

FARS Series Photoelectric Sensors



M18 (18 mm) plastic - DC

The FARS series is a direct reflection diffuse sensor with adjustable background suppression. By using an embedded linear position sensor and a microprocessor, the FARS sensor has excellent capabilities in sensing targets of all shades of color, from a 90% reflective white target, all the way to a 6% reflective black target. The sensing distance can be adjusted between 30 mm and 130 mm using the lateral trimmer.

Features

- 8 models, diffuse with background suppression
- 30/130 mm adjustable maximum reading distance
- Cable or M12 quick disconnect
- Plastic or metal housing
- Supply voltage: 10 - 30 VDC, output current: 100 mA
- LED light status indicator
- IP67 housing protection
- Complete protection against electrical damage



18mm diameter Diffuse Sensors Selection Chart									
Part Number	Price	Voltage Range	Sensing Range	Switching Frequency	Sensing Beam	Thru-Beam Component	Output Type	Connection Type	Wiring
FARS-BN-0A	\$49.00	10 to 30 VDC	30 - 130 mm adjustable	1 kHz	Red light (660 nm)	NO/NC background suppression	NPN NO + NC complementary	2 meter axial cable	Diagram 1
FARS-BN-0E	\$49.00						NPN NO + NC complementary	M12 quick disconnect (purchase cable separately)	
FARS-BP-0A	\$48.50						PNP NO + NC complementary	2 meter axial cable	Diagram 2
FARS-BP-0E	\$49.00						PNP NO + NC complementary	M12 quick disconnect (purchase cable separately)	
FARS-ON-0A	\$49.00					NO/NC background suppression	NPN NO/NC selectable	2 meter axial cable	Diagram 3
FARS-ON-0E	\$49.00						NPN NO/NC selectable	M12 quick disconnect (purchase cable separately)	
FARS-OP-0A	\$49.00						PNP NO/NC selectable	2 meter axial cable	Diagram 4
FARS-OP-0E	\$49.00						PNP NO/NC selectable	M12 quick disconnect (purchase cable separately)	

Wiring Diagrams

Diagram 1

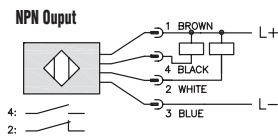
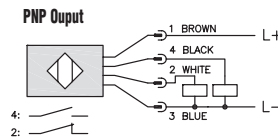


Diagram 2



Connector

M12 Connector

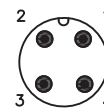


Diagram 3

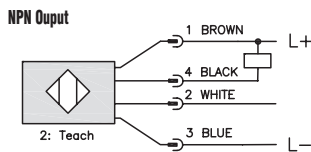
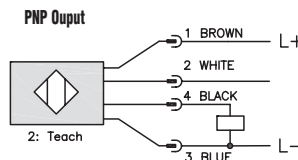


