Distance-settable Photoelectric Sensors
E3AS Series

E3AS Series changes the “way of using” reflective photoelectric sensors

- Complete lineup of photoelectric sensors for various applications
- Teach button allows anyone to set optimal threshold values
- Antifouling coating prevents contamination on the sensing surface
- Ecolab certified in addition to IP67/69K/67G protection
- All models with IO-Link connectivity (NPN type excluded)

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Refer to *Safety Precautions* on page 38.

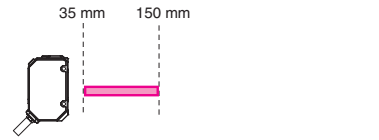
Table of Contents

Ordering Information

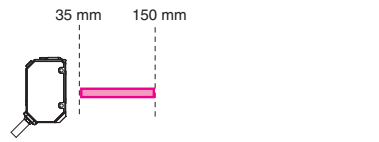
E3AS-HL models [Refer to *Dimensions* on page 40]

Red laser

Line beam type

Connection method	Sensing distance (white paper)	Output	Model	
			NPN output	PNP output
		IO-Link baud rate	---	COM3 (230.4 kbps) *3
Pre-wired (2 m) *1			E3AS-HL500LMN 2M	E3AS-HL500LMT 2M
M8 Connector			E3AS-HL500LMN M3	E3AS-HL500LMT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-HL500LMN-M1TJ 0.3M	E3AS-HL500LMT-M1TJ 0.3M
Pre-wired (2 m) *1			E3AS-HL150LMN 2M	E3AS-HL150LMT 2M
M8 Connector			E3AS-HL150LMN M3	E3AS-HL150LMT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-HL150LMN-M1TJ 0.3M	E3AS-HL150LMT-M1TJ 0.3M

Spot type

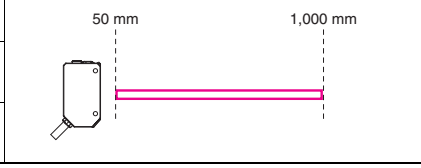
Connection method	Sensing distance (white paper)	Output	Model	
			NPN output	PNP output
		IO-Link baud rate	---	COM3 (230.4 kbps) *3
Pre-wired (2 m) *1			E3AS-HL500MN 2M	E3AS-HL500MT 2M
M8 Connector			E3AS-HL500MN M3	E3AS-HL500MT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-HL500MN-M1TJ 0.3M	E3AS-HL500MT-M1TJ 0.3M
Pre-wired (2 m) *1			E3AS-HL150MN 2M	E3AS-HL150MT 2M
M8 Connector			E3AS-HL150MN M3	E3AS-HL150MT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-HL150MN-M1TJ 0.3M	E3AS-HL150MT-M1TJ 0.3M

✻1. Models with 5-m cable length are also available with “5M” suffix. (Example: E3AS-HL500MN 5M/E3AS-HL500LMN 5M)
✻2. M8 Pre-wired Connector Models are also availavble. When ordering, add "-M3J 0.3M" to the end of the model number (e.g., E3AS-HL500MN-M3J 0.3M/E3AS-HL500LMN-M3J 0.3M).
✻3. COM2 (38.4kbps) Models are also availavble.

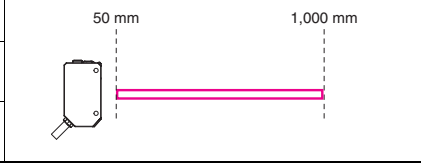
E3AS-F models [Refer to *Dimensions* on page 41]

Infrared light

Metal case type

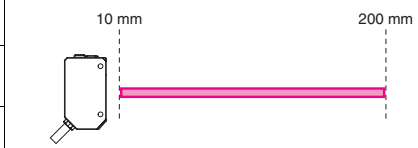
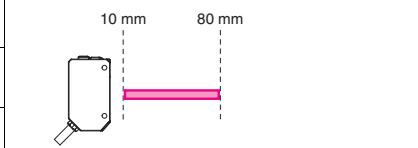
Connection method	Sensing distance (white paper)		Model	
		Output	NPN output	PNP output
		IO-Link baud rate	---	COM3 (230.4 kbps) *3
Pre-wired (2 m) *1			E3AS-F1500IMN 2M	E3AS-F1500IMT 2M
M8 Connector			E3AS-F1500IMN M3	E3AS-F1500IMT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-F1500IMN-M1TJ 0.3M	E3AS-F1500IMT-M1TJ 0.3M
Pre-wired (2 m) *1			E3AS-F1000IMN 2M	E3AS-F1000IMT 2M
M8 Connector			E3AS-F1000IMN M3	E3AS-F1000IMT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-F1000IMN-M1TJ 0.3M	E3AS-F1000IMT-M1TJ 0.3M

Plastic case type

Connection method	Sensing distance (white paper)		Model	
		Output	NPN output	PNP output
		IO-Link baud rate	---	COM3 (230.4 kbps) *3
Pre-wired (2 m) *1			E3AS-F1500IPN 2M	E3AS-F1500IPT 2M
M8 Connector			E3AS-F1500IPN M3	E3AS-F1500IPT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-F1500IPN-M1TJ 0.3M	E3AS-F1500IPT-M1TJ 0.3M
Pre-wired (2 m) *1			E3AS-F1000IPN 2M	E3AS-F1000IPT 2M
M8 Connector			E3AS-F1000IPN M3	E3AS-F1000IPT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-F1000IPN-M1TJ 0.3M	E3AS-F1000IPT-M1TJ 0.3M

E3AS-L models [Refer to *Dimensions* on page 42]

Red laser

Connection method	Sensing distance (white paper)		Model	
		Output	NPN output	PNP output
		IO-Link baud rate	---	COM3 (230.4 kbps) *3
Pre-wired (2 m) *1			E3AS-L200MN 2M	E3AS-L200MT 2M
M8 Connector			E3AS-L200MN M3	E3AS-L200MT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-L200MN-M1TJ 0.3M	E3AS-L200MT-M1TJ 0.3M
Pre-wired (2 m) *1			E3AS-L80MN 2M	E3AS-L80MT 2M
M8 Connector			E3AS-L80MN M3	E3AS-L80MT M3
M12 Pre-wired Smartclick Connector (0.3m) *2			E3AS-L80MN-M1TJ 0.3M	E3AS-L80MT-M1TJ 0.3M

✻1. Models with 5-m cable length are also available with “5M” suffix. (Example: E3AS-F1500IMN 5M/E3AS-F1500IPN 5M/E3AS-L200MN 5M)
✻2. M8 Pre-wired Connector Models are also availavble. When ordering, add "-M3J 0.3M" to the end of the model number (e.g., E3AS-F1500IMN-M3J 0.3M/E3AS-F1500IPN-M3J 0.3M/E3AS-L200MN-M3J 0.3M).
✻3. COM2 (38.4kbps) Models are also availavble.

Accessories (Sold Separately)

Sensor I/O Connectors (Sockets on One Cable End)

(Models for Connectors / Pre-wired Connectors)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

Round Water-resistant Connectors XS3F-M8 series

Appearance	Cable specification	Cable diameter (mm)	Cable connection direction	Cable length (m)	Sensor I/O Connector model number
M8 Connector Straight type 	PVC cable	5 dia.	Straight	2	**XS3F-M421-402-R**
				5	**XS3F-M421-405-R**
Right-angle type 			Right-angle	2	**XS3F-M422-402-R**
				5	**XS3F-M422-405-R**

Note: 1. The XS3W (Socket and Plug on Cable Ends) is also available. Refer to *XS3 Series Datasheet* (Cat. No. G147).
2. The connectors will not rotate after they are connected.
3. The cable is fixed at an angle of 180° from the sensor emitter/receiver surface.

Round Water-resistant Connectors XS5 series

Appearance	Cable specification	Cable diameter (mm)	Cable connection direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	PVC robot cable	6 dia.	Straight	2	**XS5F-D421-D80-F**
				5	**XS5F-D421-G80-F**
Right-angle type 			Right-angle	2	**XS5F-D422-D80-F**
				5	**XS5F-D422-G80-F**

Note: 1. The XS5W (Socket and Plug on Cable Ends) is also available. Refer to *XS5* on your OMRON website for details.
2. The connectors will not rotate after they are connected.
3. The cable is fixed at an angle of 180° from the sensor emitter/receiver surface.

Mounting Brackets

A Mounting Bracket is not enclosed with the Sensor. Order a Mounting Bracket separately if required.

For E3AS-HL series [Refer to *Dimensions* on page 43]

Appearance	Model (material)	Pre-wired	M12 Pre-wired Smartclick Connector	M8 Connector
L-shaped Mounting Bracket 	**E39-L221 (SUS304)**	Yes	Yes	---
Horizontal Protective Cover Bracket 	**E39-L222 (SUS304)**	Yes	Yes	---
Rear Mounting Bracket 	**E39-L223 (SUS304)**	Yes	Yes	Yes *2
Robust Mounting Bracket 	**E39-L224 (SUS304)**	Yes	Yes	---
L-shaped Mounting Bracket 	**E39-L231 (SUS304)**	--- *1	--- *1	Yes *3
Horizontal Protective Cover Bracket 	**E39-L232 (SUS304)**	--- *1	--- *1	Yes *3
Robust Mounting Bracket 	**E39-L234 (SUS304)**	--- *1	--- *1	Yes *3
Front Protection Cover 	**E39-E19** *4	Yes	Yes	Yes

✻1. Can be used for Pre-wired models and M12 Pre-wired Smartclick Connector models. However, confirm the bracket shape in advance.
✻2. Confirm the installation environment and bracket shape of the Sensor I/O Connector to be connected.
✻3. Use an L-shaped Sensor I/O Connector. Straight types cannot be installed.
✻4. Front Protection Cover is Accessory for E3AS-HL. E3AS-F model and E3AS-L model cannot be installed.

