

Photoelectric Sensors Selection Guide



Specification	MQ Series AC	MV Series AC	C5 Series DC	HE/HER Series DC	DM Series DC
Description	18mm diffuse with background suppression, 90° radial optic	18mm plastic, AC	5mm stainless steel, DC	8mm Thru-Beam	12mm nickel-plated brass with Teach operating distance function, DC
Sensing Distances	Standard distance models: 50mm Extended distance models: 100mm	Diffuse: 100mm, 200mm, 400mm Reflective: 3m Through-beam: 16m	Diffuse models: 50mm Through-beam models: 250mm	1000 mm / Ex. gain = 2	Diffuse models: 100mm, 300mm Reflective models: 2m Through-beam: 4m
Output State	N.O./N.C. background suppression	N.O./ receiver dependent	N.O. / receiver dependent	N.O./N.C.	Diffuse: N.O./N.C. selectable Polarized reflective: N.O./N.C. selectable Through-beam: N.O./N.C./ receiver dependent
Logic Output	Triac	Triac	NPN / PNP/ N.O. only	NPN / PNP	NPN / PNP
Connection Type	M12 quick disconnect	Axial cable M12 connector	Axial cable M8 connector	Axial cable M8 quick disconnect	Axial cable / M12 connector
Supply Voltage	20 to 253 VAC	20 to 253 VAC	10 to 30 VDC	10 to 30 VDC	10 to 30 VDC
Switching Frequency	25Hz	25Hz	250Hz	10kHz	Diffuse and reflective models: 400Hz Through-beam models: 250Hz
Rating	IEC IP67	IEC IP67	IEC IP67	IEC IP67	IEC IP67



Specification	C18 Series DC	GX Series DC	FE Series DC	CX Series DC	QX Series DC
Description	18mm nickel-plated brass, DC	18mm rectangular plastic, DC	Mini-rectangular plastic, DC	Mini-rectangular plastic, DC	Rectangular plastic, DC
Sensing Distances	Diffuse models: up to 600mm Diffuse models w/ background suppression: 10 to 120mm Reflective models: Up to 2m Through-beam models: Up to 6m	Diffuse models w/ background suppression: Up to 150mm Reflective models: Up to 4m Through-beam models: Up to 20m	Diffuse models: 800mm Reflective models: 4m Through-beam: 12m	Diffuse models: up to 600mm Diffuse models w/ background suppression: 15 to 150mm Reflective models: Up to 2m Through-beam models: Up to 6m	Diffuse models: 300mm Reflective models: 2.5m Through-beam models: 8m
Output State	Diffuse: Light-on / Dark-on selectable Diffuse models with background suppression: Light-on Polarized reflective: Dark-on Through-beam: Light-on / Dark-on / receiver dependent	Diffuse models w/ background suppression: Light-on Polarized reflective: Light-on / Dark-on Through-beam: Light-on / Dark-on / receiver dependent	Light-on/Dark-on selectable	N.O.	N.O./receiver dependent
Logic Output	NPN / PNP/ receiver dependent	NPN / PNP/ receiver dependent	NPN / PNP	NPN / PNP	NPN / PNP selectable / receiver dependent
Connection Type	Axial cable / M12 connector	M12 connector	Axial cable / M8 connector	Axial cable / M8 connector	Axial cable / M12 connector
Supply Voltage	10 to 36 VDC	10 to 30 VDC	10 to 30 VDC	10 to 36 VDC	10.8 to 30VDC
Switching Frequency	Diffuse models: 1kHz Diffuse models w/ background suppression: 500Hz Reflective models: 1kHz Through-beam models: 1kHz	1kHz	1kHz	Diffuse models: 1kHz Diffuse models w/ background suppression: 500Hz Reflective models: 1kHz Through-beam models: 1kHz	Diffuse and reflective models: 750Hz (Tr=0.5ms) Through-beam models: 500Hz (Tr=0.75ms)
Rating	IEC IP67	IEC IP67	IEC IP67	IEC IP65	IEC IP65

