

# AK series

M18 cylindrical inductive sensors



## features

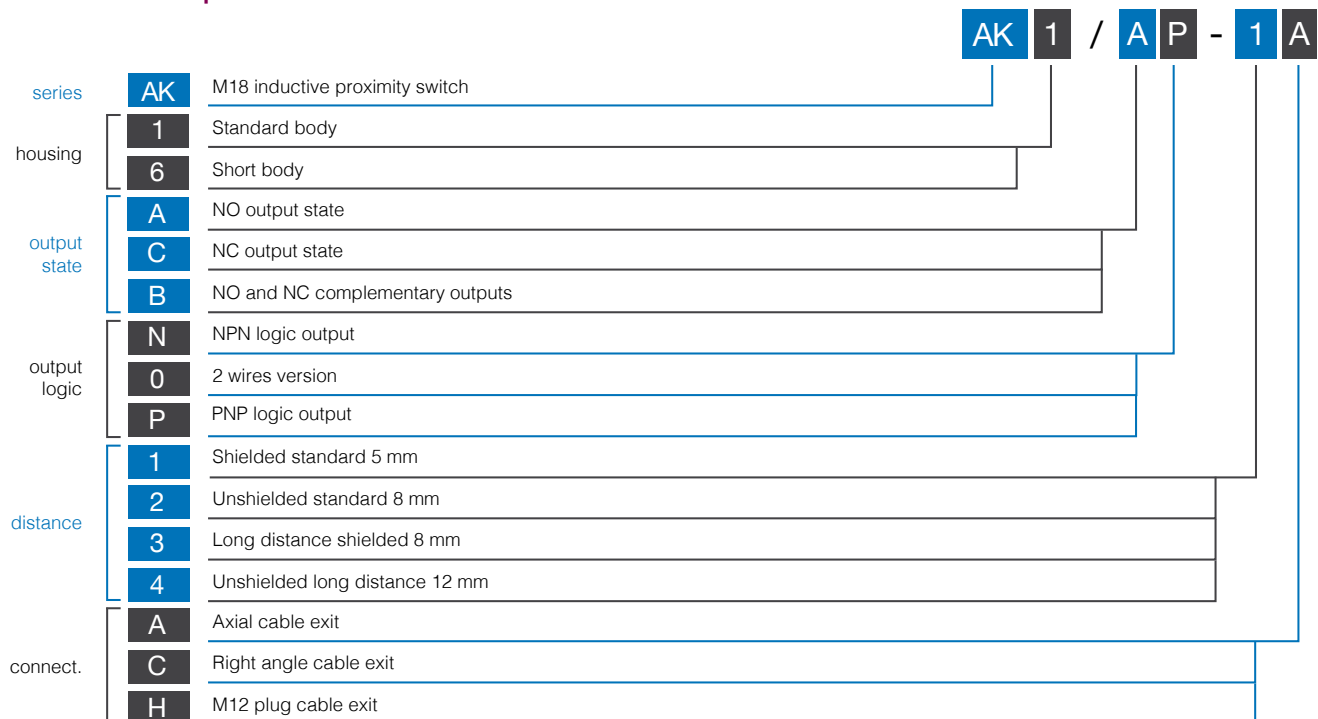
- Wide range of models: standard, long distance
- Output: cable, M12 and plug cable exit
- Models with 2, 3, and 4 wires
- ATEX models, cat. 3, available on request
- Models with complementary output (NO+NC)



## web contents

- Application notes
- Photos
- Catalogue / Manuals

## code description<sup>(\*)</sup>



<sup>(\*)</sup> ATEX models available, contact our Sales Dept. for further information.

## 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	8	cable	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	
	unshielded	long distance	cable	12	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	
					M12	AK1/AN-4A	AK1/AP-4A	AK1/CN-4A	AK1/CP-4A	
			shielded		8	cable	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
						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	
				8	AK6/AN-2A	AK6/AP-2A	AK6/BN-2A	AK6/BP-2A	
					AK6/AN-3A	AK6/AP-3A	AK6/BN-3A	AK6/BP-3A	
				12	AK6/AN-4A	AK6/AP-4A	AK6/BN-4A	AK6/BP-4A	
	unshielded	long distance			M12	5	AK6/AN-1H	AK6/AP-1H	AK6/BN-1H
				8		AK6/AN-2H	AK6/AP-2H	AK6/BN-2H	AK6/BP-2H
						AK6/AN-3H	AK6/AP-3H	AK6/BN-3H	AK6/BP-3H
				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		
					8	AK1/A0-1H	
						AK1/A0-2A	
				unshielded	8	AK1/A0-2H	
						12	AK1/A0-3A
							AK1/A0-3H
	unshielded	long distance		12	AK1/A0-4A		
					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 x 18 mm FE 360	24 x 24 mm FE 360		36 x 36 mm 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	≤ 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 <sup>(1)</sup> ( 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			