For E3AS-F/L models [Refer to *Dimensions* on page 47]

Appearance	Model (material)	Pre-wired	M12 Pre-wired Smartclick Connector	M8 Connector
L-shaped Mounting Bracket 	**E39-L201 (SUS304)**	Yes	Yes	---
Horizontal Protective Cover Bracket 	**E39-L202 (SUS304)**	Yes	Yes	---
Rear Mounting Bracket 	**E39-L203 (SUS304)**	Yes	Yes	Yes *2
Robust Mounting Bracket 	**E39-L204 (SUS304)**	Yes	Yes	---
L-shaped Mounting Bracket 	**E39-L211 (SUS304)**	--- *1	--- *1	Yes *3
Horizontal Protective Cover Bracket 	**E39-L212 (SUS304)**	--- *1	--- *1	Yes *3
Robust Mounting Bracket 	**E39-L214 (SUS304)**	--- *1	--- *1	Yes *3

✻1. Can be used for Pre-wired models and M12 Pre-wired Smartclick Connector models. However, confirm the bracket shape in advance.
✻2. Confirm the installation environment and bracket shape of the Sensor I/O Connector to be connected.
✻3. Use an L-shaped Sensor I/O Connector. Straight types cannot be installed.

Common to E3AS series [Refer to *Dimensions* on page 50]
A Mounting Bracket is not enclosed with the Sensor. Order a Mounting Bracket separately if required.

Appearance	Model (material)	Pre-wired	M12 Pre-wired Smartclick Connector	M8 Connector
Flexible Mounting Bracket 	**E39-L261 *1 (SUS304)**	Yes	Yes	Yes
Post 50 mm 	**E39-L262**	Yes	Yes	Yes
Post 100 mm 	**E39-L263**	Yes	Yes	Yes
Air Blow Unit 	**E39-E16 *2**	Yes	Yes	Yes

***1.** The Flexible Mounting Bracket is not provided with a Post (E39-L262/E39-L263). It must be ordered separately.
***2.** The tube for air is not included.

E3AS Series

Ratings and Specifications

E3AS-HL models

Item	Model	Sensing method	Triangulation			
		NPN Output	E3AS-HL500MN	E3AS-HL500LMN	E3AS-HL150MN	E3AS-HL150LMN
		PNP Output/COM3	E3AS-HL500MT	E3AS-HL500LMT	E3AS-HL150MT	E3AS-HL150LMT
Sensing distance			35 mm to the set distance (White paper or black paper100 × 100 mm)		35 mm to the set distance (White paper or black paper100 × 100 mm)	
Setting range			35 to 500 mm (White paper or black paper 100 × 100 mm)		35 to 150 mm (White paper or black paper 100 × 100 mm)	
Standard detectable difference *1			35 to 180 mm: 9 mm 180 to 300 mm: 18 mm 300 to 400 mm: 30 mm 400 to 500 mm: 45 mm at 10 m sec		35 to 50 mm: 1 mm 50 to 100 mm: 2 mm 100 to 150 mm: 4 mm at 10 m sec	
Display minimum unit value			1 mm		0.1 mm	
Spot size (reference value) *2			2.5 mm × 1.5 mm at distance of 500 mm	18 mm × 1.5 mm at distance of 500 mm	2.5 mm × 1.3 mm at distance of 150 mm	8 mm × 1.3 mm at distance of 150 mm
Light source (wavelength)			Red laser (660 nm), Class1 (IEC/EN60825-1:2014)			
Power supply voltage			10 to 30 VDC (including 10% ripple (p-p)), Class2			
Current consumption			100 mA max.			
Input/ output	Control output		Load power supply voltage 30 VDC max. (Class2), the total load current of the two outputs is 100 mA max. Residual voltage (Load current 10 mA max.: 1 VDC max., Load current 10 to 100 mA: 2 VDC max.) N.O. (Normally Open) / N.C. (Normally Close) selectable			
		NPN	OUTPUT 1: NO (Normally open), OUTPUT 2: NC (Normally closed)			
		PNP/COM3	OUTPUT 1: NO (Normally open)/COM□, OUTPUT 2: NC (Normally closed)			
	External input		Laser OFF / Teaching / Zero reset selectable NPN ON time: 0 V short-circuit or 1.5 V or less, OFF time: Power supply voltage short-circuit or open PNP ON time: Power supply voltage short-circuit or within power supply voltage - 1.5 V, OFF time: 0 V short-circuit or open			
Response time			1.5 ms / 10 ms / 50 ms selectable			
Mutual interference prevention			4 units max. (when using the mutual interference prevention function)			
Ambient illumination			Receiver surface illuminance: Incandescent lamp: 20,000 lx max., Sunlight: 25,000 lx max. at distance of 250 mm Incandescent lamp: 5,000 lx max., Sunlight: 10,000 lx max. at distance of 500 mm		Receiver surface illuminance: Incandescent lamp: 8,000 lx max., Sunlight: 16,000 lx max.	

*1. Measured with OMRON's standard workpiece (White ceramic).

*2. Defined by D4σ method at the maximum sensing distance. Detection may be influenced if there is light leakage outside the defined region and the surroundings of the target object have a high reflectance in comparison to the target object. Also, when detecting a workpiece that is smaller than the spot size, a correct value may not be obtained.

E3AS-F models

Item	Model	Sensing method	TOF (Time of flight)	
		Type	Metal case (□: M), Plastic case (□: P)	
		NPN output	E3AS-F1500I□N	E3AS-F1000I□N
		PNP output/ COM3	E3AS-F1500I□T	E3AS-F1000I□T
Sensing distance			50 mm to the set distance (White paper or black paper 200 × 200 mm)	50 mm to the set distance (White paper or black paper 200 × 200 mm)
Setting range			100 to 1,500 mm (White paper 200 × 200 mm) 100 to 1,000 mm (Black paper 200 × 200 mm)	100 to 1,000 mm (White paper 200 × 200 mm) 100 to 500 mm (Black paper 200 × 200 mm)
Spot diameter (reference value)			95 mm dia. (at distance of 1,000 mm)	
Differential travel			15% max. of set distance (Set distance 200 mm min.)	
Reflectivity characteristic (black/white error)			10% max. of set distance (Set distance 200 mm min.)	
Light source (wavelength)			Infrared laser (940 nm) Class1 (IEC/EN60825-1:2014)	
Power supply voltage			10 to 30 VDC (including 10% ripple (p-p)), Class2	
Current consumption			30 mA max.	
Input/ output	Control output		Load power supply voltage: 30 VDC max., Class2, Load current: 100 mA max. (Residual voltage: Load current of less than 10 mA: 1 V max. Load current of 10 to 100 mA: 2 V max.) Open-collector output (NPN/PNP output depending on model)	
		NPN	OUTPUT 1: NO (Normally open), OUTPUT 2: NC (Normally closed)	
		PNP/COM3	OUTPUT 1: NO (Normally open)/COM□, OUTPUT 2: NC (Normally closed)	
Response time			Operate or reset: 150 ms max.	Operate or reset: 90 ms max.
Distance setting			Teaching method/IO-Link communications	
Ambient illumination			Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.	

E3AS-L models

Item \ Model		Sensing method	Triangulation	
		NPN Output	E3AS-L200MN	E3AS-L80MN
		PNP Output/COM3	E3AS-L200MT	E3AS-L80MT
Sensing distance			10 mm to the set distance (White paper or black paper 100 × 100 mm)	
Setting range			40 to 200 mm (White paper or black paper 100 × 100 mm)	20 to 80 mm (White paper or black paper 100 × 100 mm)
Spot diameter (reference value)			25 × 25 mm at distance of 200 mm	4 mm dia. (at distance of 80 mm)
Differential travel			10% max. of set distance	White paper: 2% max. of set distance Black paper: 5% max. of set distance
Reflectivity characteristic (black/white error)			10% max. of set distance	5% max. of set distance
Light source (wavelength)			Red LED (624 nm)	Red LED (650 nm)
Power supply voltage			10 to 30 VDC (including 10% ripple (p-p)), Class2	
Current consumption			35 mA max.	
Input/ output	Control output		Load power supply voltage: 30 VDC max., Class2, Load current: 100 mA max. (Residual voltage: Load current of less than 10 mA: 1 V max. Load current of 10 to 100 mA: 2 V max.) Open-collector output (NPN/PNP output depending on model)	
		NPN	OUTPUT 1: NO (Normally open), OUTPUT 2: NC (Normally closed)	
		PNP/COM3	OUTPUT 1: NO (Normally open)/COM□, OUTPUT 2: NC (Normally closed)	
Response time			Operate or reset: 1 ms max.	
Distance setting			Teaching method/IO-Link communications	
Ambient illumination			Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.	

Common to E3AS series

Series		E3AS-HL	E3AS-F	E3AS-L
Protection circuits		Power supply reverse polarity protection, Output short-circuit protection, and Output reverse polarity protection		
Ambient temperature range		Operating: -10 to 50°C, Storage: -25 to 70°C (with no icing or condensation)	Operating: -20 to 55°C, Storage: -40 to 70°C (with no icing or condensation)	
Ambient humidity range		Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)		
Insulation resistance		20 MΩ min. at 500 VDC		
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min		
Vibration resistance		10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		500 m/s^2 for 3 times each in X, Y, and Z directions		
Degree of protection		IP67 (IEC60529) and IP67G *1 (JIS C 0920 Annex 1), IP69K (ISO20653)		
Indicators		OLED Display (White), Power/ Communication indicator (Green*), Operation indicator (Orange) * IO-Link Communication mode: blinking	Operation indicator (orange), Stability & Communication indicator (green*) * IO-Link Communication mode: blinking	
Connection method		Pre-wired (standard cable length: 2 m), M8 Connector, M12 Pre-wired Smartclick Connector (standard cable length: 0.3m)		
Weight (packed state/ Sensor only)	Pre-wired (2 m)	Approx. 180 g/approx. 110 g	Metal case type: Approx. 135 g/approx. 90 g Plastic case type: Approx. 115 g/approx. 70 g	Approx. 135 g/approx. 90 g
	M8 Connector	Approx. 120 g/approx. 50 g	Metal case type: Approx. 75 g/approx. 30 g Plastic case type: Approx. 60 g/approx. 15 g	Approx. 75 g/approx. 30 g
	M12 Pre-wired Smartclick Connector (0.3m)	Approx. 150 g/approx. 80 g	Metal case type: Approx. 95 g/approx. 50 g Plastic case type: Approx. 75 g/approx. 30 g	Approx. 95 g/approx. 50 g
Materials	Case	Stainless steel (SUS316L)	Metal case type: Main unit/mounting part/connector part Stainless steel (SUS316L) Plastic case type: Main unit Polybutylene terephthalate (PBT) / polycarbonate (PC), Mounting part/connector part Nickel-plated brass	Stainless steel (SUS316L)
	Lens cover and Display	Methacrylic resin (PMMA) (Lens cover: Antifouling coating)		
	Indicator	Polyamide 11 (PA11)	Metal case type: Polyamide 11 (PA11) Plastic case type: Polyethersulfone (PES)	Polyamide 11 (PA11)
Main IO-Link functions		Operation mode switching between NO and NC, execution of teaching (2-point teaching, Background teaching), setup of the threshold, timer function of the control output and timer time selecting, Restore Factory Settings, Key Lock (Unlock, Lock, Lock (No Button)), monitor output* (Detection level, Incident light level) * Only for E3AS-HL and E3AS-F		
IO-Link Communication specifications	IO-Link specification	Ver. 1.1		
	Baud rate	COM3 (230.4 kbps)		
	Data length	PD size: 4 bytes, OD size: 1 byte (M-sequence type: TYPE_2_V)		PD size: 1 byte, OD size: 1 byte (M-sequence type: TYPE_2_1)
	Minimum cycle time	COM3: 1.2 ms		
Accessories		Instruction manual, compliance sheet, index list (attached for IO-Link type only) and FDA certification label Note: Mounting Brackets must be ordered separately.		

