

FB Series Photoelectric Sensors



M18 (18mm) 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 |
| Diffuse | | | | | | | |
| FB6-LN-0E | | 70 to 400 mm (2.76 to 15.75 in) | N.O. | NPN | M12 (12mm) connector | Diagram 1 | Figure 1 |
| FB6-LP-0E | | | | PNP | M12 (12mm) connector | Diagram 2 | |
| FB6-DN-0E | | | N.C. | NPN | M12 (12mm) connector | Diagram 1 | |
| FB6-DP-0E | | | | PNP | M12 (12mm) connector | Diagram 2 | |
| Polarized reflective* | | | | | | | |
| FBP-LN-0E | | 2.5 m (8.2 ft) | N.C. | NPN | M12 (12mm) connector | Diagram 1 | Figure 1 |
| FBP-LP-0E | | | | PNP | M12 (12mm) connector | Diagram 2 | |
| FBP-DN-0E | | | N.O. | NPN | M12 (12mm) connector | Diagram 1 | |
| FBP-DP-0E | | | | PNP | M12 (12mm) connector | Diagram 2 | |
| Through-beam** | | | | | | | |
| FBR-LN-0E | Receiver | 8m (26.25 ft) | N.C. | NPN | M12 (12mm) connector | Diagram 1 | Figure 1 |
| FBR-LP-0E | Receiver | | | PNP | M12 (12mm) connector | Diagram 2 | |
| FBR-DN-0E | Receiver | | N.O. | NPN | M12 (12mm) connector | Diagram 1 | |
| FBR-DP-0E | Receiver | | | PNP | M12 (12mm) connector | Diagram 2 | |
| FBE-00-0E | Emitter | | — | — | Receiver dependent | M12 (12mm) connector | |

*Purchase reflectors separately.

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

Wiring Diagrams

Diagram 1

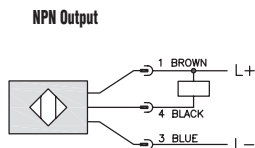


Diagram 2

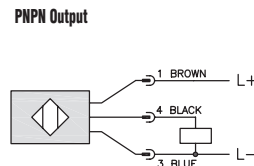
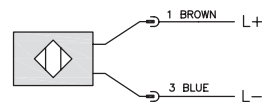


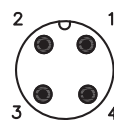
Diagram 3



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

Connector

M12 Connector

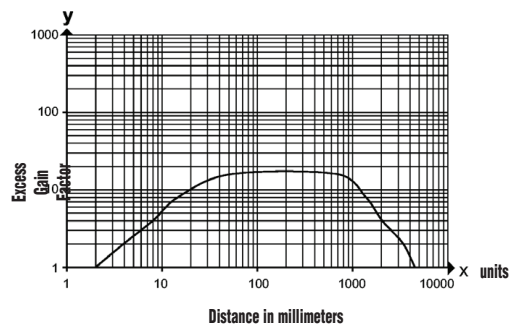


FB Series Photoelectric Sensors

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

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

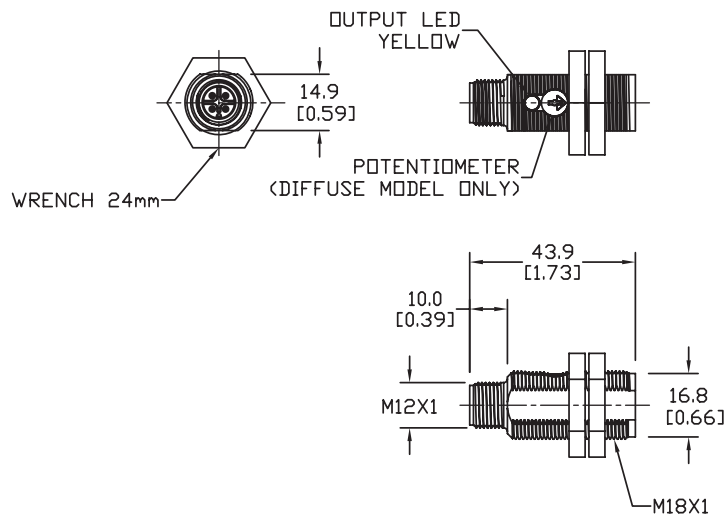
Curves FBP series



Dimensions

mm [inches]

Figure 1



Accessories for 18mm Sensors

Axial Mounting Bracket

Axial mounting bracket 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.

