M18 Cylindrical Inductive Sensors
AK Series

Technical Datasheet

Key Features

- Wide range of models: standard, long distance
- Output: cable and M12 exit
- Models with 2, 3, and 4 wires
- Models with complementary output (NO+NC)
- IP67 nickel-plated brass housing

Options & Ordering Codes

AK 1 / A P - 1 A

Series

M18 Inductive Proximity Switch	AK

Housing

Standard body	1
Short body	6

Output State

NO output state	A
NC output state	C
NO and NC complementary outputs (only AK1/B0-3H & AK1/B0-4H)	B

Output logic

N	NPN logic output
O	2 wire version
P	PNP logic output

Distance

1	Shielded standard 5 mm
2	Unshielded standard 8 mm
3	Long distance shielded 8 mm
4	Unshielded long distance 12 mm

Connect

A	Axial cable exit
H	M12 plug cable exit

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M18 Cylindrical Inductive Sensors
AK Series

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Technical Datasheet

Standard Housing

Diameter	Installation	Distance	Exit	Distance (mm)	NPN/NO	PNP/NO	NPN/NC	PNP/NC
M18	Shielded	Standard	Cable	5	AK1/AN-1A	AK1/AP-1A	AK1/CN-1A	AK1/CP-1A
			Cable 90°		AK1/AN-1C	AK1/AP-1C	AK1/CN-1C	AK1/CP-1C
			M12		AK1/AN-1H	AK1/AP-1H	AK1/CN-1H	AK1/CP-1H
	Unshielded		Cable	8	AK1/AN-2A	AK1/AP-2A	AK1/CN-2A	AK1/CP-2A
			Cable 90°		AK1/AN-2C	AK1/AP-2C	AK1/CN-2C	AK1/CP-2C
	Shielded	Long distance	M12		AK1/AN-2H	AK1/AP-2H	AK1/CN-2H	AK1/CP-2H
			Cable		AK1/AN-3A	AK1/AP-3A	AK1/CN-3A	AK1/CP-3A
			M12		AK1/AN-3H	AK1/AP-3H	AK1/CN-3H	AK1/CP-3H
	Unshielded		Cable	12	AK1/AN-4A	AK1/AP-4A	AK1/CN-4A	AK1/CP-4A
			M12		AK1/AN-4H	AK1/AP-4H	AK1/CN-4H	AK1/CP-4H

Short Housing

Diameter	Installation	Distance	Exit	Distance (mm)	NPN/NO	PNP/NO	NPN/NO+NC	PNP/NO+NC
M18	Shielded	Standard	Cable	5	AK6/AN-1A	AK6/AP-1A	AK6/BM-1A	AK6/BP-1A
	Unshielded			8	AK6/AN-2A	AK6/AP-2A	AK6/BN-2A	AK6/BP-2A
	Shielded	Long distance			AK6/AN-3A	AK6/AP-3A	AK6/BN-3A	AK6/BP-3A
	Unshielded			12	AK6/AN-4A	AK6/AP-4A	AK6/BN-4A	AK6/BP-4A
	Shielded	Standard	M12	5	AK6/AN-1H	AK6/AP-1H	AK6/BN-1H	AK6/BP-1H
	Unshielded			8	AK6/AN-2H	AK6/AP-2H	AK6/BN-2H	AK6/BP-2H
	Shielded	Long distance			AK6/AN-3H	AK6/AP-3H	AK6/BN-3H	AK6/BP-3H
	Unshielded			12	AK6/AN-4H	AK6/AP-4H	AK6/BN-4H	AK6/BP-4H

DC 2 Wire models

Diameter	Installation	Distance	Exit	Distance (mm)	NO - PNP/NPN
M18	Shielded	Standard	Cable	5	AK1/A0-1A
			M12		AK1/A0-1H
	Unshielded		Cable	8	AK1/A10-2A
			M12		AK1/A10-2H
	Shielded	Long distance	Cable		AK1/A10-3A
			M12		AK1/A10-3H
	Unshielded		Cable	12	AK1/A10-4A
			M12		AK1/A10-4H

