

Built-in Amplifier Photoelectric Sensor (Medium Size)

E3S-AD16



Image

Medium Photoelectric Sensor With Built-in Amplifier, Diffuse-reflective, Horizontal, Sensing distance: 200 mm, NPN, M12 connector models

Sensing method	Diffuse-reflective
Sensing distance	White paper 100 x 100 mm: 10 to 200 mm
Light source	Red LED (660 nm)
Connection method	M12 connector models

Ratings/Performance

As of July 25, 2024

Shape	Square type
Sensing method	Diffuse-reflective
Sensing distance	White paper 100 x 100 mm: 10 to 200 mm
Differential distance	10% max. of sensing distance
Light source	Red LED (660 nm)
Power supply voltage	10 to 30 VDC ripple (p-p) 10% included
Current consumption	30 mA max.
Control output	NPN open collector 30 VDC max. 100 mA max. Residual voltage: 1 V max.
Operation mode	Light-ON/Dark-ON selectable
Protective circuit	Output short-circuit protection, Power supply reverse polarity protection
Response time	Operate or reset: 0.5 ms max.
Sensitivity setting	2-turn endless adjustment (with indicator)
Ambient illuminance	Incandescent lamp: 5,000 lx max. Sunlight: 10,000 lx max.
Ambient temperature range (Operating)	-25 to 55 °C (with no freezing or condensation)
Ambient temperature range (Storage)	-40 to 70 °C (with no freezing or condensation)
Ambient humidity range (Operating)	35 to 85 % (with no condensation)
Ambient humidity range (Storage)	35 to 95 % (with no condensation)
Insulation resistance	20 MΩ min. (500 VDC megger)
Dielectric strength	1000 VAC 50/60 Hz 1 min

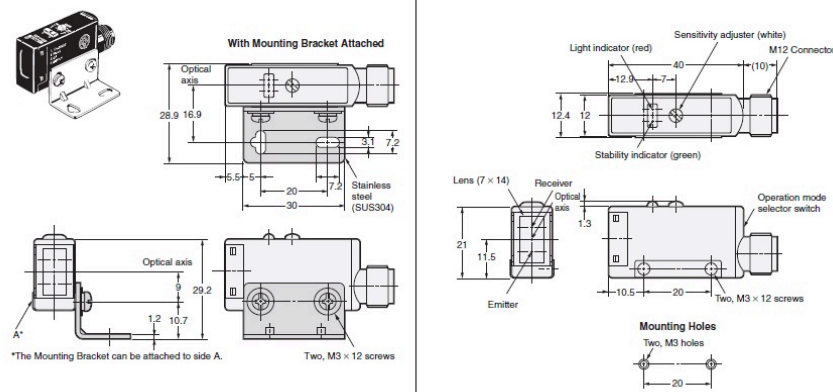
Vibration resistance	Destruction: 10 to 55 Hz, 1.5 mm double amplitude each in X, Y, and Z directions for 2 h
Shock resistance	Destruction: 500 m/s ² 3 times each in X, Y and Z directions
Degree of protection	IEC: IP67 NEMA 4X (indoors only)
Connection method	M12 connector models
Indicator	Light indicator (red), Stability indicator (green)
Weight	Package: Approx. 50 g
Accessories	Instruction manual, Mounting bracket, Sensitivity adjustment driver, Sensitivity adjusting knob, Close-mounting plate (only for Sensors with connector terminals)
Material	Case: Polybutylene terephthalate (PBT) Lens: Denatured Polyarylate Mounting Bracket: Stainless steel (SUS304)

