

# PFM Series IP69K-rated Proximity Sensors

## 12mm Stainless Steel - DC



- 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



**PFM1-BN-1H**

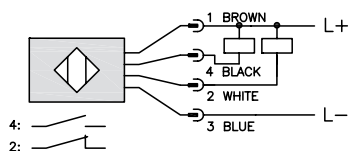
### PFM Series Food and Beverage DC Inductive Prox Selection Chart

Part Number	Price	Sensing Range	Mounting	Output State	Logic	Connection	Wiring	Dimensions
Standard								
<a href="#">PFM1-BN-1H</a>	\$;09f4:	0 to 2 mm [0 to 0.08 in]	Flush	N.O./N.C.	NPN	M12 [12mm] connector	Diagram 1	Figure 2
<a href="#">PFM1-BP-1H</a>	\$;09f8:				PNP	M12 [12mm] connector	Diagram 2	Figure 2
<a href="#">PFM1-BN-2H</a>	\$;09f5:	0 to 4 mm [0 to 0.157 in]	Non-flush	N.O./N.C.	NPN	M12 [12mm] connector	Diagram 1	Figure 2
<a href="#">PFM1-BP-2H</a>	\$;09f9:				PNP	M12 [12mm] connector	Diagram 2	Figure 2
Extended								
<a href="#">PFM1-BN-3H</a>	\$;09f6:	0 to 4 mm [0 to 0.157 in]	Flush	N.O./N.C.	NPN	M12 [12mm] connector	Diagram 1	Figure 2
<a href="#">PFM1-BP-3H</a>	\$;09fa:				PNP	M12 [12mm] connector	Diagram 2	Figure 2
<a href="#">PFM1-BN-4H</a>	\$;09f7:	0 to 8 mm [0 to 0.315 in]	Non-flush	N.O./N.C.	NPN	M12 [12mm] connector	Diagram 1	Figure 2
<a href="#">PFM1-BP-4H</a>	\$;09fb:				PNP	M12 [12mm] connector	Diagram 2	Figure 2
<a href="#">PFM1-AP-4H</a>	Retired	0 to 7 mm [0 to 0.275 in]		N.O.	PNP	M12 [12mm] connector	Diagram 3	Figure 1

