

# GX Series Photoelectric Sensors

## M18 (18mm) Rectangular Plastic - DC



**GX3-AP-2E**

- Diffuse with background suppression, polarized reflective, and through-beam models
- Fixed sensing ranges, no adjustment required
- 18 mm diameter threaded lens with mounting hex nut included
- NPN or PNP, Light-on, Dark-on output models
- Visible red LED emission
- M12 quick-disconnect; purchase cable separately
- IP67 rated



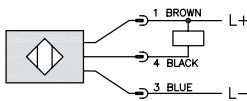
### GX Series Photoelectric Sensors Selection Chart

Part Number	Price	Sensing Range	Output State	Logic	Connection	Wiring	Characteristic Curves
Diffuse with background suppression							
<a href="#">GX3-AN-1E</a>	\$;09p[:	Up to 100mm [3.93 in]	N.O.	NPN	M12 [12mm] connector	Diagram 1	N/A
<a href="#">GX3-AP-1E</a>	\$09p#:			PNP		Diagram 2	
<a href="#">GX3-AN-2E</a>	\$09p_:	Up to 150mm [5.90 in]		NPN		Diagram 1	
<a href="#">GX3-AP-2E</a>	\$;09p!:			PNP		Diagram 2	
Polarized reflective *							
<a href="#">GXP-AN-1E</a>	\$09p?:	Up to 4m [13.12 ft] with <a href="#">RL110</a> reflector	N.C.	NPN	M12 [12mm] connector	Diagram 1	Chart 1
<a href="#">GXP-AP-1E</a>	\$;09p:.			PNP		Diagram 2	
<a href="#">GXP-CN-1E</a>	\$09q0:		N.O.	NPN		Diagram 1	
<a href="#">GXP-CP-1E</a>	\$09q1:			PNP		Diagram 2	
Through-beam							
<a href="#">GXR-AP-1E</a>	Receiver	Up to 20m [65.62 ft]	N.C.	PNP	M12 [12mm] connector	Diagram 2	Chart 2
<a href="#">GXR-CN-1E</a>	- must be used with		N.O.	NPN		Diagram 1	
<a href="#">GXR-CP-1E</a>	Emitter			PNP		Diagram 2	
<a href="#">GXE-00-1E</a>	Emitter		Receiver dependent	Receiver dependent		Diagram 3	

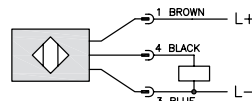
\*Note: Purchase reflectors separately.

## Wiring Diagrams

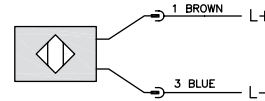
**Diagram 1**  
NPN Output



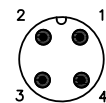
**Diagram 2**  
PNP Output



**Diagram 3**  
Emitter

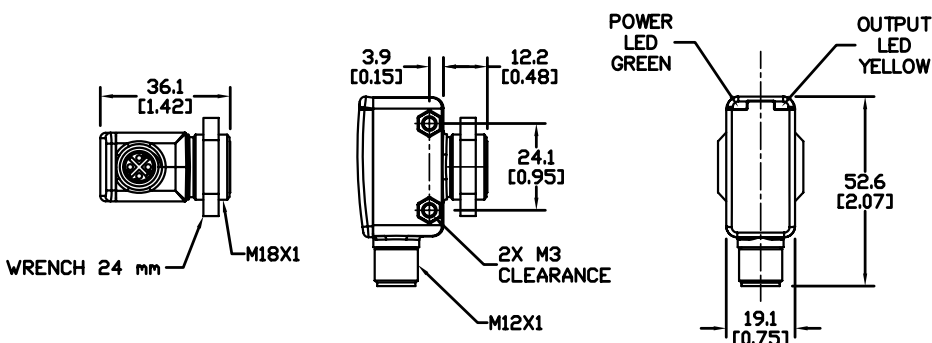


**Connector**  
M12 connector



## Dimensions

mm [inches]



Note: Class 2 power source required

### Switching Element Function

	Through-Beam and Reflective Models	Diffuse Models
Light-on	N.C.	N.O.
Dark-on	N.O.	N.C.

