



PFM series

M12 cylindrical inductive sensors for food and beverage applications



M12 cylindrical for food and beverage applications

features

- AISI 316L (DIN 1.4404) stainless steel housing
- LED status indicator
- IP67 – IP68 – IP69K protection degree
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models



web contents



- Application notes
- Photos
- Catalogue / Manuals



code description (*)

PFM 1 / A P - 1 H 26

series	PFM	M12 inductive sensor for food+beverage applications
housing	1	Standard housing
output state	A	NO output
	B	NO+NC complementary output
output logic	N	NPN output
	P	PNP output
distance	1	2 mm standard shielded
	2	4 mm standard unshielded
	3	4 mm long distance shielded
	4	8 mm long distance unshielded
connect.	H	M12 plug exit
special models	26	Extended temperature range models

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



M12 cylindrical for food and beverage applications

available models

standard models

model	installation	sensing	plug	distance (mm)	NPN/NO	PNP/NO
M12	shielded	standard	M12	2	PFM1/AN-1H	PFM1/AP-1H
	unshielded			4	PFM1/AN-2H	PFM1/AP-2H
	shielded	long distance		4	PFM1/AN-3H	PFM1/AP-3H
	unshielded			8	PFM1/AN-4H	PFM1/AP-4H

available models

models with complementary output

model	installation	sensing	plug	distance (mm)	NPN/NO+NC	PNP/NO+NC
M12	shielded	standard	M12	2	PFM1/BN-1H	PFM1/BP-1H
	unshielded			4	PFM1/BN-2H	PFM1/BP-2H
	shielded	long distance		4	PFM1/BN-3H	PFM1/BP-3H
	unshielded			8	PFM1/BN-4H	PFM1/BP-4H

available models

models with extended temperature range

model	installation	sensing	plug	distance (mm)	PNP/NO+NC
M12	shielded	standard	M12	2	PFM1/BP-1H 26
	unshielded			4	PFM1/BP-2H 26

correction factors

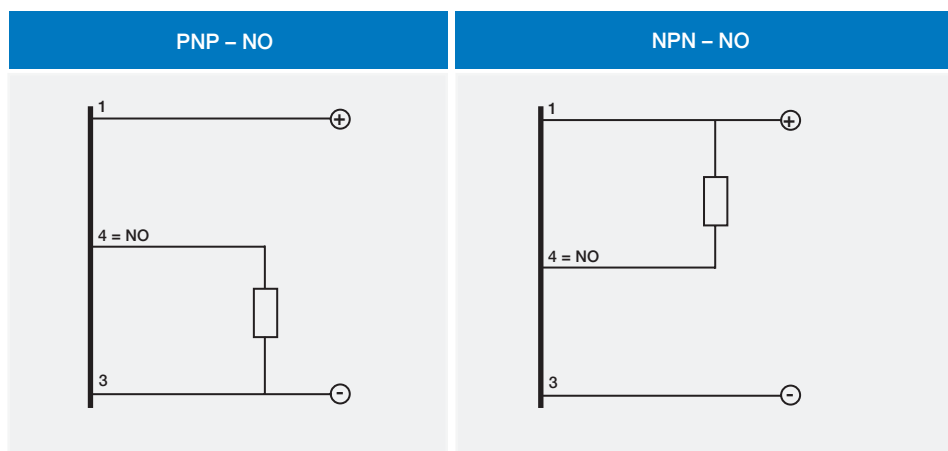
code	steel FE 360	copper	aluminium	brass	stainless steel
PFM1/**-1H*	1	0.25	0.3	0.4	0.75
PFM1/**-2H*		0.33	0.4	0.5	0.8
PFM1/**-3H*		0.3	0.35	0.4	0.75
PFM1/**-4H*		0.33	0.4	0.45	

