



OPTIBAR PC 5060 C Technical Datasheet

Pressure transmitter for the measurement of process pressure and level

- Maximum overload and vacuum resistance under all process conditions
- Fast response time
- Modular converter platform for all applications

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1.1 OPTIBAR pressure transmitter

The **OPTIBAR PC 5060 C** features a ceramic capacitive measuring cell that demonstrates its robustness and longevity in particular in many applications. The pressure transmitter is a universal measuring device for gases, vapours and liquids. The measuring cell can be built into the process absolutely flush and the radially recessed position of the gasket provides additional protection in abrasive media.

As a special advantage, the pressure transmitters offer process temperatures up to 150°C / 302°F and complete resistance against sudden temperature shocks.

Highlights

- High plant availability thanks to maximum overload and vacuum resistance in the ceramic measuring cell
- Process temperatures up to 150°C / 302°F without diaphragm seal
- Minimum measuring ranges with high measuring accuracy
- The wear-free measuring cell guarantees minimum service and maintenance costs
- Extremely quick step response times < 85 ms
- Universal modularity of the entire OPTIBAR process series
- Resistant to temperature shocks
- Quick start-up for all applications
- Extensive diagnostic and parameterization functions on the display module or the user-friendly and free DTM

Industries

- General process technology
- Power generation
- Chemicals
- Petrochemicals
- Environmental technology
- Water and wastewater

Applications

- Monitoring from low pressure to absolute vacuum
- Overload resistant level and overpressure measurement in batch tanks
- Monitoring of supply pressure in pipelines
- Dry-run protection of delivery pumps

1.2 Options

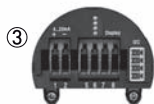
The OPTIBAR process pressure series allows free choice of pressure sensors, process connections, electronics and housings - so that each device is perfectly adapted to each measuring task.



① The optional display and adjustment module make it possible to start-up the converter entirely on site. With double chamber housings it can be installed on the side or on the top.



② The converter can be configured using the optional display and adjustment module as well as by way of PACTware™ via HART® or the optionally available USB module. Regardless of the selected option, user guidance and navigation are absolutely identical.



③ There are a variety of converters available and they can be used regardless of the housing or sensor selected. In addition to the standard configuration with 2-wire 4...20 mA and superimposed HART® (version 7) signal, Foundation Fieldbus and Profibus PA can be selected depending on the application.



④ Note that not all approvals are available with all housings.



⑤ The OPTIBAR process pressure series comprises relative and absolute pressure sensors with metallic and ceramic measuring cells as well as a differential pressure measuring cell with metallic diaphragm for any application in industrial process measuring technology.

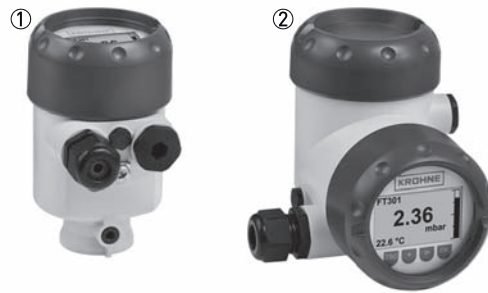


Figure 1-1: Plastic housing

- ① Single chamber
- ② Double chamber

The plastic housing is cost-effective and features a low net weight. Converters can only be used in hazardous areas in intrinsically safe operation.

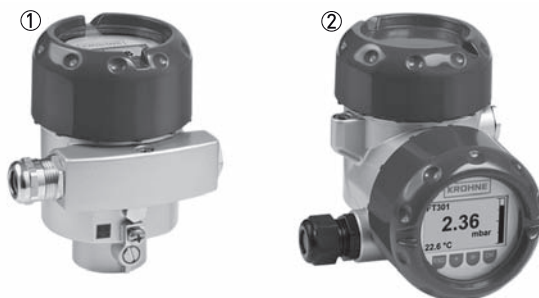


Figure 1-2: Aluminium housing

- ① Single chamber
- ② Double chamber

The standard housing for all pressure transmitters – it is perfectly equipped for industrial use and can be used in hazardous areas for all protection types.

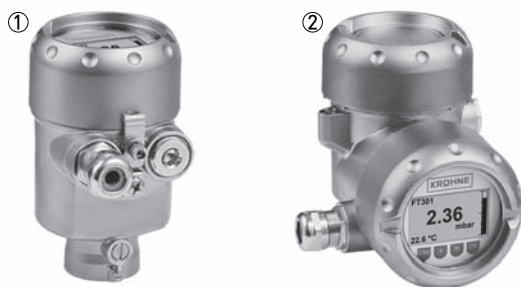


Figure 1-3: Stainless steel housing (precision casting)

- ① Single chamber
- ② Double chamber

For applications that place particular demands on the mechanical robustness of the converter. These housings can be used with all protection types for hazardous areas.



Figure 1-4: Stainless steel housing (electro-polished)

- ① Single chamber

Recommended for applications requiring the corrosion resistance of stainless steel but not the mechanical robustness of a stainless steel precision casting housing. Also suitable for hygienic applications that require an IP69K protection class for steam jet cleanings. Converters can only be used in hazardous areas in intrinsically safe operation.

1.3 Measuring principle

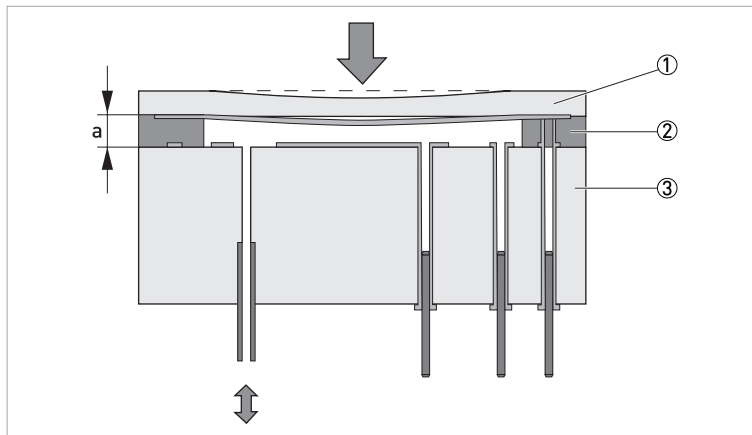


Figure 1-5: Ceramic measuring cell

- ① Diaphragm
- ② Glass solder connection
- ③ Base body

The OPTIBAR PC 5060 C sensor element is the CERTEC[®] measuring cell with robust ceramic diaphragm. The measuring cell is made up of a ceramic base body welded to the equally ceramic diaphragm via a glass solder connection. The base body and the diaphragm are inside the measuring cell, partially coated with gold and passivated against environmental impacts with an extremely thin glass layer. Pressure acting on the measuring cell diaphragm causes a change in capacitance in the measuring cell. This change is evaluated by the sensor electronics and converted into a corresponding output signal by the converter electronics. A temperature sensor behind the diaphragm allows for the additional output of a temperature measurement.

The ceramic measuring cell is available in two designs:

- Diameter 17.5 mm / 0.69" for small process connections and the measuring range 100 bar / 1450 psi.
- Diameter of 28 mm / 1.1" for large process connections and all flange connections.

The measuring cells are configured differently depending on the type of pressure selected:

Gauge pressure: The measuring cell is open to the atmosphere. The ambient pressure is compensated directly in the measuring cell and thus has no influence on the measurement.

Absolute pressure: The measuring cell is evacuated and enclosed. The process pressure is measured in reference to vacuum. Any change in the ambient temperature changes the measured value.

2.1 Technical data

- The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local sales office.
- Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website (Downloadcenter).

