

Slim Sensor with Plug-in Outputs, Built-in Time Delays

- Plug-in replaceable outputs
- Light-ON/Dark-ON operation, switch selectable
- Optional solid-state outputs
- Polarized diffuse and through-beam models
- Timer models provide selectable ON-delay, OFF-delay and one-shot outputs
- Standard with 3 A relay output



Ordering Information

■ SENSORS

Method of detection		Through-beam	Retroreflective	Diffuse reflective
Sensing distance		10 m (32.8 ft)	3 m (9.8 ft)	70 cm (27.6 in)
Part number	Without timer	E3A2-10M4	E3A2-R3M4	E3A2-DS70M4
	ON-delay, OFF-delay, one-shot equal ON- and OFF-delays (0.1 to 5 seconds)	E3A2-10M4T	E3A2-R3M4T	E3A2-DS70M4T
	Independent ON-delays and OFF-delays (0.1 to 5 seconds)	E3A2-10M4D	E3A2-R3M4D	E3A2-DS70M4D

■ ACCESSORIES

Description		Part number
Solid-state output modules	AC (SCR) output module; 200 mA, 250 VAC max. load	G3K-2R2P-1
	DC NPN output module; 200 mA, 30 VDC max. load, dual complementary	G3KD-YR2P-1
	DC PNP output module; 200 mA, 30 VDC max. load, dual complementary	G3KD-YR2P-2
Reflector adapter for stud-mounting E39-R1 reflector		E39-L7

■ REPLACEMENT PARTS

Description	Part number
Relay output module, SPDT, 3 A at 250 VAC (output supplied with each sensor)	G6C-2117P-DC8
Reflector (supplied with retroreflective sensor)	E39-R1
Mounting bracket (supplied with each sensor)	E39-L34

Specifications

Part number		E3A2-10□□□	E3A2-R3□□□	E3A2-DS70□□□
Method of detection		Through-beam	Retroreflective	Diffuse reflective
Supply voltage		24 to 240 VAC, 50/60 Hz; 12 to 240 VDC		
Power consumption	Relay output type	Emitter: 0.82 W max. Receiver: 1.2 W max.	1.5 W max.	
	DC solid-state output type	Emitter: 0.82 VA max. Receiver: 1.2 VA max.	2 VA max.	
	AC solid-state output type			
Sensing distance		10 m (32.8 ft)	3 m (9.8 ft) with E39-R1 reflector (included)	70 cm (27.6 in) with 10 x 10 cm (3.94 x 3.94 in) 90% reflectance white mat paper
Light source		Pulse modulated infrared LED (950 nm)	Pulse modulated red LED, polarized (680 nm)	Pulse modulated infrared LED (950 nm)
Detectable object type		Opaque materials, 26 mm (1.02 in) minimum dimension	Opaque and mirror surface materials, 56 mm (2.20 in) min. dimension	Opaque and translucent materials
Operation mode		Light-ON/Dark-ON, switch selectable		
Sensitivity		Fixed	Adjustable	
Mutual interference protection		Not provided	Provided	
Control output	Relay	Type	SPDT with G6C-2117P-DC8 output module (standard)	
		Max. load	3 A, 250 VAC (p.f. = 1); 3 A, 30 VDC	
	AC solid-state	Type	SCR with G3K-2R2P-1 output module (optional)	
		Max. load	200 mA, 250 VAC	
		Min. load	5 mA	
		Max. inrush	2 A	
	DC solid-state	Off-state leakage current	1 mA max.	
		Type	NPN-SPDT with G3KD-YR2P-1 output module (optional) PNP-SPDT with G3KD-YR2P-2 output module (optional)	
		Max. load	200 mA, 30 VDC	
Max. on-state voltage drop		2 VDC at 200 mA		
Response time (ON and OFF)	Relay	15 ms max. with G6C-2117P-DC8 output module (standard)		
	AC solid-state output	30 ms max. with G3KD-2R2P-1 output module (optional)		
	DC solid-state	1 ms max. with G3KD-YR2P-1 or -2 output modules (optional)		
Timing functions	Type E3A2-□□□T	Normal, ON-delay, OFF-delay, one-shot or equal ON- and OFF-delays, switch selectable		
	Type E3A2-□□□D	Independent ON- and OFF-delays		
	Range	0.1 to 5 seconds		
Circuit protection	Output short-circuit	Provided (AC solid-state and DC solid-state output modules only)		
	DC power supply reverse polarity	Provided		
Indicators		Emitter: Power On (red LED) Receiver: Light Incident (red LED) and output stability (green LED); Output Operation (yellow LED) on timer-equipped models	Light Incident (red LED) and Output Stability (green LED); Output Operation (yellow LED) on timer-equipped models	
Materials	Lens	Plastic		
	Case	Plastic		
Mounting		Side surface mount with two through holes; E39-L34 bracket and hardware included		
Connections	Conduit	1/2-14 NPT		
	Wire	Terminal screws		
Weight		Emitter: 200 g (7.1 oz) Receiver: 200 g (7.1 oz)	200 g (7.1 oz)	

