

PFM Series IP69K-rated Proximity Sensors

12 mm stainless steel - DC



PFM1-BN-1H

- 10 models available
- 12 mm diameter
- 316 L stainless steel housing
- M12 quick-disconnect plug with gold-plated pins (purchase cable separately)
- Complete overload protection
- IP69K rated for food and beverage applications
- M12 mounting hex nuts included
- Lifetime warranty



PFM Series Food and Beverage DC Inductive Prox Selection Chart								
Part Number	Price	Sensing Range	Housing	Output State	Logic	Connection	Wiring	Dimensions
Standard								
PFM1-BN-1H	\$42.50	0 to 2 mm (0 to 0.08 in)	Shielded	NO/NC	NPN	M12 (12 mm) connector	Diagram 1	Figure 2
PFM1-BP-1H	\$42.50				PNP	M12 (12 mm) connector	Diagram 2	Figure 2
PFM1-BN-2H	\$42.50	0 to 4 mm (0 to 0.157 in)	Unshielded	NO/NC	NPN	M12 (12 mm) connector	Diagram 1	Figure 2
PFM1-BP-2H	\$42.50				PNP	M12 (12 mm) connector	Diagram 2	Figure 2
Extended								
PFM1-BN-3H	\$42.50	0 to 4 mm (0 to 0.157 in)	Shielded	NO/NC	NPN	M12 (12 mm) connector	Diagram 1	Figure 2
PFM1-BP-3H	\$42.50				PNP	M12 (12 mm) connector	Diagram 2	Figure 2
PFM1-AP-3H	\$35.50			NO	PNP	M12 (12 mm) connector	Diagram 3	Figure 1
PFM1-BN-4H	\$42.50	0 to 8 mm (0 to 0.315 in)	Unshielded	NO/NC	NPN	M12 (12 mm) connector	Diagram 2	Figure 2
PFM1-BP-4H	\$42.50				PNP	M12 (12 mm) connector	Diagram 2	Figure 2
PFM1-AP-4H	\$35.50	0 to 7 mm (0 to 0.275 in)		NO	PNP	M12 (12 mm) connector	Diagram 3	Figure 1

Wiring diagrams

Diagram 1

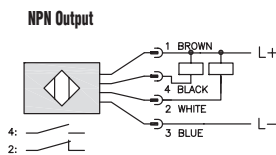
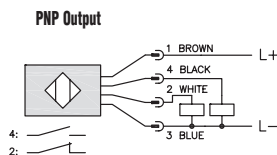


Diagram 2



Connector

M12 connector

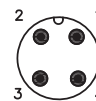
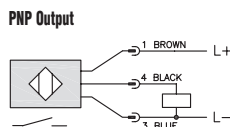


Diagram 3



NOTE: CLASS 2 POWER SUPPLY REQUIRED

PFM Series IP69K-rated Proximity Sensors

PFM Series Specifications	Standard		Extended			
Mounting Type	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Nominal Sensing Distance	2 mm (0.08 in)	4 mm (0.157 in)	4 mm (0.157 in)	8 mm (0.315 in)	4 mm (0.157 in)	7 mm (0.275 in)
Operating Distance	NA					
Material Correction Factors	See the Material influence table					
Output Type	NPN or PNP/4-wire, NO/NC				PNP, NO only	
Operating Voltage	10 - 30 VDC				10 - 36 VDC	
No-load Supply Current	≤15 mA				≤10 mA	
Operating (Load) Current	≤200 mA				≤100 mA	
Off-state (Leakage) Current	≤10 µA				NA	
Voltage Drop	≤2.0 V				≤2.5 V	
Switching Frequency	2000 Hz				800 Hz	
Differential Travel (% of Nominal Distance)	1 - 20%				3 - 15%	
Repeat Accuracy	5%				10%	
Ripple	≤10%				NA	
Time Delay Before Availability (tv)	50 ms				30 ms	
Reverse Polarity Protection	Yes					
Short-Circuit Protection	Yes (switch auto-resets after overload is removed)					
Operating Temperature	-40° to 80°C (-40° to 176°F), Short exposure (15 minutes) to 100°C (212°F) during cleaning processes				0° to 100°C (32° to 212°F)	
Temperature Drift	≤10% Sr					
Protection Degree (DIN 40050)	IEC IP67, IP68, IP69K				IEC IP68, IP69K	
Indication/Switch Status	Normally Open output energized - Yellow					
Housing Material	316 L stainless steel					
Sensing Face Material	PPS (FDA certified)				PEEK (Polyether Ether Ketone)	
Shock/Vibration	See Proximity Sensor Terminology					
Tightening Torque	20 Nm (14.75 lb-ft)				20 Nm (14.75 lb-ft)	
Weight	35 g (1.23 oz)				25 g (0.88 oz)	
Connection	M12 plug with gold-plated pins					
Agency Approvals	UL file E187310, CE, ECOLAB, RoHS				UL file E328811, CE, ECOLAB, RoHS	

* Part numbers PFK1-AP-3H and PFK1-AP-4H have no NO PNP outputs only.

