

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

**NOTES:**

\*Purchase reflectors separately.

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

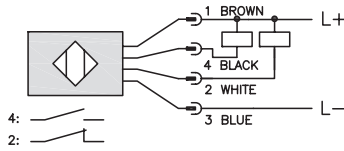
Switching Element Function		
	Through-beam and Reflective Models	Diffuse Reflective Models
<b>Light-on</b>	N.C.	N.O.
<b>Dark-on</b>	N.O.	N.C.

# prosense® F18 Series Photoelectric Sensors

## Wiring Diagrams

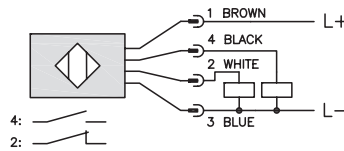
**Diagram 1**

**NPN Output**



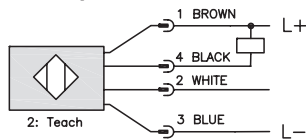
**Diagram 2**

**PNP Output**



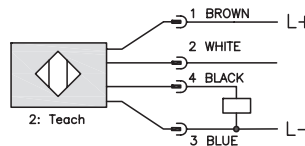
**Diagram 3**

**NPN Output**

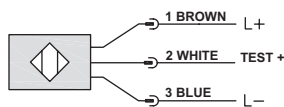


**Diagram 4**

**PNP Output**

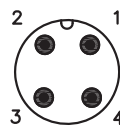


**Diagram 5**



### Connector

**M12 Connector**



*2-meter Axial Cable version: check is black  
M12 Connector: check is Pin 2 (white)*

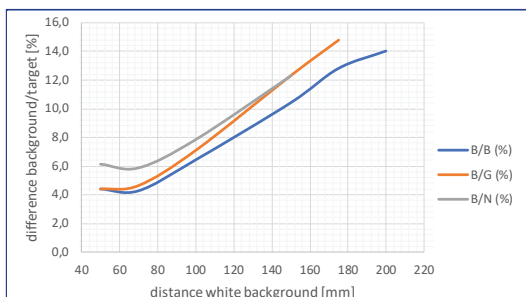
# pro<sup>sense</sup> F18 Series Photoelectric Sensors

F18 Series Photoelectric Sensors Specifications					
Type	Diffuse With Background Suppression	Diffuse	Diffuse - Potentiometer	Polarized Retroreflective	Through-beam
<b>Sensing Distance</b>	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]
<b>Light Spot Diameter</b>	NA	8mm @100mm	16mm @ 700mm	6cm @ 4m	100cm @ 25m
<b>Detection Diagram</b>	A	B	C	D	E
<b>Emission</b>	Red LED (660nm)	Red LED (880nm)	Infrared LED (880nm)	Red LED (660nm)	Infrared LED (880nm)
<b>Sensitivity</b>	Teach	None	Potentiometer		None
<b>Output Type</b>	See individual parts on Selection Chart				
<b>Operating Voltage</b>	10-30VDC				
<b>No-load Supply Current</b>	35mA				
<b>Operating (Load) Current</b>	100mA max				
<b>Off-state (Leakage) Current</b>	< 0.5mA				
<b>Voltage Drop</b>	2V max				
<b>Switching Frequency</b>	500 Hz		F18I6 500 Hz F18I8 1000 Hz	F18RP-0x-0x - 500 Hz F18RP-Bx-0x - 1000 Hz	Receiver 250 Hz Emitter N/A
<b>Ripple</b>	2 Vpp max				
<b>Time Delay Before Availability (tv)</b>	< 300ms				
<b>Short-Circuit Protection</b>	Yes				
<b>Temperature Range</b>	Operating: -25 to 55°C [-13 to 131°F] Storage: -25 to 70°C [-13 to 158°F]				
<b>Protection Degree (DIN 40050)</b>	IP67				
<b>LED Indicators- Switching Status</b>	Yellow output LED (all except emitters) Green stability LED (emitters POWER LED) Green/Red ready/error LED (Diffused with Background Suppression models only)				
<b>Housing Material</b>	Polybutylene terephthalate (PBT)				
<b>Lens Material</b>	Polymethyl methacrylate (PMMA)				
<b>Shock/Vibration</b>	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)				
<b>Tightening Torque</b>	1.5 N•m [13.27 lb-in]				
<b>Weight</b>	Cable Models: 75g max. (90g max. Diffuse with Background Suppression Models), Connector Models: 25g max. (40g max. Diffuse with Background Suppression Models)				
<b>Connection</b>	4-pin M12 quick-disconnect, or pigtail 6.5ft/2m				
<b>Agency Approvals *</b>	CE, cULus File E328811, CSA C22-2 File Number 60497-5-2-14				

