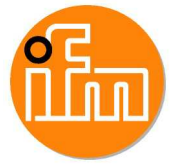


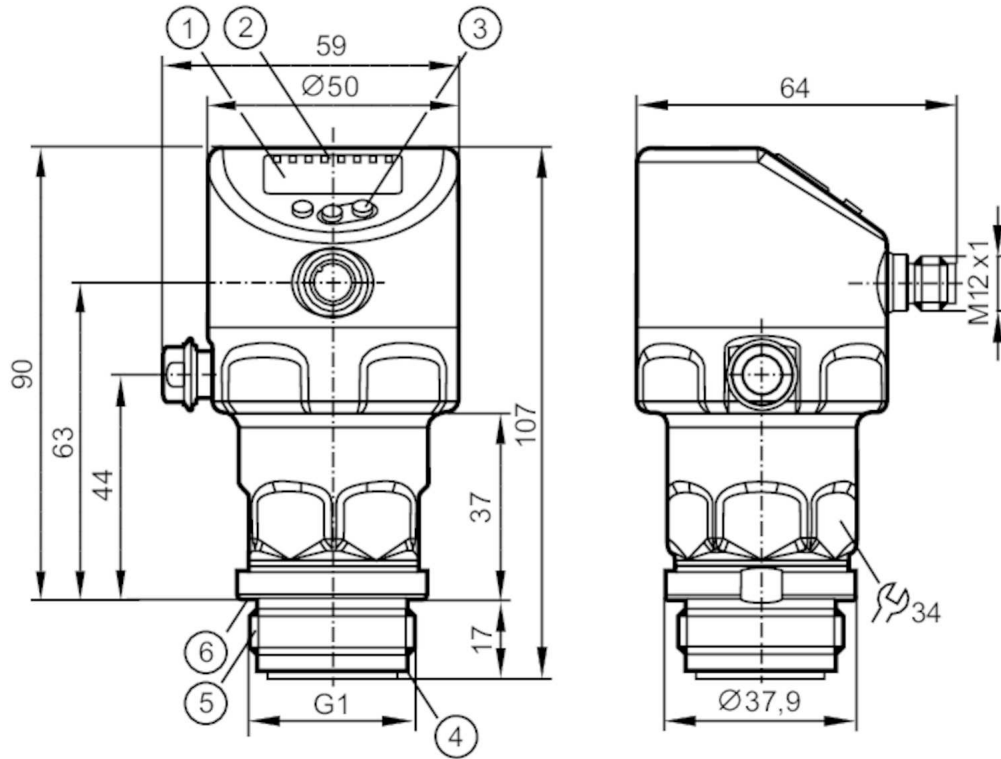
# PI1789



## Flush pressure sensor with display

PI-,10BREA01-MFRKG/US/ /P

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 cUL<sup>us</sup> LISTED EC 1935/2004 EHEDG Certified FCM FDA IO-Link Reg31 UK CA

### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1		
Measuring range	-0.005...0.1 bar	-5...100 mbar	-2...40.15 inH <sub>2</sub> O -0.5...10 kPa
Process connection	threaded connection G 1 external thread Aseptoflex Vario		

### Application

System	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	30000 mbar	12044 inH <sub>2</sub> O	3000 kPa
Pressure rating	4000 mbar	1606 inH <sub>2</sub> O	400 kPa
Vacuum resistance [mbar]	-1000		
Type of pressure	relative pressure; vacuum		
No dead space	yes		
MAWP (for applications according to CRN) [bar]	4		