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AK Series

Technical Datasheet

Correction factors

Code	Steel FE 360	Copper	Alluminium	Brass	Stainless steel
AK1/**-1*	1	0.4	0.48	0.72	0.86
AK1/**-2*		0.45	0.53	0.56	0.77
AK1/**-3*		0.4	0.45	0.5	0.75
AK1/**-4*		0.45	0.53	0.56	0.77
AK6/**-1*		0.12	0.2	0.26	0.62
AK6/**-2*		0.3	0.37	0.46	0.78
AK6/**-3*		0.13	0.2	0.24	0.61
AK6/**-4*		0.32	0.39	0.42	0.69

Specifications

Models	AK1/**-1*	AK1/**-2*	AK1/**-3*	AK1/**-4*
Nominal Sensing Distance	5mm	8mm	8mm	12mm
Operating Distance	0 - 4mm	0 - 6.5mm	0 - 6.5mm	0 - 9.7mm
Hysteresis	1 - 20%			
Standard Target	18 x 18mm FE 360	24 x 24mm FE 360		36 x 36mm FE 360
Repeatability	5%			
Operating Voltage	10 - 30 VDC			
Output Type	NPN or PNP - NO or NC (3 wires models), NPN/PNP - NO (2 wires models)			
Max. Ripple Content	≤10%			
Output Current	≤400mA (3 - 100mA or 2 wires versions)			
Output Voltage Drop	≤1V @ 400mA (2.8 V @ 100mA or 2 wires versions)			
No Load Supply Current	20mA			
Leakage Current	≤10μA (0.8mA or 2 wires versions)			
Switching Frequency	600Hz (300Hz for 2 wires)		300Hz (150Hz for 2 wires)	
Power On Delay	50ms			
Ambient Temperature Range	-25°C to 70°C			
Temperature Drift of Sr	10%			
Short Circuit Protection	•			
Induction Protection	•			
Voltage Reversal Protection	•			
Shocks & Vibrations	IEC 60947-5-2			
Weight	55g connector / 130g cable			
LEDs	Yellow LED output state			
Protection Degree	IP67 (EN 60529)			
EMC	in conformity with the EMC Directive, according to IEC 60947-5-2			
Housing Material	Nickel-plated brass			
Active Head Material	PBT			
Connection	Cable 2m PVC / Plug M8 or M12			
Tightening Torque	25 Nm			

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M18 Cylindrical Inductive Sensors
AK Series

IMO

Technical Datasheet

Specifications

Models	AK6/**-1*	AK6/**-2*	AK6/**-3*	AK6/**-4*
Nominal Sensing Distance	5mm	8mm	8mm	12mm
Operating Distance	0 - 4mm	0 - 6.5mm	0 - 6.5mm	0 - 9.7mm
Hysteresis	0 - 20%			
Standard Target	18 x 18mm FE 360	24 x 24mm FE 360		36 x 36mm FE 360
Repeatability	5% Ub 20 - 30v Ta=23°C 5°C			
Operating Voltage	10 - 30 VDC			
Max. Ripple Content	≤10%			
Output Current	≤400mA			
Output Voltage Drop	≤1.5V @ 400mA			
No Load Supply Current	10mA			
Logic Output	PNP or NPN			
Output State	NO or NO+NC			
Leakage Current	10μA			
Switching Frequency	2,5KHz	2KHz	2,5KHz	2KHz
Power On Delay	≤50ms			
Ambient Temperature Range	-25°C to 70°C			
Temperature Drift of Sr	≤10%			
Short Circuit Protection	•(Autoreset)			
Induction Protection	•			
Voltage Reversal Protection	•			
EMC	in conformity with the EMC Directive, according to IEC 60947-5-2			
Shocks & Vibrations	IEC 60947-5-2			
Protection Degree	IP67 (EN 60529)			
Housing Material	Nickel-plated brass			
Active Head Material	PBT			
LEDs	Yellow LED output state			
Connection	M12 connector, 2m PVC cable			
Tightening Torque	25 Nm			

