PRODUCT INFORMATION

PBS Hygienic Pressure Sensors

The compact pressure switch for hygienic applications

SICK
Sensor Intelligence.

The compact pressure switch for hygienic applications

IO-Link

Additional information

Product description

The electronic pressure switch PBS Hygienic has been designed for use in the food and beverage industry. The wetted parts are gap-free and have no dead spaces. Their high-quality stainless steel surfaces are smooth and easy to clean. The highly resistant stainless steel membrane is welded to the hygienic process connection without gaps or edges. The device is designed for CIP and SIP processes. This enables safe hygienic operation in conjunction with optimized system availability.

The PBS Hygienic is available with up to two switching outputs, an analog output and IO-Link in a single device. Its intuitive configuration via three large pushbuttons and display facilitates operation. The housing can be rotated in two ways, allowing the display and electrical connection to be aligned according to specific installation situation. Available with a variety of measuring ranges and process connections, the PBS Hygienic is suitable for universal use.

At a glance

- Hygienically-graded pressure switch with display for the food and beverage industry
- Wetted parts are made from stainless steel 1.4435
- Individually programmable switching outputs and analog output
- Pressure values are indicated on the display
- Unit of pressure value in the display can be switched
- Output states are indicated separately via large LEDs

Your benefits

- Safe hygienic operation due to flush-mounted, highly resistant stainless steel membrane and hygienic process connections
- Suitability for CIP and SIP ensures high system availability
- Safe and easy setup with three large pushbuttons and legible, rotatable display
- Rotatable housing for optimum cable routing
- Wide range of available configurations enable customer-specific solutions
- High reliability: Corrosion-resistant design of wetted parts and housing with IP 65 and IP 67 enclosure ratings
- Ultimate system availability: IO-Link enables fast, reliable parameter setting when changing over products

→ **www.mysick.com/en/PBS_Hygienic**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Detailed technical data

Features

Pressure units	bar, MPa, psi and kg/cm²
Measuring ranges	
Gauge pressure	0 bar ... 1 bar up to 0 bar ... 25 bar
Absolute pressure	0 bar ... 1 bar up to 0 bar ... 25 bar
Compound pressure	–1 bar ... 0 bar up to –1 bar ... +24 bar
Overpressure safety	2-fold
Process temperature	–20 °C ... +100 °C, +135 °C for max. 1 h –20 °C ... +125 °C, +150 °C for max. 1 h [1]
Signal output and maximum ohmic load R_A	4 mA ... 20 mA (R_A ≤ 0.5 kOhm) 0 V ... 10 V (R_A > 10 kOhm)
Zero point adjustment	Max. + 3 % of span
Switching output	Transistor switching output PNP or NPN Number: 1 or 2 (With IO-Link: C/Q_1: PNP) Function: normally open/normally closed, windows- and hysteresis function freely adjustable Contact rating: Supply voltage L^+ – 1 V [V DC] Max. switching current: 250 mA, with IO-Link: C/Q_1: 100 mA, Q_2: 250 mA Switching delay: 0 s ... 50 s (adjustable) Response time: ≤ 10 ms Individually adjustable via external control buttons Setting accuracy: ≤ 0.5 % of span
Rotatable housing	Display against housing with electrical connection: 330° Housing against process connection: 320°
Display	14-segment-LED, blue, 4-digits, height 9 mm, electronically turnable by 180° Accuracy: ≤ 1 % of span ± 1 digit Update: 1,000, 500, 200, 100 ms (adjustable)

[1] Only for process connection G 1 hygienic.

Performance

Non-linearity	≤ ± 0.5 % of span (Best Fit Straight Line, BFSL) according to IEC 61298-2
Accuracy	≤ ± 1 % of span (Including non-linearity, hysteresis, zero point and full scale error (corresponds to error of measurement according to IEC 61298-2))
Response time	3 ms
Long-term drift/one-year stability	≤ ± 0.2 % of span according to IEC 61298-2
Temperature coefficient in rated temperature range	Typical temperature coefficient of zero: [1] In the temperature range 0 °C ... 20 °C: 0.75 % of span / 10 K. In the temperature range 20 °C ... 80 °C: 0.45 % of span / 10 K. Typical temperature coefficient of span: [1] In the temperature range 0 °C ... 80 °C: 0.1 % of the span / 10 K Typical temperature coefficient of zero: [2] In the temperature range 0 °C ... 20 °C: 0.7 % of span / 10 K. In the temperature range 20 °C ... 80 °C: 0.2 % of span / 10 K. Typical temperature coefficient of span: [2] In the temperature range 0 °C ... 80 °C: 0.1 % of the span / 10 K
Rated temperature range	0 °C ... +80 °C

[1] With Clamp (DIN 32676) DN 32.

