

FARS Series Photoelectric Sensors



M18 (18mm) 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
- 30/130mm 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	Through-Beam Component	Output Type	Connection Type	Wiring	
FARS-BN-OA		10 to 30 VDC	30 -130 mm adjustable	1kHz	Red light (660 nm)	N.O./N.C. background suppression	NPN N.O. + N.C. complementary	2 meter axial cable	Diagram 1	
FARS-BN-OE							NPN N.O. + N.C. complementary	M12 quick-disconnect (purchase cable separately)		
FARS-BP-OA							PNP N.O. + N.C. complementary	2 meter axial cable	Diagram 2	
FARS-BP-OE							PNP N.O. + N.C. complementary	M12 quick-disconnect (purchase cable separately)		
FARS-ON-OA							N.O./N.C. background suppression	NPN N.O./N.C. selectable	2 meter axial cable	Diagram 3
FARS-ON-OE								NPN N.O./N.C. selectable	M12 quick-disconnect (purchase cable separately)	
FARS-OP-OA								PNP N.O./N.C. selectable	2 meter axial cable	Diagram 4
FARS-OP-OE								PNP N.O./N.C. selectable	M12 quick-disconnect (purchase cable separately)	

Wiring Diagrams

Diagram 1

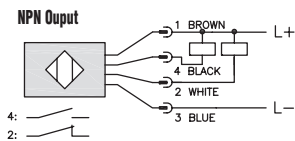
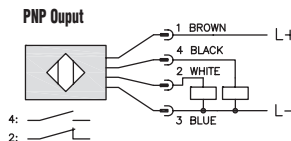


Diagram 2



Connector

M12 Connector

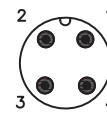


Diagram 3

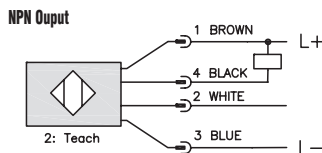
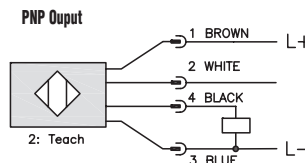


