

### Plug-in Terminal for Easy Maintenance and Installation

- Universal AC/DC supply voltage
- Replace sensing head without rewiring
- Detect shiny objects with polarized retroreflective type
- Long-range diffuse reflective sensors detect dark objects at long distances
- Built-in ON- and OFF-delay timers available
- Switch selectable light-on/dark-on operation
- Mutual interference protection
- Ready-to-use: includes 3 A relay, mounting bracket and reflector for retroreflective types



## Ordering Information

### ■ SENSORS

Method of detection		Retroreflective		Diffuse reflective	Long-range diffuse
Light source		Polarized IR	Non-polarized IR	Non-polarized IR	
Sensing distance		5 m (16.40 ft)	7 m (22.97 ft)	2 m (6.56 ft)	3 m (9.84 ft)
Part number	Without timers	<b>E3B2-R5M4-US</b>	<b>E3B2-R7M4-US</b>	<b>E3B2-D2M4-US</b>	<b>E3B2-D2M4-US-N</b>
	ON- and OFF-delay timers	(0.5 to 20 s)	<b>E3B2-R5M4D-US</b>	<b>E3B2-R7M4D-US</b>	—
		(0.05 to 5 s)	<b>E3B2-R5M4D-US-3</b>	—	<b>E3B2-D2M4D-US-3</b>

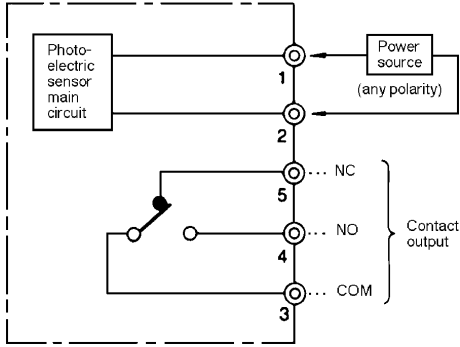
### ■ REPLACEMENT PARTS

Description	Part number
Reflector (supplied with retroreflective sensor)	<b>E39-R2</b>
Mounting bracket (supplied with each sensor)	<b>E39-L35</b>

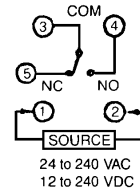
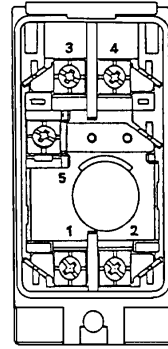
# Specifications

Part number		E3B2-R5M4□-US-□	E3B2-R7M4□-US	E3B2-D2M4□-US-□	E3B2-D2M4□-US-N-□
Method of detection		Retroreflective		Diffuse reflective	Long-range diffuse
Supply voltage		24 to 240 VAC, 50/60 Hz; 12 to 240 VDC			
Power consumption	AC operation	2 VA max.			
	DC operation	1.5 W max.			
Sensing distance		5 m (16.40 ft) with E39-R2 reflector (included)	7 m (22.97 ft) with E39-R2 reflector (included)	2 m (6.56 ft) with 30x30 cm (11.8x11.8 in) 90% reflectance white mat paper	3 m (9.84 ft) with 30 x 30 cm (11.8 x 11.8 in) 90% reflectance white mat paper
Light source		Pulse modulated infrared LED, polarized	Pulse modulated infrared LED		
Detectable object type		Shiny and opaque materials, 80 mm (3.15 in) minimum dimension	Opaque materials, 80 mm (3.15 in) minimum dimension	Opaque and transparent materials	
Operation mode		Light-ON/Dark-ON, switch selectable			
Sensitivity		Adjustable			
Mutual interference protection		Provided			
Control output	Relay	Type	SPDT (Form 1C)		
		Max. load	3 A, 250 VAC, (p.f.=1)		
		Min. load	10 mA, 5 VDC		
Response time	On	Without timer	30 ms max. (E3B2-□□M4-US-□)		
		With timer	0.5 to 20 seconds, adjustable (E3B2-□□M4D-US); 0.05 to 0.5 sec (E3B2-□□M4D-US-□-3)		
	Off	Without timer	30 ms max. (E3B2-□□M4-US-□)		
		With timer	0.5 to 20 seconds, adjustable (E3B2-□□M4D-US); 0.05 to 0.5 sec (E3B2-□□M4D-US-□-3)		
Timing functions	Type	Independent ON-delay and OFF-delay (E3B2-□□M4D-US)			
	Range	0.5 to 20 seconds			
Circuit protection	Output short-circuit	Not provided			
	DC power supply reverse polarity	Provided			
Indicators		Light incident (red LED), output stability (green LED), and output operation (yellow LED)			
Materials	Lens cover	Plastic, polycarbonate			
	Body/receptacle	Plastic, polymethylmethacrylate (PMMA)			
	Access cover	Plastic, polycarbonate			
Mounting		Side surface with two through holes or bottom surface with two threaded metal inserts; bracket E39-L35 and hardware included			
Connections	Conduit	1/2-14 NPT			
	Wire	Plated steel screw terminals			
Weight		230 g (8.1 oz)	200 g (7.1 oz)		
Enclosure ratings	UL	1			
	NEMA	1, 3, 4, 12, 13			
	IEC 144	IP66			
Approvals	UL	Listed, File Number E41515			
	CSA	Certified, File Number LR45951			
Ambient temperature	Operating	-25° to 55°C (-13° to 131°F)			
	Storage	-30° to 70°C (-22° to 158°F)			

