

Electronic pressure switch with display Model PSD-4

WIK A data sheet PE 81.86



for further approvals,
see page 8



Applications

- Machine tools
- Hydraulics and pneumatics
- Special machine building
- Food and pharmaceutical industry

Special features

- Advanced condition monitoring via IO-Link
- Higher flexibility, lower inventory
- Easy integration combined with good readability
- Fast parameterisation via 3-buttons



Electronic pressure switch, model PSD-4

Configurator



Standard articles



Description

The PSD-4 electronic pressure switch is the universal solution for industrial automation tasks – also in hygienic applications and under harsh conditions. Due to an accuracy of $< \pm 0.5\%$ and minimal long-term drift, it permanently ensures an accurate representation of the process pressure for more than 100 million load cycles. The pressure switch is available with a digital output signal as well as a switchable and scalable analogue output. In addition, it can also be easily monitored via the self-diagnostics.

Advanced condition monitoring via IO-Link

Condition data and the diagnostic functions allow consistent monitoring. Whether it is defective or whether the pressure or temperature values are above or below the specifications is displayed directly in the system. The data also allow conclusions to be drawn about changing process conditions. Additional information helps to check the loading.

Higher flexibility, lower inventory

Low stocking costs due to fewer variants: With the scalable analogue output, the measuring range can be restricted in a ratio of 5:1. In addition, the output signal can be configured specifically for the application. Thus the PSD-4 can be used flexibly.

Easy integration combined with good readability

Thanks to the large 14-segment display and red digits, pressure values are easy to read, even in bright environments. In addition, the display's content can be turned through 180° and the case through $> 300^\circ$.

Fast parameterisation via 3-buttons

The PSD-4 can be set via 3-button operation. Display and menu offer intuitive navigation in accordance with VDMA specification 24574-1. This speeds up parameterisation and reduces the installation effort.

Specifications

Accuracy specifications		
Accuracy	→ See “Max. measured error per IEC 61298-2”	
Max. measured error per IEC 61298-2	≤ ±0.5 % of span	
Accuracy of the switch point	≤ ±0.5 % of span	
Adjustability of zero point	Max. ±3 % of span	
Non-repeatability per IEC 61298-2	≤ 0.1 % of span	
Temperature error at 0 ... 80 °C [32 ... 176 °F]		
For all process connections with pressure port	≤ ±1.5 % of span	
With increased overpressure limit and process connection G ½ B flush	≤ ±2.5 % of span	
For process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2"	≤ ±3.5 % of span	
Long-term drift per IEC 61298-2	≤ ±0.1 % of span	
	≤ ±0.2 % of span	For measuring ranges ≤ 0.6 bar [10 psi], with increased overpressure limit, with process connection G ½ B flush or with process connections G 1 hygienic, TRI-CLAMP® 1 ½" and 2"
Reference conditions	Per IEC 61298-1	

Measuring ranges, gauge pressure

bar	
0 ... 0.4 ^{1) 2)}	0 ... 25
0 ... 0.6 ^{1) 2)}	0 ... 40 ²⁾
0 ... 1 ¹⁾	0 ... 60 ²⁾
0 ... 1.6 ¹⁾	0 ... 100 ²⁾
0 ... 2.5	0 ... 160 ²⁾
0 ... 4	0 ... 250 ²⁾
0 ... 6	0 ... 400 ²⁾
0 ... 10	0 ... 600 ²⁾
0 ... 16	0 ... 1,000 ^{1) 2)}

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

psi	
0 ... 10 ^{1) 2)}	0 ... 300
0 ... 15 ¹⁾	0 ... 500 ²⁾
0 ... 25 ¹⁾	0 ... 1,000 ²⁾
0 ... 30 ¹⁾	0 ... 1,500 ²⁾
0 ... 50	0 ... 2,000 ²⁾
0 ... 100	0 ... 3,000 ²⁾
0 ... 160	0 ... 5,000 ²⁾
0 ... 200	0 ... 7,500 ²⁾

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

Measuring ranges, absolute pressure

bar abs.	
0 ... 0.4 ^{1) 2)}	0 ... 4
0 ... 0.6 ^{1) 2)}	0 ... 6
0 ... 1 ¹⁾	0 ... 10
0 ... 1.6 ¹⁾	0 ... 16
0 ... 2.5	0 ... 25

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

psi abs.	
0 ... 10 ^{1) 2)}	0 ... 100
0 ... 15 ¹⁾	0 ... 160
0 ... 25 ¹⁾	0 ... 200
0 ... 30 ¹⁾	0 ... 300
0 ... 50	

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

TRI-CLAMP® is a trademark of the company Alfa Laval AB SE

Vacuum and +/- measuring ranges

bar	
-1 ... 0 ¹⁾	-1 ... +5
-1 ... +0.6 ^{1) 2)}	-1 ... +9
-1 ... +1.5	-1 ... +15
-1 ... +3	-1 ... +24

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

psi	
-14.5 ... 0 ¹⁾	-14.5 ... +100
-14.5 ... +15 ^{1) 2)}	-14.5 ... +160
-14.5 ... +30	-14.5 ... +200
-14.5 ... +50	-14.5 ... +300

1) Not available for process connection G ½ flush.

2) Not available for process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2".

Special measuring ranges on request.

With special measuring ranges there are deviations in temperature error and long-term drift.

Further details on: Measuring range	
Maximum working pressure	→ Equals the upper range value / full scale value
Overpressure limit	The overpressure limit is based on the sensor element used. Depending on the selected process connection and sealing, restrictions in overpressure limit can result.
Measuring ranges ≤ 600 bar [≤ 7,500 psi]	2 times
Measuring range 1,000 bar [14,500 psi]	1.48 times
Vacuum resistance	Yes
Digital display	
Indication range	14 segments
Units	bar, psi, kg/cm², MPa
Colour	Red (LED)
Character size	9 mm [0.35 in]
Digits	4-digit
Display	The display can be rotated electronically through 180°

Increased overpressure limit on request.

With increased overpressure limit there are deviations in temperature error and long-term drift.

