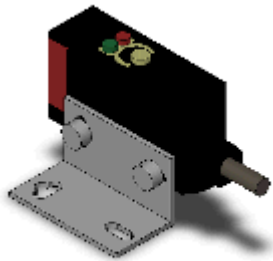


Built-in Amplifier Photoelectric Sensor (Medium Size)

# E3S-AD21 2M



Image

**Medium Photoelectric Sensor With Built-in Amplifier, Diffuse-reflective, Horizontal, Sensing distance: 200 mm, NPN, Timer/Self diagnosis function, Turbo function, Pre-wired model, 2 m**

<b>Sensing method</b>	Diffuse-reflective
<b>Sensing distance</b>	White paper 100 x 100 mm: 10 to 200 mm
<b>Light source</b>	Red LED (660 nm)
<b>Connection method</b>	Pre-wired models

Ratings/Performance

As of July 25, 2024

<b>Shape</b>	Square type
<b>Sensing method</b>	Diffuse-reflective
<b>Sensing distance</b>	White paper 100 x 100 mm: 10 to 200 mm
<b>Differential distance</b>	10% max. of sensing distance
<b>Light source</b>	Red LED (660 nm)
<b>Power supply voltage</b>	10 to 30 VDC ripple (p-p) 10% included
<b>Current consumption</b>	30 mA max. Note: (plus approx. 15 mA with turbo function)
<b>Control output</b>	NPN open collector 30 VDC max. 100 mA max. Residual voltage: 1 V max.
<b>Operation mode</b>	Light-ON/Dark-ON selectable
<b>Protective circuit</b>	Output short-circuit protection, Power supply reverse polarity protection
<b>Response time</b>	Operate or reset: 0.5 ms max.
<b>Sensitivity setting</b>	2-turn endless adjustment (with indicator)
<b>Self-diagnostic output</b>	50 mA max., 30 VDC (residual voltage: 1 V max.), open collector
<b>Timer function</b>	OFF-delay 0 to 100 ms
<b>Ambient illuminance</b>	Incandescent lamp: 5,000 lx max. Sunlight: 10,000 lx max.
<b>Ambient temperature range (Operating)</b>	-25 to 55 °C (with no freezing or condensation)
<b>Ambient temperature range (Storage)</b>	-40 to 70 °C (with no freezing or condensation)
<b>Ambient humidity range (Operating)</b>	35 to 85 % (with no condensation)

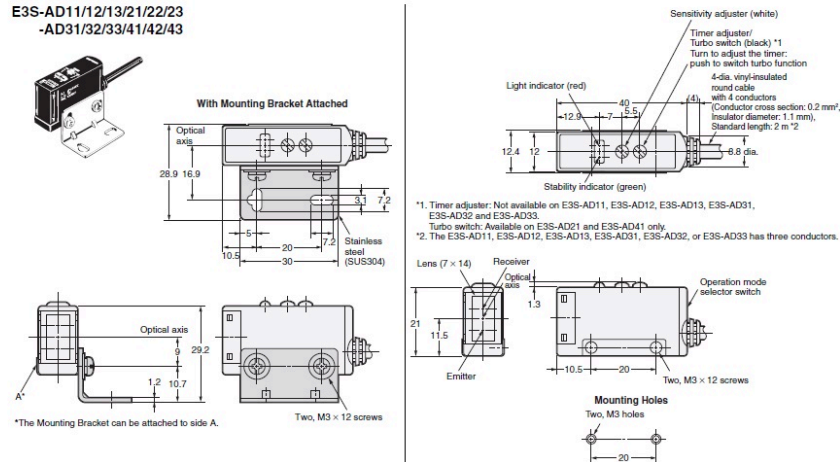
<b>Ambient humidity range (Strage)</b>	35 to 95 % (with no condensation)
<b>Insulation resistance</b>	20 MΩ min. (500 VDC megger)
<b>Dielectric strength</b>	1000 VAC 50/60 Hz 1 min
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz, 1.5 mm double amplitude each in X, Y, and Z directions for 2 h
<b>Shock resistance</b>	Destruction: 500 m/s <sup>2</sup> 3 times each in X, Y and Z directions
<b>Degree of protection</b>	IEC: IP67 NEMA 4X (indoors only)
<b>Connection method</b>	Pre-wired models (Cable length 2 m)
<b>Indicator</b>	Light indicator (red), Stability indicator (green)
<b>Weight</b>	Package: Approx. 90 g
<b>Accessories</b>	Instruction manual, Mounting bracket, Sensitivity adjustment driver, Sensitivity adjusting knob
<b>Material</b>	Case: Polybutylene terephthalate (PBT) Lens: Denatured Polyarylate Mounting Bracket: Stainless steel (SUS304)