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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 analog outputs: 1			
Outputs					
Total number of outputs		2			
Output signal		switching signal; analog signal; IO-Link			
Electrical design		PNP/NPN			
Number of digital outputs		2			
Output function		normally open / closed; (configurable)			
Number of analog outputs		1			
Analog current output	[mA]	4...20, invertible; (scalable)			
Short-circuit protection		yes			
Type of short-circuit protection		yes (non-latching)			
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		-0.005...0.1 bar	-5...100 mbar	-2...40.15 inH2O	-0.5...10 kPa
Set point SP		-0.0049...0.1 bar	-4.9...100 mbar	-1.95...40.15 inH2O	-0.49...10 kPa
Reset point rP		-0.005...0.099 bar	-5...99.9 mbar	-2.01...40.09 inH2O	-0.5...9.99 kPa
Analog start point		-0.005...0.08 bar	-5...80 mbar	-2.01...32.12 inH2O	-0.5...8 kPa
Analog end point		0.015...0.1 bar	15...100 mbar	6.02...40.15 inH2O	1.5...10 kPa
Min. difference between SP and rP		0.0002 bar	0.2 mbar	0.06 inH2O	0.02 kPa
In steps of		0.0001 bar	0.1 mbar	0.01 inH2O	0.01 kPa

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## Flush pressure sensor with display

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Factory setting	SP1 =25 mbar	rP1 = 23 mbar
	SP2 = 75 mbar	rP2 = 73 mbar
	ASP = 0 mbar	AEP = 100 mbar
	dAP = 2.00 s	dAA =2.00 s

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

### Accuracy / deviations

Switch point accuracy [% of the span]	< ± 0,5; (DIN EN IEC 62828-1; Turn down 1:1)	
Repeatability [% of the span]	< ± 0,2; (with temperature fluctuations < 10 K; Turn down 1:1)	
Characteristics deviation [% of the span]	< ± 0,5; (DIN IEC EN 62828-1 incl. zero point and span error, non-linearity, hysteresis; Turn down 1:1)	
Linearity deviation [% of the span]	< ± 0,25; (Turn down 1:1)	
Hysteresis deviation [% of the span]	< ± 0,2; (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 ± 0,15 % of the span / 10 K
	15...80 °C	Characteristics deviation
	80...150 °C	Characteristics deviation ± 0,2 % 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	

### Reaction times

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

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

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



## Flush pressure sensor with display

PI-,10BREA01-MFRKG/US/ /P

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 class	A	
Min. process cycle time [ms]	5.6	
IO-Link resolution pressure [mbar]	0.005	
IO-Link resolution temperature [K]	0.2	
IO-Link process data (cyclical)	<b>Function</b>	<b>bit length</b>
	pressure	32
	temperature	32
	device status	4
	binary switching information	2
IO-Link functions (acyclical)	application specific tag; internal temperature; operating hours counter; switching cycles counter; Pressure peak counter	
Supported DeviceIDs	<b>Type of operation</b>	<b>DeviceID</b>
	default	1158

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 number	J048
	File number UL	E174189

Mechanical data		
Weight [g]	357	
Material	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	mbar; kPa; inH2O	

Remarks		
Pack quantity	1 pcs.	

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## Flush pressure sensor with display

