AK series
M18 cylindrical inductive sensors

features

- **Wide range of models: standard, long distance**
- **Output: cable, M12 and plug cable exit**
- **Models with 2, 3, and 4 wires**
- **ATEX models, cat. 3, available on request**
- **Models with complementary output (NO+NC)**



web contents

- **Application notes**
- **Photos**
- **Catalogue / Manuals**

code description(*)

AK 1 / A P - 1 A

series	AK	M18 inductive proximity switch
housing	1	Standard body
	6	Short body
output state	A	NO output state
	C	NC output state
	B	NO and NC complementary outputs
output logic	N	NPN logic output
	0	2 wires 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
	C	Right angle cable exit
	H	M12 plug cable exit

(*) ATEX models available, contact our Sales Dept. for further information.

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available models

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
			M12		AK1/AN-2H	AK1/AP-2H	AK1/CN-2H	AK1/CP-2H
	shielded	long distance	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

available models

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/BN-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

available models

DC 2 wires 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/A0-2A
			M12		AK1/A0-2H
	shielded	long distance	cable		AK1/A0-3A
			M12		AK1/A0-3H
	unshielded		cable	12	AK1/A0-4A
			M12		AK1/A0-4H

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

technical specification

	AK1/**-1*	AK1/**-2*	AK1/**-3*	AK1/**-4*
				
nominal sensing distance	5 mm	8 mm	8 mm	12 mm
operating distance	0...4 mm	0...6.5 mm	0...6.5 mm	0...9.7 mm
hysteresis	1...20%			
standard target	18 x18 mm FE 360	24 x 24 mm FE 360		36 x 36 mm FE 360
repeatibility	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	≤ 400 mA (3...100 mA or 2 wires versions)			
output voltage drop	≤ 1V @ 400 mA (2.8 V @ 100 mA or 2 wires versions)			
no-load supply current	20 mA			
leakage current	10 µA (0.8 mA or 2 wires versions)			
switching frequency	600 Hz (300 Hz for 2 wires)		300 Hz (150 Hz for 2 wires)	
power on delay	50 ms			
ambient temperature range	-25...+70 °C			
temperature drift of Sr	10%			
short-circuit protection	●			
voltage reversal protection	●			
induction protection	●			
shocks and vibrations	IEC 60947-5-2			
weight	55 g connector 130 g cable			
LEDs	yellow LED output state			
protection degree	IP 67(1) (EN60529)			
EMC	in conformity with the EMC Directive according to IEC 60947-5-2			
housing material	nickel-plated brass			
active head material	PBT			
connection	cable 2 m PVC - plug M12			
tightening torque	25 Nm			

(1) Protection guaranteed only with plug cable well mounted

technical specification

	AK6/**-1*	AK6/**-2*	AK6/**-3*	AK6/**-4*
				
nominal sensing distance	5 mm	8 mm	8 mm	12 mm
operating distance	0...4 mm	0...6.5 mm	0...6.5 mm	0...9.7 mm
hysteresys	0...20%			
standard target	18x18 mm FE 360	24x24 mm FE 360		36x36 mm FE 360
repeatibility	5% Ub 20-30V Ta=23°C±5°C			
operating voltage	10...30 Vdc			
ripple	≤ 10 %			
output current	≤ 400 mA			
output voltage drop	≤ 1.5 V @ 400 mA			
no-load current	≤ 10 mA			
logic output	PNP or NPN			
output state	NO or NO+NC			
leakage current	10 µA			
switching frequency	2,5 KHz	2 KHz	2,5 KHz	2 KHz
power on delay	≤ 50 ms			
temperature range	-25°C...+70°C			
temperature drift	≤ 10%			
short circuit protection	● (autoreset)			
induction protection	●			
voltage reversal protection	●			
EMC	in conformity with the EMC Directive, according to IEC 60947-5-2			
shocks and vibrations	IEC 60947-5-2			
protection degree	IP67			
housing material	nickelplated brass			
active head material	PBT			
LEDs	output on (yellow LED)			
connections	M12 connector, 2 m PVC cable			
tightening torque	25 Nm			

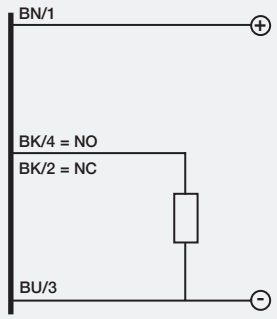
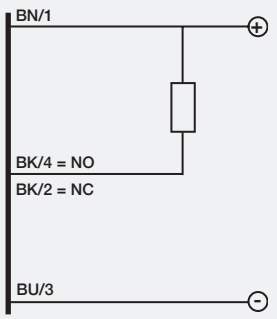
(1) Protection guaranteed only with plug cable well mounted

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

electrical diagrams of connections

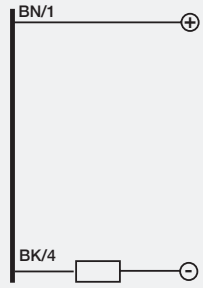
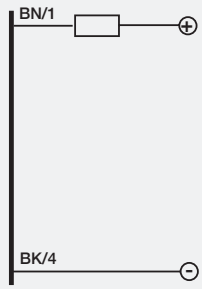
3 wires versions

PNP	NPN
	

BN	brown
BU	blue
BK	black
WH	white

electrical diagrams of connections

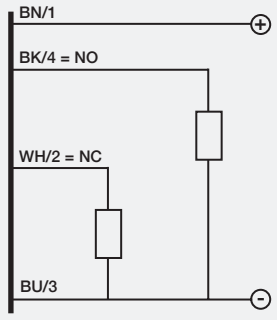
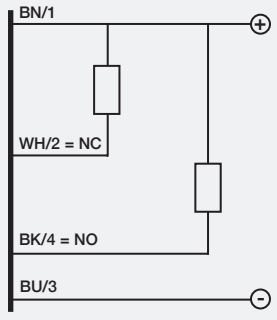
2 wires versions

PNP	NPN
	

BN	brown
BU	blue
BK	black
WH	white

electrical diagrams of connections

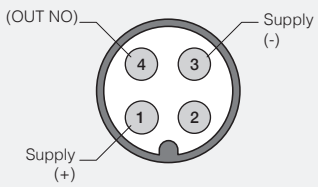
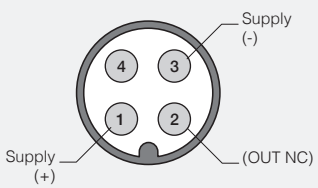
complementary outputs versions