Measuring system

Measuring principle	Capacitive ceramic measuring cell
Application range	<ul style="list-style-type: none"> • Process pressure measurement • Level of liquids
Measuring range	25 mbar...100 bar / 0.73...1450.38 psi
Display and User interface	
Display on signal converter	<ul style="list-style-type: none"> • Dot-matrix display 45x27 mm / 1.77x1.06", illuminated • Display turnable in 90° steps • Digit size 13x7 mm / 0.51x0.27" • Ambient temperatures below -20°C / -4°F may affect the readability of the display
Display function	<ul style="list-style-type: none"> • Display of measured value or derived measured value such as filling height • Warning and diagnostic information • All parameters are accessible via the operating menu
Operating and display languages	German, English, French, Spanish, Portuguese, Italian, Dutch, Russian, Turkish, Polish and Czech
Operation	Local operation via 4 push buttons on the display and adjustment module
Remote control	<ul style="list-style-type: none"> • PACTware™, incl. Device Type Manager (DTM) • HART® Hand Held Communicator from Emerson Process • AMS® from Emerson Process • PDM® from Siemens
Integrated clock	
Date format	Day / Month / Year
Time format	12 hours / 24 hours
Time zone	CET (Factory setting)
Rate deviation	Maximum 10.5 minutes / year

Measuring accuracy

Process pressure	
Reference conditions acc. to DIN 61298-1	<ul style="list-style-type: none"> • Ambient temperature (constant): +15...+25°C / +59...+77°F • Relative humidity (constant): 45...75% • Ambient pressure (constant): 860...1060 mbar / 12.5...15.4 psi • Measuring accuracy according to IEC 61298-2 (terminal based) • Curve characteristic: linear • Vertical mounting position, measuring diaphragm pointing down • Effect of mounting position < 0.2 mbar/20 Pa (0.003 psig) • Deviation at current output due to strong, high-frequency electromagnetic fields within the scope of EN 61326

Reference accuracy acc. to DIN EN 60770	Includes the non-linearity, hysteresis and repeatability under reference conditions. Applies to the digital interfaces (HART [®] , Profibus PA, Foundation Fieldbus) as well as for the analogue 4...20 mA current output. [% of the set span]			
	Accuracy class	0.05%	0.10%	0.20%
	TD of 1:1 to 5:1	< ±0.05%	< ±0.1%	< ±0.2%
	TD > 5:1	< ±0.01% x TD	< ±0.02% x TD	< ±0.04% x TD
Effect of ambient or medium temperature	Ambient temperature effect on zero and span in relation to the set measuring span. Applies to the digital interfaces (HART [®] , Profibus PA, Foundation Fieldbus) as well as for the analogue 4...20 mA current output. [% of the set span]			
	Accuracy class	0.05%	0.10%	0.20%
	-40...0°C / -40...+32°F	< ± 0.375% + 0.375% x TD	< ± 0.65% + 0.65% x TD	
	0...+100°C / 32...+212°F	< ± 0.075% + 0.075% x TD	< ± 0.15% + 0.15% x TD	
	+100...+130°C / +212...+266°F	< ± 0.125% + 0.125% x TD	< ± 0.30% + 0.30% x TD	
Effect of mounting position	A position-dependent zero offset can be corrected.			
	≤0.1 mbar per 10° inclination			
Long-term stability acc. to DIN 16086 and IEC 60770-1	Applies to the digital interfaces (HART [®] , Profibus PA, Foundation Fieldbus) as well as for the analogue 4...20 mA current output. [% of URL] The values indicated are doubled for the measuring range 0...+0.025 bar / 0...+0.36 psi for the Ø 28 mm / 1.1" measuring cell.			
	Time period	Measuring cell Ø 17.5 mm	Measuring cell Ø 28 mm	
	1 years	<0.1% x TD	< ± 0.05% x TD	
	5 years	<0.2% x TD	< ± 0.1% x TD	
	10 years	<0.4% x TD	< ± 0.2% x TD	
Dynamic output behaviour	These parameters depend on the fill fluid, temperature and, if applicable, the diaphragm seal.			
Damping	63% of the input variable 0...999 seconds, adjustable in 0.1 second steps.			
Temperature				
The evaluation is made using the HART [®] output signal.				
Operating temperature / nominal temperature range	-60...+150°C / -76...+302°F			
Resolution	> 0.2 K			
Accuracy at 0...+100°C / +32...+212°F	± 2 K			
Accuracy at -60...0°C / -76...+32°F and +100...+150°C / +212...+302°F	Typ. ± 4 K			

Operating conditions

Temperature		
Version	Ambient temperature	Storage and transport temperature
Standard version	-40...+80°C / -40...+176°F	-60...+80°C / -76...+176°F
IP 66 / IP 68 version (1 bar / 14.5 psi)	-20...+80°C / -4...+176°F	-20...+80°C / -4...+176°F
IP68 version (25 bar / 362,6 psi), connection cable PUR	-20...+80°C / -4...+176°F	-20...+80°C / -4...+176°F
IP68 version (25 bar / 362,6 psi), connection cable PE	-20...+60°C / -4...+140°F	-20...+60°C / -4...+140°F
Temperature derating		
Version	Medium temperature	Ambient temperature
+130°C / +266°F	+100°C / +212°F	+80°C / +176°F
	+130°C / +266°F	+55°C / +131°F
+150°C / +302°F	+100°C / +212°F	+80°C / +176°F
	+150°C / +302°F	+50°C / +122°F

Further operating conditions

Ingress protection acc. to IEC 529 / EN 60529			
Plastic (PBT)	Single chamber	IP66 / IP67	NEMA 6P
	Double chamber	IP66 / IP67	NEMA 6P
Aluminium	Single chamber	IP66 / IP67	NEMA 6P
		IP68 (1 bar / 14.5 psi)	-
	Double chamber	IP66 / IP67	NEMA 6P
	Stainless steel (electro- polished)	Single chamber	IP69K
Single chamber		IP66 / IP67	NEMA 6P
Stainless steel (precision casting)	Single chamber	IP66 / IP67	NEMA 6P
		IP68 (1 bar / 14.5 psi)	-
	Double chamber	IP66 / IP67	NEMA 6P
Stainless steel	Sensor for external housing	IP68 (25 bar / 362.6 psi)	-
Vibration			
Reference conditions	Single chamber housing, aluminium		
Vibration resistance acc. to EN 60068-2-6	4 g at 5...200 Hz		
Shock resistant according to EN 60068-2- 27	100 g, 6 ms (mechanical shock)		

Materials

Gaskets		
	Standard version	Version with extended temperature range
FKM (VP2/A)	-20...+130°C / -4...+266°F	-20...+150°C / -4...+302°F
FKM (A+P 70.16)	-40...+130°C / -4...+266°F	-
FKM (ET 7056)	-20...+130°C / -4...+266°F	-
EPDM (A+P 75.5/KW75F)	-40...+130°C / -40...+266°F 1h: +140°C / +284°F cleaning temperature	-40...+150°C / -40...+302°F
EPDM (ET 7056)	-40...+130°C / -40...+266°F 1h: +140°C / +284°F cleaning temperature	-
FFKM (Kalrez® 6375)	-20...+130°C / -4...+266°F	-20...+150°C / -4...+302°F
FFKM (Perlast® G75S)	-15...+130°C / +5...+266°F	-15...+150°C / +5...+302°F
FFKM (Perlast® G75B)	-15...+130°C / +5...+266°F	-15...+150°C / +5...+302°F
FFKM (Chemraz® 535)	-30...+130°C / -22...+266°F	-
FEPM (Fluoraz® SD890)	-5...+130°C / 23...+266°F	-
Wetted parts		
Process connection	316 L / 1.4404, PVDF, Alloy C-22, Alloy C-276, Duplex 1.4462 and Titan Grade 2.	
Diaphragm	Sapphire ceramic® (>99.9% AL ₂ O ₃ ceramic)	
Joining material diaphragm/base body	Glass (non-wetted for double seal and moulded seal)	
Measuring cell seal	FKM (VP2/A, A+P 70.16), EPDM (A+P 75.5/KW75F), FFKM (Kalrez® 6375, Perlast® G75S, Perlast® G75B)	
Gasket for process connection (included)	Thread G1/2 (EN 837)	Aramid fibres, bound with NBR
	Thread G1 1/2 (DIN 3852-A)	Aramid fibres, bound with NBR
	M44 x 1.25 (DIN 13), M30 x 1.5	FKM, FFKM and EPDM
Materials for food applications		
Surface quality hygienic connections		
316 L process connection	R _a < 0.8 µm	
Ceramic diaphragm	R _a < 0.7 µm	
Gasket under wall mount plate 316 L with 3A approval	EPDM	
Non-wetted parts		
Electronics housing	Plastic PBT (Polyester), powder coated die-cast aluminium, 316 L / 1.4404	
External housing	Plastic PBT (polyester) and 316 L / 1.4404	
Base, wall mount external housing	Plastic PBT (polyester) and 316 L / 1.4404	
Gasket between base and wall mount	EPDM (permanently attached)	
Housing cover sealing ring	Silicone (aluminium or plastic housing), NBR (stainless steel housing)	
Inspection window in housing cover (display, adjustment module)	Polycarbonate (UL746-C listed)	
Ground terminal	316 Ti, 316 L / 1.440	