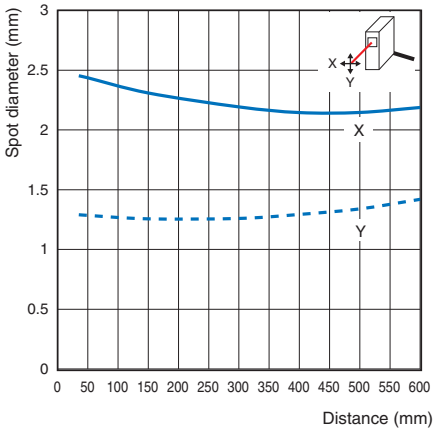
*1. The IP67G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards).
The IP67 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.

Engineering Data (Reference Value)

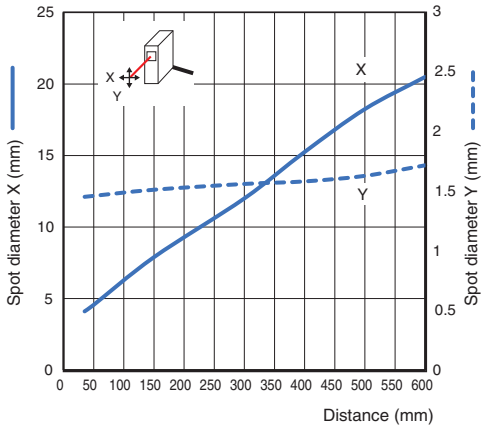
E3AS-HL models

Spot Diameter vs. Sensing Distance

Spot type
E3AS-HL500□
E3AS-HL150□

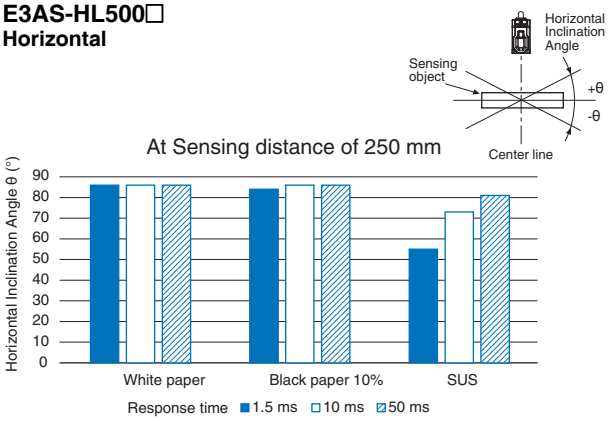


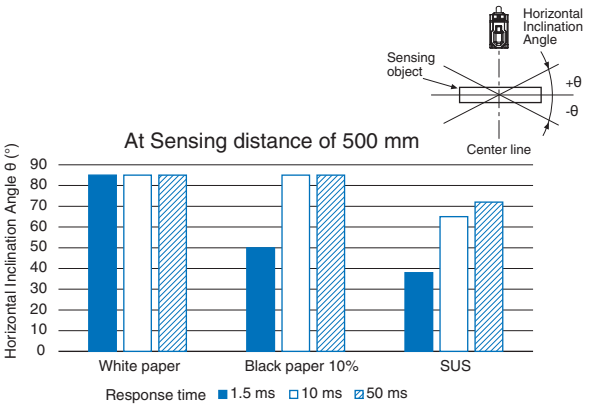
Line beam type
E3AS-HL500L□
E3AS-HL150L□