PNP	NPN
	

BN	brown
BU	blue
BK	black
WH	white

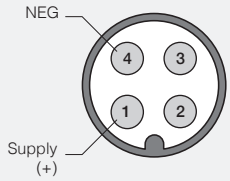
plug

3 wires versions

M12 - NO	M12 - NC
	

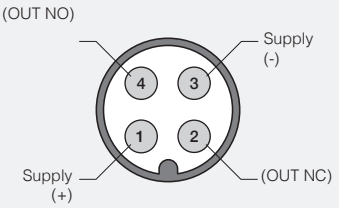
plug

2 wires versions

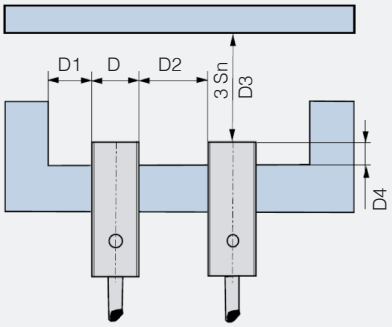
M12 - NO


plug

versioni complementary outputs versions

M12 - NC


installation

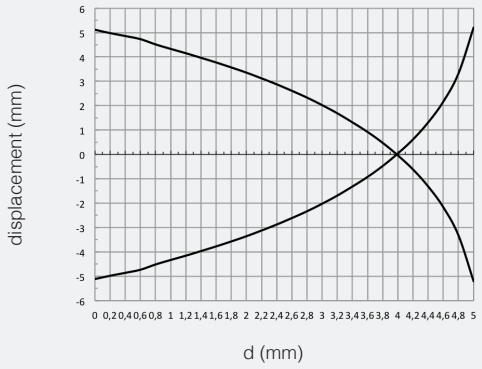


code	D4	D1	D2	D3
AK/**-1*	≥ 0 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
AK/**-2* -	≥ 8 mm (1)	≥ 18 mm	≥ 36 mm	≥ 24 mm
AK1/**-3*	≥ 1.8 mm	≥ 9 mm	≥ 18 mm	
AK1/**-4*	≥ 12 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm
AK6*/**-1*	≥ 1 mm (2)	≥ 9 mm	≥ 18 mm	≥ 15 mm
AK6*/**-2*	≥ 11 mm (3)	≥ 18 mm	≥ 36 mm	≥ 24 mm
AK6*/**-3*	≥ 3 mm (2)	≥ 9 mm	≥ 18 mm	
AK6*/**-4*	≥ 13 mm (5)	≥ 18 mm	≥ 36 mm	≥ 36 mm