Tolerance ±10%



	PFM1/**-1H	PFM1/**-2H	PFM1/**-3H	PFM1/**-4H
rated operative distance S _n	2 mm	4 mm		8 mm
working distance	0...1.62 mm	0...3.24 mm		0...6.5 mm
hysteresis				1...20%
standard target	12x12 mm FE360			24x24 mm FE360
repeatability				5%
operating voltage	10...30 V _{cc}			
output type	NPN or PNP - NO + NC or NO			
max ripple content	≤ 10%			
output current	≤ 200 mA			
output voltage drop	≤ 2 V			
no-load supply current	≤ 15 mA			
leakage current	≤ 15 μA			
switching frequency	2 kHz			
power on delay	50 ms			
ambient temperature range	-40...+80 °C short exposure (15') to 100°C (during cleaning processes) / -25...+110°C (PFM-26 models)			
temperature drift of S _r	10%			
short-circuit protection	●			
voltage reversal protection	●			
induction protection	●			
shocks and vibration	IEC 60947-5-2 / 7.4			
weight	30 g			
LEDs	NO output state / no led -25...+110°C PFM-26 models)			
protection degree	IP67, IP68 (1m, 7days); IP69K (according to DIN 40050 part 9)			
EMC	in conformity with the EMC Directive according to IEC 60947-5-2			
housing material	stainless Steel AISI316L (DIN 1.4404)			
active head material	PPS (FDA certified)			
connection	M12 plug with gold-plated pins			
tightening torque	25 Nm			

electrical diagrams of connections



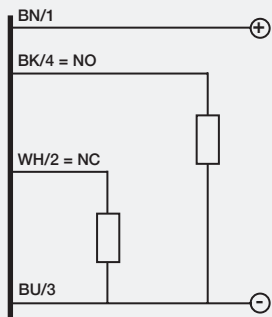
- BN** brown
- BU** blue
- BK** black
- WH** white



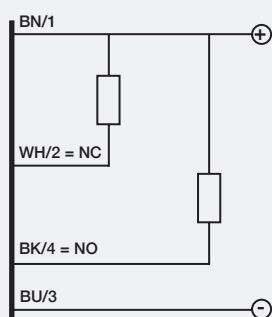
electrical diagrams of connections

M12 cylindrical for food and beverage applications

PNP – NO + NC



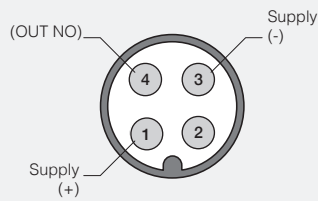
NPN – NO + NC



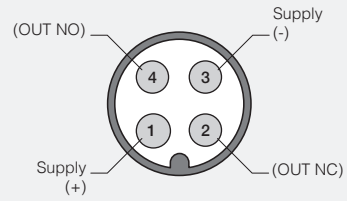
- BN** brown
- BU** blue
- BK** black
- WH** white