[2] With Tri-Clamp 1 ½'', Tri-Clamp 2'', Conical coupling (DIN 11851) DN 40 with union nut, Conical coupling (DIN 11851) DN 50 with union nut, Clamp (DIN 32676) DN 40, Clamp (DIN 32676) DN 50, G 1 hygienic.

Mechanics/electronics

Process connection	Tri-Clamp 1 ½'' Tri-Clamp 2" Conical coupling (DIN 11851) DN 40 with union nut Conical coupling (DIN 11851) DN 50 with union nut Clamp (DIN 32676) DN 32 Clamp (DIN 32676) DN 40 Clamp (DIN 32676) DN 50 G 1 hygienic flush-mounted
Wetted parts	Stainless steel 1.4435 / 316L
Internal transmission fluid	Medical white oil, FDA compliant according to CFR 172.878 and 21 CFR 178.3620(a), compliant to USP, EP, and JP
Housing material	Lower body: stainless steel 304, Plastic head: PC + ABS, Buttons: TPE-E, Display window: PC
Electrical connection/enclosure rating [1)]	Round connector M12 x 1, 4-pin with 1 switching output + analog output, IP 65 / 67 Round connector M12 x 1, 5-pin with 2 switching outputs and analog output, IP 65 / 67
Supply voltage	15 V DC ... 35 V DC
Power consumption	Max. 70 mA
Total current consumption	Max. 570 mA (incl. switching current)
Electrical safety	Protection class: III Overvoltage protection: 40 V DC Short-circuit protection: Q_A, Q_1, Q_2 towards M Reverse polarity protection: L^+ towards M
Isolation voltage	500 V DC
CE-conformity	EMC directive: 2004/108/EEC, EN 61326-2-3
Seal	Without seal, EPDM, FKM
Enclosure rating	IP 65 / IP 67

[1)] Enclosure rating IP per IEC 60529. The enclosure rating classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding enclosure rating.

Ambient data

Ambient temperature	–20 °C ... +80 °C
Storage temperature	–20 °C ... +80 °C
Relative humidity	45 % ... 75 %
Shock load	50 g according to IEC 60068-2-27 (mechanical shock)
Vibration load	10 g according to IEC 60068-2-6 (vibration under resonance)

