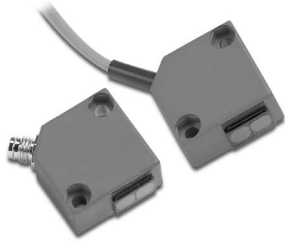


# CX Series Photoelectric Sensors



## Mini-rectangular Plastic - DC

- 18 models available
- Long operating distances
- Adjustable sensitivity
- Scratch-resistant and easy to clean glass lens
- Axial cable or M8 quick-disconnect models
- Complete overload protection
- Mounting brackets are not needed
- IP65 rated



### CX Series Mini-Rectangular Photoelectric Sensors Selection Chart

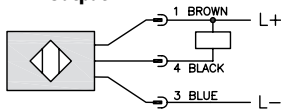
Part Number		Price	Sensing Range	Output State	Logic	Connection	Wiring	Dimensions	Characteristic Curves
Diffuse									
<a href="#">CX3-AN-1A</a>		\$09?v:	Up to 600mm [23.62 in]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 1
<a href="#">CX3-AP-1A</a>		\$09?y:			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 1
<a href="#">CX3-AN-1F</a>		\$09?x:			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 1
<a href="#">CX3-AP-1F</a>		\$09?z:			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 1
Diffuse with background suppression									
<a href="#">CX5-AN-1A</a>		\$0a48:	15-150mm [0.59 to 5.91 in]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 2
<a href="#">CX5-AP-1A</a>		\$0a4a:			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 2
<a href="#">CX5-AN-1F</a>		\$0a49:			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 2
<a href="#">CX5-AP-1F</a>		\$0a4b:			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 2
Polarized reflective*									
<a href="#">CXP-AN-1A</a>		\$,09,8:	Up to 2m [6.6 ft]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 3
<a href="#">CXP-AP-1A</a>		\$,09,a:			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 3
<a href="#">CXP-AN-1F</a>		\$,09,9:			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 3
<a href="#">CXP-AP-1F</a>		\$,09,b:			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 3
Through-beam**									
<a href="#">CXR-AP-1A</a>	Receiver	\$,09,u:	Up to 6m [19.7 ft]	N.O.	PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 4
<a href="#">CXR-AP-1F</a>	Receiver	\$,09,v:			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 4
<a href="#">CXE-0N-1A</a>	Emitter	\$,09,p:		Receiver dependent	Receiver dependent	2m [6.5 ft] axial cable	Diagram 3	Figure 1	Chart 4
<a href="#">CXE-0N-1F</a>	Emitter	\$,09,q:				M8 [8mm] connector	Diagram 3	Figure 2	Chart 4

\*Purchase reflectors separately.

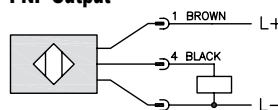
\*\*Purchase one receiver and one emitter for a complete set.

## Wiring Diagrams

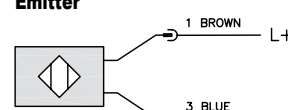
**Diagram 1**  
**NPN Output**



**Diagram 2**  
**PNP Output**



**Diagram 3**  
**Emitter**

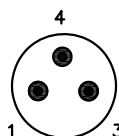


Emitter test input (<4V: OFF / >8V or open: ON) 0.5mA

### Switching Element Function

	Through-beam and Reflective Models	Diffuse Reflective Models
<b>Light-on</b>	N.C.	N.O.
<b>Dark-on</b>	N.O.	N.C.

