

## Long-distance Photoelectric Sensor

## E3G

### Advanced Design with Automatic Teach Function

- Retroreflective models have a sensing distance of 10 m
- Teach function up to 2 m diffuse
- Zone mode for precise sensing
- M12 connector and pre-leaded models
- IEC IP67
- Light-ON/Dark-ON operation, NPN/PNP output are switch selectable
- Relay or transistor output models





## Ordering Information

### ■ SENSORS

Type	Supply voltage	Output	Connection	Sensing range	Standard target	Timer function	Part number
Polarized retroreflective	10-30 VDC	NPN/PNP	Pre-leaded	500 mm to 10 m with E39-R2 reflector (included)	80 mm dia.	——	E3G-R13
			Connector				E3G-R17
	12-240 VDC, 24-240 VAC	Relay	Terminal block			ON or OFF delay 0-5s, adjustable	E3G-MR19-US
							E3G-MR19T-US
Diffuse reflective	10-30 VDC	NPN/PNP	Pre-leaded	200 mm to 2 m	300 x 300 mm Kodak 90% white card	——	E3G-L73
			Connector				E3G-L77
	12-240 VDC, 24-240 VAC	Relay	Terminal block			ON or OFF delay 0-5s, adjustable	E3G-ML79-US
							E3G-ML79T-US



### ■ CONNECTOR CORDSETS

#### Connector Cables


Shape	Length	Conductors	Part number
Straight 	2 m	Three	<b>XS2F-D421-DC0-A</b>
	5 m		<b>XS2F-D421-GC0-A</b>
Right angle 	2 m		<b>XS2F-D422-DC0-A</b>
	5 m		<b>XS2F-D422-GC0-A</b>

## ■ ACCESSORIES (ORDER SEPARATELY)



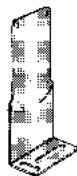

### Reflectors

Shape	Sensing distance (typical)	Remarks	Part number
	500 mm to 10 m	Included with E3G-R□□ and E3G-MR□□	<b>E39-R2</b>
	100 mm to 6 m	---	<b>E39-R1</b>

### Terminal Protection Cover for Side-pullout Cable (required when side-exit is desired for cable)

Shape	Applicable model	Remarks	Part number
	E3G-MR19 (T), ML79 (T)	Provided with rubber bushing and cap for pullout prevention in vertical direction	<b>E39-L129</b>

### Mounting Brackets (not included, order separately)

Shape	Applicable model	Remarks	Part number
Pre-leaded and connector models			
	E3G-R1□ E3G-L7□	---	<b>E39-L131</b>
		Rear-mounting use	<b>E39-L132</b>
	Terminal block models		
	E3G-MR19 (T) E3G-ML79 (T)	Cable pulled out in the downward direction	<b>E39-L135</b>
	E3G-MR19 (T) E3G-ML79 (T)	---	<b>E39-L136</b>

# Specifications

## ■ RATINGS/CHARACTERISTICS

Sensing method	Retroreflective (polarized)				Diffuse			
Part number	E3G-R13	E3G-R17	E3G-MR19	E3G-MR19T	E3G-L73	E3G-L77	E3G-ML79	E3G-ML79T
Sensing distance	0.5 to 10 m (1.64 to 32.8 ft) using E39-R2				0.2 to 2 m (0.66 to 6.56 ft)			
Setting distance	---				0.5 to 2 m (1.64 to 6.56 ft)			
Standard sensing object	Opaque: 80 dia. min.				Kodak 90% white card 300 x 300 mm			
Hysteresis (typical)	---				10% of setting distance			
Directional angle	Sensor: 1° to 5° Reflector: 40° min.				---			
Reflectivity characteristics (black/white error)	---				±10% max. (at 1-m sensing distance)			
Light source (wavelength)	Red LED (700 nm)				Infrared LED (860 nm)			
Spot size	---				70 dia. max. at 1-m sensing distance			
Supply voltage	10 to 30 VDC including 10% (p-p) ripple		12 to 240 VDC ±10% including 10% (p-p) max. ripple 24 to 240 VAC ±10% at 50/60 Hz		10 to 30 VDC including 10% (p-p) ripple		12 to 240 VDC ±10% including 10% (p-p) max. ripple 24 to 240 VAC ±10% at 50/60 Hz	
Current consumption	50 mA max.		2 W max.		60 mA max.		2 W max.	
Output	30 VDC max. Load current: 100 mA max. Residual voltage: NPN output: 1.2 V max. PNP output: 2.0 V max. Open collector output (NPN/PNP selectable)		Relay output: SPDT, 3 A (cos ϕ = 1) max. at 250 VAC or 3 A max. at 30 VDC		Load power supply voltage: 30 VDC max. Load current: 100 mA max. Residual voltage: NPN output: 1.2 V max. PNP output: 2.0 V max. Open collector output (NPN/PNP selectable)		Relay output: SPDT, 3 A (cos ϕ = 1) max. at 250 VAC or 3 A max. at 30 VDC	
Operation mode	Light-ON/Dark-ON switch selectable							
Life expectancy (relay output)	Mechanical:50,000,000 operations min. (switching frequency: 18,000 operations/h) Electrical: 100,000 operations min. (switching frequency: 1,800 operations/h)							
Circuit protection	Protection from reversed power supply connection, load short-circuit, and mutual interference		Protection from mutual interference		Protection from reversed power supply connection, load short-circuit, and mutual interference		Protection from mutual interference	

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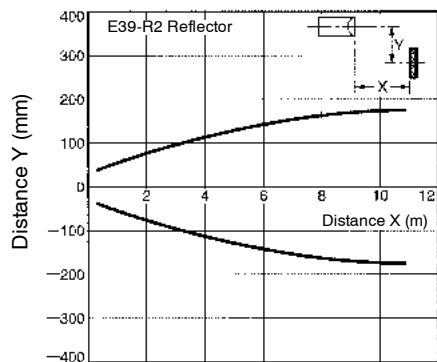
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Part number		E3G-R13	E3G-R17	E3G-MR19	E3G-MR19T	E3G-L73	E3G-L77	E3G-ML79	E3G-ML79T
Response time		1 ms		30 ms max.		5 ms		30 ms max.	
Sensitivity adjustment		One-turn potentiometer				Teaching (in NORMAL or ZONE mode)			
Ambient illumination (receiver side)		Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.							
Ambient temperature		Operating: -25°C to 55°C (-13 to 131°F) Storage: -30°C to 70°C (-22 to 158°F) with no icing or condensation							
Relative humidity		Operating: 35% to 85%/ Storage: 35% to 95% with no condensation							
Insulation resistance		20 MΩ min. at 500 VDC							
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min		2,000 VAC, 50/60 Hz for 1 min		1,000 VAC, 50/60 Hz for 1 min		2,000 VAC, 50/60 Hz for 1 min	
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z axes							
Shock resistance		500 m/s <sup>2</sup> 3 times each in X, Y, and Z axes							
Degree of protection		IP67							
Connection method		2 m cable	M12 connector	Terminal block		2 m cable	M12 connector	Terminal block	
Weight (packed state)		Approx. 150 g	Approx. 50 g	Approx. 150 g			Approx. 50 g	Approx. 150 g	
Material	Case	PBT (polybutylene terephthalate)							
	Lens	Acrylic (PMMA)							
	Mounting bracket	Stainless steel (SUS304), order separately							

## Engineering Data

### ■ RETROREFLECTIVE MODELS, E3G-R/MR

#### Lateral Movement



#### Excess Gain

