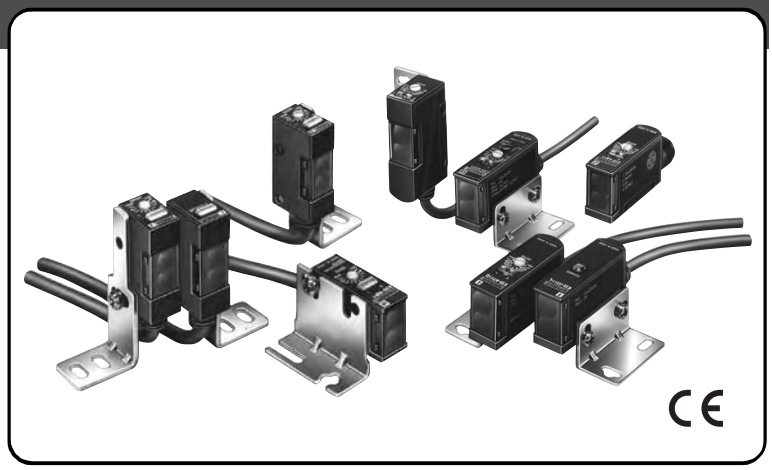
OMRON

Built-in Amplifier Photoelectric Sensor

E3S-A/B



Revolutionary High-performance High-quality Sensor with Built-in Amplifier

- Optical axis can be adjusted in seconds because the optical axis coincides with the mounting axis.
- Highly visible spot on white paper (except 100 mm and 700 mm Diffuse-reflective Sensors).
- Two-turn sensitivity adjustment with consistent scale reading to enable setting multiple Sensors without adjusting each individually (for Diffuse-reflective Sensors).
- Stable detection at a distance of from 2 to 700 mm (E3S-AD□2, E3S-AD□7).
- Washable in water (IP67, NEMA 4X degree of protection).
- A total of 72 different modes to match essentially every need.
- Built-in mutual interference prevention function. E39-E6/E8 Filters for mutual interference prevention available.

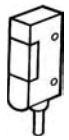
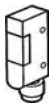
<READ AND UNDERSTAND THIS CATALOG>

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Ordering Information

■ E3S-A General-purpose Sensors

Connection method	Appearance	Sensing method	Sensing distance	Operating mode	Functions	Model	
						NPN output	PNP output
Pre-wired (2 m)	Horizontal 	Through-beam Sensors	7 m	Light ON Dark ON (selectable)	---	E3S-AT11	E3S-AT31
					Timer Turbo Self Diagnosis External Diagnosis	E3S-AT21	E3S-AT41
		Retro-reflective Sensors (with MSR function)	2 m [100 mm] (See note 1.)		---	E3S-AR11	E3S-AR31
					Timer Turbo Self Diagnosis External Diagnosis	E3S-AR21	E3S-AR41
		Diffuse-reflective Sensors	100 mm (wide view)		---	E3S-AD13 (See note 2.)	E3S-AD33
					Timer Self Diagnosis	E3S-AD23	E3S-AD43
			200 mm		---	E3S-AD11	E3S-AD31
					Timer Turbo Self Diagnosis	E3S-AD21	E3S-AD41
			700 mm		---	E3S-AD12	E3S-AD32
					Timer Self Diagnosis	E3S-AD22	E3S-AD42

Connection method	Appearance	Sensing method	Sensing distance	Operating mode	Functions	Model	
						NPN output	PNP output
Pre-wired (2 m)	Vertical 	Through-beam Sensors	7 m	Light ON Dark ON (selectable)	---	E3S-AT61	E3S-AT81
					Timer Turbo Self Diagnosis External Diagnosis	E3S-AT71	E3S-AT91
		Retro-reflective Sensors (with MSR function)	2 m [100 mm] (See note 1.)		---	E3S-AR61	E3S-AR81
					Timer Turbo Self Diagnosis External Diagnosis	E3S-AR71	E3S-AR91
		Diffuse-reflective Sensors	100 mm (wide view)		---	E3S-AD63 (See note 2.)	E3S-AD83
					Timer Self Diagnosis	E3S-AD73	E3S-AD93
			200 mm		---	E3S-AD61	E3S-AD81
					Timer Turbo Self Diagnosis	E3S-AD71	E3S-AD91
			700 mm		---	E3S-AD62	E3S-AD82
					Timer Self Diagnosis	E3S-AD72	E3S-AD92
Connector (M12)	Horizontal 	Through-beam Sensors	7 m		---	E3S-AT16	E3S-AT36
		Retro-reflective Sensors (with MSR function)	2 m [100 mm] (See note 1.)			E3S-AR16	E3S-AR36
		Diffuse-reflective Sensors	100 mm (wide view)			E3S-AD18	E3S-AD38
			200 mm			E3S-AD16	E3S-AD36
			700 mm			E3S-AD17	E3S-AD37
	Vertical 	Through-beam Sensors	7 m		---	E3S-AT66	E3S-AT86
		Retro-reflective Sensors	2 m [100 mm] (See note 1.)			E3S-AR66	E3S-AR86
		Diffuse-reflective Sensors	100 mm (wide view)			E3S-AD68	E3S-AD88
			200 mm			E3S-AD66	E3S-AD86
			700 mm			E3S-AD67	E3S-AD87

Note 1. Values in brackets are the minimum required distance between the Sensor and Reflector.

2. The following models are available with 200-mm sensing distances: E3S-AD14 and E3S-AD64.

■ E3S-B Miniature Sensors

Connection method	Appearance	Sensing method	Sensing distance	Operating modes	Functions	Model	
						NPN output	PNP output
Pre-wired	Horizontal 	Through-beam Sensors	2 m	Light ON Dark ON (selectable)	---	E3S-BT11	E3S-BT31
		Retro-reflective Sensors (with MSR function)	1 m [100 mm] (See note 1.)			E3S-BR11	E3S-BR31
		Diffuse-reflective Sensors	200 mm			E3S-BD11	E3S-BD31
	Vertical 	Through-beam Sensors	2 m			E3S-BT61	E3S-BT81
		Retro-reflective Sensors (with MSR function)	1 m [100 mm] (See note 1.)			E3S-BR61	E3S-BR81
		Diffuse-reflective Sensors	200 mm			E3S-BD61	E3S-BD81

Note: Values in brackets are the minimum required distance between the Sensor and Reflector.

■ Accessories (Order Separately)

E3S-A General-purpose Sensor Accessories

● Slits

Slit width	Sensing distance	Minimum sensing object (typical)	Model	Quantity	Remarks
0.5 mm × 11.1 mm	500 mm	0.2 mm dia.	E39-S46	1 set each for Emitter/Receiver (4 Slits total)	Slits can be used with the E3S-AT□□ Through-beam Sensor.
1 mm × 11.1 mm	1.1 m	0.4 mm dia.			
2 mm × 13.6 mm	2.5 m	0.8 mm dia.		1 set each for Emitter/Receiver (2 Slits total)	

● Mutual Interference Prevention Filters

Sensing distance	Model	Quantity	Remarks
2.4 m	E39-E6	1 set each for Emitter/Receiver (4 Filters total)	Can be used with the E3S-AT□□ Through-beam Sensor.

● Sensitivity Adjustment Screwdriver

Model	Quantity	Remarks
E39-G2	1	Provided with product.

E3S-B Miniature Sensor Accessories

● Slits

Slit width	Sensing distance	Minimum sensing object (typical)	Model	Quantity	Remarks
0.5 mm × 11.6 mm	250 mm	0.25 mm dia.	E39-S47	1 set each for Emitter/ Receiver (6 Slits total)	Sealed Long Slits can be used with the E3S-BT□□ Through-beam Sensor.
1 mm × 11.6 mm	500 mm	0.4 mm dia.			
2 mm × 11.6 mm	1 m	0.8 mm dia.			
0.5 mm dia.	40 mm	0.2 mm dia.	E39-S48		Sealed Round Slits can be used with the E3S-BT□□ Through-beam Sensor.
1 mm dia.	170 mm	0.4 mm dia.			
2 mm dia.	600 mm	0.7 mm dia.			
0.5 mm × 9.3 mm	250 mm	0.25 mm dia.	E39-S53	1 set each for Emitter/ Receiver (6 Slits total)	Insert-type Long Slits can be used with the E3S-BT□□ Through-beam Sensor.
1 mm × 9.3 mm	500 mm	0.4 mm dia.			
2 mm × 9.3 mm	1 m	0.8 mm dia.			
0.5 mm dia.	40 mm	0.2 mm dia.	E39-S54		Insert-type Round Slits can be used with the E3S-BT□□ Through-beam Sensor.
1 mm dia.	170 mm	0.4 mm dia.			
2 mm dia.	600 mm	0.7 mm dia.			

● Mutual Interference Prevention Filters

Sensing distance	Model	Quantity	Remarks
600 mm	E39-E8	2 Filters each for Emitter/Receiver (4 Filters total)	Can be used with the E3S-BT□□ Through-beam Sensor.

E3S-A/E3S-B Sensor Accessories

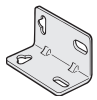
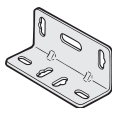
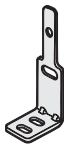
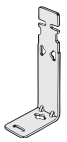
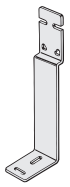
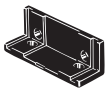
● Reflectors/Other

Name	E3S-A sensing distance (typical)	E3S-B sensing distance (typical)	Model	Quantity	Remarks
Reflectors	2 m [100 mm] (See note 1.) (rated value)	1 m [100 mm] (See note 1.) (rated value)	E39-R1	1	Provided with E3S-AR□□ and E3S-BR□1 Retro-reflective Sensor.
Small Reflectors	1.3 m [100 mm] (See note 1.)	600 m [100 mm] (See note 1.)	E39-R3	1	---
	600 mm [70 mm] (See note 1.)	350 mm [70 mm] (See note 1.)	E39-R4	1	---
Tape Reflectors	450 mm [100 mm] (See note 1.)	300 mm [100 mm] (See note 1.)	E39-RS1	1	Enables MSR function.
	700 mm [100 mm] (See note 1.)	450 mm [100 mm] (See note 1.)	E39-RS2	1	
	900 mm [100 mm] (See note 1.)	600 mm [100 mm] (See note 1.)	E39-RS3	1	
Optical Axis Confirmation Reflector	---	---	E39-R5	1	Used to check optical axis for the E3S-AT□□ Through-beam Sensor.

Note 1. Values in brackets are the minimum required distance between the Sensor and Reflector.

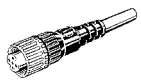
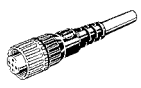
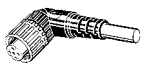
2. When using any Reflector other than the provided one, use a sensing distance of approximately 0.7 times the typical value as a guide.

● **Mounting Brackets/Other**

Appearance	Model	Quantity	Remarks
	E39-L69	1	Provided with E3S-A Horizontal Models.
	E39-L70	1	Provided with E3S-A Vertical Models.
	E39-L71	1	Provided with E3S-B Horizontal Models.
	E39-L72	1	Provided with E3S-B Vertical Models.
	E39-L59	1	Provided with E3S-A Vertical Pre-wired Models.
	E39-L81	1	Provided with E3S-A Vertical Connector Models.
	E39-L97	1	Protective Cover for Horizontal Models Note: When mounting Sensors with Connectors, the Sensor I/O Connector will come into contact with the Bracket. Mount the Sensor with care.
	E39-L98	1	Protective Cover for Vertical Models Note: When mounting Sensors with Connectors, the Sensor I/O Connector will be longer. Mount the Sensor with care.
	E39-L60	1	Side-by-side Mounting Plate Provided with E3S-A Connector Models.
	E39-L61	1	Side-by-side Mounting Plate Provided with E3S-B Models.

Note: If a Through-beam Model is used, order two Mounting Brackets, one for the Emitter and one for the Receiver.

Sensors I/O Connectors

Cable	Appearance		Cable length	Model
Standard	Straight (3 conductors)		2 m	XS2F-D421-DC0-A
			5 m	XS2F-D421-GC0-A
	L-shape (3 conductors)		2 m	XS2F-D422-DC0-A
			5 m	XS2F-D422-GC0-A
Robot (vibration-proof)	Straight (4 conductors)		2 m	XS2F-D421-D80-R
			5 m	XS2F-D421-G80-R
	L-shape (4 conductors)		2 m	XS2F-D422-D80-R
			5 m	XS2F-D422-G80-R

Specifications

■ Ratings/Characteristics

E3S-A General-purpose Sensors

Item		Through-beam Sensors	Retro-reflective Sensors (with MSR function)	Diffuse-reflective Sensors		
		E3S-AT11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91	**E3S-AR11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91**	**E3S-AD13, 18, 23, 33, 38, 43, 63, 68, 73, 83, 88, 93**	**E3S-AD11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91**	**E3S-AD12, 17, 22, 32, 37, 42, 62, 67, 72, 82, 87, 92**
Sensing distance		7 m	2 m [100 mm] (See note 1.) (When using E39-R1)	100 mm (wide view) (white paper 100 × 100 mm)	10 to 200 mm (white paper 100 × 100 mm)	700 mm (white paper 200 × 200 mm)
Standard sensing object		Opaque: 10-mm dia. min.	Opaque: 75-mm dia. min.	---		
Differential travel		---		20% max. of sensing distance	10% max. of sensing distance	20% max. of sensing distance
Directional angle		Both Emitter and Receiver: 3° to 15°	3° to 10°	---		
Light source (wavelength)		Red LED (700 nm)		Infrared LED (880 nm)	Red LED (700 nm)	Infrared LED (880 nm)
Power supply voltage		10 to 30 VDC, including ripple (p-p) 10%				
Current consumption		Both Emitter and Receiver: 20 mA max. (plus approx. 15 mA with turbo function)	30 mA max. (plus approx. 15 mA with turbo function)	35 mA max.	30 mA max. (plus approx. 15 mA with turbo function)	35 mA max.
Control output		Load power supply voltage: 30 VDC max., Load current: 100 mA max. (residual voltage: 1 V max.) Open-collector output (NPN or PNP depending on model), Light-ON/Dark-ON selectable				
Self-diagnostic output (Only on Sensors with self-diagnostic outputs)		Only Sensors with self-diagnostic function Load power supply voltage: 30 VDC max., Load current: 50 mA max. (residual voltage: 1 V max.), Open-collector output (NPN or PNP depending on model)				
External-diagnostic input (Only on Sensors with external diagnostic outputs)	**Input voltage**	<NPN> with Emitter OFF: 0 V short-circuit or 1.5 V max. (push current: 1 mA max.) with Emitter ON: Open (current leakage: 0.1 mA max.) <PNP> with Emitter OFF: +DC short-circuit or –1.5 VDC max. (pull current: 3 mA max.) with Emitter ON: Open (current leakage: 0.1 mA max.)		---		
	Response time	0.5 ms max.				
Protection circuits		Power supply reverse polarity protection, Output short-circuit protection	Power supply reverse polarity protection, Output short-circuit protection, Mutual interference prevention			
Response time		Operation or reset: 0.5 ms max.				
Sensitivity adjustment		Two-turn endless adjuster with an indicator				
Timer function (Only on Sensors with the timer function)		0 to 100 ms OFF-delay variable adjuster				
Turbo function (Only on Sensors with the turbo function)		Yes (with turbo switch)				---
Ambient illumination (Receiver side)		Incandescent lamp: 5,000 lx max. Sunlight: 10,000 lx max.				
Ambient temperature		Operating: –25°C to 55°C (with no icing or condensation) Storage: –40°C to 70°C (with no icing or condensation)				
Ambient humidity		Operating: 35% to 85% (with no condensation) Storage: 35% to 95% (with no condensation)				
Insulation resistance		20 MΩ min. at 500 VDC between current-carrying parts and case				
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min. between current-carrying parts and case				

Item		Through-beam Sensors	Retro-reflective Sensors (with MSR function)	Diffuse-reflective Sensors		
		E3S-AT11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91	E3S-AR11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91	E3S-AD13, 18, 23, 33, 38, 43, 63, 68, 73, 83, 88, 93	E3S-AD11, 16, 21, 31, 36, 41, 61, 66, 71, 81, 86, 91	E3S-AD12, 17, 22, 32, 37, 42, 62, 67, 72, 82, 87, 92
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock resistance		500 m/s^2, 3 times each in X, Y, and Z directions				
Degree of protection		IEC60529: IP67; NEMA: 4X (indoors only) (See note 2.)				
Connection method		Pre-wired (standard length: 2 m) or M12 connector				
Weight (packed state)	Pre-wired cable	Approx. 150 g	Approx. 110 g	Approx. 90 g		
	M12 connector	Approx. 70 g	Approx. 60 g	Approx. 50 g		
Material	Case	PBT				
	Lens	Denatured polyallylate				
	Mounting Bracket	Stainless steel (SUS304)				
Accessories		Instruction manual, Mounting Bracket (with screws), Sensitivity adjustment driver, Sensitivity adjusting knob, Side-by-side Mounting Plate (only for Sensors with M12 connectors), and Reflector (E39-R1: only for Retro-reflective Sensors)				

Note 1. Values in brackets are the minimum required distance between the Sensor and Reflector.

2. National Electrical Manufacture's Association

E3S-B Miniature Sensors

Item		Through-beam Sensors	Reflo-reflective Sensors (with MSR function)	Diffuse-reflective Sensors
		E3S-BT11, 31, 61, 81	E3S-BR11, 31, 61, 81	E3S-BD11, 31, 61, 81
Sensing distance		2 m	1 m [100 mm] (See note1.) (When using E39-R1)	200 mm (white paper 100 × 100 mm)
Standard sensing object		Opaque: 8-mm dia. min.	Opaque: 75-mm dia. min.	---
Differential travel		---		20% max. of sensing distance
Directional angle		Both Emitter and Receiver: 5° to 20°	3° to 10°	---
Light source (wavelength)		Red LED (700 nm)		
Power supply voltage		12 to 24 VDC±10%; Ripple (p-p): 10% max.		
Current consumption		Both Emitter and Receiver: 17.5 mA max.	25 mA max.	
Control output		Load power supply voltage: 26.4 VDC max., Load current: 100 mA max. (residual voltage: 1 V max.); Open-collector output (NPN or PNP depending on model), Light-ON/Dark-ON selectable		
Protection circuits		Power supply reverse polarity protection, Output short-circuit protection	Power supply reverse polarity protection, Output short-circuit protection, Mutual interference prevention	
Response time		Operation or reset: 0.5 ms max.		
Sensitivity adjustment		One-turn adjuster		
Ambient illumination (Receiver side)		Incandescent lamp: 5,000 ℓx max. Sunlight: 10,000 ℓx max.		
Ambient temperature		Operating: –25°C to 55°C (with no icing or condensation) Storage: –40°C to 70°C (with no icing or condensation)		
Ambient humidity		Operating: 35% to 85% (with no condensation) Storage: 35% to 95% (with no condensation)		
Insulation resistance		20 MΩ min. at 500 VDC between current-carrying parts and case		
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min. between current-carrying parts and case		
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions		
Shock resistance		500 m/s^2, 3 times each in X, Y, and Z directions		
Degree of protection		IEC60529: IP67; NEMA: 4X (indoors only) (See note 2.)		
Connection method		Pre-wired (standard length: 2 m)		
Weight (packed state)		Approx. 150 g	Approx. 100 g	Approx. 90 g
Material	Case	PBT		
	Lens	Denatured polyarylate		
	Mounting Bracket	Stainless steel (SUS304)		
Accessories		Instruction manual, Mounting Bracket (with screws), Sensitivity adjustment driver, Sensitivity adjusting knob, Side-by-side Mounting Plate, and Reflector (E39-R1: only for Retro-reflective Sensors)		

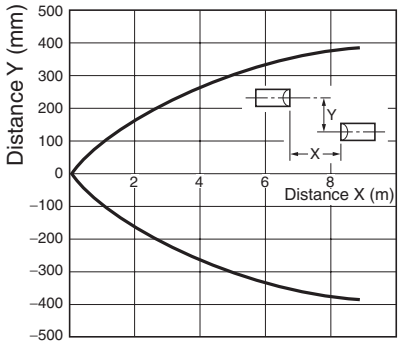
Note 1. Values in brackets are the minimum required distance between the Sensor and Reflector.