**Connector**  
**M8 connector**



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

# CX Series Photoelectric Sensors

CX Series Photoelectric Sensors Specifications				
Specifications	Diffuse Models	Diffuse Models with Background Suppression	Reflective Models	Through-beam Models <sup>1</sup>
Type	Diffuse reflection	Diffuse reflection with background suppression	Polarized reflection	Through-beam
Sensing Distance	600mm <sup>2</sup>	15 to 150mm <sup>3</sup>	2m	6m
Light Spot Diameter	See charts			
Emission	IR-LED [880nm]	LED red [660nm]	LED red polarized [660nm]	IR-LED [880nm]
Sensitivity	Adjustable 12-turn pot.			
Output Type	NPN or PNP; N.O. only			
Operating Voltage	10-36 VDC			
No Load Supply Current	15mA	25mA	15mA	15mA (R) / 10mA (E)
Operating (Load) Current	≤ 200mA			
Off-state (Leakage) Current	≤ 10μA			
Voltage Drop	≤ 2.0V			
Switching Frequency	1kHz	500Hz	1kHz	1kHz
Ripple	≤ 20%			
Time Delay Before Availability (tv)	100ms			
Short-Circuit Protection	Yes (switch auto-resets after overload is removed)			
Operating Temperature	-25 to 55°C [-13 to 131°F]			
Protection Degree (DIN 40050)	IEC IP65			
LED Indicators - Switching Status	Yellow (output state, output energized), green (excess light indication)			
Housing Material	PBTP (Crastin)			
Lens Material	Glass			
Shock/Vibration	See terminology section			
Tightening Torque	N/A			
Weight (cable/connector)	84g [2.96 oz] / 49g [1.73 oz]			232g [8.40oz] / 98g [3.46oz]
Connectors	2m [6.5 ft] axial cable; M8 [8mm] connector			
Agency Approvals	cULus E32881			

<sup>1</sup> Through-beam sensors must be used in pairs consisting of one receiver and one emitter <sup>2</sup> With 200x200mm white matte paper

<sup>3</sup> With 100x100mm white matte paper

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

## Dimensions

(mm)

Figure 1

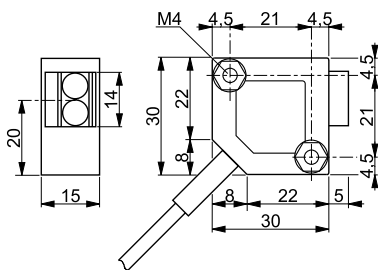
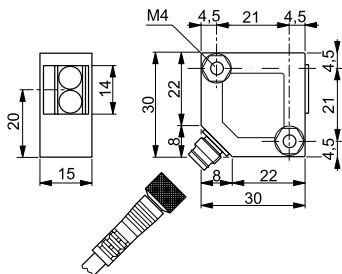


Figure 2



## Characteristic curves

Chart 1 (Diffuse)

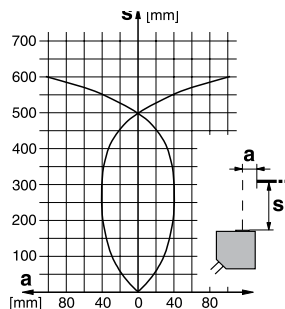


Chart 2 (Diffuse with background suppression)

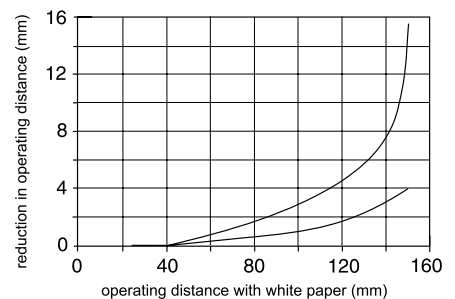


Chart 3 (Polarized reflective)

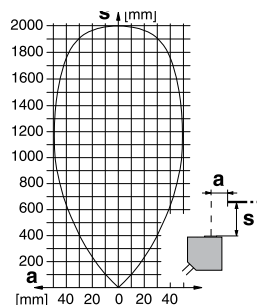
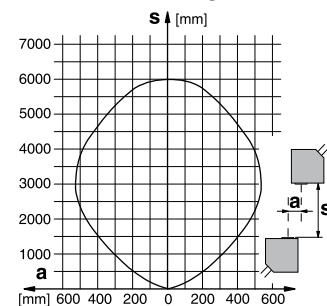


Chart 4 (Through-beam)



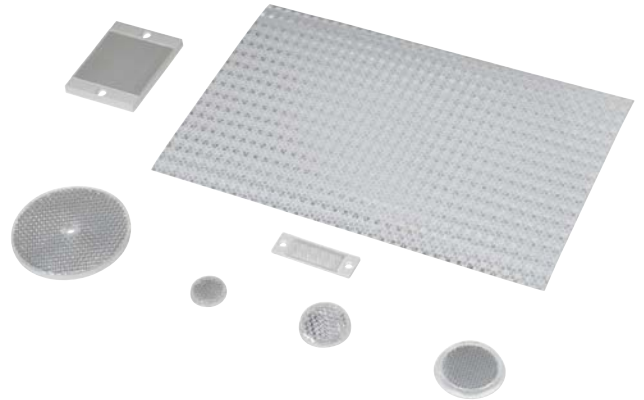
# Reflectors

## 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[i:	<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.