Diagram 4

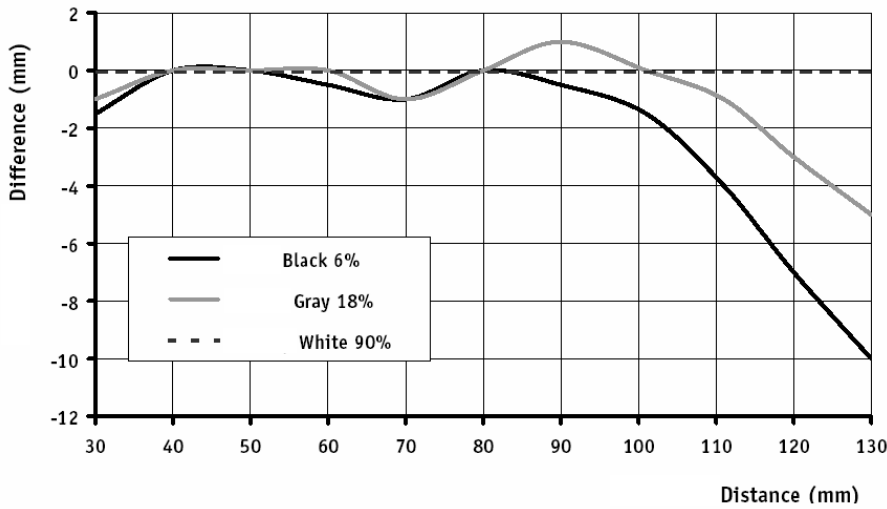


NO	Light ON
NC	Dark ON



FARS Series Photoelectric Sensors

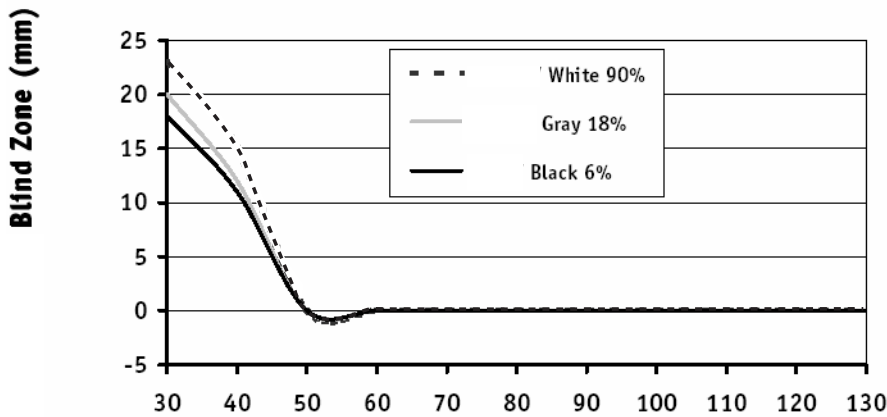
Black-White Differential Chart



Black-White Differential Graph

This graph shows the difference in distance between where the FARS series sensors detect a 90% reflective white card, versus a 6% reflective black test card under the same conditions. As the adjoining graph illustrates, the FARS series sensors provide practically a zero millimeter difference between the white and black target at a setup distance of 80 mm, 3 mm difference at a setup distance of 100 mm and 10 mm for a setup distance of 130 mm.

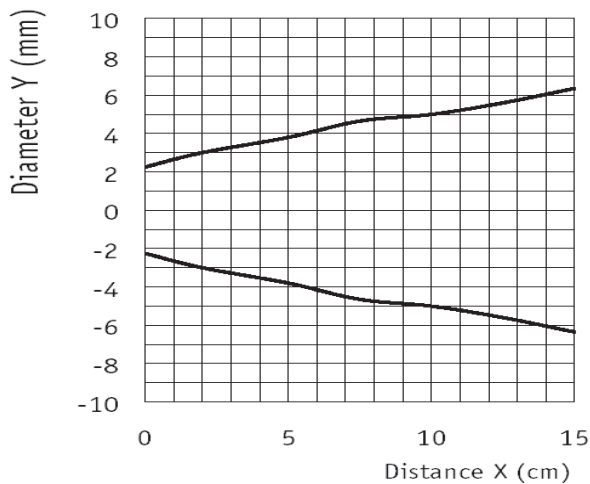
Blind zone chart



Blind Zone Graph

This graph shows the blind zone, which is where the FARS series sensors will not detect, depending on the setup distance. For setup sensing distance of 30 mm the FARS sensor will have a blind zone of 25 mm, so the effective sensing envelope is from 25 mm to 30 mm; but, as the setup sensing distance is increased, the blind zone decreases. The graph shows that from a setup sensing distance of 60 mm to 130 mm, the blind zone is zero millimeters.

Spot dimension chart



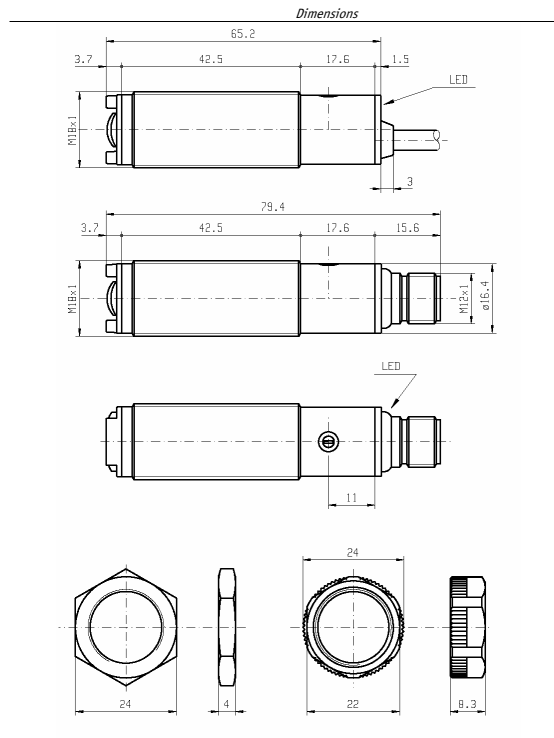
Switching Element Function		
	<i>Thru-beam and Reflective Models</i>	<i>Diffuse Reflective Models</i>
<i>Light on</i>	N.C.	N.O.
<i>Dark on</i>	N.O.	N.C.