Ordering information

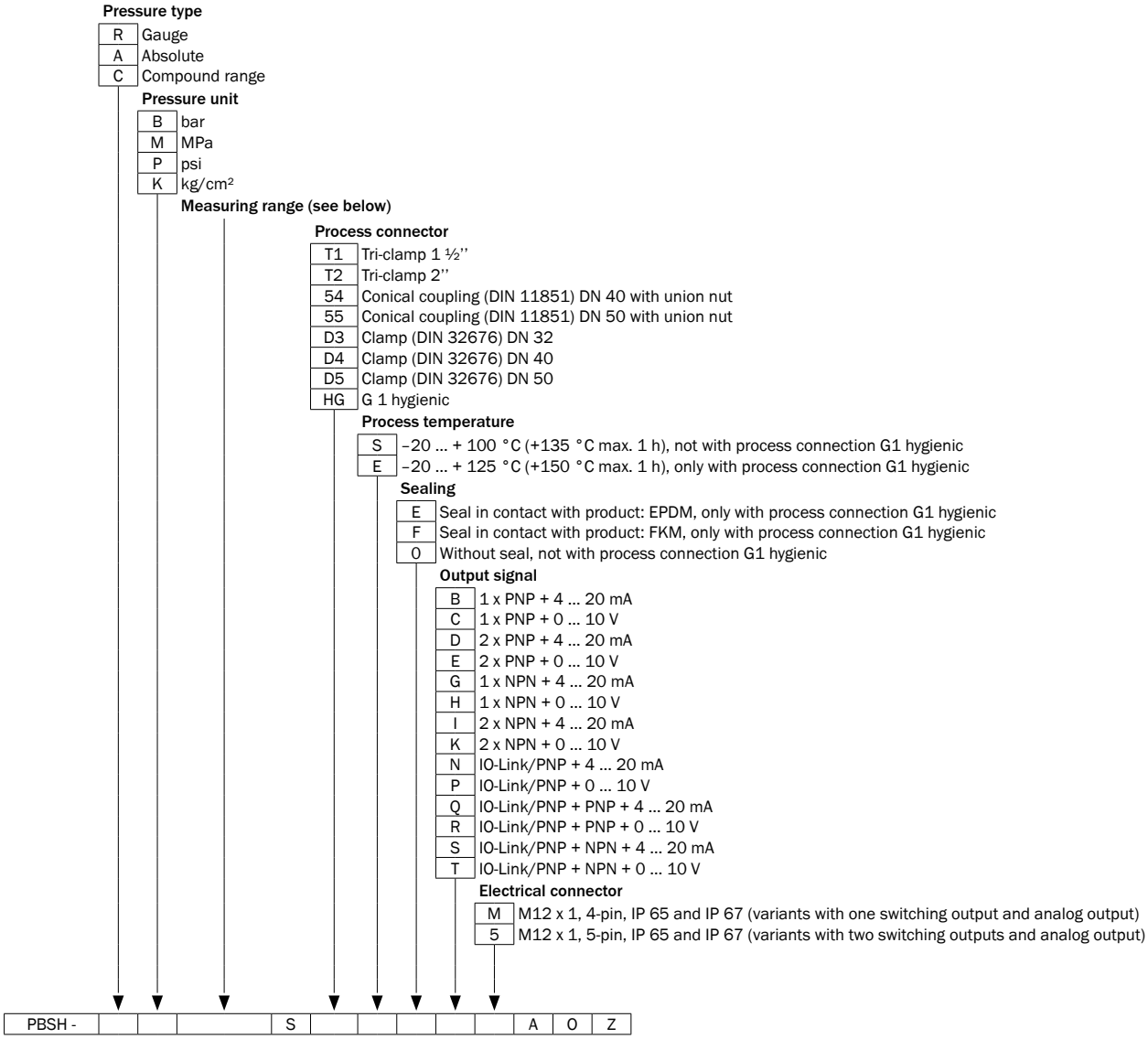
- Gauge pressure
- **Accuracy:** ≤ ± 1 % of span

Output signal	Electrical connection	Process connection	Seal	Process temperature	Measuring range	Type	Part no.
1 x PNP + 4 mA ... 20 mA	Round connector M12 x 1, 4-pin	Tri-Clamp 1 ½''	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025ST1S-0BMA0Z	6051833
					0 bar ... 10 bar	PBSH-RB010ST1S-0BMA0Z	6051832
					0 bar ... 6 bar	PBSH-RB6X0ST1S-0BMA0Z	6051831
					0 bar ... 2.5 bar	PBSH-RB2X5ST1S-0BMA0Z	6051830
					0 bar ... 1.6 bar	PBSH-RB1X6ST1S-0BMA0Z	6051829
		Conical coupling (DIN 11851) DN 40 with union nut	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025S54S-0BMA0Z	6051839
					0 bar ... 10 bar	PBSH-RB010S54S-0BMA0Z	6051838
					0 bar ... 6 bar	PBSH-RB6X0S54S-0BMA0Z	6051837
					0 bar ... 2.5 bar	PBSH-RB2X5S54S-0BMA0Z	6051836
					0 bar ... 1.6 bar	PBSH-RB1X6S54S-0BMA0Z	6051835
					0 bar ... 1 bar	PBSH-RB1X0S54S-0BMA0Z	6051834
		G 1 hygienic flush-mounted	Wetted parts: EPDM, Not wetted parts: EPDM	–20 °C ... +125 °C, +150 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025SHGEE-BMA0Z	6051845
					0 bar ... 10 bar	PBSH-RB010SHGEE-BMA0Z	6051844
					0 bar ... 6 bar	PBSH-RB6X0SHGEE-BMA0Z	6051843
					0 bar ... 2.5 bar	PBSH-RB2X5SHGEE-BMA0Z	6051842
					0 bar ... 1.6 bar	PBSH-RB1X6SHGEE-BMA0Z	6051841
					0 bar ... 1 bar	PBSH-RB1X0SHGEE-BMA0Z	6051840

