

# proense® F18 Series Photoelectric Sensors



## M18 (18 mm) 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



**Please note: \$US prices shown**  
**For current \$AUD visit [www.directautomation.com.au](http://www.directautomation.com.au)**

### F18 Series Photoelectric Sensor Selection Chart

Part Number	Price	Sensing Distance	Switching Frequency	Light Emission	Logic	Output Function	Connection	Wiring	Drawing Link	
<b>Diffuse with background suppression - Teach-in button</b>										
<a href="#">F18RS-BN-0A</a>	\$61.00	50-150mm [1.96-5.90in]	500 Hz	Visible red	NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	<a href="#">PDF</a>	
<a href="#">F18RS-BP-0A</a>	\$61.00				PNP			Diagram 2	<a href="#">PDF</a>	
<a href="#">F18RS-BN-0E</a>	\$61.00				NPN		4-pin M12 quick-disconnect	Diagram 1	<a href="#">PDF</a>	
<a href="#">F18RS-BP-0E</a>	\$61.00				PNP			Diagram 2	<a href="#">PDF</a>	
<b>Diffuse</b>										
<a href="#">F18I2-0N-0A</a>	\$40.00	100mm [3.93in]	500 Hz	Infrared	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18I2-0P-0A</a>	\$40.00				PNP			Diagram 4	<a href="#">PDF</a>	
<a href="#">F18I2-0N-0E</a>	\$37.00				NPN		4-pin M12 quick-disconnect	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18I2-0P-0E</a>	\$37.00				PNP			Diagram 4	<a href="#">PDF</a>	
<b>Diffuse - Potentiometer</b>										
<a href="#">F18I6-0N-0A</a>	\$39.00	700mm [27.55in]	500 Hz	Infrared	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18I6-0P-0A</a>	\$39.00				PNP			Diagram 4	<a href="#">PDF</a>	
<a href="#">F18I6-0N-0E</a>	\$37.00				NPN		4-pin M12 quick-disconnect	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18I6-0P-0E</a>	\$37.00				PNP			Diagram 4	<a href="#">PDF</a>	
<a href="#">F18I8-BN-0A</a>	\$53.00		1000 Hz			NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	<a href="#">PDF</a>
<a href="#">F18I8-BP-0A</a>	\$53.00					PNP			Diagram 2	<a href="#">PDF</a>
<a href="#">F18I8-BN-0E</a>	\$51.00					NPN		4-pin M12 quick-disconnect	Diagram 1	<a href="#">PDF</a>
<a href="#">F18I8-BP-0E</a>	\$51.00					PNP			Diagram 2	<a href="#">PDF</a>
<b>Polarized Retroreflective* - Potentiometer</b>										
<a href="#">F18RP-0N-0A</a>	\$45.00	0.1-4m [0.32-13.12ft]	500 Hz	Visible red	NPN	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18RP-0P-0A</a>	\$45.00				PNP			Diagram 4	<a href="#">PDF</a>	
<a href="#">F18RP-0N-0E</a>	\$41.00				NPN		4-pin M12 quick-disconnect	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18RP-0P-0E</a>	\$41.00				PNP			Diagram 4	<a href="#">PDF</a>	
<a href="#">F18RP-BN-0A</a>	\$52.00		1000 Hz			NPN	Complementary Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 1	<a href="#">PDF</a>
<a href="#">F18RP-BP-0A</a>	\$52.00					PNP			Diagram 2	<a href="#">PDF</a>
<a href="#">F18RP-BN-0E</a>	\$51.00					NPN		4-pin M12 quick-disconnect	Diagram 1	<a href="#">PDF</a>
<a href="#">F18RP-BP-0E</a>	\$51.00					PNP			Diagram 2	<a href="#">PDF</a>
<b>Through-beam**</b>										
<a href="#">F18IR-0N-0A</a>	Receiver	\$39.00	25m [82.02ft]	250 Hz	N/A	Selectable Light-on/Dark-on	Pigtail 6.5ft/2m	Diagram 3	<a href="#">PDF</a>	
<a href="#">F18IR-0P-0A</a>	Receiver	\$39.00						PNP	Diagram 4	<a href="#">PDF</a>
<a href="#">F18IR-0N-0E</a>	Receiver	\$31.50					NPN	4-pin M12 quick-disconnect	Diagram 3	<a href="#">PDF</a>
<a href="#">F18IR-0P-0E</a>	Receiver	\$31.50					PNP		Diagram 4	<a href="#">PDF</a>
<a href="#">F18IE-00-0A</a>	Emitter	\$31.50	N/A	Infrared	Receiver dependent	N/A	Pigtail 6.5ft/2m	Diagram 5	<a href="#">PDF</a>	
<a href="#">F18IE-00-0E</a>	Emitter	\$31.50					4-pin M12 quick-disconnect	Diagram 5	<a href="#">PDF</a>	

**NOTES:**

\*Purchase reflectors separately.