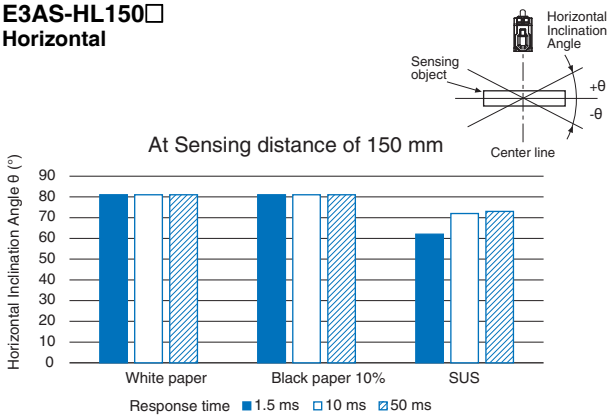
Sensing Object Angle Characteristics

Spot type/Line beam type
E3AS-HL500□
Horizontal





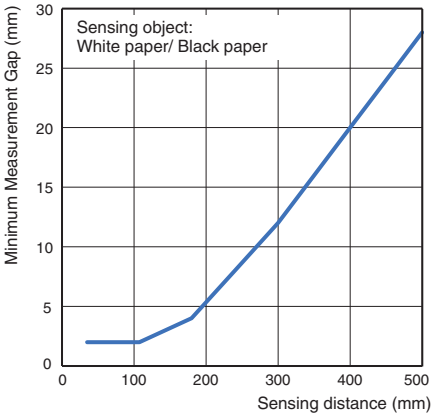
E3AS-HL150□
Horizontal



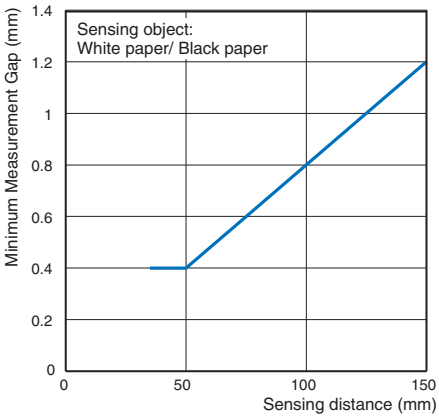
Minimum Measurement Gap Vs. Distance

Spot type/Line beam type

E3AS-HL500□



E3AS-HL150□

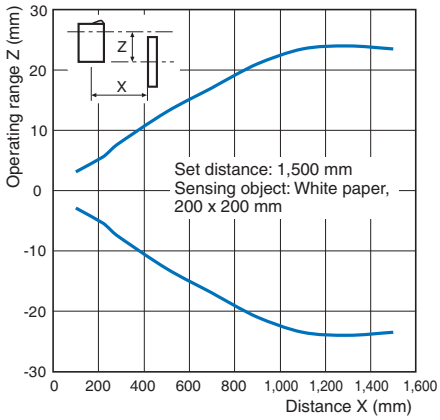


E3AS-F models

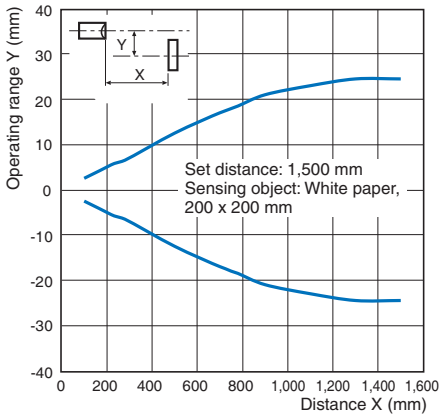
Operating Range

E3AS-F1500□

Z directions

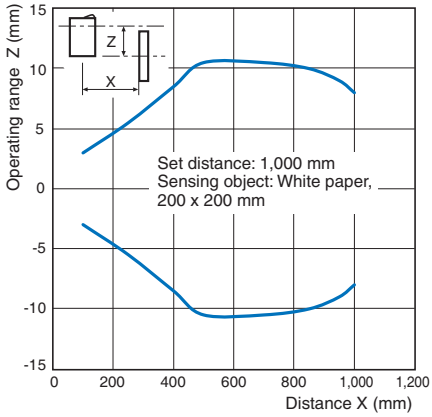


Y directions

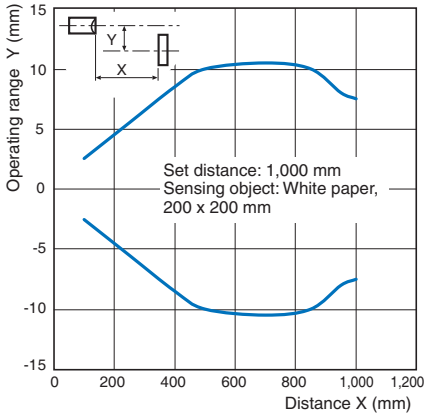


E3AS-F1000□

Z directions



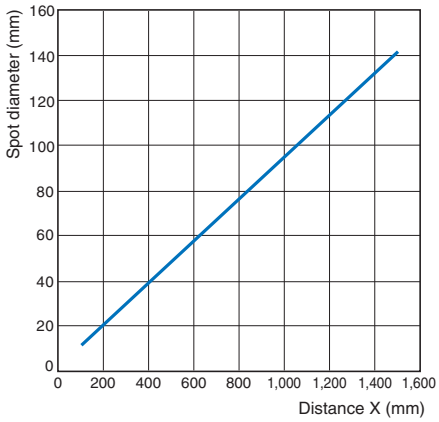
Y directions



Spot Diameter vs. Sensing Distance

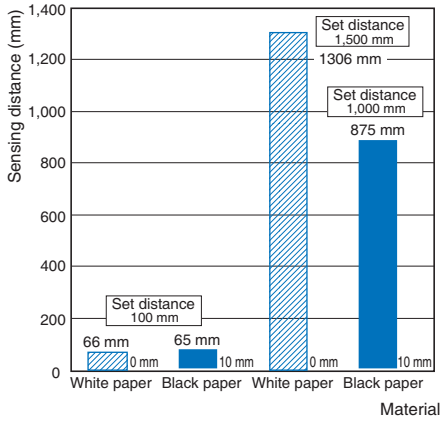
E3AS-F1500□

E3AS-F1000□

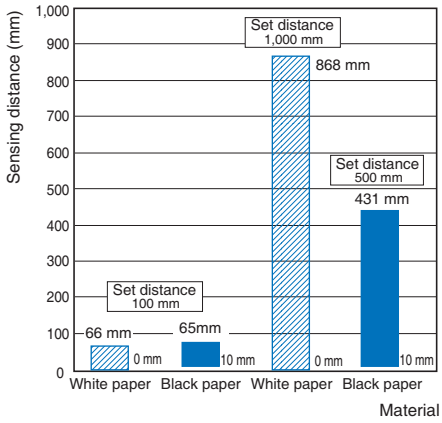


Close-range Characteristics

E3AS-F1500□

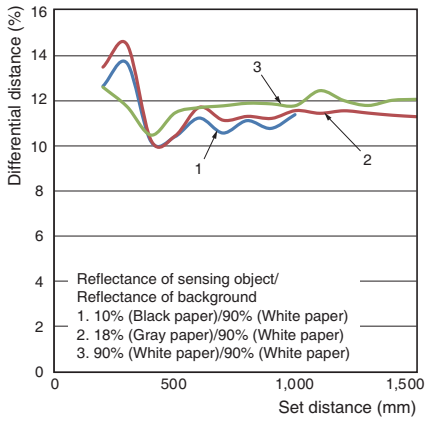


E3AS-F1000□

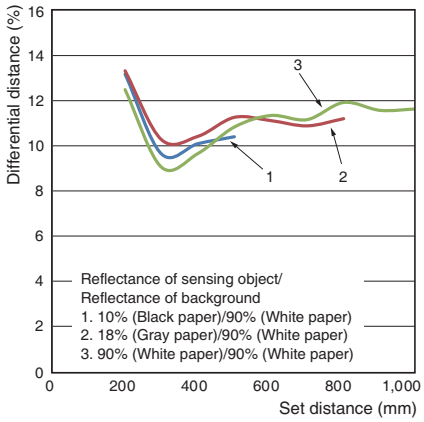


Differential distance for each sensing object Vs. Distance

E3AS-F1500□



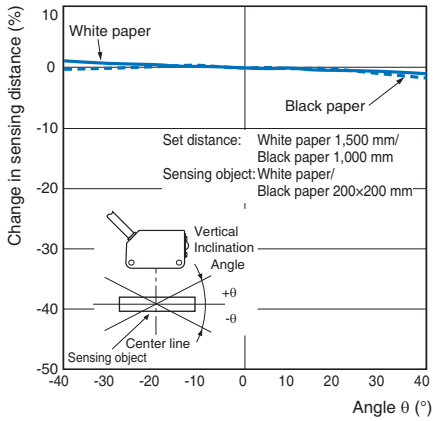
E3AS-F1000□



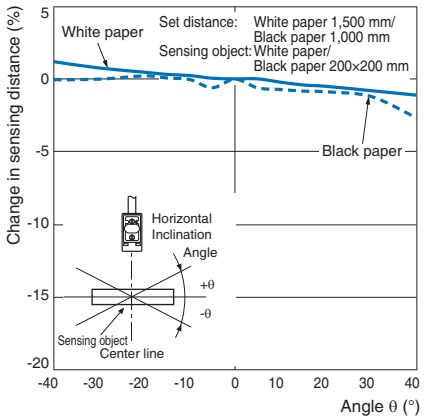
Sensing Object Angle Characteristics

E3AS-F1500□

Vertical

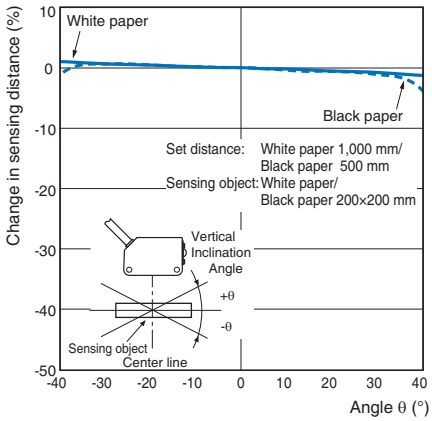


Horizontal

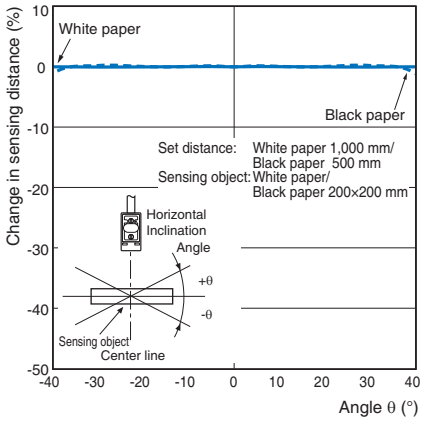


E3AS-F1000□

Vertical



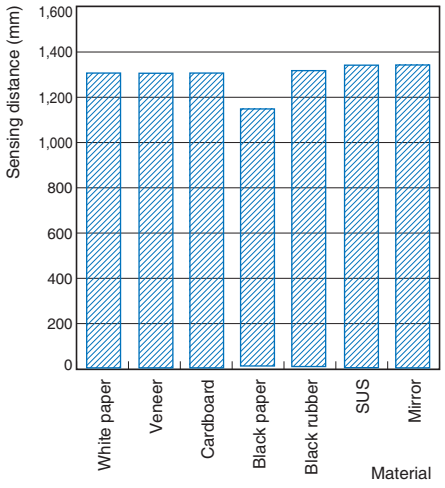
Horizontal



Sensing Distance vs. Sensing Object Material

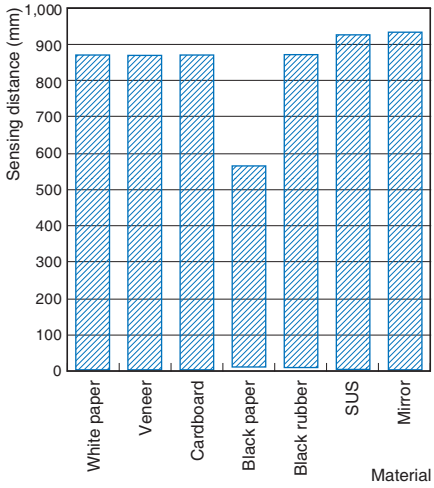
E3AS-F1500□

(Set Distance of 1,500 mm using White Paper)



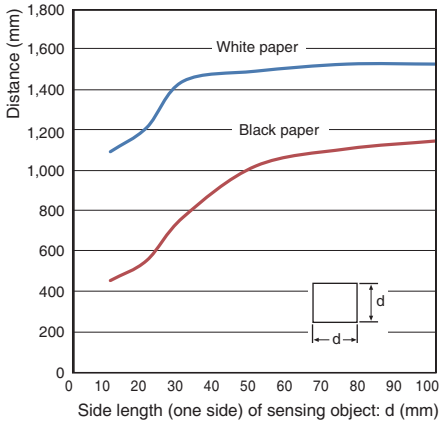
E3AS-F1000□

(Set Distance of 1,000 mm using White Paper)