Connecting cable between sensor and external electronics housing for IP 68 (25 bar) version	PE and PUR
Nameplate carrier on connecting cable	PE hard
Connection cable for IP 68 (1 bar) version	PE

Process connection

Thread	from G1/2 and 1/2-14 NPT (female)
Flanges	from DN 25 (DIN) / 1" (ASME)
Flanges with extension	from DN 25 (DIN) / 1" (ASME)
Other connections	ISO 2852 / DIN 32676, DIN 11851, Neumo BioConnect / BioControl, Varivent, DRD, SMS and PMC

Tightening torques

Maximum tightening torques for the process connection	
G1/2 and G3/4	30 Nm / 22 ft lb
G1 and M30 x 1.5	50 Nm / 37 ft lb
G1 for PASVE	100 Nm / 74 ft lb
G1 1/2	200 Nm / 147 ft lb
Maximum tightening torques for screws	
PMC1 and PMC1 1/4	2 Nm / 1.5 ft lb
PMC1 1/2	5 Nm / 3.7 ft lb
Maximum tightening torques for NPT cable gland and conduit pipe	
Plastic housing	10 Nm / 7.4 ft lb
Aluminium housing	50 Nm / 37 ft lb
Stainless steel housing	50 Nm / 37 ft lb

Electrical connections

Mechanical - Standard	
Cable gland	M 20 x 1.5 mm
cable diameter	5...9 mm / 0.20...0.35" 6...12 mm / 0.24...0.47" 10...14 mm / 0.39...0.55"
1/2 NPT cable entry	Blind plug: M 20 x 1.5 mm, 1/2-14 NPT
	Closing cap: M 20 x 1.5 mm, 1/2-14 NPT
	Connector option: M12 x 1, Harting HAN 7D,8D, 7/8" FF
Wire cross-section	Solid wire with cords: 0.2 mm...2.5 mm ² / AWG 24...14
	Cord with wire end sleeve: 0.2 mm...1.5 mm ² / AWG 24...16
Mechanical - IP 66 / IP 68 (1 bar)	
Connection cable	
Construction	Four wires, one pressure compensation capillary, one suspension cable, screen braiding, metal foil and cable jacket
Wire cross-section	0.5 mm ² / AWG 20
Wire resistance	< 0.036 Ω/m
Tensile strength	< 1200 N / 270 lbf

Standard length	5 m / 16.40 ft
Max. length	25 m / 82.02 ft
Min. bending radius	25 mm / 0.98" at 25°C / 77°F
Diameter	Approx. 8 mm / 0.31"
Colour	Non-Ex version: black
	Ex version: blue
Mechanical - IP68 (25 bar)	
Connecting cable between IP 68 device and external housing	
Construction	Four wires, one pressure compensation capillary, one suspension cable, screen braiding, metal foil and cable jacket
Wire cross-section	0.5 mm ² / AWG 20
Wire resistance	< 0.036 Ω/m / 0.011 Ω/ft
Standard length	5 m / 16.40 ft
Max. length	25 m / 82.02 ft
Min. bending radius	25 mm / 0.98" at 25°C / 77°F
Diameter	Approx. 8 mm / 0.31"
Colour	Blue
Cable entry / Connector	
External housing	1 x cable gland M20 x 1.5 (cable Ø 5...9 mm), 1 x blind plug M20 x 1.5 or
	1 x connector (depending on version), 1 x blind plug M20 x 1.5
Spring load terminals for wire cross-section up to	2.5 mm ² / AWG 14
Electrical	
Supply voltage	Non-Ex device: 9.6...35 VDC
	Ex ia device: 9.6...30 VDC
	Ex d device: 9.6...35 VDC
	Ex ia d device: 15...35 VDC
Reverse polarity protection	Integrated
Permissible residual ripple	
Non-Ex devices	for U_n 12 VDC ($9.6 < U_B < 14$ VDC) $\leq 0.7 V_{eff}$ (16...400 Hz)
Ex ia d devices and Ex ia devices	for U_n 24 VDC ($18 < U_B < 35$ VDC) $\leq 1.0 V_{eff}$ (16...400 Hz)
Load	$R_{L, max} = (U_B - 9.6) / 22$ mA
Potential connection in device	Electronics: not electrically isolated
	Ground terminal: galvanically connected with process connection
Over voltage category	III
Protection class	II

Inputs and outputs

Output signal	
Output signal	4...20 mA / HART® version 7.3 3.8...20.5 mA (factory setting acc. to NAMUR recommendation)
Signal resolution	0.3 µA
Error signal of current output (adjustable)	High alarm ≥ 21 mA Low Alarm ≤ 3.6 mA, last valid measured value
Max. output current	21.5 mA
Boot-up current	≤ 10 mA for 5 ms after switching on, then ≤ 3.6 mA
Damping	0...999 seconds, adjustable

Approvals and certificates

CE	The device fulfils the statutory requirements of the EC directives. The manufacturer certifies that these requirements have been met by applying the CE marking.
Electromagnetic compatibility (EMC)	EMC conformity for EN 61326-1 (05/2006)
NAMUR	NE 21 - Electromagnetic compatibility of equipment NE 43 - Signal level for the failure information of digital transmitters NE 53 - Compatibility of field devices and display/adjustment components NE 107 - Self-monitoring and diagnosis of field devices
Classification according to Pressure Equipment Directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1, the requirements are fulfilled according to article 3, paragraph 3 (sound engineering practice).

2.2 Dimensions and weights

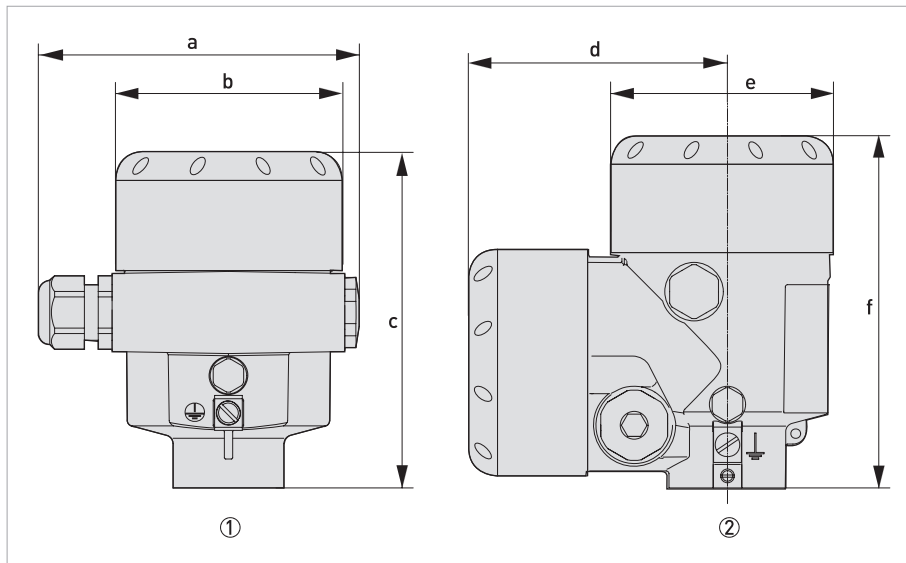


Figure 2-1: Aluminium housing

- ① Single chamber
- ② Double chamber

	Dimension [mm]	Dimension [inch]
a	116	4.57
b	86	3.39
c	116	4.57
d	87	3.43
e	86	3.39
f	120	4.72

With integrated display and adjustment module the height of the housing increases by 9 mm / 0.35 inch.