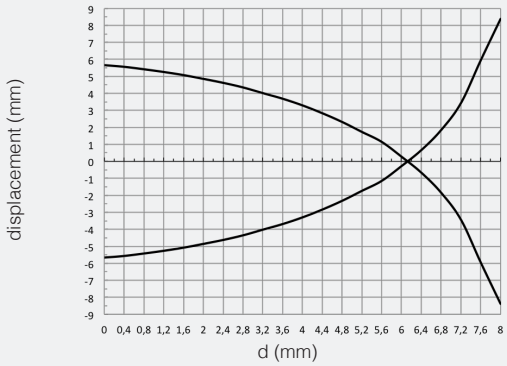
(1) ≥ 5.4 mm for not magnetic materials

response diagram

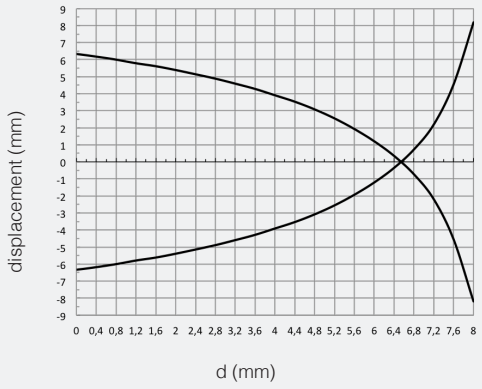
AK1/**-1* parallel displacement



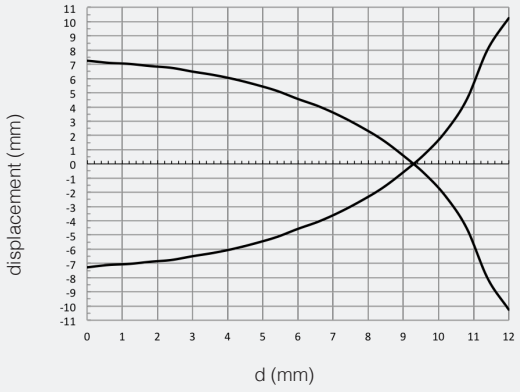
AK1/**-2* parallel displacement



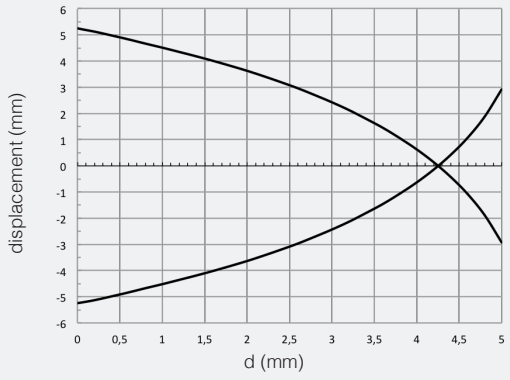
AK1/**-3* parallel displacement



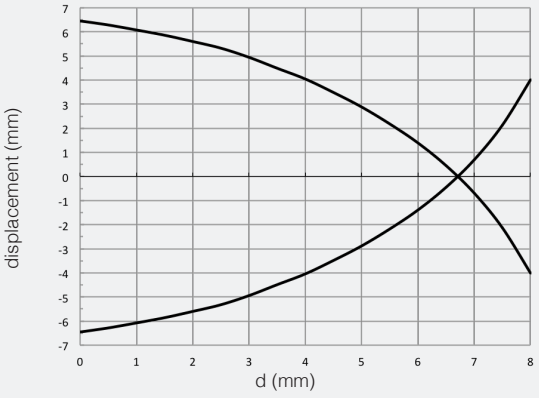
AK1/**-4* parallel displacement



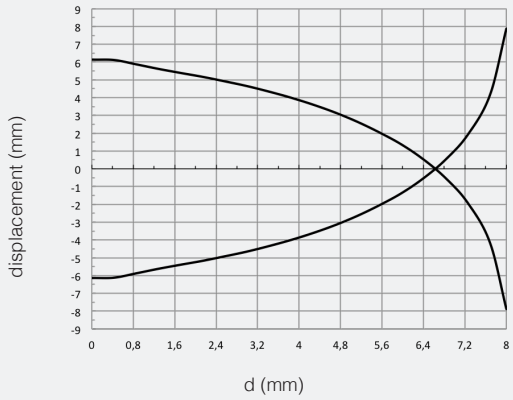
AK6/**-1* parallel displacement



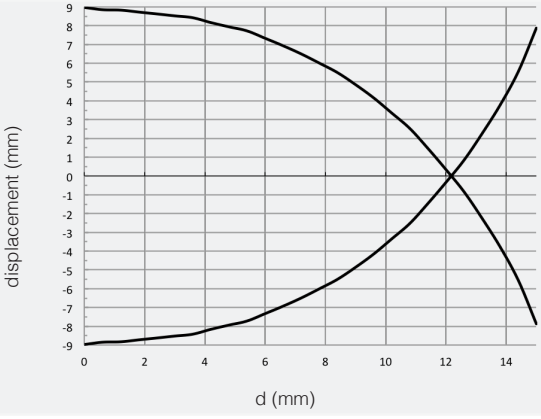
AK6/**-2* parallel displacement



AK6/**-3* parallel displacement

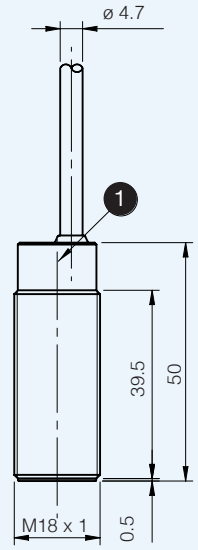


AK6/**-4* parallel displacement

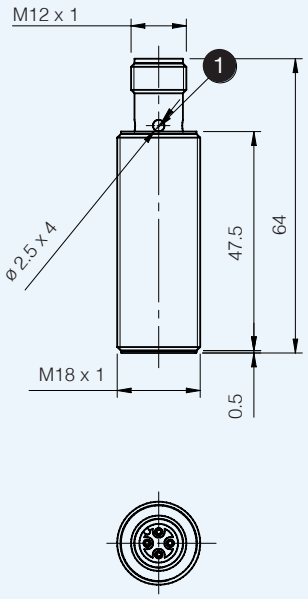


dimensions (mm)