Diagram 4

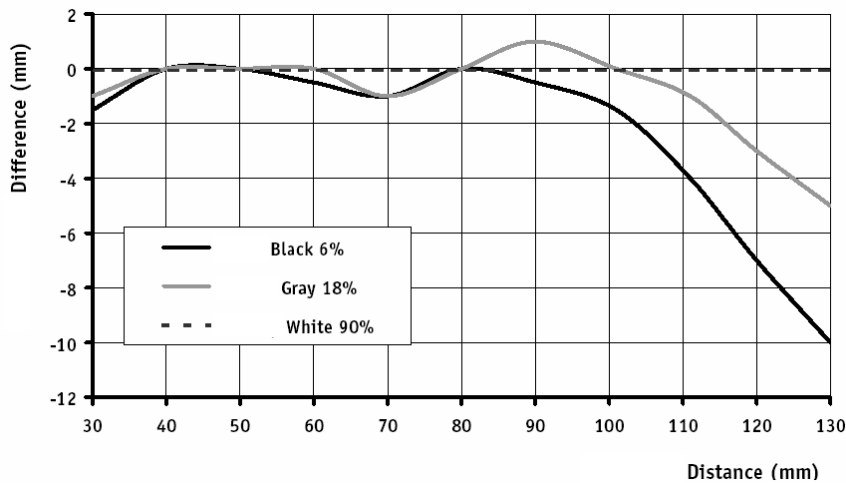


N.O.	Light ON
N.C.	Dark ON



FARS Series Photoelectric Sensors

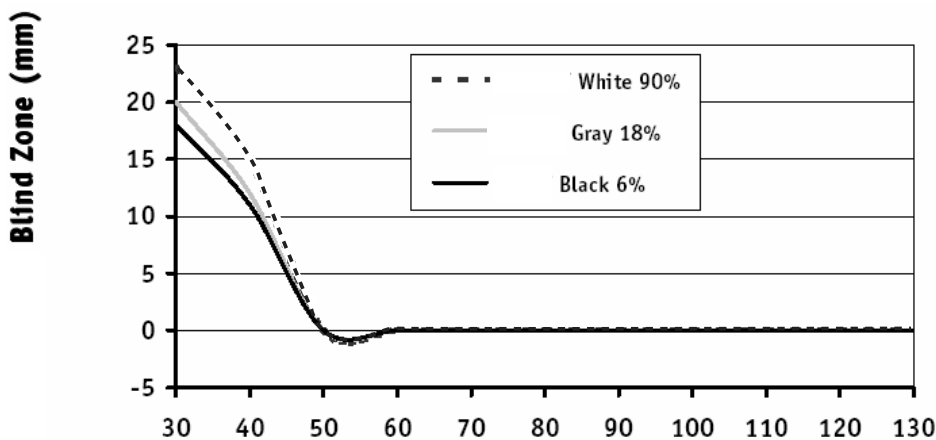
Black-White Differential Chart



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.

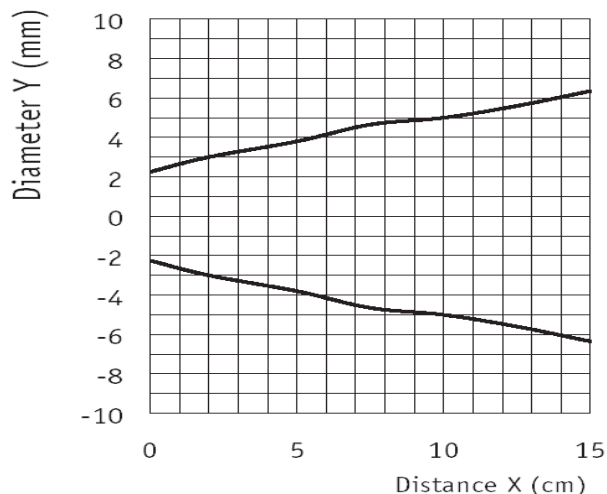
Blind zone chart



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



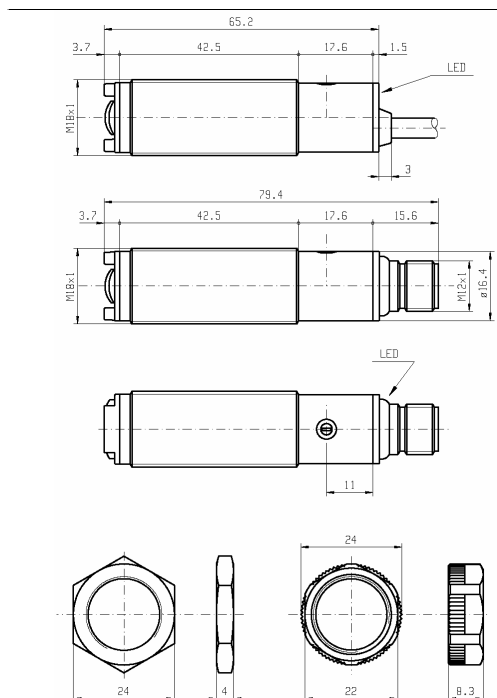
Switching Element Function		
	Through-beam and Reflective Models	Diffuse Reflective Models
Light on	N.C.	N.O.
Dark on	N.O.	N.C.

FARS Series Photoelectric Sensors

FARS Series Photoelectric Sensors Specifications	
Type	18mm Diffuse with Background Suppression
Sensing Distance	30 - 130mm
Light Spot Diameter	13mm @ 100mm
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	25mA
Operating (Load) Current	100mA
Off-state (Leakage) Current	≤ 10 μA @ 30 VDC
Voltage Drop	2V max @ 100mA
Switching Frequency	1kHz
Ripple	≤ 10%
Time Delay Before Availability (tv)	200ms
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 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.

