AK Series Inductive Proximity Sensors

M18 (18mm) metal – DC

- 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

NEED CABLES?

AK Series M18 DC Inductive Proximity Selection Chart								
Part Number	Price	Sensing Range	Mounting	Output State	Logic	Connection	Wiring	Dimensions
Standard Distance								
AK1-AN-1A	$18.50	5mm [0.197 in]	Flush	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-AP-1A	$18.50				PNP	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-A0-1A	$27.00				Sink/source	2m [6.5 ft] axial cable	Diagram 2	Figure 1
AK1-AN-1H	$21.00				NPN	M12 [12mm] connector	Diagram 1	Figure 2
AK1-AP-1H	$21.00				PNP	M12 [12mm] connector	Diagram 1	Figure 2
AK1-A0-1H	$27.00				Sink/source	M12 [12mm] connector	Diagram 2	Figure 2
AK1-AN-2A	$18.50	8mm [0.315 in]	Non-flush	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-AP-2A	$18.50				PNP	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-A0-2A	$27.00				Sink/source	2m [6.5 ft] axial cable	Diagram 2	Figure 1
AK1-AN-2H	$21.00				NPN	M12 [12mm] connector	Diagram 1	Figure 2
AK1-AP-2H	$21.00				PNP	M12 [12mm] connector	Diagram 1	Figure 2
AK1-A0-2H	$27.00				Sink/source	M12 [12mm] connector	Diagram 2	Figure 2
Extended Distance								
AK1-AN-3A	$24.00	8mm [0.315 in]	Flush	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-AP-3A	$24.00				PNP	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-A0-3A	$35.00				Sink/source	2m [6.5 ft] axial cable	Diagram 2	Figure 1
AK1-AN-3H	$24.00				NPN	M12 [12mm] connector	Diagram 1	Figure 2
AK1-AP-3H	$24.00				PNP	M12 [12mm] connector	Diagram 1	Figure 2
AK1-A0-3H	$35.00				Sink/source	M12 [12mm] connector	Diagram 2	Figure 2
AK1-AN-4A	$24.00	12mm [0.472 in]	Non-flush	N.O.	NPN	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-AP-4A	$24.00				PNP	2m [6.5 ft] axial cable	Diagram 1	Figure 1
AK1-A0-4A	$35.00				Sink/source	2m [6.5 ft] axial cable	Diagram 2	Figure 1
AK1-AN-4H	$24.00				NPN	M12 [12mm] connector	Diagram 1	Figure 2
AK1-AP-4H	$24.00				PNP	M12 [12mm] connector	Diagram 1	Figure 2
AK1-A0-4H	$35.00				Sink/source	M12 [12mm] connector	Diagram 2	Figure 2

Dimensions

mm [inches]

Figure 1
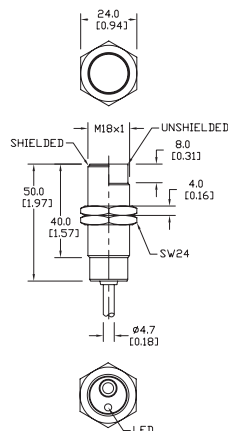
Figure 2
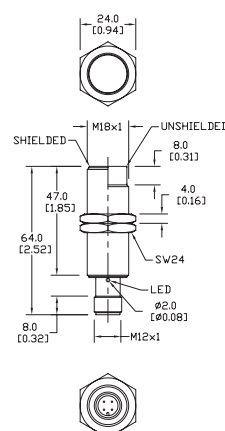
AK Series Inductive Proximity Sensors

AK Series M18 DC Inductive Proximity Specifications				
Mounting Type	Standard Distance		Extended Distance	
	Flush	Non-flush	Flush	Non-flush
Nominal Sensing Distance	5mm [0.197 in]	8mm [0.315 in]	8mm [0.315 in]	12mm [0.472 in]
Operating Distance	NA			
Material Influence Factors	See the Material influence table			
Output Type	3- wire: NPN or PNP/N.O. / 2-wire: sink/source, N.O. 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	600Hz	300hz		
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 [N.O. output energized]			
Housing Material	Nickel-plated brass			
Sensing Face Material	Polybutylene Terephthalate [PBT]			
Shock/Vibration	See Proximity Sensor Terminology			
Tightening Torque	25 Nm [18.44 lbs-ft]			
Weight	A type (w/ cable): 130g [4.59 oz] H type: 55g [1.94 oz]			
Connection	2 meter [6.5 ft] PVC axial cable / M12 connector			
Agency Approvals	NA			

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

Wiring diagrams

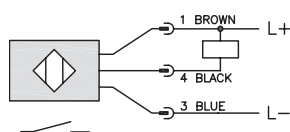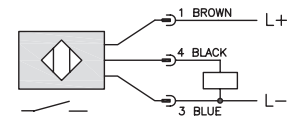### Diagram 1
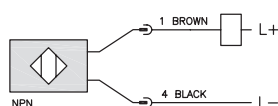
NPN Output

PNP Output
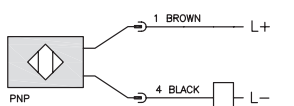
Connector

M12 connector
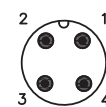
Diagram 2

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 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-adapter sensors. Hexagonal nuts not included. For use with 18mm sensors.

Accessories for 18mm Sensors			
Part Number	**Price**	**Description**	**Weight lb [g]**
ST18A	$2.00	Micro Detectors mounting bracket, axial, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
ST18A7W	$7.25	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]**
ST18C	$2.00	Micro Detectors mounting bracket, right-angle, zinc plated steel. For use with 18mm sensors.	0.06 [27.2]
ST18C7W	$7.25	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]
OPT2104	$10.50	Wenglor mounting bracket, right-angle, fixed insertion stop adjustment, plastic. For use with 18mm sensors.	PDF	0.06 [27.2]
OPT2105	$10.50	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	$11.50	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	$21.00	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]

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).

OPT2116, OPT2117

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	$13.00	Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel.	PDF	0.41 [185.97]
OPT2110	$16.00	Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel.	PDF	0.60 [272.16]
OPT2111	$21.00	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	$16.00	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111.	PDF	0.07 [31.8]