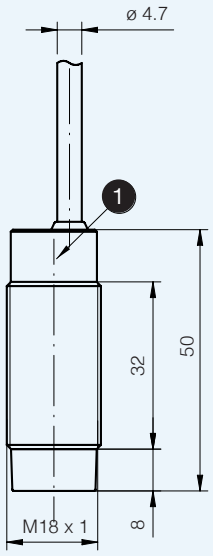
AK1/**-1A
AK1/**-3A



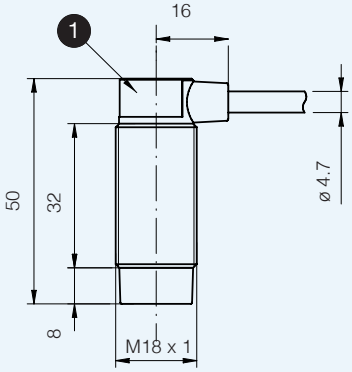
AK1/**-1H
AK1/**-3H



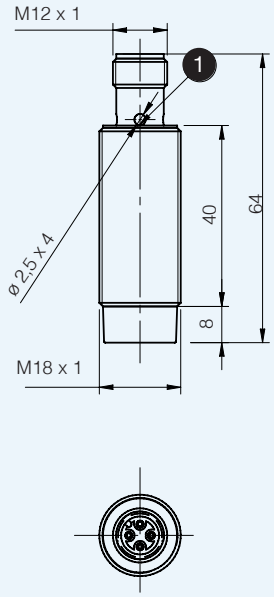
AK1/**-2A
AK1/**-4A



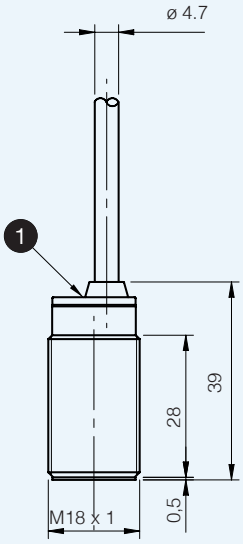
AK1/**-2C
AK1/**-4C



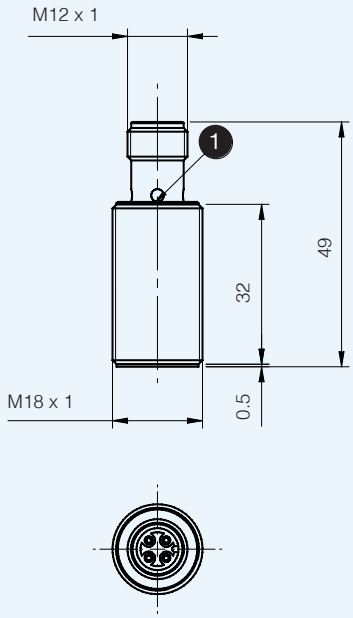
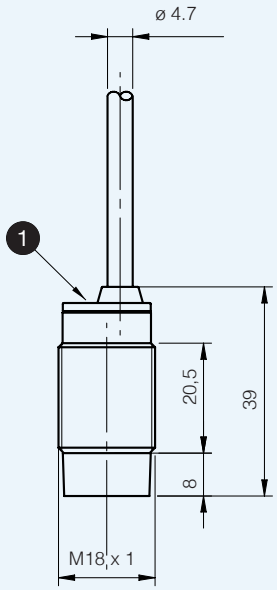
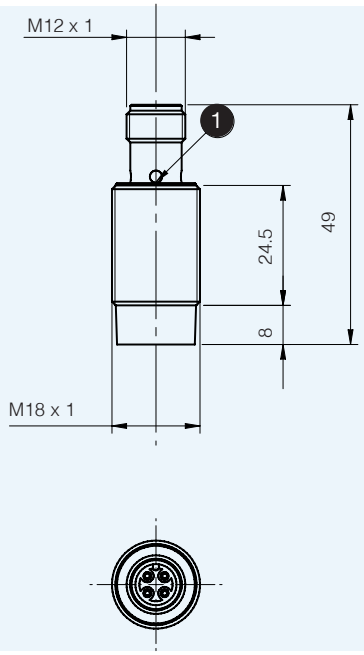
AK1/**-2H
AK1/**-4H



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



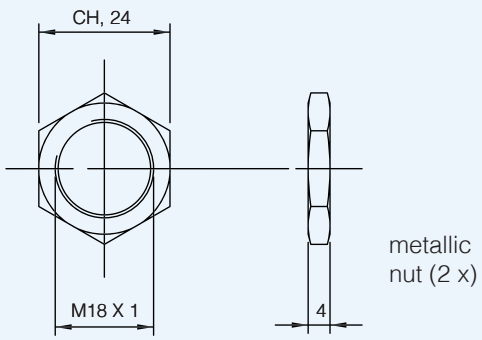
1 LED

AK6/**-1H AK6/**-3H	AK6/**-2A AK6/**-4A	AK6/**-2H AK6/**-4H
		

1 LED

dimensions (mm)

accessories included



metallic
nut (2 x)