# GX Series Photoelectric Sensors

GX Series Photoelectric Series			
Specifications	Diffuse Models with Background Suppression	Reflective Models	Through-beam Models
Type	Diffuse reflection	Polarized reflection	Through-beam <sup>3</sup>
Sensing Distance	GX3-AN-1E, GX3-AP-1E: up to 100 mm <sup>1</sup> GX3-AN-2E, GX3-AP-2E: up to 150 mm <sup>1</sup>	4m with RL110 <sup>2</sup>	20m
Light Spot Diameter	GX3-AN-1E, GX3-AP-1E: 7mm at maximum range GX3-AN-2E, GX3-AP-2E: 11mm at maximum range	160mm at maximum range	GXE-00-1E: 800mm at maximum range
Emission	Red LED (visible)		
Sensitivity	Fixed		
Output Type	NPN or PNP - Light-on or Dark-on		
Operating Voltage	10 to 30 VDC		
No Load Supply Current	30mA	25mA	20mA
Operating (Load) Current	< 200mA		
Off-state (Leakage) Current	N/A		
Voltage Drop	< 2.5 V		
Switching Frequency	1kHz		
Ripple	-		
Time Delay Before Availability (tv)	Minimal		
Short-Circuit Protection	Yes (non-latching)		
Operating Temperature	-25 to 60°C [-13 to 140°F]		
Protection Degree (DIN 40050)	IEC IP67		
LED Indicators - Switching Status	Yellow (output energized)		
LED Indicators - Power	Green		
Housing Material	LCP (Liquid Crystal Polymer); PEI (Polyether imide)		
Lens Material	Polymethyl methacrylate (PMMA)		
Shock/Vibration	See terminology section		
Tightening Torque	2.25 N•m [1.66 lb-ft]		
Weight (cable/connector)	45.36 g [1.6 oz]		
Connectors	M12 connector		
Accessories	1 mounting hex nut included		
Agency Approvals	cULus listed UL file E328811, CE		

<sup>1</sup> With 200x200mm white matte paper, 90% remission

<sup>2</sup> With standard diameter 84mm RL110 reflector. Purchase reflector separately.

<sup>3</sup> An emitter and receiver pair must be ordered for a complete sensor set.

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

## Characteristic Curves

Chart 1 - GXP

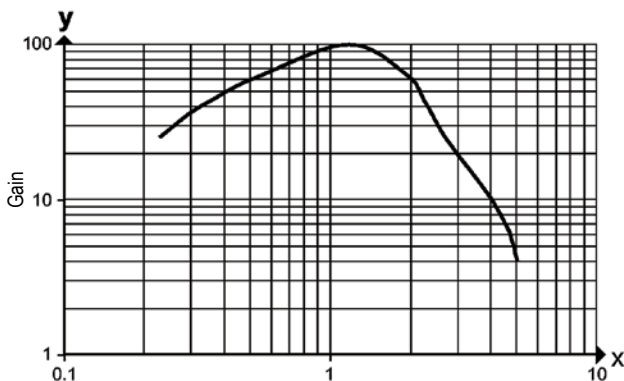
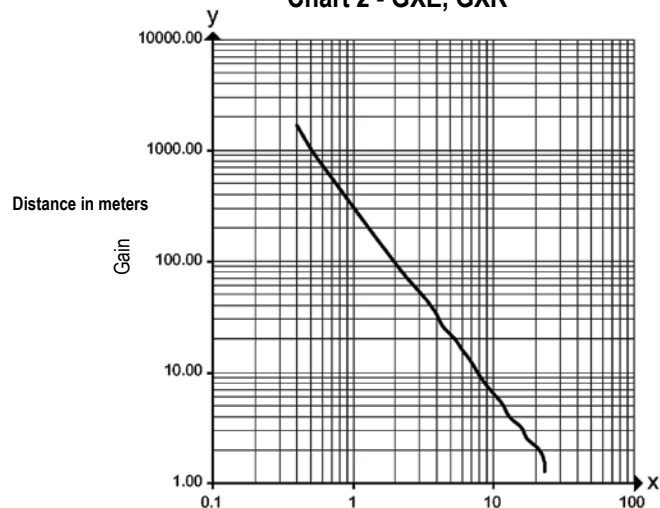


Chart 2 - GXE, GXR



**Warning: These products are not safety sensors and are not suitable for use in personal safety applications.**

# Accessories for 18mm Sensors

## Axial Mounting Bracket

Axial mounting bracket available in zinc plated steel or 316L stainless steel. Has two mounting holes (use 4mm screws) and allows for rotation of an optical axis for right-beam-angle-adaptor sensors. Hexagonal nuts not included. For use with 18mm sensors.

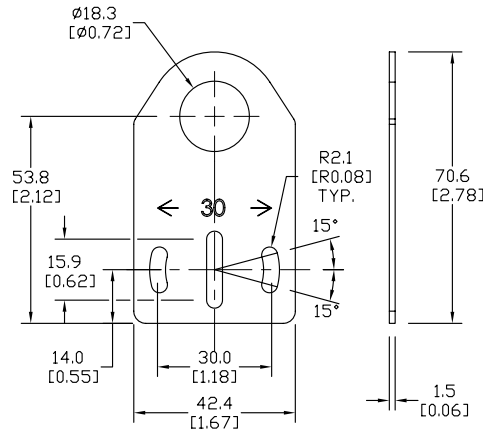
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18A</b>	\$97.:	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18A7W</b>	\$980:	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18A**

## Dimensions

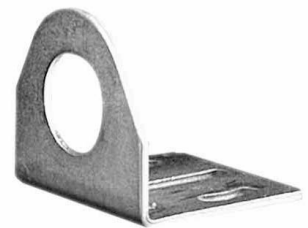
mm [inches]



## Right-angle Mounting Bracket

Right-angle mounting bracket for use with 18mm sensors. Has two mounting holes (use 4mm screws) and allows the rotation of an optical axis for axial sensors. Hexagonal nuts not included.

