

# AK Series Inductive Proximity Sensors



## M18 (18 mm) metal – DC

- 24 models available
- Standard and extended distance models available
- 2-wire and 3-wire models
- Axial cable or M12 quick-disconnect models available
- Complete overload protection
- IP67 rated
- LED status indicators are visible 360° around the cylinder
- Lifetime warranty



AK Series M18 DC Inductive Prox Selection Chart								
Part Number	Price	Sensing Range	Housing	Output State	Logic	Connection	Wiring	Dimensions
<b>Standard Distance</b>								
AK1-AN-1A	\$22.00	5 mm (0.197 in)	Shielded	NO	NPN	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-AP-1A	\$22.00				PNP	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-A0-1A	\$23.00				Sink/source	2 m (6.5') axial cable	Diagram 2	Figure 1
AK1-AN-1H	\$22.00				NPN	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-AP-1H	\$22.00				PNP	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-A0-1H	\$23.00				Sink/source	M12 (12 mm) connector	Diagram 2	Figure 2
AK1-AN-2A	\$22.00	8 mm (0.315 in)	Unshielded	NO	NPN	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-AP-2A	\$22.00				PNP	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-A0-2A	\$23.00				Sink/source	2 m (6.5') axial cable	Diagram 2	Figure 1
AK1-AN-2H	\$22.00				NPN	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-AP-2H	\$22.00				PNP	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-A0-2H	\$23.00				Sink/source	M12 (12 mm) connector	Diagram 2	Figure 2
<b>Extended Distance</b>								
AK1-AN-3A	\$26.50	8 mm (0.315 in)	Shielded	NO	NPN	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-AP-3A	\$26.50				PNP	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-A0-3A	\$29.50				Sink/source	2 m (6.5') axial cable	Diagram 2	Figure 1
AK1-AN-3H	\$26.50				NPN	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-AP-3H	\$26.50				PNP	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-A0-3H	\$29.50				Sink/source	M12 (12 mm) connector	Diagram 2	Figure 2
AK1-AN-4A	\$26.50	12 mm (0.472 in)	Unshielded	NO	NPN	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-AP-4A	\$26.50				PNP	2 m (6.5') axial cable	Diagram 1	Figure 1
AK1-A0-4A	\$29.50				Sink/source	2 m (6.5') axial cable	Diagram 2	Figure 1
AK1-AN-4H	\$26.50				NPN	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-AP-4H	\$26.50				PNP	M12 (12 mm) connector	Diagram 1	Figure 2
AK1-A0-4H	\$29.50				Sink/source	M12 (12 mm) connector	Diagram 2	Figure 2

## Dimensions

mm [inches]

Figure 1

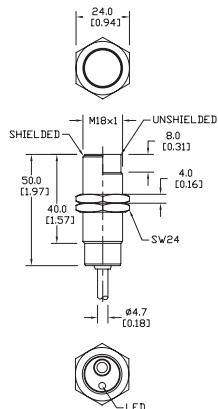
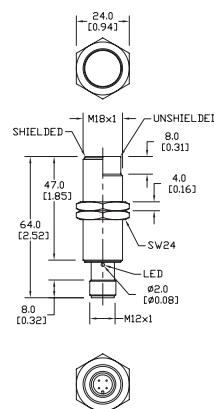