Correction factors

Code	Steel FE 360	Copper	Alluminium	Brass	Stainless steel
AK6/00-1*	1	0.36	0.43	0.49	0.80
AK6/00-2*	1	0.43	0.38	0.75	0.31
AK6/00-3*	1	0.39	0.45	0.51	0.77
AK6/00-4*	1	0.47	0.42	0.74	0.36

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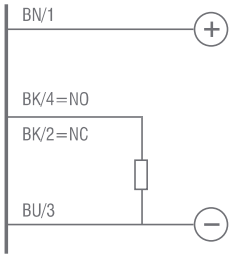
M18 Cylindrical Inductive Sensors
AK Series

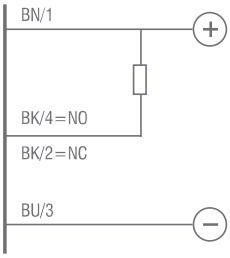
Technical Datasheet

Electrical Connection Diagrams

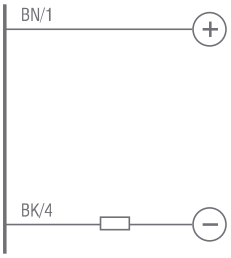
3 Wires PNP



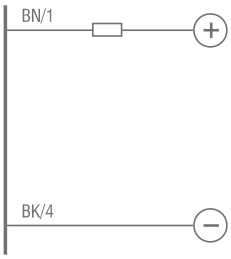
3 Wires NPN



2 Wires PNP



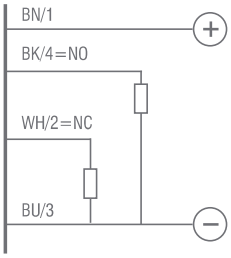
2 Wires NPN



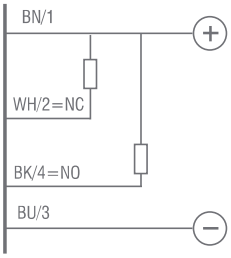
BN - Brown BU - Blue BK - Black WH - White

Electrical Connection Diagrams

Complementary Outputs PNP



Complementary Outputs NPN



BN - Brown BU - Blue BK - Black WH - White

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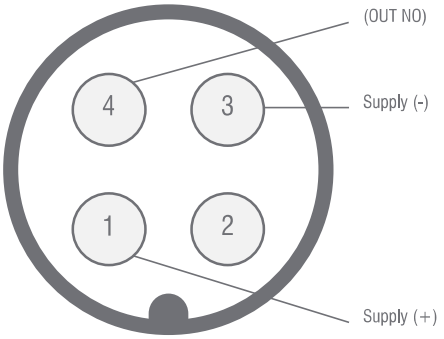
AK Series