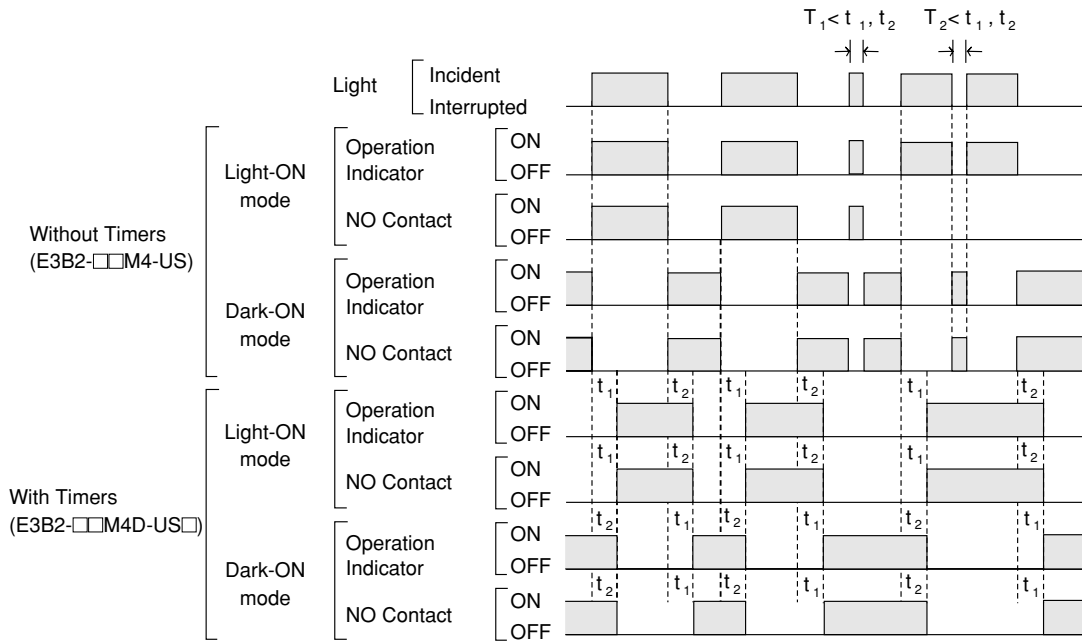
■ OUTPUT CIRCUIT DIAGRAM



■ CONNECTIONS



■ TIMING CHART

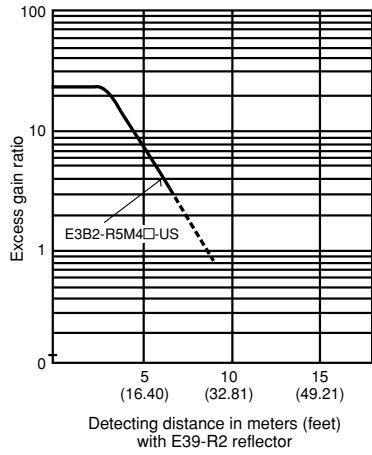


$t_1$  : ON-delay 0.5 to 20 s (E3B2-□□M4D-US) or 0.05 to 0.5 s (E3B2-□□M4D-US-3)  
 $t_2$  : OFF-delay 0.5 to 20 s (E3B2-□□M4D-US) or 0.05 to 0.5 s (E3B2-□□M4D-US-3)