plug

M12

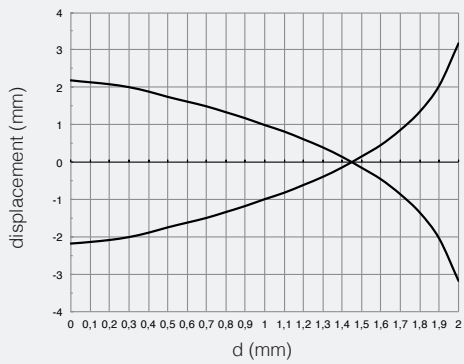


M12

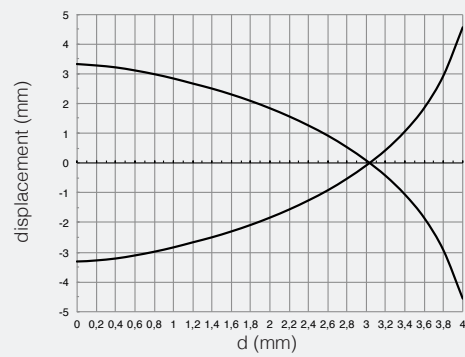


response diagram

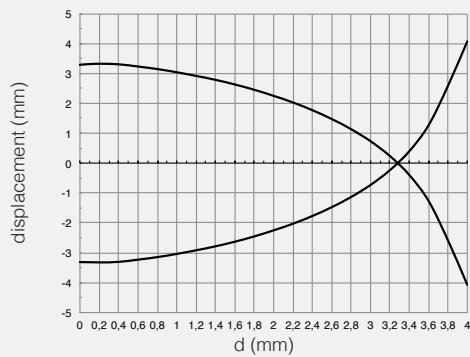
PFM1*/**-1* parallel displacement



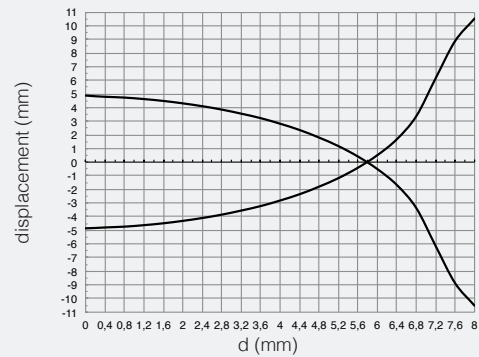
PFM1*/**-2* parallel displacement



PFM1*/**-3* parallel displacement

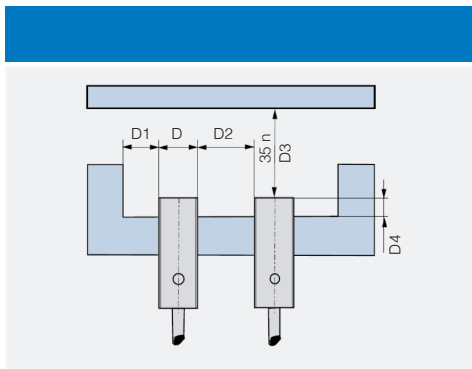


PFM1*/**-4* parallel displacement



PFM

installation

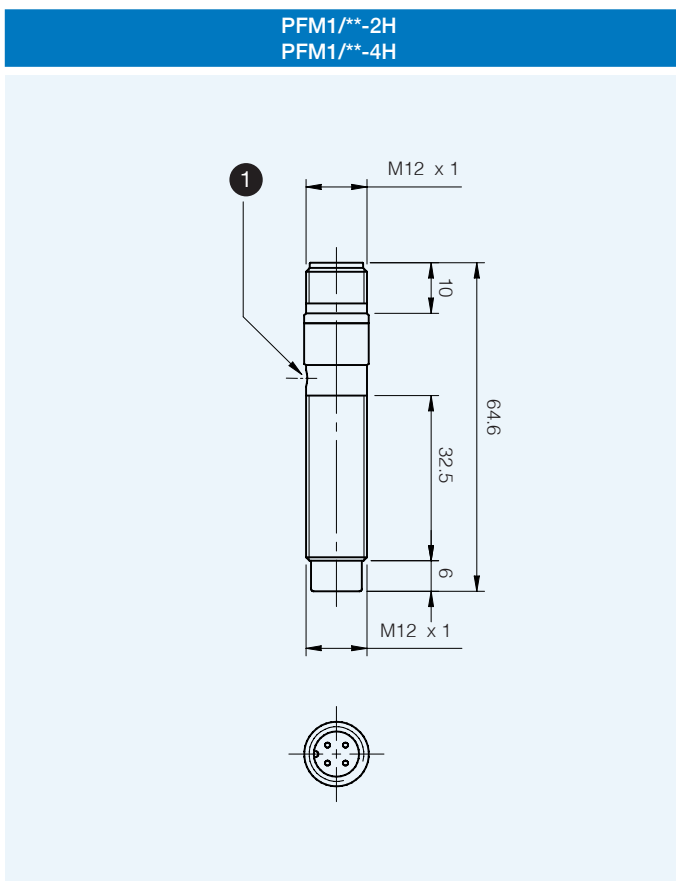
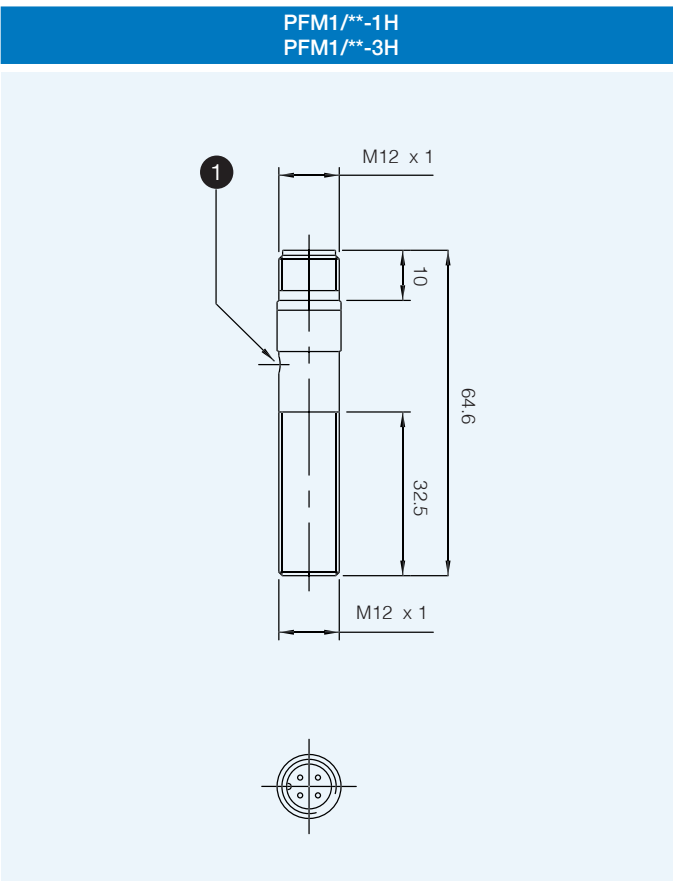