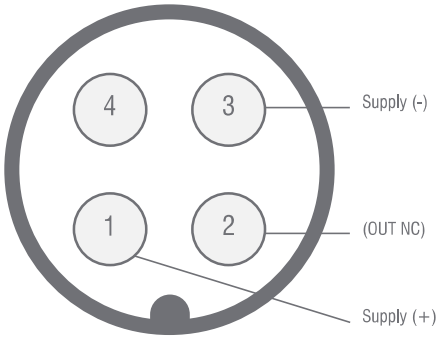
Technical Datasheet

Connectors

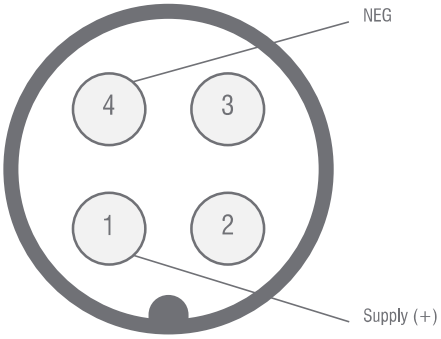
3 Wires M12 - NO



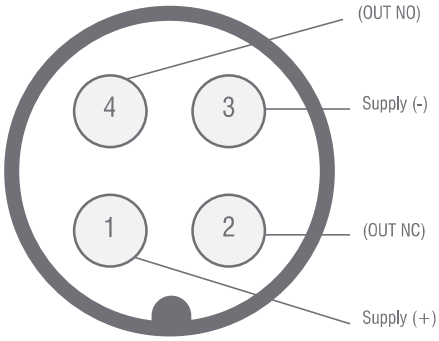
3 Wires M12 - NC



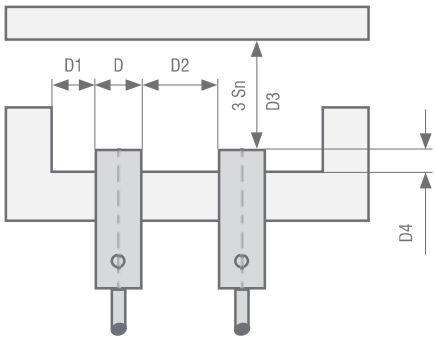
2 Wires M12 - NO



Complementary outputs M12 - NC



Installation



Code	D4	D1	D2	D3
AK1/**-1*	≥3.6mm	≥9mm	≥18mm	≥15mm
AK1/**-2*	≥16mm	≥18mm	≥36mm	≥24mm
AK1/**-3*	≥3.6mm	≥9mm	≥18mm	
AK1/**-4*	≥16mm	≥18mm	≥36mm	≥36mm
AK6/**-1*	≥3.6mm	≥9mm	≥18mm	≥15mm
AK6/**-2*	≥12mm	≥18mm	≥36mm	≥24mm
AK6/**-3*	≥1.8mm	≥9mm	≥18mm	
AK6/**-4*	≥16mm	≥18mm	≥36mm	≥36mm

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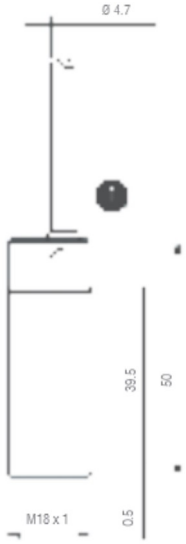
AK Series

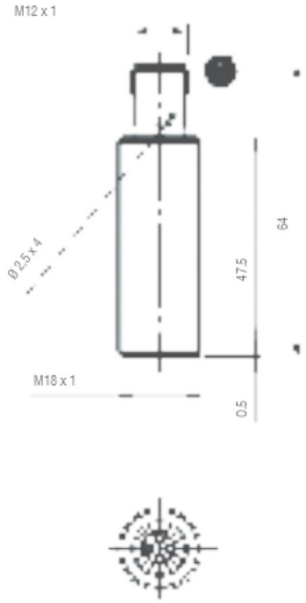
Technical Datasheet

Dimensions (mm)