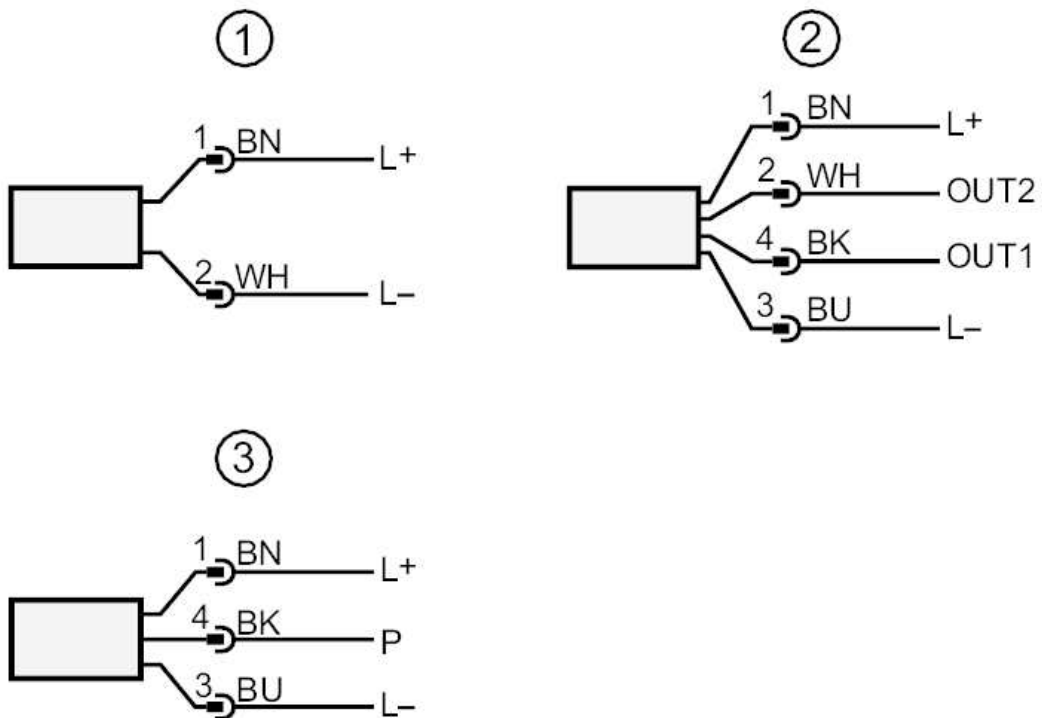
PI-,10BREA01-MFRKG/US/ /P

### 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 / analog output
- 3 connection for IO-Link parameter setting (P = communication via IO-Link)

Colors to DIN EN 60947-5-2  
Core colors

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

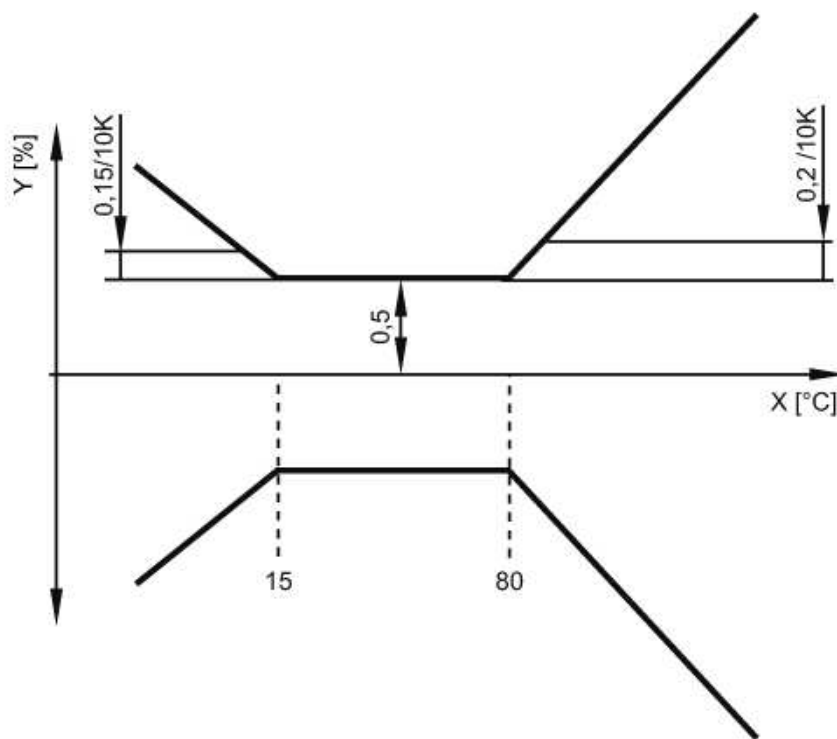
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## Flush pressure sensor with display

PI-,10BREA01-MFRKG/US/ IP

### Diagrams and graphs



X temperature  
Y total deviation