Housing version	Weight [kg]	Weight [lb]
Single chamber, aluminium	0.83	1.84
Double chamber, aluminium	1.24	2.73

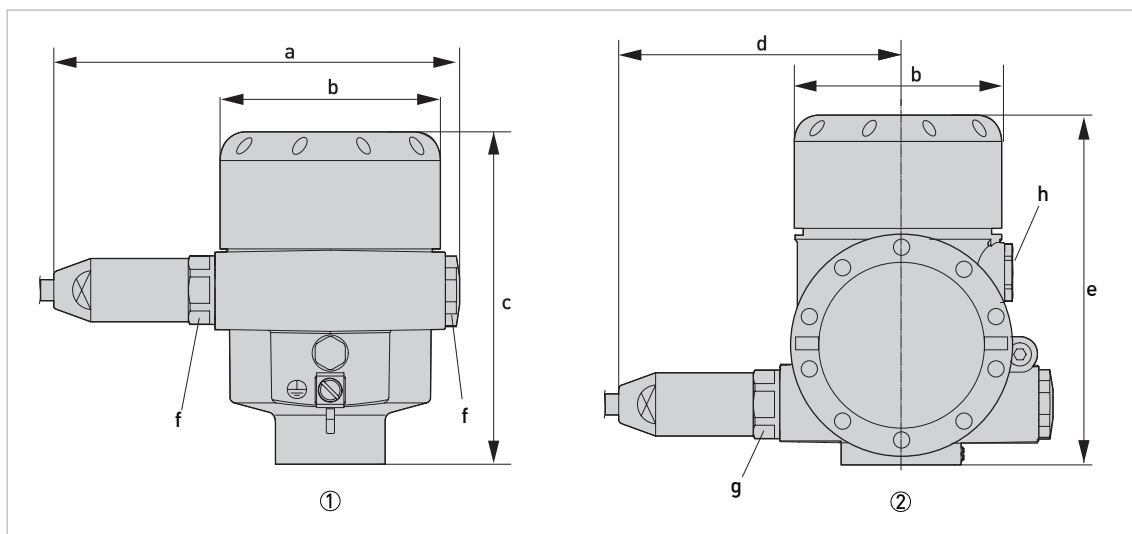


Figure 2-2: Aluminium housing in IP66 / IP68 version (1 bar)

- ① Single chamber
- ② Double chamber

	Dimension [mm]	Dimension [inch]
a	150	5.91
b	86	3.39
c	116	4.57
d	105	4.13
e	120	4.72
f		M20 x 1.5
g		M20 x 1,5 / 1/2-14 NPT
h		M16 x 1.5

With integrated display and adjustment module the height of the housing increases by 9 mm / 0.35 inch.

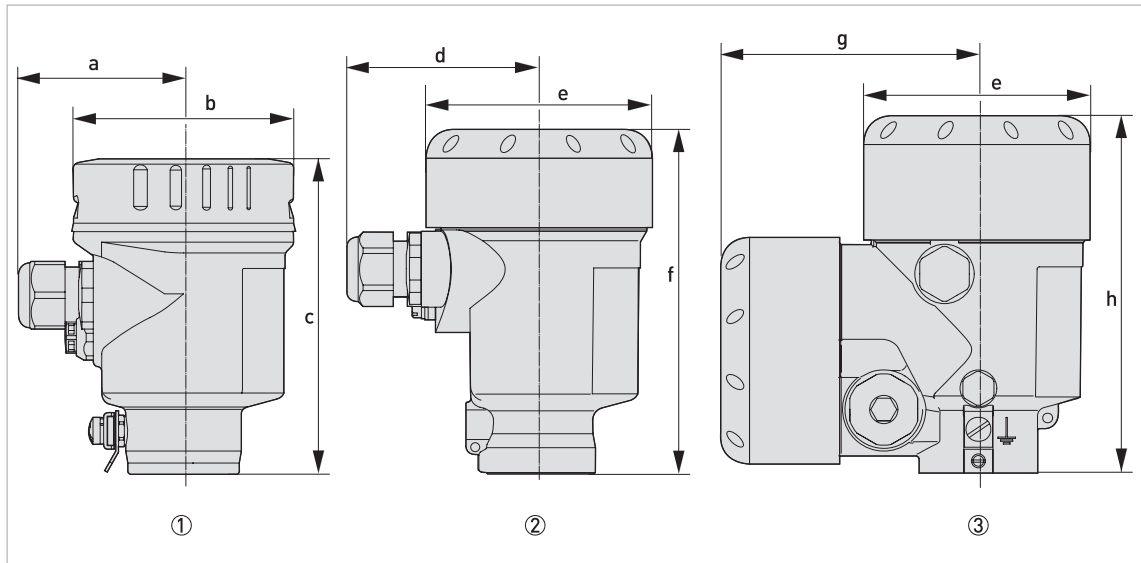


Figure 2-3: Stainless steel housing

- ① Single chamber, stainless steel (electro-polished)
- ② Single chamber, precision casting
- ③ Double chamber, precision casting

	Dimension [mm]	Dimension [inch]
a	59	2.32
b	80	3.15
c	112	4.41
d	69	2.72
e	79	3.11
f	117	4.61
g	87	3.42
h	79	3.11
i	120	4.72

With integrated display and adjustment module the height of the housing increases by 9 mm / 0.35 inch.

Housing version	Weight [kg]	Weight [lb]
Single chamber, stainless steel (electro-polished)	0.73	1.61
Single chamber, precision casting	1.31	2.89
Double chamber, precision casting	2.86	6.31

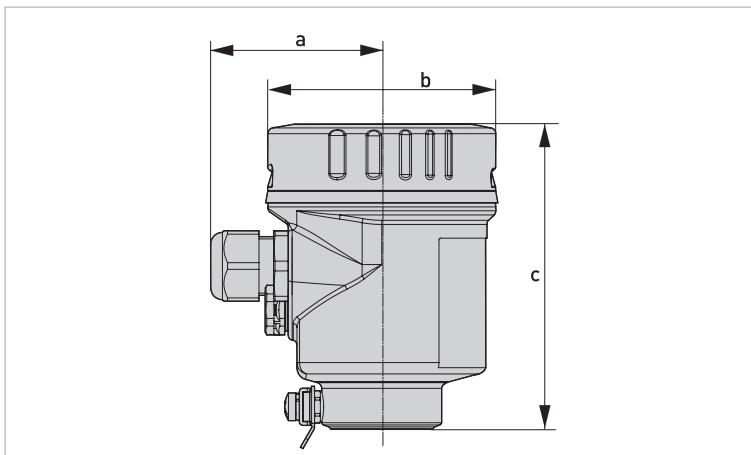


Figure 2-4: Stainless steel (electro-polished) in IP69K version

	Dimension [mm]	Dimension [inch]
a	59	2.32
b	80	3.15
c	104	4.10

With integrated display and adjustment module the height of the housing increases by 9 mm / 0.35 inch.