As of July 25, 2024

Dimensions

As of July 25, 2024

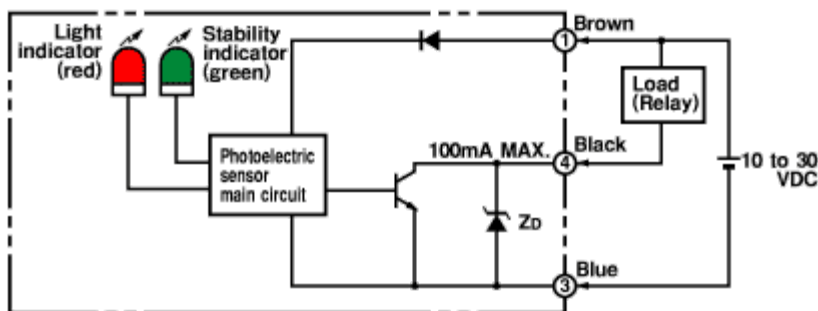
E3S-AD16/17/18/36/37/38



As of July 25, 2024

Output circuit diagram

As of July 25, 2024



M12 Connector Pin Arrangement

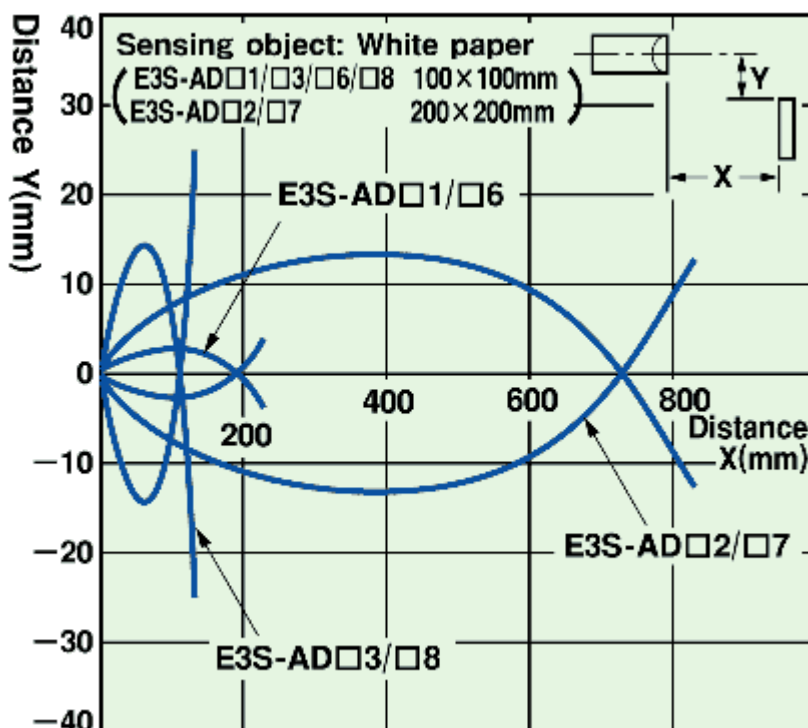


Note. Pin ② is not used.

Timing chart

Operation mode	Timing chart	Mode switch
Light ON	<p>Incident light </p> <p>No incident light </p> <p>Light indicator (red) ON </p> <p>OFF </p> <p>Output transistor ON </p> <p>OFF </p> <p>Load (Relay) Operate </p> <p>Reset </p> <p>(Between brown(1) and black(4))</p>	L side (LIGHT ON)
Dark ON	<p>Incident light </p> <p>No incident light </p> <p>Light indicator (red) ON </p> <p>OFF </p> <p>Output transistor ON </p> <p>OFF </p> <p>Load (Relay) Operate </p> <p>Reset </p> <p>(Between brown(1) and black(4))</p>	D side (DARK ON)

Operating range

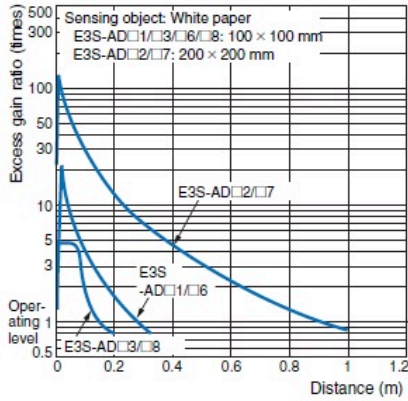


Setting distance

Excess gain ratio vs. setting distance

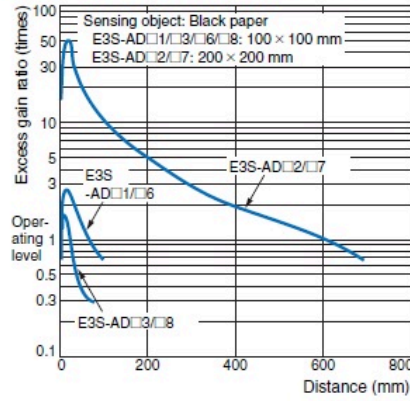
Diffuse-reflective Sensor

E3S-AD□1/AD□2/AD□3/AD□6/AD□7/
AD□8 (Detection of White Paper)



Diffuse-reflective Sensor

E3S-AD□1/AD□2/AD□3/AD□6/AD□7/
AD□8 (Detection of Black Paper)



Sensing object size vs. setting distance