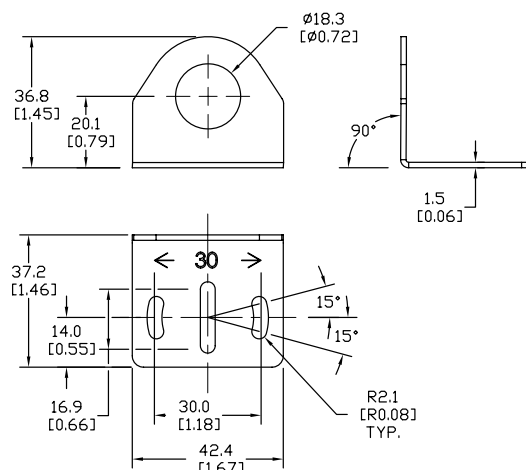
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18C</b>	\$981:	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18C7W</b>	\$982:	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18C**

## Dimensions

mm [inches]



# Accessories for 18mm Sensors

## Right-angle Mounting Brackets

Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors. Available with or without fixed insertion stop.

Accessories for 18mm Sensors				
Part Number	Price	Description	Drawing Link	Weight lb [g]
<a href="#">OPT2104</a>	\$;-1nlt:	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	0.06 [27.2]
<a href="#">OPT2105</a>	\$;-1nlu:	Wenglor mounting bracket, right-angle, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	0.06 [27.2]



[OPT2104](#), [OPT2105](#)

## Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with 18mm sensors. Available in all 304 stainless steel or with an aluminum head and a stainless steel mounting plate.

Accessories for 18mm Sensors						
Part Number	Price	Description	Mounting Head	Mounting Plate	Drawing Link	Weight lb [g]
<a href="#">OPT2116</a>	\$-1n#:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 18mm sensors.	Aluminum	304 Stainless steel	<a href="#">PDF</a>	0.15 [68.0]
<a href="#">OPT2117</a>	\$;-1nll:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 18mm sensors.	304 Stainless steel	304 Stainless steel	<a href="#">PDF</a>	0.28 [127.0]



[OPT2116](#), [OPT2117](#)

Note: 304 Stainless steel mounting rods sold separately: [OPT2109](#) (200mm [7.87 in] length), [OPT2110](#) (300mm [11.81 in] length), and [OPT2111](#) (500mm [19.69 in] length).

# Mounting Rods and Brackets

## Mounting Rods

304 Stainless steel rods for mounting swivel brackets [OPT2112](#) - [OPT2127](#). Available in three lengths: 200mm, 300mm, and 500mm. 12mm diameter.

Mounting Rods for OPT2112-2127 Swivel Mounting Brackets				
Part Number	Price	Description	Drawing Link	Weight lb (g)
<a href="#">OPT2109</a>	\$1nn9:	Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	<a href="#">PDF</a>	0.41 [185.97]
<a href="#">OPT2110</a>	\$1nna:	Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	<a href="#">PDF</a>	0.60 [272.16]
<a href="#">OPT2111</a>	\$1nnb:	Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	<a href="#">PDF</a>	0.98 [444.52]



## Right-angle Mounting Bracket

Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods [OPT2109](#), [OPT2110](#) & [OPT2111](#).

Right-angle Mounting Brackets for 12mm Sensors				
Part Number	Price	Description	Drawing Link	Weight lb [g]
<a href="#">OPT2108</a>	\$-1nly:	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	<a href="#">PDF</a>	0.07 [31.8]



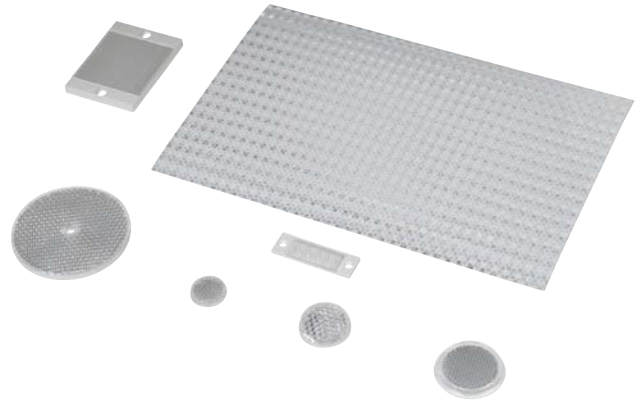
# Reflectors

## RL Series Reflectors for Polarized Reflective Photoelectric Sensors (All Models)

- Suitable for use with polarized light photoelectric sensors
- Shapes and sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single hole, dual hole and self-adhesive mounting types available
- Single and 10-packs available

## Installation Notes

- Keep the reflector surface clean to ensure peak detection performance. This is especially true when the maximum sensing range is being used. Clean using a damp cloth.
- When selecting a reflector, it is important to consider the ambient conditions it will be exposed to. Dusty or high humidity conditions may reduce the sensing range as much as 90%.
- Reflectors should be positioned at a 90° angle to the optical axis with a tolerance of  $\pm 15^\circ$ .