code	D4	D1	D2	D3
PFM1/**-1*	≥ 0 mm ⁽¹⁾	≥ 6 mm	≥ 12 mm	≥ 6 mm
PFM1/**-2*	≥ 6 mm ⁽²⁾	≥ 12 mm	≥ 24 mm	≥ 12 mm
PFM1/**-3*	≥ 0 mm ⁽³⁾	≥ 6 mm	≥ 12 mm	≥ 12 mm
PFM1/**-4*	≥ 12 mm	≥ 12 mm	> 29 mm	≥ 24 mm

⁽¹⁾ ≥ 2 mm for non magnetic material
⁽²⁾ ≥ 0 mm for non magnetic material
⁽³⁾ ≥ 2.4 mm for non magnetic material

M12 cylindrical for food and beverage applications

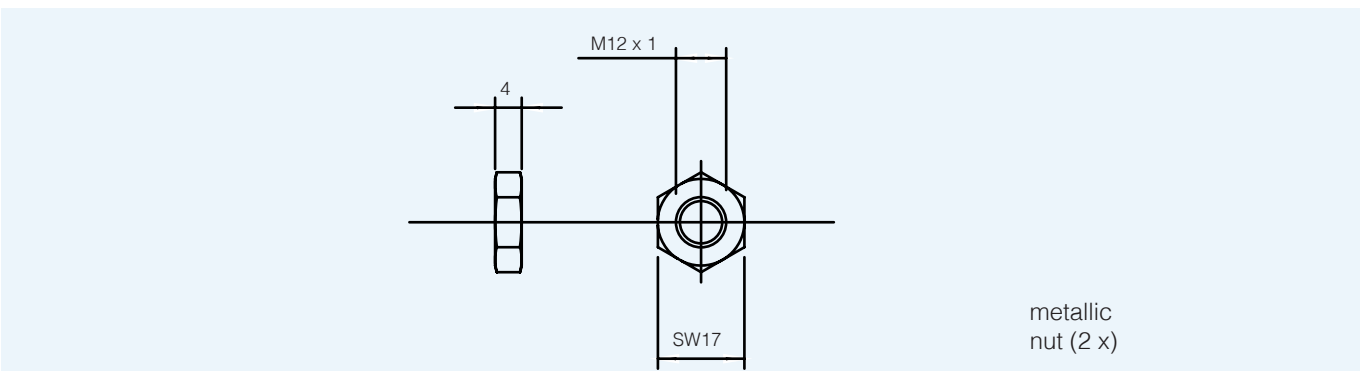
dimensions



1 LED (no LED in PFM-26 models)

dimensions (mm)

accessories included in all M12 models



PFM



notes

20 horizontal light blue lines for writing notes.



PFK series

M18 cylindrical inductive sensors for food and beverage applications



M18 cylindrical for food and beverage applications

features

- AISI 316L (DIN 1.4404) stainless steel housing
- LED status indicator
- IP67 – IP68 – IP69K protection degree
- ATEX models, cat. 3, available on request
- Complete protection against electrical damages
- Standard and long distance models