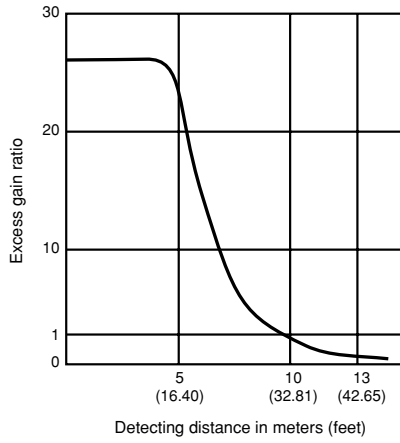
# Engineering Data

## ■ EXCESS GAIN RATIO

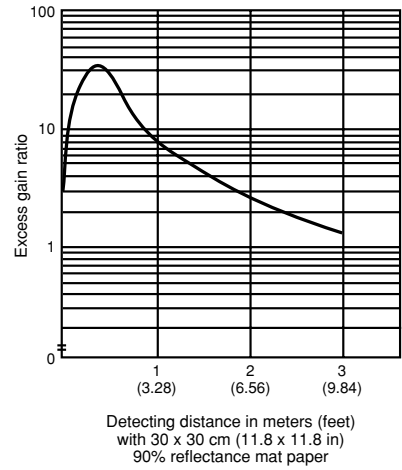
**E3B2-R5M4□-US-□**



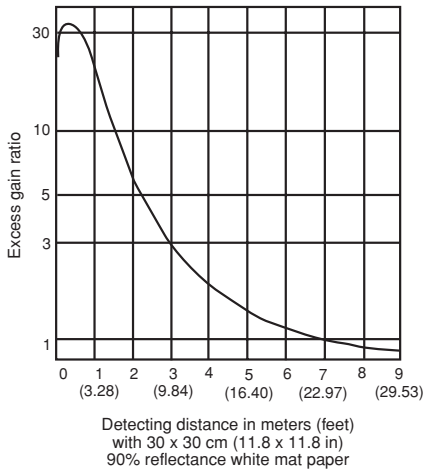
**E3B2-R7M4□-US**



**E3B2-D2M4□US-□**

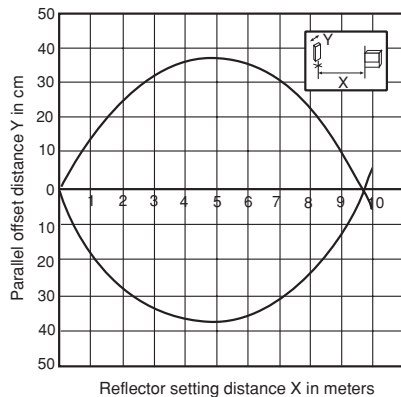


**E3B2-D2M4□-US-N-□**

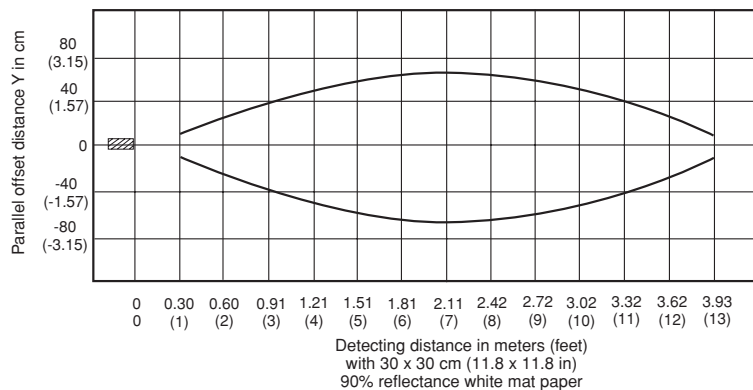


