

prosense® F18 Series Photoelectric Sensors



M18 (18mm) Plastic - DC

- 30 models - diffuse with background suppression, diffuse, polarized retroreflective and through-beam
- M12 quick-disconnect (purchase cable separately) or pigtail with PVC jacket
- Supply voltage: 10 to 30 VDC
- LED light status indicators
- IP67 protection
- Complete protection against electrical damage
- M18 mounting hex nuts included



F18 Series Photoelectric Sensor Selection Chart

Part Number		Price	Sensing Distance	Switching Frequency	Light Emission	Logic	Output Function	Connection	Wiring	Drawing Link	
Diffuse with background suppression - Teach-in button											
F18RS-BN-0A		\$52.00	50-150mm [1.96-5.90 in]	500 Hz	Visible red	NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	PDF	
F18RS-BP-0A		\$52.00				PNP			Diagram 2	PDF	
F18RS-BN-0E		\$52.00				NPN		4-pin M12 quick-disconnect	Diagram 1	PDF	
F18RS-BP-0E		\$52.00				PNP			Diagram 2	PDF	
Diffuse											
F18I2-0N-0A		\$34.00	100mm [3.93 in]	500 Hz	Infrared	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	PDF	
F18I2-0P-0A		\$34.00				PNP			Diagram 4	PDF	
F18I2-0N-0E		\$32.00				NPN		4-pin M12 quick-disconnect	Diagram 3	PDF	
F18I2-0P-0E		\$32.00				PNP			Diagram 4	PDF	
Diffuse - Potentiometer											
F18I6-0N-0A		\$33.00	700mm [27.55 in]	500 Hz	Infrared	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	PDF	
F18I6-0P-0A		\$33.00				PNP			Diagram 4	PDF	
F18I6-0N-0E		\$32.00				NPN		4-pin M12 quick-disconnect	Diagram 3	PDF	
F18I6-0P-0E		\$32.00				PNP			Diagram 4	PDF	
F18I8-BN-0A		\$45.00		1000 Hz		NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	PDF	
F18I8-BP-0A		\$45.00				PNP			Diagram 2	PDF	
F18I8-BN-0E		\$43.00				NPN		4-pin M12 quick-disconnect	Diagram 1	PDF	
F18I8-BP-0E		\$43.00				PNP			Diagram 2	PDF	
Polarized Retroreflective* - Potentiometer											
F18RP-0N-0A		\$38.00	0.1-4m [0.32-13.12 ft]	500 Hz	Visible red	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	PDF	
F18RP-0P-0A		\$38.00				PNP			Diagram 4	PDF	
F18RP-0N-0E		\$35.00				NPN		4-pin M12 quick-disconnect	Diagram 3	PDF	
F18RP-0P-0E		\$35.00				PNP			Diagram 4	PDF	
F18RP-BN-0A		\$44.00		1000 Hz		NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	PDF	
F18RP-BP-0A		\$44.00				PNP			Diagram 2	PDF	
F18RP-BN-0E		\$43.00				NPN		4-pin M12 quick-disconnect	Diagram 1	PDF	
F18RP-BP-0E		\$43.00				PNP			Diagram 2	PDF	
Through-beam**											
F18IR-0N-0A		Receiver	25m [82.02 ft]	250 Hz	N/A	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	PDF	
F18IR-0P-0A		Receiver				\$33.00			PNP	Diagram 4	PDF
F18IR-0N-0E		Receiver				\$27.00		NPN	4-pin M12 quick-disconnect	Diagram 3	PDF
F18IR-0P-0E		Receiver				\$27.00		PNP		Diagram 4	PDF
F18IE-00-0A		Emitter	25m [82.02 ft]	N/A	Infrared	Receiver dependent	N/A	Pigtail 6.5ft/2m	Diagram 5	PDF	
F18IE-00-0E		Emitter						\$27.00	4-pin M12 quick-disconnect	Diagram 5	PDF

NOTES:

*Purchase reflectors separately.

