



Pressure sensor with display

PN-001BREN14-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

Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1				
Measuring range	-0.05...1 bar	-50...1000 mbar	-0.72...14.5 psi	-20.1...401.5 inH2O	-5...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			
MAWP (for applications according to CRN)	10 bar	10000 mbar	145 psi	1000 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	-0.05...1 bar	-50...1000 mbar	-0.72...14.5 psi	-20.1...401.5 inH2O	-5...100 kPa
Analog start point	-50...800 mbar	-0.72...11.6 psi	-20...321 inH2O	-5...80 kPa	
Analog end point	150...1000 mbar	2.18...14.5 psi	60.5...401.5 inH2O	15...100 kPa	

Factory setting / CMPT = 2

Set point SP	-44...1000 mbar	-0.64...14.5 psi	-17.5...401.5 inH2O	-4.4...100 kPa
Reset point rP	-48...996 mbar	-0.7...14.44 psi	-19...400 inH2O	-4.4...99.6 kPa
Min. difference between SP and rP	6 mbar	0.06 psi	2 inH2O	0.6 kPa
In steps of	2 mbar	0.02 psi	0.5 inH2O	0.2 kPa

Status_B High Resolution / CMPT = 3

Set point SP	-44...1000 mbar	-0.63...14.5 psi	-17.5...401.5 inH2O	-4.4...100 kPa
Reset point rP	-48...996 mbar	-0.69...14.44 psi	-19.2...399.8 inH2O	-4.8...99.6 kPa
Min. difference between SP and rP	5 mbar	0.06 psi	1.7 inH2O	0.5 kPa
In steps of	1 mbar	0.01 psi	0.1 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>475</td></tr> <tr> <td>Status_B High Resolution / CMPT = 3</td><td>991</td></tr> </table>	Type of operation	DeviceID	Factory setting / CMPT = 2	475	Status_B High Resolution / CMPT = 3	991
Type of operation	DeviceID						
Factory setting / CMPT = 2	475						
Status_B High Resolution / CMPT = 3	991						
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]	0.5	
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]	222	
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	4 x LED, green (mbar, kPa, psi, inH2O)
		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