2. National Electrical Manufacture's Association

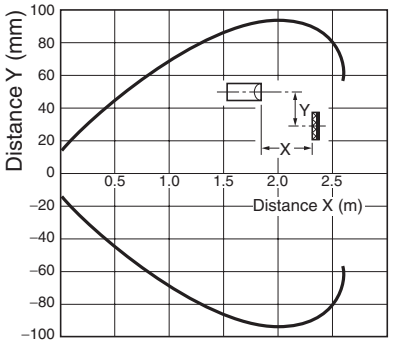
Engineering Data

■ E3S-A Models

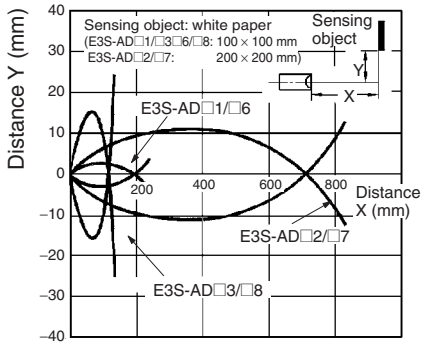
Parallel Sensing Range (Typical)
Through-beam Sensors
E3S-AT□



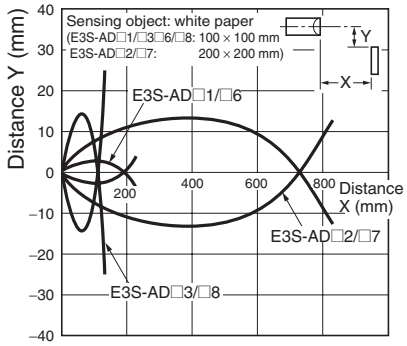
Retro-reflective Sensors
E3S-AR□ (with Reflector: E39-R1)



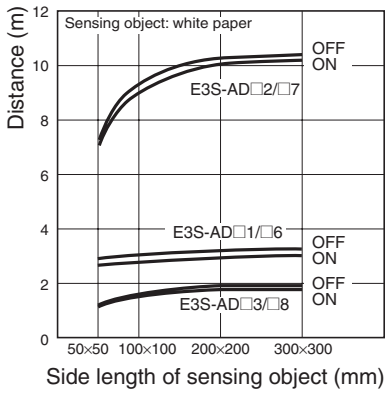
Sensing Range (Typical)
Diffuse-reflective Sensors
E3S-AD□ (Left and Right)



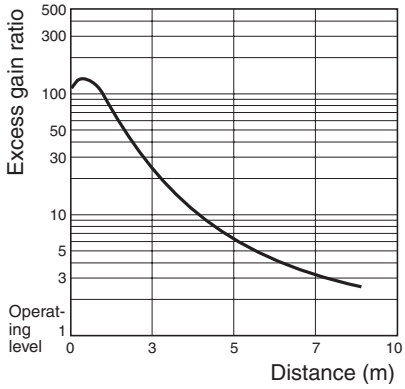
E3S-AD□ (Up and Down)



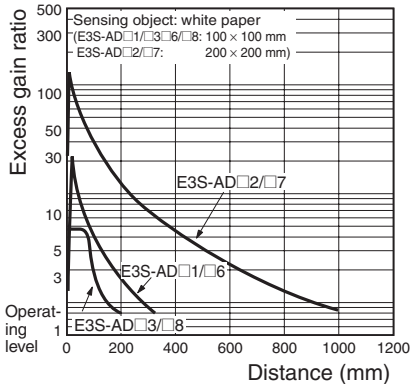
Sensing Object Size vs. Sensing Distance (Typical)
Diffuse-reflective Sensors
E3S-AD□



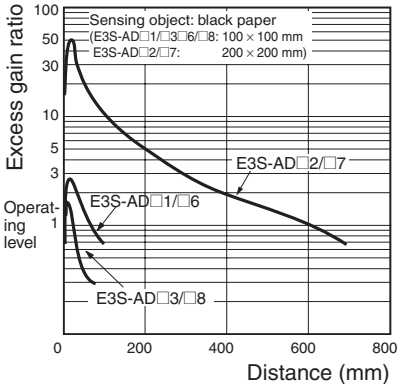
Excess Gain vs. Set Distance (Typical)
Through-beam Sensors
E3S-AT□



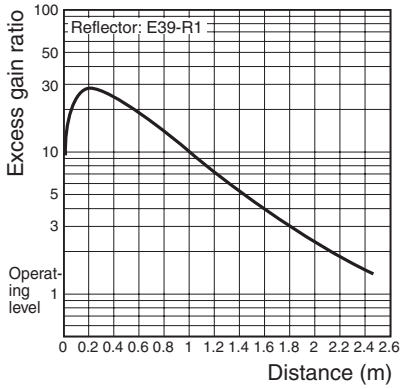
Diffuse-reflective Sensors
E3S-AD□
(Detection of White Paper)



Diffuse-reflective Sensors
E3S-AD□
(Detection of Black Paper)

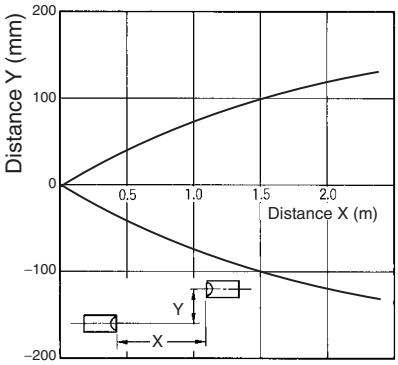


Retro-reflective Sensors
E3S-AR□ (with Reflector: E39-R1)

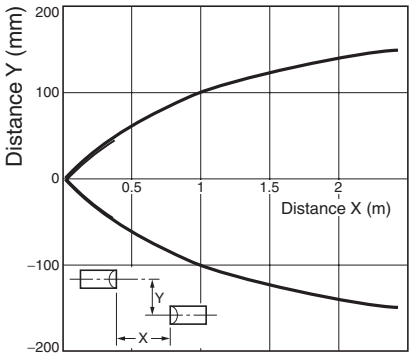


■ E3S-B Models

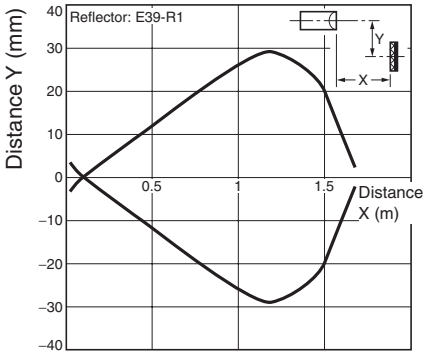
Parallel Sensing Range (Typical)
Through-beam Sensors
E3S-BT□1 (Left and Right)



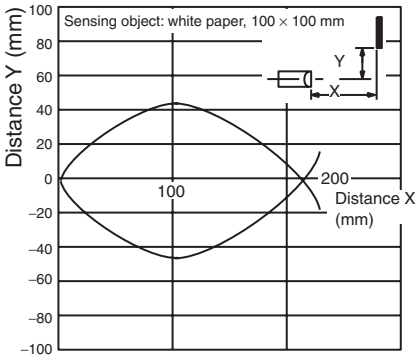
E3S-BT□1 (Up and Down)



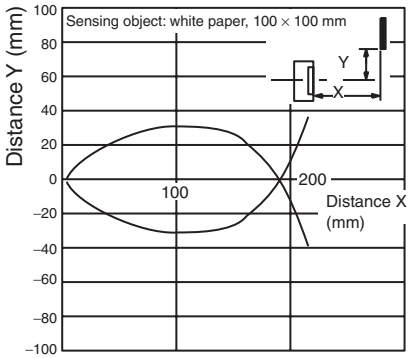
Retro-reflective Sensors
E3S-BR□1 (with Reflector: E39-R1)



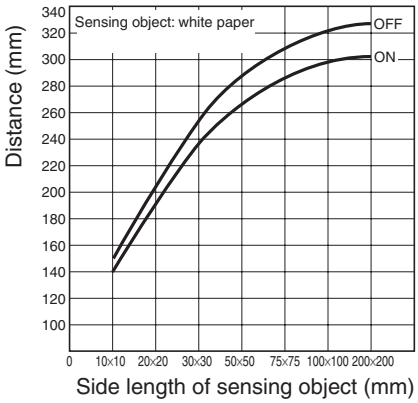
Sensing Range (Typical)
Diffuse-reflective Sensors
E3S-BD□1 (Left and Right)



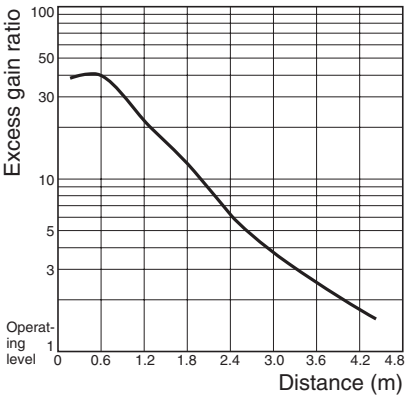
E3S-BD□1 (Up and Down)



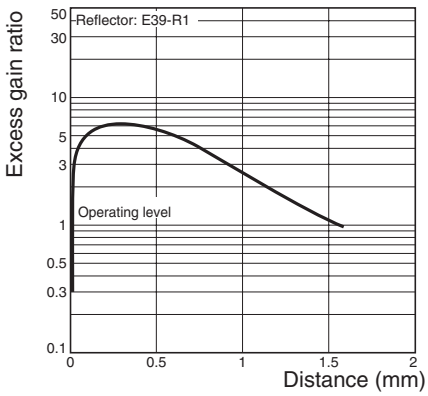
Sensing Object Size vs. Sensing Distance (Typical)
Diffuse-reflective Sensors
E3S-BD□1



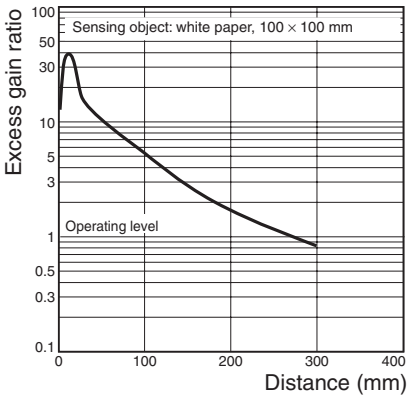
Excess Gain vs. Set Distance (Typical)
Through-beam Sensors
E3S-BT□1



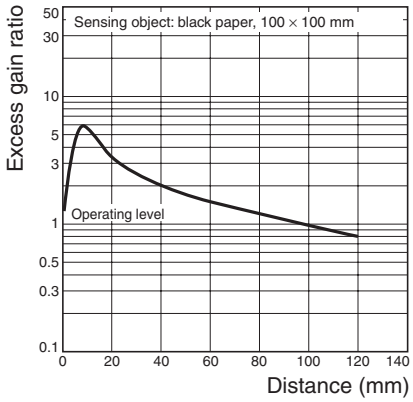
Retro-reflective Sensors
E3S-BR□1 (with Reflector: E39-R1)



Diffuse-reflective Sensors
E3S-BD□1
(Detection of White Paper)



E3S-BD□1
(Detection of Black Paper)



Operation

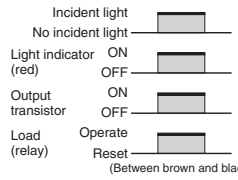
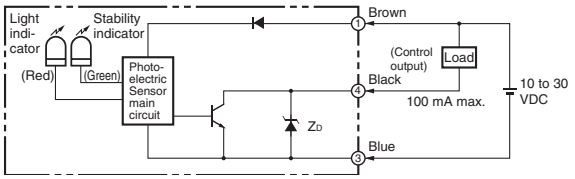
■ Output Circuit Diagrams

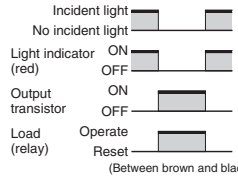
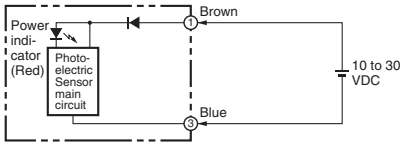
E3S-A

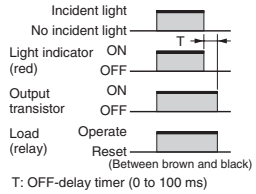
NPN Output

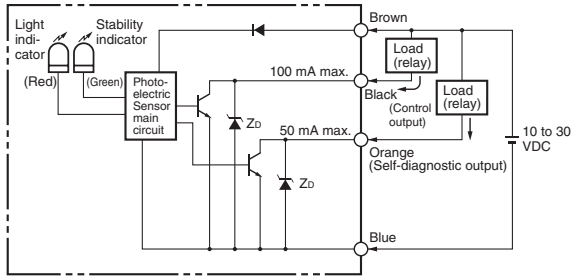
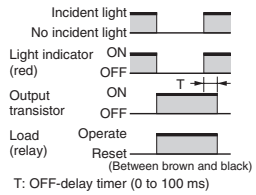
<table>
<tr><th>Model</th><th>Operating mode</th><th>Timing chart</th><th>Mode switch</th><th>Output circuit</th></tr>
<tr><td rowspan="3">E3S-AT11
E3S-AT16
E3S-AT61
E3S-AT66

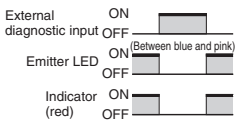
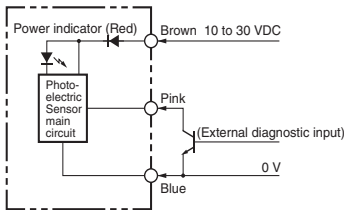
E3S-AR11
E3S-AR16
E3S-AR61
E3S-AR66

E3S-AD11
E3S-AD16
E3S-AD61
E3S-AD66
E3S-AD12
E3S-AD17
E3S-AD62
E3S-AD67
E3S-AD13
E3S-AD18
E3S-AD63
E3S-AD68</td><td>Light ON</td><td> 
</td><td>L (Light ON)</td><td rowspan="2">Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors
 

Connector Pin Arrangement
 
Note: Pin 2 is not used.</td></tr>
<tr><td>Dark ON</td><td> 
</td><td>D (Dark ON)</td></tr>
<tr><td colspan="2">Through-beam Emitters
 
</td><td colspan="2">Connector Pin Arrangement
 
Note: Pin 2, 4 is not used.</td></tr>
<tr><td rowspan="3">E3S-AT21
E3S-AT71

E3S-AD21
E3S-AD71
E3S-AD22
E3S-AD72
E3S-AD23
E3S-AD73</td><td>Light ON</td><td> 

T: OFF-delay timer (0 to 100 ms)</td><td>L (Light ON)</td><td rowspan="2">Through-beam Receivers and Diffuse-reflective Sensors
 
</td></tr>
<tr><td>Dark ON</td><td> 

T: OFF-delay timer (0 to 100 ms)</td><td>D (Dark ON)</td></tr>
<tr><td>---</td><td> 
</td><td>---</td><td>Through-beam Emitters
 
</td></tr>
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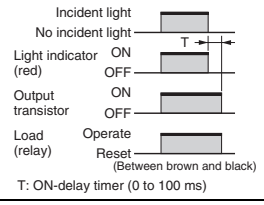
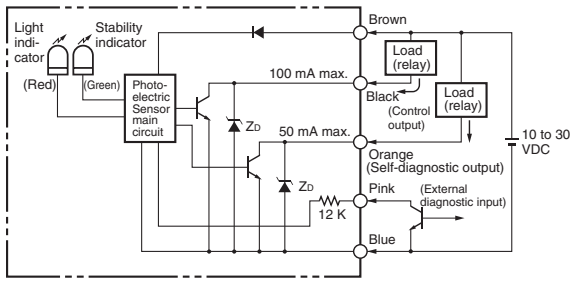
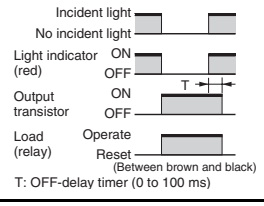
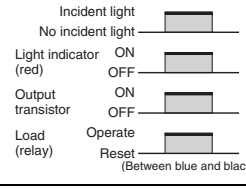
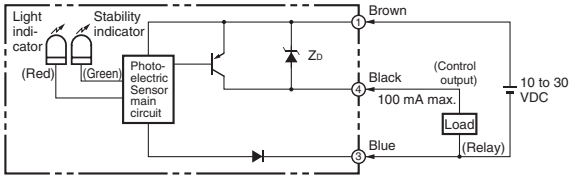
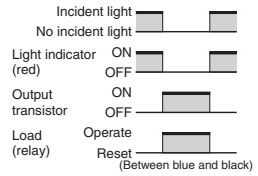
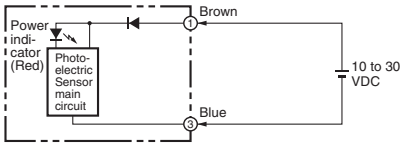
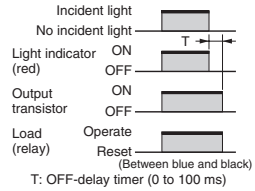
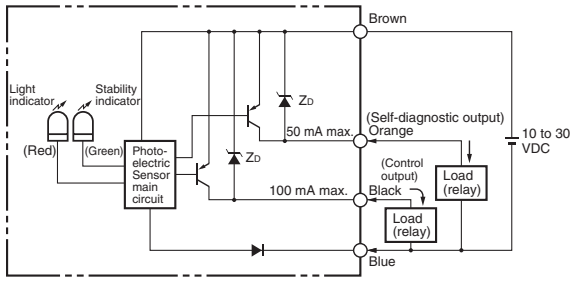
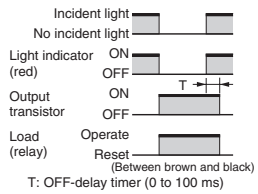
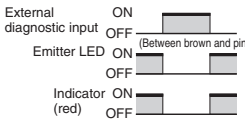
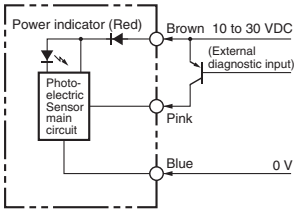
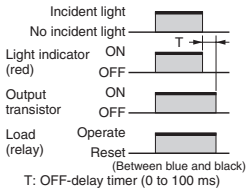
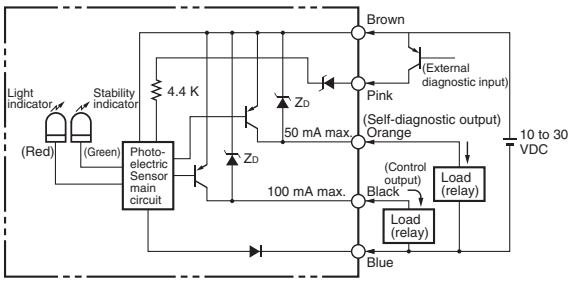
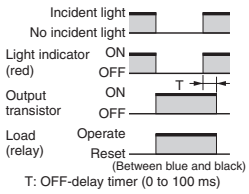
Model	Operating mode	Timing chart	Mode switch	Output circuit
E3S-AR21 E3S-AR71	Light ON		L (Light ON)	Retro-reflective Sensors 
	Dark ON		D (Dark ON)	

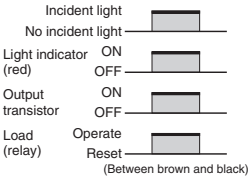
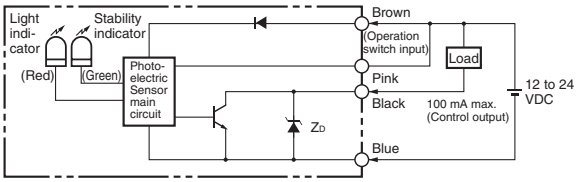
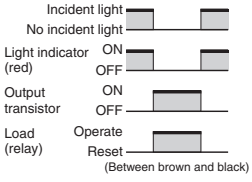
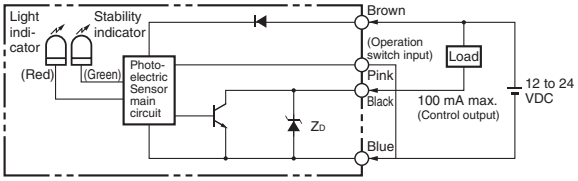
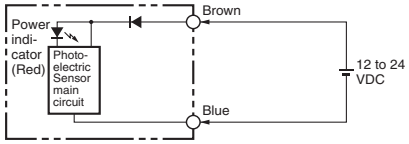
PNP Output

Model	Operating mode	Timing chart	Mode switch	Output circuit
E3S-AT31 E3S-AT36 E3S-AT81 E3S-AT86 E3S-AR31 E3S-AR36 E3S-AR81 E3S-AR86 E3S-AD31 E3S-AD36 E3S-AD81 E3S-AD86 E3S-AD32 E3S-AD37 E3S-AD82 E3S-AD87 E3S-AD33 E3S-AD38 E3S-AD83 E3S-AD88	Light ON		L (Light ON)	Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors  Connector Pin Arrangement  **Note:** Pin 2 is not used.
	Dark ON		D (Dark ON)	
	Through-beam Emitters			Connector Pin Arrangement  **Note:** Pin 2, 4 is not used.
E3S-AT41 E3S-AT91 E3S-AD41 E3S-AD91 E3S-AD42 E3S-AD92 E3S-AD43 E3S-AD93	Light ON		L (Light ON)	Through-beam Receivers and Diffuse-reflective Sensors 
	Dark ON		D (Dark ON)	
	---		---	Through-beam Emitters 

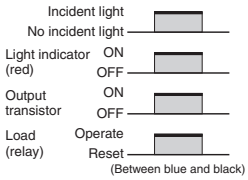
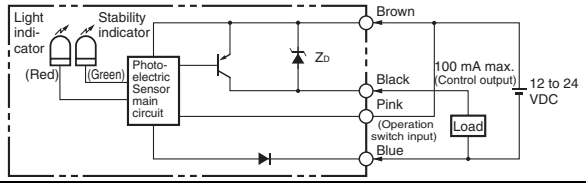
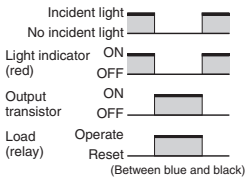
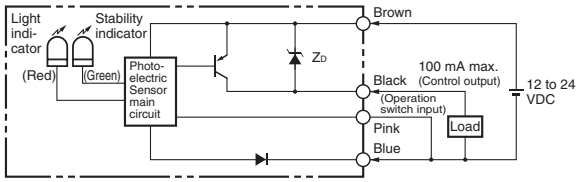
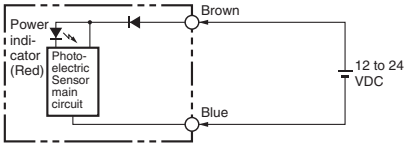
Model	Operating mode	Timing chart	Mode switch	Output circuit
E3S-AR41 E3S-AR91	Light ON		L (Light ON)	Retro-reflective Sensors 
	Dark ON		D (Dark ON)	

E3S-B

NPN Output

Model	Operating mode	Timing chart	Connection method	Output circuit
E3S-BT11 E3S-BT61 E3S-BR11 E3S-BR61 E3S-BD11 E3S-BD61	Light ON		Connect the pink wire to the brown wire.	Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors 
	Dark ON		Either leave the pink wire open or connect it to the blue wire.	Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors 
	Through-beam Emitters			

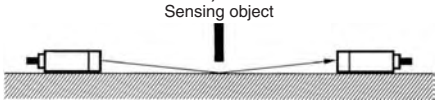
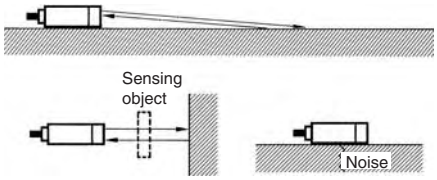
PNP Output

Model	Operating mode	Timing chart	Connection method	Output circuit
E3S-BT31 E3S-BT81 E3S-BR31 E3S-BR81 E3S-BD31 E3S-BD81	Light ON		Connect the pink wire to the brown wire.	Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors 
	Dark ON		Either leave the pink wire open or connect it to the blue wire.	Through-beam Receivers, Retro-reflective Sensors, and Diffuse-reflective Sensors 
	Through-beam Emitters			

Note: If the pink wire is not connected, be sure that noise does not enter and that electric contact does not occur.

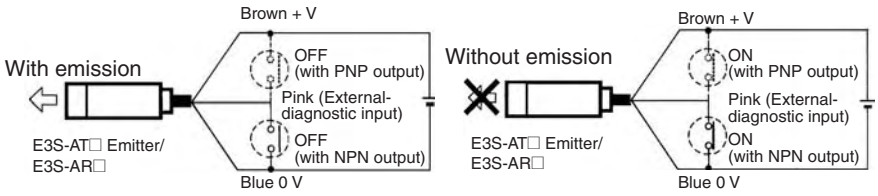
■ Self-diagnostic Function

With this function, the E3S-A/-B checks changes in environmental conditions (especially a change in the ambient temperature) and self-diagnoses the resistance against the changes. The result is shown by the indicators or an output signal.