Process connection					
Standard	Thread size	Max. measuring range		Overpressure limit	
DIN EN ISO 1179-2 (formerly DIN 3852-E)	G ¼ A	600 bar	[8,700 psi]	858 bar	[12,440 psi]
		1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]
	G ½ A	600 bar	[8,700 psi]	858 bar	[12,440 psi]
EN 837	G ¼ B	600 bar	[8,700 psi]	858 bar	[12,440 psi]
	G ¼ female thread	1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]
	G ½ B	1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]
ANSI/ASME B1.20.1	¼ NPT	1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]
	½ NPT	1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]
ISO 7	R ¼	600 bar	[8,700 psi]	858 bar	[12,440 psi]
KS	PT ¼	600 bar	[8,700 psi]	858 bar	[12,440 psi]
-	G ¼ female (Ermeto compatible)	1,000 bar	[14,500 psi]	1,480 bar	[21,400 psi]

Process connection						
Standard	Thread size	Max. measuring range		Overpressure limit	Sealing	
-	G ½ B flush	600 bar	[8,700 psi]	858 bar	[12,440 psi]	NBR
		400 bar	[5,800 psi]	600 bar	[8,000 psi]	FPM/FKM
-	G 1 hygienic ¹⁾	25 bar	[300 psi]	50 bar	[500 psi]	■ EPDM ■ FPM/FKM
-	TRI-CLAMP® 1 ½"	Depending on the clamp used		Depending on the clamp used	-	
-	TRI-CLAMP® 2"	Depending on the clamp used		Depending on the clamp used	-	

1) Overpressure limit 1.7 times [272 psi] for gauge pressure measuring range 160 psi

Details must be tested separately in the respective application. The specified values for the overpressure limit serve only as a rough orientation. The values depend on the temperature, the sealing used, the selected torque, the type and the material of the mating thread and the prevailing operating conditions.

Further details on: Process connection	
Max. measuring range	→ See table Process connection page 3/4
Overpressure limit	→ See table Process connection page 3/4
Sealing	→ See table Process connection page 3/4
Pressure port diameter	■ 3.5 mm (standard with all non-flush process connections) ■ 0.6 mm ■ 0.3 mm ■ 10 mm

Output signal

When ordering the PSD-4, only one of the three following output variants has to be selected. The analogue output can be ordered as 4 ... 20 mA output, as DC 0 ... 10 V output or with a switching option between both outputs.

The signal type, as well as the assignment of the second switching output, can be individually set during commissioning. IO-Link is optionally available for all output variants.

Output signal	Switching output 1	Switching output 2	Analogue output	IO-Link option
Output variant 1	x	x	-	x
Output variant 2	x	-	x	x
Output variant 3	x	x	x	x

Further details on: Output signal

Signal type

Switching output 1	■ PNP ■ NPN
	Factory setting: PNP
Switching output 2	■ PNP ■ NPN
	Factory setting: PNP
Analogue output	■ 4 ... 20 mA (3-wire) ■ DC 0 ... 10 V (3-wire) ■ 4 ... 20 mA/DC 0 ... 10 V (3-wire)
	Factory setting: 4 ... 20 mA (for version with switching option)
IO-Link	IO-Link is optionally available for all output signal configurations.
Switching function	■ Window ■ Hysteresis
	Factory setting: Hysteresis
Contact function	■ Normally open ■ Normally closed
	Factory setting: Normally open
Setting range of the switch points	■ Factory setting ■ Customer-specific
	Switch point 1 and switch point 2 are independently settable → See operating instructions
Switch hysteresis	Minimum 0.25 % of span

Load

Analogue signal 4 ... 20 mA	≤ 500 Ω
Analogue signal DC 0 ... 10 V	> max. output voltage/1 mA
Signal damping	Configurable from 0 ... 65 s
Switching delay time	Configurable from 0 ... 65 s
Reset delay time	Configurable from 0 ... 65 s
Switching current	Max. 250 mA per switching output
Switching voltage	Supply voltage - 1 V

Communication

IO-Link	Version	Version 1.1
	SIO mode	Yes
	Maximum cycle time	2.3 ms
	Velocity	COM2 (38.4 kBaud)
	Process data width	16 bit (frame type 2.2)
	Support for data management	Yes
	Smart sensor profile	Yes

Voltage supply

Supply voltage	DC 15 ... 35 V	
Current supply	Max. 600 mA including switching current	
Current consumption	Versions without 4 ... 20 mA output signal	Max. 45 mA
	Versions with 4 ... 20 mA output signal	Max. 70 mA
Overvoltage protection	DC 40 V	

Dynamic behaviour

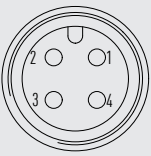
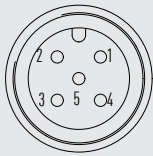
Settling time per IEC 61298-2	Analogue signal	≤ 5 ms
	Switching output	≤ 5 ms
Switch-on time	1 s	

Electrical connection	
Connection type	Circular connector M12 x 1 (4-pin) Circular connector M12 x 1 (5-pin) ¹⁾
Pin assignment	→ See table pin assignment below
Ingress protection (IP code) per IEC 60529 ²⁾	IP65 and IP67
Short-circuit resistance	S+ / SP1 / SP2 vs. U-
Reverse polarity protection	U+ vs. U-
Insulation voltage	DC 500 V

1) Only for version with two switching outputs and additional analogue signal.

2) The stated IP codes (per IEC 60529) only apply when plugged in using mating connectors that have the appropriate IP code.

Pin assignment

Circular connector M12 x 1 (4-pin)		
	U+	1
	U-	3
	S+	2
	SP1/C ¹⁾	4
	SP2	2
Circular connector M12 x 1 (5-pin)		
	U+	1
	U-	3
	S+	5
	SP1/C	4
	SP2	2

1) Depending on the configuration of the output signals

Legend:

U+	Positive power supply terminal
U-	Negative power supply terminal
SP1	Switching output 1
SP2	Switching output 2
S+	Analogue output
C	Communication with IO-Link

Material		
Material (wetted)		
Measuring ranges < 10 bar [150 psi]	Stainless steel 316L	
	Stainless steel 1.4435/316L with G 1 hygienic and TRI-CLAMP® 1 ½" and 2" process connections	
Measuring ranges ≥ 10 bar [150 psi]	Stainless steel 316L, PH grade steel	
	Stainless steel 1.4435/316L with G 1 hygienic and TRI-CLAMP® 1 ½" and 2" process connections	
Material (in contact with the environment)		
Case	Stainless steel 304	
Keyboard	TPE-E	
Display window	PC	
Display head	PC + ABS blend	
Pressure transmission medium		
For all gauge pressure measuring ranges < 10 bar [150 psi] ¹⁾ , all absolute pressure measuring ranges and G ½ flush	Synthetic oil	
With G 1 hygienic and TRI-CLAMP® 1 ½" and 2" process connections	KN92 medicinal white mineral oil, FDA-compliant per CFR 172.878 and 21 CFR 178.3620(a); conform to USP, EP and JP	
Surface roughness of wetted parts	Process connection G 1 hygienic	Ra ≤ 0.8 µm (except for weld seam)
	Process connection TRI-CLAMP® 1 ½" and 2"	Ra ≤ 0.76 µm per ASME BPE SF3 (except for weld seam)