Output signal	Electrical connection	Process connection	Seal	Process temperature	Measuring range	Type	Part no.
2 x PNP + 4 mA ... 20 mA	Round connector M12 x 1, 5-pin	Tri-Clamp 1 ½''	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025ST1S-0D5A0Z	6051852
					0 bar ... 10 bar	PBSH-RB010ST1S-0D5A0Z	6051851
					0 bar ... 6 bar	PBSH-RB6X0ST1S-0D5A0Z	6051850
					0 bar ... 2.5 bar	PBSH-RB2X5ST1S-0D5A0Z	6051849
					0 bar ... 1.6 bar	PBSH-RB1X6ST1S-0D5A0Z	6051848
					0 bar ... 1 bar	PBSH-RB1X0ST1S-0D5A0Z	6051846
		Conical coupling (DIN 11851) DN 40 with union nut	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025S54S-0D5A0Z	6051858
					0 bar ... 10 bar	PBSH-RB010S54S-0D5A0Z	6051857
					0 bar ... 6 bar	PBSH-RB6X0S54S-0D5A0Z	6051856
					0 bar ... 2.5 bar	PBSH-RB2X5S54S-0D5A0Z	6051855
					0 bar ... 1.6 bar	PBSH-RB1X6S54S-0D5A0Z	6051854
					0 bar ... 1 bar	PBSH-RB1X0S54S-0D5A0Z	6051853
		G 1 hygienic flush-mounted	Wetted parts: EPDM, Not wetted parts: EPDM	–20 °C ... +125 °C, +150 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025SH-GEED5A0Z	6051864
					0 bar ... 10 bar	PBSH-RB010SH-GEED5A0Z	6051863
					0 bar ... 6 bar	PBSH-RB6X0SH-GEED5A0Z	6051862
					0 bar ... 2.5 bar	PBSH-RB2X5SH-GEED5A0Z	6051861
					0 bar ... 1.6 bar	PBSH-RB1X6SH-GEED5A0Z	6051860
					0 bar ... 1 bar	PBSH-RB1X0SH-GEED5A0Z	6051859

Output signal	Electrical connection	Process connection	Seal	Process temperature	Measuring range	Type	Part no.
IO-Link/PNP + 4 mA ... 20 mA	Round connector M12 x 1, 4-pin	Tri-Clamp 1 ½''	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025ST-1S0NMA0Z	6051870
					0 bar ... 10 bar	PBSH-RB010ST-1S0NMA0Z	6051869
					0 bar ... 6 bar	PBSH-RB6X0ST-1S0NMA0Z	6051868
					0 bar ... 2.5 bar	PBSH-RB2X5ST-1S0NMA0Z	6051867
					0 bar ... 1.6 bar	PBSH-RB1X6ST-1S0NMA0Z	6051866
					0 bar ... 1 bar	PBSH-RB1X0ST-1S0NMA0Z	6051865
		Conical coupling (DIN 11851) DN 40 with union nut	Without seal	–20 °C ... +100 °C, +135 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025S54S-0NMA0Z	6051876
					0 bar ... 10 bar	PBSH-RB010S54S-0NMA0Z	6051875
					0 bar ... 6 bar	PBSH-RB6X0S54S-0NMA0Z	6051874
					0 bar ... 2.5 bar	PBSH-RB2X5S54S-0NMA0Z	6051873
					0 bar ... 1 bar	PBSH-RB1X0S54S-0NMA0Z	6051871
		G 1 hygienic flush-mounted	Wetted parts: EPDM, Not wetted parts: EPDM	–20 °C ... +125 °C, +150 °C for max. 1 h	0 bar ... 25 bar	PBSH-RB025SH-GEENMA0Z	6051882
					0 bar ... 10 bar	PBSH-RB010SH-GEENMA0Z	6051881
					0 bar ... 6 bar	PBSH-RB6X0SH-GEENMA0Z	6051880
					0 bar ... 2.5 bar	PBSH-RB2X5SH-GEENMA0Z	6051879
					0 bar ... 1.6 bar	PBSH-RB1X6SH-GEENMA0Z	6051878
					0 bar ... 1 bar	PBSH-RB1X0SH-GEENMA0Z	6051877

Type code



Not all variations of the type code can be combined!