Operating level	Incident light indicator (red)	Indicator	Green indicator	Self-diagnostic fuction	Self-diagnostic example
1.2 or more	Incident light (red indicator: ON)	 Green Red	Stable operating state with incident light: Stable operation is expected in the rated temperature range with the green indicator ON.	---	---
1.0 to 1.2		 Green Red	Conditional operating state with incident light: Stable operation is expected if the temperature fluctuation is within ±10% of the primary temperature.	The self-diagnostic alarm output alerts the user to this state if it continues for 0.3 s.	The optical axis misaligned by vibration.  Light decreased by dust.  Dust
0.8 to 1.0	No incident light (red indicator: OFF)	 Green Red			With light leakage (Through-beam and Retro-reflective Sensors)  Sensing object Light reflected from the floor or the back ground (Diffuse-reflective Sensors)  Sensing object Noise
0.8 or less		 Green Red	Stable operating state with no incident light: Stable operation is expected in the rated temperature range with the green indicator ON.	---	---

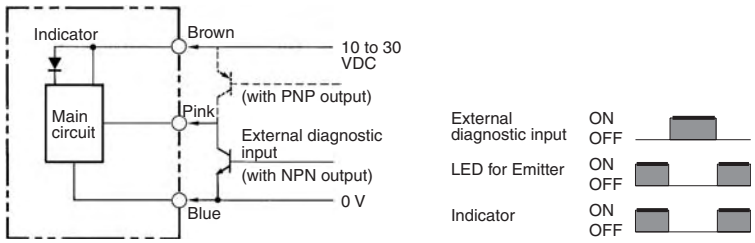
■ External Diagnostic Input Function

To switch the emission OFF, short-circuit the pink and the blue wires of the Emitter of the E3S-AT□ or the E3S-AR□ with the NPN output feature. For the E3S-AT□ or the E3S-AR□ with the PNP output feature, short-circuit the pink and the brown wires.



With this function, the operating status can be checked before operation.

E3S-AT□/E3S-AR□ Emitter



The Sensor is normal if the control output varies when the self-diagnostic external input is ON and OFF. The Sensor is abnormal if the control output does not vary when the self-diagnostic external input is turned ON or OFF.

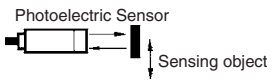
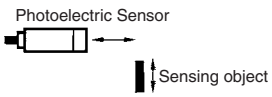
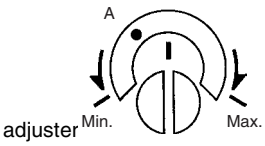
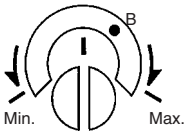
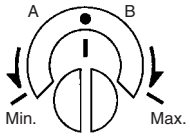
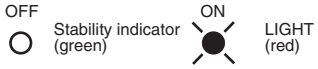
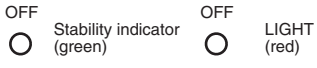
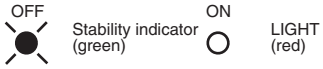
Note: Before using the self-diagnostic external input function, the incident light beam to the Sensor must not be blocked by an object.

■ Timer and Turbo Switch (Sensors with Self-diagnostic Output Function)

The E3S-A Sensor equipped with the self-diagnostic feature incorporates an OFF-delay timer that can be adjusted within a range of 0 to 100 ms.

The Emitter of the Through-beam Sensor with the self-diagnostic feature incorporates a turbo switch. When this switch is ON, the intensity of the red LED light source can be increased to make a brighter spot. The OFF-delay timer adjuster of the Retro-reflective and the 200-mm Diffuse-reflective Sensor is used as a turbo switch. When the adjuster is pressed, it functions as a turbo switch to automatically increase the power of the light source to create a brighter light spot. Do not press the adjuster when turning it.

■ Sensitivity Adjustment (Reflective Sensors)

Item	Position A	Position B	Setting
Sensing condition			---
Sensitivity adjuster			
Indicators			
Procedure	Locate a sensing object at the sensing distance, set the sensitivity adjuster to the minimum scale position, and gradually increase sensitivity by turning the sensitivity adjuster clockwise until the incident light indicator (red LED) is ON. Position A is where the indicator has turned ON. Regard the maximum scale position as Position A if the indicator does not turned ON at full sensitivity.	Remove the sensing object and gradually decrease sensitivity by turning the sensitivity adjuster counterclockwise from the maximum scale position until the incident light indicator (red LED) is OFF. Position B is where the indicator has turned OFF. Regard the minimum scale position as Position B if the indicator does not turned ON at minimum sensitivity.	Set the sensitivity indicator to the position between Positions A and B (in some cases, Positions A and B are opposite of the above example). The Photoelectric Sensor will then work normally if the stability indicator (green) is lit with and without the sensing object. If it is not lit, stable operation cannot be expected, in which case a different detection method must be applied.

Unlike conventional Photoelectric Sensors, the variation in the sensitivity of E3S Photoelectric Sensors is minimal. This means the sensitivity can be adjusted on only a single Photoelectric Sensor, and then the adjusters on the other Photoelectric Sensors can be set to the same scale position. There is no need to adjust the sensitivity of each Photoelectric Sensor individually.

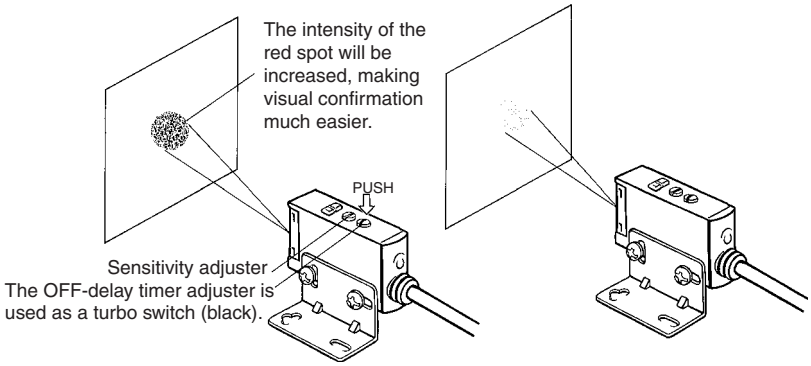
■ Turbo Function (Turbo Switch)

With the turbo function switched ON, the light spot is visible even at a distance of 20 cm, making it easy to check the sensing position and the angle of the optical axis.

1. After using the turbo function, readjust the OFF-delay time that had been set, since the OFF-delay timer could have been changed when the turbo switch (which is on the OFF-delay timer adjuster) was pressed.
2. Press the OFF-delay timer adjuster to switch ON the turbo function with a maximum force of 1 kg and within a maximum period of 3 min. (The Photoelectric Sensor, however, will not malfunction even if the turbo function is switched ON for more than 3 min.)

With Turbo Switch ON ← **Normal Operating Condition**

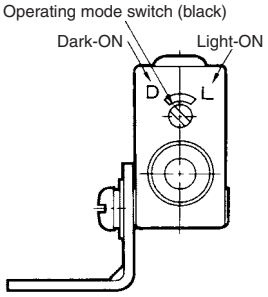
The turbo function is effective with the turbo switch pressed, and the function is reset automatically when released.



■ Operating Mode Selection

E3S-A

As shown in the following illustration, the E3S-A has an operating mode switch on the panel where the Receiver connector is located. With this operating mode switch, the E3S-A is in either dark-ON or light-ON mode.



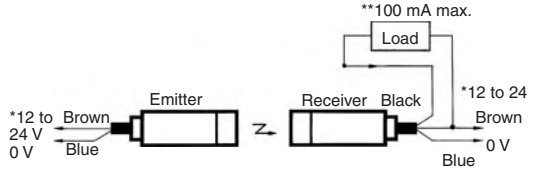
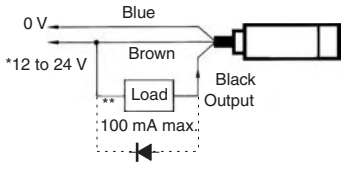
E3S-B

The operating mode of the E3S-B is determined with the connecting method of the Receiver wires as shown in the output circuit diagram.

Installation

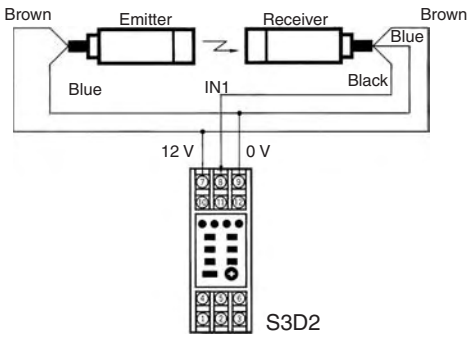
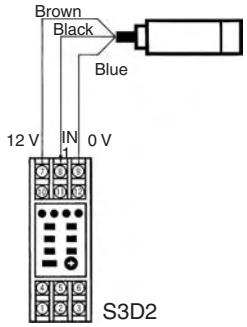
■ Connections (without Self-diagnostic Function)

Load (Relay)

Sensing method	Through-beam Sensors	Retro-reflective Sensors/Diffuse-reflective Sensors
Connection method		

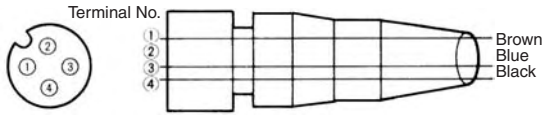
* 10 to 30 V for the E3S-A.
** If the load is a relay, insert a surge absorbing diode between the coils of the relay.
*** The connection examples are for Sensors with the NPN output.

With Sensor Controller (S3D2)

Sensing method	Through-beam Sensors	Retro-reflective Sensors/Diffuse-reflective Sensors
Connection method		

■ Plug (for E3S-A with Connector)

Internal Connection

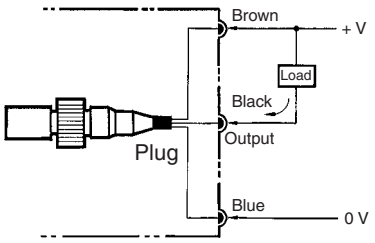


Item	Color of wire	Coonection Pin No.	Application
For DC	Brown	1	Power supply (+V)
	Black	4	Output
	Blue	3	Power supply (0 V)

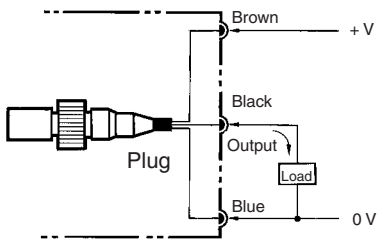
Note: Pin No. 2 and 4 are connected internally.

External Connections

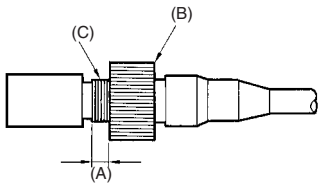
NPN Output



PNP Output



Tightening the Plug



Turn part B by hand (do not use a pliers or the plug will be damaged) and tighten it with part C so that length A is nearly zero. Part B must be tightened properly with part C, or otherwise part B could be loosen by vibration and the Sensor will not maintain the specified degree of protection.

Note: Use the Side-by-side Mounting Plate (sold together) to mount the Photoelectric Sensor with or without the enclosed Mounting Bracket (refer to *Dimensions*).

Precautions

⚠ WARNING

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

■ Precautions for Correct Use

The supplied voltage must be within the rated voltage range. Unregulated full-or half-wave rectifiers must not be used as power supplies.

If the input/output lines of the Photoelectric Sensor are placed in the same conduit or duct as power lines or high-voltage lines, the Photoelectric Sensor could be induced to malfunction, or even be damaged, by electrical noise. Either separate the wiring, or use shielded lines as input/output lines to the Photoelectric Sensor.

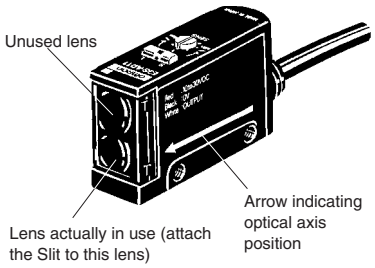
Do not use a hammer to hit the amplifier when mounting or the amplifier will loose watertightness.

Note the following when using the E39-R3, E39-R4, E39-RS1, E39-RS2, or E39-RS3 Reflector (tape):

1. Before applying adhesive tape to the Reflector, make sure that the Reflector is free from oil or dust, or otherwise the adhesive tape will not stick to the Reflector properly.
2. Do not cut the Reflector or the Reflector will loose watertightness.
3. Do not press the Reflector with a metal object or a nail, or otherwise the Reflector will not function properly.

Position of Optical Axis of Through-beam Model

Unlike conventional through-beam sensors, the E3S Through-beam Photoelectric Sensor incorporates 2 lenses. But the lens actually in use is the one marked with an arrow indicating the position of the optical axis. When using a Slit, attach it to the lens marked with the arrow.

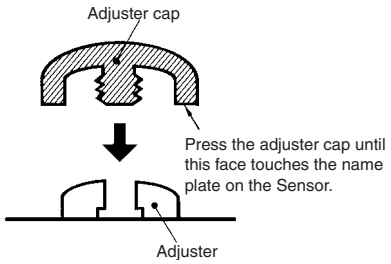


Position of Arrow Indicating Optical Axis

Model	Position of lens in use
E3S-A (Vertical Models)	Top
E3S-A (Horizontal Models)	Bottom
E3S-B (Vertical Models)	
E3S-B (Horizontal Models)	

Adjuster Cap

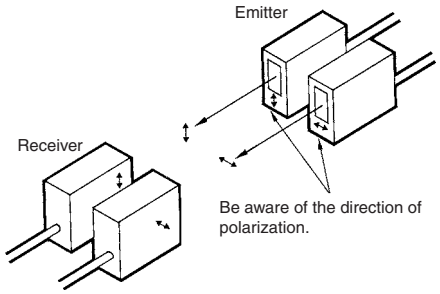
In order to prevent the sensitivity or OFF-delay timer that has been set from changing accidentally enclosed, cover the adjusters with the adjuster cap (enclosed).



Mutual Interference Filters (E39-E6/-E8)

A set of 4 Filters are sold together for two Through-beam Models (for 2 each of Emitters and Receivers).

For mounting, refer to the figure of the Slit for the E3S-A Photoelectric Sensor.



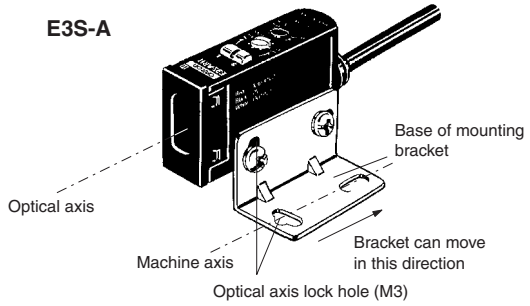
The arrow printed on the cover indicates the direction of polarization. By attaching the Filters opposite to each other in polarization to the Emitters and the Receivers (refer to the figure) in rows, mutual interference can be prevented (in any case, the Filter attached to an Emitter and to the corresponding Receiver must be the same in direction of polarization or the Photoelectric Sensor will not function).

Note: The arrows on the Filters can be attached in either direction when two Sensors are mounted next to each other. The Filter attached to an Emitter and to the corresponding Receiver must be the same in direction of polarization or the Sensor will not function.

Mounting Bracket

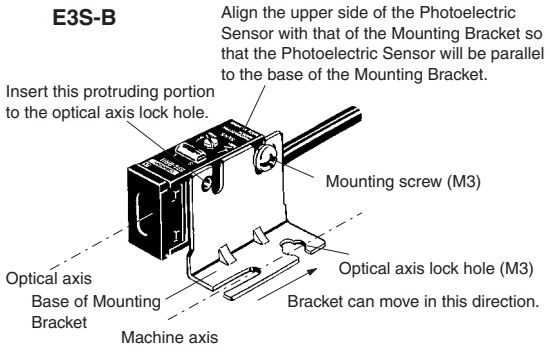
The direction of the optical axis coincides with the machine axis of the E3S when the mounting screw is inserted into the lock hole of the Mounting Bracket. Unlike conventional Photoelectric Sensors, if the sensing object (or the Retroreflector in the case of a Through-beam Sensor) is in the machine axis of the Photoelectric Sensor, the object is detected with the incident light without the time-consuming adjustment of the optical axis (but if the mounting surface is not flat, the adjustment of the optical axis may still be required).

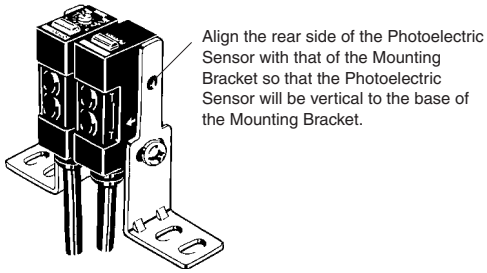
E3S-A



Note: The maximum tightening torque applied to the screw is 0.53 N·m.

E3S-B





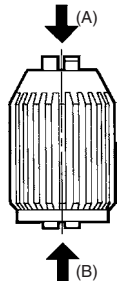
Note: The maximum tightening torque applied to the screw is 0.53 N·m.

■ E3S-A

Installation of Accessories

Sensitivity adjuster Knob (Attachment)

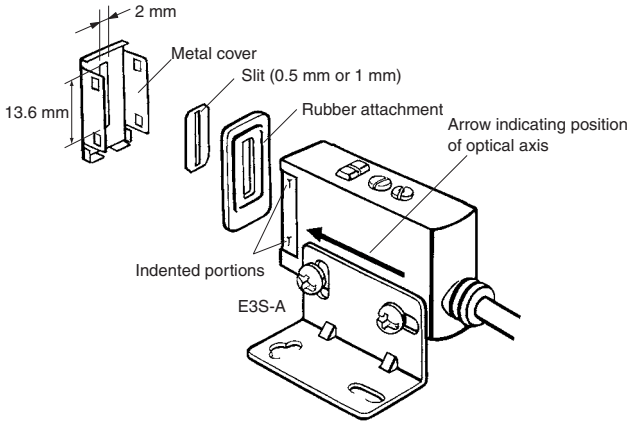
To temporarily use the knob to adjust the sensitivity of the Photoelectric Sensor, insert side A into the shaft of the sensitivity adjuster.



To permanently use the knob to adjust the sensitivity of the Photoelectric Sensor, insert side B into the shaft (the knob cannot be removed if once side B is inserted into the shaft).

Slit (E39-S46 Order Separately) for E3S-A

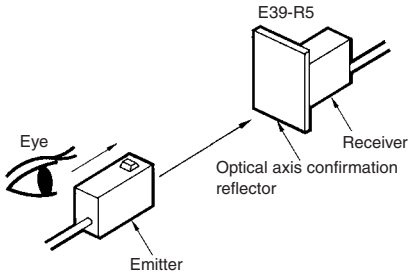
Use the rubber attachment with the metal cover if a slit width of 2 mm is required. Insert the 0.5- or 1-mm Slit between the metal cover and rubber attachment if a slit width of 0.5 or 1 mm is desired. These Slits fit into the rubber attachment.



Note: Apply the Slit to the lens of the Photoelectric Sensor marked with an arrow indicating the position of the optical axis (apply it to the bottom lens of Horizontal Models and the top lens of Vertical Models).

Optical Axis Reflector (E39-R5 Order Separately)

Use this attachment when the set distance is long and adjustment is mechanically difficult with a sensing object.



Attach the Reflector to the Receiver (refer to the figure).

Look at the Reflector from right behind the Emitter. The Reflector should be bright with red light when the optical beam strikes the Reflector. If the Emitter has a turbo function, the Reflector looks brighter with the function switched ON.

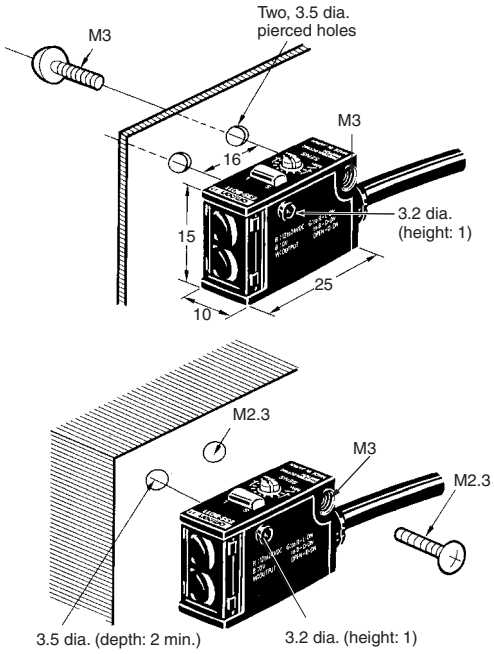
When the Reflector is removed, the light beam strikes the Receiver.

■ E3S-B

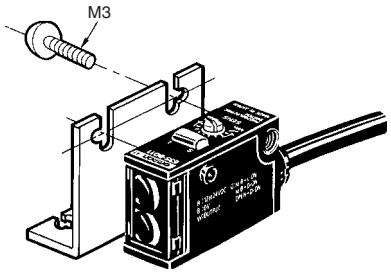
Mounting Methods

The E3S-B Miniature Photoelectric Sensor is mounted and secured with a single mounting screw and the protruding portion on the Sensor.

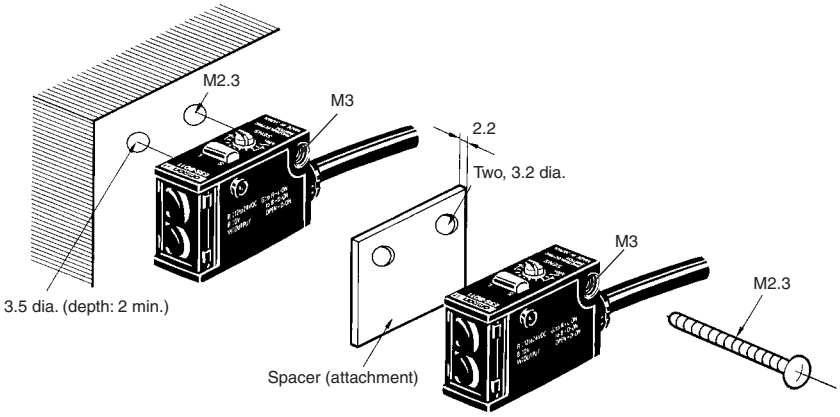
1. For direct mounting



2. With Mounting Bracket (attachment)



3. For side-by-side mounting of Photoelectric Sensors



Installation of Accessories

Slit (E39-S47, E39-S48 Attachment)

Peel off the protective sheet and attach the Slit seal to the Emitter panel of the Photoelectric Sensor. Do not touch the panel or the lens by hand in order to avoid oil sticking on the panel surface. Remove any oil on the panel or the Slit will not stick properly.