## ■ OPERATING RANGE

**E3B2-R5M4□-US-□**

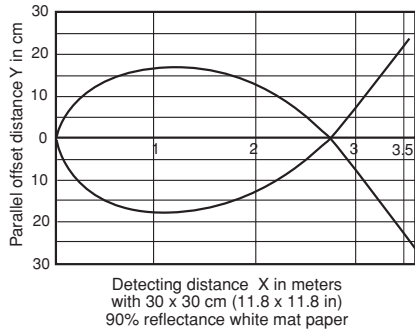


**E3B2-D2M4□-US-N-□**



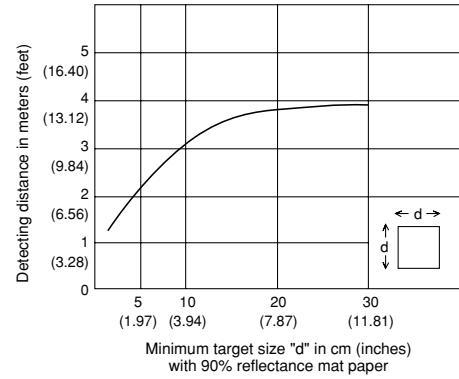
Operating Range continued

E3B2-D2M4□-US-□



DETECTING DISTANCE VS. MINIMUM TARGET SIZE (at maximum sensitivity)

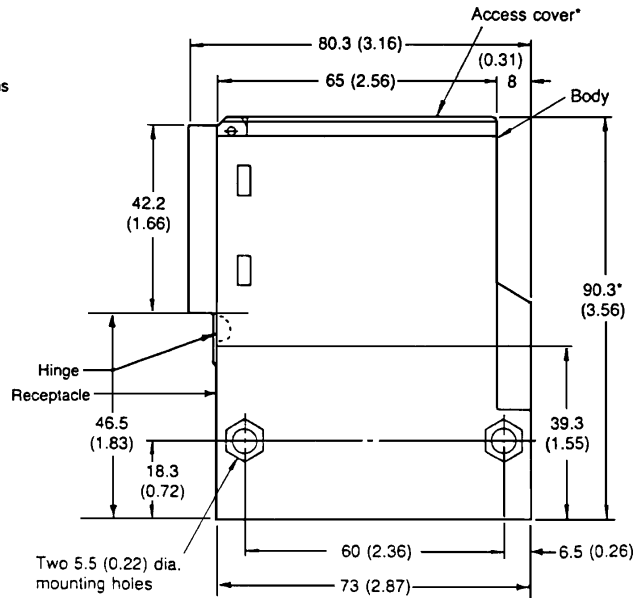
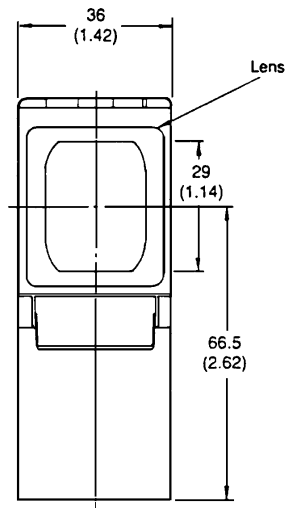
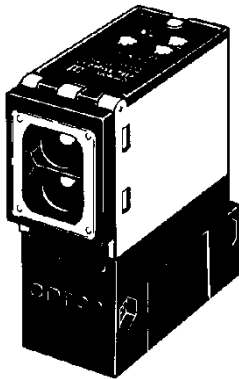
E3B2-D2M4□-US