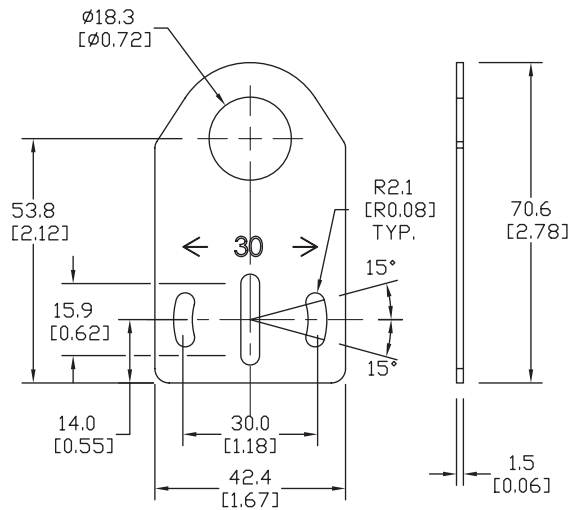


ST18A

| 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.

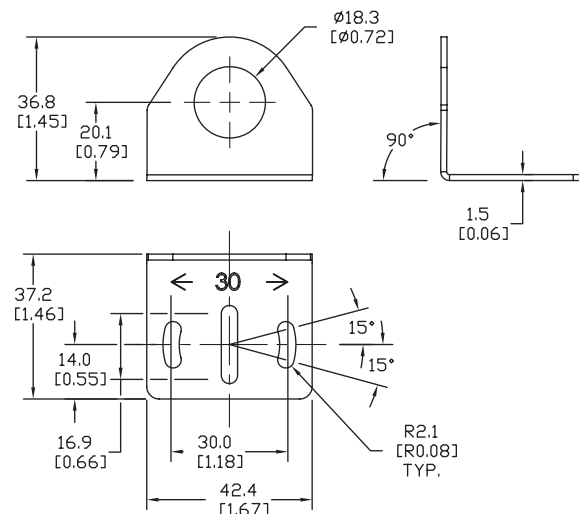


ST18C

| 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]

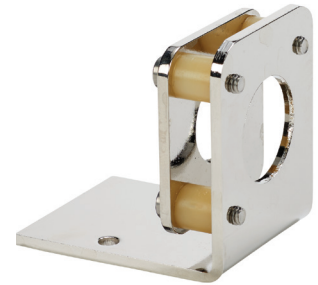


Accessories for 18mm Sensors

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 |

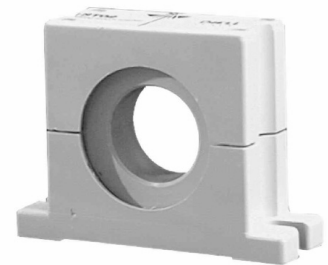


OPT2036

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).

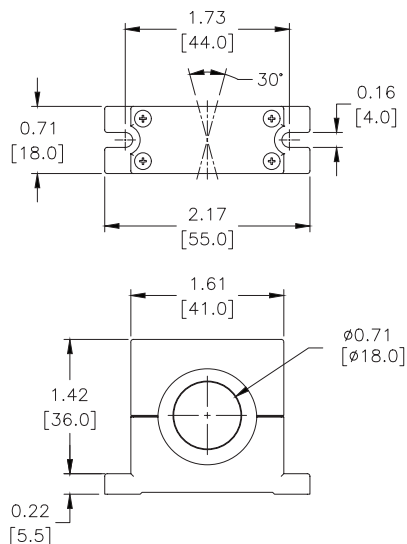
| Accessories for 18mm Sensors | | | |
|------------------------------|-------|--|-------------|
| Part Number | Price | Description | Weight [lb] |
| ST02 | | Mounting bracket, ball swivel, plastic. For use with 18mm sensors. | 0.06 |



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) |