Material		
Options for specific media		
Oil- and grease-free	Residual hydrocarbon	< 1,000 mg/m ²
Oxygen, oil- and grease-free	Residual hydrocarbon	< 200 mg/m ²
	Packaging	Protection cap on the process connection
	Max. permissible temperature	-20 ... +60 °C [-4 ... +140 °F]
	Available measuring ranges	■ 0 ... 400 mbar to 0 ... 400 bar [0 ... 10 to 0 ... 5,000 psi] ■ -1 ... 0 to -1 ... 24 bar [-14.5 ... 0 to -14.5 ... 300 psi]
	Sealing	Factory supplied without sealing
→ Not available with process connections per ISO 1179-2, G ½ B flush, G 1 hygienic and TRI-CLAMP® 1 ½" and 2"		

1) < 16 bar [250 psi] with increased overpressure limit

Operating conditions		
Medium temperature limit		
Process connections with pressure port and G ½ B flush	-20 ... +85 °C [-4 ... +185 °F]	
Process connection G 1 hygienic	■ -20 ... +100 °C [-4 ... +212 °F] (+135 °C [+275 °F] max. 1h) ■ -20 ... +125 °C [-4 ... +257 °F] (+150 °C [+302 °F] max. 1h) (option)	
Process connections TRI-CLAMP® 1 ½" and 2"	-20 ... +100 °C [-4 ... +212 °F] (+135 °C [+275 °F] max. 1h)	
Ambient temperature limit	-20 ... +80 °C [-4 ... +176 °F]	
Storage temperature limit	-20 ... +70 °C [-4 ... +158 °F]	
Vibration resistance per IEC 60068-2-6	20 g, 10 ... 2,000 Hz (under resonance)	
	10 g, 10 ... 2,000 Hz (under resonance)	For process connections G 1 hygienic and TRI-CLAMP® 1 ½" and 2"
Shock resistance per IEC 60068-2-27	50 g, 6 ms (mechanical)	
Service life		
Switching cycles	100 million	
Load cycle (mechanical) ¹⁾	100 million or 10 million for measuring ranges > 600 bar [7.500 psi]	

1) Not valid for G 1 hygienic and TRI-CLAMP® 1 ½" and 2"

Packaging and instrument labelling	
Packaging	Individual packaging
Instrument labelling	■ WIKA product label, glued ■ Customer-specific product label on request

Approvals

Logo	Description	Region
	EU declaration of conformity	European Union
	EMC directive	
	EN 61326 emission (group 1, class B) and immunity (industrial application)	
	Pressure equipment directive	
	UKCA	United Kingdom
	Electromagnetic compatibility regulations	
	Pressure equipment (safety) regulations	
	Restriction of hazardous substances (RoHS) regulations	
	EAC EMC directive	Eurasian Economic Community
	UL ¹⁾ Safety (e.g. electr. safety, overpressure, ...)	USA and Canada

1) Not for hygienic connections

Optional approvals

Logo	Description	Region
	PAC Kazakhstan ¹⁾ Metrology, measurement technology	Kazakhstan
-	PAC Ukraine ¹⁾ Metrology, measurement technology	Ukraine
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada
	3-A ²⁾ Sanitary Standard This instrument is 3-A marked, based on a third party verification for conformance to the 3-A standard 74-07 (sensors and sensor fittings and connections).	USA
	EHEDG ^{2) 3)} Hygienic Equipment Design EL class I, components for closed processes, cleaning with liquid: Cleaning in place (CIP) without dismounting	European Community

1) Not available with process connections G 1 hygienic and TRI-CLAMP® 1 1/2" and 2"

2) For process connection G 1 hygienic

3) For process connections TRI-CLAMP® 1 1/2" and 2".

Manufacturer's information and certificates

Logo	Description
-	China RoHS directive
-	MTTF:> 100 years
-	Manufacturer's statement ADI Frei (restricted choice of versions)
-	Manufacturer's declaration of food contact materials in accordance with regulation (EC) no. 1935/2004 and regulation (EC) no. 2023/2006 on good manufacturing practice for materials and articles intended to come into contact with food

Test report

Test report ¹⁾	
Number of measuring points	3
Configurations switching output	Switching function Contact function Switch point Reset point

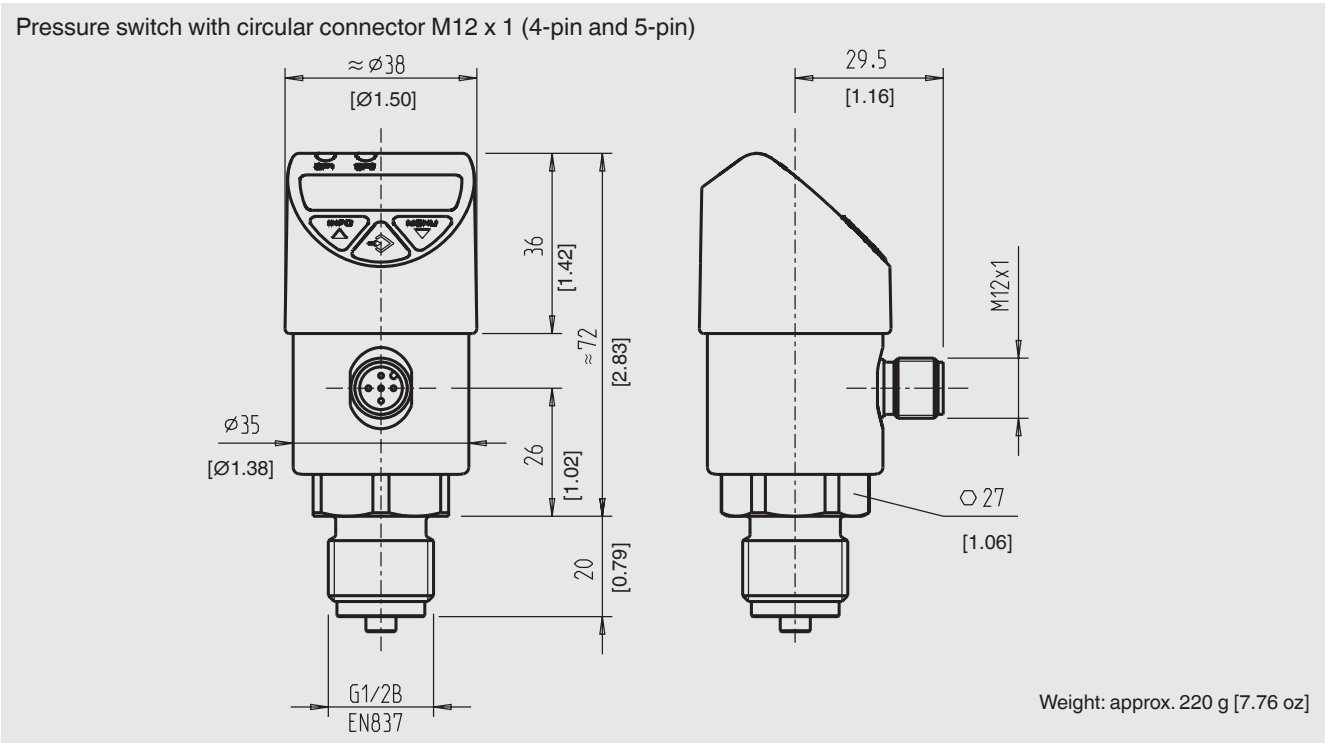
1) Not available with process connections G 1/2B hygienic and TRI-CLAMP® 1 1/2" and 2"