FARS Series Photoelectric Sensors

FARS Series Photoelectric Sensors Specifications	
Type	18 mm Diffuse with Background Suppression
Sensing Distance	30 - 130 mm
Light Spot Diameter	13 mm @ 100 mm
Emission	Red Light (660 nm)
Sensitivity	Adjustable
Output Types	NPN / PNP Q/Qnot L-on/D-on, switch-selectable
Operating Voltage	10 to 30 VDC
No Load Supply Current	25 mA
Operating (Load) Current	100 mA
Off-state (Leakage) Current	≤ 10 μA @ 30 VDC
Voltage Drop	2V max @ 100 mA
Switching Frequency	1 kHz
Ripple	≤ 10%
Time Delay Before Availability (tv)	200 ms
Short-circuit Protection	Yes
Operating Temperature	13°F to 158°F (-25°C to +70°C)
Protection Degree(DIN 40050)	IP67
LED Indicators- Switching Status	Yellow Output/Short Circuit Status
Housing Material	Polybutylene Terephthalate (PBT)
Lens Material	Poly methyl methacrylate (PMMA),
Shock/Vibration	per IEC EN 60947-5-2
Tightening Torque	1 Nm (0.74 lb-ft)
Weight	28.576 g (1.008 oz)
Connectors	2m (6.5') axial cable; M12 (12mm) connector
Agency Approvals	UL, CE

Dimensions

(mm)



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

Accessories for 18mm Sensors

Axial Mounting Bracket

Axial mounting bracket for use with 18mm sensors. 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.

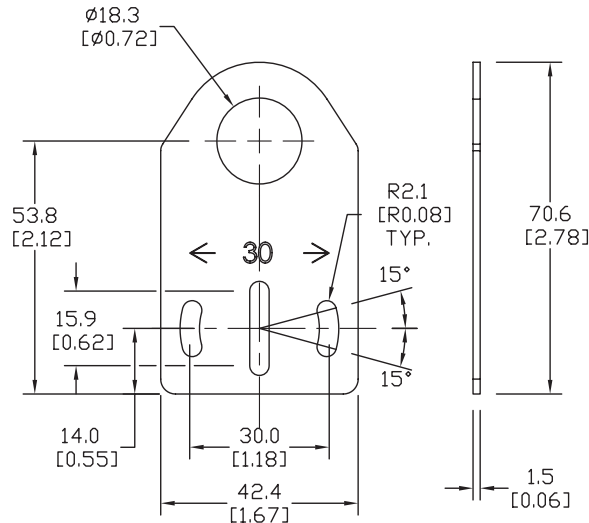
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb (g)
ST18A	\$2.00	Mounting bracket, axial, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06 (27.2)
ST18A7W	\$6.75	Mounting bracket, axial, 316L stainless steel. For use with 18mm sensors. 1/pk.	0.06 (27.2)



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.

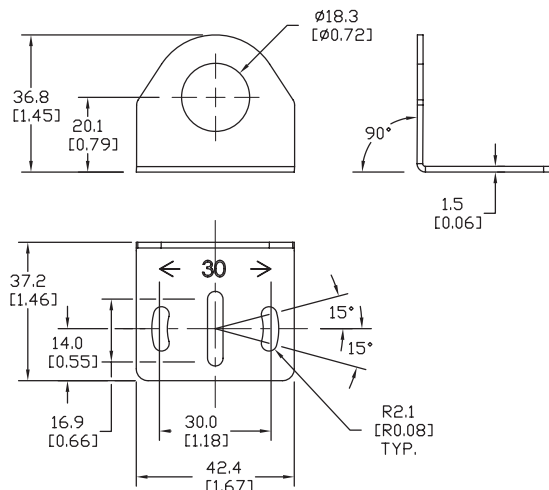
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb (g)
ST18C	\$2.00	Mounting bracket, right angle, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06 (27.2)
ST18C7W	\$6.75	Mounting bracket, right angle, 316L stainless steel. For use with 18mm sensors. 1/pk.	0.06 (27.2)