Reflector Specifications							
Part number	Price	Drawing Link	Quantity	Dimensions mm [in]	Degree of Protection	Mounting	Materials
<a href="#">RL102</a>	\$;09[h:	<a href="#">PDF</a>	10	25	IEC IP67	Customer-supplied adhesive or other mounting method required	Reflective face: PMMA Polymethylmethacrylate (acrylic)  Base material: ABS (Acrylonitrile-butadiene-styren)
<a href="#">RL102-1</a>	\$?6y:		1	[0.98]			
<a href="#">RL103</a>	\$;-09[j:	<a href="#">PDF</a>	10	34.5			
<a href="#">RL103-1</a>	\$?6z:		1	[1.36]			
<a href="#">RL104</a>	\$;-09[j:	<a href="#">PDF</a>	10	46			
<a href="#">RL104-1</a>	\$;?6]:		1	[1.81]			
<a href="#">RL105G</a>	\$-2e_j:	<a href="#">PDF</a>	10	95 x 38		Two 4.3 mm holes	
<a href="#">RL105G-1</a>	\$2e_k:		1	[3.74 x 1.50]			
<a href="#">RL106G</a>	\$;-09[l:	<a href="#">PDF</a>	10	182 x 42		Two 6mm holes	
<a href="#">RL106G-1</a>	\$?6_:		1	[7.17 x 1.65]			
<a href="#">RL110</a>	\$;09[n:	<a href="#">PDF</a>	10	84		One 5mm hole	
<a href="#">RL110-1</a>	\$?6#:		1	[3.31]			
<a href="#">RL116</a>	\$05yv:	<a href="#">PDF</a>	10	41 x 60		Two 3mm holes	
<a href="#">RL116-1</a>	\$;?6!:		1	[3.54 x 2.36]			
<a href="#">RL100DA4</a>	\$0?77:	NA	1	200 x 300		Self-adhesive	Paper (Acrylic tape with micro prism)
<a href="#">RL100DC4</a>	\$0?78:	NA	1	50 x 300			
<a href="#">RL100DQ1</a>	\$?79:	NA	1	100 x 100			
<a href="#">RL111G</a>	\$;0?6,:	<a href="#">PDF</a>	10	22.5 x 47		Two 3mm slots	Reflective face: PMMA Polymethylmethacrylate (acrylic)  Base material: ABS (Acrylonitrile-butadiene-styren)
<a href="#">RL111G-1</a>	\$?6?:		1	[0.89 x 1.85]			
<a href="#">RL112G</a>	\$0?71:	<a href="#">PDF</a>	10	19 x 73			
<a href="#">RL112G-1</a>	\$?70:		1	[0.75 x 2.87]			
<a href="#">RL113G</a>	\$0?73:	<a href="#">PDF</a>	10	51.4 x 60.3		Two 4mm slots	
<a href="#">RL113G-1</a>	\$?72:		1	[2.02 x 2.37]			

Not recommended for applications involving moist air environments or water immersion.

# Reflectors

## RL Series Reflectors for Polarized Reflective Laser Photoelectric Sensors (FALN series)

- Suitable for use with polarized light laser photoelectric sensors
- Sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single and 5-packs available

Specifications						
Part Number	<a href="#">RL201</a>	<a href="#">RL201-1</a>	<a href="#">RL203</a>	<a href="#">RL203-1</a>	<a href="#">RL204</a>	<a href="#">RL204-1</a>
Price	\$;09[o:	\$?74:	\$;09[p:	\$?75:	\$;09[q:	\$?76:
Quantity	5	1	5	1	5	1
Drawing Link	<a href="#">PDF</a>		<a href="#">PDF</a>		<a href="#">PDF</a>	
Dimensions	60 x 82 mm 2.36 x 3.23 in		19 x 6mm 0.75 x 2.36 in		20mm x 32mm 0.80 in x 1.26 in	
Degree of Protection <sup>1</sup>	IEC IP67					
Mounting	Two 0.4 mm holes		Two 0.4 mm holes		Two 0.3 mm holes	
Materials	Acrylic/polycarbonate					

<sup>1</sup> Not recommended for applications involving moist air environments or water immersion.