Certificates (option)

Certificates	
Certificates	2.2 test report per EN 10204 (technical version “oxygen service”) 3.1 inspection certificate per EN 10204 (e.g. confirmation of the class and indication accuracy, list of single measured values) Material proof for wetted metal parts FDA conformity of the system fill fluid Confirmation of 3-A conformity Confirmation of EHEDG certification Confirmation of surface roughness

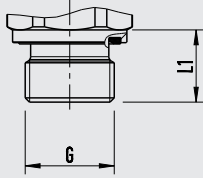
→ For approvals and certificates, see website

Dimensions in mm [in]



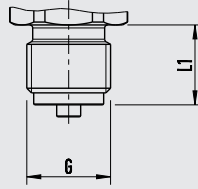
Process connections

DIN EN ISO 1179-2



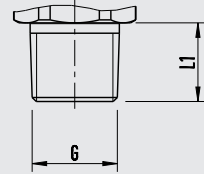
G	L1
G ¼ A	14 [0.55]
G ½ A	17 [0.67]

EN 837



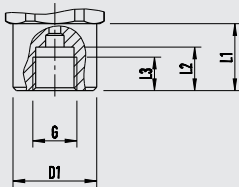
G	L1
G ¼ B	13 [0.51]
G ½ B	20 [0.79]

ANSI/ASME B1.20.1, ISO7



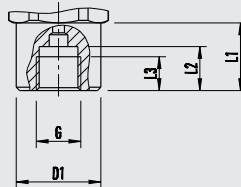
G	L1
¼ NPT	13 [0.51]
½ NPT	19 [0.75]
R ¼	13 [0.51]
PT ¼	13 [0.51]

EN 837, female thread, Ermeto-compatible



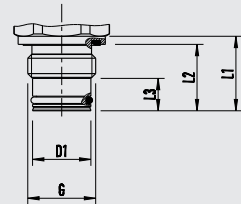
G	L1	L2	L3	D1
G ¼ 1)	20 [0.79]	15 [0.59]	12 [0.47]	Ø 25 [0.98]

EN 837, female thread



G	L1	L2	L3	D1
G ¼	20 [0.79]	13 [0.51]	10 [0.39]	Ø 25 [0.98]

Flush

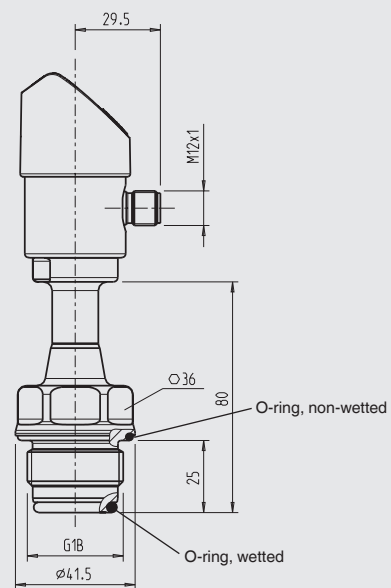
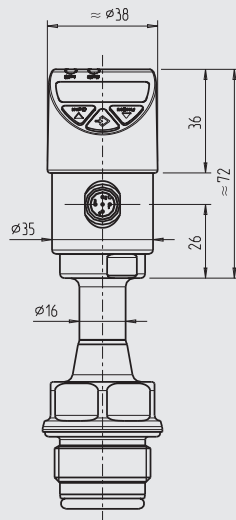


G	L1	L2	L3	D1
G ½ B 2)	23 [0.91]	20.5 [0.81]	10 [0.39]	Ø 18 [0.71]

1) Ermeto-compatible

2) Welding sockets recommended as defined counter-thread (→ see accessories)

With G 1 hygienic

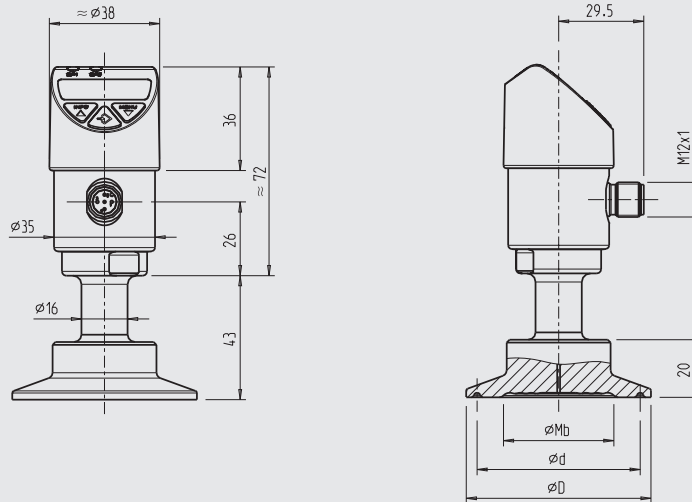


Wetted seals from EPDM or FKM

→ Suitable for WIKA adapter system model 910.61; see WIKA data sheet AC 09.20

→ For dimensions of the appropriate process adapters and welding sockets, see WIKA data sheet AC 09.20

With TRI-CLAMP®



Version		Dimensions in mm		
		Ø Mb	Ø d	Ø D
TRI-CLAMP® 2)	1 ½" per ASME BPE 1 ½", DIN 32676 row A DN 40, row C DN 1 ½", BS 4825 part 3 DN 38.1	32	43.5	50.5
	2" per ASME BPE 2", DIN 32676 row A DN 50, row B DN 42.4 and 48.3, row C DN 2", BS 4825 part 3 DN 50.8	40	56.6	64

1) EHEDG conformity only in combination with a T-ring seal from Combifit Metaalbewerking B.V.