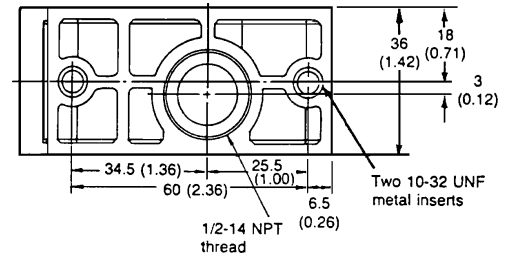
Dimensions

Unite: mm (inch)

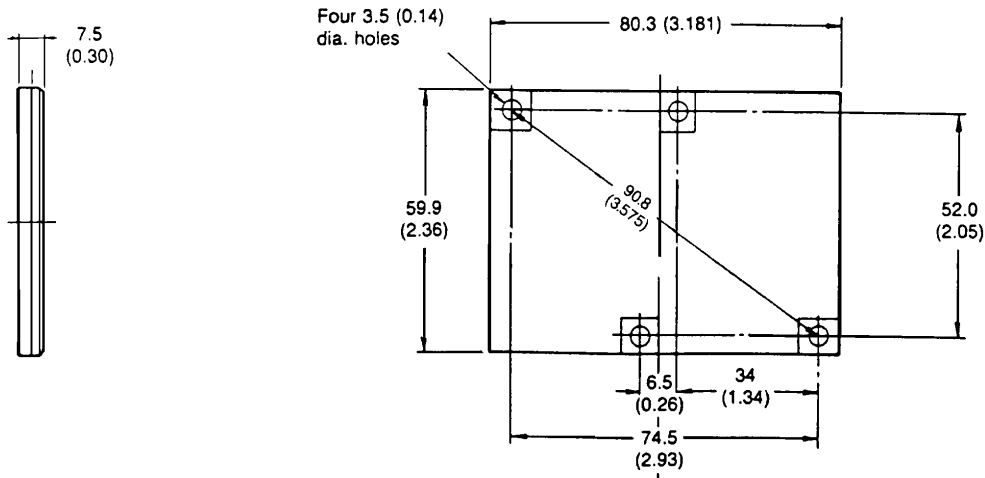
SENSOR



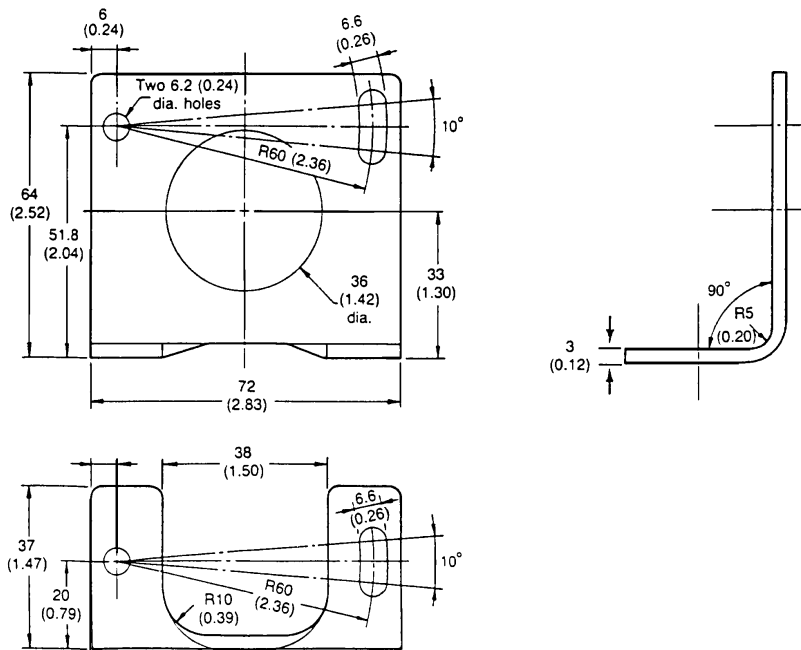
\*Allow for a total height of 150 mm (5.91 inches) to open access cover.



■ E39-R2 REFLECTOR (included)



■ E39-L35 MOUNTING BRACKET (included)



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