

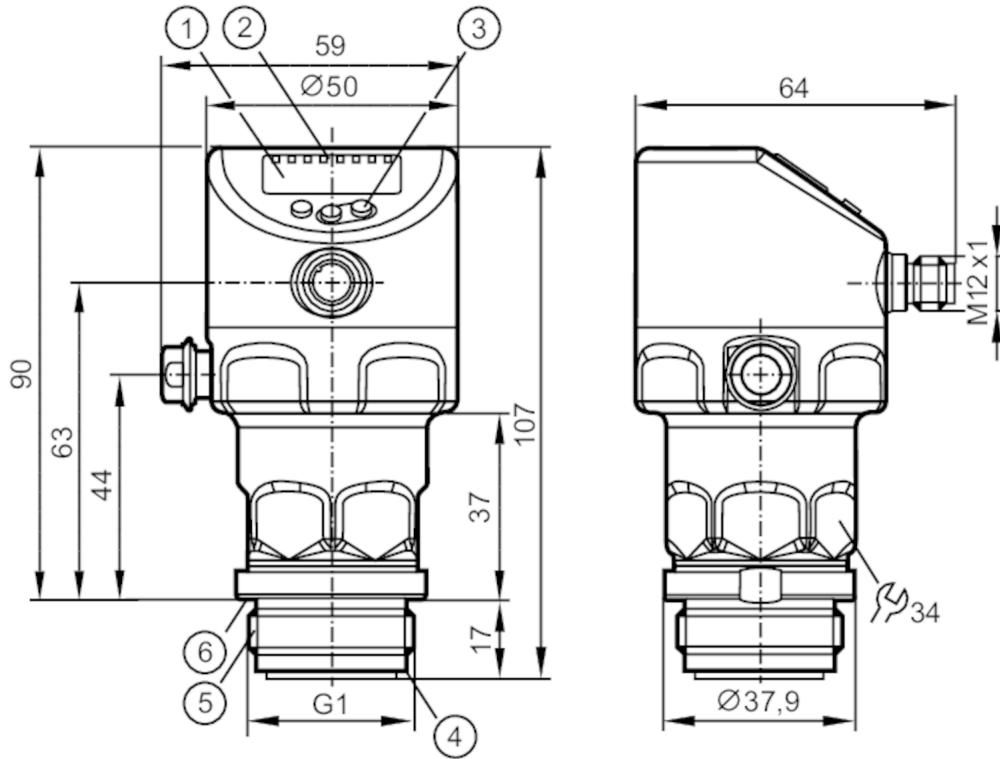
# PI1704



## Flush pressure sensor with display

PI-010-REA01-MFRKG/US/ IP

When selecting an alternative article and accessories please note that technical data may differ!



- 1 alphanumeric display 4-digit
- 2 status LEDs
- 3 programming button
- 4 groove for sealing ring
- 5 external thread G1 Aseptoflex Vario
- 6 groove with sealing ring (DIN 3869-33)



ACS CE CRN EC 1935/2004 EHEDG Certified FCM FDA IO-Link Reg31

### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1		
Measuring range	-1...10 bar	-14.6...145 psi	-0.1...1 MPa
Process connection	threaded connection G 1 external thread Aseptoflex Vario		

### Application

Special feature	Gold-plated contacts		
Application	flush mountable for the food and beverage industry		
Media	viscous media and liquids with suspended particles; liquids and gases		
Medium temperature [°C]	-25...150		
Min. bursting pressure	150 bar	2175 psi	15 MPa
Pressure rating	50 bar	725 psi	5 MPa
Vacuum resistance [mbar]	-1000		
Type of pressure	relative pressure; vacuum		
No dead space	yes		
MAWP (for applications according to CRN) [bar]	10		

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Electrical data				
Min. insulation resistance	[MΩ]	100; (500 V DC)		
Protection class		III		
Reverse polarity protection		yes		
Integrated watchdog		yes		
2-wire				
Operating voltage	[V]	20...30 DC		
Current consumption	[mA]	3.5...21.5		
Power-on delay time	[s]	< 1		
3-wire				
Operating voltage	[V]	18...30 DC		
Current consumption	[mA]	5...45; (430 bei max. Laststrom)		
Power-on delay time	[s]	< 0.5		
Inputs / outputs				
Number of inputs and outputs		Number of digital outputs: 2; Number of analogue outputs: 1		
Outputs				
Total number of outputs		2		
Output signal		switching signal; analogue signal; IO-Link		
Electrical design		PNP/NPN		
Number of digital outputs		2		
Output function		normally open / normally closed; (parameterisable)		
Number of analogue outputs		1		
Analogue current output	[mA]	4...20, invertible; (scalable)		
Short-circuit protection		yes		
Type of short-circuit protection		pulsed		
Overload protection		yes		
2-wire				
Max. load	[Ω]	300		
3-wire				
Max. voltage drop switching output DC	[V]	2		
Permanent current rating of switching output DC	[mA]	100		
Switching frequency DC	[Hz]	125		
Max. load	[Ω]	(U <sub>b</sub> - 10 V) / 21,5 mA; 650 Ω (U <sub>b</sub> = 24 V)		
Measuring/setting range				
Measuring range		-1...10 bar	-14.6...145 psi	-0.1...1 MPa
Set point SP		-0.99...10 bar	-14.3...145 psi	-0.099...1 MPa
Reset point rP		-1...9.99 bar	-14.5...144.8 psi	-0.1...0.999 MPa
Analogue start point		-1...8 bar	-14.5...116 psi	-0.1...0.8 MPa
Analogue end point		1...10 bar	14.5...145 psi	0.1...1 MPa
Min. difference between SP and rP		0.02 bar	0.3 psi	0.002 MPa
In steps of		0.01 bar	0.1 psi	0.001 MPa