2) For maximum pressure range consider pressure rating of clamp.

→ For further information, see WIKA data sheet DS 99.41

Other process connections on request.

Spare parts

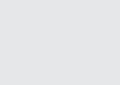
Sealings

Model			Order number
	Sealings		
	G ¼ A DIN EN ISO 1179-2	NBR	1537857
		FPM/FKM	1576534
		FPM/FKM (for measuring range 0 ... 1,000 bar)	14045531
	G ½ A DIN EN ISO 1179-2	NBR	1039067
		FPM/FKM	1039075
	G ¼ B EN 837	Copper	11250810
		Stainless steel	11250844
	G ½ B EN 837	Copper	11250861
		Stainless steel	11251042
	Sealings for G 1 hygienic, wetted		
	Conformity per FDA 21 CFR 177.2600, USP XXV class VI and 3-A (18-03) Sanitary Standards class 2 (max. 8 % milk fat)	EPDM 70	14004173
	Conformity per FDA 21 CFR 177.2600, USP XXIII class VI and 3-A (18-03) Sanitary Standards class 1	FKM 75	14004174
	Sealings for G 1 hygienic, non-wetted	EPDM 70	14023833

Accessories

Model		Description	Order number
	Welding socket for process connection G 1/2 B flush	G 1/2 B female, outer diameter 50 mm [2 in], material 1.4571	1192299
	Cooling element for screwing G 1/2 female / G 1/2 male per EN 837 (for instruments with process connection G 1/2 B per EN 837)	Max. medium temperature 150 °C [302 °F] at an ambient temperature of max. 30 °C [86 °F] Max. operating pressure 600 bar [8,700 psi]	14109813
		Max. medium temperature 200 °C [392 °F] at an ambient temperature of max. 30 °C [86 °F] Max. operating pressure 600 bar [8,700 psi]	14109815
	Instrument mounting bracket	Instrument mounting bracket for PSD-4, aluminium, wall mounting	11467887

Circular connector M12 x 1 with moulded cable

Model	Description	Material	IP code	Temperature limit	Cable diameter	Cable length	Order number
	Straight version, cut to length, 4-pin, UL listed	PUR	IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	2 m [6.6 ft]	14086880
						5 m [16.4 ft]	14086883
						10 m [32.8 ft]	14086884
	Straight version, cut to length, 5-pin, UL listed				5.5 mm [0.22 in]	2 m [6.6 ft]	14086886
						5 m [16.4 ft]	14086887
						10 m [32.8 ft]	14086888
	Angled version, cut to length, 4-pin, UL listed				4.5 mm [0.18 in]	2 m [6.6 ft]	14086889
						5 m [16.4 ft]	14086891
						10 m [32.8 ft]	14086892
	Angled version, cut to length, 5-pin, UL listed				5.5 mm [0.22 in]	2 m [6.6 ft]	14086893
						5 m [16.4 ft]	14086894
						10 m [32.8 ft]	14086896

Only use the accessories and spare parts listed, otherwise it could lead to the loss of the UL approval.

Ordering information

Model / Output signal / IO-Link / Measuring range / Process connection / Sealing / Medium / Certificates / Approvals

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The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



OEM pressure switch with display Model PSD-4-ECO

WIKA data sheet PE 81.69



Applications

- Machine tools
- Hydraulics and pneumatics
- Automation engineering
- Special-purpose machine building

Special features

- Good/bad indication through parameterisable digital display (red/green)
- Compact size enables easy installation in narrow spaces
- Optimised design makes OEM machine integration easier
- Designed for rough demands of up to 50 g shock and -40 ... +125 °C [-40 ... +257 °F]



OEM pressure switch with display, model PSD-4-ECO

Description

The model PSD-4-ECO is a programmable electronic pressure switch designed specifically for OEM customers. With IO-Link 1.1, the cost-effective and reliable model PSD-4-ECO is a future-proof automation solution. Through individual factory pre-configuration, the pressure switch can also be quickly and simply integrated into the machine without any programming effort.

Fast error detection through colour feedback

With the model PSD-4-ECO pressure switch, it is very easy to determine if the system is operating within the desired pressure range. The instrument can be parameterised such that the digital display lights up green when the value is within the defined pressure range and red if not. In this way, problems can be identified early.

Optimised for tight mounting spaces

With a diameter of 29 mm, the model PSD-4-ECO is very slim. Through the arrangement of the electrical output, it can be installed so that it uses little space. The display head can

be rotated through 335° and the display tilted electronically through 180°, so that the pressure display is always aligned towards the user.

Optimised for OEM integration

The pressure switch is specially adapted to the requirements of OEM series production. For example, units of 25 pieces reduce the packaging material and make handling easier. Customer-specific pre-configuration by WIKA or automated parameterisation via IO-Link 1.1 saves time and simplifies the integration process.

Designed for harsh ambient conditions

Tough: The model PSD-4-ECO pressure switch is designed for medium temperatures from -40 ... +125 °C. In addition, it withstands mechanical shocks up to 50 g and high electrical loads. This makes it a highly economical and reliable solution.