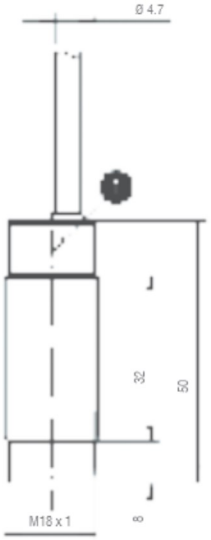
AK1/**-1A
AK1/**-3A



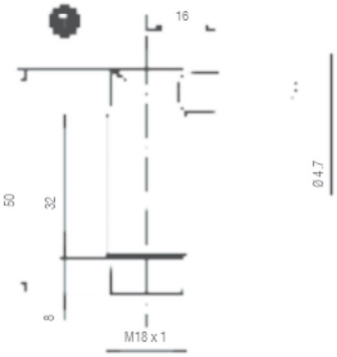
AK1/**-1H
AK1/**-3H



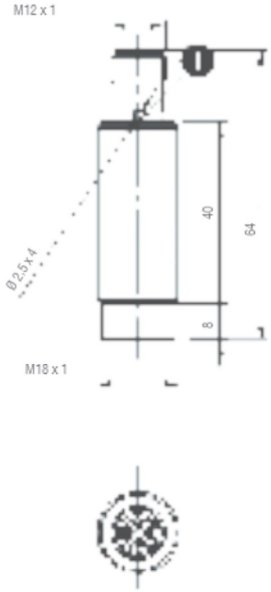
AK1/**-2A
AK1/**-4A



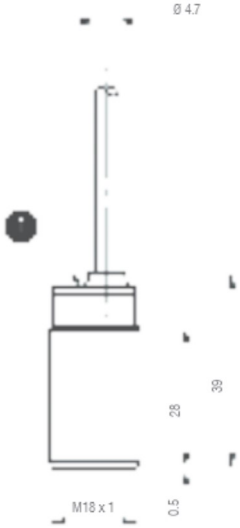
AK1/**-2C
AK1/**-4C



AK1/**-2H
AK1/**-4H



AK6/**-1A
AK6/**-3A



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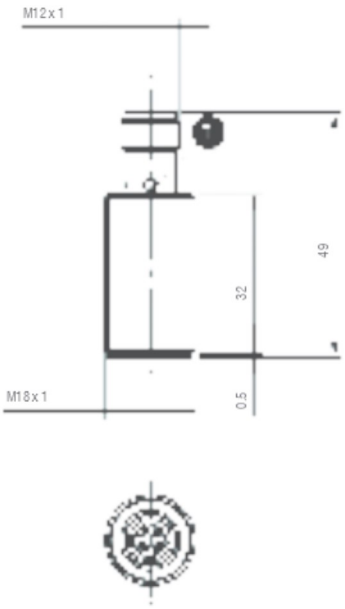
M18 Cylindrical Inductive Sensors
AK Series

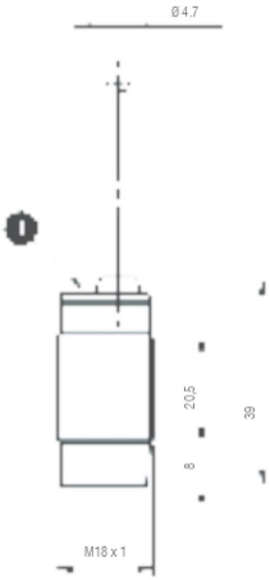
Technical Datasheet

Dimensions (mm)

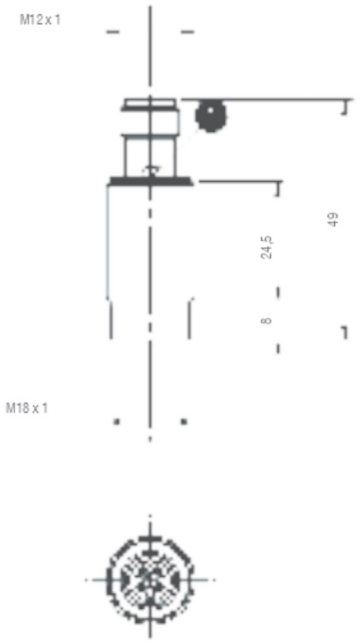
AK6/**-1H
AK6/**-3H



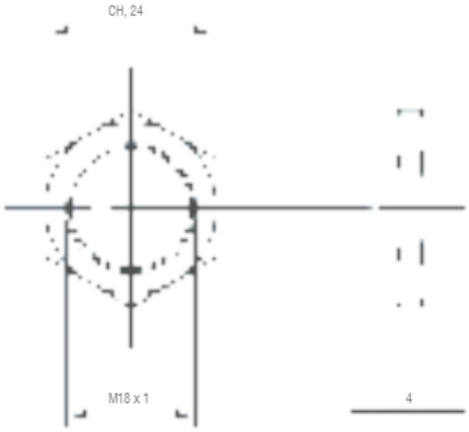
AK6/**-2A
AK6/**-4A



AK6/**-2H
AK6/**-4H



Metallic nut (2x)



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