Measuring range

	Gauge Pressure
1X0	0 ... 1 bar
1X6	0 ... 1.6 bar
2X5	0 ... 2.5 bar
4X0	0 ... 4 bar
6X0	0 ... 6 bar
010	0 ... 10 bar
016	0 ... 16 bar
025	0 ... 25 bar

	Absolute Pressure
1X0	0 ... 1 bar abs
1X6	0 ... 1.6 bar abs
2X5	0 ... 2.5 bar abs
4X0	0 ... 4 bar abs
6X0	0 ... 6 bar abs
010	0 ... 10 bar abs
016	0 ... 16 bar abs
025	0 ... 25 bar abs

	Compound Pressure
1X0	–1 ... 0 bar
2X5	–1 ... +1.5 bar
4X0	–1 ... +3 bar
6X0	–1 ... +5 bar
010	–1 ... +9 bar
016	–1 ... +15 bar
025	–1 ... +24 bar

	Gauge Pressure
015	0 ... 15 psi
025	0 ... 25 psi
030	0 ... 30 psi
050	0 ... 50 psi
060	0 ... 60 psi
100	0 ... 100 psi
160	0 ... 160 psi
200	0 ... 200 psi
250	0 ... 250 psi
300	0 ... 300 psi

	Absolute Pressure
015	0 ... 15 psi abs
025	0 ... 25 psi abs
030	0 ... 30 psi abs
050	0 ... 50 psi abs
60	1 ... 60 psi abs
100	0 ... 100 psi abs
160	0 ... 160 psi abs
200	0 ... 200 psi abs
250	1 ... 250 psi abs
300	0 ... 300 psi abs

	Compound Pressure
015	–14.5 ... +0 psi
030	–14.5 ... +15 psi
040	–14.5 ... +25 psi
045	–14.5 ... +30 psi
065	–14.5 ... +50 psi
115	–14.5 ... +100 psi
175	–14.5 ... +160 psi
215	–14.5 ... +200 psi
315	–14.5 ... +300 psi

	Gauge Pressure
X10	0 ... 0.1 MPa
X16	0 ... 0.16 MPa
X25	0 ... 0.25 MPa
X40	0 ... 0.4 MPa
X60	0 ... 0.6 MPa
1X0	0 ... 1 MPa
1X6	0 ... 1.6 MPa
2X5	0 ... 2.5 MPa

	Absolute Pressure
X10	0 ... 0.1 MPa abs
X16	0 ... 0.16 MPa abs
X25	0 ... 0.25 MPa abs
X40	0 ... 0.4 MPa abs
X60	0 ... 0.6 MPa abs
1X0	0 ... 1 MPa abs
1X6	0 ... 1.6 MPa abs
2X5	0 ... 2.5 MPa abs

	Compound Pressure
X10	–0.1 ... 0 MPa
X25	–0.1 ... +0.15 MPa
X40	–0.1 ... +0.3 MPa
X60	–0.1 ... +0.5 MPa
1X0	–0.1 ... +0.9 MPa
1X6	–0.1 ... +1.5 MPa
2X5	–0.1 ... +2.4 MPa

	Gauge Pressure
1X0	0 ... 1 kg/cm²
1X6	0 ... 1.6 kg/cm²
2X5	0 ... 2.5 kg/cm²
4X0	0 ... 4 kg/cm²
6X0	0 ... 6 kg/cm²
010	0 ... 10 kg/cm²
016	0 ... 16 kg/cm²
025	0 ... 25 kg/cm²