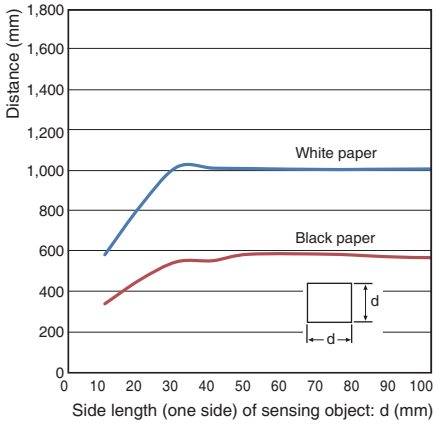


Sensing Object Size vs. Sensing Distance

E3AS-F1500□



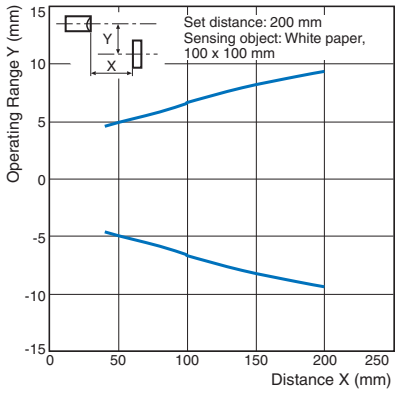
E3AS-F1000□



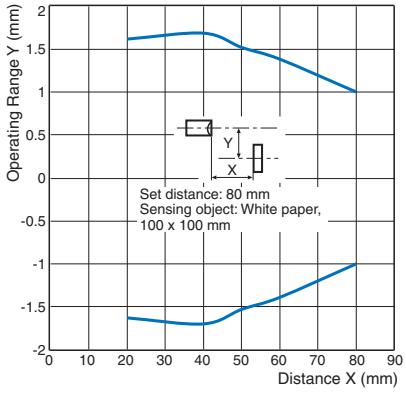
E3AS-L models

Operating Range

E3AS-L200

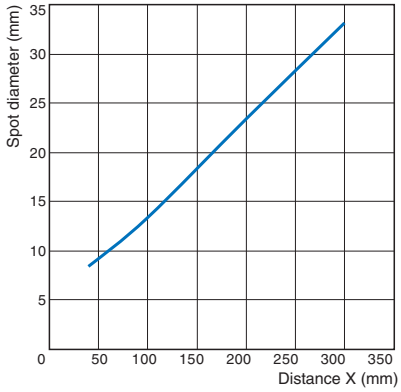


E3AS-L80

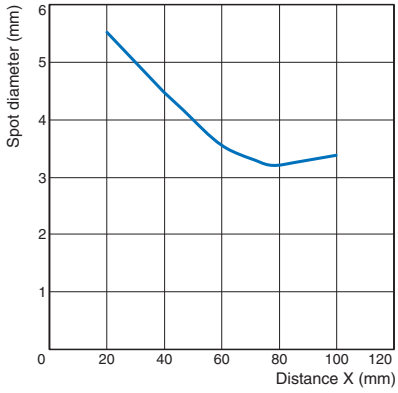


Spot Diameter vs. Sensing Distance

E3AS-L200

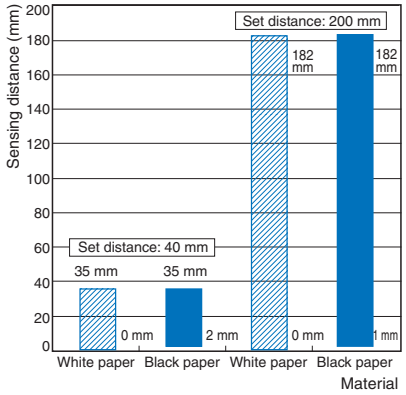


E3AS-L80

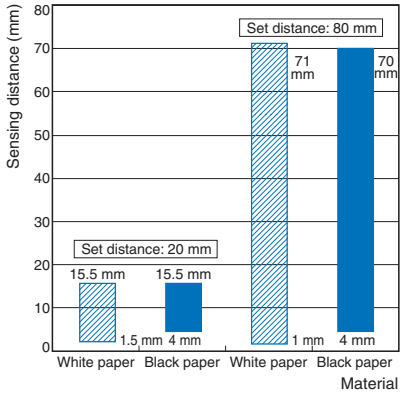


Close-range Characteristics

E3AS-L200

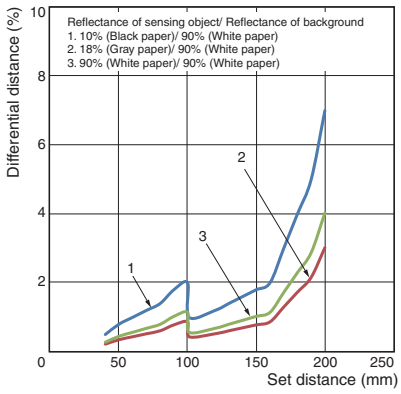


E3AS-L80

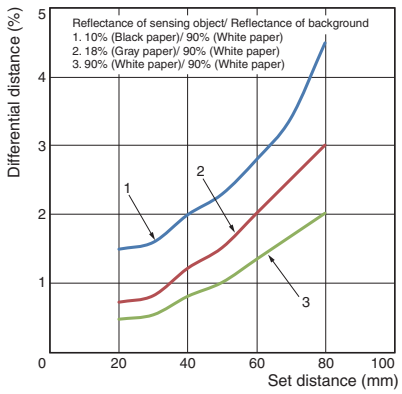


Differential distance for each sensing object Vs. Distance

E3AS-L200



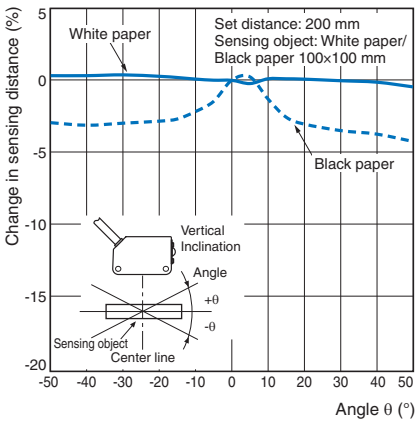
E3AS-L80



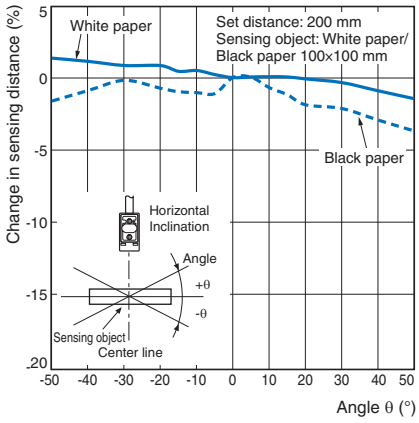
Sensing Object Angle Characteristics

E3AS-L200

Vertical

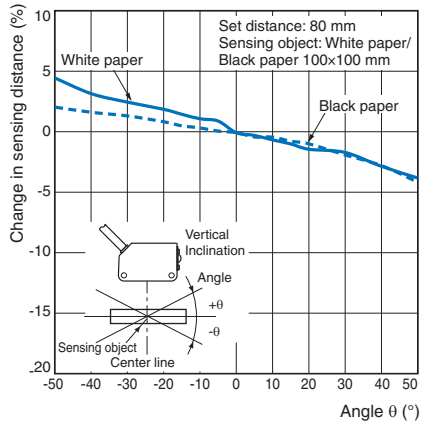


Horizontal

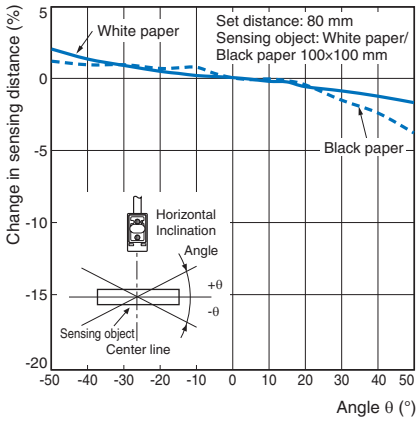


E3AS-L80

Vertical



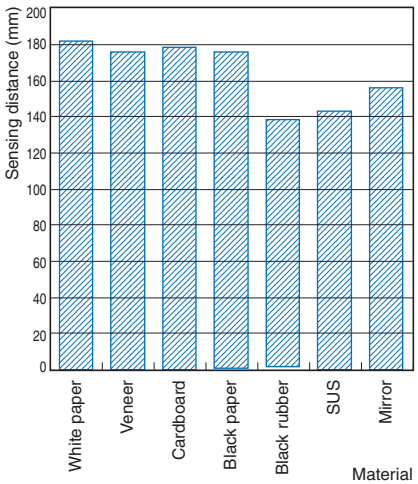
Horizontal



Sensing Distance vs. Sensing Object Material

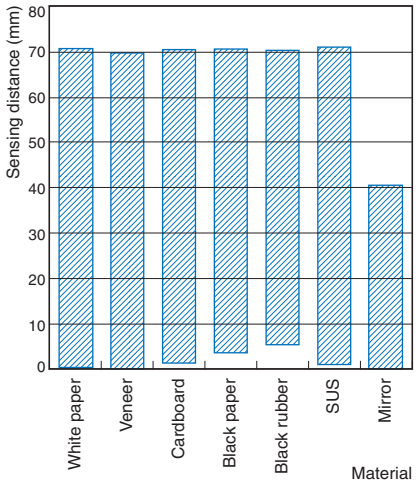
E3AS-L200

(Set Distance of 200 mm using White Paper)



E3AS-L80

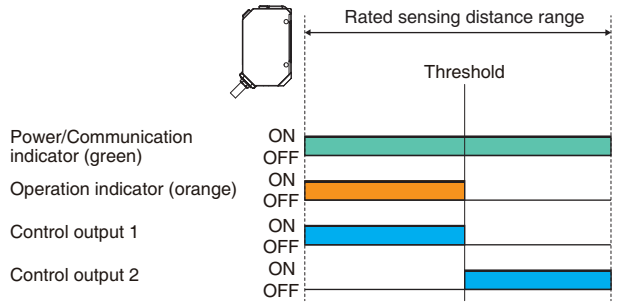
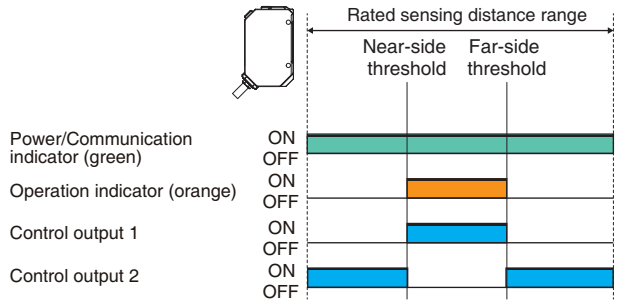
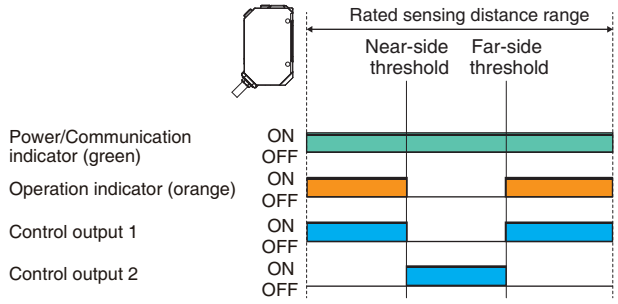
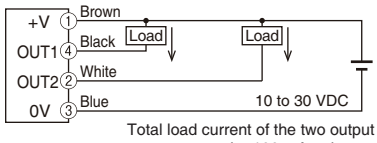
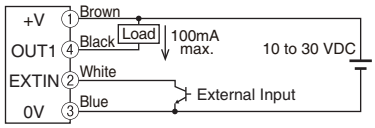
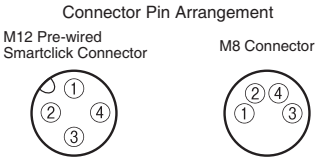
(Set Distance of 80 mm using White Paper)



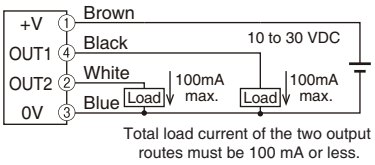
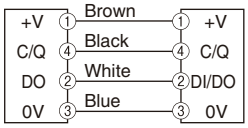
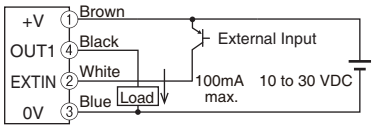
I/O Circuit Diagrams/ Timing Charts

E3AS-HL models

NPN Output

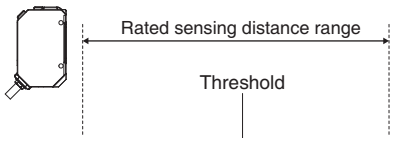
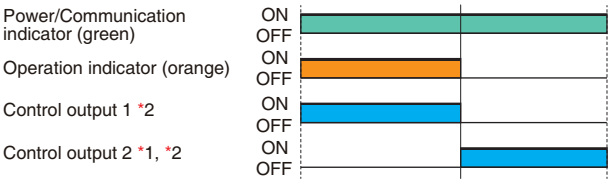
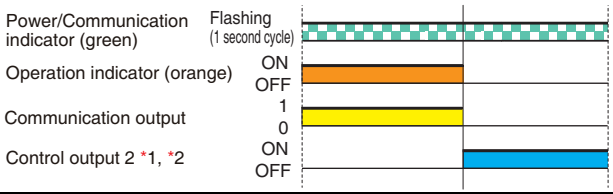
Model	Timing chart	Output circuit
E3AS-HL500□N□ E3AS-HL150□N□	**Single Point Mode [Single]**  **Window BGS mode [Window BGS]**  **Window FGS mode [Window FGS]** 	**Using Pin2 (white wire) as output**  Total load current of the two output routes must be 100 mA or less. **Using Pin2 (white wire) as external input**  **External Input** / **NPN** **ON time** / 0V short-circuit or 1.5V or less **OFF time** / Power supply voltage short-circuit or open Connector Pin Arrangement 

