

**Features**

- Device for absolute pressure and gauge pressure measurement in gases, steams or liquids
- Large selection of process connections: universal use
- Temperature range up to 130 °C (266 °F)
- Pressure range up to 40 bar (600 psi)
- Easy commissioning without the need for an operating tool
- Configurable by **PACTware**<sup>TM</sup>
- Up to SIL2 acc. to IEC 61508

**Function**

The device is used for absolute pressure and gauge pressure measurement in gases, steams or liquids.

The device has a capacitive measuring cell and a ceramic process isolating diaphragm.

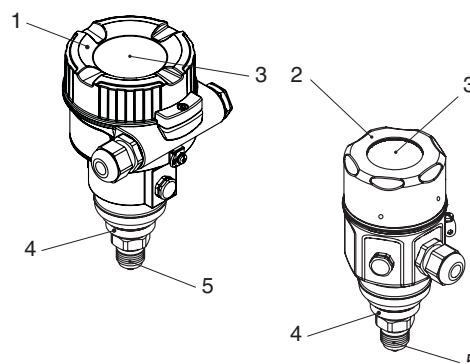
The ceramic sensor is a dry sensor. The process pressure acts directly on the robust ceramic process isolating diaphragm and deflects it. A pressure-dependent change in capacitance is measured at the electrodes of the ceramic substrate and the process isolating diaphragm. The measuring range is determined by the thickness of the ceramic process isolating diaphragm.

The data is transmitted to the control via analog signal, HART protocol or PROFIBUS PA.

The device is easily configured by the use of keypad or with the PACTware configuration software.

The device is designed modular and offers a variety of process connections, a replaceable display and a universal electronics.

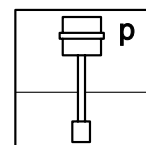
**Assembly**



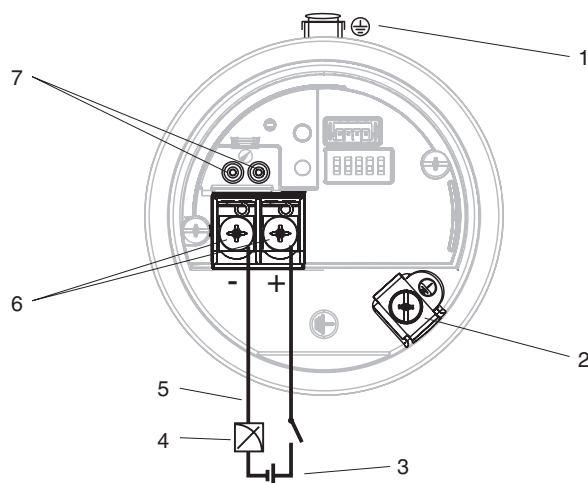
- 1 Aluminum housing
- 2 Stainless steel housing
- 3 Cover with viewing window
- 4 Ceramic process isolating diaphragm
- 5 Process connection (thread)



**SIL2**



**Connection**



- 1 External grounding terminal
- 2 Internal grounding terminal
- 3 Supply voltage
- 4 4 mA to 20 mA for HART devices
- 5 For HART devices: With a handheld terminal, all the parameters can be configured anywhere along the bus line via menu operation.
- 6 Terminals
- 7 Test terminals for HART devices

Release date 2013-05-03 12:07 Date of issue 2013-05-03 t163050\_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