## Wiring Diagrams

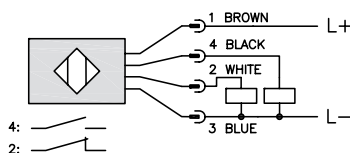
**Diagram 1**

**NPN Output**



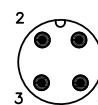
**Diagram 2**

**PNP Output**



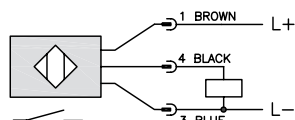
**Connector**

**M12 connector**



**Diagram 3**

**PNP Output**



*Note: Class 2 power supply required*

# PFM Series IP69K-rated Proximity Sensors

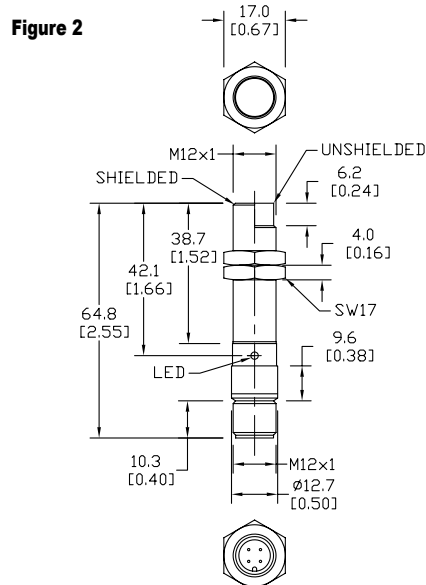
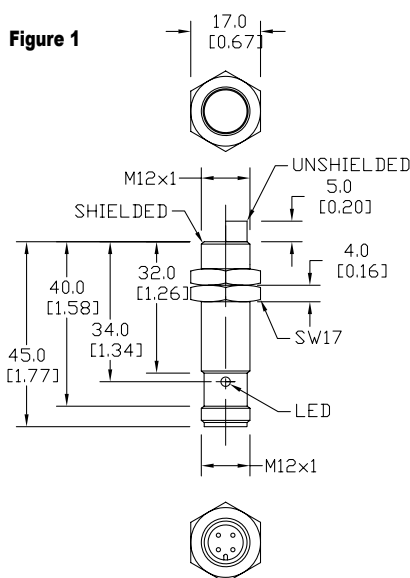
PFM Series Specifications	Standard		Extended			
Mounting Type	Flush	Non-flush	Flush	Non-flush	Flush	Non-flush
Nominal Sensing Distance	2mm [0.08 in]	4mm [0.157 in]	4mm [0.157 in]	8mm [0.315 in]	4mm [0.157 in]	7m [0.275 in]
Operating Distance	NA					
Material Correction Factors	See the <a href="#">Material influence table</a>					
Output Type	NPN or PNP/4-wire, N.O./N.C				PNP, N.O. 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	2000Hz				800Hz	
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	316L stainless steel					
Sensing Face Material	PPS (FDA certified)				PEEK (Polyether Ether Ketone)	
Shock/Vibration	See <a href="#">Proximity Sensor Terminology</a>					
Tightening Torque	20 Nm [14.75 lb-ft]				20 Nm [14.75 lb-ft]	
Weight	35g [1.23 oz]				25g [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 number PFM1-AP-4H has N.O. PNP outputs only.

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

## Dimensions

mm [inches]

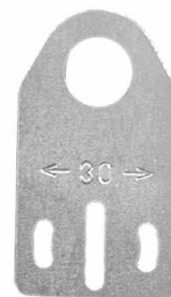


# Accessories for 12mm Sensors

## Axial Mounting Bracket

Mounting bracket, axial, available in 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 right-angle adapter sensors. Hexagonal nuts not included.

Accessories for 12mm Sensors				
Part Number	Price	Description	Drawing Link	Weight lb [g]
<a href="#"><u>ST12A</u></a>	\$97_:	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.03 [13.6]
<a href="#"><u>ST12A7W</u></a>	\$97#:	Micro Detectors mounting bracket, axial, 316L stainless steel. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.03 [13.6]



[ST12A](#)

## 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	Drawing Link	Weight lb [g]
<a href="#"><u>ST12C</u></a>	\$;97!:	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.03 [13.6]
<a href="#"><u>ST12C7W</u></a>	\$97?:	Micro Detectors mounting bracket, right-angle, 316L stainless steel. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.03 [13.6]



[ST12C](#)

# Accessories for 12mm Sensors

## Right-angle Fine Tune Mounting Bracket

Mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel-plated steel. For use with 12mm sensors. Enables fine tuning vertical and horizontal placement.

Accessories for 12mm Sensors				
Part Number	Price	Description	Drawing Link	Weight [lb]
<a href="#">OPT2035</a>	\$~1nlj:	Wenglor mounting bracket, right-angle, fine tune vertical and horizontal adjustment, nickel plated steel. For use with 12mm sensors.	<a href="#">PDF</a>	0.16



[OPT2035](#)

# 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	Drawing Link	Weight lb [g]
<a href="#"><u>OPT2102</u></a>	\$-1nlq:	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.05 [22.7]
<a href="#"><u>OPT2103</u></a>	\$-1nls:	Wenglor mounting bracket, right-angle, plastic. For use with 12mm sensors.	<a href="#"><u>PDF</u></a>	0.05 [22.7]



[OPT2102](#), [OPT2103](#)

## 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	Drawing Link	Weight lb [g]
<a href="#"><u>OPT2114</u></a>	\$;-1nl[:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 12mm sensors.	Aluminum	Stainless steel	<a href="#"><u>PDF</u></a>	0.14 [63.5]
<a href="#"><u>OPT2115</u></a>	\$-1nl_:	Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with 12mm sensors.	304 Stainless steel	304 Stainless steel	<a href="#"><u>PDF</u></a>	0.27 [122.5]

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).



[OPT2114](#), [OPT2115](#)

# 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]

