

# SSF Series Fiber Photoelectric Amplifiers



## M18 (18mm) plastic with Teach function - DC

- Sensitivity adjustment using Teach button
- NPN or PNP, Light-on/Dark-on selectable outputs
- Red LED with visible spot
- IP67 rated



### SSF Series Fiber Photoelectric Amplifier Selection Chart

Part Number	Price	Sensing Range	Output State	Logic	Connection	Wiring	Dimensions
SSF-0N-0A	\$:,08[t:	Optical fiber dependent	N.O./N.C. selectable	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1
SSF-0N-0E	\$:,08[u:				M12 [12mm] connector		Figure 2
SSF-0P-0A	\$:,08[v:			PNP	2m [6.5 ft] axial cable	Diagram 2	Figure 1
SSF-0P-0E	\$:,08[x:				M12 [12mm] connector		Figure 2

## Wiring Diagrams

Diagram 1

PNP Output

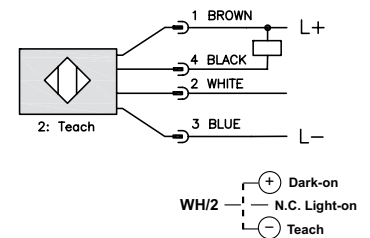
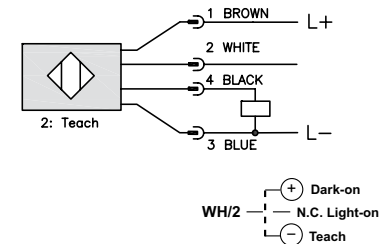


Diagram 2

PNP Output



### Connector

M12 Connector



Specifications		
Type	SSF-0N-0*	SSF-0P-0*
Sensing Distance	See Optical Fibers Table	
Light Spot Diameter	N/A	
Emission	Red LED	
Sensitivity	Teach button	
Output Type	NPN Light-on or Dark-on Selectable	PNP Light-on or Dark-on Selectable
Operating Voltage	10-30VDC	
No-load Supply Current	≤20mA	
Load Current	≤100mA	
Leakage Current	≤10μA	
Voltage Drop	2V maximum	
Switching Frequency	800Hz	
Ripple	≤10%	
Time Delay Before Availability (tv)	150ms	
Short-Circuit Protection	Yes (switch auto-resets after overload is removed)	
Temperature	-25 to 70°C [-13 to 158°F]	
Protection Degree	IP67	
LED Output Indicator	Yellow (output energized)	
Housing Material	PBT	
Lens Materials	Acrylic	
Shock/Vibration	See terminology section	
Tightening Torque	40 Nm [29 lb-ft]	
Weight (cable/connector)	100g [3.53oz]	
Connectors	2m [6.5 ft] axial cable; M12 [12mm] connector	
Agency Approvals	CE	

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

## Dimensions

(mm)

Figure 1

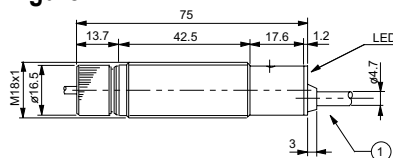
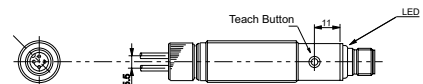
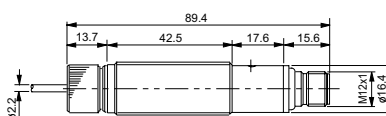


