

# Leuze M18 Plastic Photoelectric Sensors

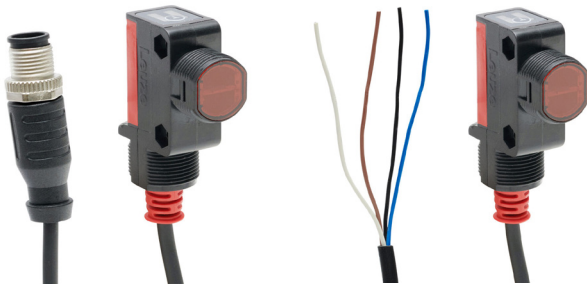
## M18 (18mm) Rectangular Plastic Photoelectric Sensors – 28 Series

### Overview

The Leuze 28 series photoelectric sensors are reliable and powerful for standard detection tasks in material handling, packaging, and other applications. The 28 series offers large ranges, highly visible red LED and Infrared models, and the ultimate in mounting flexibility with front and bottom 18mm threads or rugged through-holes. Strong opto performance and various electrical options make the 28 series photoelectric sensors a solid performer even in rough industrial environments.

### Features

- Diffuse, polarized retroreflective, and through-beam models available
- Operating voltage 10-30VDC
- Complete overload protection
- IP67 rated
- M12 quick-disconnect (purchase cable separately) or pigtail models
- Includes mounting hardware
- 2-year warranty



ET28.3-4P-200-M12

ET28.3-4P



### M18 (18mm) Rectangular Plastic Photoelectric Sensors - 28 Series

Part Number	Price	Sensing Distance	Light Type	Logic	Output Function	Connection Type	Wiring Diagram	Drawing Link
Diffuse, teach-in button								
<a href="#">ET28.3-4P-200-M12</a>	\$68.00	1-650mm [0.03-25.59 in]	Visible red LED 620nm	PNP	Complementary Light-on / Dark-on	4-wire, 4-pin M12 quick-disconnect, 0.2m [0.6 ft] cable, PUR	2	<a href="#">PDF</a>
<a href="#">ET28.3-4P</a>	\$62.00			PNP		4-wire, pigtail 2m [6.5 ft] cable, PUR	2	<a href="#">PDF</a>
<a href="#">ET28.3-2N-200-M12</a>	\$68.00			NPN		4 wire, 4-pin M12 quick-disconnect, 0.2m [0.6 ft] cable, PUR	1	<a href="#">PDF</a>
<a href="#">ET28.3-2N</a>	\$62.00			NPN		4-wire, pigtail, 2m [6.5 ft] cable, PUR	1	<a href="#">PDF</a>
Polarized Retroreflective *								
<a href="#">PRK28-4P-200-M12</a>	\$68.00	0.02-4.5m [0.06-14.76 ft]	Visible red LED 620nm	PNP	Complementary Light-on / Dark-on	4-wire, 4-pin M12 quick-disconnect, 0.2m [0.6 ft] cable, PUR	2	<a href="#">PDF</a>
<a href="#">PRK28-4P</a>	\$62.00			PNP		4-wire, pigtail, 2m [6.5 ft] cable, PUR	2	<a href="#">PDF</a>
<a href="#">PRK28-2N-200-M12</a>	\$68.00			NPN		4-wire, 4-pin M12 quick-disconnect, 0.2m [0.6 ft] cable, PUR	1	<a href="#">PDF</a>
<a href="#">PRK28-2N</a>	\$62.00			NPN		4-wire, pigtail, 2m [6.5 ft] cable, PUR	1	<a href="#">PDF</a>
* Purchase reflector separately.								
Through-beam Emitters								
<a href="#">LS28-9D-M12</a>	\$42.00	0-10m [0 to 32.80 ft]	Visible red LED 620nm	—	—	2-wire, 4-pin M12 quick-disconnect	3	<a href="#">PDF</a>
<a href="#">LS28-9D</a>	\$49.00			—	—	2-wire, pigtail, 2m [6.5 ft] cable, PUR	3	<a href="#">PDF</a>
<a href="#">LS28I</a>	\$55.00		Infrared	—	—	2-wire, pigtail, 2m [6.5 ft] cable, PUR	3	<a href="#">PDF</a>
Through-beam Receivers								
<a href="#">LE28-4P-M12</a>	\$54.00	0-10m [0 to 32.80 ft]	—	PNP	Complementary Light-on / Dark-on	4-wire, 4-pin M12 quick-disconnect	2	<a href="#">PDF</a>
<a href="#">LE28-4P</a>	\$62.00			PNP		4-wire, pigtail, 2m [6.5 ft] cable, PUR	2	<a href="#">PDF</a>
<a href="#">LE28-2N-M12</a>	\$54.00			NPN		4-wire, 4-pin M12 quick-disconnect	1	<a href="#">PDF</a>
<a href="#">LE28-2N</a>	\$62.00			NPN		4-wire, pigtail, 2m [6.5 ft] cable, PUR	1	<a href="#">PDF</a>

Note: Purchase cable separately for the M12 quick-disconnect models.