<b>General specifications</b>	
Construction type	sensor: ceramic sensor ceramic diaphragm
Order code	see technical informations (TI)
<b>Supply</b>	
Rated voltage	versions for safe area: 11.5 ... 45 V DC, 2-wire 11.5 ... 35 V DC, HART, 2-wire 9 ... 32 V DC, PROFIBUS PA version for hazardous area see safety information (SI)
<b>Input</b>	
Measured variable	absolute or relative pressure
Measurement range	0.1 ... 40 bar max. turn down: 20:1
<b>Output</b>	
Output signal	4 ... 20 mA , analog , 2-wire 4 ... 20 mA with superimposed digital communication protocol HART 6.0, 2-wire digital communication signal PROFIBUS PA (Profile 3.02)
Communication	4 ... 20 mA HART (standard) PROFIBUS PA (option)
<b>Conformity</b>	
Protection degree	IEC 60529:2001
<b>Measurement accuracy</b>	
Accuracy	reference accuracy: $\pm 0.15\%$ (standard), $\pm 0.075\%$ (platinum) The reference accuracy comprises the non-linearity according to limit point setting, hysteresis and non-reproducibility acc. to IEC 60770. The data refer to the calibrated span.
Long-term drift	up to $\pm 0.1\%$ of upper range limit (URL)/year
<b>Operating conditions</b>	
Process conditions	
Medium temperature	-40 ... 100 °C (-40 ... 212 °F) hygienic versions: -40 ... 130 °C (-40 ... 266 °F), 150 °C/1h (302 °F/1h)
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 85 °C (-40 ... 185 °F) with display : -20 ... 70 °C (-4 ... 158 °F)
<b>Mechanical specifications</b>	
Protection degree	IP66, NEMA 4X IP68, NEMA 6P (24 hours in water 1.83 m (6 ft) deep) IP69K (with separate housing and FEP cable)
Connection	gland M20 thread M20, G1/2, NPT1/2 device plug M12 HAN7D Harting connector, angled valve connector acc. ISO 4400, cable 5 m
Material	materials in contact with process : Al <sub>2</sub> O <sub>3</sub> ceramic (ultrapure 99.9 %) housing: - die-cast aluminum with protective powder-coating on polyester base, housing F31 - stainless steel AISI 316L (1.4404), housing F15 measuring cell seal: Viton, EPDM, NBR, Kalrez
Process connection	threads ISO 228: G1/2, G1, G1-1/2, G2 threads ANSI: NPT1/2, NPT1, NPT1-1/2, NPT2 hygienic process connections: Clamp, Varivent, DRD, DIN 11851, DIN 11864, NEUMO, APV, uni adapter flanges: EN 1092-1: DN 25 ... DN 80, ANSI 16.5: 1 ... 4 in, JIS B2220
<b>Data for application in connection with Ex-areas</b>	
EC-Type Examination Certificate	see safety information (SI)
<b>International approvals</b>	
FM approval	see safety information (SI)
CSA approval	see safety information (SI)
IECEX approval	see safety information (SI)
<b>Certificates and approvals</b>	
Drinking water approval	NSF61 approval
Overspill protection	see approvals (ZE)
Marine approval	German Lloyd (GL)
<b>General information</b>	
Supplementary documentation	technical informations (TI) operating instructions (BA, KA) safety information (SI) control drawings (ZD) approvals (ZE)

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .
<b>Accessories</b>	
Designation	see technical informations (TI)

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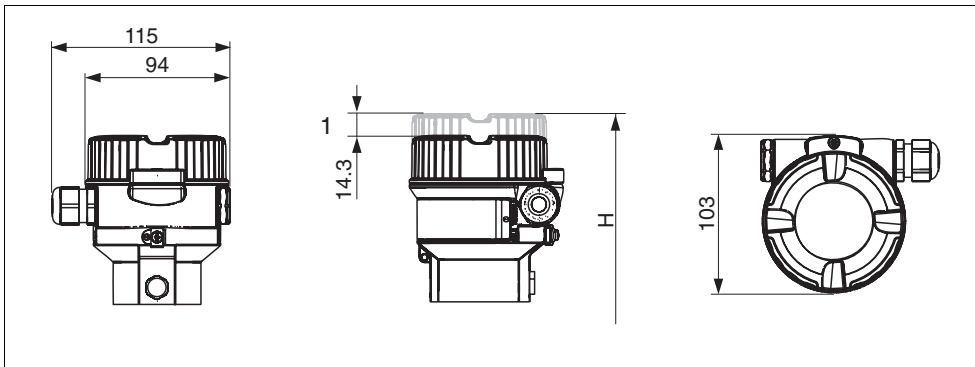
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**Dimensions (excerpt)**

**Housing F31, aluminum (versions I, J)**

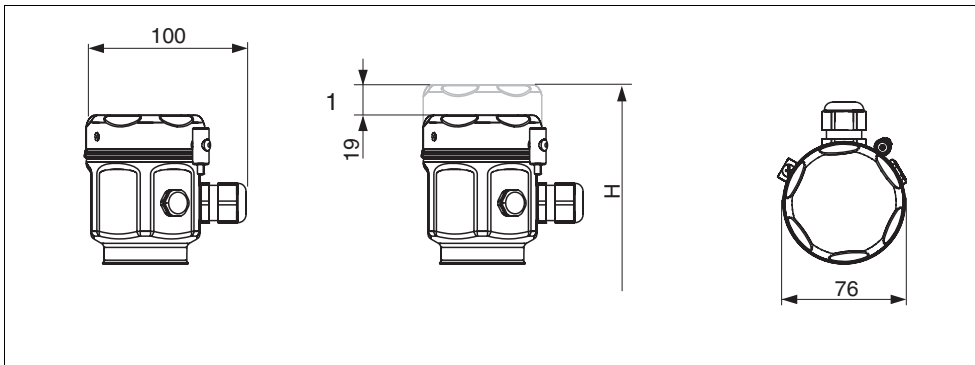
Dimensions in mm (in)