GX Series Photoelectric Sensors


GX3-AP-2E

M18 (18 mm) rectangular plastic - DC

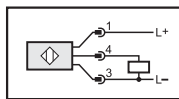
- 12 models available
- Diffuse with background suppression, polarized reflective, and through-beam models
- Fixed sensing ranges, no adjustment required
- 18 mm diameter threaded lens with mounting hex nut included
- NPN or PNP, Light-on, Dark-on output models
- Visible red LED emission
- M12 quick-disconnect;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

GX Series Photoelectric Sensors Selection Chart							
Part Number	Price	Sensing Range	Output State	Logic	Connection	Characteristic Curves	
Diffuse with background suppression							
GX3-AN-1E	<--->	Up to 100 mm (3.93 in)	Light-on	NPN	M12 (12 mm) connector	N/A	
GX3-AP-1E	<--->			PNP	M12 (12 mm) connector		
GX3-AN-2E	<--->	Up to 150 mm (5.90 in)	Light-on	NPN	M12 (12 mm) connector		
GX3-AP-2E	<--->			PNP	M12 (12 mm) connector		
Polarized reflective							
GXP-AN-1E	<--->	Up to 4 m (13.12 ft) with RL110 reflector	Light-on	NPN	M12 (12 mm) connector	Chart 1	
GXP-AP-1E	<--->			PNP	M12 (12 mm) connector		
GXP-CN-1E	<--->		Dark-on	NPN	M12 (12 mm) connector		
GXP-CP-1E	<--->			PNP	M12 (12 mm) connector		
Through-beam							
GXR-AP-1E	Receiver - must be used with Emitter	<--->	Up to 20 m (65.62 ft)	Light-on	PNP	M12 (12 mm) connector	Chart 2
GXR-CN-1E				Dark-on	NPN	M12 (12 mm) connector	
GXR-CP-1E					PNP	M12 (12 mm) connector	
GXE-00-1E	Emitter	<--->	Receiver dependent	Receiver dependent	M12 (12 mm) connector		

*Note: Polarized reflective sensors include one round reflector (84mm dia.). Purchase additional reflectors separately.

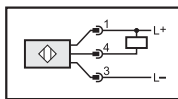
Wiring GX3, GXP and GXR series

PNP



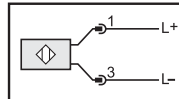
Pin 1 - Brown = L+ (10...30 V DC)
Pin 3 - Blue = L-
Pin 4 - Black = load (PNP, 200 mA max)
(Pin 2 - White = not connected)

NPN



Pin 1 - Brown = L+ (10...30 V DC)
Pin 3 - Blue = L-
Pin 4 - Black = load (NPN, 200 mA max)
(Pin 2 - White = not connected)

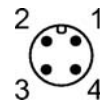
Transmitter



Pin 1 - Brown = L+ (10...30 V DC)
Pin 3 - Blue = L-
(Pin 4 - Black = not connected)
(Pin 2 - White = not connected)

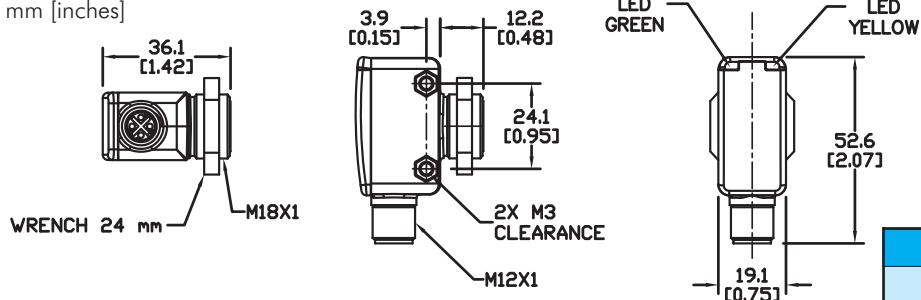
NOTE: CLASS 2 POWER SOURCE REQUIRED

M12 connector



Dimensions

mm [inches]