As of July 25, 2024

### Dimensions

As of July 25, 2024

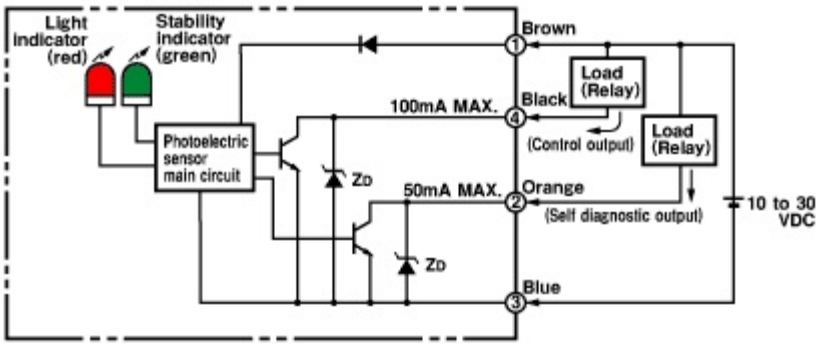
E3S-AD11/12/13/21/22/23  
-AD31/32/33/41/42/43



As of July 25, 2024

### Output circuit diagram

As of July 25, 2024



As of July 25, 2024

Timing chart

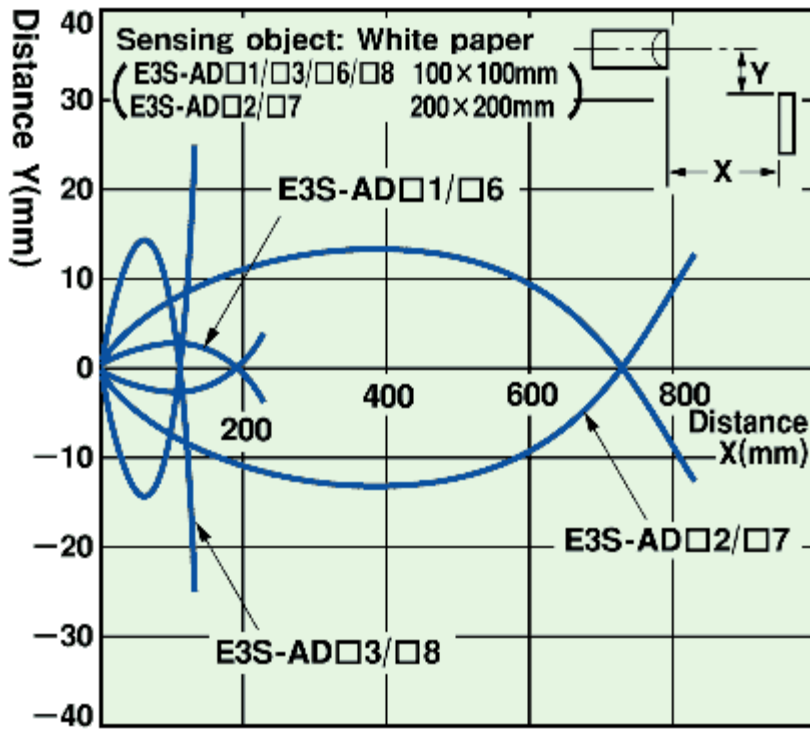
As of July 25, 2024

Operation mode	Timing chart	Mode switch
<b>Light ON</b>	<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> <p>T : OFF delay timer (0~100ms)</p>	<b>L side (LIGHT ON)</b>
<b>Dark ON</b>	<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> <p>T : OFF delay timer (0~100ms)</p>	<b>D side (DARK ON)</b>