1 The cover with viewing window is 15 mm (0.59 in) higher than the cover without viewing window.

**Housing F15, stainless steel (versions Q, R, S, hygienic)**

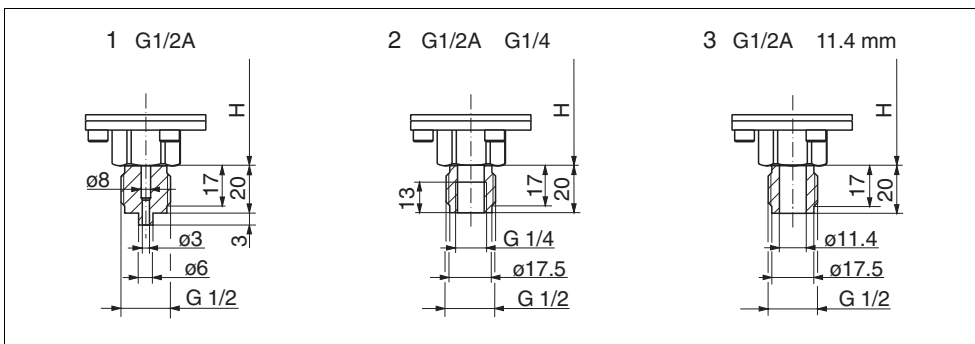
Dimensions in mm (in)



1 The cover with viewing window is 19 mm (0.75 in) higher than the cover without viewing window.

**Process connections with thread, internal process isolating diaphragm**

Dimensions in mm (in)



Process connections PPC-M51, thread ISO 228

- 1 Thread ISO 228 G1/2 A EN 837; material version G11: AISI 316L, version G1C: Alloy C276, Version G1V: PVDF (max.: 15 bar (217,5 psi), -10 °C to +60 °C (+14 °F to +140 °F)), Version G1V mount version with a mounting bracket only
- 2 Thread ISO 228 G1/2A G1/4 (female); material version G14: AISI 316L, version G13: Alloy C276
- 3 Thread ISO 228 G1/2A hole 11.4 mm (0.45 in); Material version G1M: AISI 316L, version G1N: Alloy C276

	F31 housing (I, J)	F15 housing (Q, R, S)
Height H	154 mm (6.06 in)	146 mm (5.75 in)

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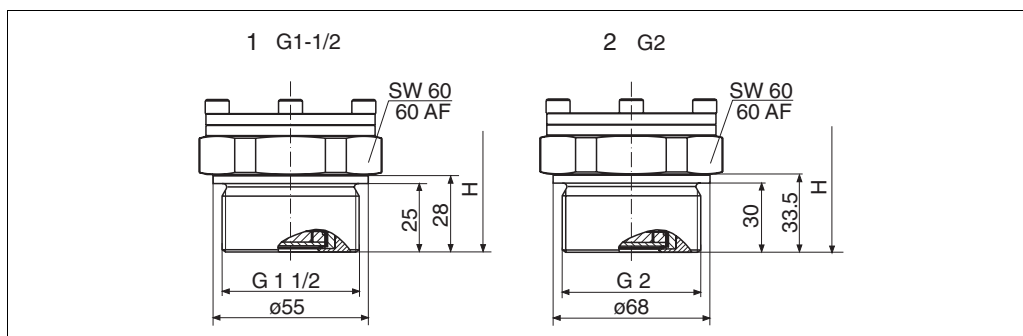
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**Dimensions (excerpt)**

**Process connections with thread, flush-mounted process isolating diaphragm**

Dimensions in mm (in)



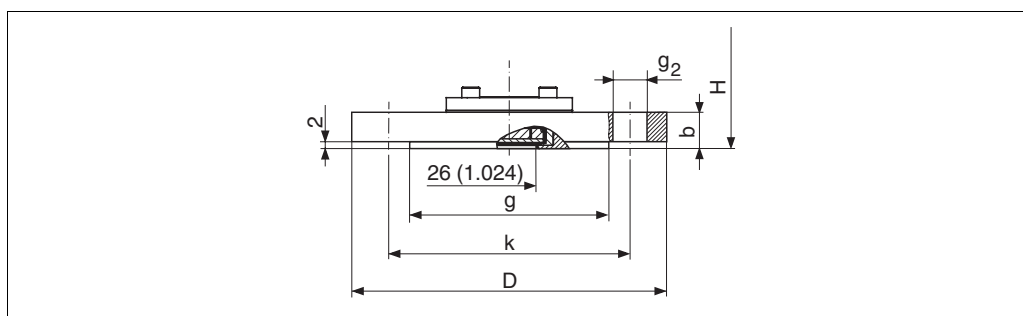
Process connections PPC-M51, thread ISO

- 1 Thread ISO 228 G1-1/2A; material version G51: AISI 316L
- 2 Thread ISO 228 G2A; material version G61: AISI 316L