Switching Element Function

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

GX Series Photoelectric Sensors

Specifications	Diffuse Models with Background Suppression	Reflective Models	Through-Beam Models
Type	Diffuse reflection	Polarized reflection	Through-beam ³
Sensing Distance	GX3-AN-1E, GX3-AP-1E: up to 100 mm ¹ GX3-AN-2E, GX3-AP-2E: up to 150 mm ¹	4m with RL110 ²	20m
Emission	Red LED (visible)		
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
Operating Voltage	10 to 30 VDC		
Maximum Load Current	200 mA		
Current Consumption	30 mA	25 mA	20 mA
Voltage Drop	< 2.5 V		
Output Type	NPN or PNP - Light-on or Dark-on		
Switching Frequency	1kHz		
Overload Protection	Yes		
Polarity Reversal Protection	Yes		
Short-Circuit Protection	Yes (non-latching)		
Vibration	IEC 60947-5-2 part 7.4.2		
Shock	IEC 60947-5-2 part 7.4.1		
Temperature Range	-25 to 60°C (-13° to 140°F)		
Protection Degree (DIN 40050)	IP67		
Agency Approvals	cULus listed UL file E328811, CE		
LED Indicators - Switching Status	Yellow (output energized)		
LED Indicators - Power	Green		
Housing Material	LCP (Liquid Crystal Polymer); PEI (Polyether imide)		
Lens Material	PMMA (Polymethyl methacrylate)		
Tightening Torque	2.25 N-m (1.66 lb-ft)		
Connection	M12 connector		
Accessories	1 mounting hex nut included		
Weight (cable/connector)	45.36g (1.6oz)		

¹With 200x200mm white matte paper, 90% remission

²With standard diameter 84mm RL110 reflector included with sensor

³An emitter and receiver pair must be ordered for a complete sensor set.

Characteristic Curves

Chart 1 - GXP

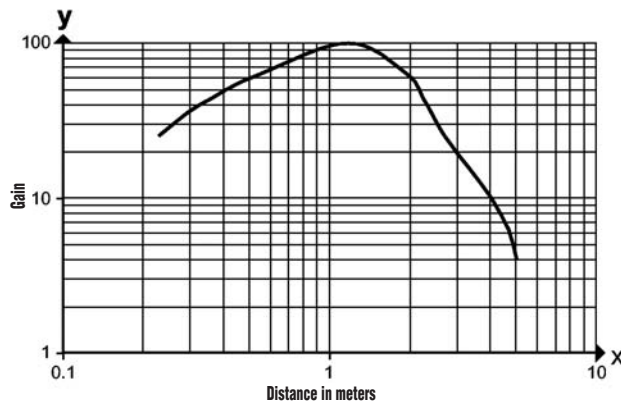
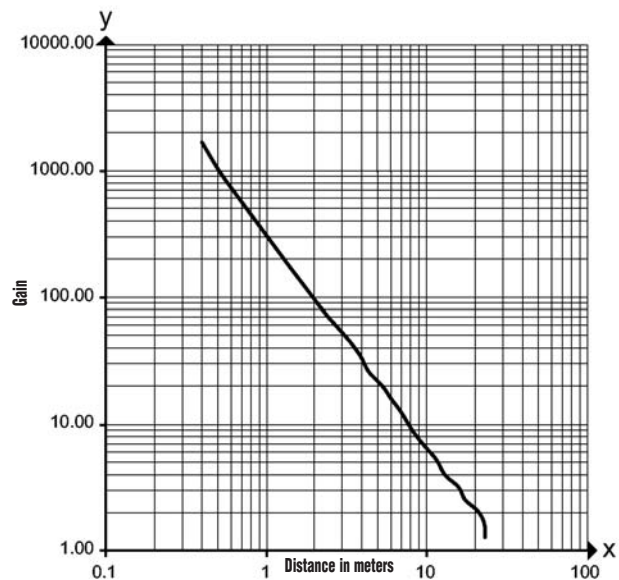


Chart 2 - GXE, GXR



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