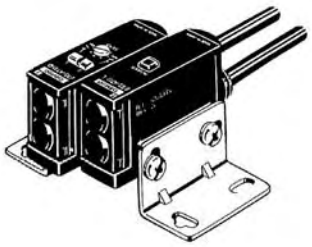
Note: Like the E3S-A Photoelectric Sensor, apply the Slit to the lens of the E3S-B Photoelectric Sensor marked with an arrow indicating the position of the optical axis (apply it to the bottom side lens of both the Horizontal and the Vertical Models).

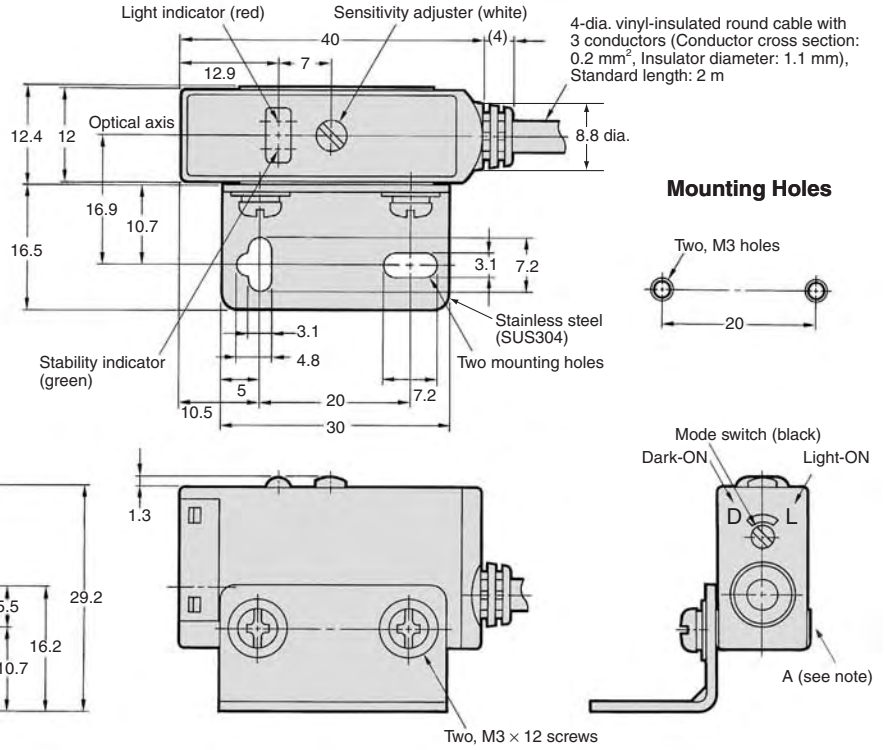
Dimensions

Note: All units are in millimeters unless otherwise indicated.

■ E3S-A Prewired Sensors

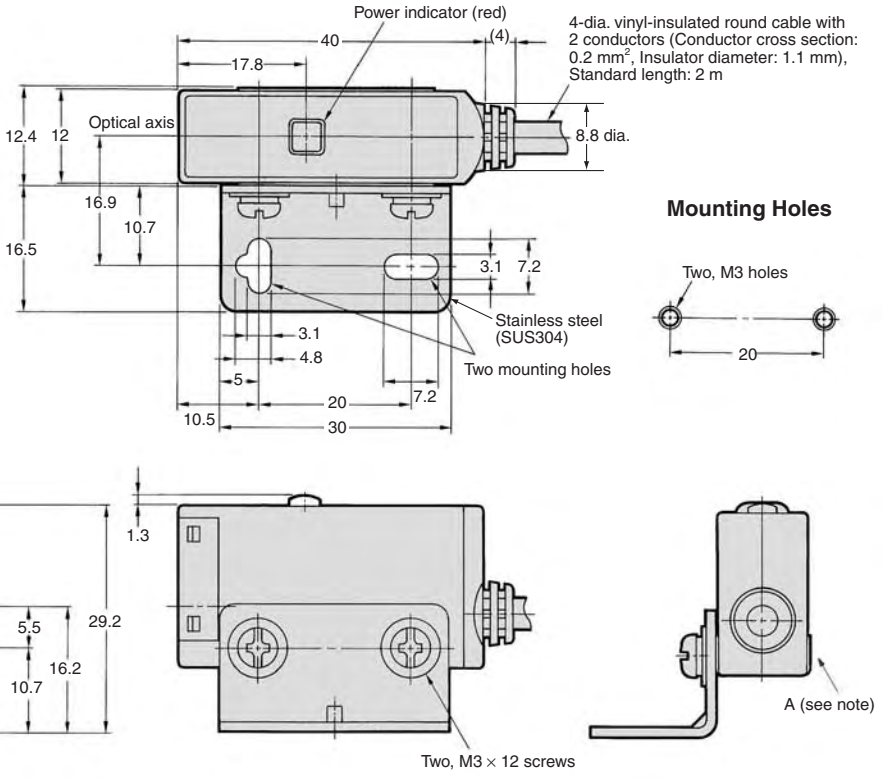
E3S-AT11, E3S-AT31 (Receiver)





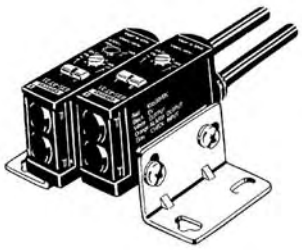
Note: The Mounting Bracket can be attached to side A.

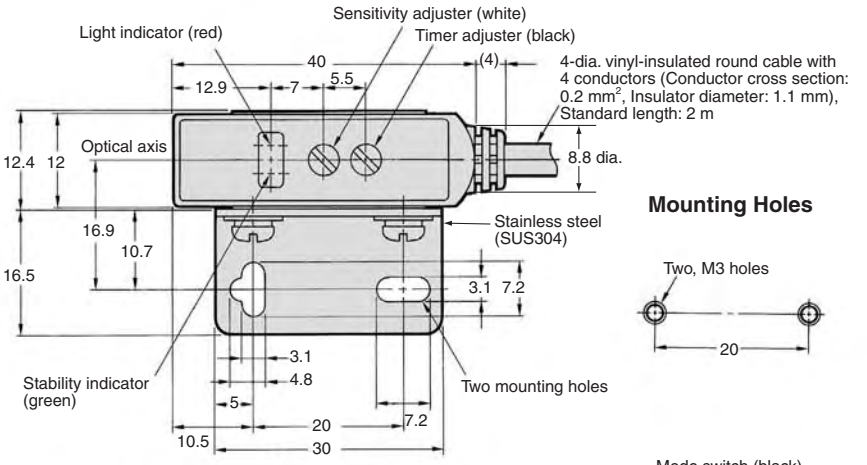
E3S-AT11, E3S-AT31 (Emitter)

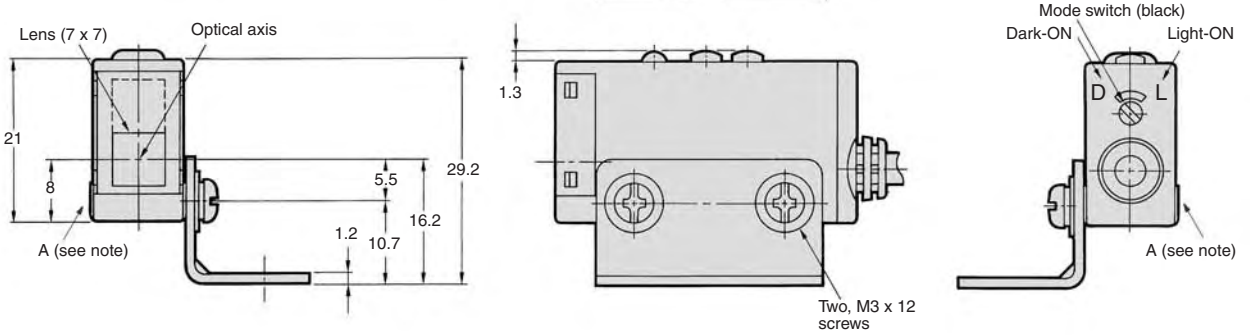


Note: The Mounting Bracket can be attached to side A.

E3S-AT21, E3S-AT41 (Receiver)

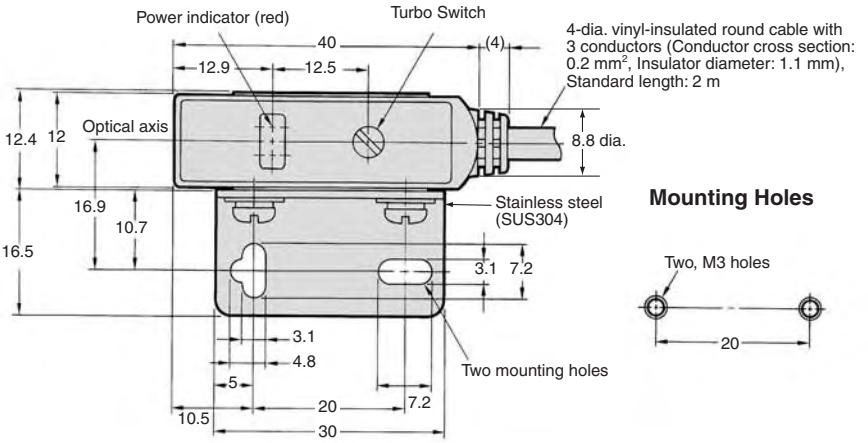


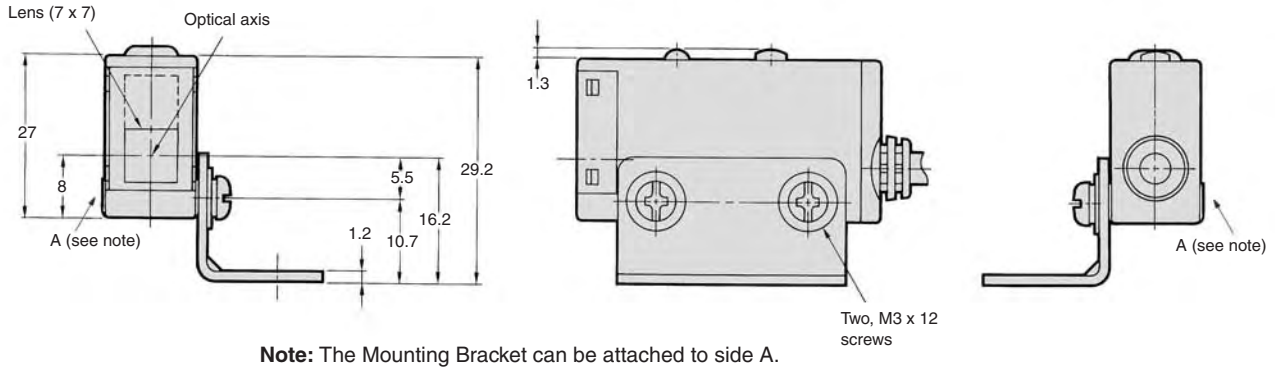




Note: The Mounting Bracket can be attached to side A.

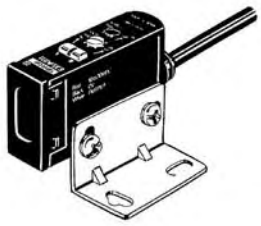
E3S-AT21, E3S-AT41 (Emitter)

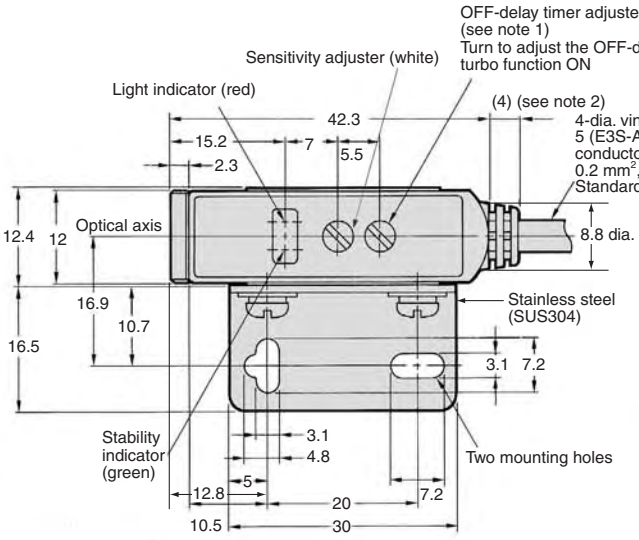




Note: The Mounting Bracket can be attached to side A.

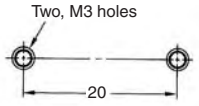
E3S-AR11, E3S-AR31
E3S-AR21, E3S-AR41

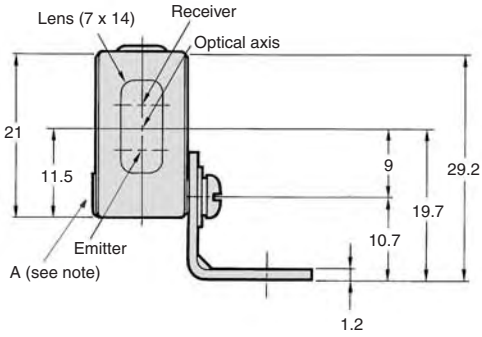


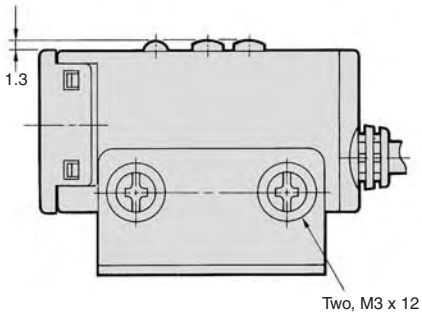


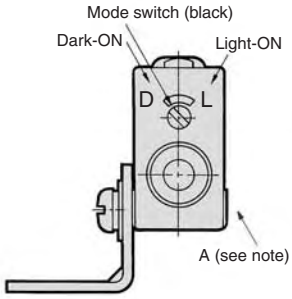
Note 1. For E3S-AR21 and E3S-AR41 only
2. 9.7 mm for E3S-AR21 and E3S-AR41

Mounting Holes



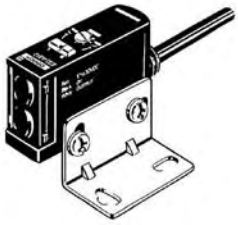


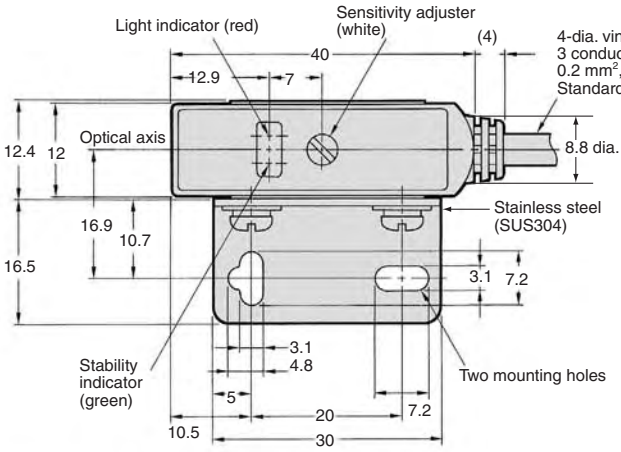




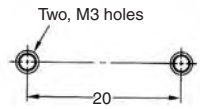
Note: The Mounting Bracket can be attached to side A.

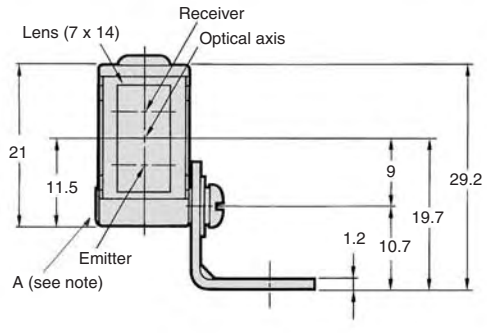
E3S-AD11, E3S-AD31
E3S-AD13, E3S-AD33
E3S-AD12, E3S-AD32

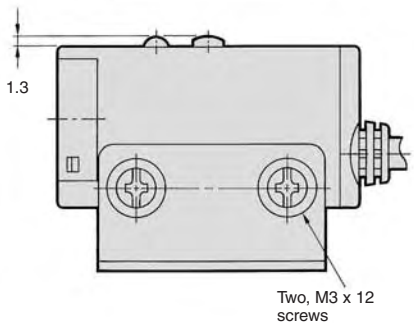


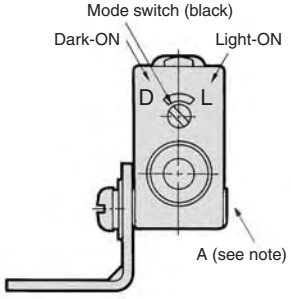


Mounting Holes



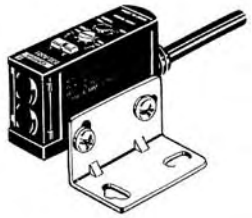


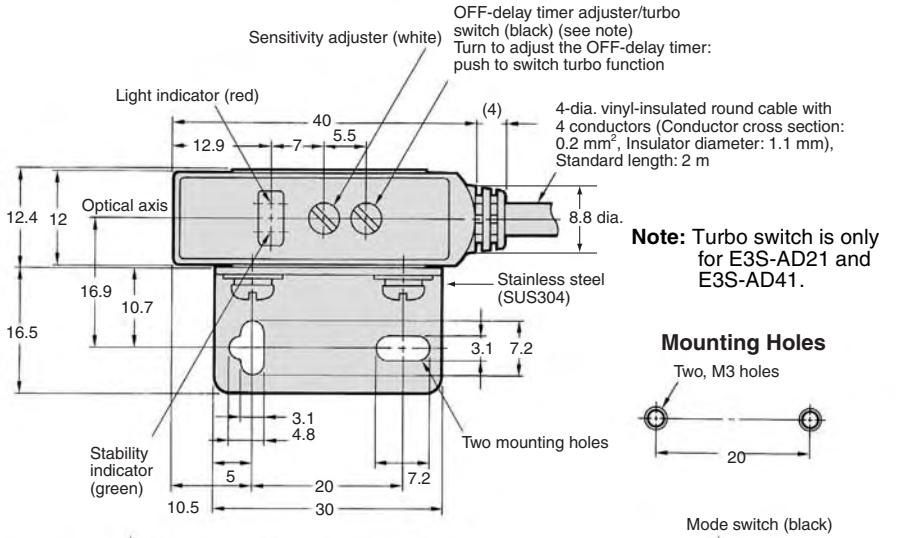




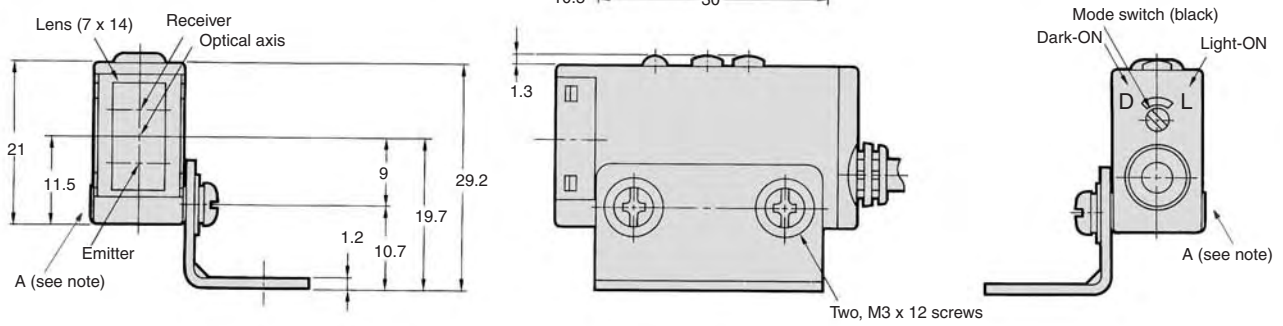
Note: The Mounting Bracket can be attached to side A.

E3S-AD21, E3S-AD41
E3S-AD23, E3S-AD43
E3S-AD22, E3S-AD42



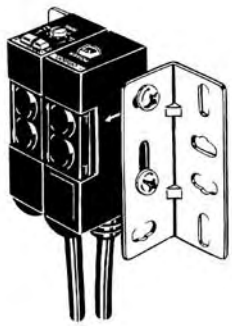


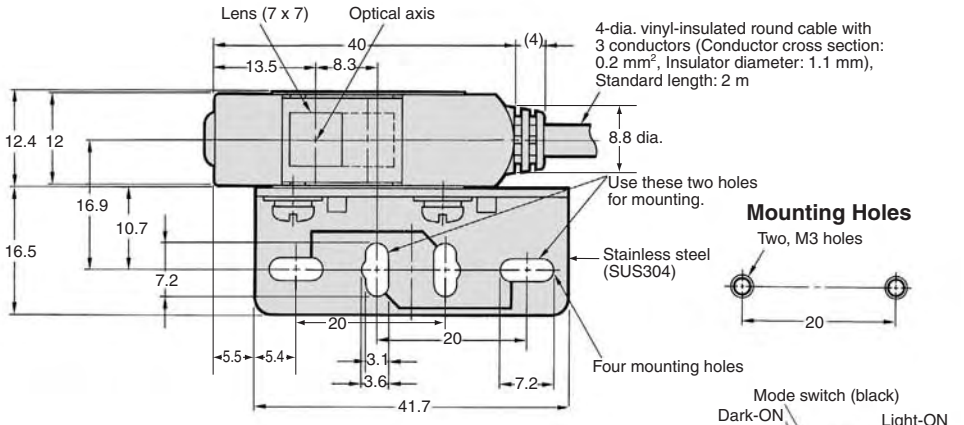
Note: Turbo switch is only for E3S-AD21 and E3S-AD41.