Measuring ranges

Gauge pressure								
bar	0 ... 0.4	0 ... 0.6	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10
	0 ... 16	0 ... 25	0 ... 40	0 ... 60	0 ... 100	0 ... 160	0 ... 250	0 ... 400
	0 ... 600	0 ... 1,000						
psi	0 ... 10	0 ... 15	0 ... 25	0 ... 30	0 ... 50	0 ... 100	0 ... 160	0 ... 200
	0 ... 300	0 ... 500	0 ... 1,000	0 ... 1,500	0 ... 2,000	0 ... 3,000	0 ... 5,000	0 ... 7,500

Absolute pressure								
bar	0 ... 0.4	0 ... 0.6	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10
	0 ... 16	0 ... 25						
psi	0 ... 10	0 ... 15	0 ... 25	0 ... 30	0 ... 50	0 ... 100	0 ... 160	0 ... 200
	0 ... 300							

Vacuum and +/- measuring range								
bar	-1 ... 0	-1 ... +0.6	-1 ... +1.5	-1 ... +3	-1 ... +5	-1 ... +9	-1 ... +15	-1 ... +24
psi	-14.5 ... 0	-14.5 ... +15	-14.5 ... +30	-14.5 ... +50	-14.5 ... +100	-14.5 ... +160	-14.5 ... +200	-14.5 ... +300

The stated measuring ranges are also available in kg/cm² and MPa.

Special measuring ranges between 0 ... 0.4 and 0 ... 1,000 bar (0 ... 10 bis 0 ... 7,500 psi) are available on request.

Special measuring ranges have a reduced long-term stability and higher temperature errors.

Overload safety

The overload safety is based on the sensor element used. Depending on the selected process connection and sealing, restrictions in overload safety can result.

≤ 600 bar [≤ 8,000 psi]: 2 times

> 600 bar [> 8,000 psi]: 1.5 times

Increased overload safety (option)

Deviating temperature errors and long-term stability with respect to the selected measuring range apply here.

Vacuum-tight

Yes

Digital display

7-segment LED, 2-coloured red/green, 4-digit, 8.9 mm [0.35 in] character size

Display can be rotated electronically through 180°

Colour ranges through green/red switching can be parameterised

Display can be rotated mechanically through 335°

Output signals

Switching output		Analogue signal
SP1	SP2	
PNP	PNP	-
PNP	-	4 ... 20 mA (3-wire)
PNP	-	DC 0 ... 10 V (3-wire)
PNP	PNP	4 ... 20 mA (3-wire)
PNP	PNP	DC 0 ... 10 V (3-wire)

Optionally also available with an NPN instead of a PNP switching output

IO-Link (option)

IO-Link is available for all output signals with PNP output.

Revision: 1.1
 Speed: 38.4 kBaud (COM2)
 Min. cycle time: 2.3 ms
 Master port class: A

Adjustment of zero point offset

max. 3 % of span

Damping of analogue output/switching outputs

0 ms ... 65 s (adjustable)

Switch-on time

1 s

Switching thresholds

Switch point 1 and switch point 2 are individually adjustable

Switching functions

Normally open, normally closed, window, hysteresis (adjustable)

Switching voltage

Power supply - 1 V

Switching current

max. 250 mA to 85 °C [176 °F]

max. 250 mA to 70 °C [176 °F] with UL approval

For details, see the derating curves below

Settling time/response time

Output signal: ≤ 5 ms

Switching output: ≤ 5 ms

Load

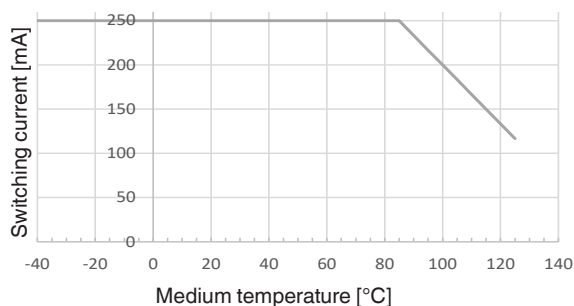
4 ... 20 mA: ≤ 500 kΩ

DC 0 ... 10 V: > max. output voltage / 1 mA

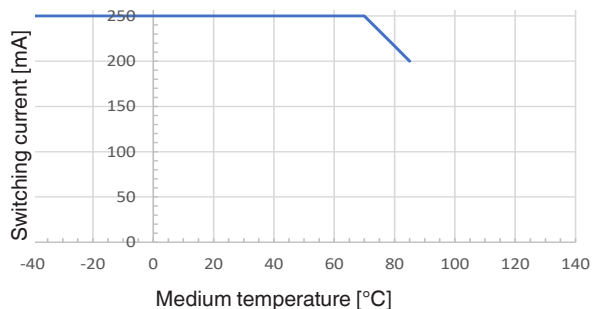
Service life

100 million switching cycles

Derating curve per switching output (without UL approval)



Derating curve per switching output (with UL approval)



Voltage supply

Power supply

DC 15 ... 32 V

Current consumption

≤ 45 mA for versions without analogue signal

≤ 70 mA for versions with analogue signal

Total current consumption

≤ 600 mA including switching current

Accuracy specifications

Accuracy, analogue signal

≤ ±1.0 % of span

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).

Non-repeatability, analogue signal (IEC 61298-2)

≤ 0.1 % of span

Long-term drift, analogue signal (IEC 61298-2)

≤ ±0.1 % of span

≤ ±0.2 % of span for measuring ranges ≤ 0.4 bar [10 psi] and for increased overload safety

Accuracy, switching output

≤ ±1.0 % of span

Temperature error in nominal temperature range

maximum: ≤ ±1.5 % of span

maximum: ≤ ±2.5 % of span with increased overload safety

Temperature coefficients in nominal temperature range

Mean TC zero point: ≤ ±0.16 % of span/10 K

Mean TC span: ≤ ±0.16 % of span/10 K

Reference conditions (per IEC 61298-1)

Temperature: 15 ... 25 °C [59 ... 77 °F]
Atmospheric pressure: 860 ... 1,060 mbar [12.5 ... 15.4 psi]
Air humidity: 45 ... 75 % r. h.
Nominal position: Process connection lower mount
Power supply: DC 24 V
Load: see "Output signal"

Operating conditions

Permissible temperature ranges

	Standard	Option
Medium	-25 ... +85 °C [-13 ... +185 °F]	-40 ... +125 °C [-40 ... +257 °F) ¹⁾
Ambient	-20 ... +85 °C [-4 ... +185 °F]	
Storage	-40 ... +70 °C [-40 ... +158 °F]	
Nominal temperature	-20 ... +80 °C [-4 ... +176 °F]	

1) Medium temperature restricted to -30 ... +85 °C [-22 ... +185 °F] with UL approval

Air humidity

45 ... 75 % r. h.

