

# FB Series Photoelectric Sensors



## M18 (18 mm) plastic - DC

- Low cost/ high performance
- 13 models available
- Diffuse, polarized reflective, and through-beam models
- Compact plastic housing
- M12 quick-disconnect; order cable separately
- Potentiometer range adjustment on diffuse models



FB Series Photoelectric Sensors Selection Chart							
Part Number	Price	Sensing Range	Output State	Logic	Connection	Wiring	Dimensions
<b>Diffuse</b>							
<b>FB6-LN-0E</b>	\$22.00	70 to 400 mm (2.76 to 15.75 in)	N.O.	NPN	M12 (12mm) connector	Diagram 1	Figure 1
<b>FB6-LP-0E</b>	\$22.00			PNP	M12 (12mm) connector	Diagram 2	
<b>FB6-DN-0E</b>	\$22.00		N.C.	NPN	M12 (12mm) connector	Diagram 1	
<b>FB6-DP-0E</b>	\$22.00			PNP	M12 (12mm) connector	Diagram 2	
<b>Polarized reflective*</b>							
<b>FBP-LN-0E</b>	\$22.00	2.5 m (8.2 ft)	N.C.	NPN	M12 (12mm) connector	Diagram 1	Figure 1
<b>FBP-LP-0E</b>	\$22.00			PNP	M12 (12mm) connector	Diagram 2	
<b>FBP-DN-0E</b>	\$22.00		N.O.	NPN	M12 (12mm) connector	Diagram 1	
<b>FBP-DP-0E</b>	\$22.00			PNP	M12 (12mm) connector	Diagram 2	
<b>Through-beam**</b>							
<b>FBR-LN-0E</b>	Receiver	\$20.50	N.C.	NPN	M12 (12mm) connector	Diagram 1	Figure 1
<b>FBR-LP-0E</b>	Receiver			PNP	M12 (12mm) connector	Diagram 2	
<b>FBR-DN-0E</b>	Receiver		N.O.	NPN	M12 (12mm) connector	Diagram 1	
<b>FBR-DP-0E</b>	Receiver			PNP	M12 (12mm) connector	Diagram 2	
<b>FBE-00-0E</b>	Emitter	\$19.00	—	Receiver dependent	M12 (12mm) connector	Diagram 3	—

\*Purchase reflectors separately.

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

## Wiring Diagrams

Diagram 1

NPN Output

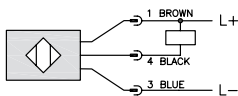


Diagram 2

PNPN Output

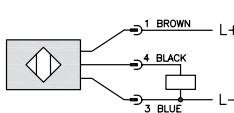
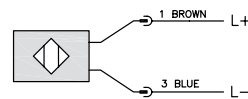