ST18C

Dimensions

mm [inches]



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Accessories for 18mm Sensors

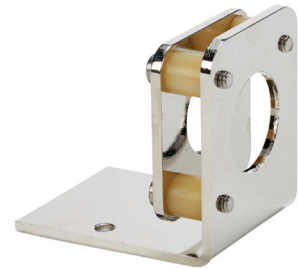
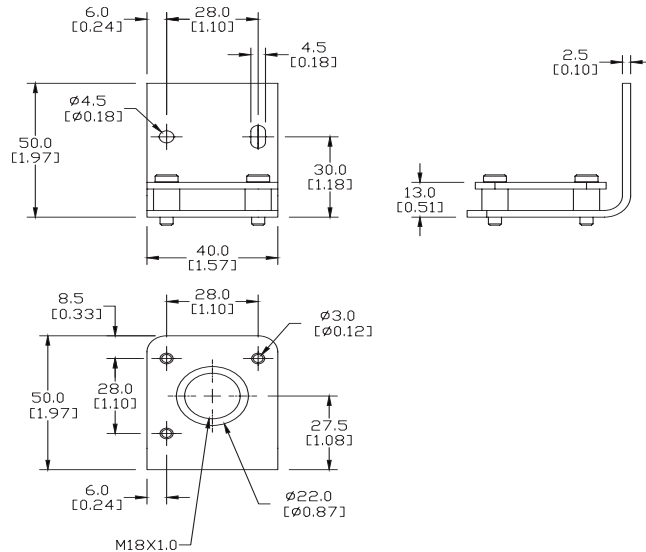
Right-angle Fine Tune Mounting Bracket

Mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel-plated steel. For use with 18mm sensors. Allows for fine tuning vertical and horizontal placement.

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight [lb]
OPT2036	\$32.50	Mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel-plated steel. For use with 18mm sensors.	0.02

Dimensions

mm [inches]



OPT2036

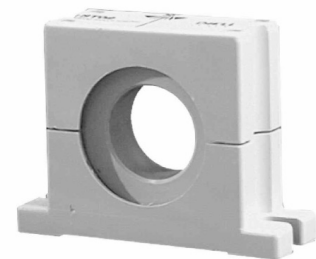
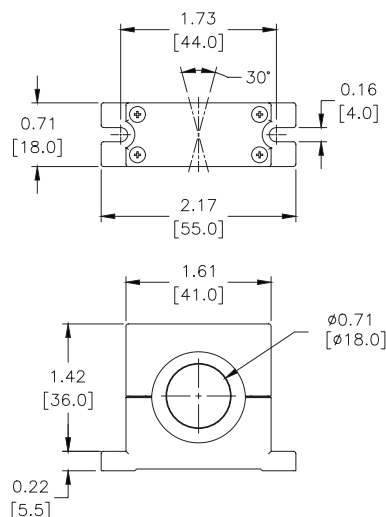
Swivel Mounting Bracket

Mounting bracket, ball swivel, plastic. For use with 18mm sensors. Has a ball-joint and set screws to adjust sensor orientation. Allows angular orientation up to 15 degrees (from center) in all directions for photoelectric sensors (Will not work with C18 series).

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight [lb]
ST02	\$9.00	Mounting bracket, ball swivel, plastic. For use with 18mm sensors.	0.06

Dimensions

mm [inches]



ST02

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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.