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

Switching Element Function

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

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Wiring Diagrams

Diagram 1

NPN Output

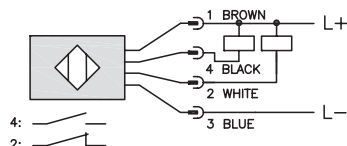


Diagram 2

PNP Output

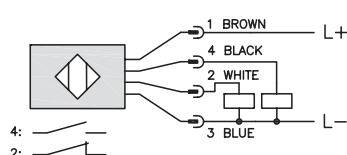


Diagram 3

NPN Output

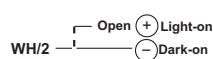
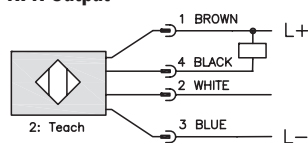


Diagram 4

PNP Output

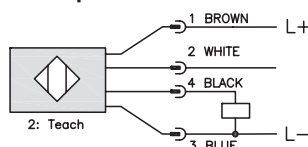
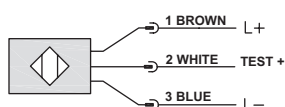
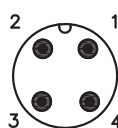


Diagram 5



Connector

M12 Connector



2-meter Axial Cable version: check is black

M12 Connector: check is Pin 2 (white)

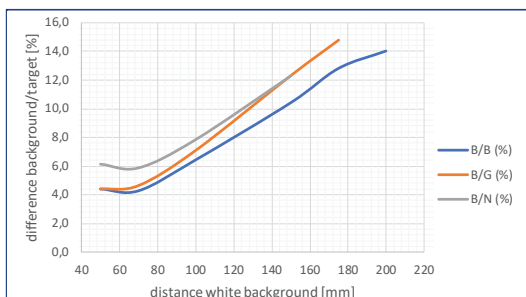
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F18 Series Photoelectric Sensors Specifications					
Type	Diffuse With Background Suppression	Diffuse	Diffuse - Potentiometer	Polarized Retroreflective	Through-beam
Sensing Distance	50-150mm [1.96 to 5.90 in]	100mm [3.93 in]	700mm [27.55 in]	0.1-4m [0.32 to 13.12 ft]	25m [82.02 ft]
Light Spot Diameter	NA	8mm @100mm	16mm @ 700mm	6cm @ 4m	100cm @ 25m
Detection Diagram	A	B	C	D	E
Emission	Red LED (660nm)	Red LED (880nm)	Infrared LED (880nm)	Red LED (660nm)	Infrared LED (880nm)
Sensitivity	Teach	None	Potentiometer		None
Output Type	See individual parts on Selection Chart				
Operating Voltage	10-30VDC				
No-load Supply Current	35mA				
Operating (Load) Current	100mA max				
Off-state (Leakage) Current	< 0.5mA				
Voltage Drop	2V max				
Switching Frequency	500 Hz		F18i6 500 Hz F18i8 1000 Hz	F18RP-0x-0x - 500 Hz F18RP-Bx-0x - 1000 Hz	Receiver 250 Hz Emitter N/A
Ripple	2 Vpp max				
Time Delay Before Availability (tv)	< 300ms				
Short-Circuit Protection	Yes				
Temperature Range	Operating: -25 to 55°C [-13 to 131°F] Storage: -25 to 70°C [-13 to 158°F]				
Protection Degree (DIN 40050)	IP67				
LED Indicators- Switching Status	Yellow output LED (all except emitters) Green stability LED (emitters POWER LED) Green/Red ready/error LED (Diffused with Background Suppression models only)				
Housing Material	Polybutylene terephthalate (PBT)				
Lens Material	Polymethyl methacrylate (PMMA)				
Shock/Vibration	Shock: 11ms (30G) 6 shock for every axis (EN60068-2-27) Vibration: 0.5 mm amplitude, 10 to 55 Hz frequency, for every axis (EN60068-2-6)				
Tightening Torque	1.5 N•m [13.27 lb-in]				
Weight	Cable Models: 75g max. (90g max. Diffuse with Background Suppression Models), Connector Models: 25g max. (40g max. Diffuse with Background Suppression Models)				
Connection	4-pin M12 quick-disconnect, or pigtail 6.5ft/2m				
Agency Approvals *	CE, cULus File E328811, CSA C22-2 File Number 60497-5-2-14				

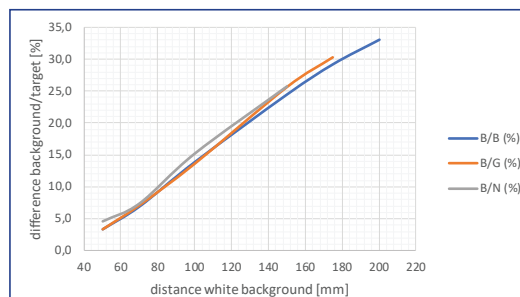
* To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

