

PN2099



Pressure sensor with display

PN-1-1BRER14-MFRKG/US/ IV



- 1 alphanumeric display 4-digit red/green
- 2 LEDs Display unit / switching status
- 3 programming button
- 4 upper part of the housing can be rotated 345°



Product characteristics

Output signal	switching signal; analogue signal; IO-Link; (configurable)					
Measuring range	-1...1 bar	-1000...1000 mbar	-14.5...14.5 psi	-29.5...29.5 inHg	-401...401 inH2O	-100...100 kPa
Process connection	threaded connection G 1/4 internal thread (DIN EN ISO 1179-2)					

Application

Special feature	Gold-plated contacts					
Measuring element	ceramic-capacitive pressure measuring cell					
Application	for industrial applications					
Media	liquids and gases					
Medium temperature [°C]	-25...80					
Min. bursting pressure	30000 mbar	450 psi		3000 kPa		
Pressure rating	10000 mbar	145 psi		1000 kPa		
Vacuum resistance [mbar]	-1000					
Type of pressure	relative pressure; vacuum					

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Electrical data							
Operating voltage	[V]	18...30 DC; (according to EN 50178 SELV/PELV)					
Current consumption	[mA]	< 35					
Min. insulation resistance	[MΩ]	100; (500 V DC)					
Protection class		III					
Reverse polarity protection		yes					
Power-on delay time	[s]	0.3					
Integrated watchdog		yes					
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; (configurable)					
Electrical design		PNP/NPN					
Number of digital outputs		2					
Output function		normally open / normally closed; (parameterisable)					
Max. voltage drop switching output DC	[V]	2					
Permanent current rating of switching output DC	[mA]	250					
Switching frequency DC	[Hz]	< 500					
Number of analogue outputs		1					
Analogue current output	[mA]	4...20; (scalable 1:5)					
Max. load	[Ω]	500					
Analogue voltage output	[V]	0...10; (scalable 1:5)					
Min. load resistance	[Ω]	2000					
Short-circuit protection		yes					
Type of short-circuit protection		pulsed					
Overload protection		yes					
Measuring/setting range							
Measuring range		-1...1 bar	-1000...1000 mbar	-14.5...14.5 psi	-29.5...29.5 inHg	-401...401 inH2O	-100...100 kPa
Analogue start point		-1000...600 mbar	-14.5...8.7 psi	-29.5...17.7 inHg	-402...240 inH2O		-100...60 kPa
Analogue end point		-600...1000 mbar	-8.7...14.5 psi	-17.7...29.5 inHg	-240...402 inH2O		-60...100 kPa
Factory setting / CMPT = 2							
Set point SP		-985...1000 mbar	-14.3...14.5 psi	-29.2...29.5 inHg	-396...402 inH2O		-98.5...100 kPa
Reset point rP		-995...990 mbar	-14.45...14.4 psi	-29.4...29.3 inHg	-400...398 inH2O		-99.5...99 kPa
Min. difference between SP and rP		10 mbar	0.15 psi	0.3 inHg	4 inH2O		1 kPa
In steps of		5 mbar	0.05 psi	0.1 inHg	2 inH2O		0.5 kPa

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Status_B High Resolution / CMPT = 3					
Set point SP	-987...1000 mbar	-14.32...14.5 psi	-29.2...29.5 inHg	-396...401 inH2O	-98.7...100 kPa
Reset point rP	-996...992 mbar	-14.44...14.38 psi	-29.4...29.3 inHg	-400...398 inH2O	-99.6...99.2 kPa
Min. difference between SP and rP	9 mbar	0.12 psi	0.3 inHg	4 inH2O	0.9 kPa
In steps of	1 mbar	0.01 psi	0.1 inHg	1 inH2O	0.1 kPa