The 28 Series Photoelectric Sensors are not intended for safety applications.

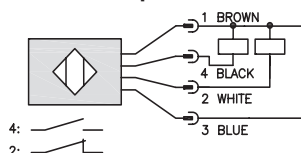
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## M18 (18mm) Rectangular Plastic Photoelectric Sensors – 28 Series

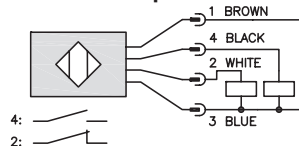
M18 (18mm) Rectangular Plastic Photoelectric Sensors - 28 Series Specifications				
Sensor type	Diffuse, teach-in button	Polarized Retroreflective	Through-beam Emitters	Through-beam Receivers
Operating Voltage	10-30 VDC			
Residual Ripple	0 to 15%, From $U_B$			
Open-circuit Current	0-20mA		0-15mA	
Switching Current (maximum)	100mA		–	100mA
Switching Voltage High	$\geq(U_B-2.5V)$		–	$\geq(U_B-2.5V)$
Switching Voltage Low	$\leq 2.5 V$		–	$\leq 2.5 V$
Switching Frequency	500Hz	500Hz	–	500Hz
Response Time	1ms		–	1ms
Time Delay Before Availability (tv)	300ms			
Voltage Reversal Protection	Yes			
Short-circuit Protection	Yes			
Operating Temperature	-40 to 60°C [-40 to 140°F]			
Storage Temperature	-40 to 70°C [-40 to 158°F]			
Degree of Protection	IP67			
Protection Class	III			
LED Indicators - Switching Status	Green LED: Operation ready Yellow LED: Object detected	Green LED: Operation ready Yellow continuous LED: Light path free Yellow flashing LED: No function reserve	Green LED: Operation ready Yellow LED: Transmitted beam active	Green LED: Operation ready Yellow continuous LED: Light path free Yellow flashing LED: No function reserve
Housing Material	ABS plastic (Acrylonitrile butadiene styrene)			
Lens Material	Plastic			
Shock/Vibration	See terminology section			
Tightening Torque	1 N•m [0.74 ft•lb]			
Weight	75g [2.64 oz] Connector models 40g [1.41 oz] Cable models			
Connectors	4-pin M12 quick-disconnect, wire cross 0.2 mm <sup>2</sup> or 4-wire, pigtail, A-coded, wire cross 0.2 mm <sup>2</sup> 24 AWG			
Agency Approvals	cULus File: E203683, CE			

## Wiring Diagrams

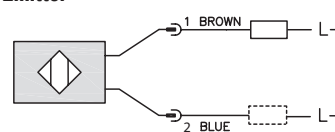
**Diagram 1**  
4-Wire NPN Output



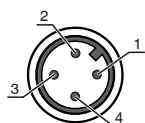
**Diagram 2**  
4-Wire PNP Output



**Diagram 3**  
Emitter



**M12 connector**



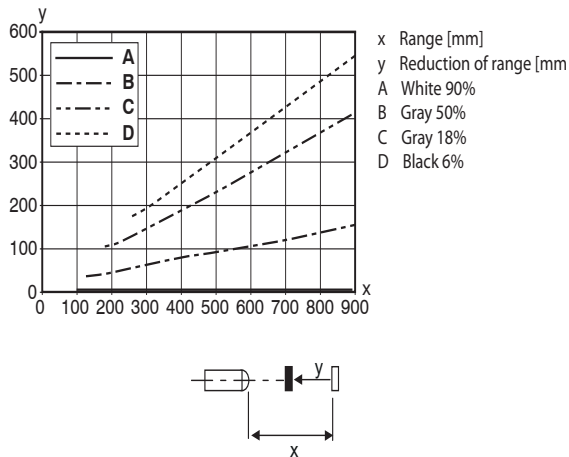
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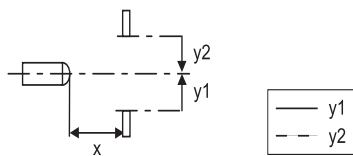
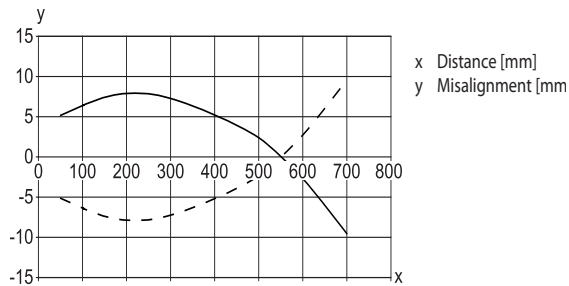
### Characteristic Curves

#### Diffuse Models

Typical black/white behavior

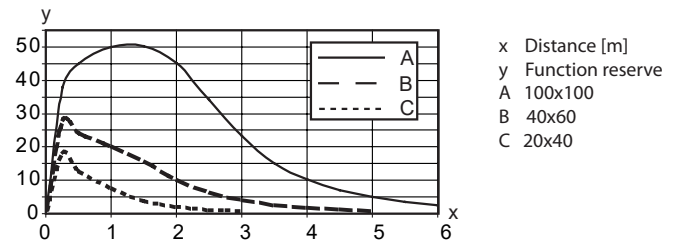
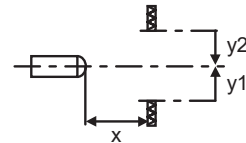
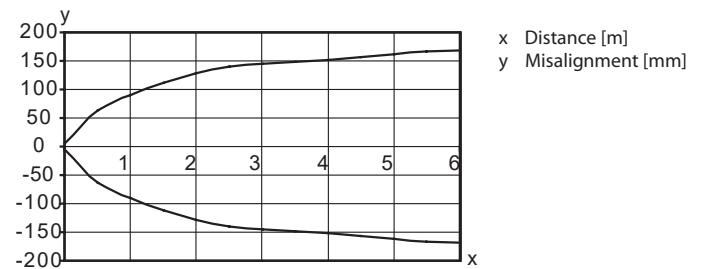


Typical response behavior (white 90%)



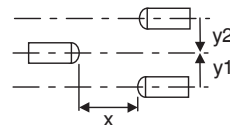
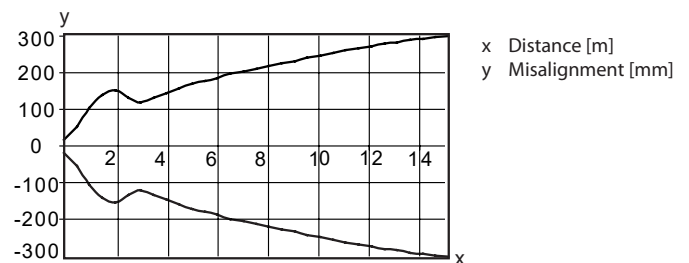
#### Polarized Retroreflective Models

Typical response behavior 100x100



#### Through-beam Models

Typical response behavior





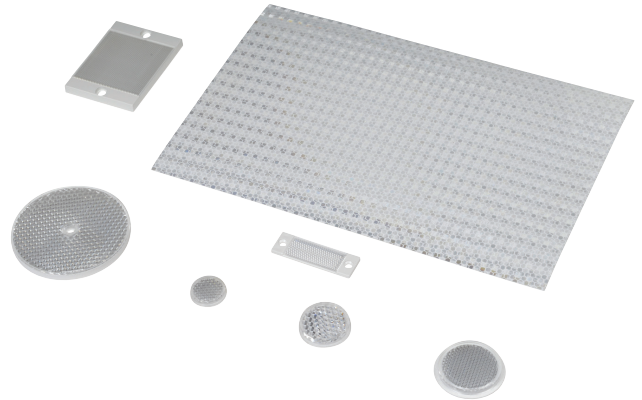
# Reflectors

## 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>	\$38.00	<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>	\$4.25		1	[0.98]			
<a href="#">RL103</a>	\$42.50	<a href="#">PDF</a>	10	34.5			
<a href="#">RL103-1</a>	\$4.75		1	[1.36]			
<a href="#">RL104</a>	\$42.50	<a href="#">PDF</a>	10	46			
<a href="#">RL104-1</a>	\$4.75		1	[1.81]			
<a href="#">RL105G</a>	\$38.00	<a href="#">PDF</a>	10	95 x 38		Two 4.3 mm holes	
<a href="#">RL105G-1</a>	\$4.25		1	[3.74 x 1.50]			
<a href="#">RL106G</a>	\$42.50	<a href="#">PDF</a>	10	182 x 42		Two 6mm holes	
<a href="#">RL106G-1</a>	\$4.75		1	[7.17 x 1.65]			
<a href="#">RL110</a>	\$19.00	<a href="#">PDF</a>	10	84		One 5mm hole	
<a href="#">RL110-1</a>	\$2.00		1	[3.31]			
<a href="#">RL116</a>	\$19.00	<a href="#">PDF</a>	10	41 x 60		Two 3mm holes	
<a href="#">RL116-1</a>	\$2.00		1	[3.54 x 2.36]			
<a href="#">RL100DA4</a>	\$38.50	NA	1	200 x 300		Self-adhesive	Paper (Acrylic tape with micro prism)
<a href="#">RL100DC4</a>	\$12.00	NA	1	50 x 300			
<a href="#">RL100DQ1</a>	\$8.75	NA	1	100 x 100			
<a href="#">RL111G</a>	\$60.00	<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>	\$7.25		1	[0.89 x 1.85]			
<a href="#">RL112G</a>	\$44.00	<a href="#">PDF</a>	10	19 x 73			
<a href="#">RL112G-1</a>	\$4.75		1	[0.75 x 2.87]			
<a href="#">RL113G</a>	\$53.00	<a href="#">PDF</a>	10	51.4 x 60.3		Two 4mm slots	
<a href="#">RL113G-1</a>	\$6.00		1	[2.02 x 2.37]			

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