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

### Switching Element Function

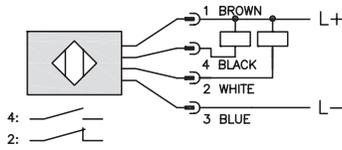
	Through-beam and Reflective Models	Diffuse Reflective Models
<b>Light-on</b>	N.C.	N.O.
<b>Dark-on</b>	N.O.	N.C.

# prosense® F18 Series Photoelectric Sensors

## Wiring Diagrams

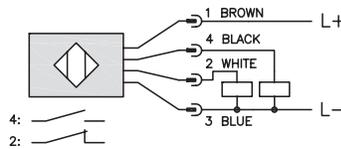
**Diagram 1**

**NPN Output**



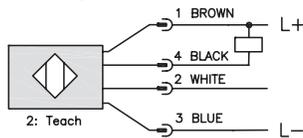
**Diagram 2**

**PNP Output**



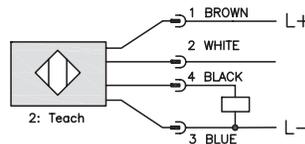
**Diagram 3**

**NPN Output**

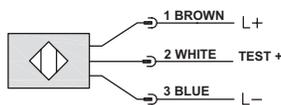


**Diagram 4**

**PNP Output**

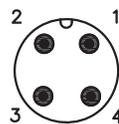


**Diagram 5**



### Connector

**M12 Connector**



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

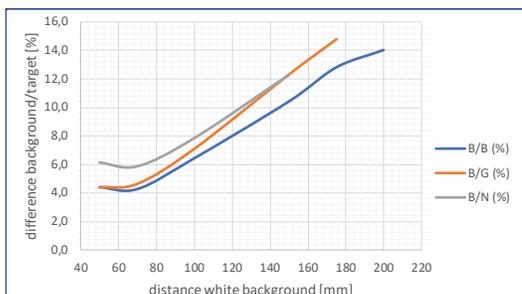
# pro<sup>sense</sup>® F18 Series Photoelectric Sensors

F18 Series Photoelectric Sensors Specifications					
Type	Diffuse With Background Suppression	Diffuse	Diffuse - Potentiometer	Polarized Retroreflective	Through-beam
<b>Sensing Distance</b>	50–150mm [1.96–5.90in]	100mm [3.93in]	700mm [27.55in]	0.1–4m [0.32–13.12ft]	25m [82.02ft]
<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 (660 nm)	Red LED (880 nm)	Infrared LED (880 nm)	Red LED (660 nm)	Infrared LED (880 nm)
<b>Sensitivity</b>	Teach	None	Potentiometer		None
<b>Output Type</b>	See individual parts on Selection Chart				
<b>Operating Voltage</b>	10–30 VDC				
<b>No-load Supply Current</b>	35 mA				
<b>Operating (Load) Current</b>	100 mA maximum				
<b>Off-state (Leakage) Current</b>	< 0.5 mA				
<b>Voltage Drop</b>	2V maximum				
<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>	< 300 ms				
<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: 11 ms (30G) 6 shock for every axis (EN60068-2-27) Vibration: 0.5mm amplitude, 10–55 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				

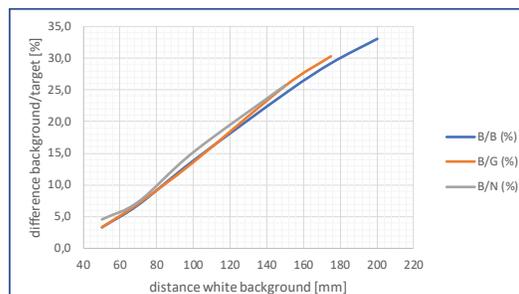
\* To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