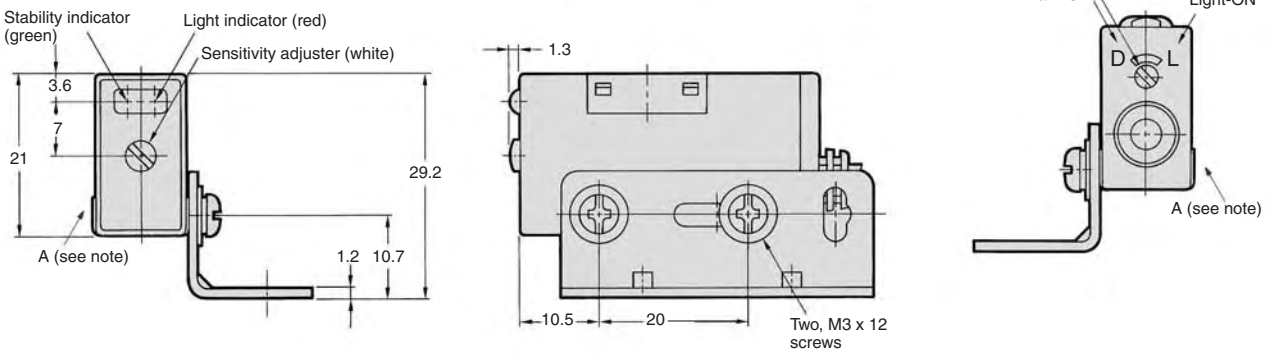


Note: The Mounting Bracket can be attached to side A.

E3S-AT61, E3S-AT81
(Receiver)

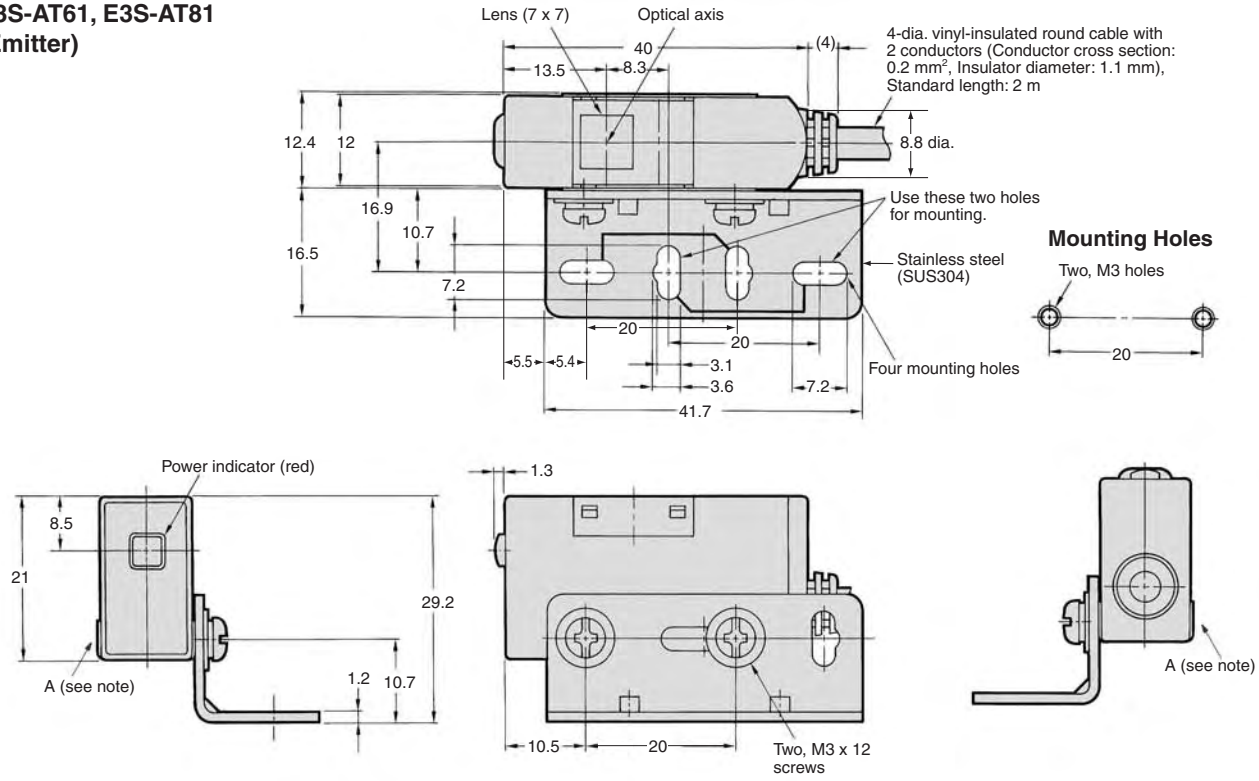






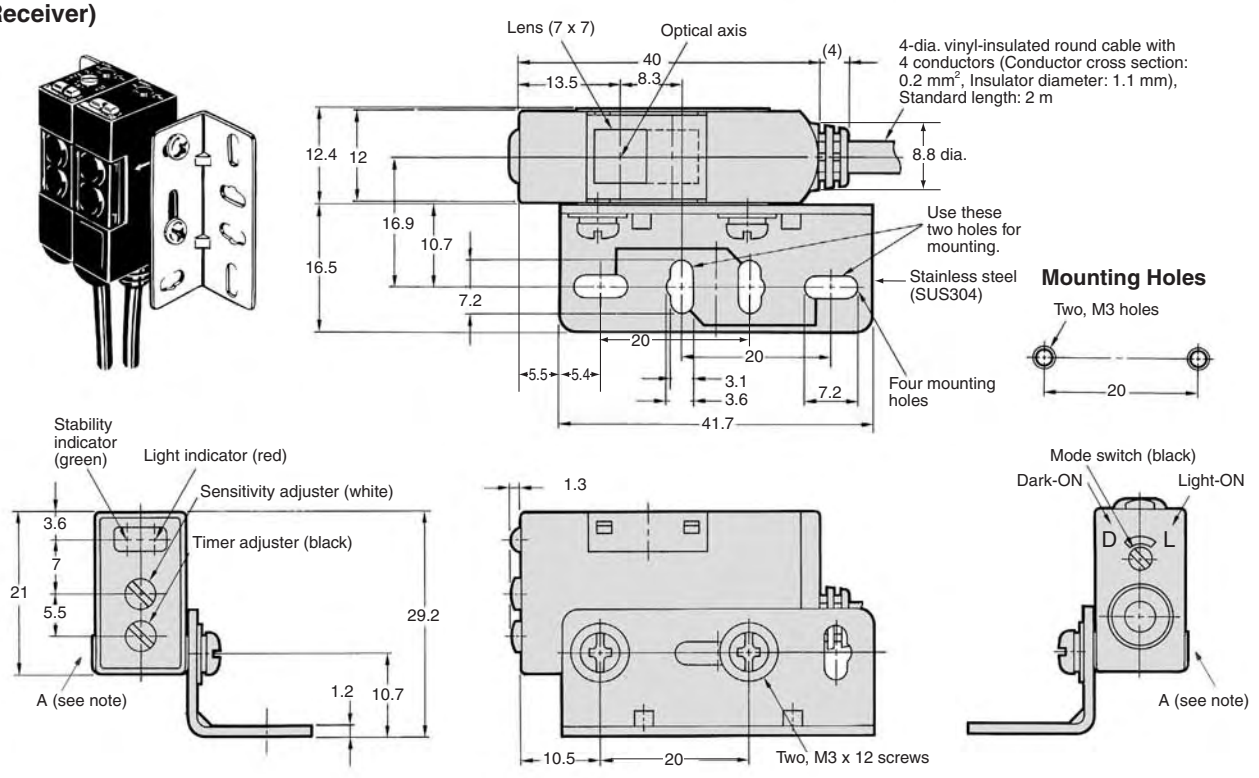
Note: The Mounting Bracket can be attached to side A.

E3S-AT61, E3S-AT81 (Emitter)



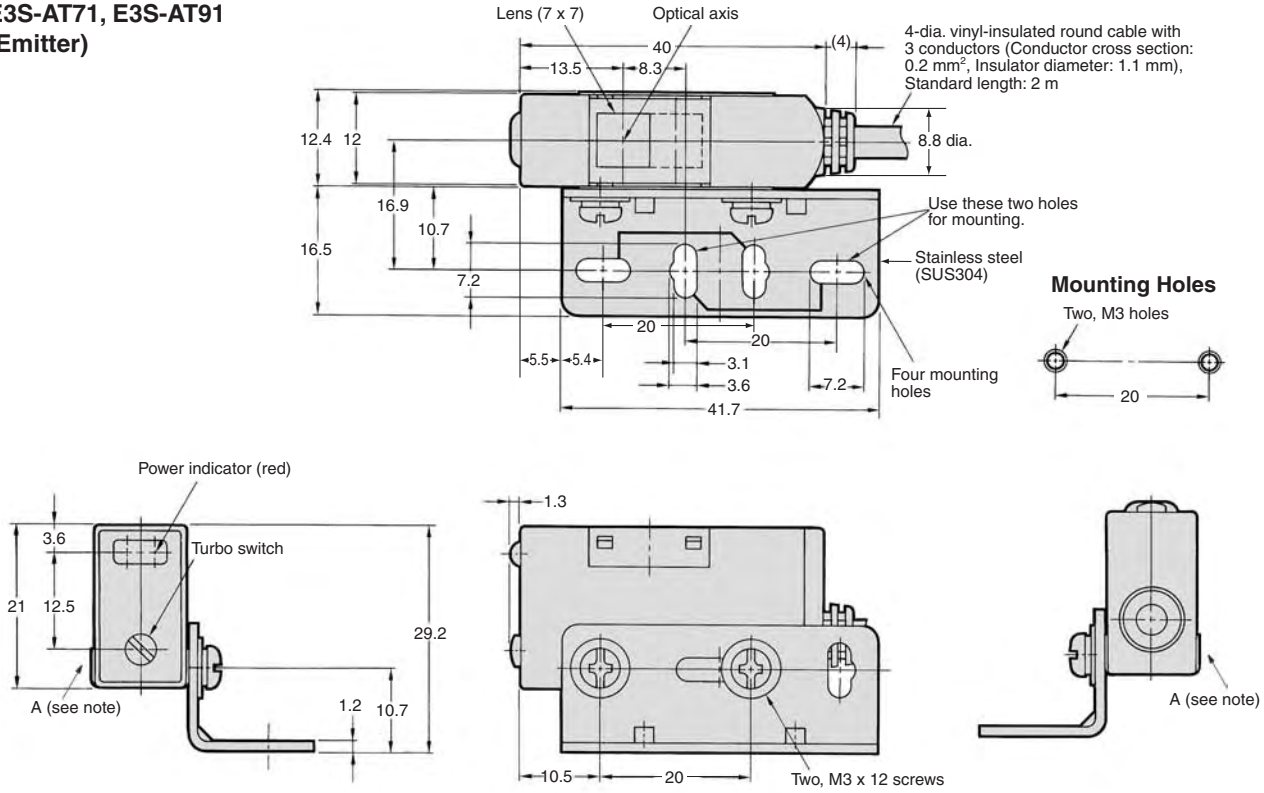
Note: The Mounting Bracket can be attached to side A.

E3S-AT71, E3S-AT91 (Receiver)



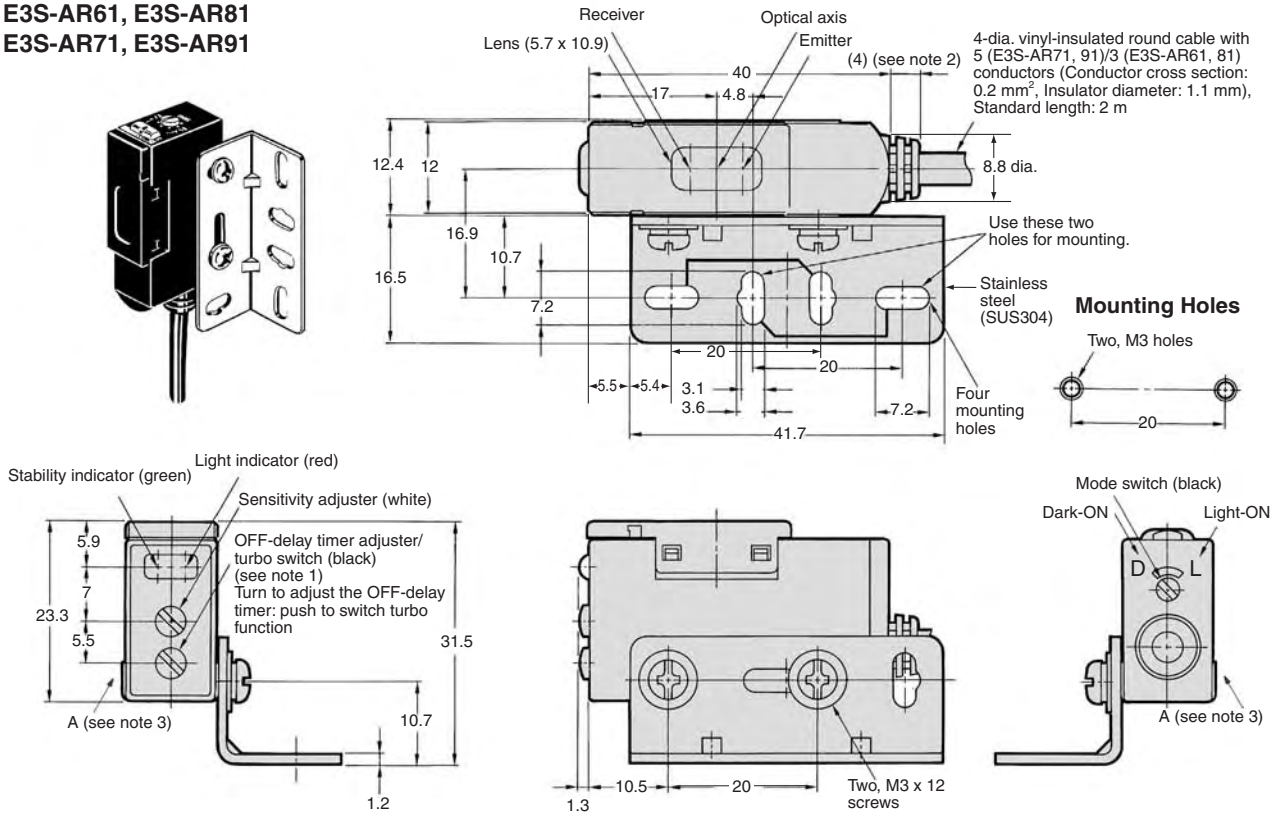
Note: The Mounting Bracket can be attached to side A.

E3S-AT71, E3S-AT91
(Emitter)



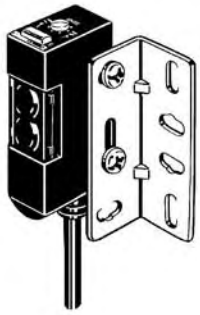
Note: The Mounting Bracket can be attached to side A.

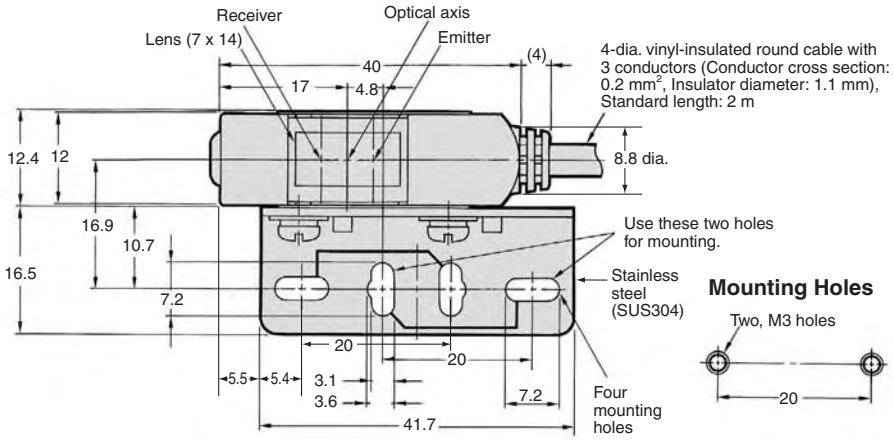
E3S-AR61, E3S-AR81
E3S-AR71, E3S-AR91

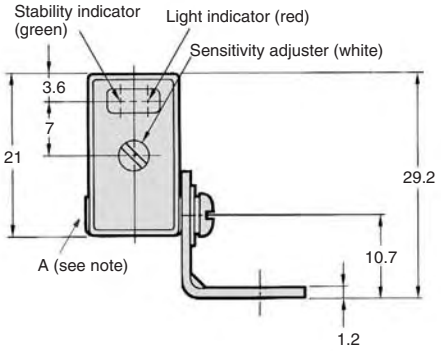


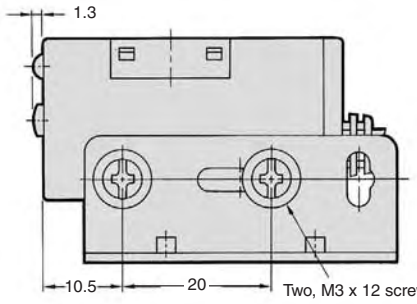
Note 1. Turbo switch is only for E3S-AR71 and E3S-AR91.
2. 9.7 mm for E3S-AR71/-AR91
3. The Mounting Bracket can be attached to side A.

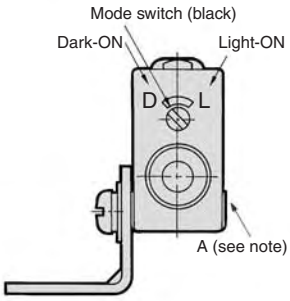
E3S-AD61, E3S-AD81
E3S-AD63, E3S-AD83
E3S-AD62, E3S-AD82





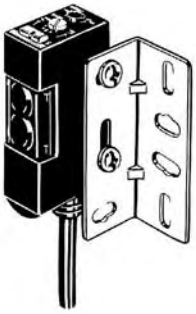


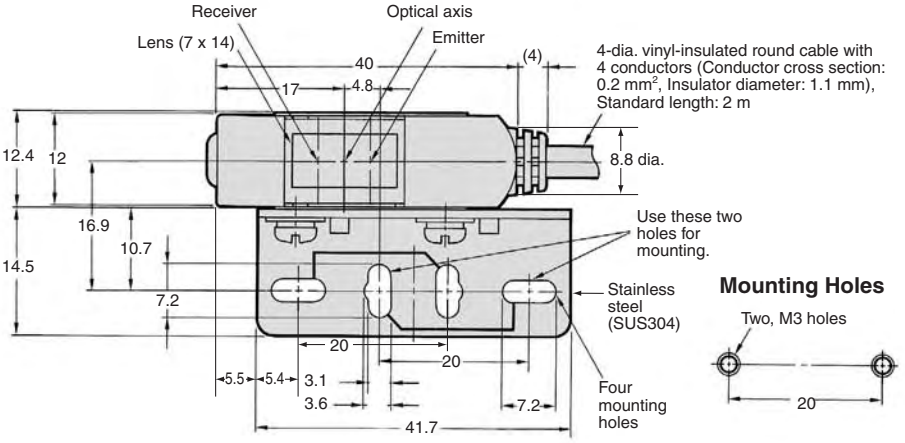


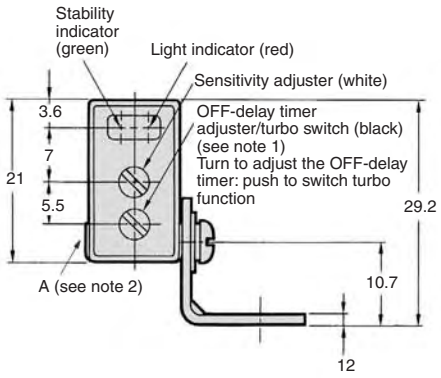


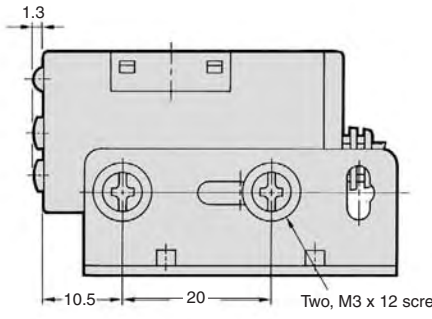
Note: The Mounting Bracket can be attached to side A.

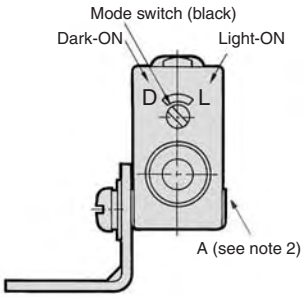
E3S-AD71, E3S-AD91
E3S-AD73, E3S-AD93
E3S-AD72, E3S-AD92







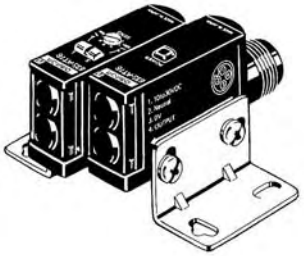


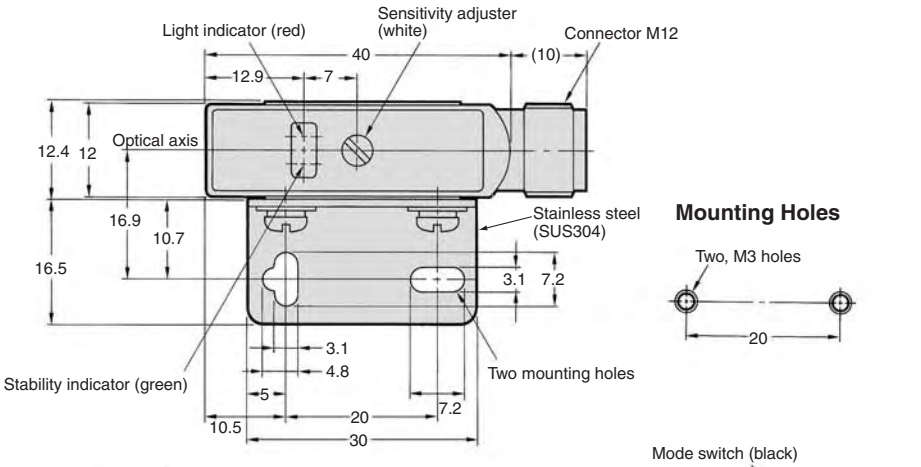


Note 1. Turbo switch is only for E3S-AD71 and E3S-AD91.
2. The Mounting Bracket can be attached to side A.