Vibration resistance

20 g, 10 ... 2,000 Hz (IEC 60068-2-6, under resonance)

Shock resistance

50 g, 11 ms (IEC 60068-2-27, mechanical)

Service life

100 million load cycles

Ingress protection (per IEC 60529)

IP65 and IP67

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Mounting position

as required

Materials

Wetted parts

< 10 bar [150 psi]: 316L
 ≥ 10 bar [150 psi]: 316L, PH grade steel

Non-wetted parts

Case: 304L
 Keyboard: PBT
 Display window: PC
 Display head: PBT+PC blend

Pressure transmission fluid:

Synthetic oil for all gauge pressure measuring ranges
 < 10 bar [150 psi] ¹⁾ and all absolute pressure measuring ranges

¹⁾ < 16 bar [250 psi] with increased overload safety

Options for specific media

- Oil and grease free: Residual hydrocarbon: < 1,000 mg/m²
- Oxygen, oil and grease free:
 Residual hydrocarbon: < 200 mg/m²
 Packaging: Protection cap on the process connection,
 instrument sealed in a vacuum bag
 Max. permissible temperature -20 ... +60 °C
 [-4 ... +140 °F]
 Available measuring ranges:
 0 ... 400 mbar to 0 ... 400 bar [0 ... 10 to 0 ... 5,000 psi]
 -1 ... 0 to -1 ... 24 bar [-14.5 ... 0 to -14.5 ... 300 psi]
 Factory supplied without sealing
 Available process connections, see "Process connections"

Process connection

Standard	Thread size	Max. nominal pressure	Sealing
DIN EN ISO 1179-2 (formerly DIN 3852-E)	G ¼ A	600 bar [8,700 psi]	NBR (options: Without, FPM/FKM)
	G ½ A	400 bar [5,800 psi]	NBR (options: Without, FPM/FKM)
EN 837	G ¼ B ¹⁾	1,000 bar [14,500 psi]	Without (options: Copper, stainless steel)
	G ¼ female ¹⁾	1,000 bar [14,500 psi]	Without (option: Copper, stainless steel)
	G ½ B ¹⁾	1,000 bar [14,500 psi]	Without (options: Copper, stainless steel)
ANSI/ASME B1.20.1	¼ NPT ¹⁾	1,000 bar [14,500 psi]	-
	½ NPT ¹⁾	1,000 bar [14,500 psi]	-
ISO 7	R ¼ ¹⁾	1,000 bar [14,500 psi]	-
KS	PT ¼ ¹⁾	1,000 bar [14,500 psi]	-
-	G ¼ female (Ermeto compatible)	1,000 bar [14,500 psi]	Without (options: Copper, stainless steel)

¹⁾ suitable for oxygen, oil and grease free.

Other connections on request.

Restrictor (option)

For applications where pressure spikes can occur, the use of a restrictor is recommended. The restrictor narrows the pressure port to 0.6 mm and thus increases the resistance against pressure spikes.

Enlarged pressure port (option)

For applications with contaminated or viscous media, for specific process connections, an enlarged pressure port with a 6 or 12 mm diameter is available in order to reduce the risk of a pressure port blocking.

Electrical connections

Connections

- Circular connector M12 x 1 (4-pin)
- Circular connector M12 x 1 (5-pin) ¹⁾

1) Only for version with two switching outputs and additional analogue signal

Electrical safety

Short-circuit resistance: S+ / SP1 / SP2 vs. U-
Reverse polarity protection: U+ vs. U-
Insulation voltage: DC 500 V
Overvoltage protection: DC 36 V