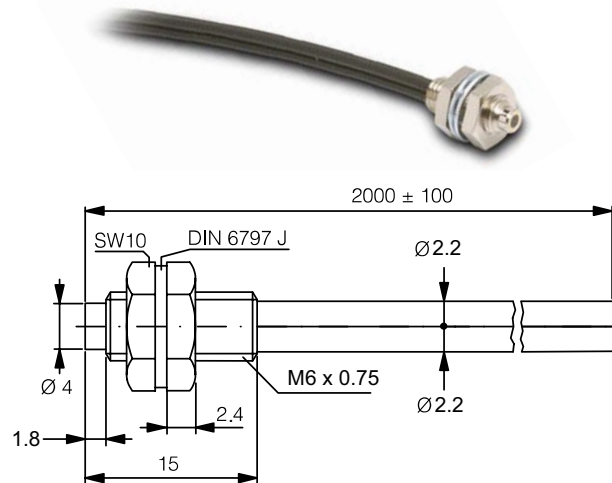
Figure 2



# Cuttable Optical Fibers (2.2 mm Diameter)

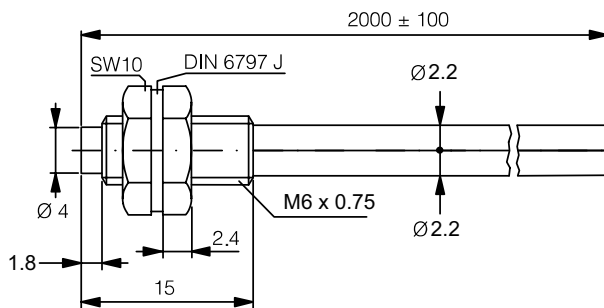
## CF-DB1-20 diffuse reflection

CF-DB1-20 Specifications	
Part Number	CF-DB1-20
Price	\$08_0:
Optical Fiber Core Ø	1 mm [0.039 in]
Sensing Distance with DFT and DFP series	200mm [7.87in]
Fiber Length (L)	2.0 m [78.74 in]
Fiber Bending Radius	25mm [0.98 in]
Free Cut	Yes
Head Size	M6
Thread Pitch	0.75 mm
Protection Degree	IEC IP67
Agency Approvals	UL file 328811
Temperature Range	-25 to 70°C [-13 to 158°F]
Fiber Materials	PMMA
Sleeve Materials	Polyethylene
Head Materials	Nickel-plated brass



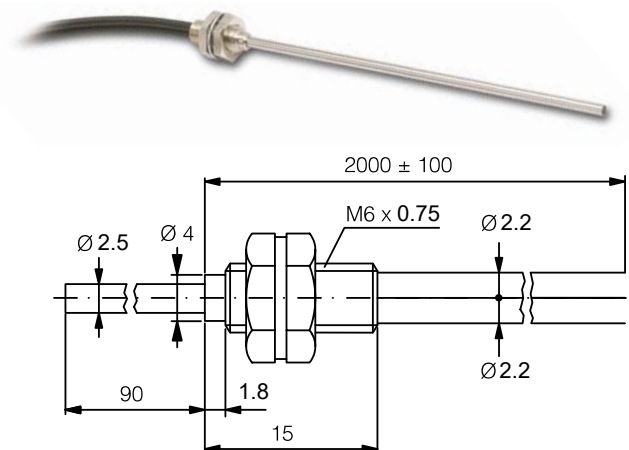
## CF-DB2-20 diffuse reflection

CF-DB2-20 Specifications	
Part Number	CF-DB2-20
Price	\$08_1:
Optical Fiber Core Ø	1.5 mm [0.06 in]
Sensing Distance with DFT and DFP Series	260mm [10.23 in]
Fiber Length (L)	2.0 m [78.74 in]
Fiber Bending Radius	40mm [1.57 in]
Free Cut	Yes
Head Size	M6
Thread Pitch	0.75 mm
Protection Degree	IEC IP67
Agency Approvals	UL file 328811
Temperature Range	-25 to 70°C [-13 to 158°F]
Fiber Materials	PMMA
Sleeve Materials	Polyethylene
Head Materials	Nickel-plated brass



## CF-DB3-20 diffuse reflection

CF-DB3-20 Specifications	
Part Number	CF-DB3-20
Price	\$08_2:
Optical Fiber Core Ø	1 mm [0.039 in]
Sensing Distance with DFT and DFP Series	200 mm [7.87 in]
Fiber Length (L)	2.0 m [78.74 in]
Fiber Bending Radius	25 mm [0.98 in]
Bendable light-outlet tube	Yes, 25mm [0.98 in] radius
Free Cut	Yes
Head Size	M6
Thread Pitch	0.75 mm
Protection Degree	IEC IP67
Agency Approvals	UL file 328811
Temperature Range	-25 to 70°C [-13 to 158°F]
Fiber Materials	PMMA
Sleeve Materials	Polyethylene
Head Materials	Nickel-plated brass

