

PN2299



Pressure sensor with display

PN-1-1BREN14-MFRKG/US/ /V



- 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

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1					
Measuring range	-1...1 bar	-1000...1000 mbar	-14.5...14.5 psi	-29.5...29.5 inHg	-402...402 inH2O	-100...100 kPa
Process connection	threaded connection 1/4" NPT Internal thread					

Application

System	gold-plated contacts		
Measuring element	ceramic-capacitive pressure measuring cell		
Application	for industrial applications		
Media	liquids and gases		
Medium temperature [°C]	-25...80		
Min. burst pressure	30000 mbar	450 psi	3000 kPa
Pressure rating	10000 mbar	145 psi	1000 kPa
Vacuum resistance	-1000 mbar		-0.1 MPa
Type of pressure	relative pressure; vacuum		
MAWP (for applications according to CRN)	20 bar	20000 mbar	290 psi 2000 kPa

Electrical data

Operating voltage [V]	18...30 DC; (to SELV/PELV)
Current consumption [mA]	< 35
Min. insulation resistance [MΩ]	100; (500 V DC)

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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 analog outputs: 1
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Outputs

Total number of outputs	2
Output signal	switching signal; analog signal; IO-Link; (configurable)
Electrical design	PNP/NPN
Number of digital outputs	2
Output function	normally open / closed; (configurable)
Max. voltage drop switching output DC [V]	2
Permanent current rating of switching output DC [mA]	250
Switching frequency DC [Hz]	< 500
Number of analog outputs	1
Analog current output [mA]	4...20; (scalable 1:5)
Max. load [Ω]	500
Analog voltage output [V]	0...10; (scalable 1:5)
Min. load resistance [Ω]	2000
Short-circuit protection	yes
Type of short-circuit protection	yes (non-latching)
Overload protection	yes

Measuring/setting range

Measuring range	-1...1 bar	-1000...1000 mbar	-14.5...14.5 psi	-29.5...29.5 inHg	-402...402 inH2O	-100...100 kPa
Analog start point	-1000...600 mbar	-14.5...8.7 psi	-29.5...17.7 inHg	-402...240 inH2O	-100...60 kPa	
Analog 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

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

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

Reaction times

Response time [ms]	< 1.5
Delay time programmable dS, dr [s]	0...50
Damping process value dAP [s]	0...4
Damping for the analog output dAA [s]	0...4
Max. response time analog output [ms]	3

Software / programming

Parameter setting options	hysteresis / window; normally open / 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 class	A; (when pin 2 not connected: B)						
Supported DeviceIDs	<table> <tr> <th>Type of operation</th><th>DeviceID</th></tr> <tr> <td>Factory setting / CMPT = 2</td><td>477</td></tr> <tr> <td>Status_B High Resolution / CMPT = 3</td><td>993</td></tr> </table>	Type of operation	DeviceID	Factory setting / CMPT = 2	477	Status_B High Resolution / CMPT = 3	993
Type of operation	DeviceID						
Factory setting / CMPT = 2	477						
Status_B High Resolution / CMPT = 3	993						
Note	For further information please see the IODD PDF file at "Downloads"						

Factory setting / CMPT = 2

Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	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

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IO-Link functions (acyclical)		application specific tag	
Status_B High Resolution / CMPT = 3			
Profiles		Smart Sensor - SSP 3.1	Measuring Sensor
		Common - I&D	Identification and Diagnosis
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 number	J012
Pressure equipment directive		sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	
Mechanical data			
Weight	[g]	223.5	
Housing		tubular	
Dimensions	[mm]	Ø 34 / L = 90.7	
Material		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] > 50; (Depends on lubrication, seal and pressure rating)	
Process connection		threaded connection 1/4" NPT Internal thread	
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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Electrical connection

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



Connection



OUT1	Switching output IO-Link
OUT2	Switching output analog output
Core colors :	
BK =	black
BN =	brown
BU =	blue
WH =	white