As of July 25, 2024

Operating range

As of July 25, 2024



As of July 25, 2024

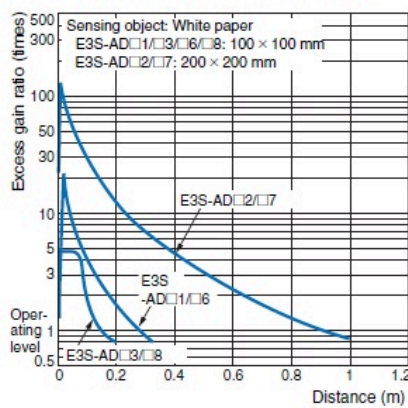
Setting distance

As of July 25, 2024

Excess gain ratio vs. setting distance

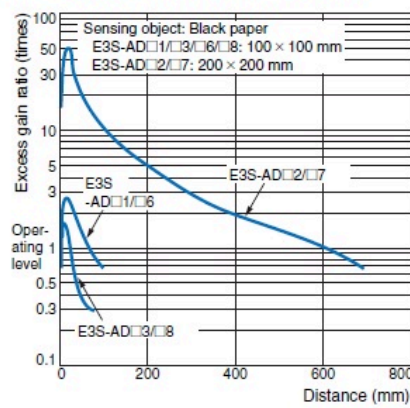
Diffuse-reflective Sensor

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

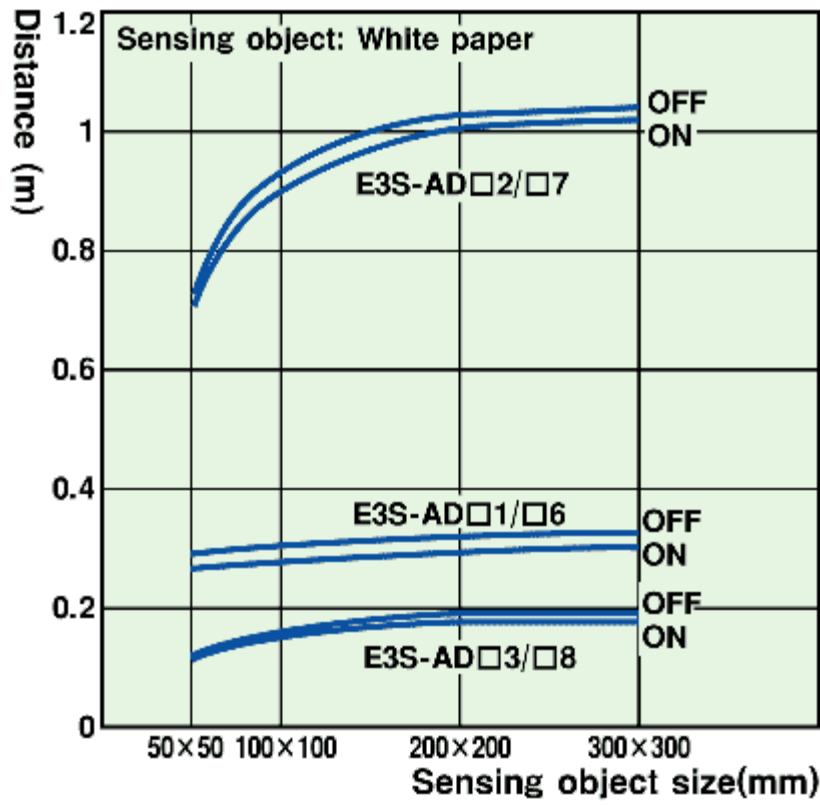


Diffuse-reflective Sensor

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



Sensing object size vs. setting distance



As of July 25, 2024