Figure 2



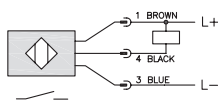
# AK Series Inductive Proximity Sensors

AK Series Specifications				
Mounting Type	Standard Distance		Extended Distance	
	Shielded	Unshielded	Shielded	Unshielded
Nominal Sensing Distance	5 mm (0.197 in)	8 mm (0.315 in)	8 mm (0.315 in)	12 mm (0.472 in)
Operating Distance	NA			
Material Influence Factors	See the <a href="#">Material influence table</a>			
Output Type	3-wire: NPN or PNP/NO (normally open) / 2-wire: sink/source, NO only			
Operating Voltage	10 to 30 VDC			
No-load Supply Current	≤ 20 mA			
Operating (Load) Current	3-wire: ≤400mA / 2-wire: 3-100mA			
Off-state (Leakage) Current	3-wire: ≤10µA / 2-wire: ≤0.8mA max			
Voltage Drop	3-wire: 1 volt max. / 2-wire: ≤2.8V max.			
Switching Frequency	600 Hz	300 Hz		
Differential Travel (% of Nominal Distance)	2 to ≤10%		2 to ≤15%	
Repeat Accuracy	≤2%		≤5%	
Ripple	≤10%			
Time Delay Before Availability (tv)	3-wire: 100ms / 2-wire: -50ms			
Reverse Polarity Protection	Yes			
Short-Circuit Protection	Yes (switch auto-resets after overload is removed)			
Operating Temperature	-25° to +70°C (-13° to 158°F)			
Protection Degree (DIN 40050)	IEC IP67			
Indication/Switch Status	Yellow (NO output energized)			
Housing Material	Nickel-plated brass			
Sensing Face Material	Polybutylene Terephthalate (PBT)			
Shock/Vibration	See <a href="#">Proximity Sensor Terminology</a>			
Tightening Torque	25 Nm (18.44 lbs-ft.)			
Weight	A type (w/ cable): 130 g (4.59 oz) H type: 55 g (1.94 oz)			
Connection	2 meter PVC axial cable / M12 connector			
Agency Approvals	NA			

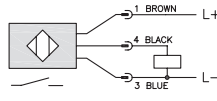
## Wiring diagrams

Diagram 1

NPN Output



PNP Output



## Connector

M12 connector

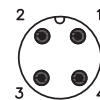
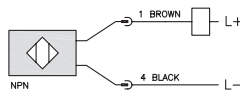


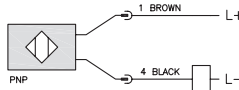
Diagram 2

Sink/Source Output



Wiring diagram when sensor is wired in sinking mode used with a sourcing module.

Sink/Source Output



Wiring diagram when sensor is wired in sourcing mode used with a sinking module.

Note: Negative (-) lead is Black on M12 quick disconnect cables and Blue on axial cables.

# Accessories for 18mm Sensors

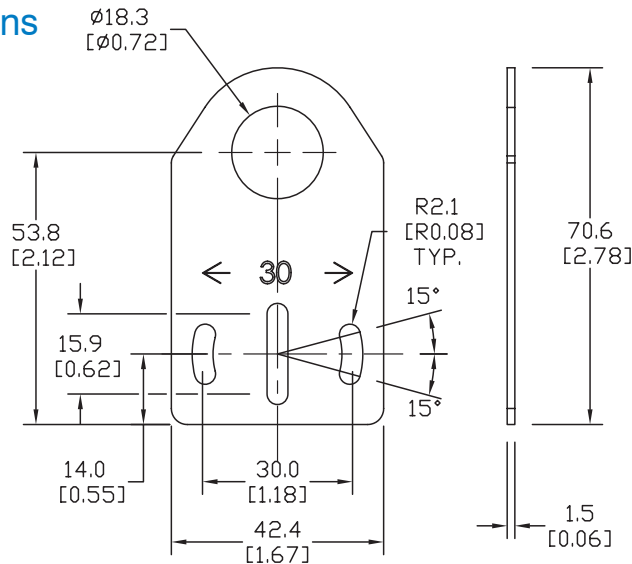
## Axial Mounting Bracket

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	\$1.25	Mounting bracket, axial, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06
ST18A7W	\$6.00	Mounting bracket, axial, 316L stainless steel. For use with 18mm sensors. 1/pk.	0.06

### Dimensions

mm [inches]



ST18A

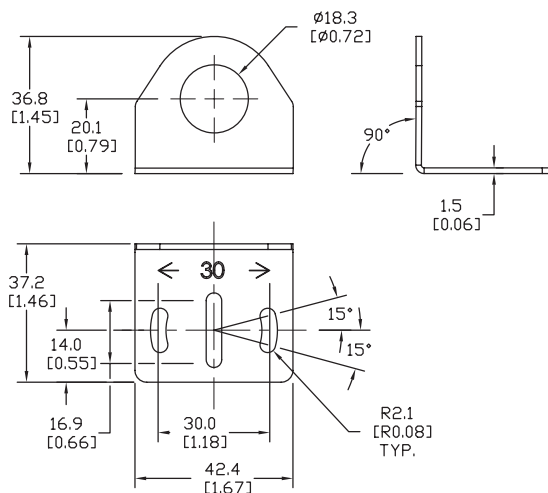
## Right-angle Mounting Bracket

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	\$1.25	Mounting bracket, right angle, zinc-plated steel. For use with 18mm sensors. 1/pk.	0.06
ST18C7W	\$6.00	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 Mounting Brackets

Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors. Available with or without fixed insertion stop.