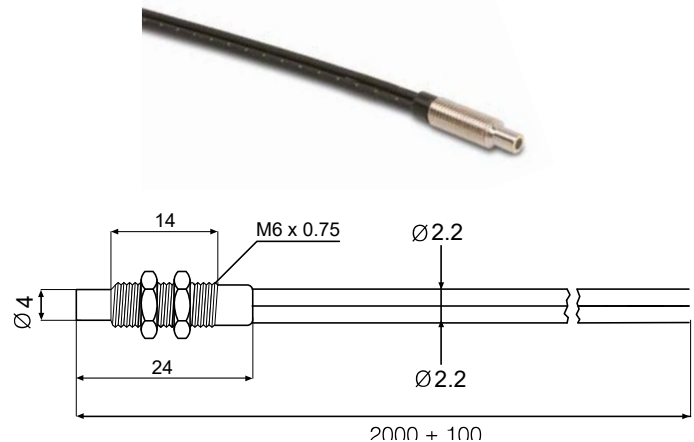


# Cuttable Optical Fibers (2.2 mm Diameter)

## CF-CB1-20 Diffuse Reflection

### CF-CB1-20 Specifications

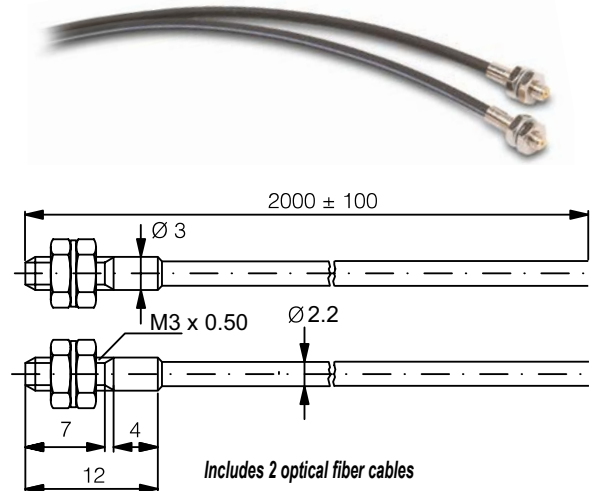
<b>Part Number</b>	CF-CB1-20
<b>Price</b>	\$,08[.:
<b>Optical Fiber Core Ø</b>	1mm [0.039 in]
<b>Sensing Distance with SSF Series</b>	50mm [1.97 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in]
<b>Fiber Bending Radius</b>	25mm [0.98 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M6
<b>Thread Pitch</b>	0.75 mm
<b>Protection Degree</b>	IEC IP67
<b>Temperature Range</b>	-40 to 70°C [-40 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass



## CF-TB1-20 Through-beam

### CF-TB1-20 Specifications

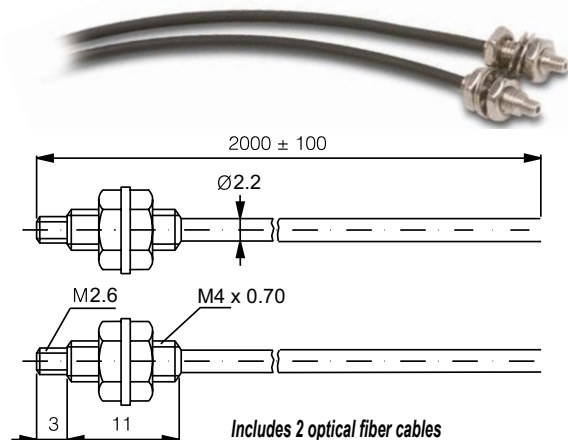
<b>Part Number</b>	CF-TB1-20
<b>Price</b>	\$08_5:
<b>Optical Fiber Core Ø</b>	0.5 mm [0.02 in]
<b>Sensing Distance with DFT and DFP Series</b>	200mm [7.87 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in] ea. piece
<b>Fiber Bending Radius</b>	25mm [0.98 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M3
<b>Thread Pitch</b>	0.5 mm
<b>Protection Degree</b>	IEC IP67
<b>Agency Approvals</b>	UL file 328811
<b>Temperature Range</b>	-25 to 70°C [-13 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass



## CF-TB2-20 Through-beam

### CF-TB2-20

<b>Part Number</b>	CF-TB2-20
<b>Price</b>	\$08_6:
<b>Optical Fiber Core Ø</b>	1mm [0.039 in]
<b>Sensing Distance with DFT and DFP Series</b>	700mm [27.56 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in] ea. piece
<b>Fiber Bending Radius</b>	25mm [0.98 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M4
<b>Thread Pitch</b>	0.7 mm
<b>Protection Degree</b>	IEC IP67
<b>Agency Approvals</b>	UL file E328811
<b>Temperature Range</b>	-25 to 70°C [-13 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass

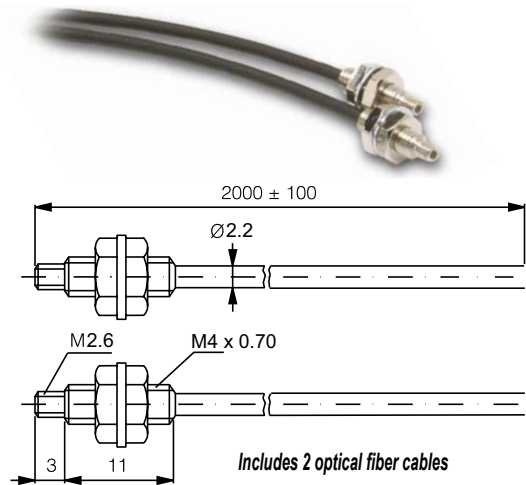


# Cuttable Optical Fibers (2.2 mm Diameter)

## CF-TB3-20 Through-beam

### CF-TB3-20 Specifications

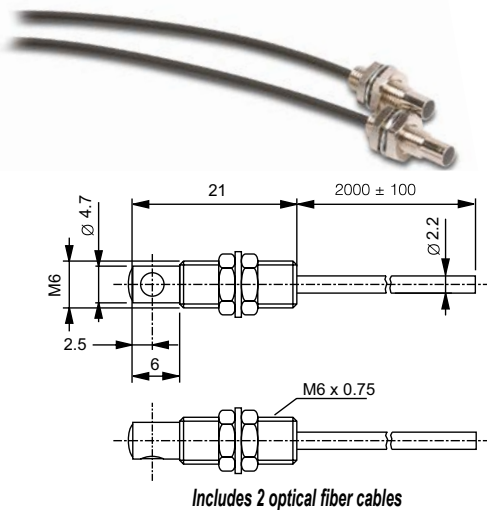
<b>Part Number</b>	CF-TB3-20
<b>Price</b>	\$08_7:
<b>Optical Fiber Core Ø</b>	1.5 mm [0.06 in]
<b>Sensing Distance with DFT and DFP Series</b>	900mm [35.43 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in] ea. piece
<b>Fiber Bending Radius</b>	40mm [1.57 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M4
<b>Thread Pitch</b>	0.7 mm
<b>Protection Degree</b>	IEC IP67
<b>Agency Approvals</b>	UL file E328811
<b>Temperature Range</b>	-25 to 70°C [-13 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass



## CF-TB4-20 90° Through-beam

### CF-TB4-20 Specifications

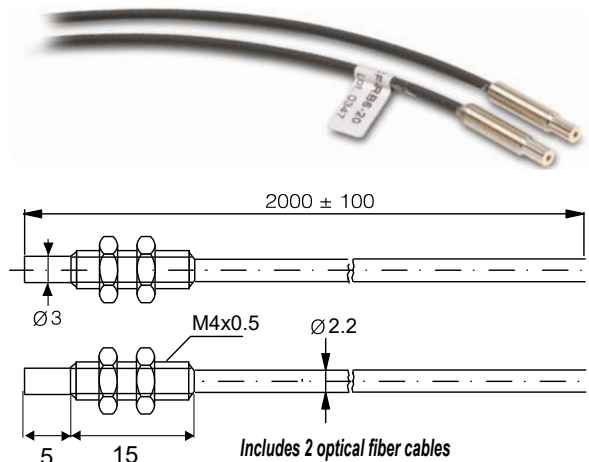
<b>Part Number</b>	CF-TB4-20
<b>Price</b>	\$08_8:
<b>Optical Fiber Core Ø</b>	1.0 mm [0.039 in]
<b>Sensing Distance with DFT and DFP Series</b>	1800mm [70.87 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in] ea. piece
<b>Fiber Bending Radius</b>	25mm [0.98 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M6
<b>Thread Pitch</b>	0.75 mm
<b>Protection Degree</b>	IEC IP67
<b>Agency Approvals</b>	UL file E328811
<b>Temperature Range</b>	-25 to 70°C [-13 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass



## CF-RB6-20 Through beam

### CF-RB6-20 Specifications

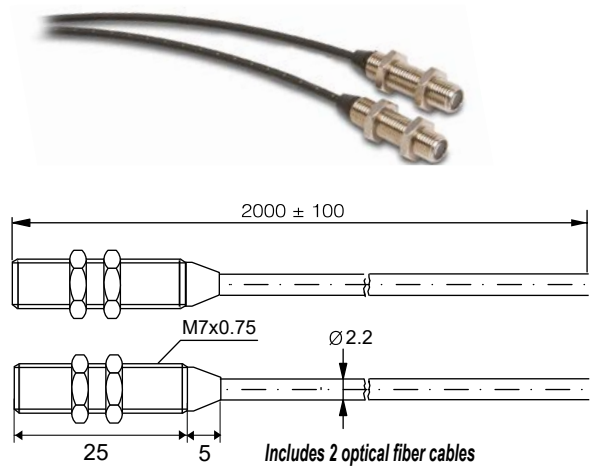
<b>Part Number</b>	CF-RB6-20
<b>Price</b>	\$08_3:
<b>Optical Fiber Core Ø</b>	1.0 mm [0.039 in]
<b>Sensing Distance with SSF Series</b>	120mm [4.72 in]
<b>Fiber Length (L)</b>	2.0 m [78.74 in] ea. piece
<b>Fiber Bending Radius</b>	25mm [0.98 in]
<b>Free Cut</b>	Yes
<b>Head Size</b>	M4
<b>Thread Pitch</b>	0.50 mm
<b>Protection Degree</b>	IEC IP67
<b>Temperature Range</b>	-40 to 70°C [-40 to 158°F]
<b>Fiber Materials</b>	PMMA
<b>Sleeve Materials</b>	Polyethylene
<b>Head Materials</b>	Nickel-plated brass



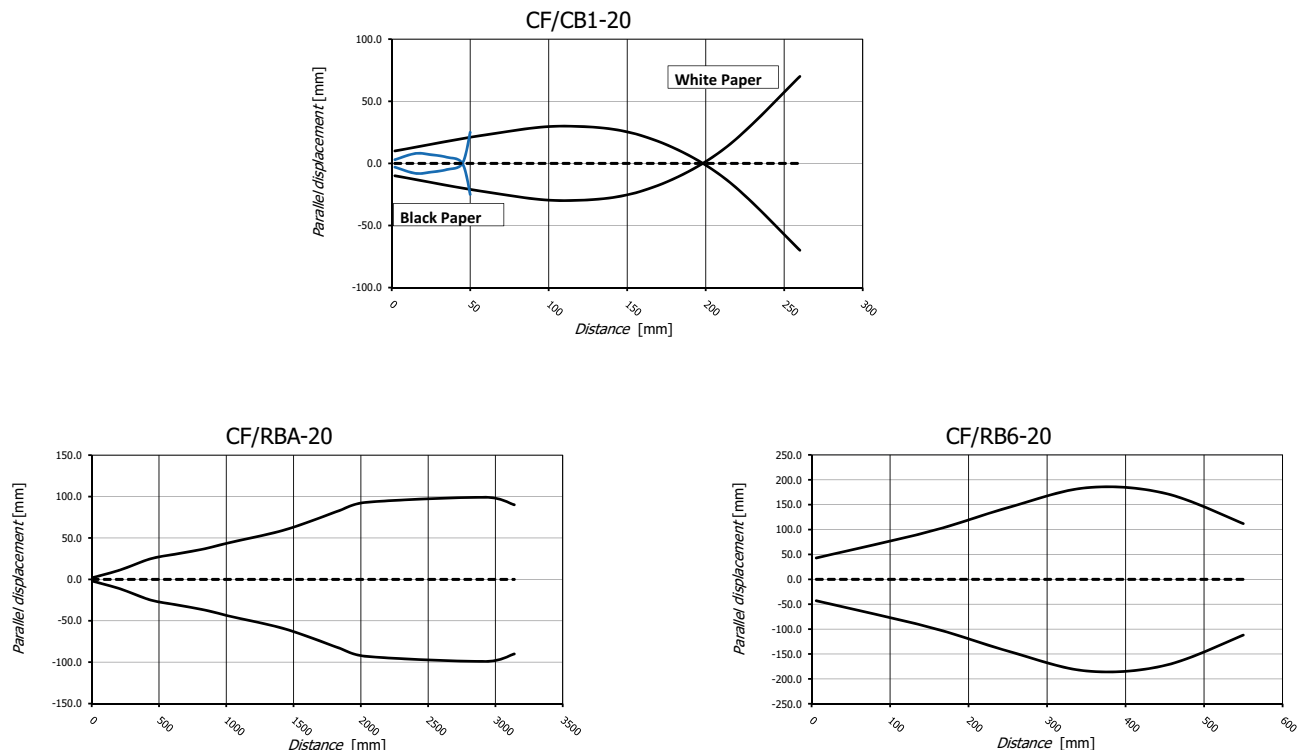
# Cuttable Optical Fibers (2.2 mm Diameter)