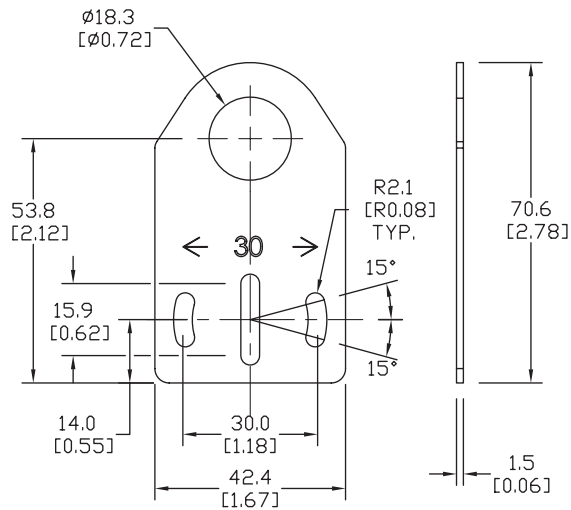


ST18A

Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb (g)
ST18A		Mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 (27.2)
ST18A7W		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.

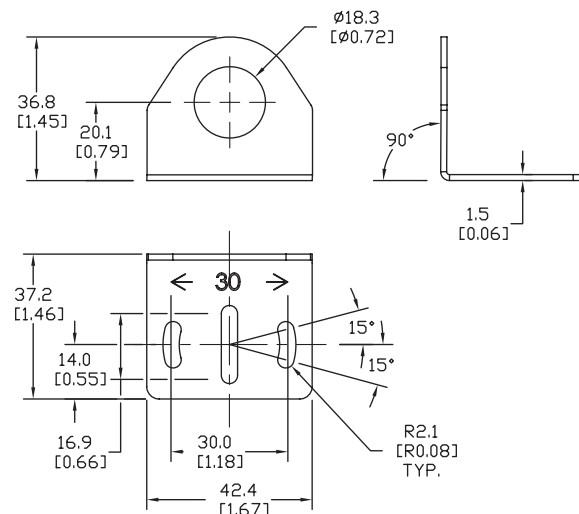


ST18C

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

Dimensions

mm [inches]

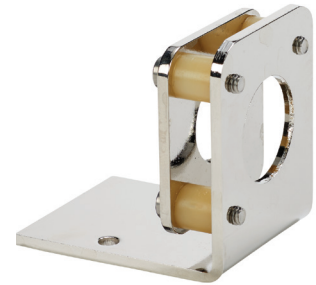


Accessories for 18mm Sensors

Right-angle 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	Drawing Link	Weight [lb]
OPT2036		Wenglor mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel plated steel. For use with 18mm sensors.	PDF	0.02

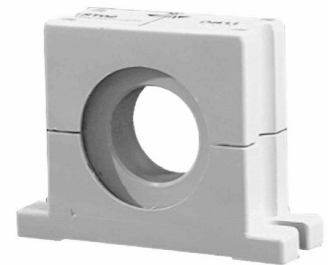


OPT2036

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).

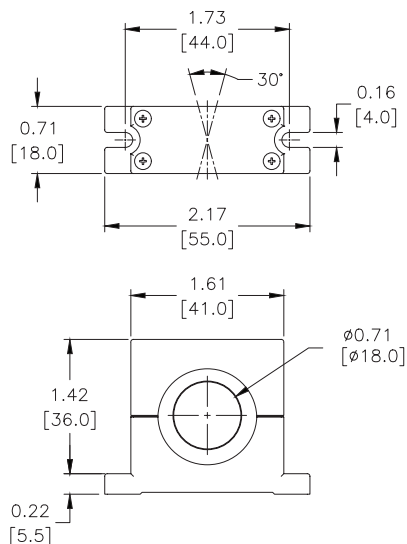
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight [lb]
ST02		Mounting bracket, ball swivel, plastic. For use with 18mm sensors.	0.06



ST02

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		Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	PDF	0.06 (27.2)
OPT2105		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		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		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).

Mounting Rods and Brackets

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	Drawing Link	Weight lb (g)
OPT2109		Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	PDF	0.41 (185.97)
OPT2110		Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	PDF	0.60 (272.16)
OPT2111		Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	PDF	0.98 (444.52)

Right-angle Mounting Bracket

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



Right-angle Mounting Brackets for 12mm Sensors				
Part Number	Price	Description	Drawing Link	Weight lb (g)
OPT2108		Wenglor mounting bracket, right-angle, nickel plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	PDF	0.07 (31.8)