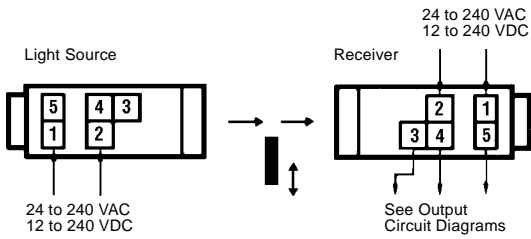
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Specifications Table - continued from previous page

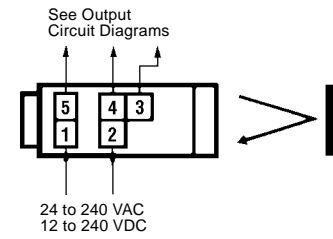
Part number		E3A2-10□□□	E3A2-R3□□□	E3A2-DS70□□□
Enclosure ratings	NEMA	1, 4, 4X, 12		
	IEC 144	IP66		
Approvals	UL	Listed, File Number E41515		
Ambient temperature	Operating	-25° to 55°C (-13° to 131°F)		
	Storage	-30° to 70°C (-22° to 159°F)		

CONNECTIONS

Through-Beam Type

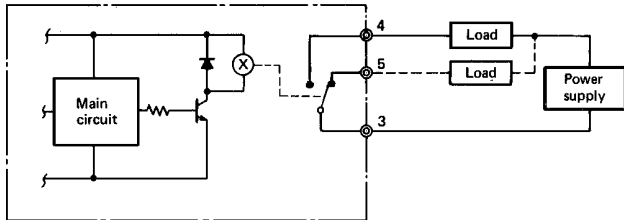


Retroreflective and Diffuse Reflective Types

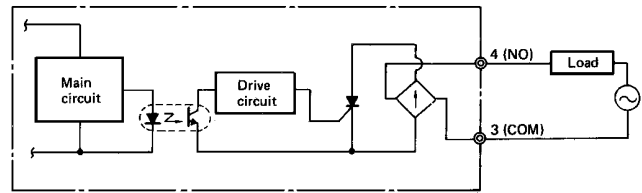


OUTPUT CIRCUIT DIAGRAMS

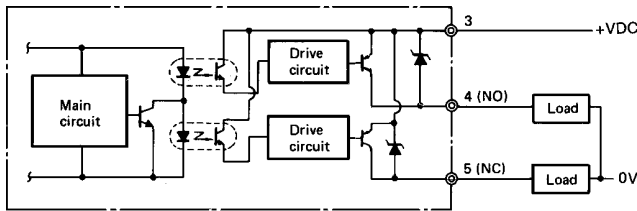
Relay output