<sup>(1)</sup> 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
repeatability	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			

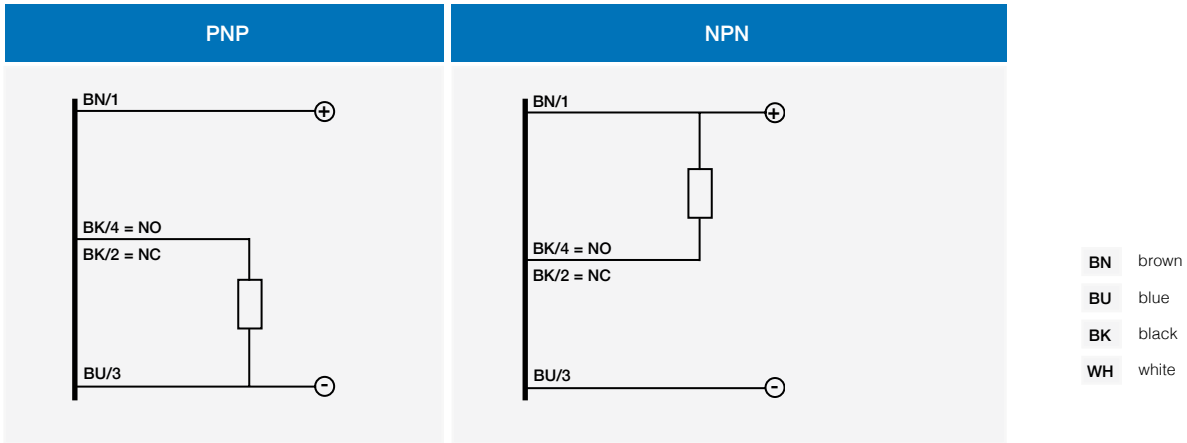
<sup>(1)</sup> Protection guaranteed only with plug cable well mounted