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Factory setting	SP1 = 2.50 bar	rP1 = 2.30 bar
	SP2 = 7.50 bar	rP2 = 7.30 bar
	ASP = 0.00 bar	AEP = 10.00 bar
	dAP = 0.06 s	dAA = 0.06 s

Temperature monitoring		
Measuring range	-25...150 °C	-13...302 °F

### Accuracy / deviations

Switch point accuracy [% of the span]	< ± 0,2; (DIN EN IEC 62828-1; Turn down 1:1)	
Repeatability [% of the span]	< ± 0,1; (with temperature fluctuations < 10 K; Turn down 1:1)	
Characteristics deviation [% of the span]	< ± 0,2; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1)	
Linearity deviation [% of the span]	< ± 0,15; (Turn down 1:1)	
Hysteresis deviation [% of the span]	< ± 0,15; (Turn down 1:1)	
Long-term stability [% of the span]	< ± 0,1; (Turn down 1:1; per year)	
Total deviation over temperature range	<b>Temperature range</b>	<b>total deviation</b>
	-25...15 °C	Characteristics deviation ± 0,05 % of the span / 10 K
	15...80 °C	Characteristics deviation
	80...150 °C	Characteristics deviation ± 0,1 % of the span / 10 K
Notes on the accuracy / deviation	for further details see section Diagrams and graphs	

Temperature monitoring		
Accuracy [K]	± 2,5+ (0,08 x ( Umgebungstemperatur - Mediumtemperatur ))	
Repeatability [K]	± 0,2	
Resolution [K]	0.2	

### Response times

Damping process value dAP [s]	0...99.99
Damping for the analogue output dAA [s]	0...99.99

2-wire		
Step response time analogue output [ms]	30	

3-wire		
Min. response time of switching output (dAP) [ms]	3	
Step response time analogue output [ms]	7	

Temperature monitoring		
Dynamic response T05 / T09 [s]	< 35 / < 135; (DIN EN 60751 water ; > 0,9 m/s)	

### Interfaces

Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	

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IO-Link revision	1.1										
SDCI standard	IEC 61131-9										
Profiles	Identification and Diagnosis (0x4000), Measurement Data Channel (0x800A)										
SIO mode	yes										
Required master port type	A										
Min. process cycle time [ms]	5.6										
IO-Link resolution pressure [bar]	0.0005										
IO-Link resolution temperature [K]	0.2										
IO-Link process data (cyclical)	<table border="1"><thead><tr><th>function</th><th>bit length</th></tr></thead><tbody><tr><td>pressure</td><td>32</td></tr><tr><td>temperature</td><td>32</td></tr><tr><td>device status</td><td>4</td></tr><tr><td>binary switching information</td><td>2</td></tr></tbody></table>	function	bit length	pressure	32	temperature	32	device status	4	binary switching information	2
function	bit length										
pressure	32										
temperature	32										
device status	4										
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IO-Link functions (acyclical)	application specific tag; internal temperature; operating hours counter; switching cycles counter; Pressure peak counter										
Supported DeviceIDs	<table border="1"><thead><tr><th>Type of operation</th><th>DeviceID</th></tr></thead><tbody><tr><td>default</td><td>1156</td></tr></tbody></table>	Type of operation	DeviceID	default	1156						
Type of operation	DeviceID										
default	1156										

Operating conditions	
Ambient temperature [°C]	-25...80
Storage temperature [°C]	-40...100
Protection	IP 67; IP 68; IP 69K

Tests / approvals	
EMC	DIN EN 61326-1
Shock resistance	DIN EN 60068-2-27 50 g (11 ms)
Vibration resistance	DIN EN 60068-2-6 20 g (10...2000 Hz)
MTTF [years]	214
Note on approval	factory certificate available as download at <a href="http://www.factory-certificate.ifm">www.factory-certificate.ifm</a>
UL approval	UL Approval no. J048 File number UL E174189

Mechanical data	
Weight [g]	360
Materials	stainless steel (1.4404 / 316L); FKM; PTFE; PBT; PEI; PFA
Materials (wetted parts)	ceramics (99.9 % Al2O3); stainless steel (1.4435 / 316L); surface characteristics: Ra < 0,4 / Rz 4; PTFE
Min. pressure cycles	100 million
Tightening torque [Nm]	35
Process connection	threaded connection G 1 external thread Aseptoflex Vario

Displays / operating elements		
Display	Display unit	LED, green
	switching status	LED, yellow
	function display	alphanumeric display, 4-digit
	measured values	alphanumeric display, 4-digit
Display unit	bar; psi; MPa	

Remarks	
Pack quantity	1 pcs.