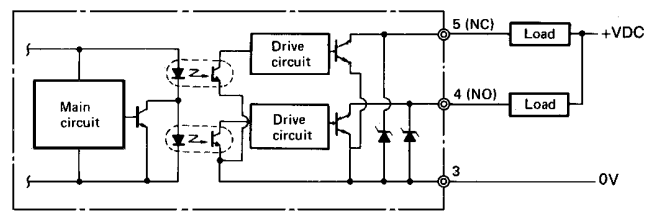
AC solid-state output



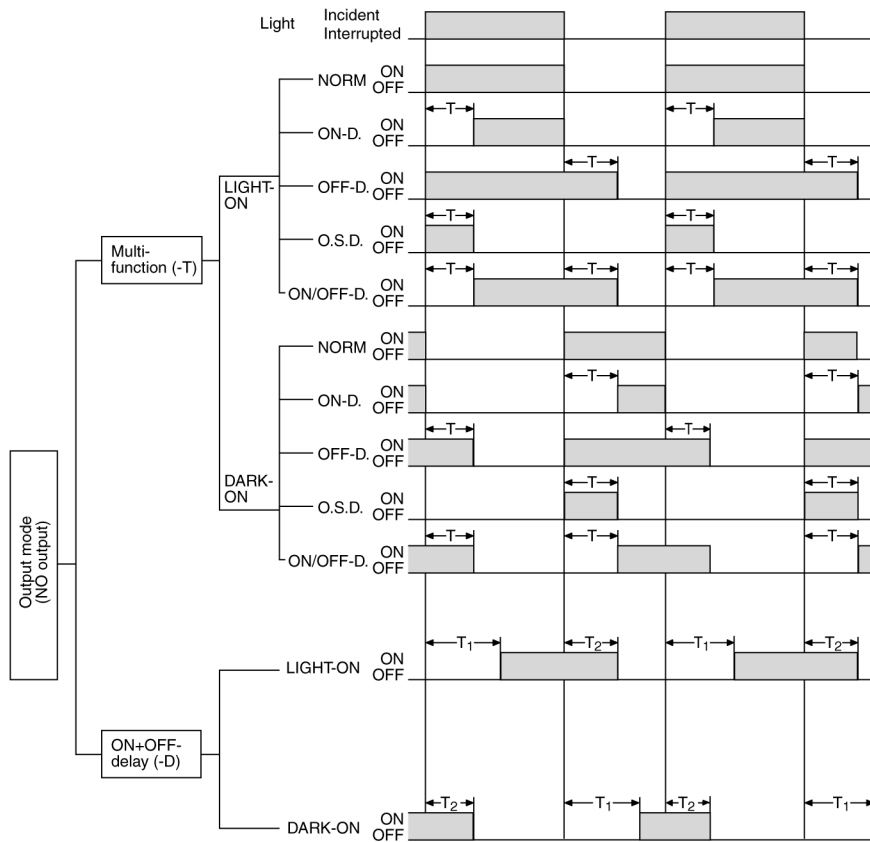
DC solid-state PNP output



DC solid-state NPN output



■ TIMING CHART



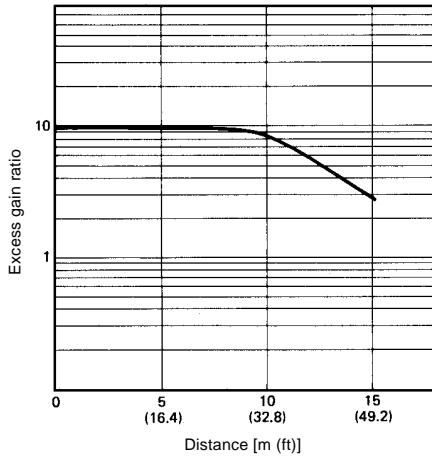
NOTE:

1. For sensors without built-in timer functions, operation follows the NORM mode shown with multi-function time delay models.
2. T₁, T₂ and T denote set time, variable within 0.1 to 5 second range.
3. For multifunction time delay models (part numbers ending in "T"), the ON- and OFF-delay time settings will be the same.
4. For ON- and OFF-delay models (part numbers ending in "D"), T₁ and T₂ are independently variable.
5. O.S.D.: one shot delay

