E3S-□B4 type) PNP open collector output (2B4) Load current: 100 mA max. Residual voltage: 2 V max	Open collector output E3Z-T61:NPN open collector output E3Z-T81:PNP open collector output  Load current: 100 mA max Residual voltage: Load current of less than 10mA: 1 V max. Load current of 10 to 100 mA: 2 V max.
Response time	Operate or reset: 1 ms max.	Operate or reset: 1 ms max.
Degree of protection	IEC60529: IP67	IEC60529: IP67
Indicators	Light indicator (red), Stability indicator (green)	Operation indicator (orange)Stability indicator (green)

## Operation Ratings

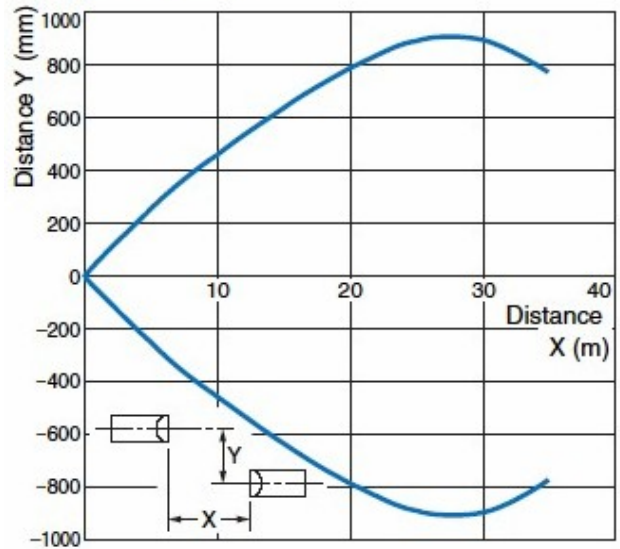
Discontinued Product  
Model E3S-2 / E3S-5 series

### Parallel Operating Range E3S-2E4 (41)

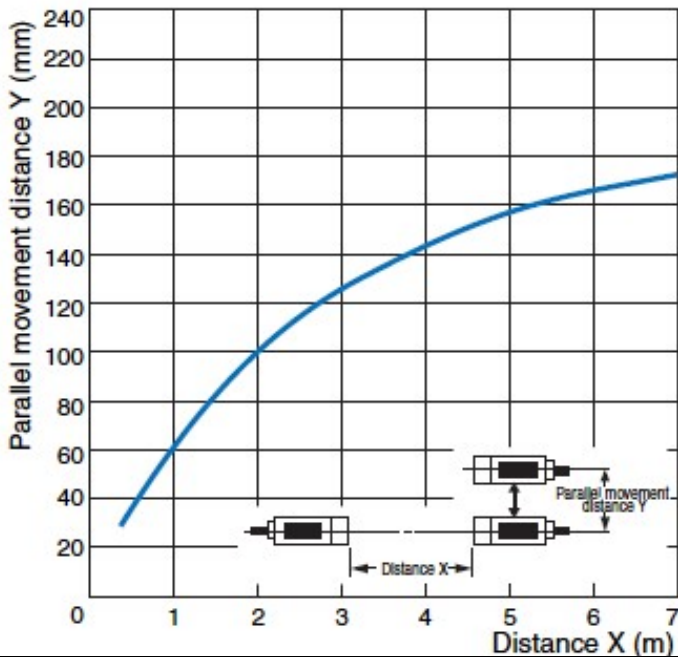


Recommended Replacement  
Model E3Z-T series

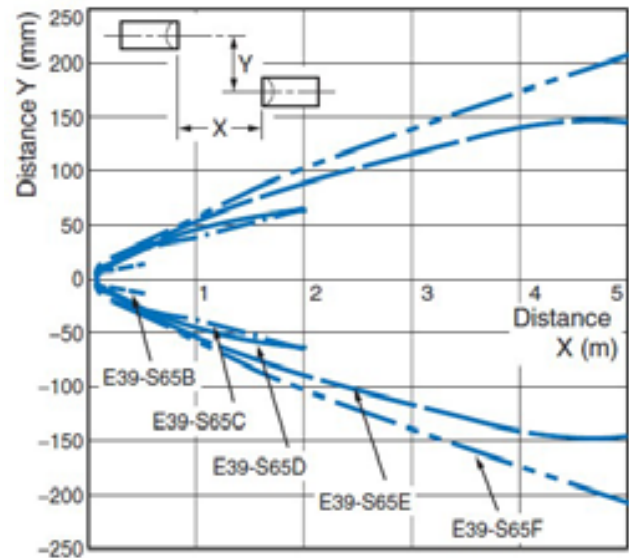
### Parallel Operating Range E3Z-T□1(T□6)