Accuracy / deviations

Notes on the accuracy / deviation	switch point accuracy, linearity error under DNV GL: $\lt; \pm 1\%$
Switch point accuracy [% of the span]	$\lt; \pm 0,4$; (Turn down 1:1)
Repeatability [% of the span]	$\lt; \pm 0,1$; (with temperature fluctuations $\lt; 10\text{ K}$; Turn down 1:1)
Characteristics deviation [% of the span]	$\lt; \pm 0,25$ (BFSL) / $\lt; \pm 0,5$ (LS); (Turn down 1:1; BFSL = Best Fit Straight Line; LS = limit value setting)
Hysteresis deviation [% of the span]	$\lt; \pm 0,1$; (Turn down 1:1)
Long-term stability [% of the span]	$\lt; \pm 0,05$; (Turn down 1:1; per 6 months)
Temperature coefficient zero point [% of the span / 10 K]	$\lt; \pm 0,2$; (-0...80 °C)
Temperature coefficient span [% of the span / 10 K]	$\lt; \pm 0,2$; (-0...80 °C)

Response times

Response time [ms]	$\lt; 1.5$
Delay time programmable dS, dr [s]	0...50
Damping for the switching output dAP [s]	0...4
Damping for the analogue output dAA [s]	0...4
Max. response time analogue output [ms]	3

Software / programming

Parameter setting options	hysteresis / window; normally open / normally closed; switch-on/ switch-off delay; Damping; Display unit; current/voltage output
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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	
SIO mode	yes	
Required master port type	A; (wenn PIN 2 nicht verbunden: B)	
Supported DeviceIDs	Type of operation	DeviceID
	Factory setting / CMPT = 2	467
	Status_B High Resolution / CMPT = 3	983
Note	For further information please see the IO-Link PDF file under "Downloads"	



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Factory setting / CMPT = 2		
Profiles	Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis	
Min. process cycle time [ms]	2.3	
IO-Link resolution pressure [mbar]	1	
IO-Link process data (cyclical)	function	bit length
	pressure	14
	binary switching information	2
IO-Link functions (acyclical)	application specific tag	
Status_B High Resolution / CMPT = 3		
Profiles	Smart Sensor ED2: Digital Measuring Sensor (0x000A), Identification and Diagnosis (0x4000)	
Min. process cycle time [ms]	3	
IO-Link resolution pressure [mbar]	1	
IO-Link process data (cyclical)	function	bit length
	pressure	16
	device status	4
	binary switching information	2
IO-Link functions (acyclical)	application specific tag	
Operating conditions		
Ambient temperature [°C]	-25...80	
Storage temperature [°C]	-40...100	
Protection	IP 65; IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
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]	138	
UL approval	UL Approval no.	J012
Pressure Equipment Directive	Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data		
Weight [g]	237.5	
Materials	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC	
Materials (wetted parts)	stainless steel (1.4404 / 316L); Al2O3 (ceramics); FKM	
Min. pressure cycles	100 million	
Tightening torque [Nm]	25...35; (recommended tightening torque; depends on lubrication, seal and pressure rating)	
Process connection	threaded connection G 1/4 internal thread (DIN EN ISO 1179-2)	
Restrictor element integrated	no (can be retrofitted)	
Displays / operating elements		
Display	Display unit	5 x LED, green (mbar, psi, kPa, inH2O, inHg)
	switching status	2 x LED, yellow
	measured values	alphanumeric display, red/green 4-digit
Remarks		
Pack quantity	1 pcs.	

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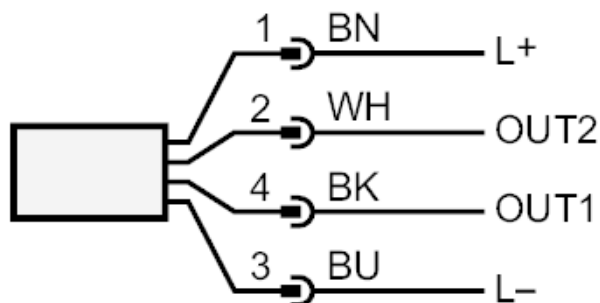
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Electrical connection

Connector: 1 x M12; Contacts: gold-plated



Connection



OUT1 switching output

IO-Link

OUT2 switching output

analogue output

Core colours :

BK = black

BN = brown

BU = blue

WH = white