■ E3S-A Connector Models

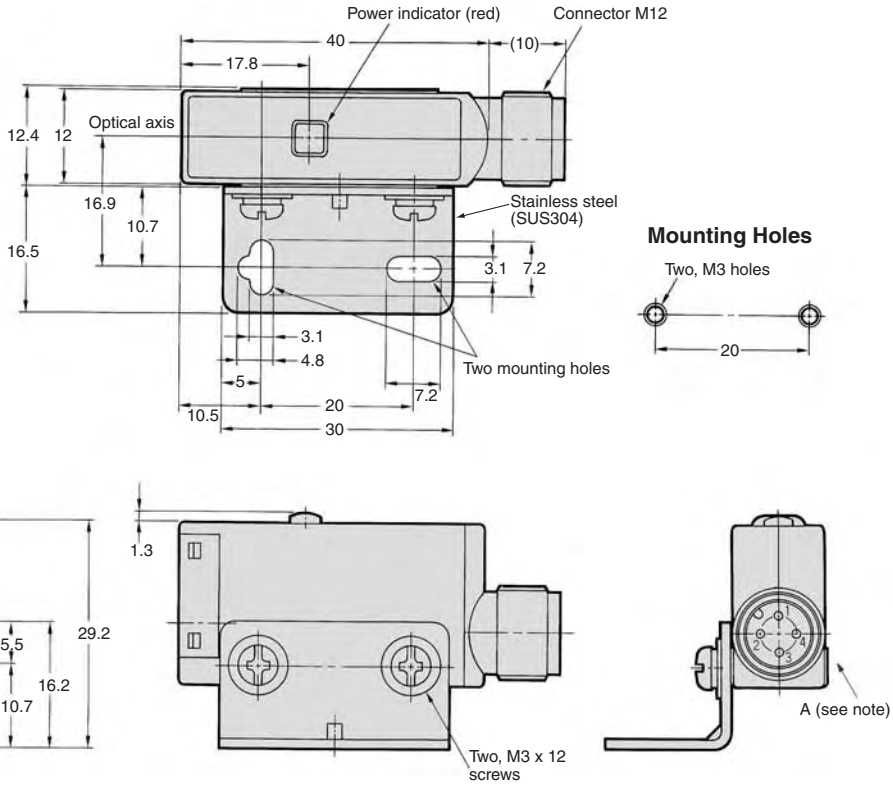
E3S-AT16, E3S-AT36 (Receiver)





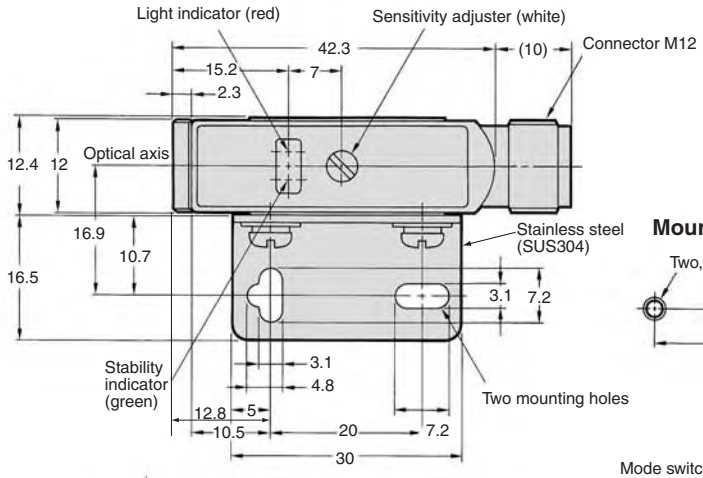
Note: The Mounting Bracket can be attached to side A.

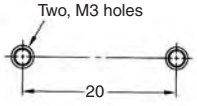
E3S-AT16, E3S-AT36 (Emitter)

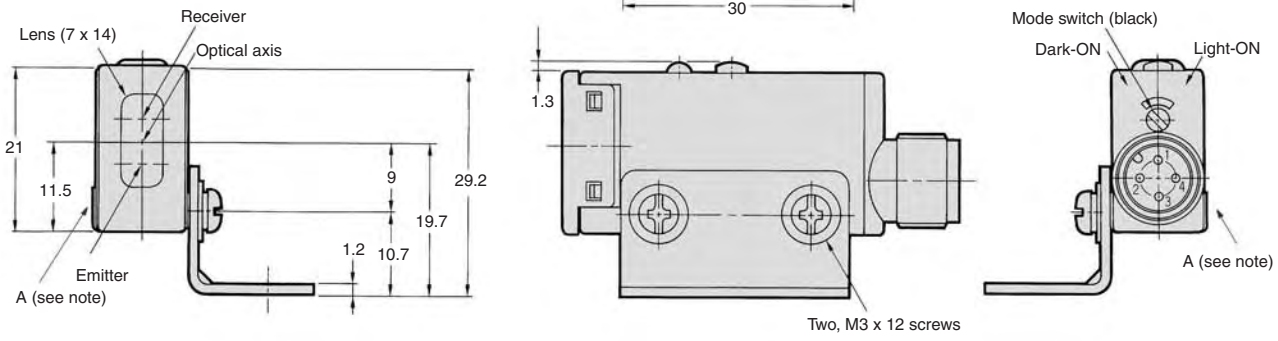


Note: The Mounting Bracket can be attached to side A.

E3S-AR16, E3S-AR36

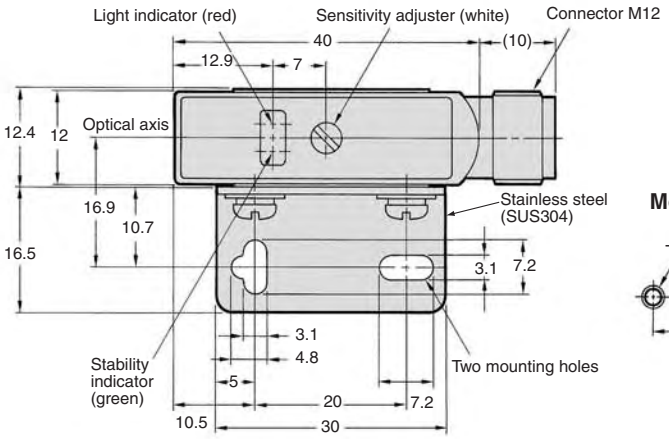


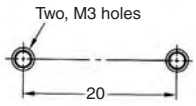


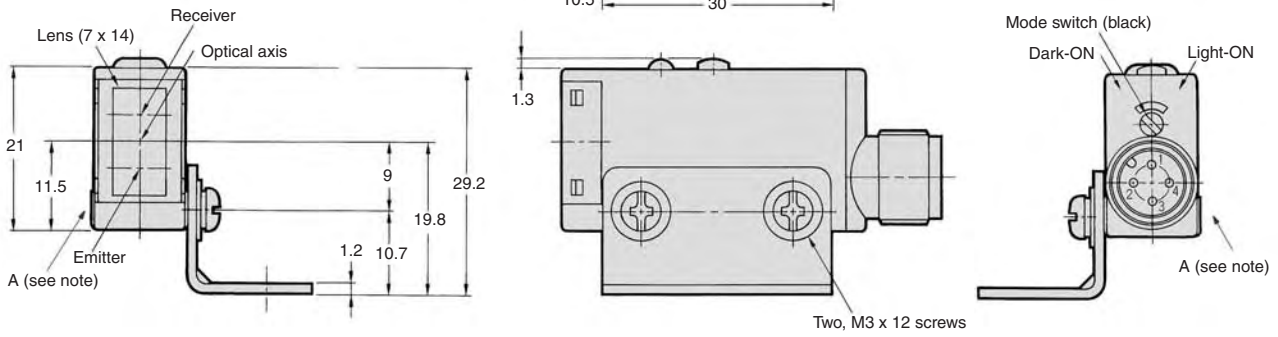


Note: The Mounting Bracket can be attached to side A.

E3S-AD16, E3S-AD36
E3S-AD18, E3S-AD38
E3S-AD17, E3S-AD37

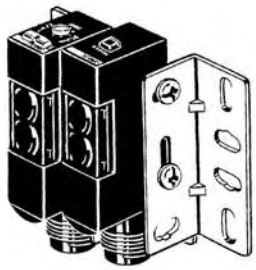


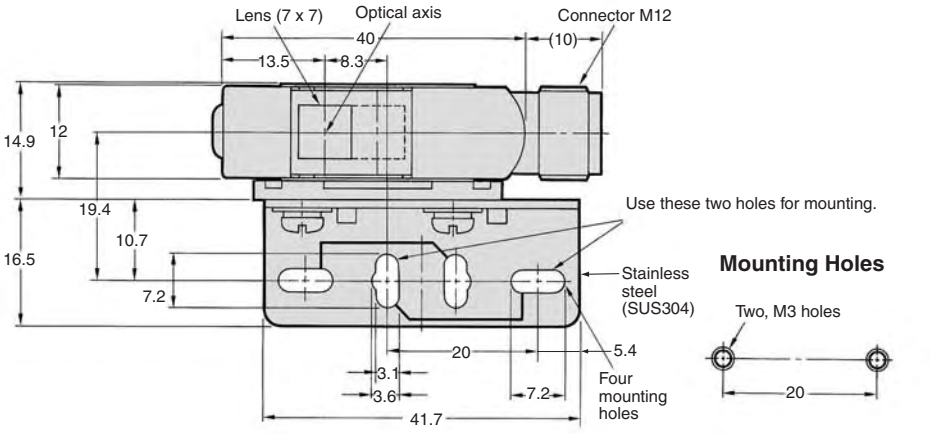


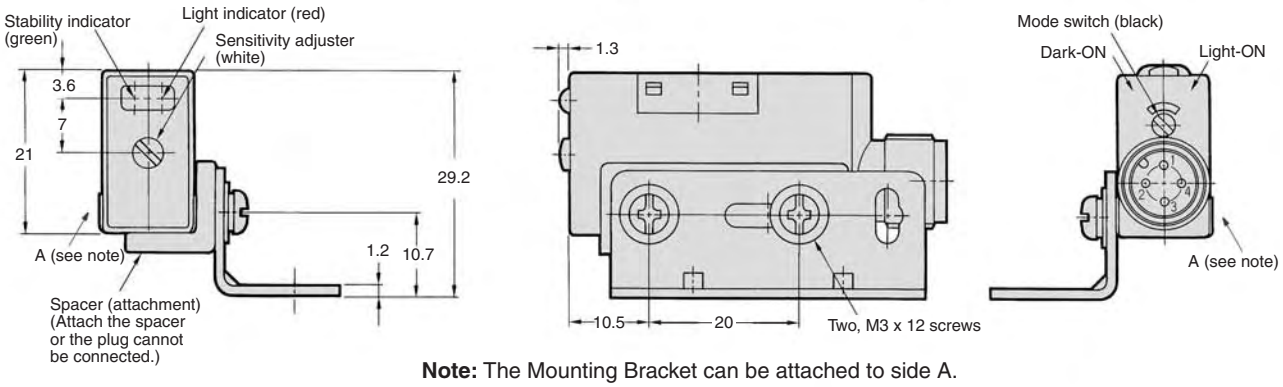


Note: The Mounting Bracket can be attached to side A.

E3S-AT66, E3S-AT86 (Receiver)

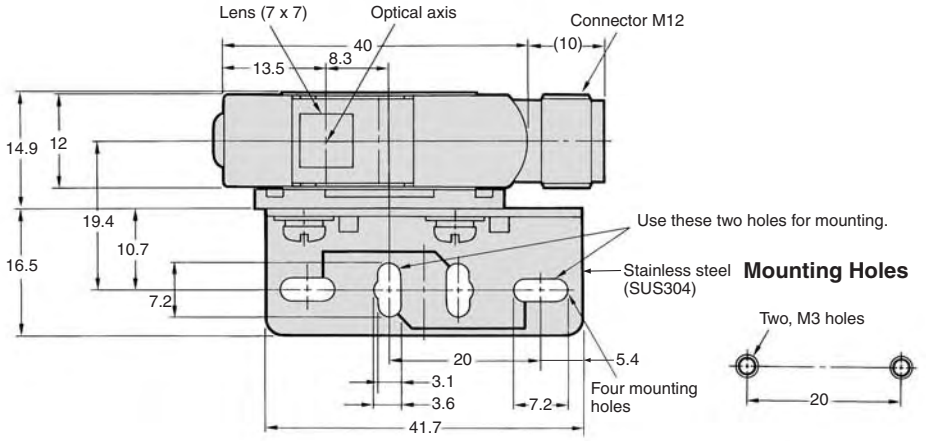


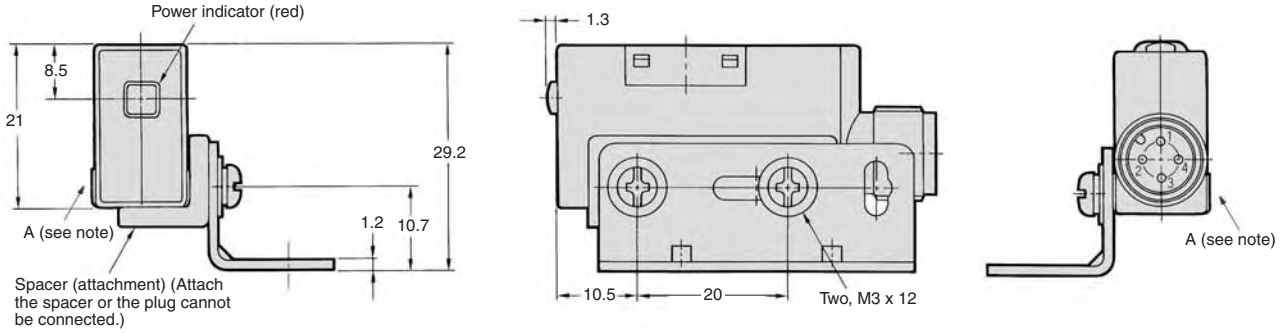




Note: The Mounting Bracket can be attached to side A.

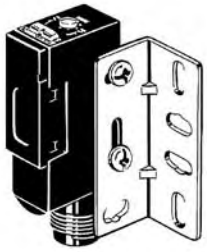
E3S-AT66, E3S-AT86 (Emitter)

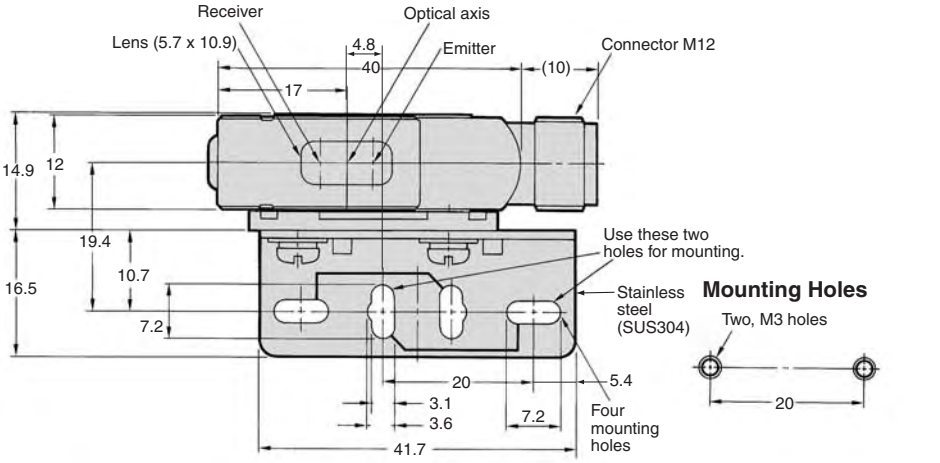


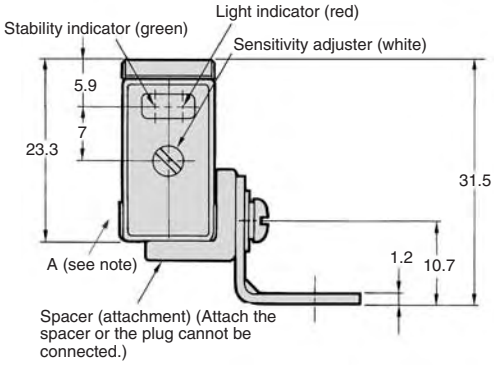


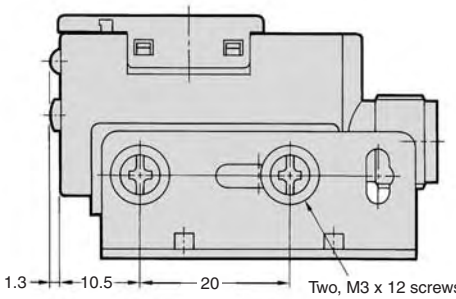
Note: The Mounting Bracket can be attached to side A.

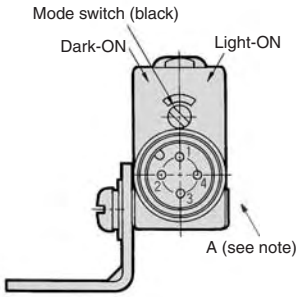
E3S-AR66, E3S-AR86





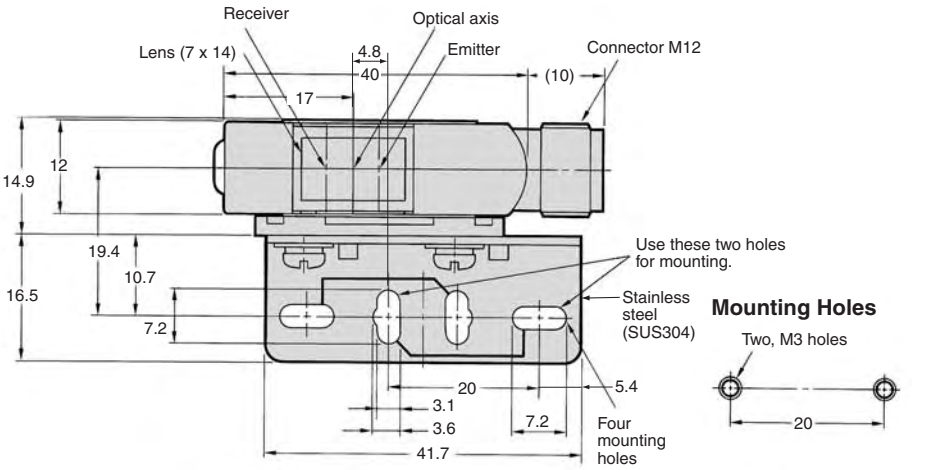


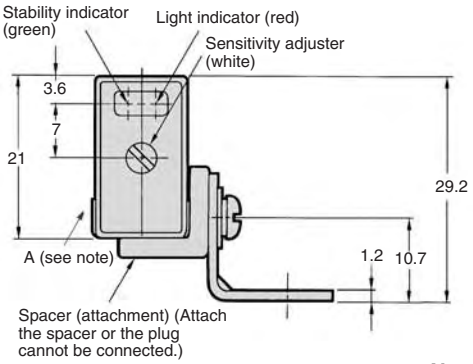


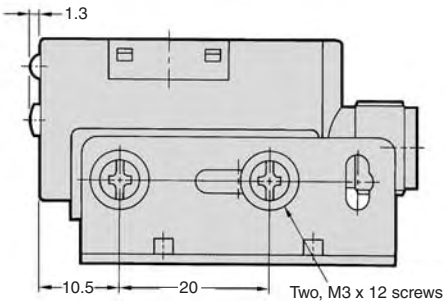


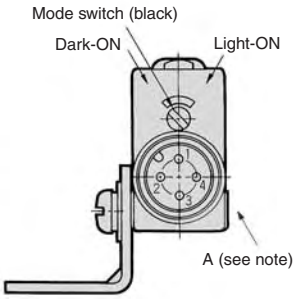
Note: The Mounting Bracket can be attached to side A.

E3S-AD66, E3S-AD86
E3S-AD68, E3S-AD88
E3S-AD67, E3S-AD87





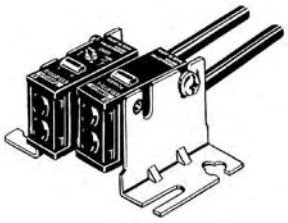


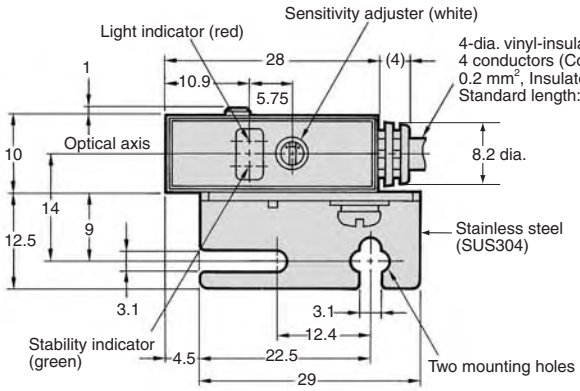


Note: The Mounting Bracket can be attached to side A.

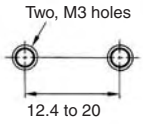
■ E3S-B Lead Wire Output Models

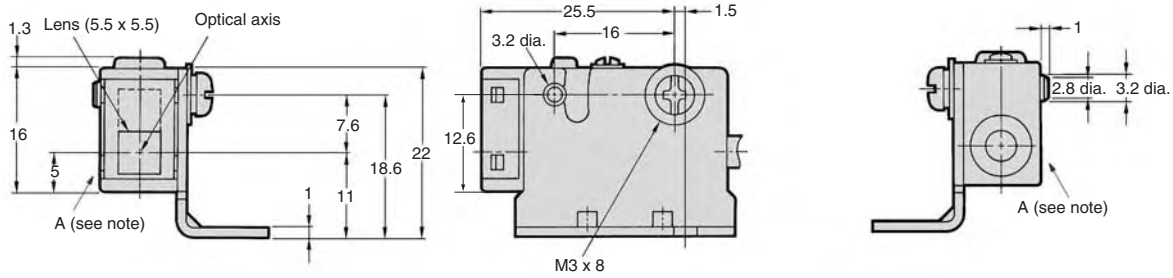
E3S-BT11, E3S-BT31 (Receiver)





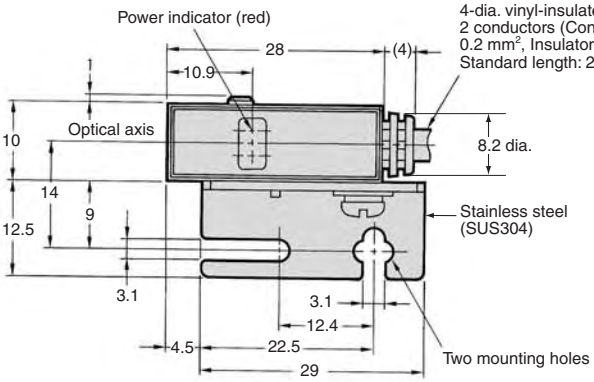
Mounting Holes



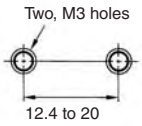


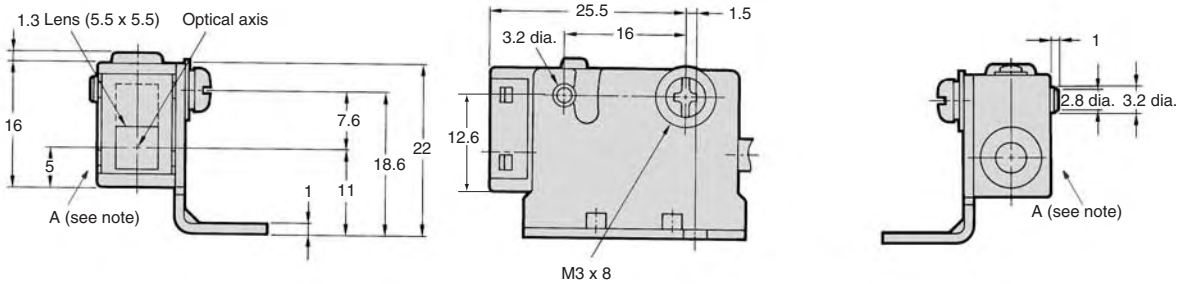
Note: The Mounting Bracket can be attached to side A.