### E3S-5E4 (41) (42)



### E3Z-T□1(T□6) and Slit (A Slit is mounted to the Emitter and Receiver.)

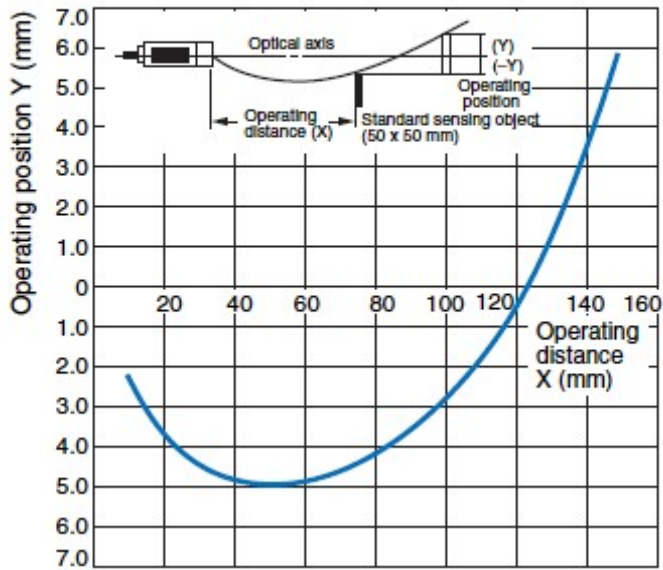




## Operation Ratings

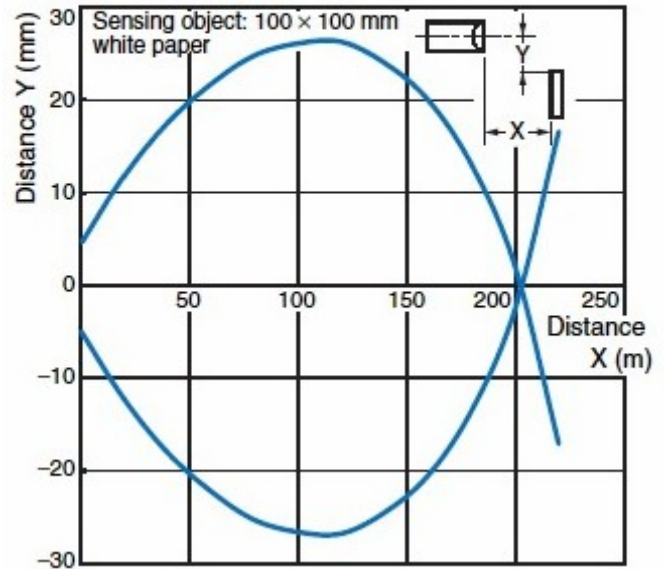
Discontinued Product  
Model E3S-DS10 / E3S-DS30 series