PNP Output

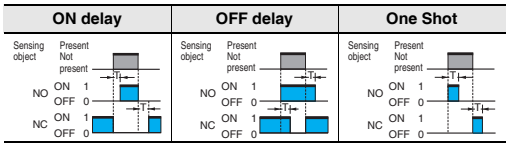
Model	Output circuit	
	Standard I/O mode (SIO mode) *1	IO-Link Communication mode (COM mode) *2
E3AS-HL500□D□ E3AS-HL150□T□	**Using Pin2 (white wire) as output**  Total load current of the two output routes must be 100 mA or less.	**Using Pin2 (white wire) as output**  IO-Link Master
	Using Pin2 (white wire) as external input  **External Input** / **PNP** **ON time**: Power supply voltage short-circuit or within power supply voltage - 1.5V **OFF time**: 0V short-circuit or open	---
	Connector Pin Arrangement M12 Pre-wired Smartclick Connector  M8 Connector 	

*1. Standard I/O mode is used as PNP ON/OFF output.
*2. IO-Link Communication mode is used for communications with the IO-Link Master. C/Q performs IO-Link communications. Sensor output DO performs ON/OFF output.

Single Point Mode [Single]

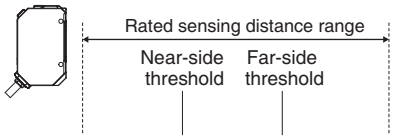
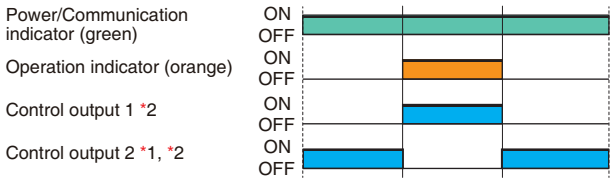
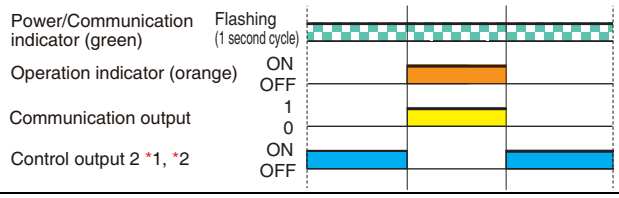
	Timing charts
Output mode	
Standard I/O mode (SIO mode)	
IO-Link Communication mode (COM mode)	

*1. The initial value of control output 2 is reverse of control output 1.
*2. The timer function of the control output can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, or one-shot function and select a timer time of 1 to 9,999 ms (T).)

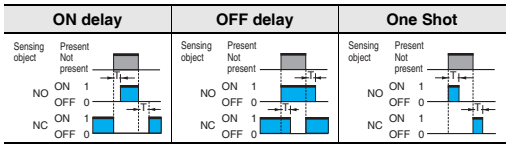


Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Window BGS mode [Window BGS]

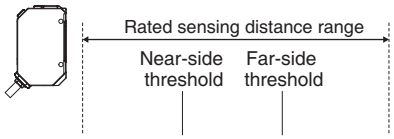
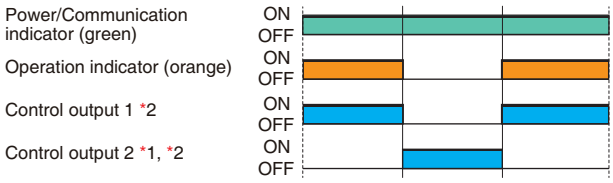
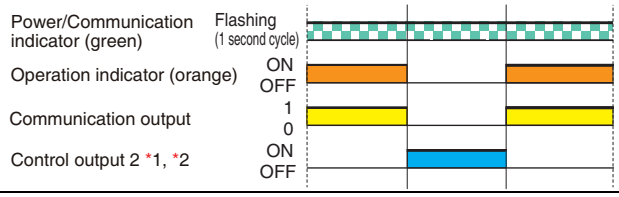
	Timing charts
Output mode	
Standard I/O mode (SIO mode)	
IO-Link Communication mode (COM mode)	

✻1. The initial value of control output 2 is reverse of control output 1.
✻2. The timer function of the control output can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, or one-shot function and select a timer time of 1 to 9,999 ms (T).)

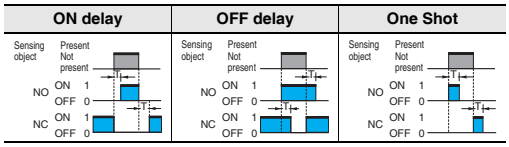


Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Window FGS mode [Window FGS]

	Timing charts
Output mode	
Standard I/O mode (SIO mode)	
IO-Link Communication mode (COM mode)	

✻1. The initial value of control output 2 is reverse of control output 1.
✻2. The timer function of the control output can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, or one-shot function and select a timer time of 1 to 9,999 ms (T).)

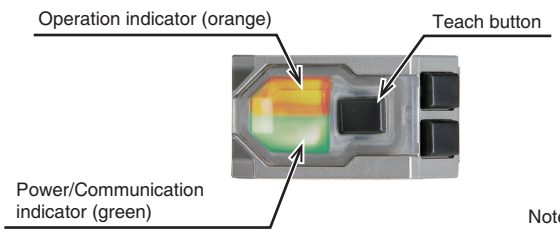


Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Note: Shown above are the factory settings. Refer to the index list for the default settings at time of shipment from factory.
PNP/COM output logic can be reversed by IO-Link communication.
The operation indicator (orange) lights up when control output 1 is ON or communication output is 1.

Nomenclature

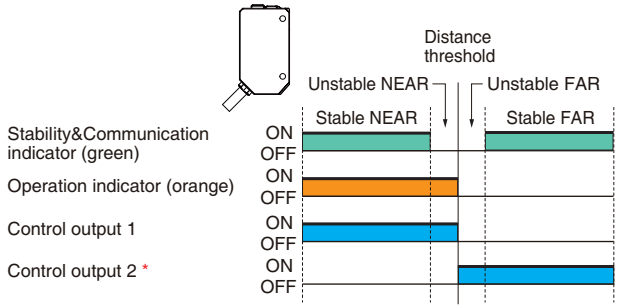
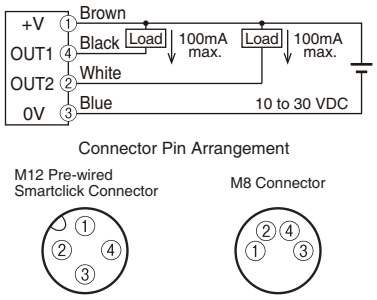
E3AS-HL500☐
E3AS-HL150☐



Note: The indicators work differently depending on sensor status.

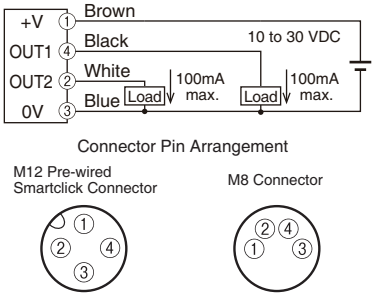
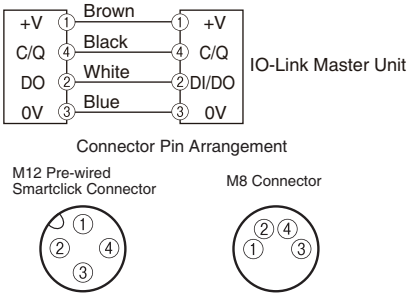
E3AS-F models

NPN Output

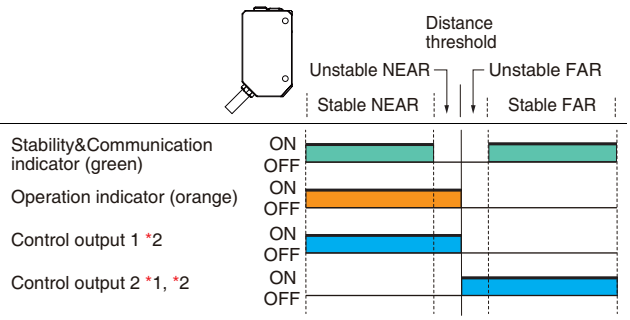
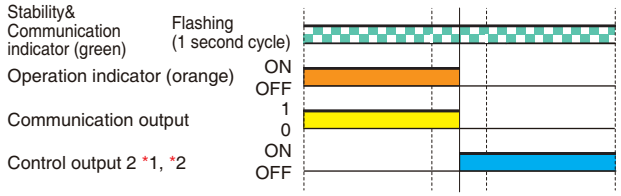
Model	Timing chart	Output circuit
E3AS-F1500I□N□ E3AS-F1000I□N□		

✻ The initial value of control output 2 is reverse of control output 1.

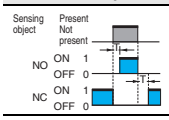
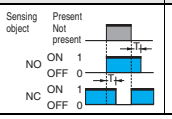
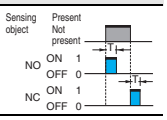
PNP Output

Model	Output circuit	
	Standard I/O mode (SIO mode) *1	IO-Link Communication mode (COM mode) *2
E3AS-F1500I□D□ E3AS-F1500I□T□ E3AS-F1000I□D□ E3AS-F1000I□T□		

✻**1.** Standard I/O mode is used as PNP ON/OFF output.
✻**2.** IO-Link Communication mode is used for communications with the IO-Link Master. C/Q performs IO-Link communications. Sensor output DO performs ON/OFF output.

Output mode	Timing charts
Standard I/O mode (SIO mode)	
IO-Link Communication mode (COM mode)	

✻**1.** The initial value of control output 2 is reverse of control output 1.
✻**2.** The timer function of the control output can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, or one-shot function and select a timer time of 1 to 9,999 ms (T).)

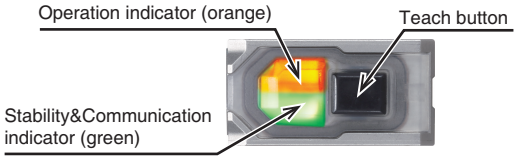
ON delay	OFF delay	One Shot
		

Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Note: Shown above are the factory settings. Refer to the index list for the default settings at time of shipment from factory.
PNP/COM output logic can be reversed by IO-Link communication.
The operation indicator (orange) lights up when control output 1 is ON or communication output is 1.

Nomenclature

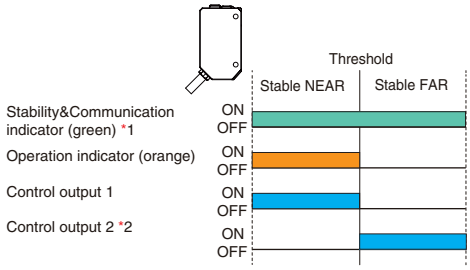
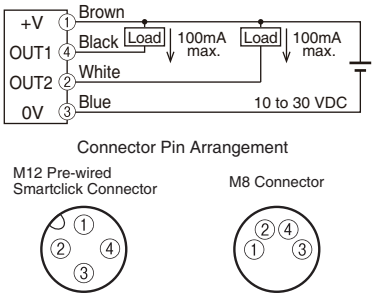
E3AS-F1500□
E3AS-F1000□



Note: The indicators work differently depending on sensor status.

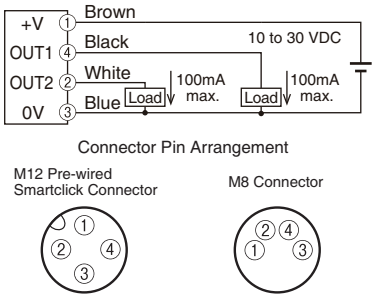
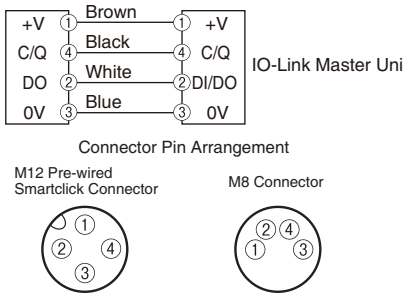
E3AS-L models

NPN Output

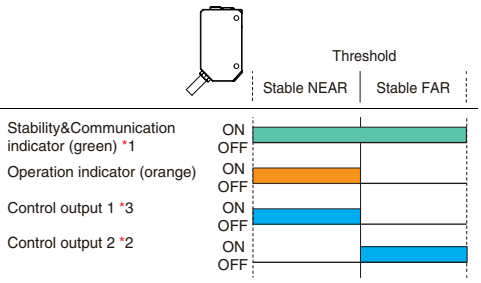
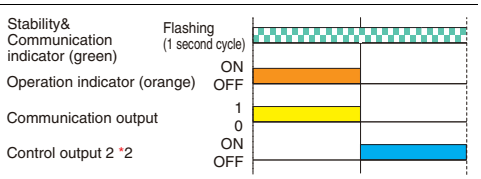
Model	Timing chart	Output circuit
E3AS-L□N		

*1. Turns off when there is insufficient margin for incident light. In that case, place the workpiece closer to ensure sufficient receiving light intensity.
*2. The initial value of control output 2 is reverse of control output 1.

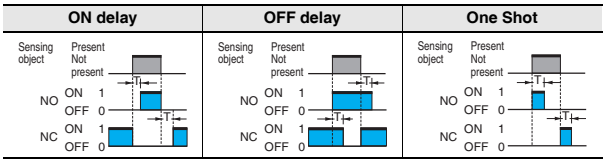
PNP Output

Model	Output circuit	
	Standard I/O mode (SIO mode) *1	IO-Link Communication mode (COM mode) *2
E3AS-L□D E3AS-L□T		

*1. Standard I/O mode is used as PNP ON/OFF output.
*2. IO-Link Communication mode is used for communications with the IO-Link Master. C/Q performs IO-Link communications. Sensor output DO performs ON/OFF output.

Output mode	Timing charts
Standard I/O mode (SIO mode)	
IO-Link Communication mode (COM mode)	

*1. Turns off when there is insufficient margin for incident light. In that case, place the workpiece closer to ensure sufficient receiving light intensity.
*2. The initial value of control output 2 is reverse of control output 1.
*3. The timer function of the control output 2 can be set up by the IO-Link communications. (It is able to select ON delay, OFF delay, or one-shot function and select a timer time of 1 to 9,999 ms (T).)

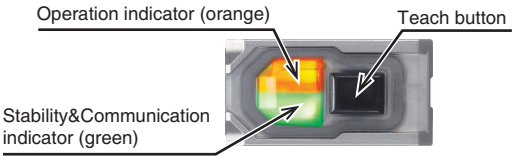


Please contact your OMRON sales representative regarding the IO-Link setup file (IODD file).

Note: Shown above are the factory settings. Refer to the index list for the default settings at time of shipment from factory.
PNP/COM output logic can be reversed by IO-Link communication.
The operation indicator (orange) lights up when control output 1 is ON or communication output is 1.

Nomenclature

E3AS-L200
E3AS-L80



Note: The indicators work differently depending on sensor status.

Safety Precautions

Be sure to read the precautions for all models in the website at: http://www.ia.omron.com/.

Warning Indications

⚠ WARNING	**Warning level** Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
⚠ CAUTION	**Caution level** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.
Precautions for Safe Use	Supplementary comments on what to do or avoid doing, to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.

Meaning of Product Safety Symbols

	**General prohibition** Indicates the instructions of unspecified prohibited action
	**Caution, fire** Indicates the possibility of fires under specific conditions.
	**General caution** Indicates unspecified general alert.
	**Laser Caution** Indicates information related to laser safety
	**Disassembly prohibited** Prohibit the disassembly of a device because of the possibility of injuries due to electric shock.

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

Do not use it exceeding the rated voltage. There is a possibility of failure and fire.

⚠ CAUTION

Its component may be damaged and/or degree of protection may be degraded. Please do not apply high pressure water intensively at one place during cleaning.

E3AS-HL and E3AS-F models

To safely use laser products

⚠ WARNING

Do not expose your eyes to the laser beam either directly or indirectly (i.e., after reflection from a mirror or shiny surface). The laser beam has a high power density and exposure may result in loss of sight.

Do not disassemble this product. Doing so may cause exposure to the built-in light source which can damage eyes and skin. Never disassemble it.

Laser safety measures for laser equipment are stipulated by the country of use. Follow the instructions described below categorized in four cases.

1. Usage in Japan

The JIS C6802:2014 standard stipulates the safety precautions that users must take according to the class of the laser product. This product is classified into class 1 defined by this standard.

2. Usage in U.S.

This product is subjected to the U.S. FDA (Food and Drug Administration) laser regulations. This product is classified into Class 1 by the IEC 60825-1:2014 standard according to the regulations of Laser Notice No.56 of the FDA standard. This product is already reported to CDRH (Center for Devices and Radiological Health).

Accession Number: 1920014-001

When using a device equipped with the product in the U.S., attach an FDA certification label near the sensor mounted on customer equipment.

FDA certification label

3. Usage in China

This product is classified into Class 2 by the GB7247.1:2012 (IEC60825-1:2007) standard.

When using a device equipped with the product in China, attach a Warning label near the sensor mounted on customer equipment.

Warning label

4. Usage in countries other than U.S. and China

This product is classified into Class 1 by the IEC/EN 60825-1:2014 standard.

Precautions for Safe Use

The following precautions must be observed to ensure safe operation.

1. Do not reverse the power supply connection or connect to an AC current.
2. Do not short the load.
3. Be sure that before making supply the supply voltage is less than the maximum rated supply voltage (30 VDC).
4. Do not use the product in environments subject to flammable or explosive gases.
5. Do not use the product under a chemical or an oil environment without prior evaluation.
6. Do not attempt to modify the product.
7. Do not touch the metal surface with your bare hands when the temperature is low. Touching the surface may result in a cold burn.
8. Burn injury may occur. The product surface temperature rises depending on application conditions, such as the ambient temperature and the power supply voltage. Attention must be paid during operation or cleaning.

Precautions for Correct Use

1. Do not hit the product using a hammer for installation.
2. The product must be installed with the specified torque or less. For M8 connector, the proper tightening torque is from 0.3 to 0.4 N·m. In case of M12 smartclick connector, manually tighten the connector.
3. Tightening torque for the mounting hole is 0.6 N·m or less (M3 screw).
4. Do not use the product in any atmosphere or environment that exceeds the ratings.
5. Risk of explosion. Do not connect the product to an AC power supply.
6. Output pulses may occur when the power supply is turned OFF. We recommend that you turn OFF the power supply to the load or load line first.
7. Use an extension cable less than 100 m long for Standard I/O mode and less than 20 m for IO-Link Communication mode.
8. Do not pull on the cable with excessive strength.
9. Be sure to turn off the power supply when connecting or disconnecting the cable.
10. Please wait for at least 600 ms (E3AS-HL), 500 ms (E3AS-F), 100 ms (E3AS-L) after turning on the product's power until it is available for use.
11. Though this is type IP67, do not use in the water, rain or outdoors.
12. If the Sensor wiring is placed in the same conduits or ducts as high-voltage or high-power lines, inductive noise may cause malfunction or damage. Wire the cables separately or use a shielded cable.
13. Do not use the product in locations subject to direct sunlight.
14. Do not use the product where humidity is high and dew condensation may occur.
15. Do not use the product where corrosive gases may exist.
16. If high-pressure washing water and so on hits the button, it might lead to malfunctioning. So, consider use of the key lock function.
17. Do not apply high-pressure washing water directly to the sensor's light emitting / receiving surface from a short distance. As the antifouling feature may be impaired, keep a sufficient distance from the light emitting / receiving surface.
18. Do not use the product at a location subject to shock or vibration.
19. To use a commercially available switching regulator, FG (frame ground) must be grounded.
20. Do not use organic solvents (e.g. paint thinner and alcohol) for cleaning. Otherwise optical properties and protective structure may deteriorate.
21. Be sure to check the influence caused by surrounding environments such as background objects and LED lighting before using the product.
22. Do not exceed 100,000 writing operations of the EEPROM (non-volatile memory). Setting information is written to the EEPROM when a threshold value change, teaching, or zero reset is executed.
23.  Please dispose in accordance with applicable regulations.

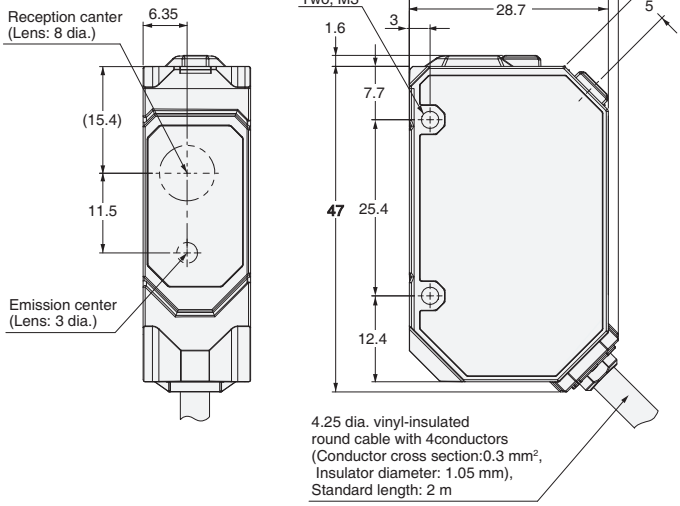
Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

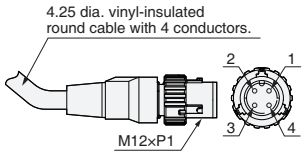
Sensors

Pre-wired Models/Pre-wired Connector Models

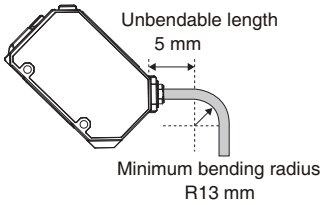
E3AS-HL500□ (-M1TJ)
E3AS-HL150□ (-M1TJ)



Pre-wired Connector Models
E3AS-HL500□-M1TJ
E3AS-HL150□-M1TJ

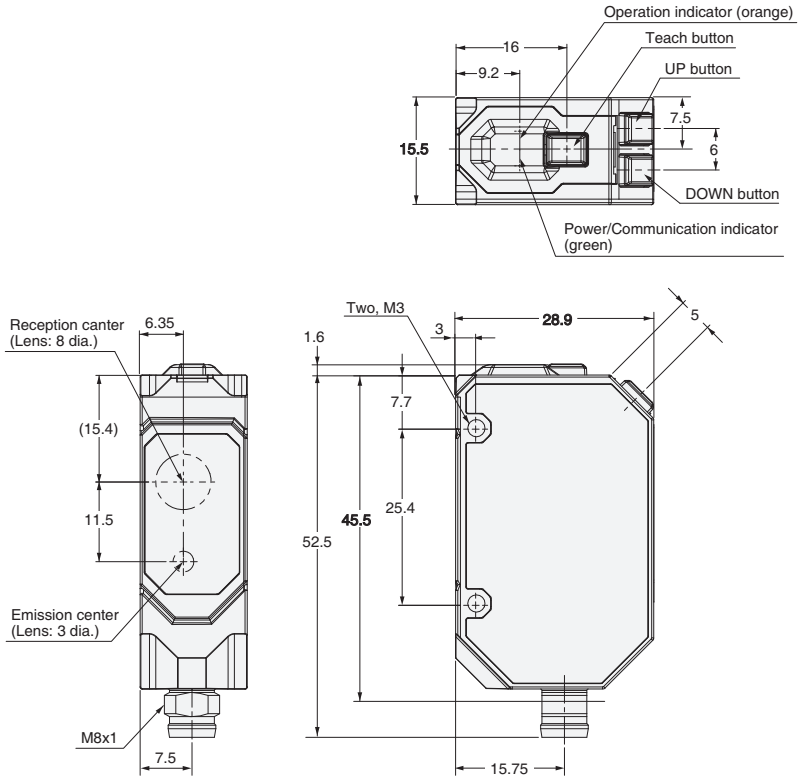


Minimum bending radius/unbendable length of cord



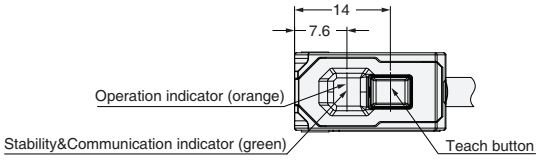
Connector Models

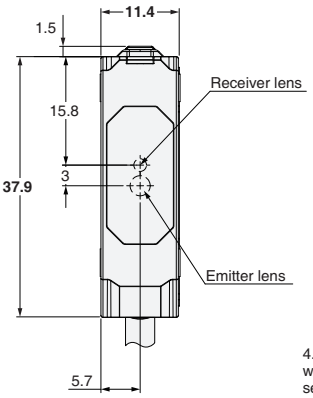
E3AS-HL500□ M3
E3AS-HL150□ M3



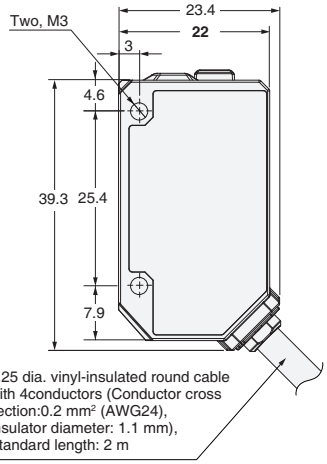
Pre-wired Models/Pre-wired Connector Models

E3AS-F1500☐ (-M1TJ)
E3AS-F1000☐ (-M1TJ)



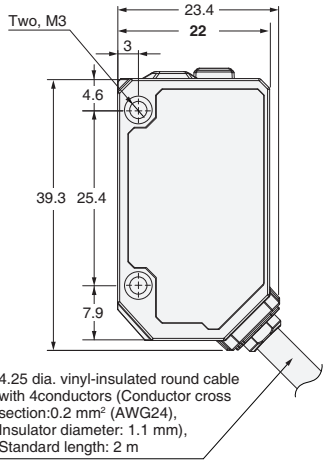


Metal case type



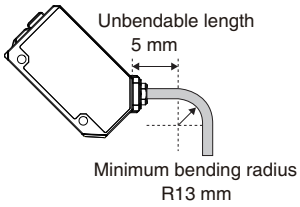
4.25 dia. vinyl-insulated round cable with 4conductors (Conductor cross section:0.2 mm² (AWG24), Insulator diameter: 1.1 mm), Standard length: 2 m

Plastic case type

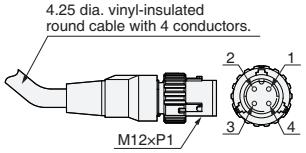


4.25 dia. vinyl-insulated round cable with 4conductors (Conductor cross section:0.2 mm² (AWG24), Insulator diameter: 1.1 mm), Standard length: 2 m

Minimum bending radius/unbendable length of cord

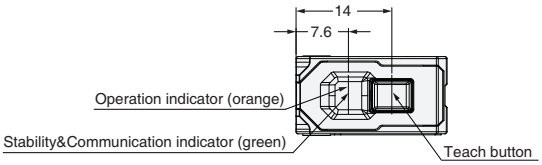


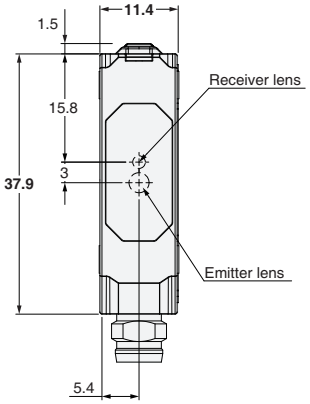
M12 Pre-wired Smartclick Connector type
E3AS-F1500☐-M1TJ/E3AS-F1000☐-M1TJ

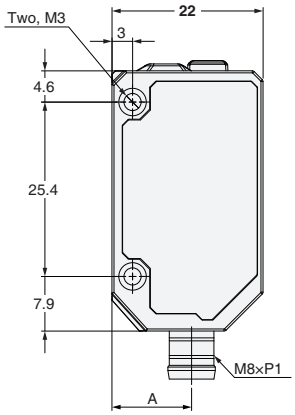


Connector Models

E3AS-F1500☐ M3
E3AS-F1000☐ M3



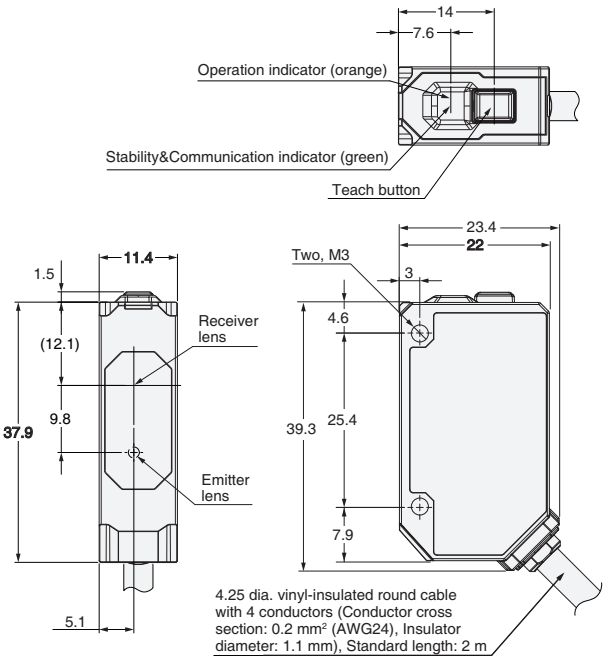




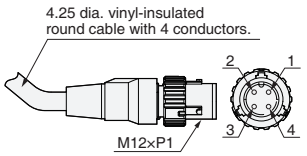
A:
Metal case type (E3AS-F☐M☐ M3) :9.6mm
Plastic case type (E3AS-F☐P☐ M3) :11.6mm

Pre-wired Models/Pre-wired Connector Models

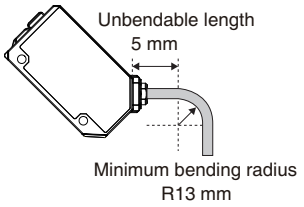
E3AS-L200□ (-M1TJ)
E3AS-L80□ (-M1TJ)



M12 Pre-wired Smartclick Connector type
E3AS-L200□-M1TJ/E3AS-L80□-M1TJ



Minimum bending radius/unbendable length of cord



Connector Models

E3AS-L200□ M3
E3AS-L80□ M3