Housing version	Weight [kg]	Weight [lb]
Single chamber, stainless steel (electro-polished)	0.73	1.61

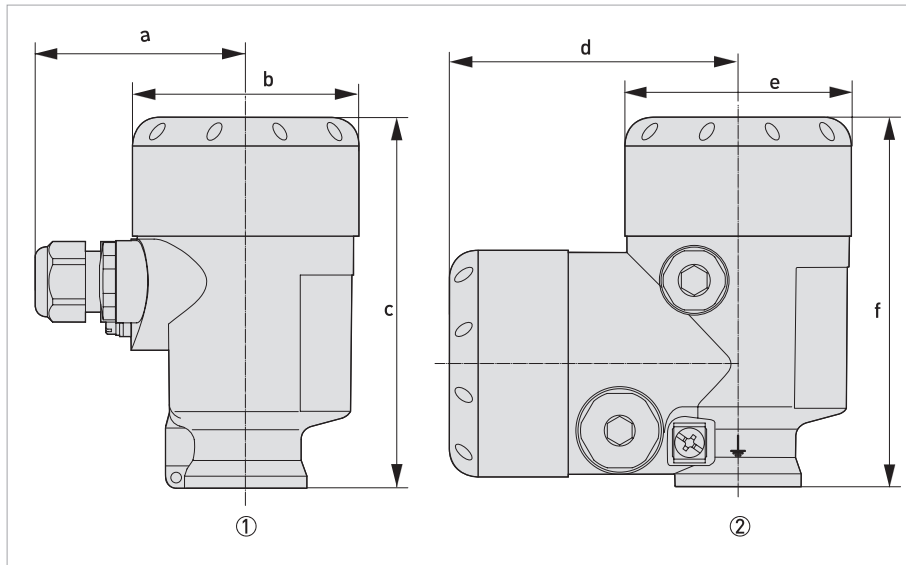


Figure 2-5: Plastic housing

- ① Single chamber
- ② Double chamber

	Dimension [mm]	Dimension [inch]
a	69	2.72
b	79	3.11
c	112	4.41
d	84	3.31
e	79	3.11
f	112	4.41

With integrated display and adjustment module the height of the housing increases by 9 mm / 0.35 inch.

Housing version	Weight [kg]	Weight [lb]
Single chamber, plastic	0.40	0.88
Double chamber, plastic	0.51	1.13

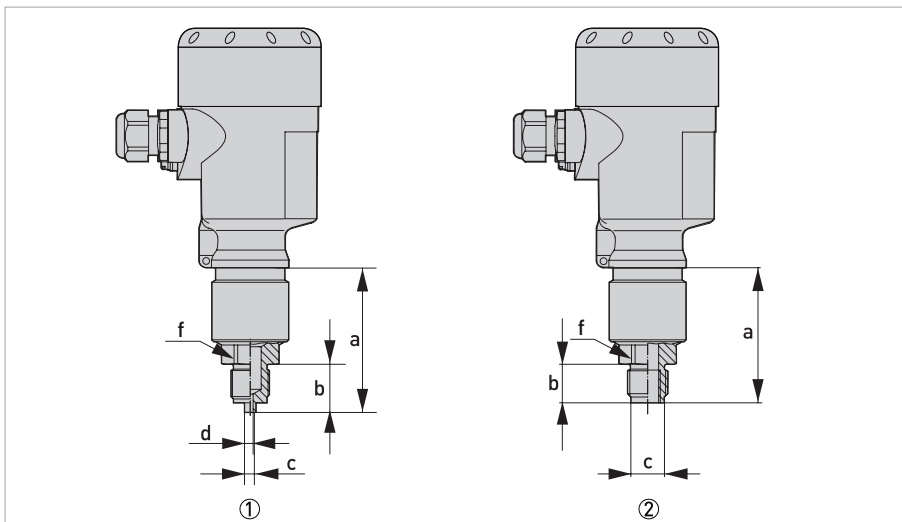


Figure 2-6: Thread not flush

- ① Thread ISO228 G1/2 EN837-1
- ② Thread ISO228 G1/2 - G1/4 female DIN3852

Dimension [mm]	a	b	c	d	e	f
①	73	23	6	3	-	WS 27
②	70	20	17.5	-	-	G1/2

Dimension [inch]	a	b	c	d	e	f
①	2.87	0.91	0.24	0.12	-	1.06
②	2.76	0.79	0.69	-	-	G1/2

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

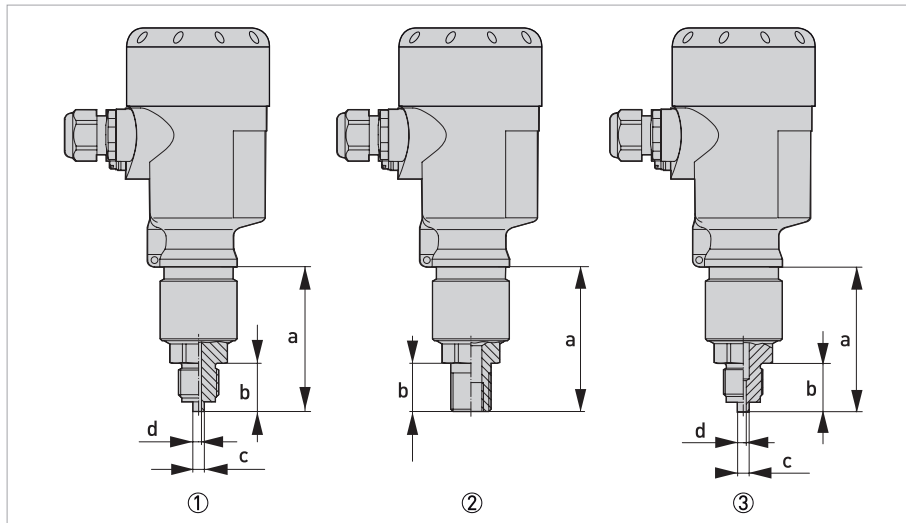


Figure 2-7: Thread not flush

- ① Thread ISO228 G1/2 EN837-1, volume reduced
- ② Thread ANSI 1/2 NPT - 1/4 NPT female
- ③ Thread DIN13 M20 x 1.5 EN837-1

Dimension [mm]	a	b	c	d	e	f
①	73	23	6	3	-	-
②	75	15	-	-	-	-
③	75	25	6	3	-	-

Dimension [inch]	a	b	c	d	e	f
①	2.87	0.91	0.24	0.12	-	-
②	2.95	0.59	-	-	-	-
③	2.95	0.98	0.24	0.12	-	-

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

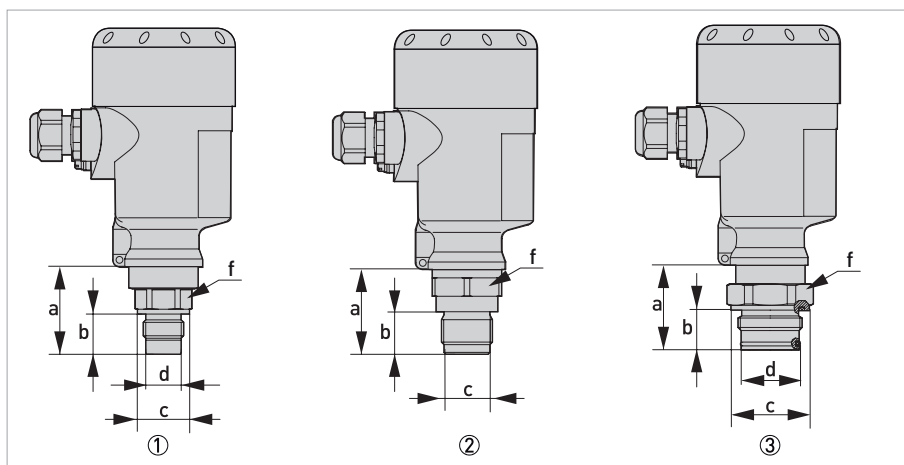


Figure 2-8: Thread flush

- ① Thread ISO228 G1/2 DIN3852, flush
- ② Thread ISO228 G3/4 DIN3852
- ③ Thread ISO228 G1 DIN3852

Dimension [mm]	a	b	c	d	e	f
①	45	21	27	18	-	WS 27
②	44	22	24	-	-	WS 36
③	44	21	40	30	-	WS 41