## 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

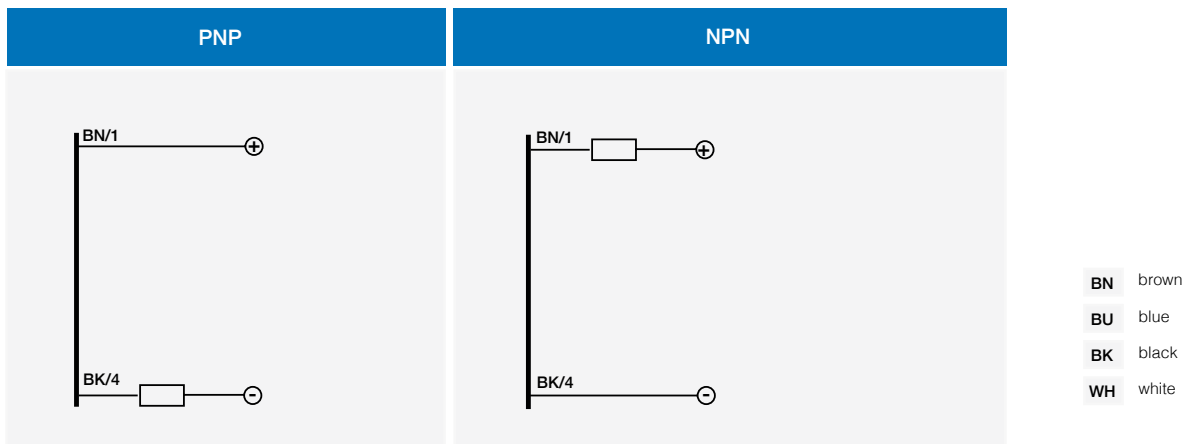
## electrical diagrams of connections

3 wires versions



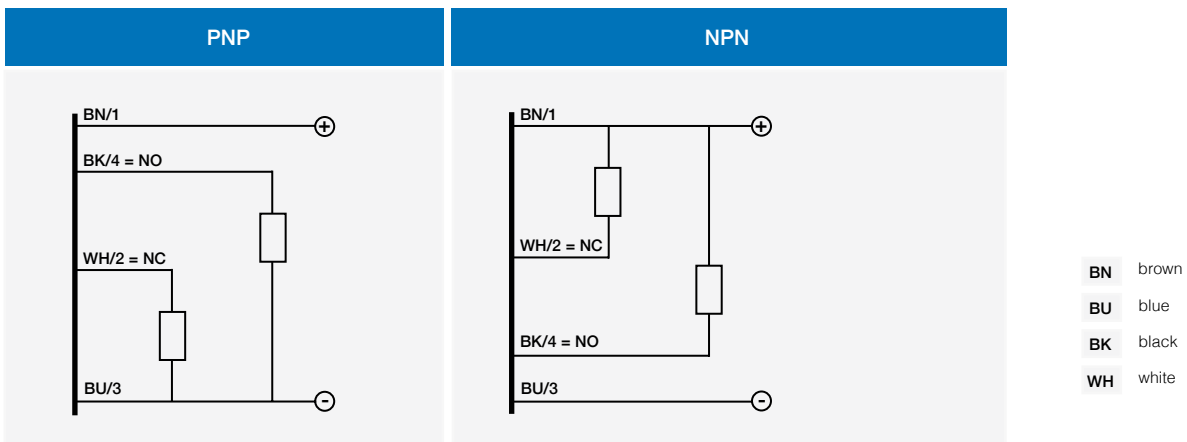
## electrical diagrams of connections

2 wires versions



## electrical diagrams of connections

PKS-PKW complementary outputs versions



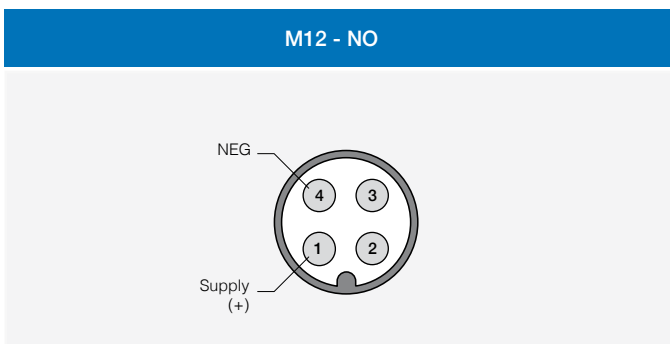
## plug

3 wires versions



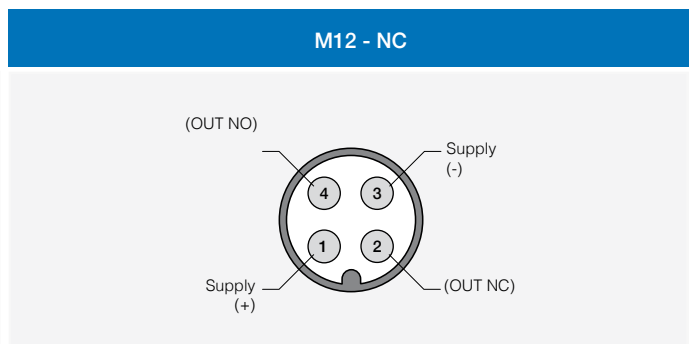
## plug

2 wires versions

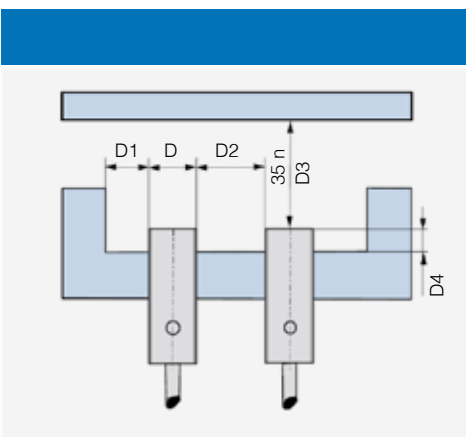


## plug

versioni complementary outputs versions



## installation

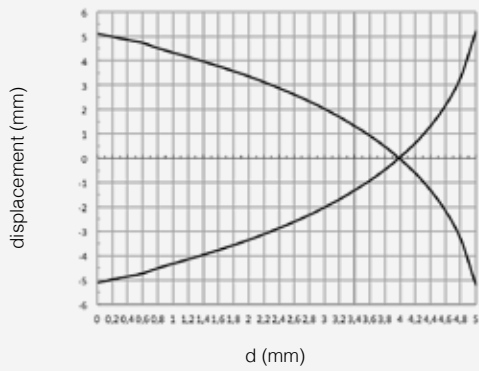


code	D4	D1	D2	D3
AK/**-1*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
AK/**-2* -	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
AK1/**-3*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 24 mm
AK1/**-4*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm
AK6/**-1*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
AK6/**-2*	≥ 12 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
AK6/**-3*	≥ 1.8 mm <sup>(1)</sup>	≥ 9 mm	≥ 18 mm	≥ 24 mm
AK6/**-4*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm

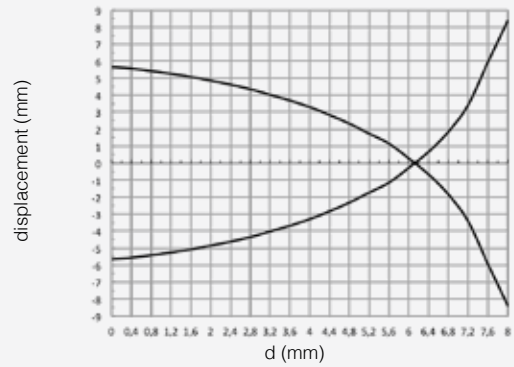
<sup>(1)</sup> ≥ 5.4 mm for not magnetic materials

# response diagram

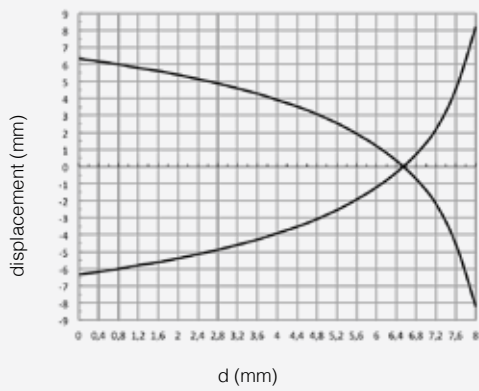
AK1/\*\*-1\* parallel displacement



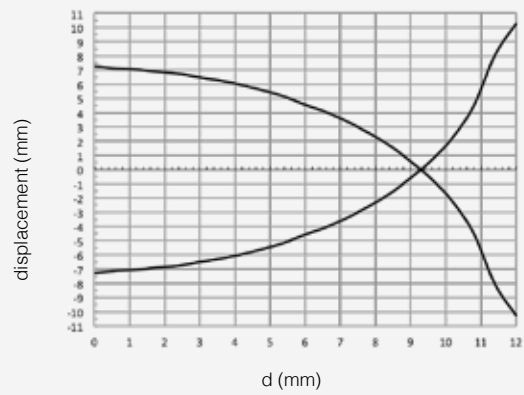
AK1/\*\*-2\* parallel displacement



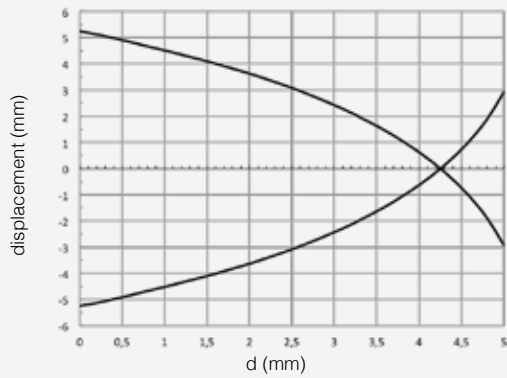
AK1/\*\*-3\* parallel displacement



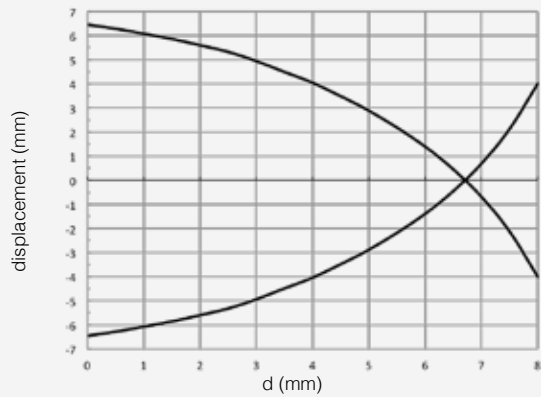
AK1/\*\*-4\* parallel displacement