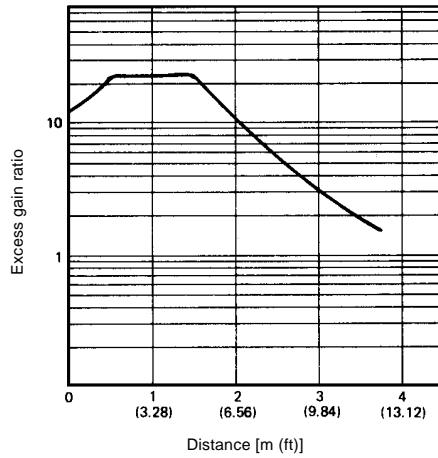
Engineering Data

■ EXCESS GAIN RATIO

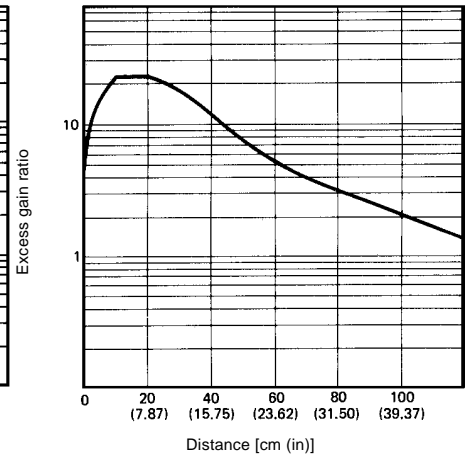
Through-Beam Type



Retroreflective Type

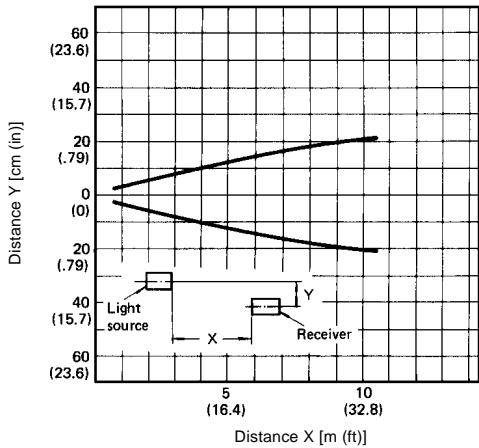


Diffuse Reflective Type



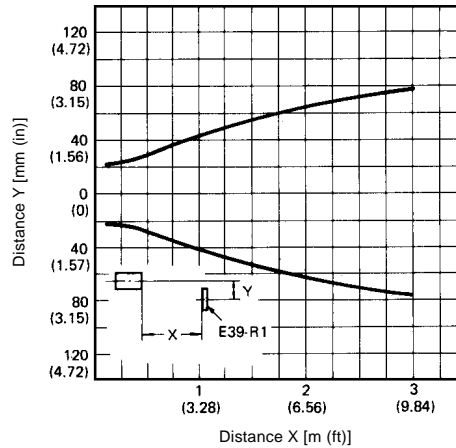
■ LIGHT SOURCE/RECEIVER SETTING RANGE

Through-Beam Type



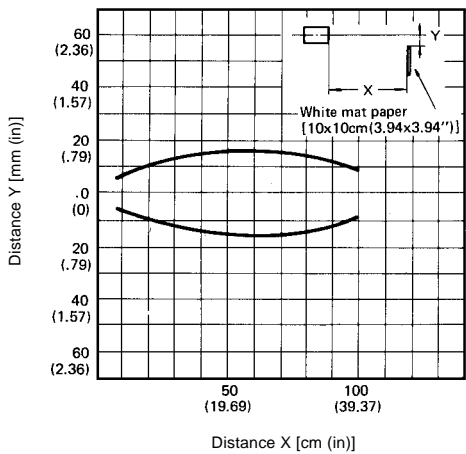
■ REFLECTOR SETTING RANGE

Retroreflective Type