	<b>F31 housing (I, J)</b>	<b>F15 housing (Q, R, S)</b>
Height H	201 mm (7.91 in)	193 mm (7.6 in)

**Process connections with EN/DIN flanges, connection dimensions as per EN 1092-1/DIN 2527**

Dimensions in mm (in)



Process connections PPC-M51, EN/DIN flange with raised face (flush-mounted process isolating diaphragm)

Version	Flange				Boltholes					
	Material	Nominal Diameter	Nominal pressure	Shape <sup>1</sup>	Diameter D [mm]	Thickness b [mm]	Raised face g [mm]	Quantity	Diameter g <sub>2</sub> [mm]	Hole circle k [mm]
F45	AISI 316L	DN25	PN10-40	B1 (D)	115	18	68	4	14	85
F55	AISI 316L	DN32	PN10-40	B1 (D)	140	18	78	4	18	100
F65	AISI 316L	DN40	PN10-40	B1 (D)	150	18	88	4	18	110
F6H	ECTFE <sup>3</sup>	DN40	PN10-40	B1 (D)	150	21	88	4	18	110
F75	AISI 316L	DN50	PN10-40	B1 (D)	165	20	102	4	18	125
F72	PVDF <sup>2</sup>	DN50	PN10-16	B1 (D)	165	18	102	4	18	125
F7H	ECTFE <sup>3</sup>	DN50	PN25-40	B1 (D)	165	20	102	4	18	125
F95	AISI 316L	DN80	PN10-40	B1 (D)	200	24	138	8	18	160
F9H	ECTFE <sup>3</sup>	DN80	PN25-40	B1 (D)	200	24	138	8	18	160

- <sup>1</sup> Designation as per DIN 2527 in brackets
- <sup>2</sup> OPL.: 15 bar (225 psi), Process temperature range: -10 °C to +60 °C (+14 °F to +140 °F)
- <sup>3</sup> ECTFE coating on AISI 316L (1.4404). When operating in hazardous areas, avoid electrostatic charging of the plastic surfaces.

	<b>F31 housing (I, J)</b>	<b>F15 housing (Q, R, S)</b>
Height H	201 mm (7.91 in)	193 mm (7.6 in)

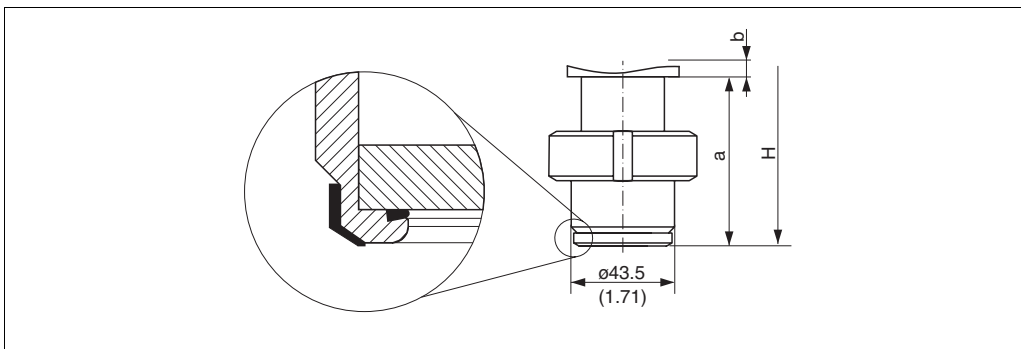
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

**Dimensions (excerpt)**

**Process connections with universal adapter**

Dimensions in mm (in)



Material: b = top section AISI 316L (1.4404), a = bottom section AISI 316L (1.4435); Pepperl+Fuchs supplies the slotted nut in stainless steel AISI 304 (DIN/EN material number 1.4301) or in AISI 304L (DIN/EN material number 1.4307). Surface roughness of the surfaces in contact with the medium Ra 0.76 µm (30 µin).

Version	Process connection approval <sup>1</sup>	Material of the molded seal (1) (changeable)	Material of the measuring cell seal (2) (not changeable) at the ceramic sensor (3)	Measuring cell seal approval	Nominal pressure PN
U4S	EHEDG, 3A	Silicone	EPDM (order version "K")	FDA <sup>2</sup> 3A Class II, USP Class VI, DVGW, KTW, W270, WRAS, ACS, NSF61	10
U4E	EHEDG	EPDM	EPDM (order version "J")	FDA <sup>2</sup>	

<sup>1</sup> EHEDG or 3A approval only with approved process connection.

<sup>2</sup> Suitable for foods FDA 21 CFR 177.2600

	F31 housing (I, J)	F15 housing (Q, R, S)
Height H	196 mm (7.72 in)	189 mm (7.44 in)



For further information see technical information.