### Operating Range E3S-DS10E4 (41)

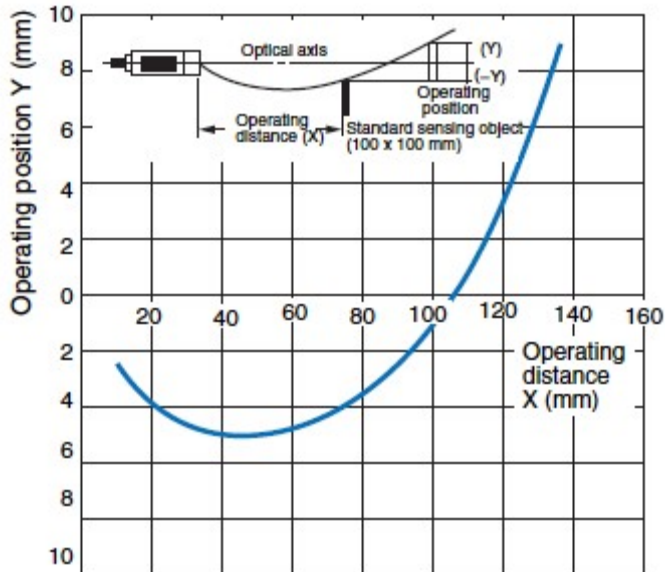


Recommended Replacement  
Model E3Z-D series

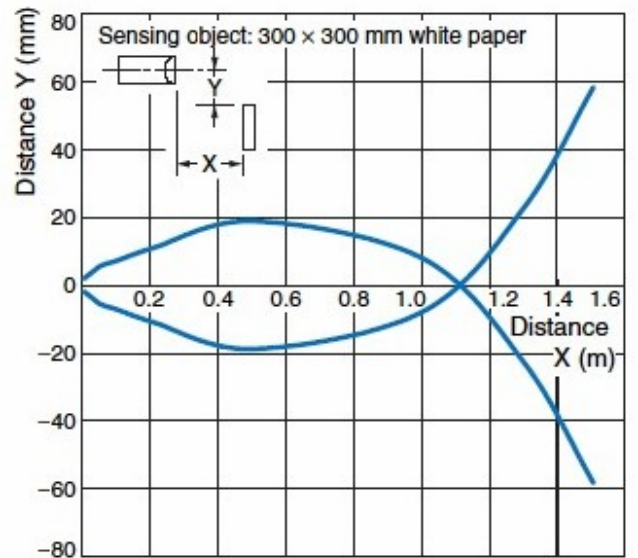
### Operating Range E3Z-D□1(D□6)



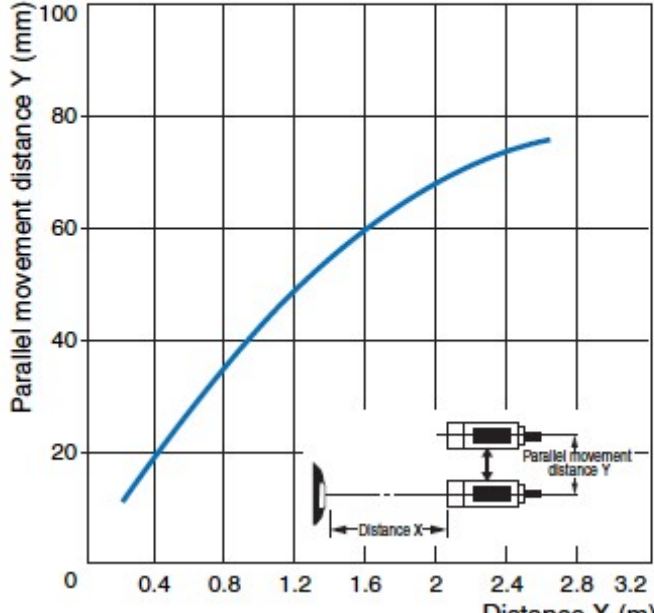
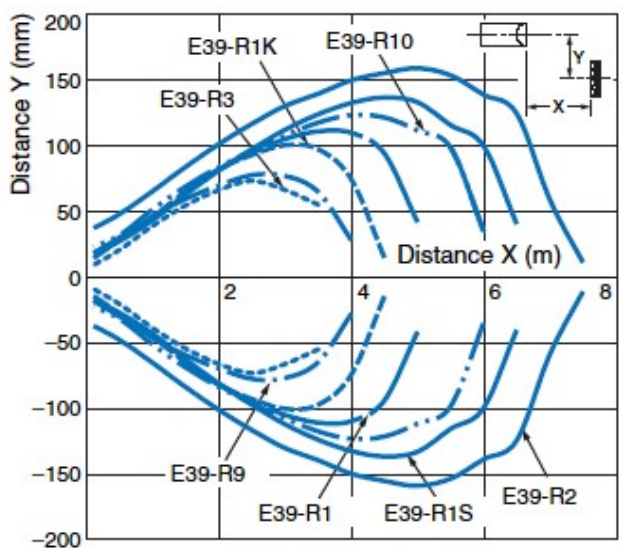
### E3S-DS30E4 (41) (42)



### E3Z-D□2(D□7)



## Operation Ratings

<p><b>Discontinued Product</b>  <b>Model E3S-R2 series</b></p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-R series</b></p>
<p><b>Parallel Operating Range</b>  <b>E3S-R2E4 (41) (42)</b></p> 	<p><b>Retro-reflective Models</b>  <b>E3Z-R□1(R□6) and Reflector</b></p> 

## Operation Method

<p><b>Discontinued Product</b>  <b>Model E3S-2, E3S-5, E3S-DS, E3S-R2 series</b></p>	<p><b>Recommended Replacement</b>  <b>Model E3Z-T, E3Z-D, E3Z-R series</b></p>
<p>Light-ON/Dark-ON operation is wire selectable by inverting the connection (Brown-Blue).          Sensitivity adjuster sets the operation threshold.</p>	<p>Light-ON/Dark-ON operation is selected by the Operation switch.</p>

## Reference Documentation

Description	Media	Publication number
E3S Photoelectric Sensors Data Sheet	PDF	<a href="#">CSM E3S DS E 8 1</a>
E3Z Photoelectric Sensors Data Sheet	PDF	<a href="#">E3Z DS E 15 1</a>