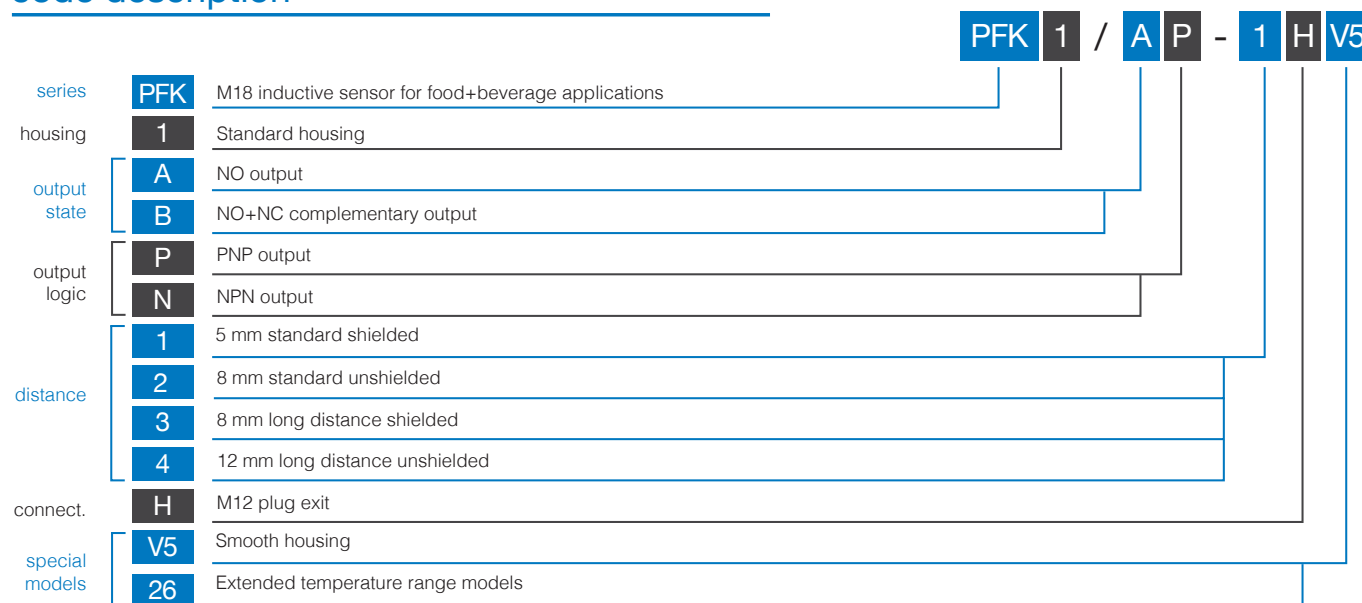
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code description (*)



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



available models

standard models

M18 cylindrical for food and beverage applications

model	installation	sensing	plug	distance (mm)	NPN/NO	PNP/NO
M18	shielded	standard	M12	5	PFK1/AN-1H	PFK1/AP-1H
	unshielded			8	PFK1/AN-2H	PFK1/AP-2H
	shielded	long distance		8	PFK1/AN-3H	PFK1/AP-3H
	unshielded			12	PFK1/AN-4H	PFK1/AP-4H

available models

models with complementary output

model	installation	sensing	plug	distance (mm)	NPN/NO+NC	PNP/NO+NC
M8	shielded	standard	M12	5	PFK1/BN-1H	PFK1/BP-1H
	unshielded			8	PFK1/BN-2H	PFK1/BP-2H
	shielded	long distance		8	PFK1/BN-3H	PFK1/BP-3H
	unshielded			12	PFK1/BN-4H	PFK1/BP-4H

available models

models with extended temperature range

model	installation	sensing	plug	distance (mm)	NPN/NO+NC	PNP/NO+NC
M18	shielded	standard	M18	5	PFK1/BN-1H26	PFK1/BP-1H26
	unshielded			8	PFK1/BN-2H26	PFK1/BP-2H26

correction factors

code	steel FE 360	copper	aluminium	brass	stainless steel
PFK1/**-1*	1	0.25	0.35	0.4	0.7
PFK1/**-2*		0.27		0.42	
PFK1/**-3*		0.2	0.3	0.4	0.65
PFK1/**-4*		0.3	0.38	0.42	

Tolerance $\pm 10\%$

technical specification

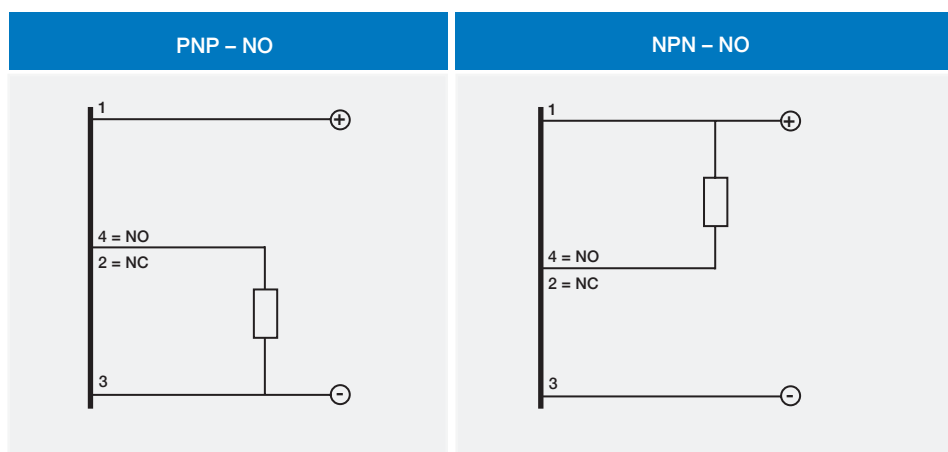
according to IEC EN 60947-5-2 / DIN 44030