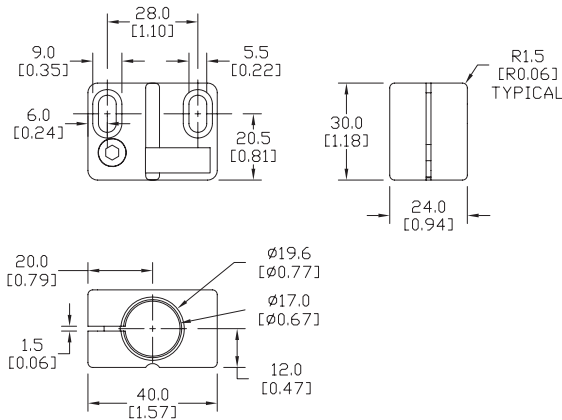
Accessories for 18mm Sensors				
Part Number	Price	Description	Weight [lb]	
<b>OPT2104</b>	\$8.00	Mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	0.06	
<b>OPT2105</b>	\$8.00	Mounting bracket, right-angle, plastic. For use with 18mm sensors.	0.06	



**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>	\$9.00	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>	\$16.00	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

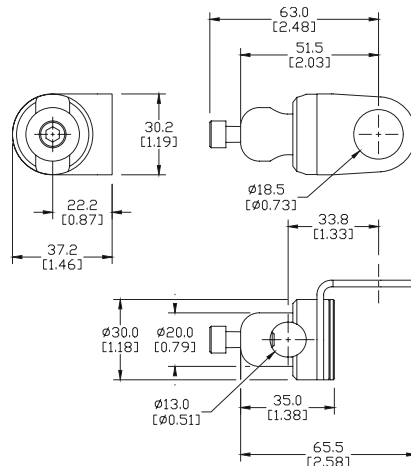
**Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm length), OPT2110 (300mm length), and OPT2111 (500mm length).**



**OPT2116, OPT2117**

## 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.

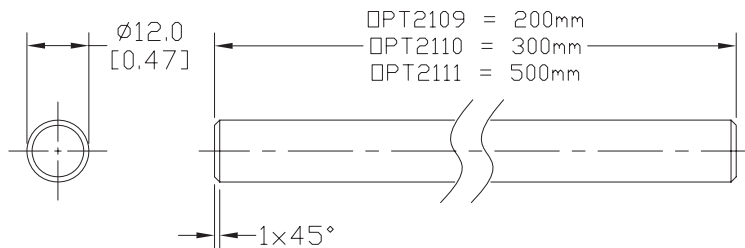
Mounting Rods for OPT2112-2127 Swivel Mounting Brackets			
Part Number	Price	Description	Weight [lb]
<b>OPT2109</b>	\$10.00	Mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	0.41
<b>OPT2110</b>	\$12.00	Mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	0.60
<b>OPT2111</b>	\$16.00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



**OPT2109, OPT2110, OPT2111**

## Dimensions

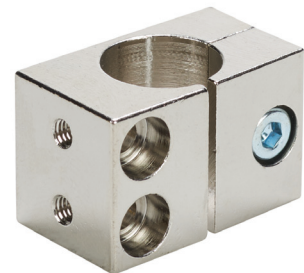
mm [inches]



## Right-angle Mounting Bracket

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

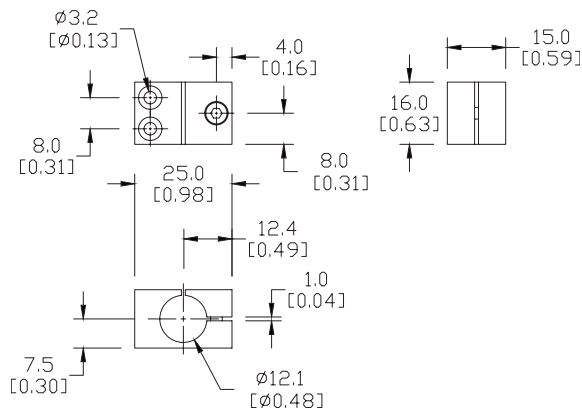
Accessories for 12mm Sensors			
Part Number	Price	Description	Weight [lb]
<b>OPT2108</b>	\$12.00	Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	0.07



**OPT2108**

## Dimensions

mm [inches]



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