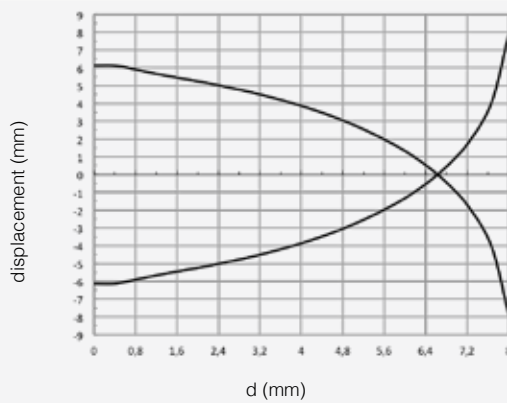
AK6/\*\*-1\* parallel displacement



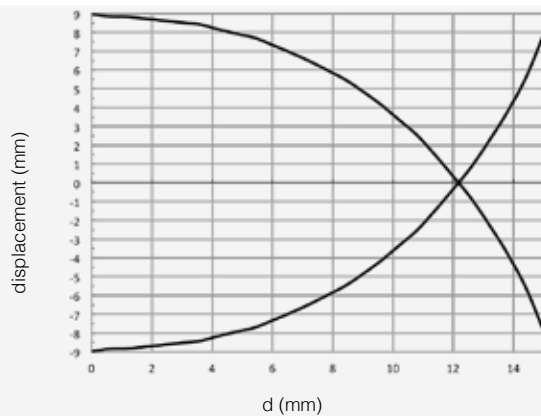
AK6/\*\*-2\* parallel displacement



AK6/\*\*-3\* parallel displacement



AK6/\*\*-4\* parallel displacement

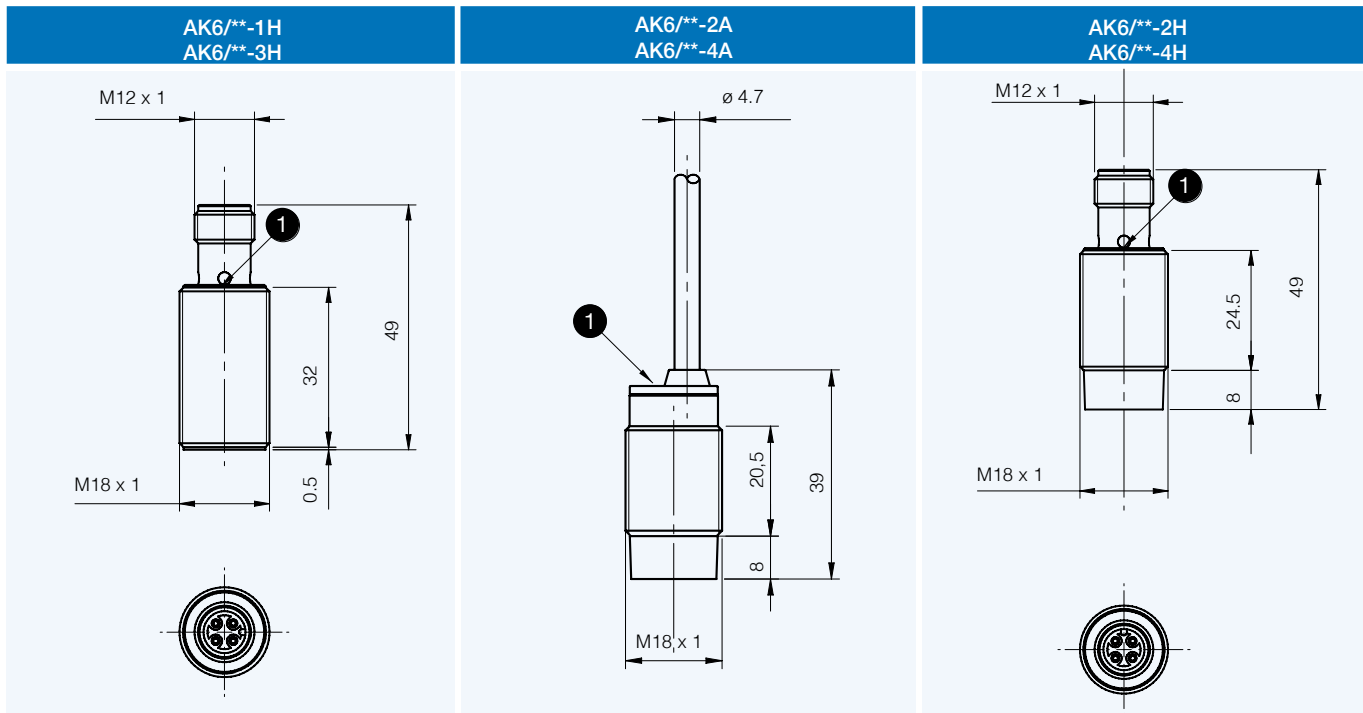


# dimensions (mm)

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





**1** LED

## dimensions (mm)

accessories included