Connection diagrams

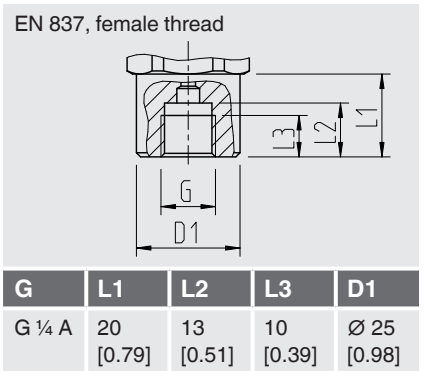
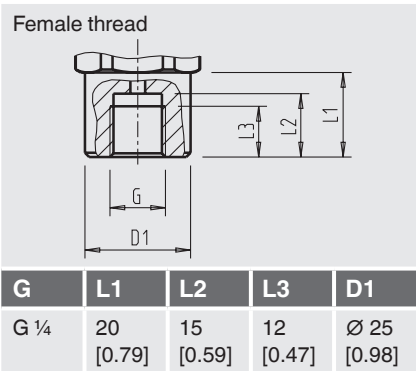
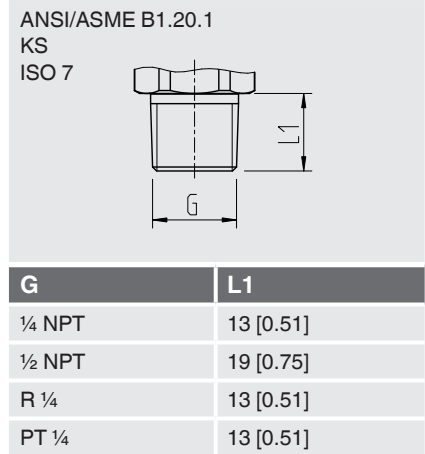
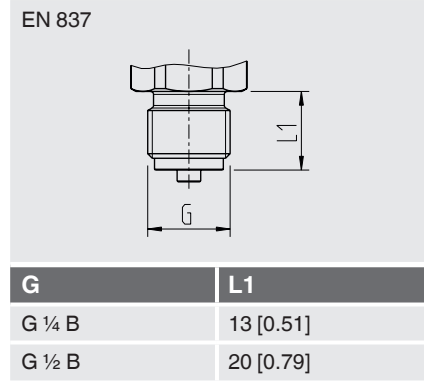
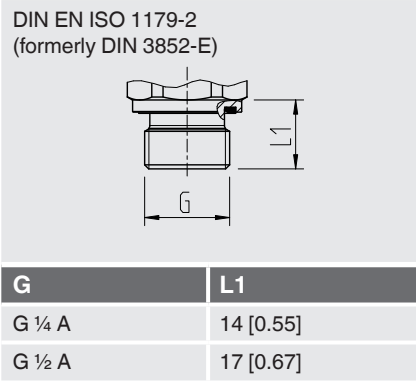
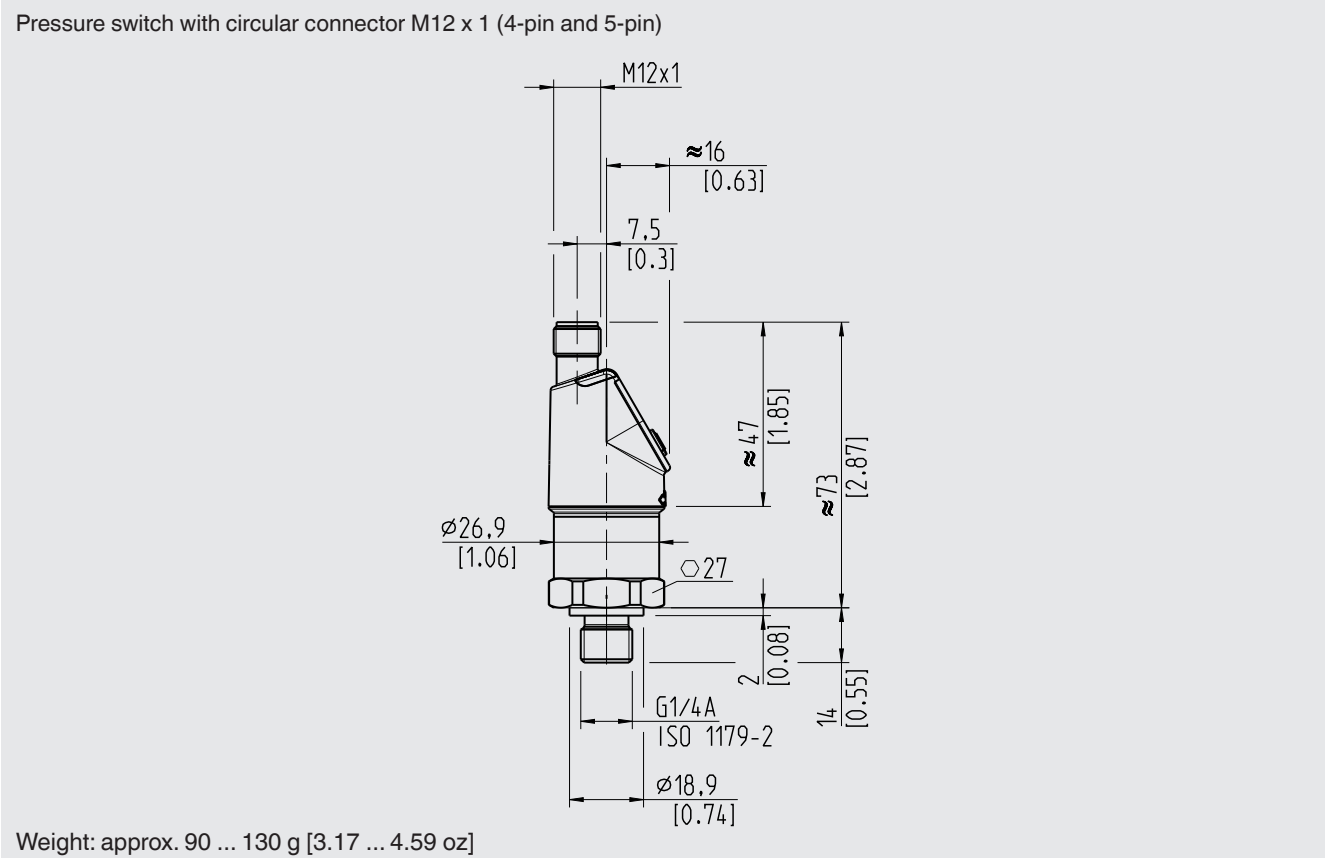
Circular connector M12 x 1 (4-pin)		
	U+	1
	U-	3
	SP2 / S+	2
	SP1 / C	4

Circular connector M12 x 1 (5-pin)		
	U+	1
	U-	3
	S+	5
	SP1 / C	4
	SP2	2

Legend:

- U+ Positive power supply
- U- Negative power supply terminal
- SP1 Switching output 1
- SP2 Switching output 2
- C Communication with IO-Link
- S+ Analogue output

Dimensions in mm [in]



Ermeto compatible

Accessories and spare parts

Sealings

	Description	Order number
	NBR profile sealing G ¼ A DIN EN ISO 1179-2 (formerly DIN 3852-E)	1537857
	FPM/FKM profile sealing G ¼ A DIN EN ISO 1179-2 (formerly DIN 3852-E)	1576534
	NBR profile sealing G ½ A DIN EN ISO 1179-2 (formerly DIN 3852-E)	1039067
	FPM/FKM profile sealing G ½ A DIN EN ISO 1179-2 (formerly DIN 3852-E)	1039075
	Copper G ¼ B EN 837	11250810
	Stainless steel G ¼ B EN 837	11250844
	Copper G ½ B EN 837	11250861
	Stainless steel G ½ B EN 837	11251042

Connectors with moulded cable

	Description	Temperature range	Cable diameter	Order number
	Straight version, cut to length, 4-pin, 2 m [6.6 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086880
	Straight version, cut to length, 4-pin, 5 m [16.4 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086883
	Straight version, cut to length, 4-pin, 10 m [32.8 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086884
	Straight version, cut to length, 5-pin, 2 m [6.6 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086886
	Straight version, cut to length, 5-pin, 5 m [16.4 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086887
	Straight version, cut to length, 5-pin, 10 m [32.8 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086888
	Angled version, cut to length, 4-pin, 2 m [6.6 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086889
	Angled version, cut to length, 4-pin, 5 m [16.4 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086891
	Angled version, cut to length, 4-pin, 10 m [32.8 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	4.5 mm [0.18 in]	14086892
	Angled version, cut to length, 5-pin, 2 m [6.6 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086893
	Angled version, cut to length, 5-pin, 5 m [16.4 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086894
	Angled version, cut to length, 5-pin, 10 m [32.8 ft] PUR cable, UL listed, IP67	-20 ... +80 °C [-4 ... 176 °F]	5.5 mm [0.22 in]	14086896

Approvals

Logo	Description	Country
	EU declaration of conformity ■ EMC directive ■ Pressure equipment directive ■ RoHS directive	European Union
	UL Safety (e.g. electr. safety, overpressure, ...)	USA and Canada

Manufacturer's information and certificates

Logo	Description
-	China RoHS directive
-	MTTF > 100 years

Patents, property rights

Protected design, registered under DPMA (German patent and trade mark office) no. 402017001481-0001

Approvals and certificates, see website

Ordering information

Model / Accuracy / Measuring range / Process connection / Sealing / Medium temperature / Output signal / Options for special media and overload safety

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