M18 cylindrical for food and beverage applications

	PFK1/**-1H	PFK1/**-2H	PFK1/**-3H	PFK1/**-4H
nominal sensing distance	5 mm	8 mm		12 mm
working distance	0...4 mm	0...6.5 mm		0...9.72 mm
hysteresis		1...20%		
standard target	18x18 mm FE360			36x36 mm FE360
repeatability		5%		
operating voltage		10...30 Vcc		
max ripple content		≤ 10%		
output type		NPN or PNP - NO + NC or NO		
output current		≤ 200 mA		
output voltage drop		≤ 2 V		
no-load supply current		≤ 15 mA		
leakage current		≤ 10 µA		
switching frequency		15 kHz		
power on delay		50 ms		
ambient temperature range	-40...+80 °C short exposure (15') to 100°C (during cleaning processes) / -25°C...+110°C (PFK-26 models)			
temperature drift of Sr		10%		
short-circuit protection		●		
voltage reversal protection		●		
induction protection		●		
shocks and vibration		IEC 60947-5-2 / 7.4		
weight		55 g (40 g smooth housing)		
LEDs		NO output state / (no led PFK-26 models)		
protection degree		IP67, IP68 (1m, 7 days); IP69K (according to DIN 40050 part 9)		
EMC		in conformity with the EMC Directive according to IEC 60947-5-2		
housing material		Stainless Steel AISI316L (DIN 1.4404)		
active head material		PPS (FDA certified)		
connection		M12 plug with gold-plated pins		
tightening torque		50 Nm		

electrical diagrams of connections



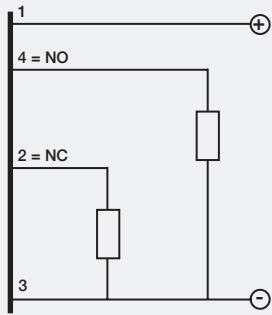
PFK



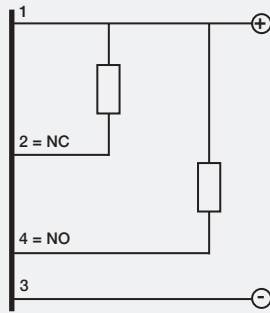
electrical diagrams of connections

M18 cylindrical for food and beverage applications

PNP – NO + NC



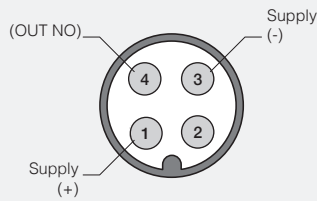
NPN – NO + NC



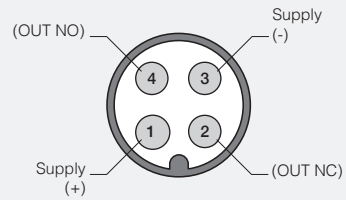
- BN** brown
- BU** blue
- BK** black
- WH** white

plug

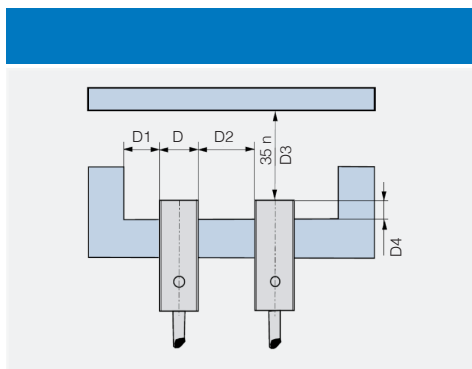
M12



M12



installation

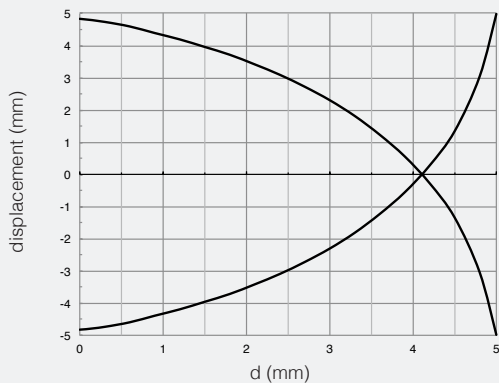


code	D4	D1	D2	D3
PFK1/**-1*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
PFK1/**-2*	≥ 12 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
PFK1/**-3*	≥ 1.8 mm ⁽¹⁾	≥ 9 mm	> 19 mm	≥ 24 mm
PFK1/**-4*	≥ 16 mm	≥ 18 mm	> 37 mm	≥ 36 mm