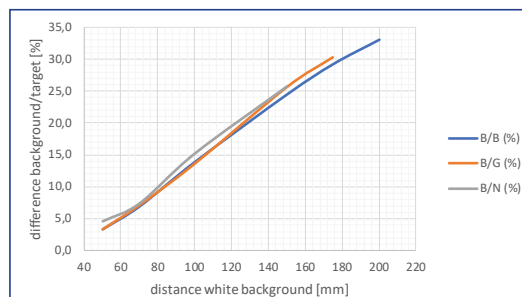
\* To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

## Detection Diagrams

### A - Diffuse with Background Suppression



Detection difference with Normal acquisition



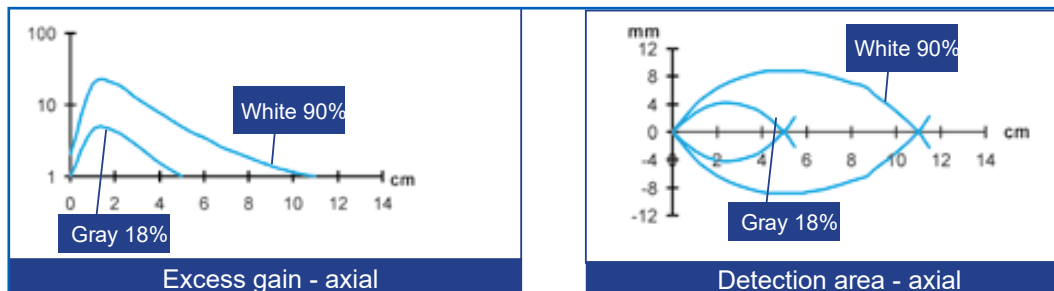
Detection difference with Fine acquisition