## CF-RBA-20 Through-beam with Lenses

CF-RBA-20 Specifications	
Part Number	CF-RBA-20
Price	\$08.4:
Optical Fiber Core Ø	1.0 mm [0.039 in]
Sensing Distance with SSF series	1200mm [47.24 in]
Fiber Length (L)	2.0 m [78.74 in] ea. piece
Fiber Bending Radius	25mm [0.98 in]
Free Cut	Yes
Head Size	M7
Thread Pitch	0.75 mm
Protection Degree	IEC IP67
Temperature Range	-40 to 70°C [-40 to 158°F]
Fiber Materials	PMMA
Sleeve Materials	Polyethylene
Head Materials	Nickel-plated brass



## Characteristic Curves



# 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.

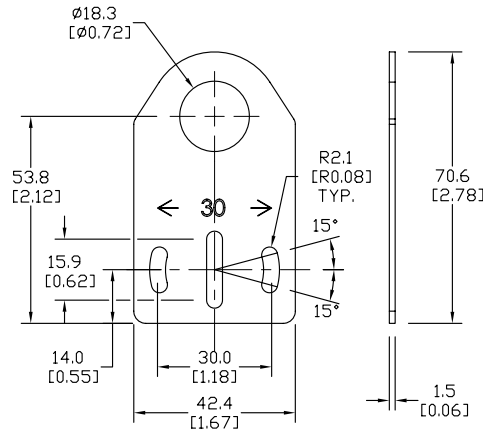
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18A</b>	\$97.:	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18A7W</b>	\$980:	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18A**

## Dimensions

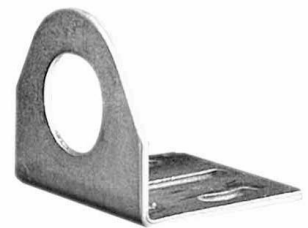
mm [inches]



## 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.

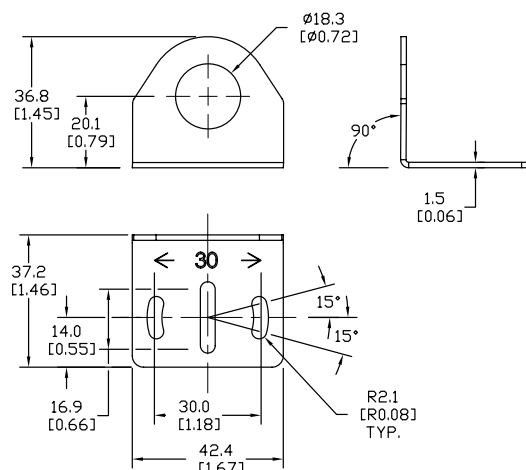
Accessories for 18mm Sensors			
Part Number	Price	Description	Weight lb [g]
<b>ST18C</b>	\$981:	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
<b>ST18C7W</b>	\$982:	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 18mm sensors.	0.06 [27.2]



**ST18C**

## 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>	\$;-1nlt:	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>	\$;-1nlu:	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>	\$;-1n#:	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>	\$;-1nll:	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 [7.87 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)
<a href="#">OPT2109</a>	\$1nn9:	Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	<a href="#">PDF</a>	0.41 [185.97]
<a href="#">OPT2110</a>	\$1nna:	Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	<a href="#">PDF</a>	0.60 [272.16]
<a href="#">OPT2111</a>	\$1nnb:	Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	<a href="#">PDF</a>	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]
<a href="#">OPT2108</a>	\$-1nly:	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	<a href="#">PDF</a>	0.07 [31.8]

