

Built-in Amplifier Photoelectric Sensor (Medium Size)

E3S-AR31 5M



Image

Medium Photoelectric Sensor With Built-in Amplifier, Retro-reflective with M.S.R. function, Horizontal, Sensing distance: 2 m (Using the E39-R1 Reflector), PNP, Pre-wired model, 5 m

Sensing method	Retro-reflective with M.S.R. function
Sensing distance	When using the E39-R1: 0.1 to 2 m
Light source	Red LED (660 nm)
Connection method	Pre-wired models

Ratings/Performance

As of July 25, 2024

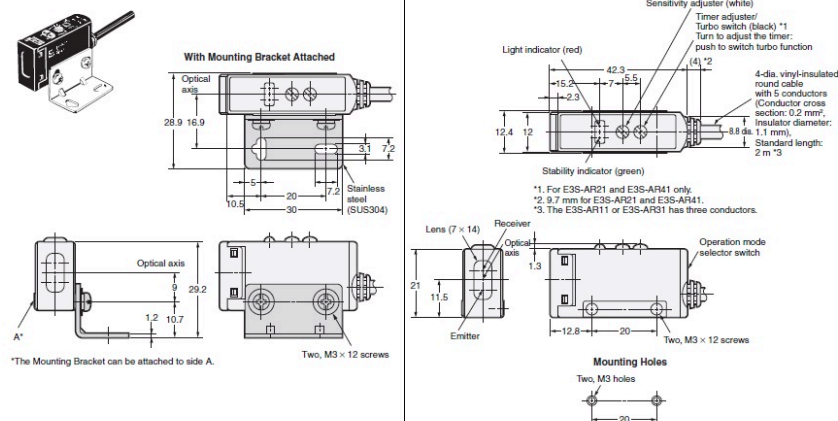
Shape	Square type
Sensing method	Retro-reflective with M.S.R. function
Sensing distance	When using the E39-R1: 0.1 to 2 m
Standard sensing object	Opaque: 75 mm dia. min.
Directional angle	3 to 10 °
Light source	Red LED (660 nm)
Power supply voltage	10 to 30 VDC ripple (p-p) 10% included
Current consumption	30 mA max.
Control output	PNP 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	Pre-wired models (Cable length 5 m)
Indicator	Light indicator (red), Stability indicator (green)
Accessories	Instruction manual, Mounting bracket, Sensitivity adjustment driver, Sensitivity adjusting knob, Reflector
Material	Case: Polybutylene terephthalate (PBT) Lens: Denatured Polyarylate Mounting Bracket: Stainless steel (SUS304)

As of July 25, 2024

Dimensions

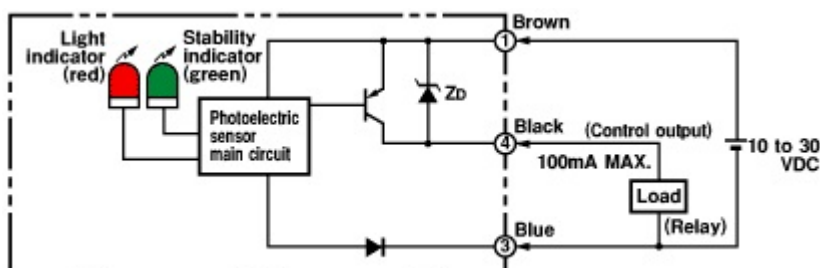
E3S-AR11/21/31/41



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Output circuit diagram



As of July 25, 2024

As of July 25, 2024

Timing chart

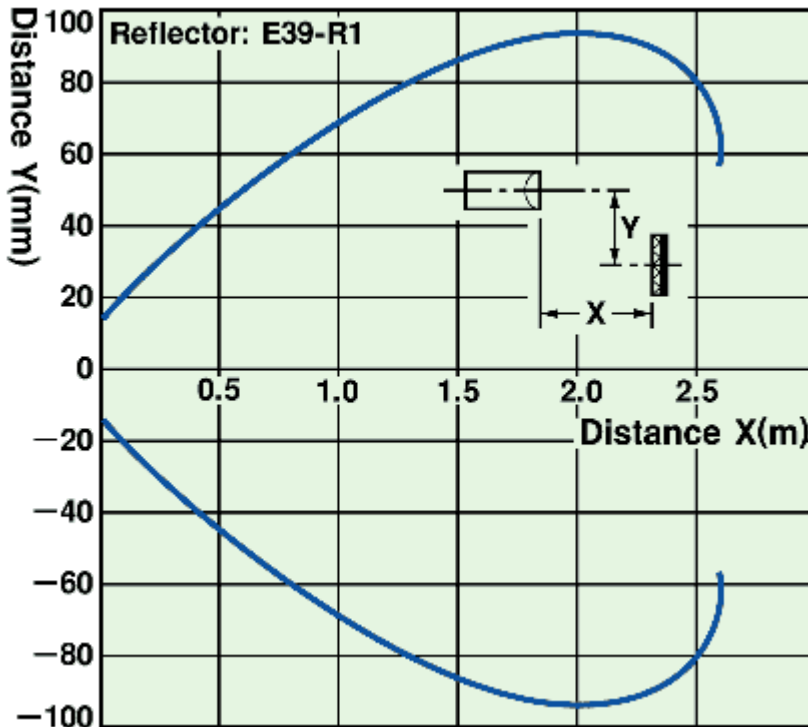
As of July 25, 2024

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 blue(③) 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 blue(③) and black(④))</p>	D side (DARK ON)

As of July 25, 2024

Parallel operating range

As of July 25, 2024



As of July 25, 2024

Excess gain ratio vs. setting distance