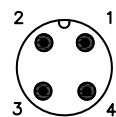
Diagram 3



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

## Connector

M12 Connector

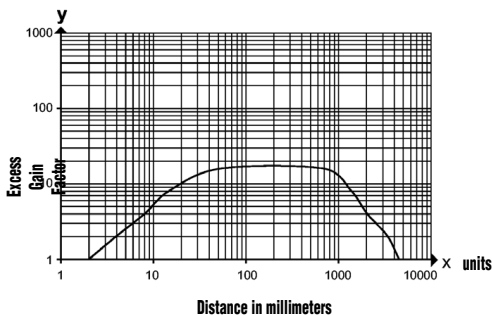


# FB Series Photoelectric Sensors

Specifications	Diffuse Models	Reflective Models	Through-Beam Models
<b>Type</b>	Diffuse reflection	Polarized reflection <sup>1</sup>	Through-beam <sup>2</sup>
<b>Sensing Distance</b>	400mm	2.5m	8m
<b>Light Spot Diameter</b>	25mm at maximum range	200mm at maximum range	600mm at maximum range
<b>Emission</b>	Red LED (visible), 645 nm		
<b>Sensitivity</b>	Adjustable 70 to 400 mm	Fixed	Fixed
<b>Output Type</b>	NPN or PNP - Light-on or Dark-on		
<b>Operating Voltage</b>	10-30 VDC		
<b>No Load Supply Current</b>	≤20 mA	≤20 mA	≤8 mA
<b>Operating (Load) Current</b>	≤200 mA		
<b>Off-state (Leakage) Current</b>	N/A		
<b>Voltage Drop</b>	<2.5V		
<b>Switching Frequency</b>	1kHz		
<b>Ripple</b>	N/A		
<b>Time Delay Before Availability (tv)</b>	N/A		
<b>Short-Circuit Protection</b>	Yes		
<b>Operating Temperature Range</b>	-25 to 60°C (-13° to 140°F)		
<b>Protection Degree (DIN 40050)</b>	IEC IP65	IEC IP67	
<b>LED Indicators - Switching Status</b>	Yellow (output energized)		
<b>Housing Material</b>	Acrylonitrile-butadienestyrene (ABS), black		
<b>Lens Material</b>	Polymethyl metacrylate (PMMA)		
<b>Shock /Vibration</b>	EN 60947-5-2 part 7, 4, 1/EN 60947-5-2 part 7, 4, 2		
<b>Tightening Torque</b>	2.25 Nm (1.66 lb-ft)		
<b>Weight</b>	8.50 g (0.3 oz)		
<b>Connection</b>	M12 connector. Two mounting hex nuts included		
<b>Agency Approvals</b>	cULus listed, UL file E328811, CE, RoHS		

Notes: <sup>1</sup> With standard diameter 84mm RL110 reflector. Purchase reflectors separately.  
<sup>2</sup> An emitter and receiver pair must be ordered for a complete sensor set.

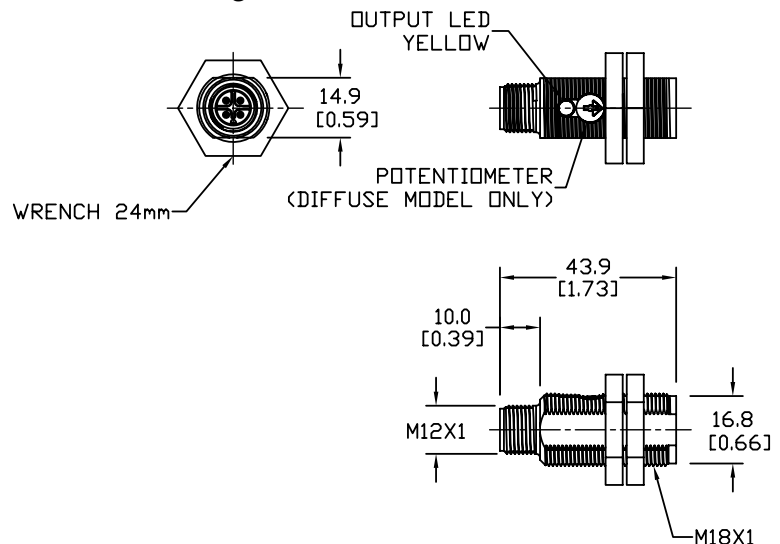
## Curves FBP series



## Dimensions

mm [inches]

Figure 1



# Accessories for 18mm Sensors

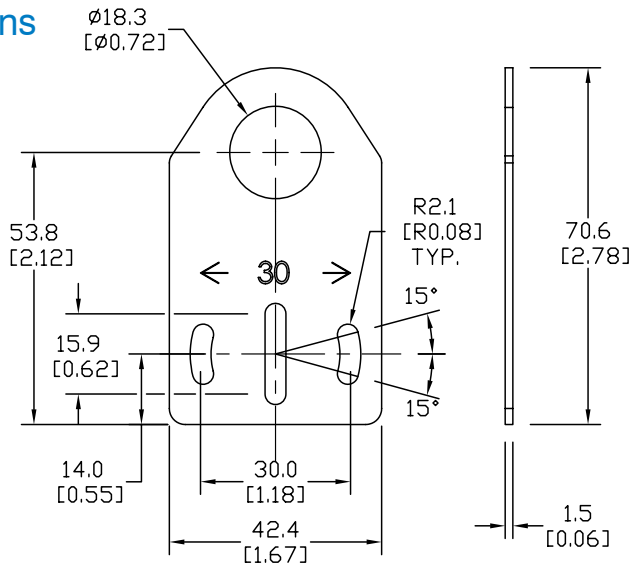
## Axial Mounting Bracket

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]
ST18A	\$2.00	Mounting bracket, axial, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06
ST18A7W	\$2.00	Mounting bracket, axial, 316L stainless steel. For use with 18mm sensors. 1/pk.	0.06

### Dimensions

mm [inches]