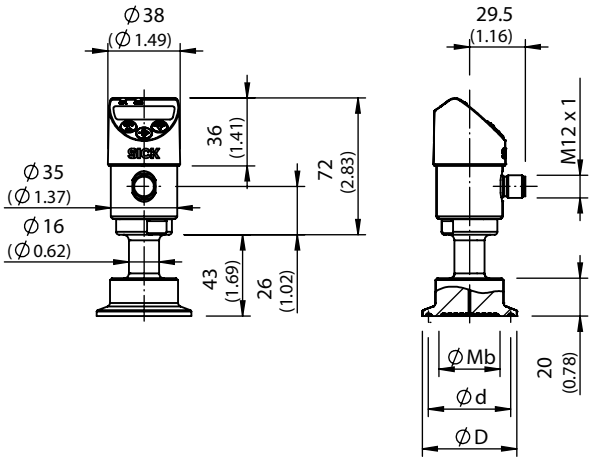
	Absolute Pressure
1X0	0 ... 1 kg/cm² abs
1X6	0 ... 1.6 kg/cm² abs
2X5	0 ... 2.5 kg/cm² abs
4X0	0 ... 4 kg/cm² abs
6X0	0 ... 6 kg/cm² abs
010	0 ... 10 kg/cm² abs
016	0 ... 16 kg/cm² abs
025	0 ... 25 kg/cm² abs

	Compound Pressure
1X0	–1 ... 0 kg/cm²
2X5	–1 ... +1,5 kg/cm²
4X0	–1 ... +3 kg/cm²
6X0	–1 ... +5 kg/cm²
010	–1 ... +9 kg/cm²
016	–1 ... +15 kg/cm²
025	–1 ... +24 kg/cm²

Dimensional drawings

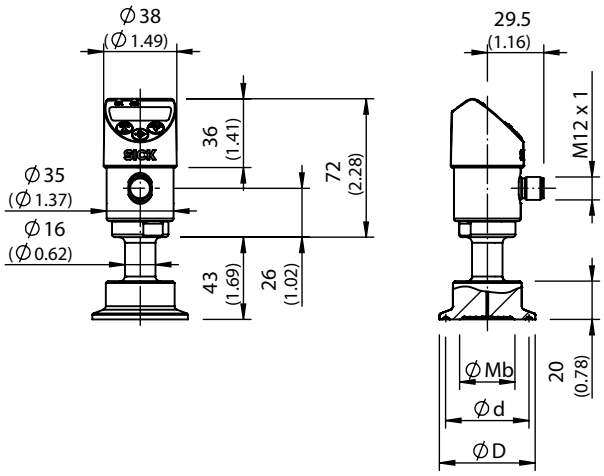
Dimensions in mm (inch)

Tri-clamp



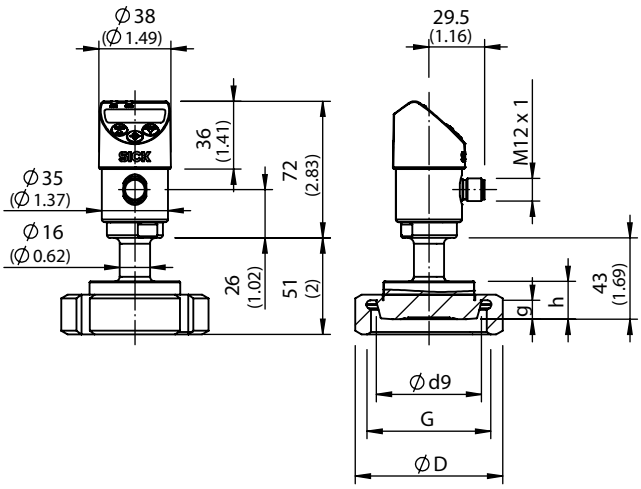
Tri-Clamp	ø Mb	ø d	ø D
1 ½"	32.0 (1.25)	43.5 (1.71)	50.5 (1.98)
2"	40.0 (1.57)	56.6 (2.22)	64.0 (2.51)

Clamp



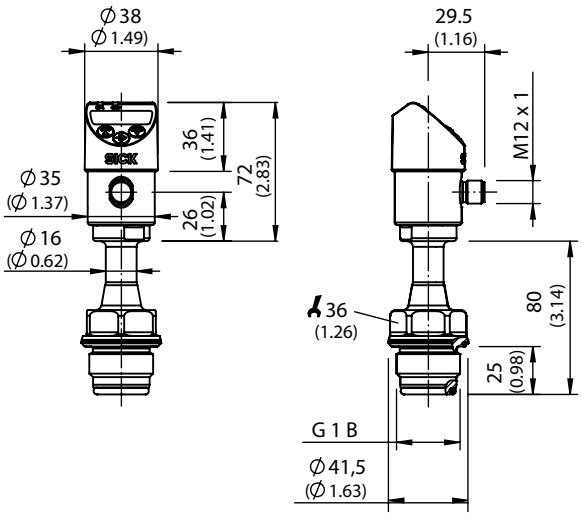
DIN 32676	ø Mb	ø d	ø D
DN 32	29.0 (1.14)	43.5 (1.71)	50.5 (1.98)
DN 40	32.0 (1.25)	43.5 (1.71)	50.5 (1.98)
DN 50	40.0 (1.57)	56.6 (2.22)	64.0 (2.51)