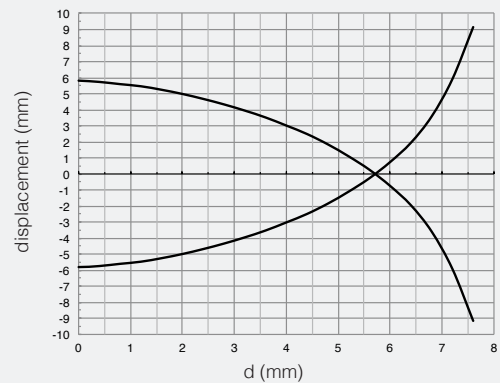
⁽¹⁾ ≥ 5.4 mm for non magnetic material

response diagram

PFK/**-1* parallel displacement



PFK/**-2* parallel displacement

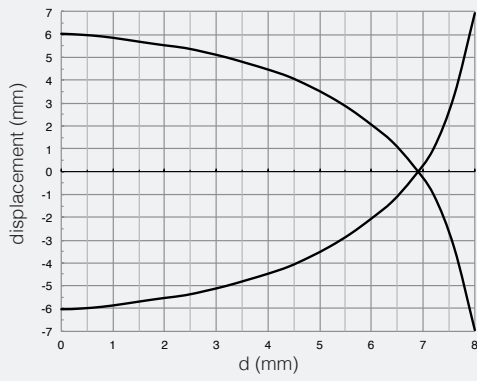


PFK

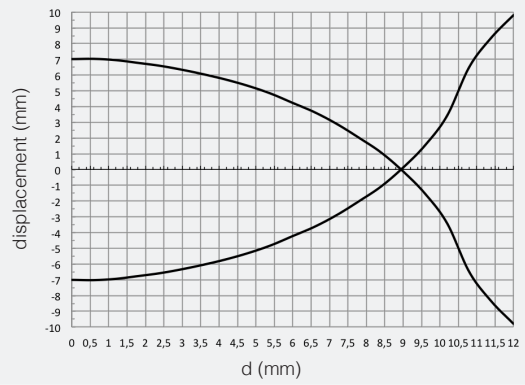


M18 cylindrical for food and beverage applications

PFK*/**-3* parallel displacement

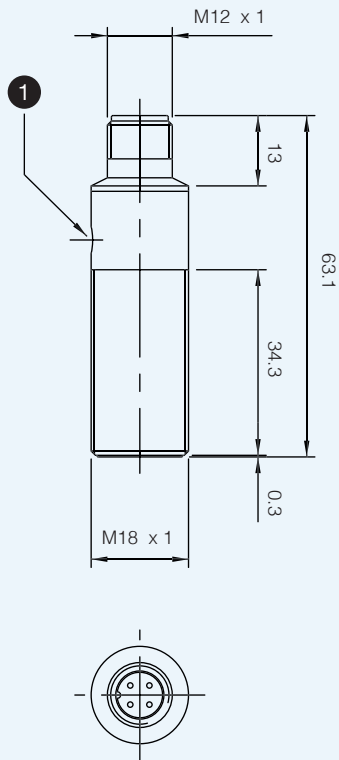


PFK*/**-4* parallel displacement

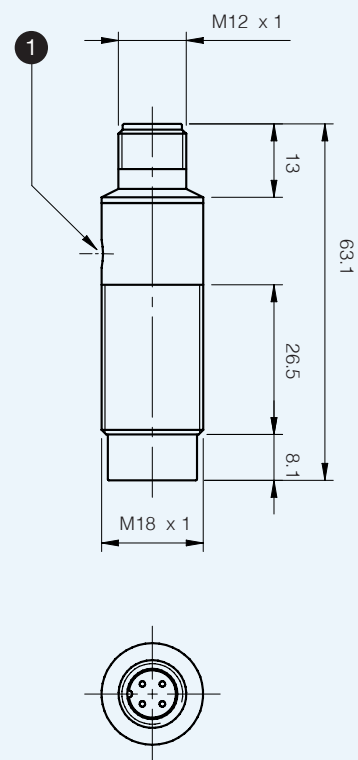


dimensions (mm)