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

# proSense® F18 Series Photoelectric Sensors

## Detection Diagrams

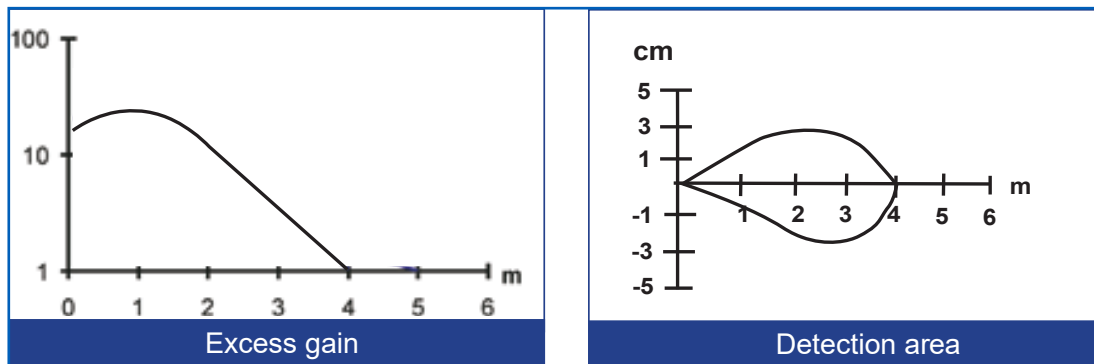
### B - Diffuse



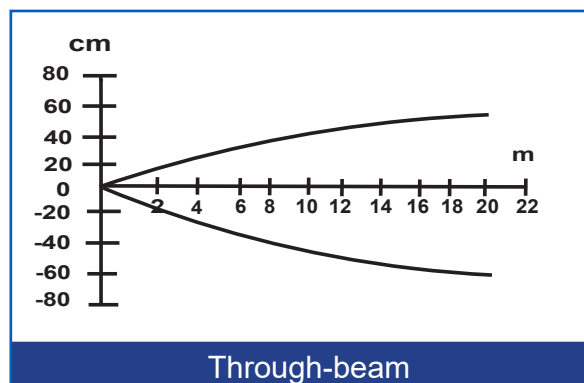
### C - Diffuse Potentiometer



### 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.

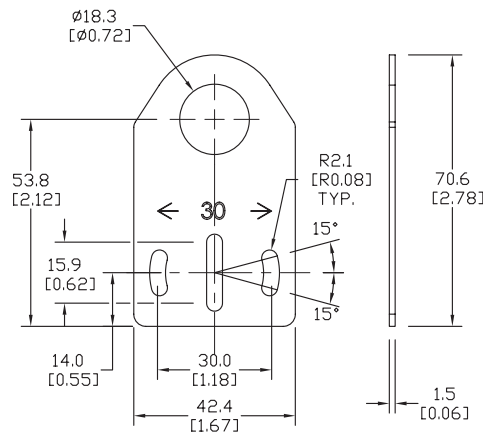


**ST18A**

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

## 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.

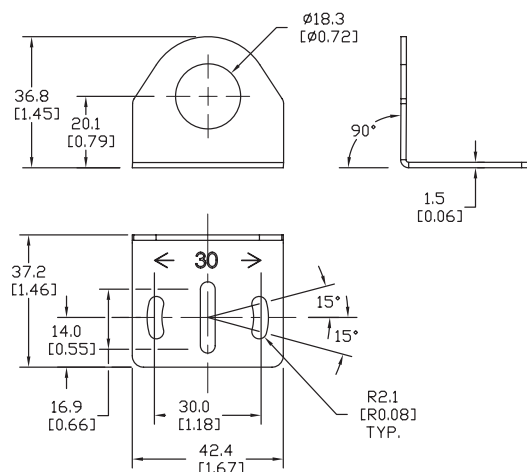


**ST18C**

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18C</b>	\$2.00	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18C7W</b>	\$7.25	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]

## 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]
<a href="#">OPT2104</a>	\$10.50	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	0.06 [27.2]
<a href="#">OPT2105</a>	\$10.50	Wenglor mounting bracket, right-angle, plastic. For use with 18mm sensors.	<a href="#">PDF</a>	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]
<a href="#">OPT2116</a>	\$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	<a href="#">PDF</a>	0.15 [68.0]
<a href="#">OPT2117</a>	\$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	<a href="#">PDF</a>	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).

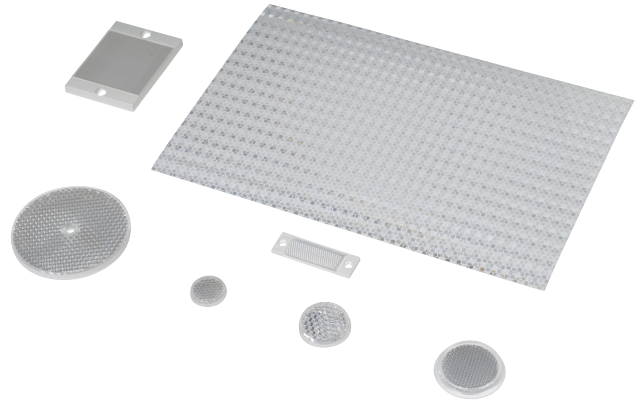
# Reflectors

## 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 ±15°.



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				Two 4.3 mm holes
<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 6mm 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		One 5mm hole		
<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		Two 3mm holes		
<a href="#">RL110-1</a>	\$2.00		1	[3.31]				
<a href="#">RL116</a>	\$19.00	<a href="#">PDF</a>	10	41 x 60		Self-adhesive		Paper (Acrylic tape with micro prism)
<a href="#">RL116-1</a>	\$2.00		1	[3.54 x 2.36]				
<a href="#">RL100DA4</a>	\$38.50	NA	1	200 x 300				
<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			
<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			Two 4mm slots	
<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				
<a href="#">RL113G-1</a>	\$6.00		1	[2.02 x 2.37]				

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