Dimensions

mm [inches]

Figure 1

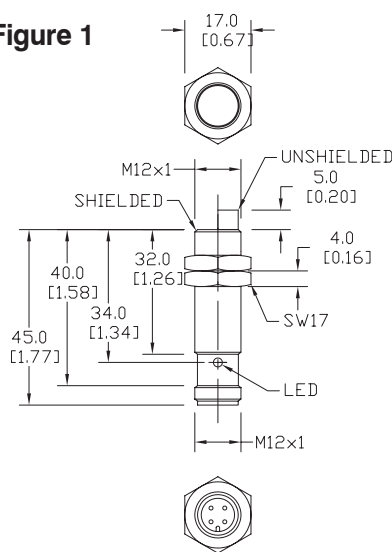
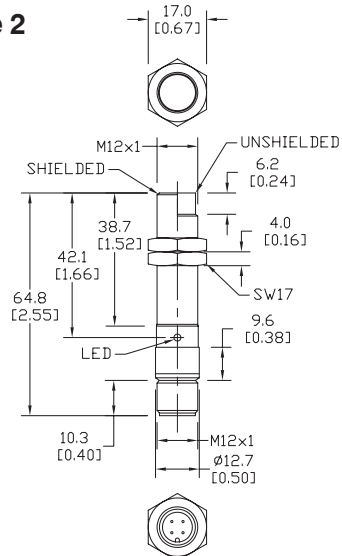


Figure 2



Accessories for 12mm Sensors

Axial Mounting Bracket

Mounting bracket, axial, zinc-plated steel. For use with 12mm sensors. Has two mounting holes (use 3mm screws) and allows the rotation of an optical axis for right-angle adapter sensors. Hexagonal nuts not included.

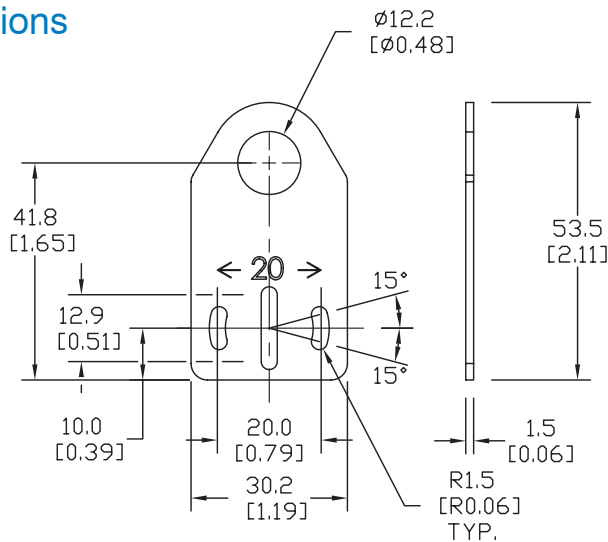
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight (lb)
ST12A	\$2.00	Mounting bracket, axial, zinc-plated steel. For use with 12mm sensors. 1/pk.	0.03
ST12A7W	\$6.00	Mounting bracket, axial, 316L stainless steel. For use with 12mm sensors. 1/pk.	0.03



ST12A

Dimensions

mm [inches]



Right-angle Mounting Bracket

Mounting bracket, right-angle, zinc-plated steel or 316L stainless steel. For use with 12mm sensors. Has two mounting holes (use 3mm screws) and allows the rotation of an optical axis for axial sensors. Hexagonal screws not included.

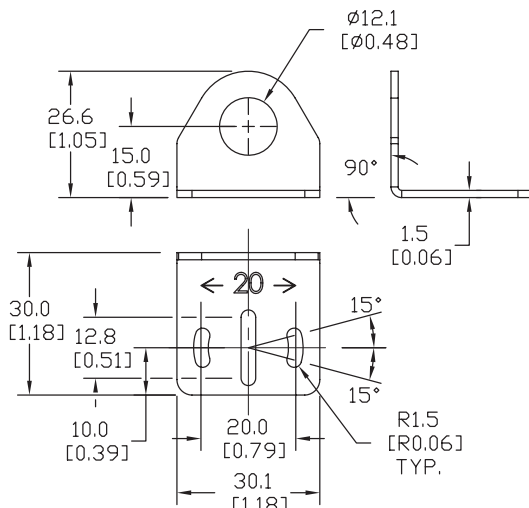
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight (lb)
ST12C	\$2.00	Mounting bracket, right angle, zinc-plated steel. For use with 12mm sensors. 1/pk.	0.03
ST12C7W	\$6.00	Mounting bracket, right angle, 316L stainless steel. For use with 12mm sensors. 1/pk.	0.03



ST12C

Dimensions

mm [inches]



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Accessories for 12mm Sensors

Right-angle Mounting Brackets

Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 12mm sensors. Available with or without fixed insertion stop.