E3S-BT11, E3S-BT31 (Emitter)



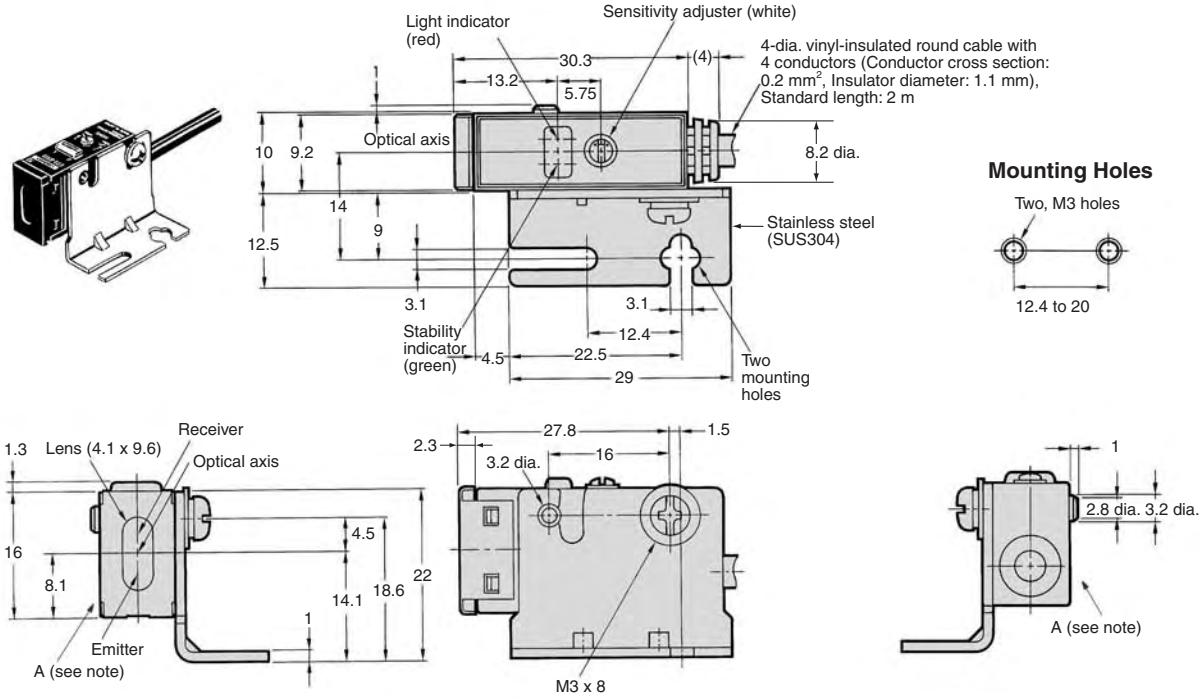
Mounting Holes





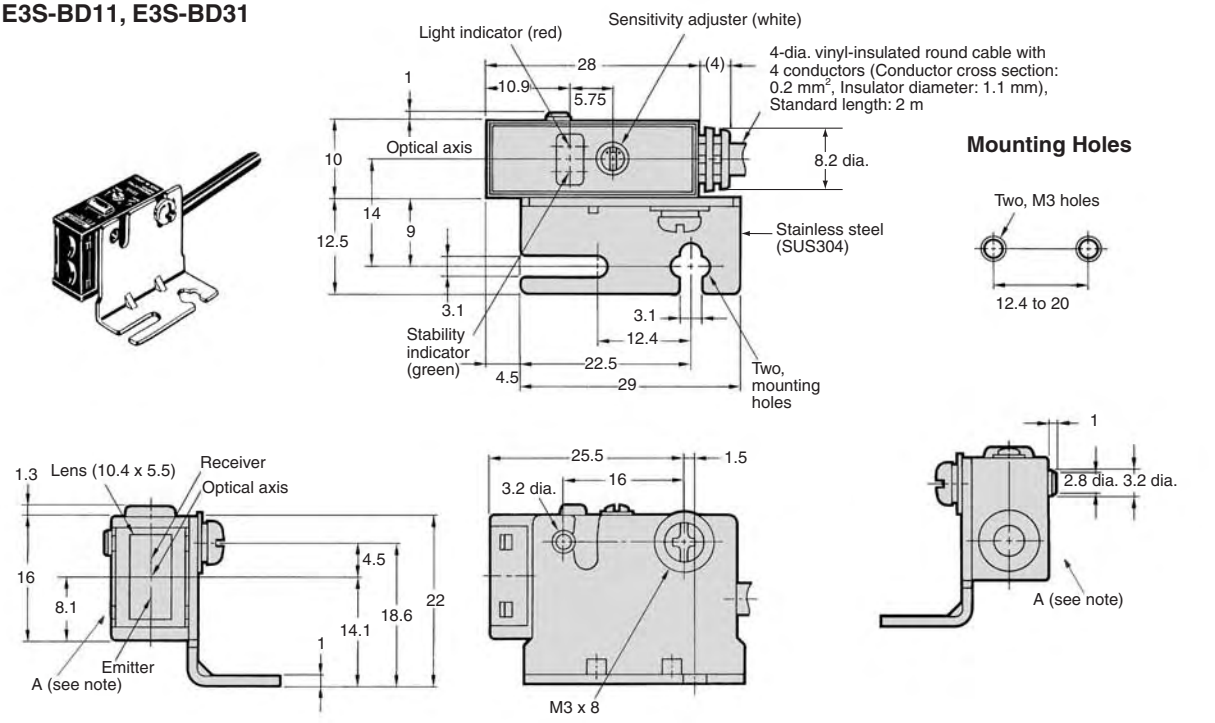
Note: The Mounting Bracket can be attached to side A.

E3S-BR11, E3S-BR31



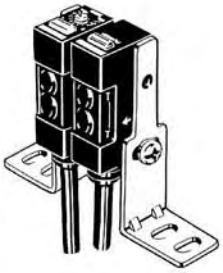
Note: The Mounting Bracket can be attached to side A.

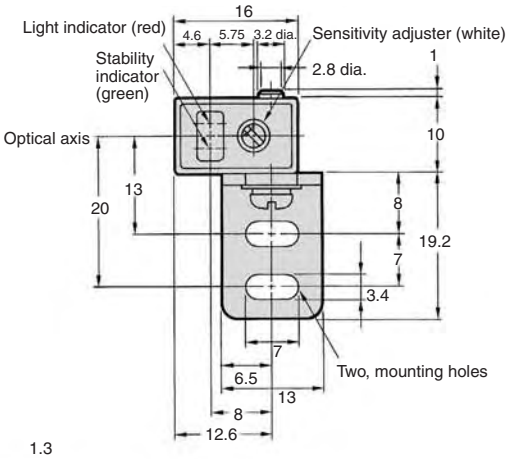
E3S-BD11, E3S-BD31



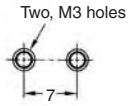
Note: The Mounting Bracket can be attached to side A.

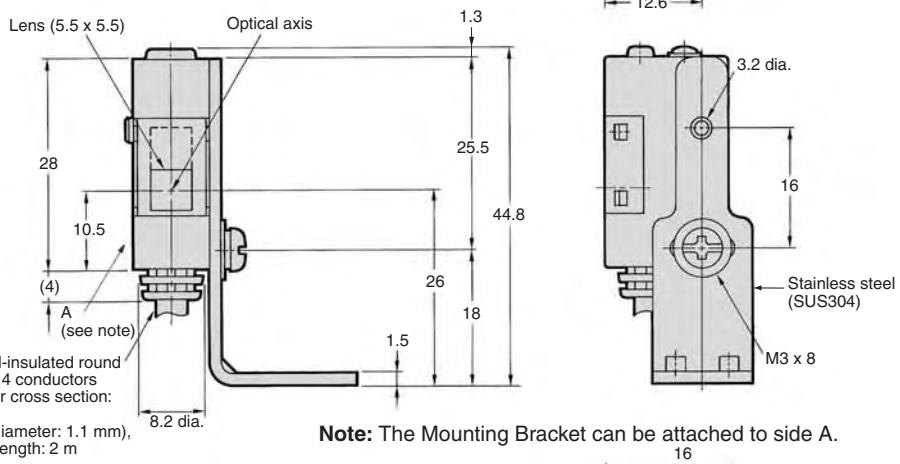
E3S-BT61, E3S-BT81 (Receiver)





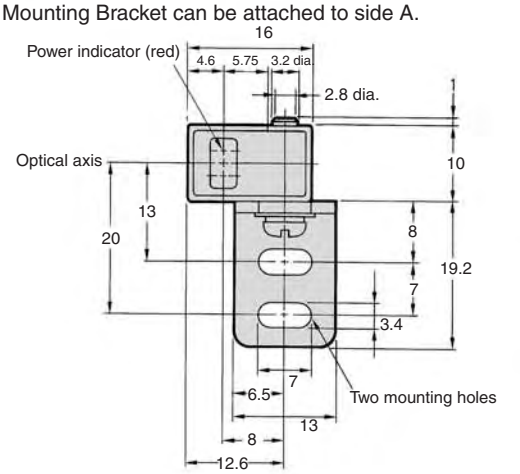
Mounting Holes



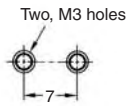


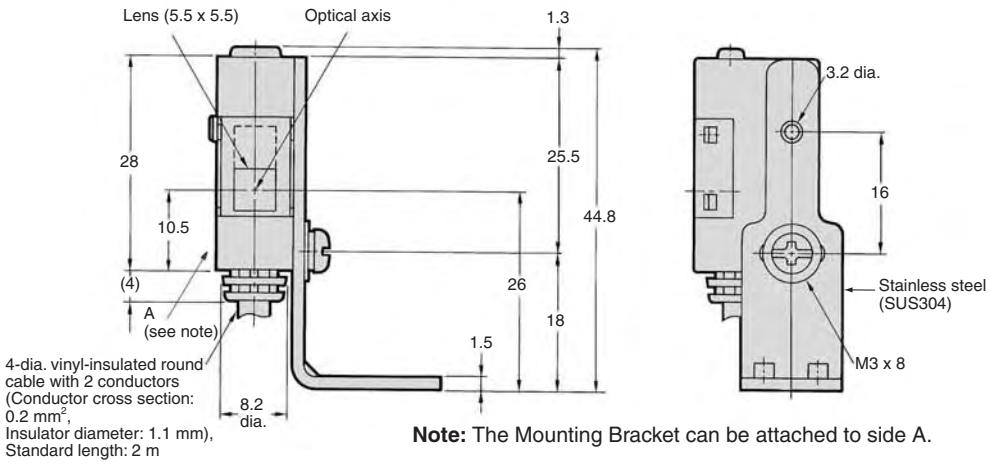
Note: The Mounting Bracket can be attached to side A.

E3S-BT61, E3S-BT81 (Emitter)



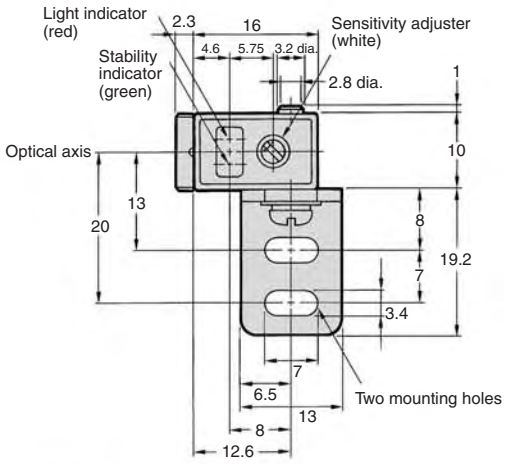
Mounting Holes



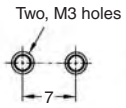


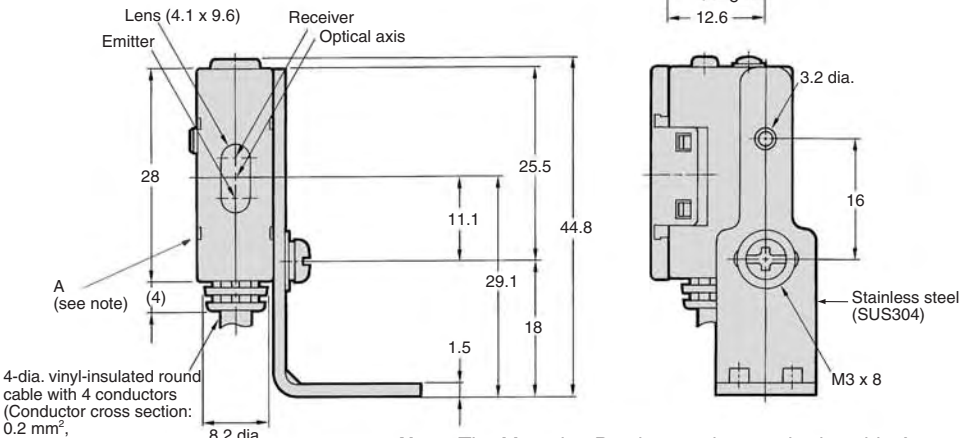
Note: The Mounting Bracket can be attached to side A.

E3S-BR61, E3S-BR81



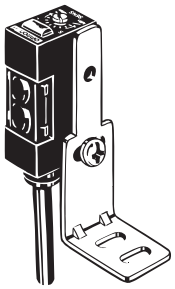
Mounting Holes

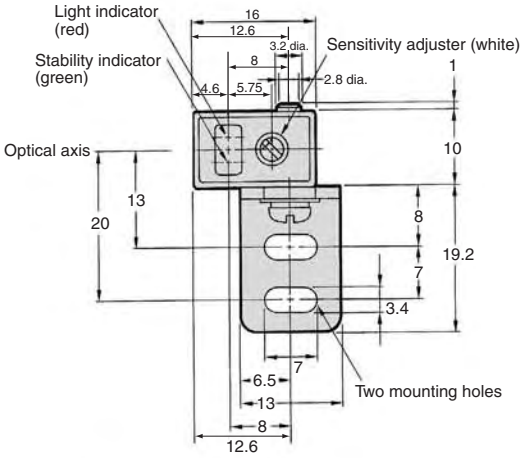




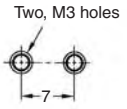
Note: The Mounting Bracket can be attached to side A.

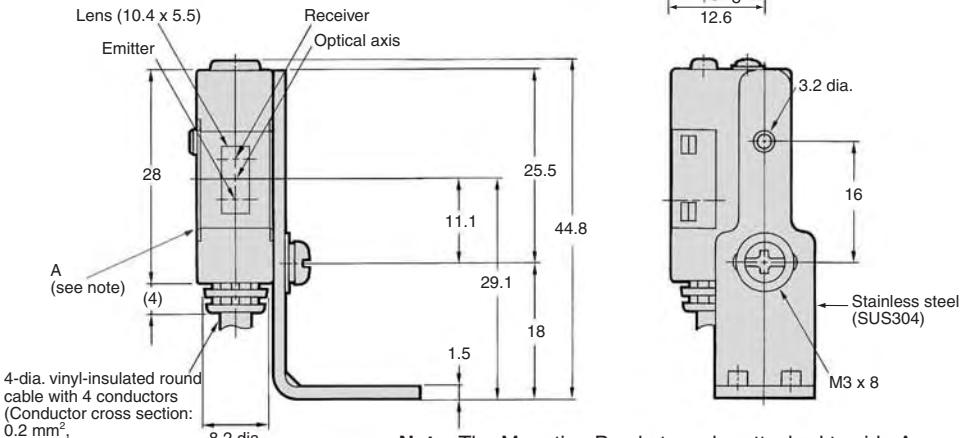
E3S-BD61, E3S-BD81





Mounting Holes

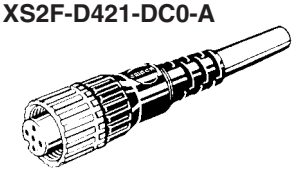


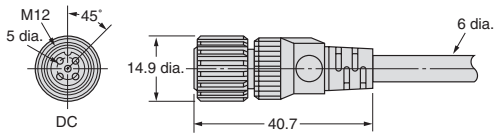


Note: The Mounting Bracket can be attached to side A.

■ Plugs (for E3S-A Connector Models)

Straight Models
XS2F-D421-DC0-A



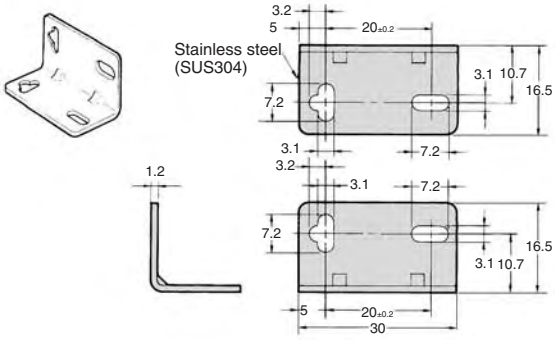


The XS2F-D421 Straight Cable Connector is also available. Refer to the *Output Circuit Diagram* on page 10.

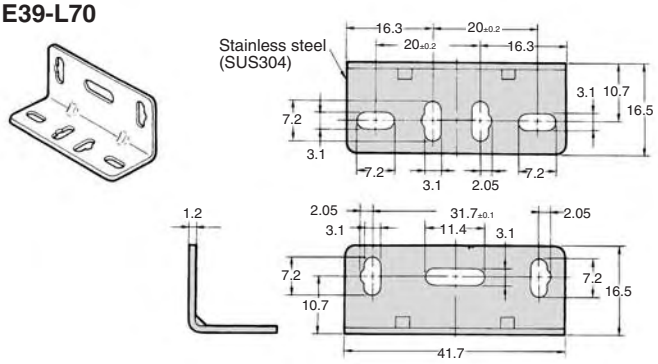
Cable drawing direction	No. of conductors	Cable length	Model
Straight	3	2 m	XS2F-D421-DC0-A
	4		XS2F-D421-D80-A
	3	5 m	XS2F-D421-GC0-A
	4		XS2F-D421-G80-A

■ Attachments

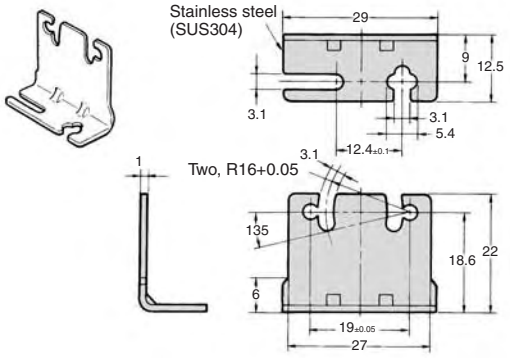
Standard Mounting Bracket
(Provided with Horizontal Models)
E39-L69



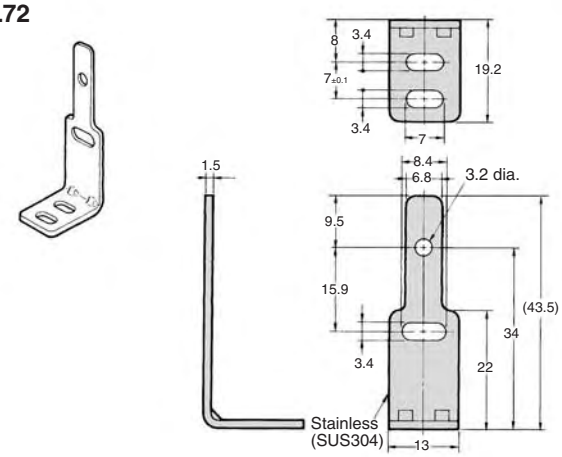
Standard Mounting Bracket
(Provided with Vertical Models)
E39-L70



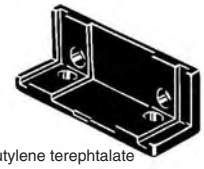
Standard Mounting Bracket
(Provided with Horizontal Models)
E39-L71



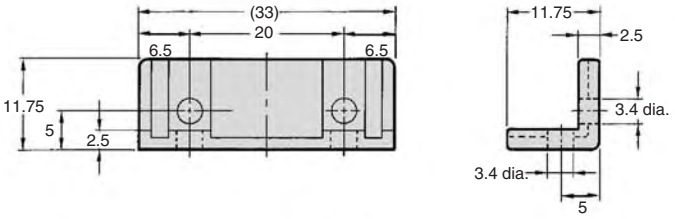
Standard Mounting Bracket
(Provided with Vertical Models)
E39-L72



Side-by-side Mounting Plate (for E3S-A Connector Model) E39-L60

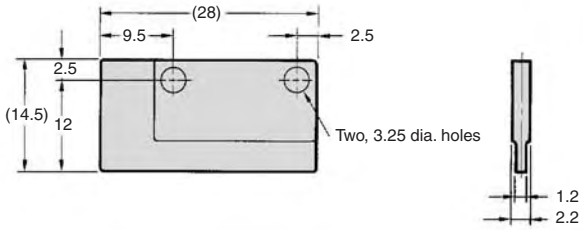


Material: Polybutylene terephtalate



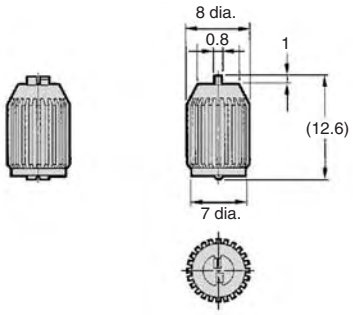
Side-by-side Mounting Plate (for E3S-B) E39-L61