Conical coupling (DIN 11851) with union nut



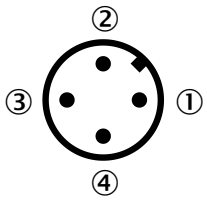
DIN 11851	ø d9	G	ø D	g	h
DN 40	56.0 (2.20)	Rd 65 x 1/6	78 (3.07)	10 (0.39)	20 (0.78)
DN 50	68.5 (2.69)	Rd 78 x 1/6	92 (3.62)	11 (0.43)	20 (0.78)

G 1 hygienic



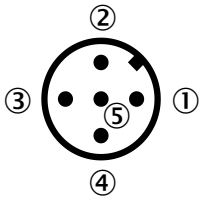
Electrical connection

Round connector M12 x 1, 4-pin with 1 switching output + analog output



① L+: Positive supply voltage
② Q_A: Analog output
③ M: Negative supply voltage
④ C/Q_1: Switching output 1
For variants with IO-Link: IO-Link communication/ switching output 1

Round connector M12 x 1, 5-pin with 2 switching outputs + analog output



① L+: Positive supply voltage
② Q_2: Switching output 2
③ M: Negative supply voltage
④ C/Q_1: Switching output 1
For variants with IO-Link: IO-Link communication/ switching output 1
⑤ Q_A: Analog output

Recommended accessories

	Accessory category	Enclosure rating	Cable length	Brief description	Type	Part no.
	Flanges	–	–	Weld-in flange/welded connector for process connection G 1 hygienic flush-mounted, stainless steel 316L	BEF-FL-316G10-BHYG	5322453
	–	IP 65, IP 67	–	IO-Link-Master	IOLSHPB-P3104R01	6039728
	Plug connectors and cables	IP 67, IP 69K	2 m	–	DOL-1204-G02MN	6028128
			5 m	–	DOL-1204-G05MN	6028130
			10 m	–	DOL-1204-G10MN	6028132
			2 m	–	DOL-1205-G02MN	6028140
			5 m	–	DOL-1205-G05MN	6028141
			10 m	–	DOL-1205-G10MN	6028142

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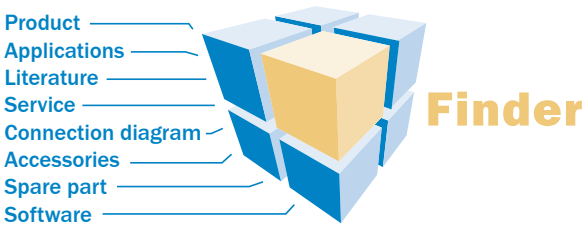

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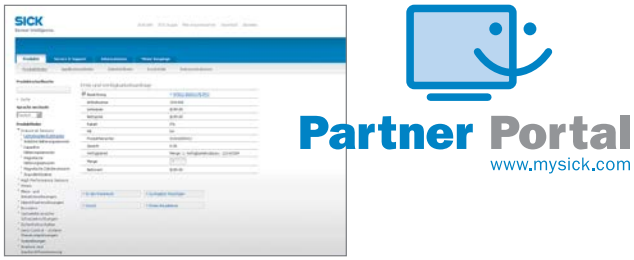

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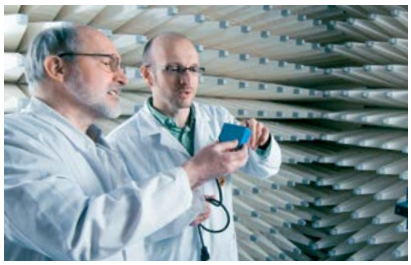
SICK at a glance



Leading technologies

With a staff of more than 6,000 and over 40 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.

Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids

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