PFK1/**-1H
PFK1/**-3H



PFK1/**-2H
PFK1/**-4H

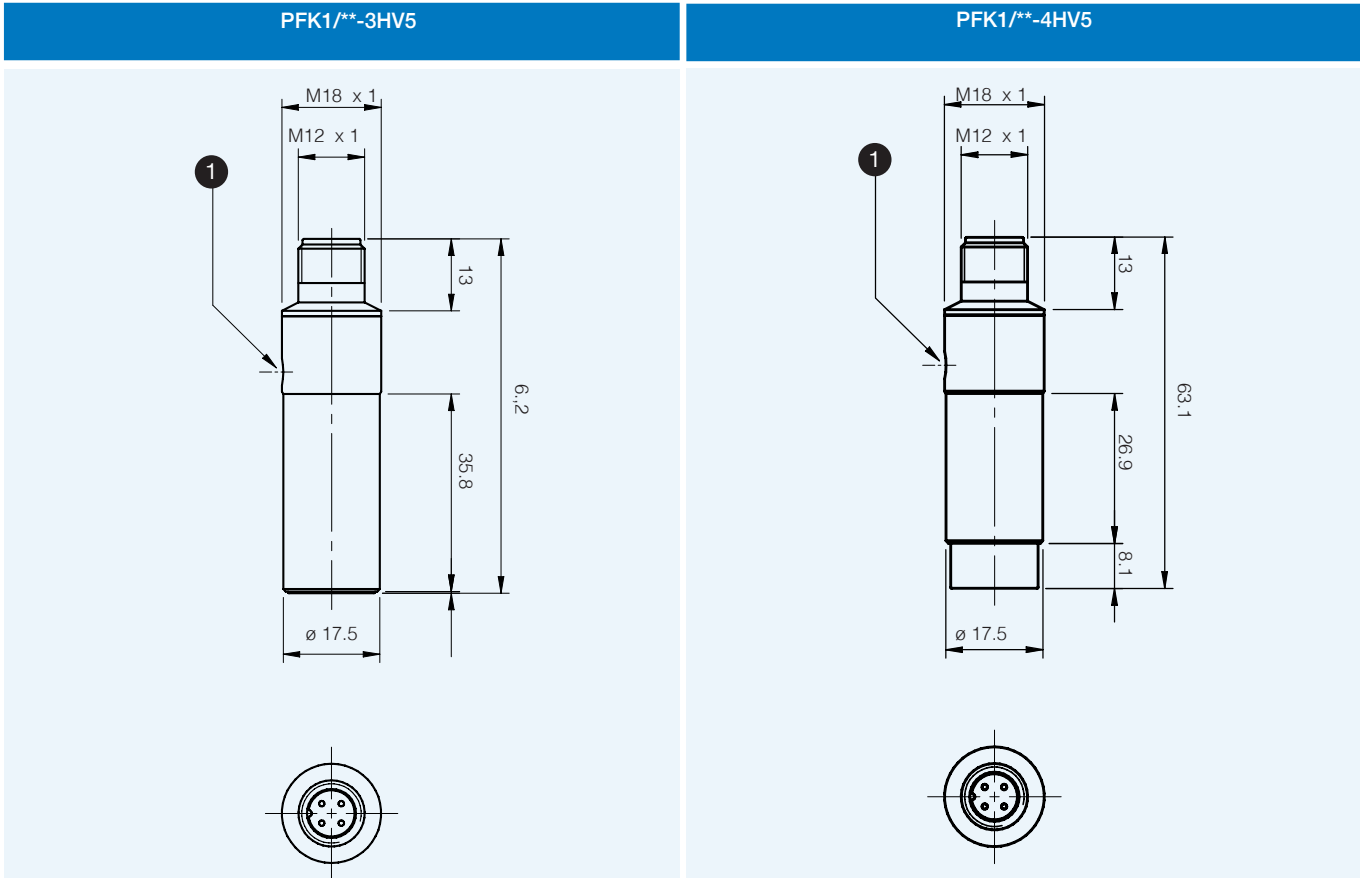


1 LED (no LED in PFK-26 models)



M18 cylindrical for food and beverage applications

dimensions (mm)



1 LED (no LED in PFK-26 models)

dimensions (mm)

accessories included in all M18 models