ST18A

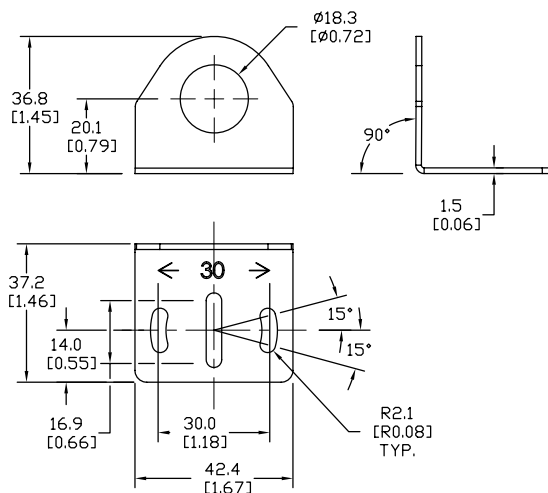
## Right-angle Mounting Bracket

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]
ST18C	\$2.00	Mounting bracket, right angle, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06
ST18C7W	\$2.00	Mounting bracket, right angle, 316L stainless steel. For use with 18mm sensors. 1/pk.	0.06

### Dimensions

mm [inches]



ST18C

See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete engineering drawings

# Accessories for 18mm Sensors

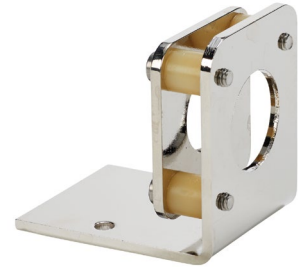
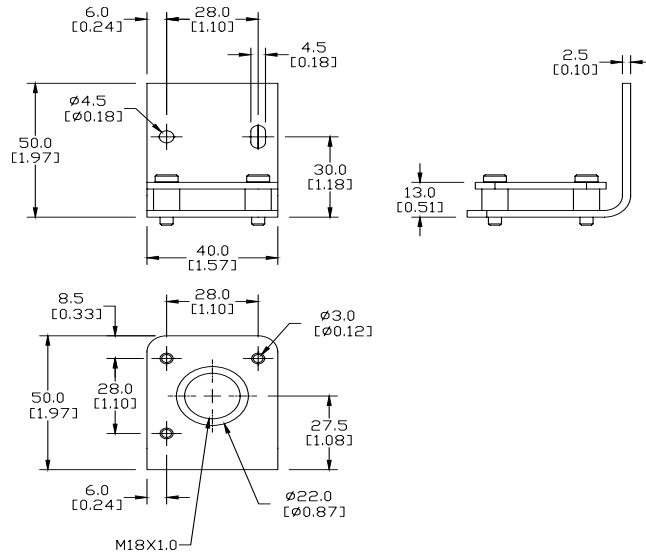
## Right-angle Fine Tune Mounting Bracket

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]
<b>OPT2036</b>	\$30.00	Mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel-plated steel. For use with 18mm sensors.	0.02

### Dimensions

mm [inches]



**OPT2036**

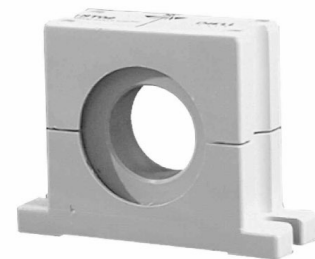
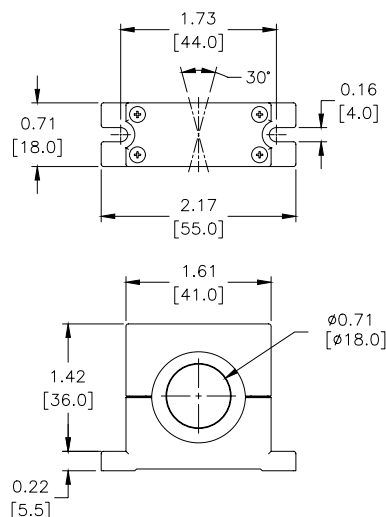
## Swivel Mounting Bracket

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]
<b>ST02</b>	\$2.00	Mounting bracket, ball swivel, plastic. For use with 18mm sensors.	0.06

### Dimensions

mm [inches]