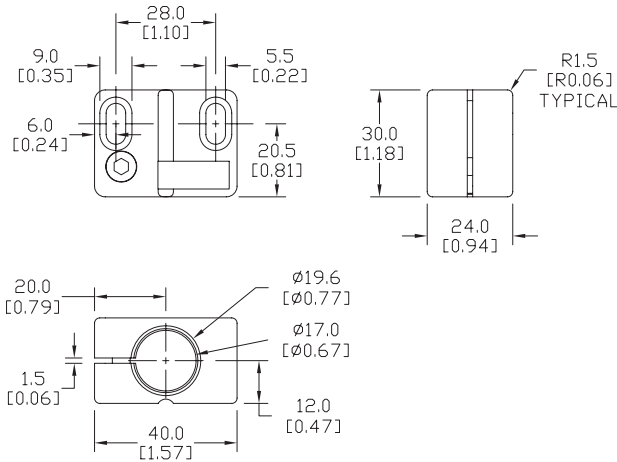


OPT2104, OPT2105

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb (g)
OPT2104	\$8.75	Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	0.06 (27.2)
OPT2105	\$8.75	Mounting bracket, right-angle, plastic. For use with 18mm sensors.	0.06 (27.2)

Dimensions

mm [inches]



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.



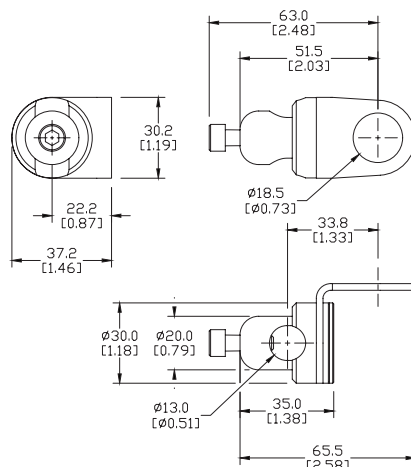
OPT2116, OPT2117

Accessories for 18mm Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight lb (g)
OPT2116	\$9.75	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 18mm sensors.	Aluminum	304 Stainless steel	0.15 (68.0)
OPT2117	\$17.50	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 18mm sensors.	304 Stainless steel	304 Stainless steel	0.28 (127.0)

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).

Dimensions

mm [inches]



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Mounting Rods

Mounting Rods

304 Stainless steel rods for mounting swivel brackets OPT2112 - OPT2127. Available in three lengths: 200mm, 300mm, and 500mm. 12mm diameter.

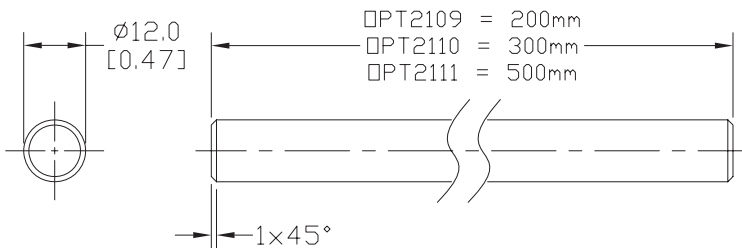
Mounting Rods for OPT2112-2127 Swivel Mounting Brackets			
Part Number	Price	Description	Weight lb (g)
OPT2109	\$11.00	Mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	0.41 (185.97)
OPT2110	\$13.50	Mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	0.60 (272.16)
OPT2111	\$17.50	Mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	0.98 (444.52)



OPT2109, OPT2110, OPT2111

Dimensions

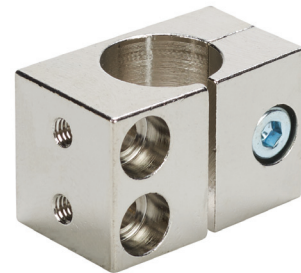
mm [inches]



Right-angle Mounting Bracket

Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.

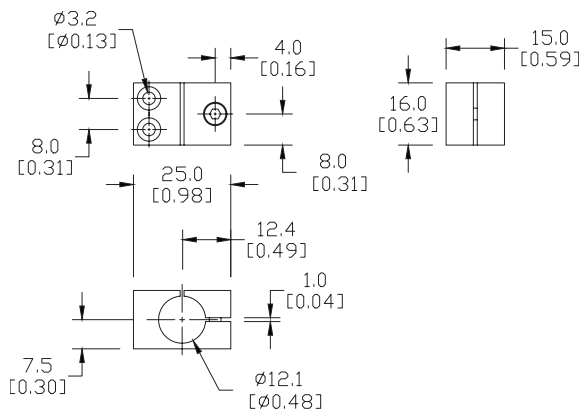
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight lb (g)
OPT2108	\$13.50	Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	0.07 (31.8)



OPT2108

Dimensions

mm [inches]



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