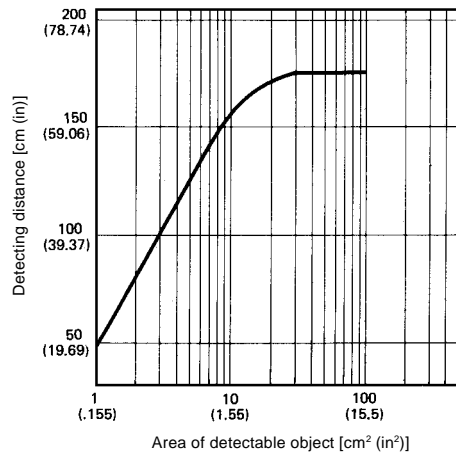
■ OPERATING RANGE

Diffuse Reflective Type



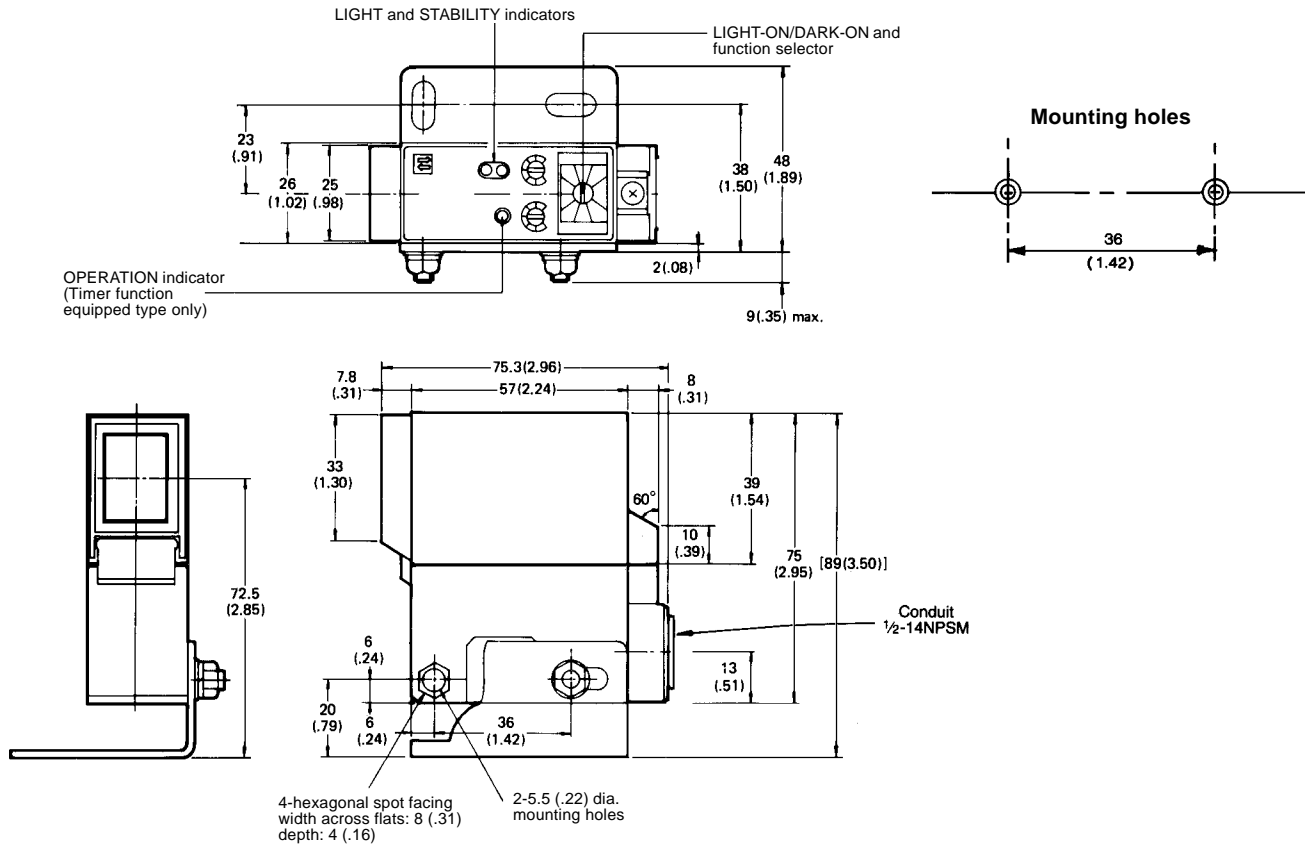
■ DETECTING DISTANCE VS. MINIMUM TARGET SIZE (AT MAXIMUM SENSITIVITY)

Diffuse Reflective Type

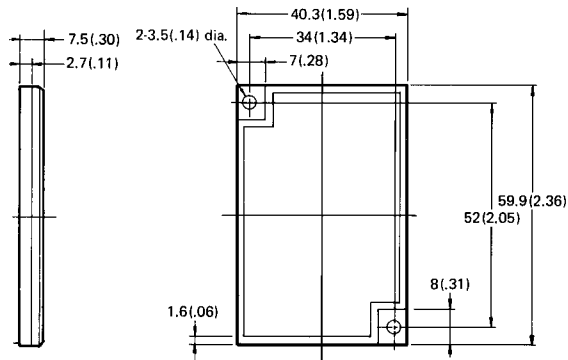


Dimensions

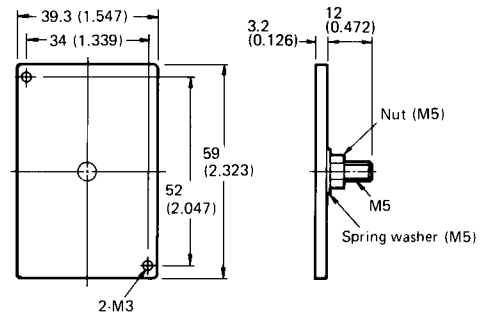
Unit: mm (inch)



E39-R1 Reflector



E39-L7 Reflector Adapter



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