## Detection Diagrams

### A - Diffuse with Background Suppression



Detection difference with Normal acquisition



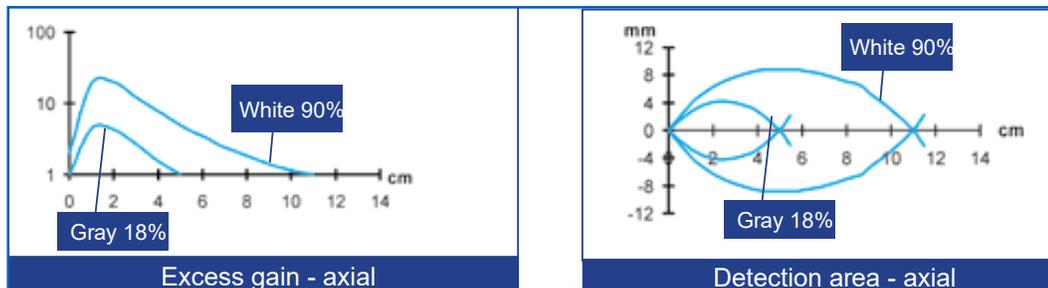
Detection difference with Fine acquisition

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

# proSense® F18 Series Photoelectric Sensors

## Detection Diagrams

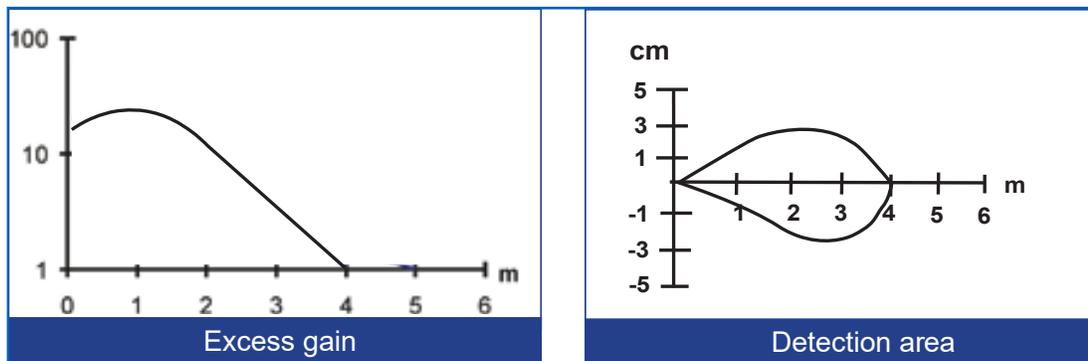
### B - Diffuse



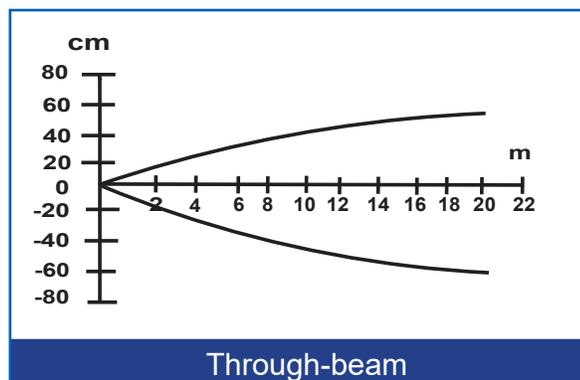
### C - Diffuse Potentiometer



### 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.

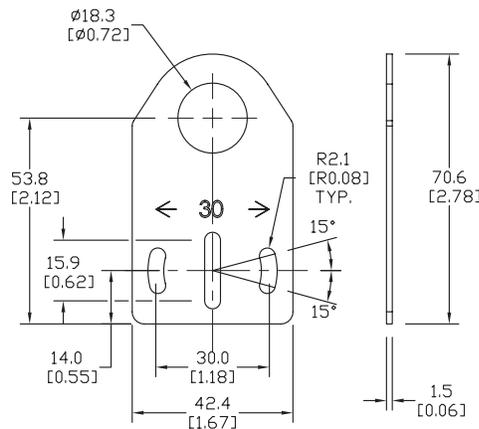


**ST18A**

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18A</b>	\$2.75	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18A7W</b>	\$9.75	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]

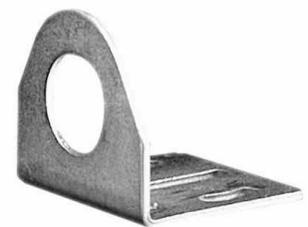
## Dimensions

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.