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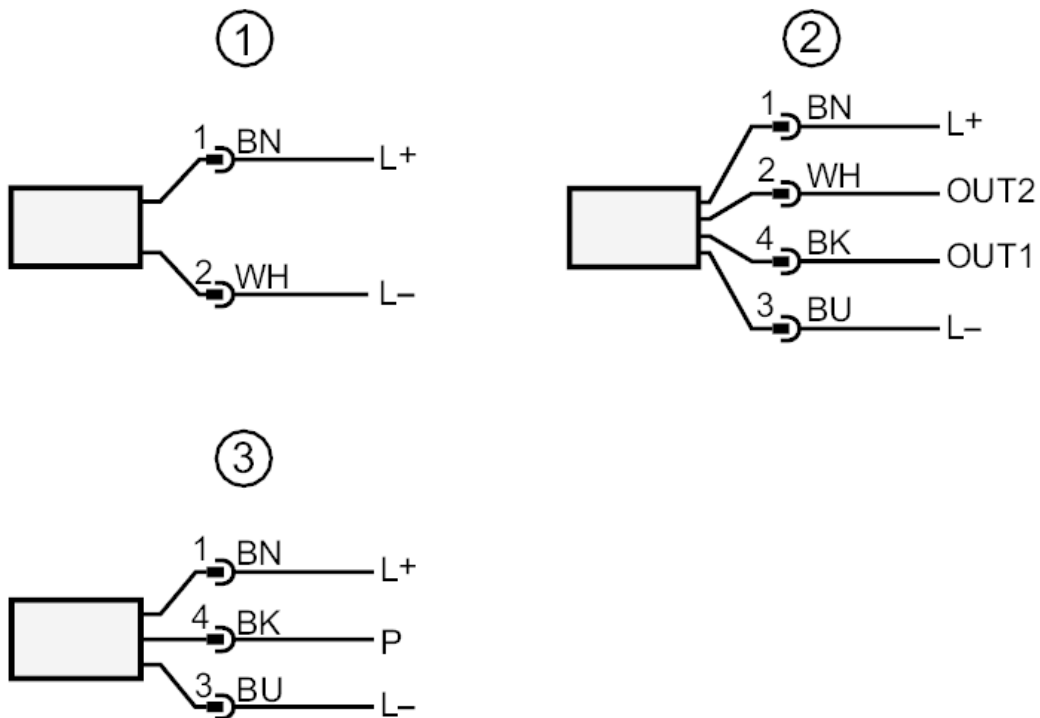
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### Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated



### Connection



- 1 connection for 2-wire operation
  - 2 connection for 3-wire operation
  - OUT1 switching output / IO-Link
  - OUT2 switching output / analogue output
  - 3 connection for IO-Link parameter setting (P = communication via IO-Link)
- colours to DIN EN 60947-5-2

Core colours

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

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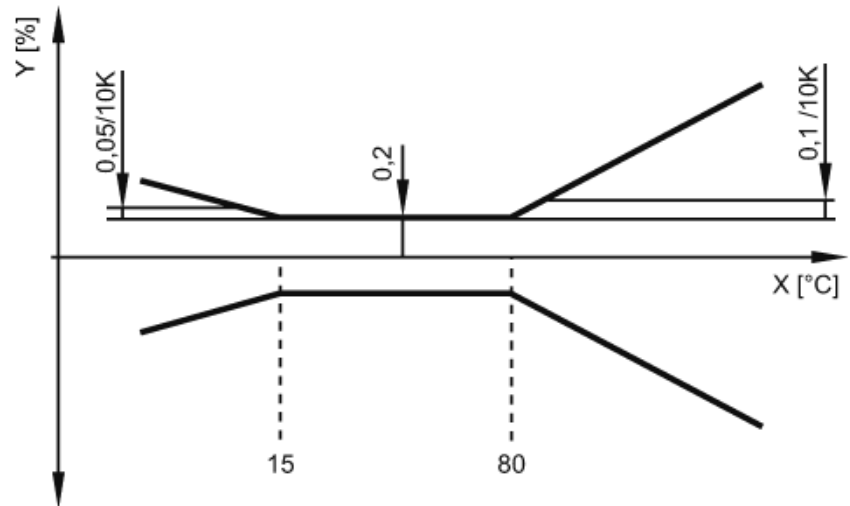


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### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation