

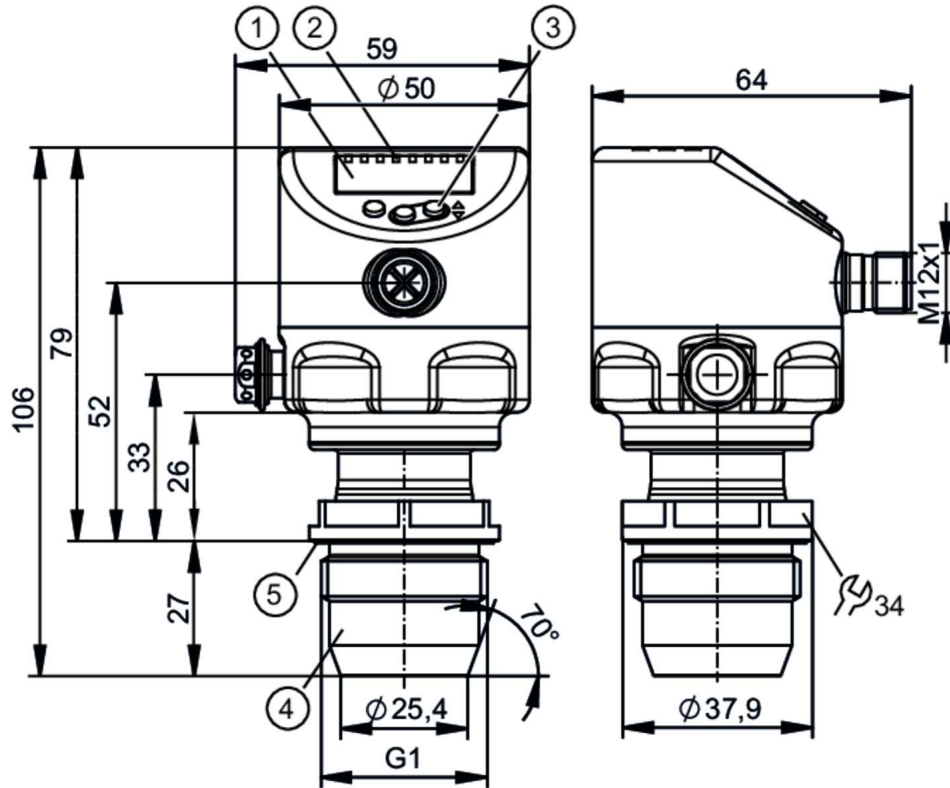
# PI1809



## Flush pressure sensor with display

PI-1-1BREA01-MFRKG/USI/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 G1 sealing cone external thread  
Attention: The unit must only be installed in a process connection for G1 sealing cone.  
The G1A sealing cone of the unit is only suited for adapters with metal end stop.
- 5 groove with sealing ring



ACS



CRN



us

EC 1935/2004

EHEDG

Tested

FCM



IO-Link

Reg31



UK

CA

### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1			
Measuring range	-1000...1000 mbar	-14.5...14.5 psi	-401...401 inH2O	-100...100 kPa
Process connection	threaded connection G 1 external thread sealing cone Attention: The unit must only be installed in a process connection for G1 sealing cone.; The G1A sealing cone of the unit is only suited for adapters with metal end stop.			

### 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	435 psi	3000 kPa
Pressure rating	10000 mbar	145 psi	1000 kPa
Vacuum resistance [mbar]	-1000		
Type of pressure	relative pressure; vacuum		
No dead space	yes		

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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 analog outputs: 1		
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### 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
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### 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	-1000...1000 mbar	-14.5...14.5 psi	-401...401 inH2O	-100...100 kPa
Set point SP	-997...1000 mbar	-14.46...14.5 psi	-400...401 inH2O	-4.9...100 kPa
Reset point rP	-1000...997 mbar	-14.5...14.46 psi	-401...400 inH2O	-100...99.7 kPa
Analog start point	-1000...599 mbar	-14.5...8.68 psi	-401...240 inH2O	-100...59.9 kPa
Analog end point	-599...1000 mbar	-8.68...14.5 psi	-240...401 inH2O	-59.9...100 kPa

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Min. difference between SP and rP	3 mbar	0.05 psi	2 inH2O	0.3 kPa
In steps of	1 mbar	0.01 psi	1 inH2O	0.1 kPa
Factory setting	SP1 = -500 mbar		rP1 = -540 mbar	
	SP2 = 500 mbar		rP2 = 460 mbar	
	ASP = -1000 mbar		AEP = 1000 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]	< ± 0,2; (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	

### 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
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### 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)	

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Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
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]	0.1	
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	1151
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	J049
	File number UL	E174189
Mechanical data		
Weight [g]	384.6	
Material	stainless steel (1.4404 / 316L); FKM; PTFE; PBT; PEI; PFA	
Materials (wetted parts)	ceramics (99.9 % Al <sub>2</sub> O <sub>3</sub> ); stainless steel (1.4435 / 316L); surface characteristics: Ra < 0,4 / Rz 4; PTFE	
Min. pressure cycles	100 million	
Tightening torque [Nm]	20	
Process connection	threaded connection G 1 external thread sealing cone Attention: The unit must only be installed in a process connection for G1 sealing cone.; The G1A sealing cone of the unit is only suited for adapters with metal end stop.	

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### Displays / operating elements

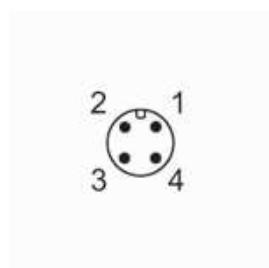
Display	Display unit	LED, green
	Switching status	LED, yellow
	Function display	alphanumeric display, 4-digit
	Measured values	alphanumeric display, 4-digit
Display unit	mbar; psi; kPa; inH2O	

### Remarks

Pack quantity	1 pcs.
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### Electrical connection

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



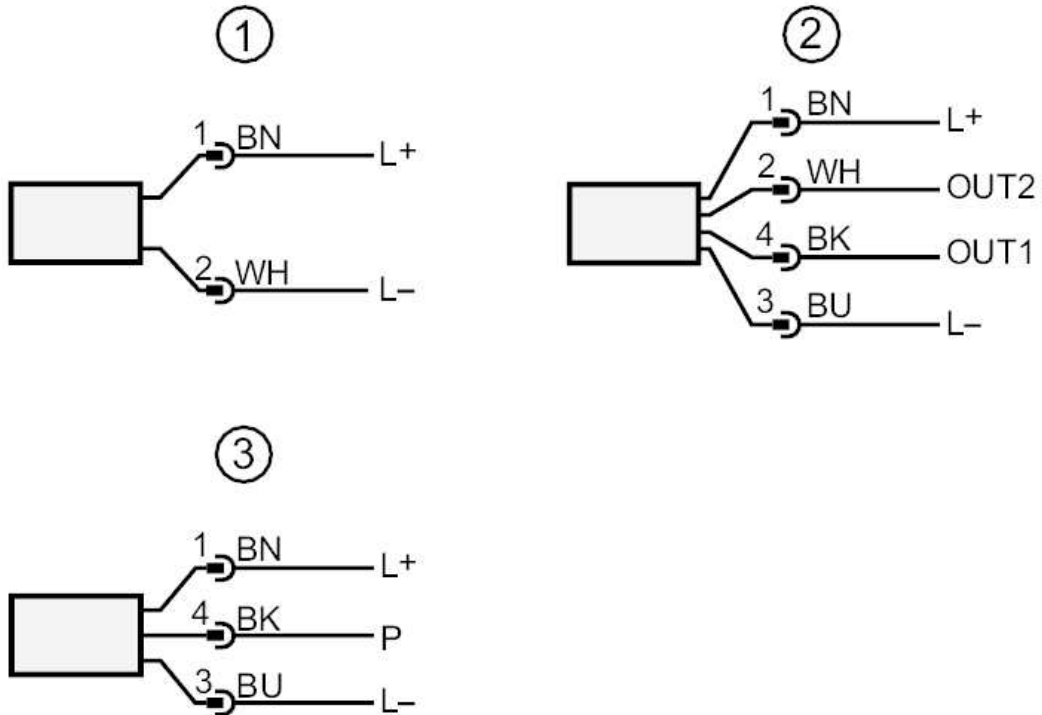
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### Connection



- 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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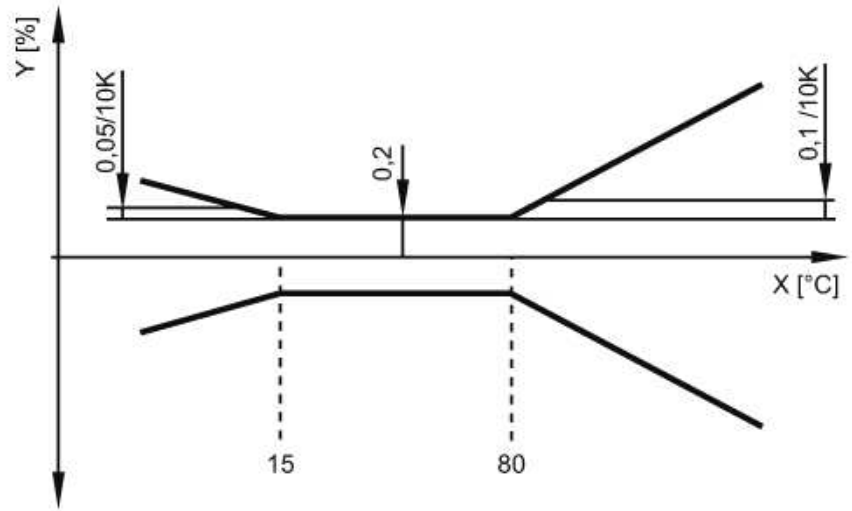


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### Diagrams and graphs

ambient temperature influence on the accuracy



X temperature  
Y total deviation