Detection Diagrams

A - Diffuse with Background Suppression



Detection difference with
Normal acquisition



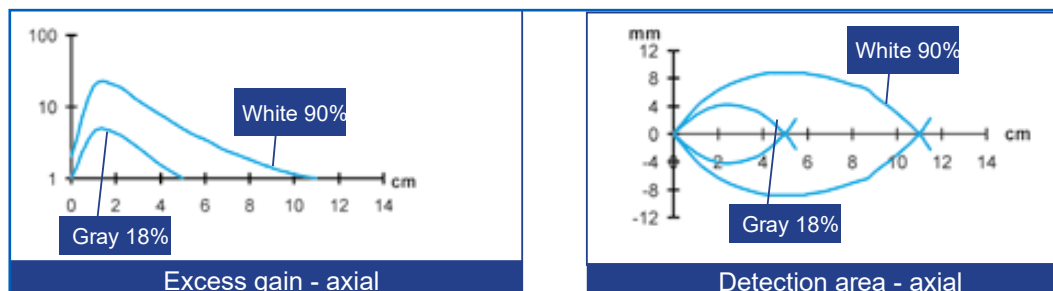
Detection difference with
Fine acquisition

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

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Detection Diagrams

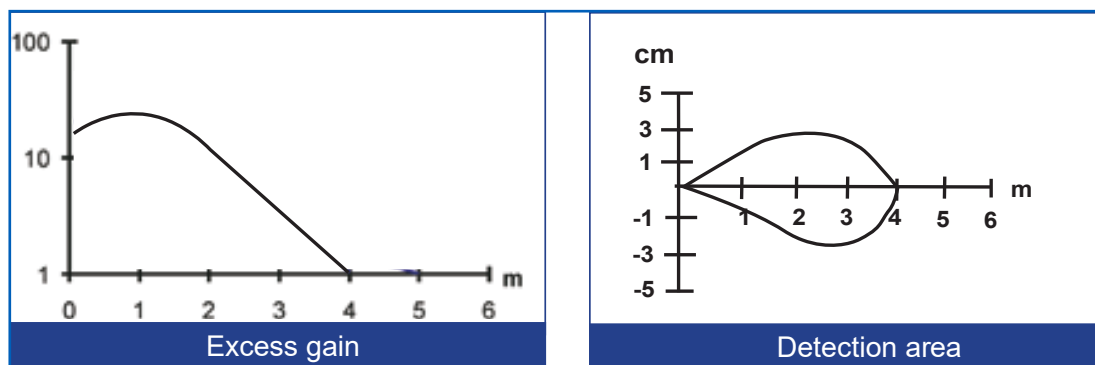
B - Diffuse



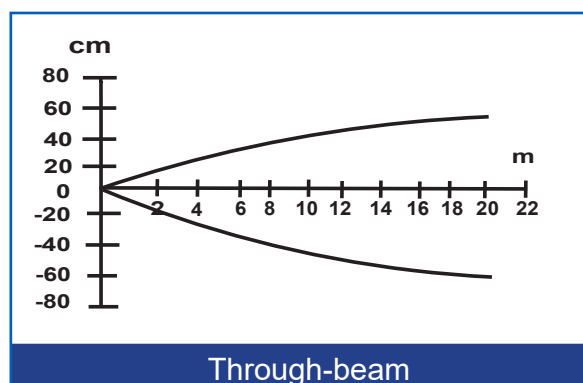
C - Diffuse Potentiometer



D - Retroreflective



E - Through-beam



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.

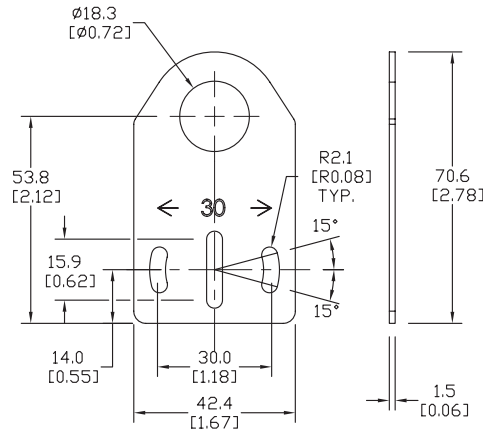
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<u>ST18A</u>	\$2.00	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<u>ST18A7W</u>	\$7.25	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



ST18A

Dimensions

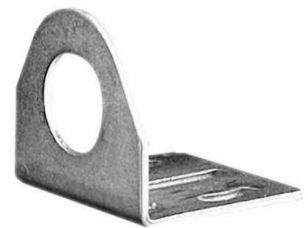
mm [inches]



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.

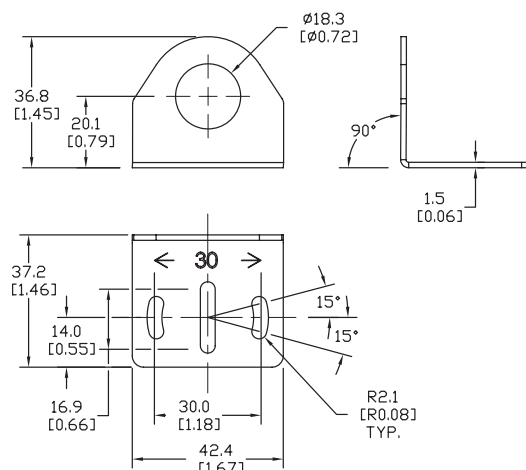
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<u>ST18C</u>	\$2.00	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<u>ST18C7W</u>	\$7.25	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 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]
OPT2104	\$10.50	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	PDF	0.06 [27.2]
OPT2105	\$10.50	Wenglor mounting bracket, right-angle, plastic. For use with 18mm sensors.	PDF	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]
OPT2116	\$11.50	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	PDF	0.15 [68.0]
OPT2117	\$21.00	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	PDF	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).

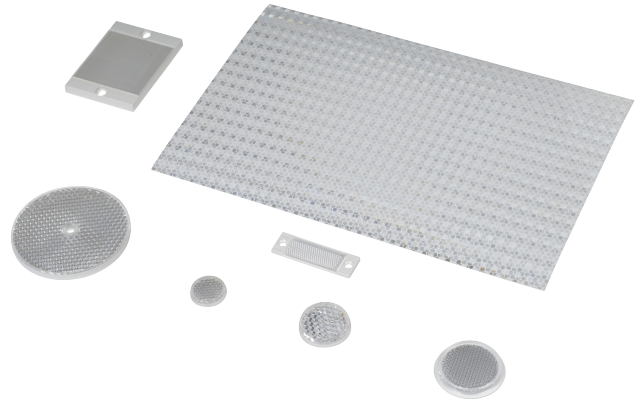
Reflectors

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	
RL102	\$38.00	PDF	10	25	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	[0.98]				
RL103	\$42.50	PDF	10	34.5				
RL103-1	\$4.75		1	[1.36]				
RL104	\$42.50	PDF	10	46				
RL104-1	\$4.75		1	[1.81]				
RL105G	\$38.00	PDF	10	95 x 38		Two 4.3 mm holes		
RL105G-1	\$4.25		1	[3.74 x 1.50]				
RL106G	\$42.50	PDF	10	182 x 42		Two 6mm holes		
RL106G-1	\$4.75		1	[7.17 x 1.65]				
RL110	\$19.00	PDF	10	84		One 5mm hole		
RL110-1	\$2.00		1	[3.31]				
RL116	\$19.00	PDF	10	41 x 60		Two 3mm holes		
RL116-1	\$2.00		1	[3.54 x 2.36]				
RL100DA4	\$38.50	NA	1	200 x 300		Self-adhesive		Paper (Acrylic tape with micro prism)
RL100DC4	\$12.00	NA	1	50 x 300				
RL100DQ1	\$8.75	NA	1	100 x 100				
RL111G	\$60.00	PDF	10	22.5 x 47	Two 3mm slots	Reflective face: PMMA Polymethylmethacrylate (acrylic) Base material: ABS (Acrylonitrile-butadiene-styren)		
RL111G-1	\$7.25		1	[0.89 x 1.85]				
RL112G	\$44.00	PDF	10	19 x 73				
RL112G-1	\$4.75		1	[0.75 x 2.87]				
RL113G	\$53.00	PDF	10	51.4 x 60.3	Two 4mm slots			
RL113G-1	\$6.00		1	[2.02 x 2.37]				

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