**ST02**

See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete engineering drawings

# 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.

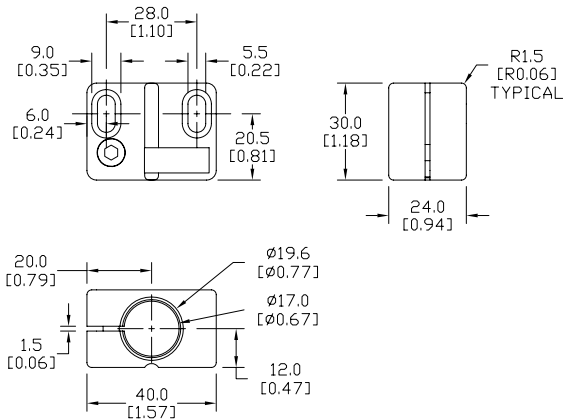
Accessories for 18mm Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight [lb]
<b>OPT2104</b>	\$8.25	Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	Aluminum	304 Stainless Steel	0.06
<b>OPT2105</b>	\$8.25	Mounting bracket, right-angle, plastic. For use with 18mm sensors.	304 Stainless Steel	304 Stainless Steel	0.06



**OPT2104, OPT2105**

## 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.

Accessories for 18mm Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight [lb]
<b>OPT2116</b>	\$9.25	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
<b>OPT2117</b>	\$16.50	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

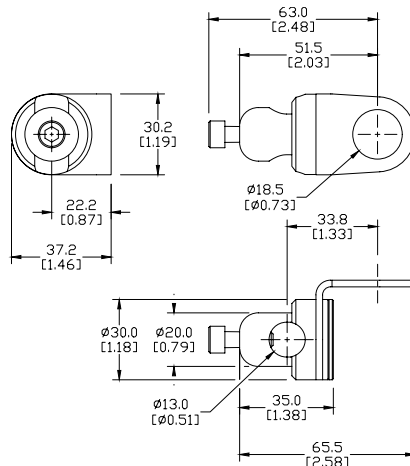


**OPT2116, OPT2117**

**Note:** 304 Stainless steel mounting rods sold separately: OPT2109 (200mm length), OPT2110 (300mm length), and OPT2111 (500mm length).

## Dimensions

mm [inches]



See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete engineering drawings

# Mounting Rods

## Mounting Rods

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

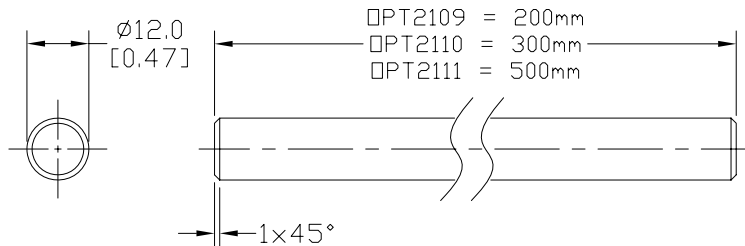
Mounting Rods for OPT2112-2127 Swivel Mounting Brackets			
Part Number	Price	Description	Weight [lb]
<b>OPT2109</b>	\$10.50	Mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	0.41
<b>OPT2110</b>	\$12.50	Mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	0.60
<b>OPT2111</b>	\$16.50	Mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	0.98



**OPT2109, OPT2110, OPT2111**

## Dimensions

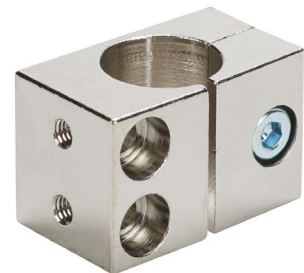
mm [inches]



## Right-angle Mounting Bracket

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

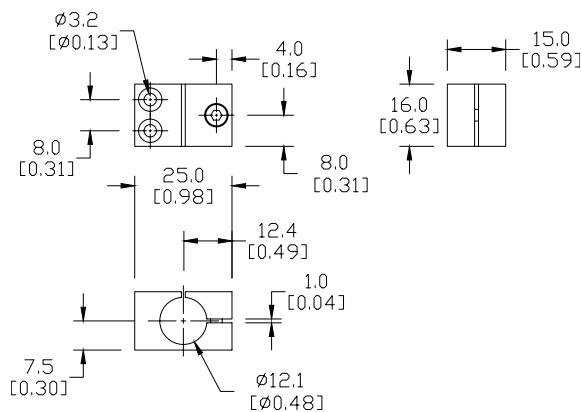
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight [lb]
<b>OPT2108</b>	\$12.50	Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	0.07



**OPT2108**

## Dimensions

mm [inches]



See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete engineering drawings