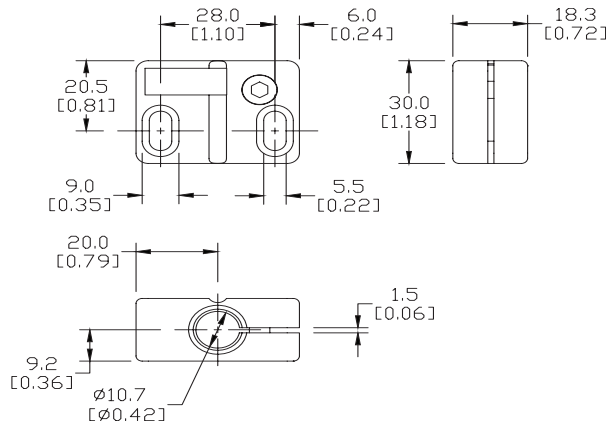
Accessories for 12mm Sensors					
Part Number	Price	Description	Weight [lb]		
OPT2102	\$6.00	Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 12mm sensors.	0.05		
OPT2103	\$6.00	Mounting bracket, right-angle, plastic. For use with 12mm sensors.	0.05		



OPT2102, OPT2103

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 12mm sensors. Available in all stainless steel or with an aluminum head and stainless steel mounting plate.

Accessories for 12mm Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight [lb]
OPT2114	\$9.00	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 12mm sensors.	Aluminum	Stainless Steel	0.14
OPT2115	\$16.00	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 12mm sensors.	304 Stainless Steel	304 Stainless Steel	0.27

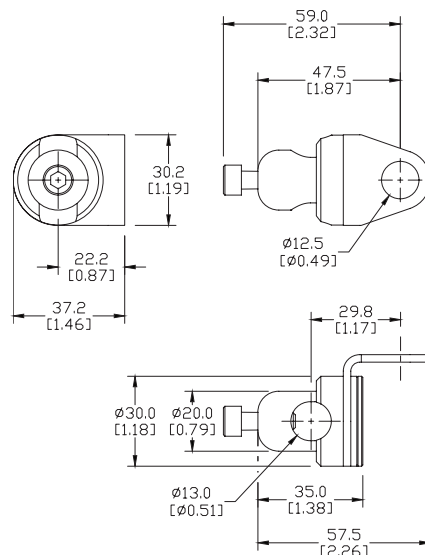
Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm length), OPT2110 (300mm length), and OPT2111 (500mm length).



OPT2114, OPT2115

Dimensions

mm [inches]



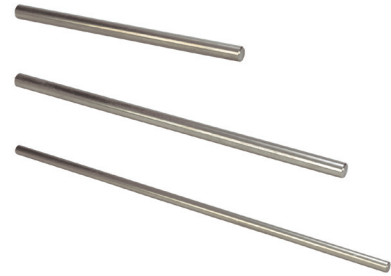
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Mounting Rods

Mounting Rods

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

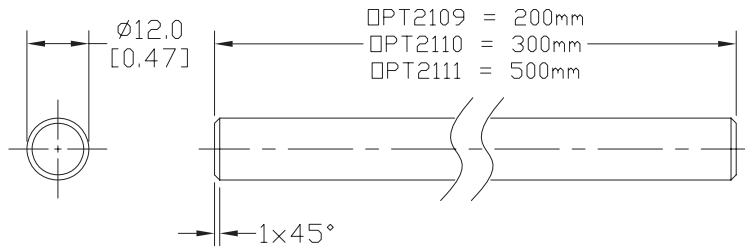
Mounting Rods for OPT2112-2127 Swivel Mounting Brackets			
Part Number	Price	Description	Weight [lb]
OPT2109	\$10.00	Mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	0.41
OPT2110	\$12.00	Mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	0.60
OPT2111	\$16.00	Mounting rod, 12mm diameter, 500mm length, 304 stainless steel.	0.98



OPT2109, OPT2110, OPT2111

Dimensions

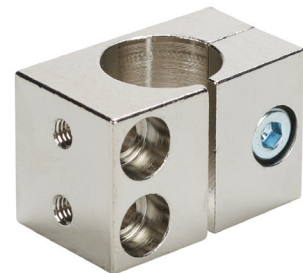
mm [inches]



Right-angle Mounting Bracket

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

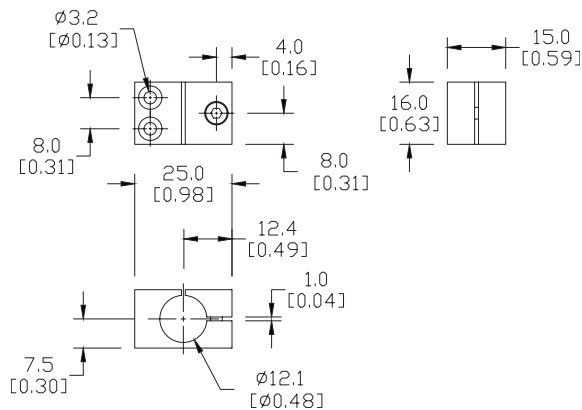
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight [lb]
OPT2108	\$12.00	Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	0.07



OPT2108

Dimensions

mm [inches]



See our website: www.AutomationDirect.com for complete engineering drawings