Dimension [inch]	a	b	c	d	e	f
①	1.77	0.83	1.06	0.71	-	1.06
②	1.73	0.87	0.95	-	-	1.42
③	1.73	0.83	1.58	1.18	-	1.61

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

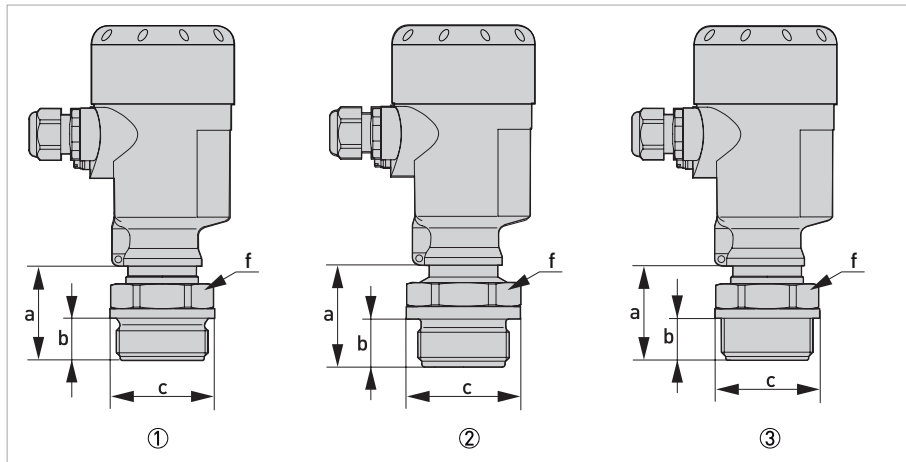


Figure 2-9: Thread flush

- ① Thread ISO228 G1 1/2 DIN3852
- ② Thread ISO G1 1/2 PVDF DIN 3852-A-B
- ③ Thread ANSI 1 1/2 NPT

Dimension [mm]	a	b	c	d	e	f
①	50	22	55	-	-	WS 46
②	50	22	55	-	-	WS 46
③	50	22	55	-	-	WS 46

Dimension [inch]	a	b	c	d	e	f
①	1.97	0.87	2.17	-	-	1.81
②	1.97	0.87	2.17	-	-	1.81
③	1.97	0.87	2.17	-	-	1.81

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

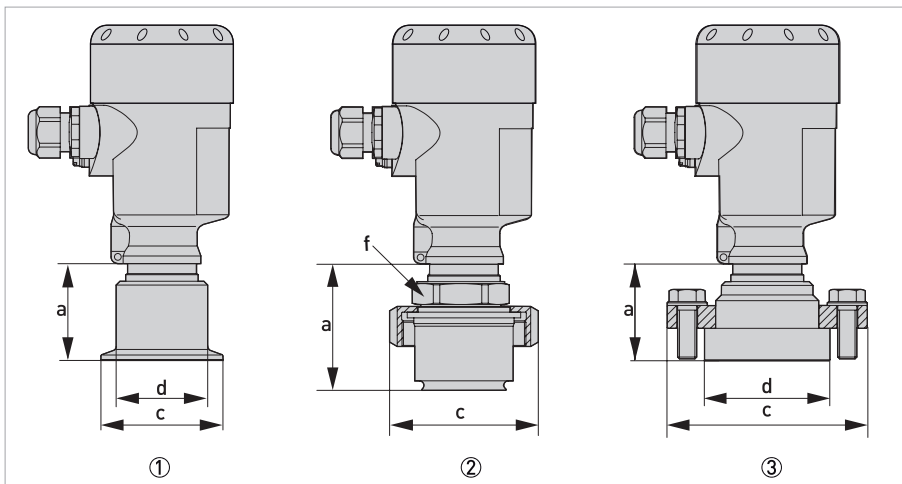


Figure 2-10: Hygienic

- ① Clamp DN50 2" PN16, DIN32676 / ISO2852
- ② Hygienic connection with grooved union nut F40 PN25
- ③ Flange DRD PN40

Dimension [mm]	a	b	c	d	e	f
①	51	-	48	64	-	-
②	60	-	-	78	-	WS 46
③	55	-	66	105	-	-

Dimension [inch]	a	b	c	d	e	f
①	2.01	-	1.89	2.52	-	-
②	2.36	-	-	3.07	-	1.81
③	2.17	-	2.60	4.13	-	-

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

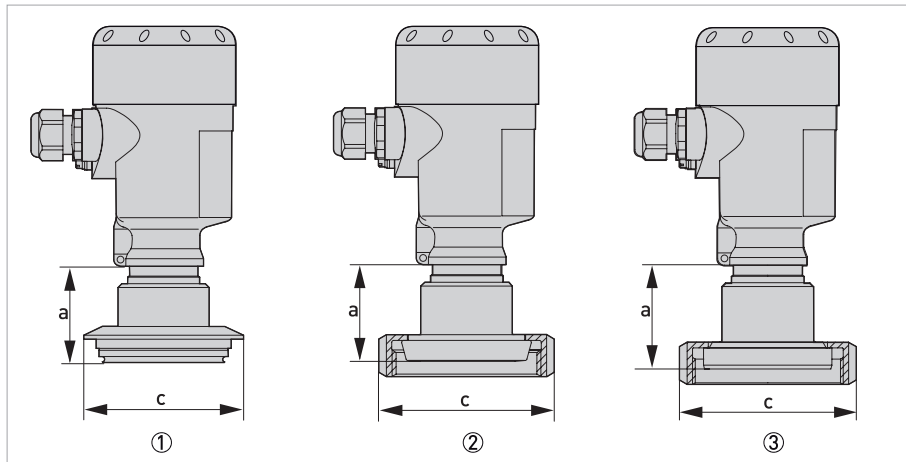


Figure 2-11: Hygienic

- ① Varivent N50-40 PN25, 316 L
- ② Compression fitting DIN11851, DN40 PN40, 316 L
- ③ Compression fitting DIN 11864-1 Form A, DN50 PN 40

Dimension [mm]	a	b	c	d	e	f
①	51	-	84	-	-	-
②	51	-	92	-	-	-
③	50	-	92	-	-	-

Dimension [inch]	a	b	c	d	e	f
①	2.01	-	3.31	-	-	-
②	2.01	-	3.62	-	-	-
③	1.97	-	3.62	-	-	-

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

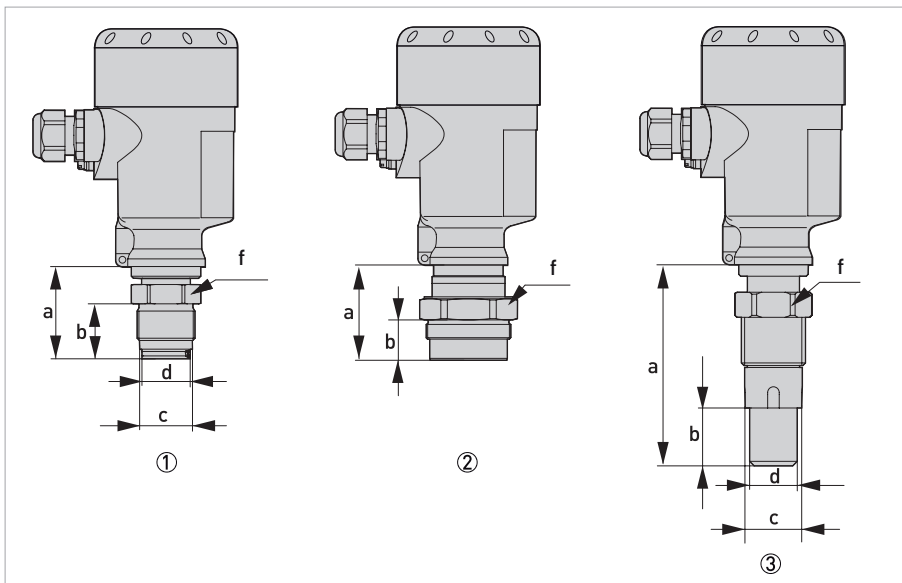


Figure 2-12: Flange with extension

- ① Thread DIN13 M30x1.5
- ② Thread DIN13 M44x1.25, pressure screw
- ③ Thread ISO228 G1, suitable for PASVE

