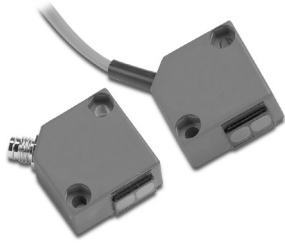# CX Series Photoelectric Sensors

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

NEED CABLES?

CX Series Mini-Rectangular Photoelectric Sensors Selection Chart

Part Number		Price	Sensing Range	Output State	Logic	Connection	Wiring	Dimensions	Characteristic Curves
Diffuse									
CX3-AN-1A		$63.00	Up to 600mm [23.62 in]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 1
CX3-AP-1A		$63.00			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 1
CX3-AN-1F		$63.00			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 1
CX3-AP-1F		$63.00			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 1
Diffuse with background suppression									
CX5-AN-1A		$86.00	15-150mm [0.59 to 5.91 in]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 2
CX5-AP-1A		$86.00			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 2
CX5-AN-1F		$86.00			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 2
CX5-AP-1F		$86.00			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 2
Polarized reflective*									
CXP-AN-1A		$66.00	Up to 2m [6.6 ft]	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1	Chart 3
CXP-AP-1A		$66.00			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 3
CXP-AN-1F		$66.00			NPN	M8 [8mm] connector	Diagram 1	Figure 2	Chart 3
CXP-AP-1F		$66.00			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 3
Through-beam**									
CXR-AP-1A	Receiver	$63.00	Up to 6m [19.7 ft]	N.O.	PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1	Chart 4
CXR-AP-1F	Receiver	$63.00			PNP	M8 [8mm] connector	Diagram 2	Figure 2	Chart 4
CXE-0N-1A	Emitter	$40.50		Receiver dependent	Receiver dependent	2m [6.5 ft] axial cable	Diagram 3	Figure 1	Chart 4
CXE-0N-1F	Emitter	$40.50				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

1 BROWN — L+
4 BLACK
3 BLUE — L−

Diagram 2
PNP Output

1 BROWN — L+
4 BLACK
3 BLUE — L−

Diagram 3
Emitter

1 BROWN — L+
3 BLUE — L−
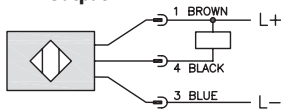
Emitter test input (<4V: OFF / >8V or open: ON) 0.5mA

Switching Element Function

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

Connector
M8 connector

4
1   3

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

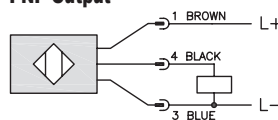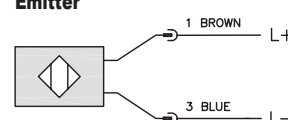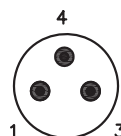# CX Series Photoelectric Sensors

Specifications	Diffuse Models	Diffuse Models with Background Suppression	Reflective Models	Through-beam Models[1]
CX Series Photoelectric Sensors Specifications				
Type	Diffuse reflection	Diffuse reflection with background suppression	Polarized reflection	Through-beam
Sensing Distance	600mm[2]	15 to 150mm[3]	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			

[1] Through-beam sensors must be used in pairs consisting of one receiver and one emitter [2] With 200x200mm white matte paper
[3] 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)

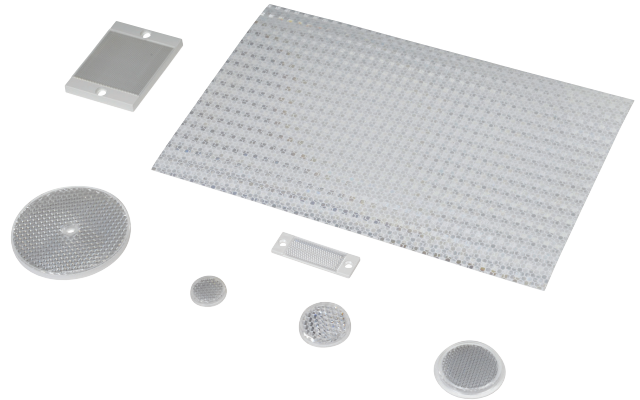For the latest prices, please check AutomationDirect.com.

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 ±15°.

Reflector Specifications							
Part number	Price	Drawing Link	Quantity	Dimensions mm [in]	Degree of Protection	Mounting	Materials
RL102	$38.00	PDF	10	25 [0.98]	IEC IP67	Customer-supplied adhesive or other mounting method required	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)
RL102-1	$4.25		1				
RL103	$42.50	PDF	10	34.5 [1.36]			
RL103-1	$4.75		1				
RL104	$42.50	PDF	10	46 [1.81]			
RL104-1	$4.75		1				
RL105G	$38.00	PDF	10	95 x 38 [3.74 x 1.50]		Two 4.3 mm holes	
RL105G-1	$4.25		1				
RL106G	$42.50	PDF	10	182 x 42 [7.17 x 1.65]		Two 6mm holes	
RL106G-1	$4.75		1				
RL110	$19.00	PDF	10	84 [3.31]		One 5mm hole	
RL110-1	$2.00		1				
RL116	$19.00	PDF	10	41 x 60 [3.54 x 2.36]		Two 3mm holes	
RL116-1	$2.00		1				
RL100DA4	$38.50	NA	1	200 x 300 [7.87 x 11.81]		Self-adhesive	Paper (Acrylic tape with micro prism)
RL100DC4	$12.00	NA	1	50 x 300 [1.97 x 11.81]			
RL100DQ1	$8.75	NA	1	100 x 100 [3.94 x 3.94]			
RL111G	$60.00	PDF	10	22.5 x 47 [0.89 x 1.85]		Two 3mm slots	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)
RL111G-1	$7.25		1				
RL112G	$44.00	PDF	10	19 x 73 [0.75 x 2.87]			
RL112G-1	$4.75		1				
RL113G	$53.00	PDF	10	51.4 x 60.3 [2.02 x 2.37]		Two 4mm slots	
RL113G-1	$6.00		1				

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	RL201	RL201-1	RL203	RL203-1	RL204	RL204-1
Price	$38.00	$8.25	$35.50	$7.75	$30.00	$6.75
Quantity	5	1	5	1	5	1
Drawing Link	PDF		PDF		PDF	
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 [1]	IEC IP67					
Mounting	Two 0.4 mm holes		Two 0.4 mm holes		Two 0.3 mm holes	
Materials	Acrylic/polycarbonate					

[1] **Not recommended for applications involving moist air environments or water immersion.**