Material: Polybutylene terephtalate

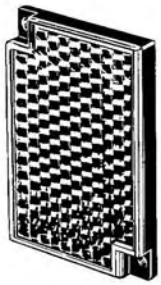


Sensitivity Adjustor Screwdriver (for E3S-A) E39-G2

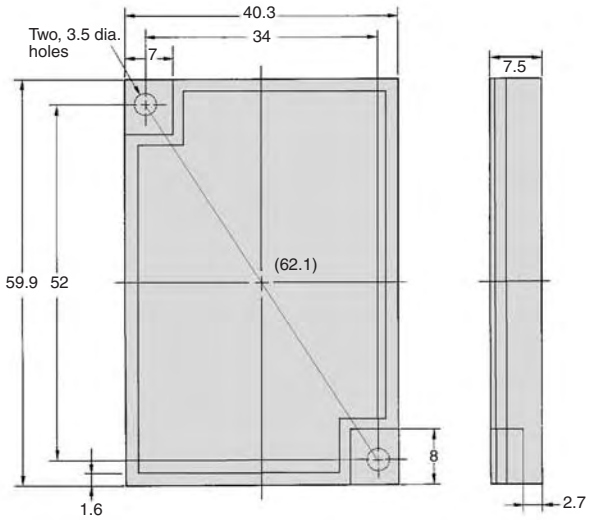
Material: Polycarbonate



Retroreflector (Provided with E3S-□R□□) E39-R1

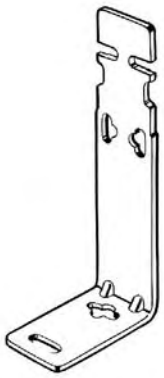


Material: Reflector: Acryl
Back: ABS

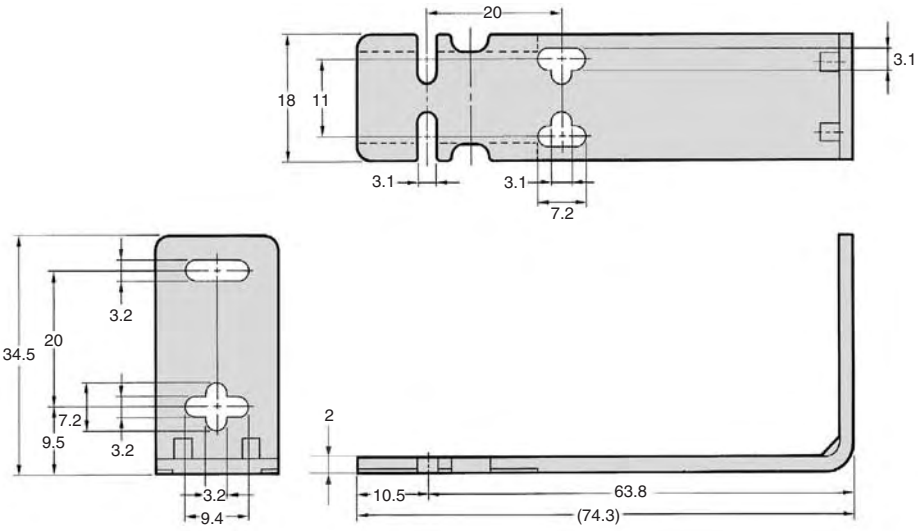


■ Accessories (Order Separately)

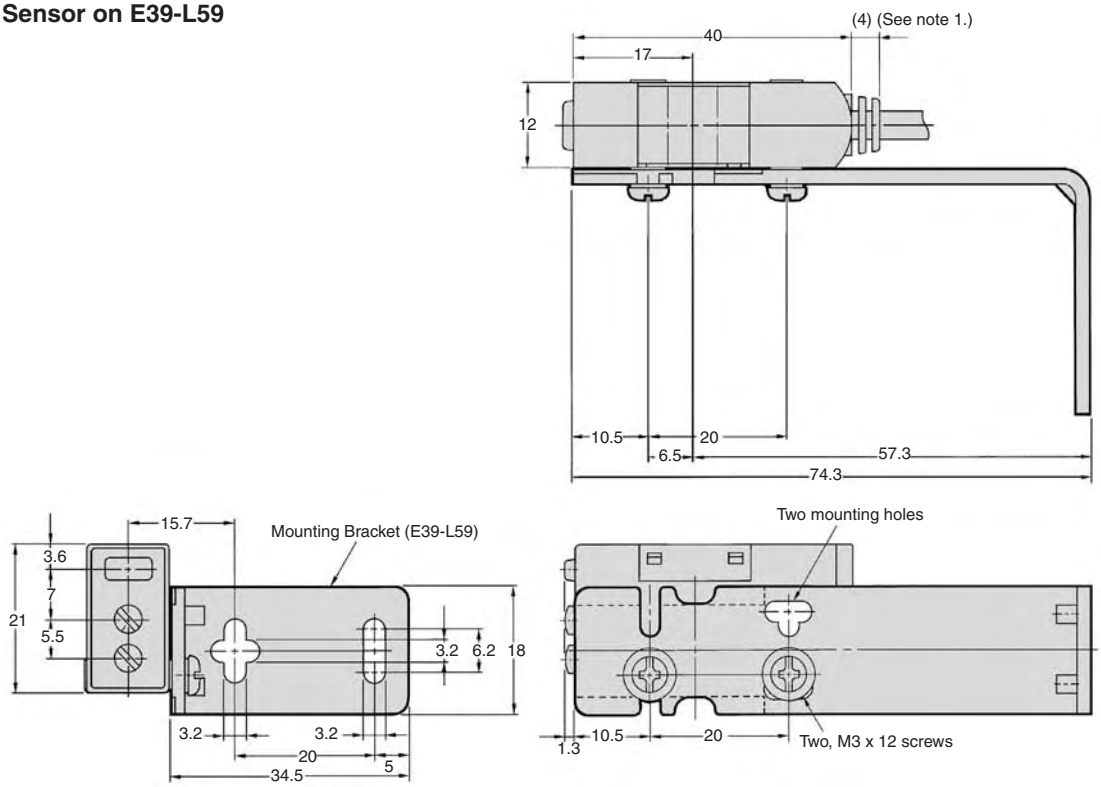
Vertical Mounting Bracket (for E3S-A) E39-L59



Material: Stainless steel (SUS304)



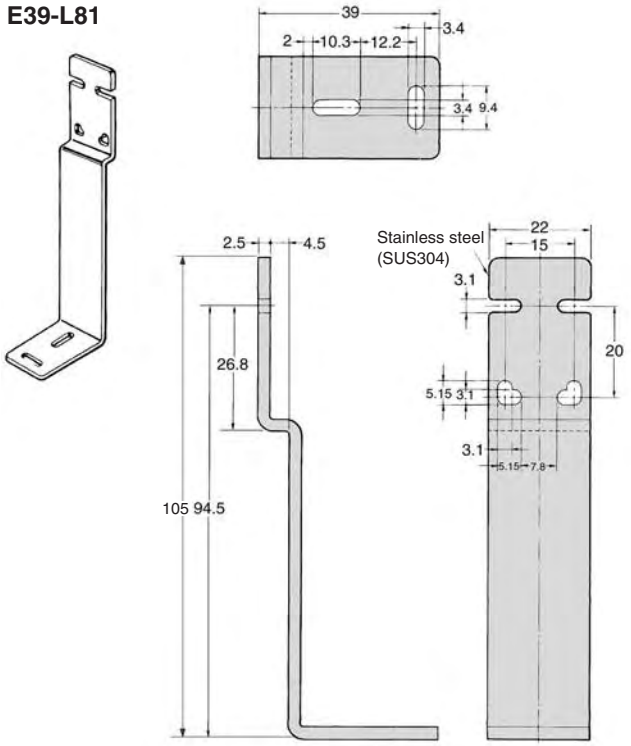
Mounting Example of E3S-A Pre-wired Sensor on E39-L59



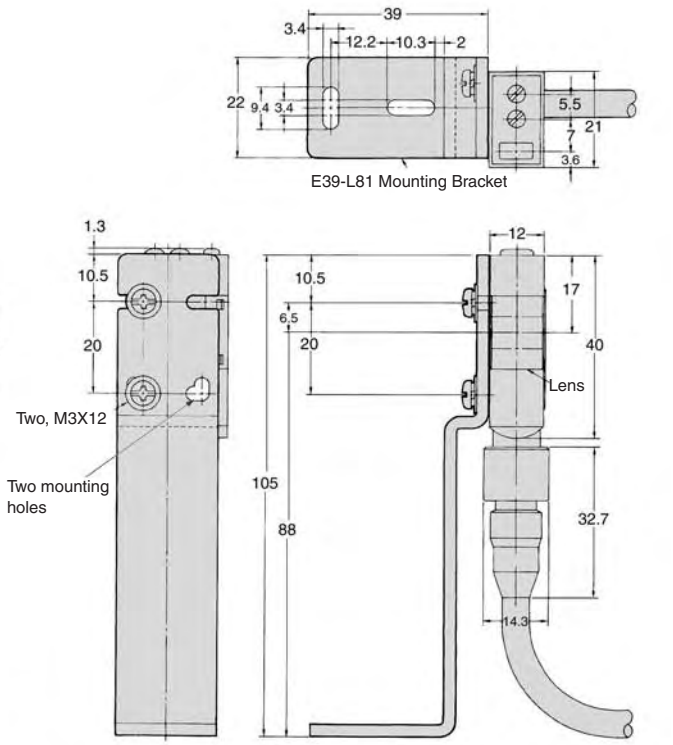
Note 1. E3S-AR71/-AR91: 9.7 mm

2. Cannot be used on Sensors with Connectors.

Vertical Mounting Bracket (for E3S-A) E39-L81



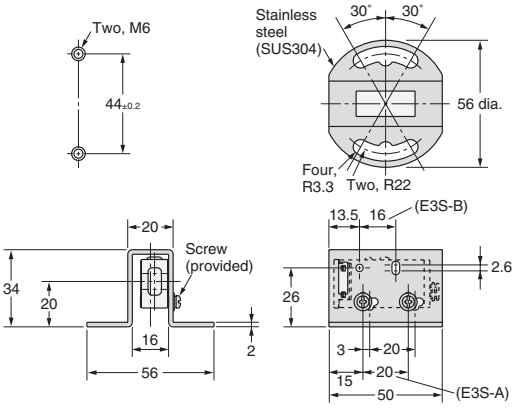
Mounting Example of E3S-A Sensor with Connector on E39-L81



Note: Can be used together with XS2F-D421-DCO-A Straight Connector.

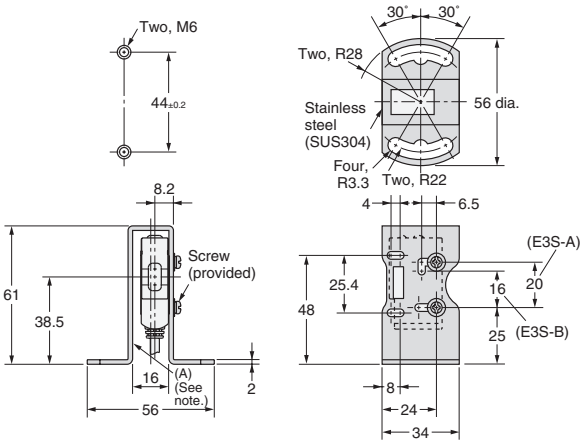
Horizontal Mounting Bracket E39-L97

Mounting Holes



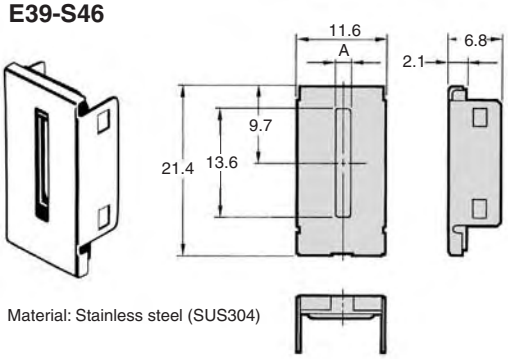
Vertical Mounting Bracket E39-L98

Mounting Holes



Note: The Mounting Bracket can be attached to side A.

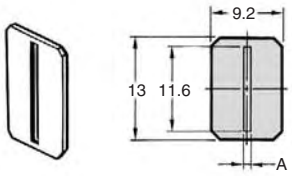
Insert-type Long Slit (for E3S-AT) E39-S46



Material: Stainless steel (SUS304)

Note: The width of A is 0.5 mm, 1 mm, or 2 mm depending on the model.

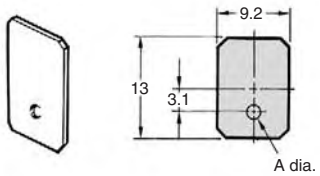
Seal-type Slit (for E3S-BT) E39-S47



Material: Polyethylene film

Note 1. The width of A is 0.5 mm, 1 mm, or 2 mm depending on the model.
2. The Slit has an adhesive back.

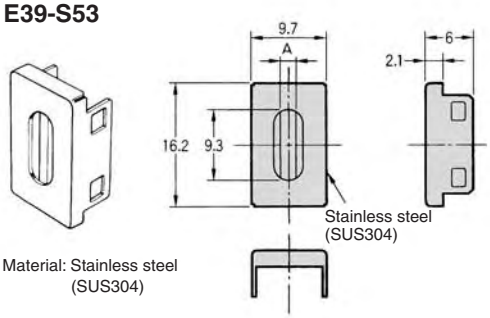
Seal-type Slit (for E3S-BT) E39-S48



Material: Polyethylene film

Note 1. The width of A is 0.5 mm, 1 mm, or 2 mm depending on the model.
2. The Slit has an adhesive back.

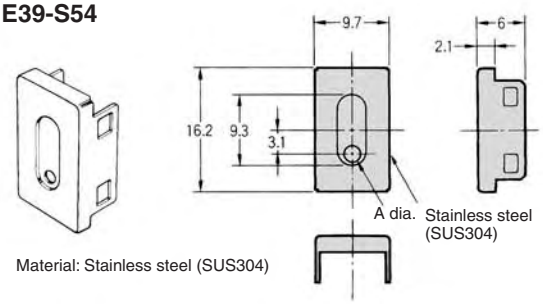
Insert-type Long Slit (for E3S-BT) E39-S53



Material: Stainless steel (SUS304)

Note: The width of A is 0.5 mm, 1 mm, or 2 mm depending on the model.

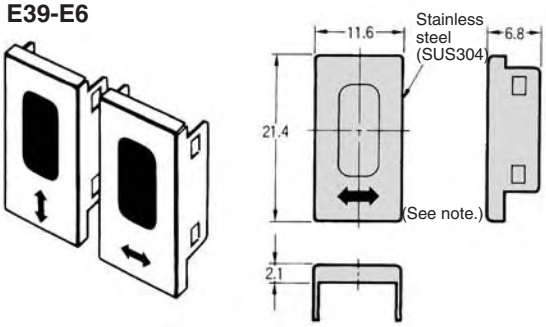
Insert-type Round Slit (for E3S-BT) E39-S54



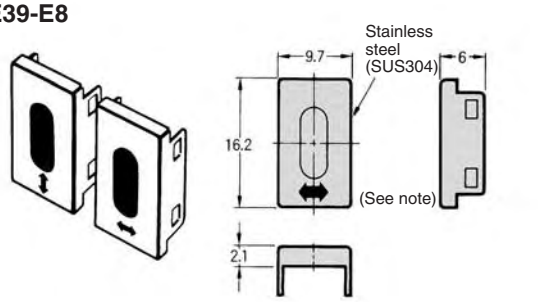
Material: Stainless steel (SUS304)

Note: The width of A is 0.5 mm, 1 mm, or 2 mm depending on the model.

Filters for Mutual Interference Prevention (for E3S-AT)
E39-E6

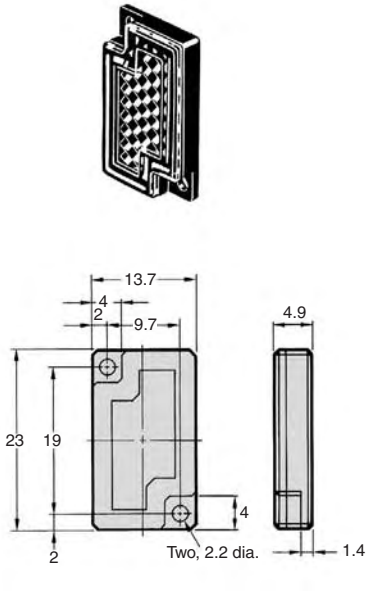


Filters for Mutual Interference Prevention (for E3S-BT)
E39-E8



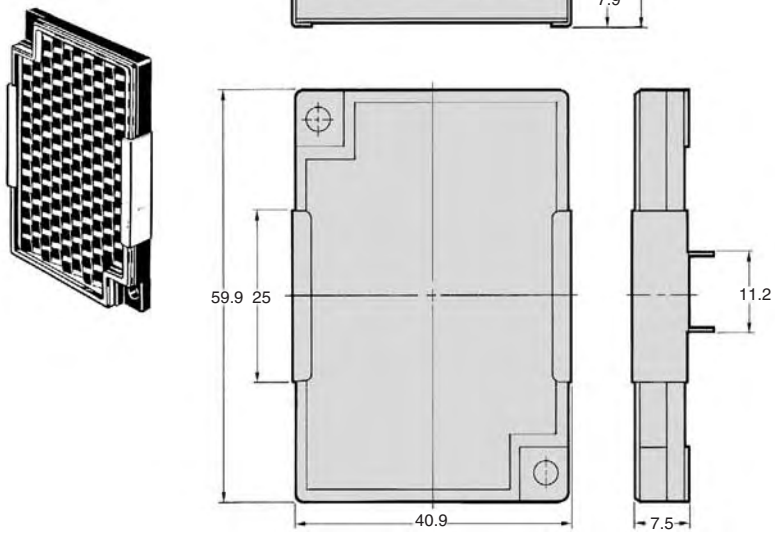
Note: Two Vertical Filters and two Horizontal Filters are sold together.

Small Reflector
E39-R4



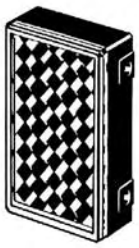
Material: Reflector: Acryl
Back: ABS

Optical Axis Confirmation Reflector (for E3S-A)
E39-R5

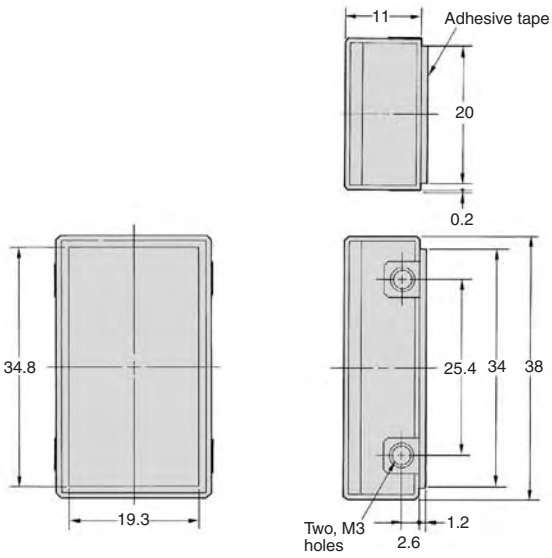


Material: Reflector: Acryl
Back: ABS

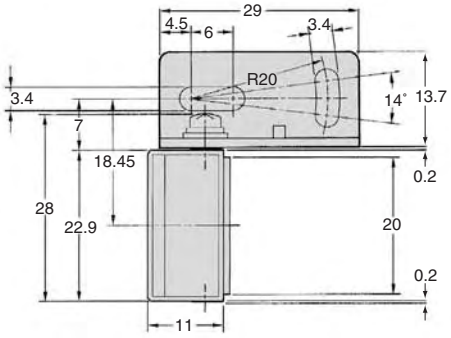
Small Reflector
E39-R3

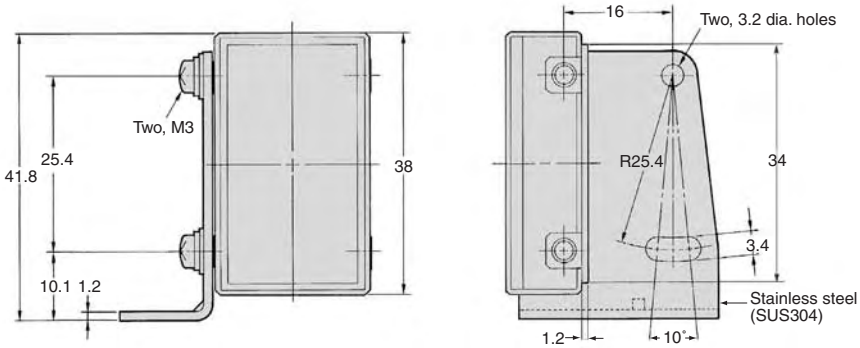


Material: Reflector: Acryl
Back: ABS



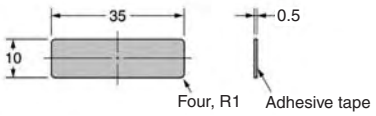
With Enclosed Mounting Bracket





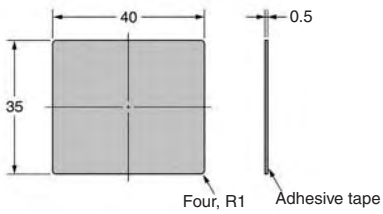
Tape Reflector
E39-RS1

Material: Acryl

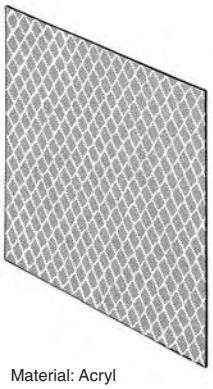


Tape Reflector
E39-RS2

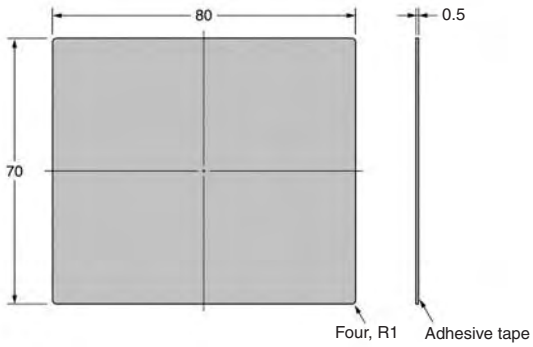
Material: Acryl



Tape Reflector
E39-RS3



Material: Acryl



Item	E39-R3	E39-RS1	E39-RS2	E39-RS3	E39-R4
Directional angle	30° min.				2 to 20°
Ambient temperature	Operating: –25°C to 55°C Storage: –40°C to 70°C	Operating: –25°C to 55°C Storage: 0°C to 40°C			Operating: –25°C to 55°C Storage: –40°C to 70°C
Ambient humidity	Operating: 35% to 85% Storage: 35% to 95%	Operating: 35% to 85% Storage: 35% to 85%			Operating: 35% to 85% Storage: 35% to 95%
Degree of protection	IP67				

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E220-E1-04

In the interest of product improvement, specifications are subject to change without notice.

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