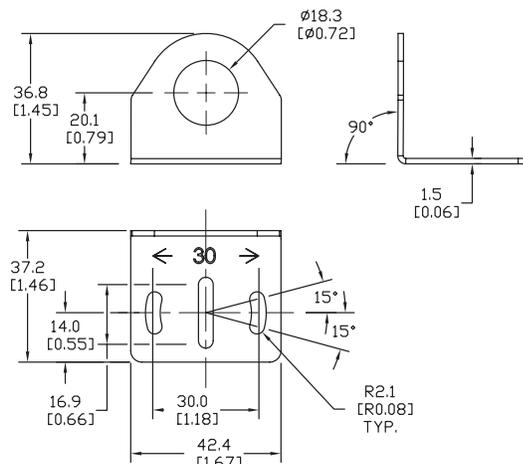


**ST18C**

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18C</b>	\$2.75	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18C7W</b>	\$9.75	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>	\$21.50	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>	\$21.50	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>	\$17.50	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>	\$24.50	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 [7.87in] length), [OPT2110](#) (300mm [11.81in] length), and [OPT2111](#) (500mm [19.69in] length).

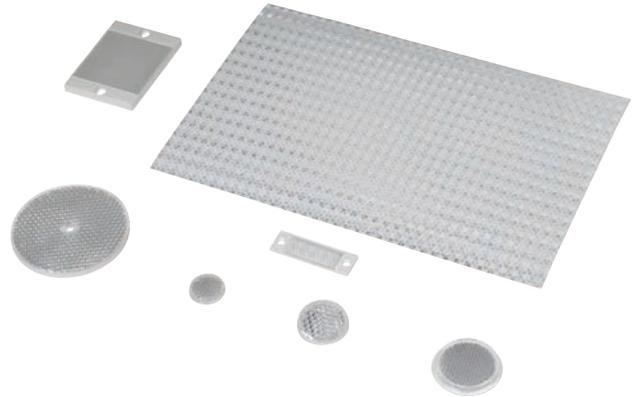
# Reflectors

## 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>	\$45.00	<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>	\$5.00		1	[0.98]			
<a href="#">RL103</a>	\$50.00	<a href="#">PDF</a>	10	34.5			
<a href="#">RL103-1</a>	\$5.50		1	[1.36]			
<a href="#">RL104</a>	\$50.00	<a href="#">PDF</a>	10	46			
<a href="#">RL104-1</a>	\$5.50		1	[1.81]			
<a href="#">RL105G</a>	\$45.00	<a href="#">PDF</a>	10	95 x 38			
<a href="#">RL105G-1</a>	\$5.00		1	[3.74 x 1.50]			
<a href="#">RL106G</a>	\$50.00	<a href="#">PDF</a>	10	182 x 42			
<a href="#">RL106G-1</a>	\$5.50		1	[7.17 x 1.65]			
<a href="#">RL110</a>	\$22.50	<a href="#">PDF</a>	10	84			
<a href="#">RL110-1</a>	\$2.25		1	[3.31]			
<a href="#">RL116</a>	\$22.50	<a href="#">PDF</a>	10	41 x 60			
<a href="#">RL116-1</a>	\$2.25		1	[3.54 x 2.36]			
<a href="#">RL100DA4</a>	\$42.50	NA	1	200 x 300		Self-adhesive	Paper (Acrylic tape with micro prism)
<a href="#">RL100DC4</a>	\$13.00	NA	1	50 x 300			
<a href="#">RL100DQ1</a>	\$9.75	NA	1	100 x 100			
<a href="#">RL111G</a>	\$70.00	<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>	\$8.75		1	[0.89 x 1.85]			
<a href="#">RL112G</a>	\$52.00	<a href="#">PDF</a>	10	19 x 73			
<a href="#">RL112G-1</a>	\$5.50		1	[0.75 x 2.87]			
<a href="#">RL113G</a>	\$62.00	<a href="#">PDF</a>	10	51.4 x 60.3	Two 4mm slots		
<a href="#">RL113G-1</a>	\$6.75		1	[2.02 x 2.37]			

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