Dimension [mm]	a	b	c	d	e	f
①	48	29	27.4	25	-	M30x1.5
②	52	21	-	-	-	M44x1.25
③	104.8	30	29.3	24.7	-	G1

Dimension [inch]	a	b	c	d	e	f
①	1.89	1.14	1.08	0.98	-	M30x1.5
②	2.05	0.83	-	-	-	M44x1.25
③	4.13	1.18	0.97	0.97	-	G1

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

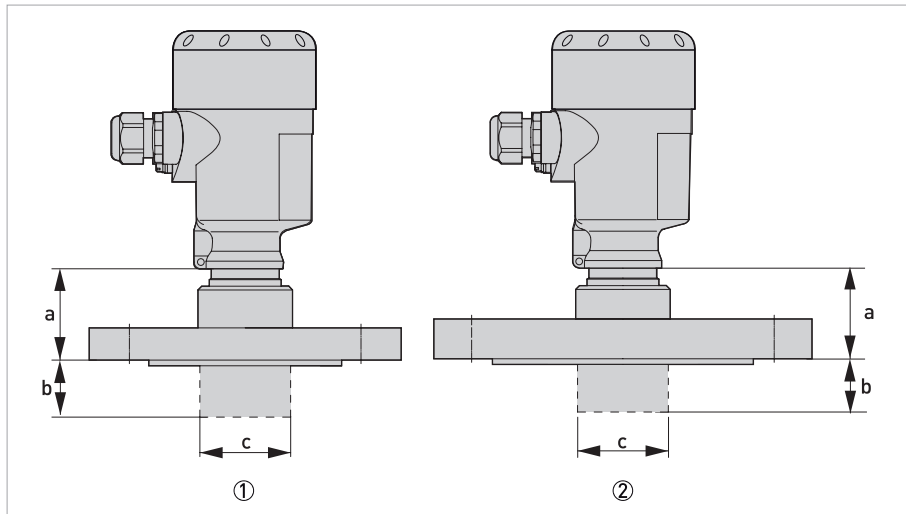


Figure 2-13: Flange with extension

- ① Flanged connection DN50 PN40 with selectable extension
 ② Flanged connection DN80 PN40 with selectable extension

Dimension [mm]	a	b	c	d	e	f
①	40	30...300	32...60	-	-	-
②	40	25...300	4.8...90	-	-	-

Dimension [inch]	a	b	c	d	e	f
①	1.58	1.18...11.81	1.26...2.36	-	-	-
②	1.58	0.98...11.81	1.89...3.54	-	-	-

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

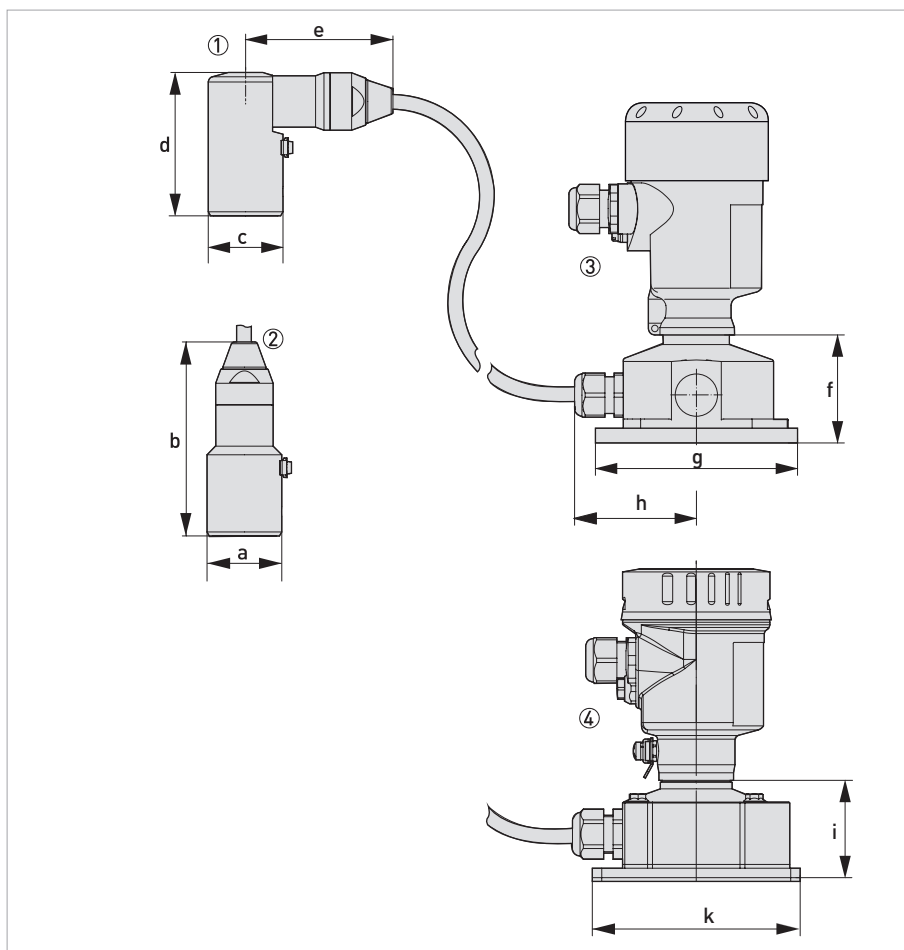


Figure 2-14: External housing

- ① Cable outlet, lateral
- ② Cable outlet, axial
- ③ Housing base in plastic
- ④ Housing base in stainless steel

	Dimension [mm]	Dimension [inch]
a	41.6	1.64
b	108	4.25
c	41.6	1.64
d	80	3.15
e	82	3.23
f	59	2.32
g	110 x 90	4.33 x 3.54
h	66	2.60
i	51	2.01
k	110 x 90	4.33 x 3.54

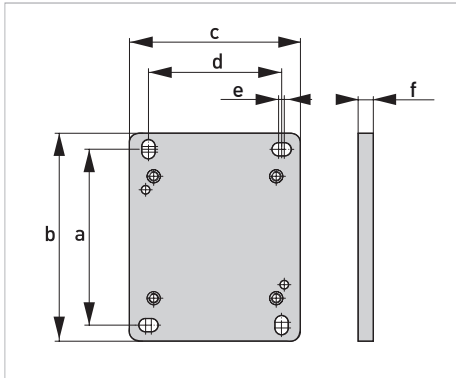


Figure 2-15: Mounting plate

	Dimension [mm]	Dimension [inch]
a	93	3.66
b	110	4.33
c	90	3.54
d	70	2.76
e	3	0.12
f	8	0.31

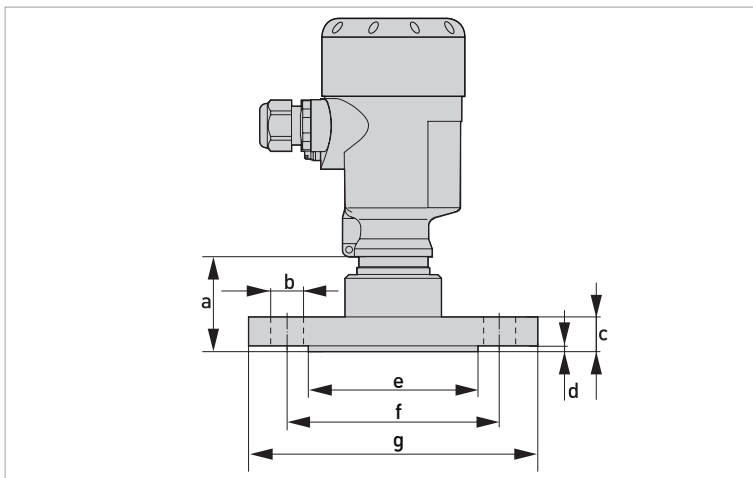


Figure 2-16: Dimensions - Flange

Flange connection acc. to DIN 2501 or ASME B16.5

Dimension [mm]	a	b	c	d	e	f	g
DN40 PN40 Form C	50	4 x Ø 18	18	3	88	110	150
DN50 PN40 Form C	50	4 x Ø 18	20	3	102	125	165
DN80 PN40 Form C	50	8 x Ø 18	24	3	138	180	200
2" Class 150lb RF	50	4 x Ø 19.1	19.1	3.2	91.9	120.7	152.4
3" Class 150lb RF	50	8 x Ø 19,1	23.9	3.2	127	152.4	190.5

