PN7097
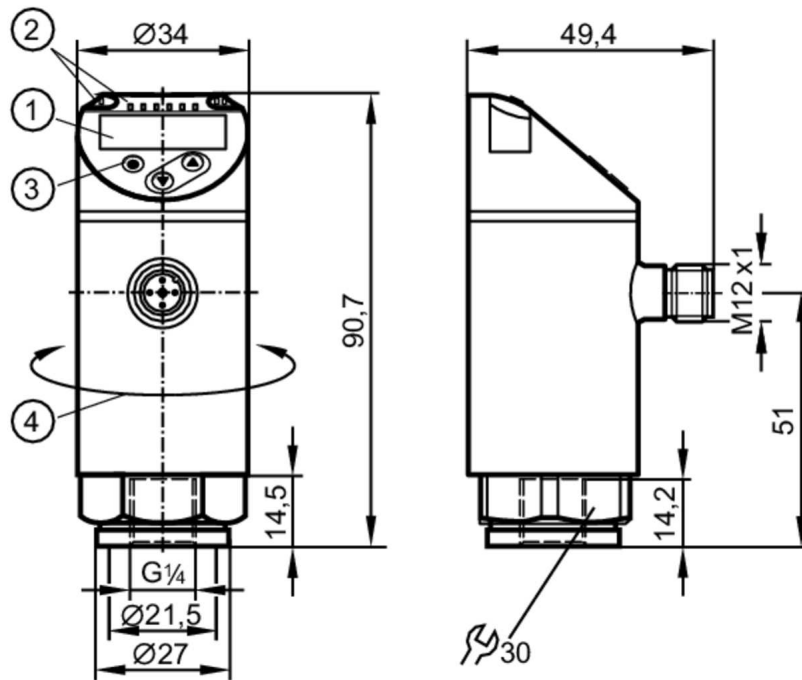
Pressure sensor with display

PN-001BRER14-QFRKG/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			
Measuring range	0...1 bar	0...1000 mbar	0...14.5 psi	0...29.5 inHg	0...100 kPa
Process connection		threaded connection G 1/4 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. bursting pressure	30000 mbar	450 psi		880 inHg	3000 kPa
Pressure rating	10000 mbar	145 psi		290 inHg	1000 kPa
Vacuum resistance [mbar]		-1000			
Type of pressure		relative pressure			
Electrical data					
Operating voltage [V]		18...30 DC; (to 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			

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Integrated watchdog	yes

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2

Outputs

Total number of outputs	2
Output signal	switching 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]	2.5
Permanent current rating of switching output DC [mA]	150; (200 (...60 °C) 250 (...40 °C))
Switching frequency DC [Hz]	< 170
Short-circuit protection	yes
Type of short-circuit protection	yes (non-latching)
Overload protection	yes

Measuring/setting range

Measuring range	0...1 bar	0...1000 mbar	0...14.5 psi	0...29.5 inHg	0...100 kPa
Factory setting / CMPT = 2					
Set point SP	10...1000 mbar	0.1...14.5 psi	0.2...29.5 inHg	1...100 kPa	
Reset point rP	5...995 mbar	0.05...14.45 psi	0.1...29.4 inHg	0.5...99.5 kPa	
Min. difference between SP and rP	5 mbar	0.1 psi	0.2 inHg	0.5 kPa	
In steps of	5 mbar	0.05 psi	0.1 inHg	0.5 kPa	
Status_B High Resolution / CMPT = 3					
Set point SP	8...1000 mbar	0.12...14.5 psi	0.2...29.5 inHg	0.8...100 kPa	
Reset point rP	3...995 mbar	0.05...14.43 psi	0.1...29.4 inHg	0.3...99.5 kPa	
Min. difference between SP and rP	5 mbar	0.08 psi	0.2 inHg	0.5 kPa	
In steps of	1 mbar	0.01 psi	0.1 inHg	0.1 kPa	

Accuracy / deviations

Switch point accuracy [% of the span]	< ± 0,5
Repeatability [% of the span]	< ± 0,1; (with temperature fluctuations < 10 K)
Characteristics deviation [% of the span]	< ± 0,25 (BFSL) / < ± 0,5 (LS); (BFSL = Best Fit Straight Line; LS = limit value setting)
Hysteresis deviation [% of the span]	< ± 0,25
Long-term stability [% of the span]	< ± 0,05; (per 6 months)
Temperature coefficient zero point [% of the span / 10 K]	< ± 0,2; (-0...80 °C)
Temperature coefficient span [% of the span / 10 K]	< ± 0,2; (-0...80 °C)

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Reaction times		
Response time	[ms]	< 3
Delay time programmable dS, dr	[s]	0...50

Software / programming	
Parameter setting options	hysteresis / window; normally open / closed; switching logic; switch-on/switch-off delay; Damping; Display unit

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)
Process data analog		1
Process data binary		2

Supported DeviceIDs	Type of operation	DeviceID
	Factory setting / CMPT = 2	405
	PN7007	313
	Status_B High Resolution / CMPT = 3	603

Note	For further information please see the IODD PDF file at "Downloads"

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 resolution pressure	[MPa]	0.0001

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]	0.5
IO-Link resolution pressure	[MPa]	0.02

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

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| 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]	260	
UL approval	UL approval number	J001
Pressure equipment directive	sound engineering practice; can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]	234.5	
Material	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC	
Materials (wetted parts)	stainless steel (1.4404 / 316L); 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	
Restrictor element integrated	no (can be retrofitted)	

Displays / operating elements		
Display	Display unit	4 x LED, green (mbar, psi, kPa, inHg)
	Switching status	2 x LED, yellow
	Measured values	alphanumeric display, red/green 4-digit

Remarks	
Pack quantity	1 pcs.

Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated
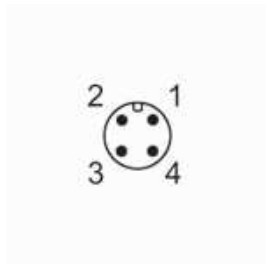
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Connection
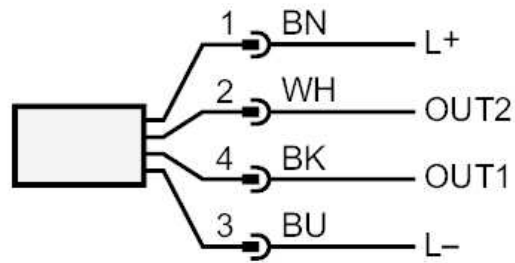
OUT1	Switching output
	IO-Link
OUT2	Switching output
	Colors to DIN EN 60947-5-2
	Core colors :
BK =	black
BN =	brown
BU =	blue
WH =	white