Flange connection acc. to DIN 2501 or ASME B16.5

Dimension [inch]	a	b	c	d	e	f	g
DN40 PN40 Form C	1.97	4 x Ø 0.71	0.71	0.12	3.46	4.33	5.91
DN50 PN40 Form C	1.97	4 x Ø 0.71	0.79	0.12	4.02	4.92	6.50
DN80 PN40 Form C	1.97	8 x Ø 0.71	0.95	0.12	5.43	6.30	7.87
2" Class 150lb RF	1.97	4 x Ø 0.75	0.75	0.13	3.62	4.75	6
3" Class 150lb RF	1.97	8 x Ø 0.75	0.94	0.13	5	6	7.50

For the version with a temperature range up to 150 °C / 302 °F the measure of length increases by 28 mm / 1.1".

For the version with "secondary process barrier" the measure of length increases by 17 mm / 0.67".

Other versions are available on request.

2.3 Pressure ranges

Adjustment

Adjustment range of min/max adjustment in relation to the nominal range:

- Percent value (-10...110%)
- Pressure value (-20...120%)

Adjustment range of the zero / span adjustment in relation to the nominal range

- Zero (-20...+95%)
- Span (-120...+120%)
- Difference between zero and span: max. 120% of the nominal range

Recommended maximum Turn Down (TD): 10:1 (no limit)

Nominal ranges and overload capacity in bar/kPa

This information is provided as an overview and refers to the measuring cell. Limitations due to the material and design of the process connection as well as the type of pressure selected are possible. The information given on the nameplate applies.

Nominal range	Max. working pressure (MWP)	Overload capacity min. pressure
Max. working pressure		
0...+0.025 bar / 0...+2.5 kPa ①	+5 bar / +500 kPa	-0.05 bar / -5 kPa
0...+0.1 bar / 0...+10 kPa	+15 bar / +1500 kPa	-0.2 bar / -20 kPa
0...+0.4 bar / 0...+40 kPa	+30 bar / +3000 kPa	-0.8 bar / -80 kPa
0...+1 bar / 0...+100 kPa	+35 bar / +3500 kPa	-1 bar / -100 kPa
0...+2.5 bar / 0...+250 kPa	+50 bar / +5000 kPa	-1 bar / -100 kPa
0...+10 bar / 0...+1000 kPa	+90 bar / +9000 kPa	-1 bar / -100 kPa
0...+25 bar / 0...+2500 kPa	+130 bar / +13000 kPa	-1 bar / -100 kPa
0...+60 bar / 0...+6000 kPa	+200 bar / +20000 kPa	-1 bar / -100 kPa
0...+100 bar / 0...+10000 kPa ②	+200 bar / +20000 kPa	-1 bar / -100 kPa
-1...0 bar / -100...0 kPa	+35 bar / +3500 kPa	-1 bar / -100 kPa
-1...+1.5 bar / -100...+150 kPa	+40 bar / +4000 kPa	-1 bar / -100 kPa
-1...+10 bar / -100...+1000 kPa	+90 bar / +9000 kPa	-1 bar / -100 kPa
-1...+25 bar / -100...+2500 kPa	+130 bar / +13000 kPa	-1 bar / -100 kPa
-1...+60 bar / -100...+6000 kPa	+200 bar / +20000 kPa	-1 bar / -100 kPa
-1...+100 bar / -100...+10000 kPa ②	+200 bar / +20000 kPa	-1 bar / -100 kPa
-0.05...+0.05 bar / -5...+5 kPa	+15 bar / +1500 kPa	-0.2 bar / -20 kPa
-0.2...+0.2 bar / -20...+20 kPa	+20 bar / +2000 kPa	-0.4 bar / -40 kPa
-0.5...+0.5 bar / -50...+50 kPa	+35 bar / +3500 kPa	-1 bar / -100 kPa

① Only for measuring cell Ø28 mm

② Only for measuring cell Ø17.5 mm

Nominal range	Max. working pressure (MWP)	Overload capacity min. pressure
Absolute pressure		
0...+0.1 bar / 0...+10 kPa	+15 bar / +1500 kPa	0.8 bar abs.
0...+1 bar / 0...+100 kPa	+35 bar / +3500 kPa	0 bar abs.
0...+2.5 bar / 0...+250 kPa	+50 bar / +5000 kPa	0 bar abs.
0...+10 bar / 0...+1000 kPa	+90 bar / +9000 kPa	0 bar abs.
0...+25 bar / 0...+2500 kPa	+130 bar / +13000 kPa	0 bar abs.
0...+60 bar / 0...+6000 kPa	+200 bar / +20000 kPa	0 bar abs.
0...+100 bar / 0...+10000 kPa ①	+200 bar / +20000 kPa	0 bar abs.

① Only for measuring cell Ø17.5 mm

Nominal range	Max. working pressure (MWP)	Overload capacity min. pressure
Max. working pressure		
0...+0.4 psig ①	+ 75 psig	-0.725 psig
0...+1.5 psig	+225 psig	-2.90 psig
0...+5 psig	+435 psig	-11.60 psig
0...+15 psig	+510 psig	-14.51 psig
0...+30 psig	+725 psig	-14.51 psig
0...+150 psig	+1300 psig	-14.51 psig
0...+300 psig	+1900 psig	-14.51 psig
0...+900 psig	+2900 psig	-14.51 psig
0...+1500 psig ②	+2900 psig	-14.51 psig
-14.5...0 psig	+510 psig	-14.51 psig
-14.5...+20 psig	+580 psig	-14.51 psig
-14.5...+150 psig	+1300 psig	-14.51 psig
-14.5...+300 psig	+1900 psig	-14.51 psig
-14.5...+900 psig	+2900 psig	-14.51 psig
-14.5...+15000 psig ②	+2900 psig	-14.51 psig
-0.7...+0.7 psig	+225 psig	-2.90 psig
-3...+3 psig	+290 psig	-5.80 psig
-7...+7 psig	+510 psig	-14.51 psig

① Only for measuring cell Ø28 mm

② Only for measuring cell Ø17.5 mm

Nominal range	Max. working pressure (MWP)	Overload capacity min. pressure
Absolute pressure		
0...1.5 psi	225 psig	0 psi
0...5 psi	435 psig	0 psi
0...15 psi	510 psig	0 psi
0...30 psi	725 psig	0 psi
0...150 psi	1300 psig	0 psi
0...300 psi	1900 psig	0 psi
0...900 psi	2900 psig	0 psi
0...+1450 psi ①	2900 psig	0 psi

① Only for measuring cell Ø17.5 mm

3.1 Intended use

For devices used in hazardous areas, additional safety instructions apply.

Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator.

The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose.

The OPTIBAR PC 5060 C process pressure transmitter is suitable for measuring the process pressure and level of gases, vapours and liquids. The available measuring ranges and permitted maximum working pressures for each are indicated on the nameplate. For details refer to *Technical data* on page 8. To observe the intended use, adhere to the following points:

- Observe the instructions in this document.
- Comply with the technical specifications (for further information refer to *Technical data* on page 8).
- Only suitably qualified personnel may install and operate the device.
- Observe the generally accepted standards of good practice.

3.2 Installation specifications

Observe the relevant directives, ordinances, standards and accident prevention regulations (e.g. VDE/VDI 3512, DIN 19210, VBG, Ex V, etc.).

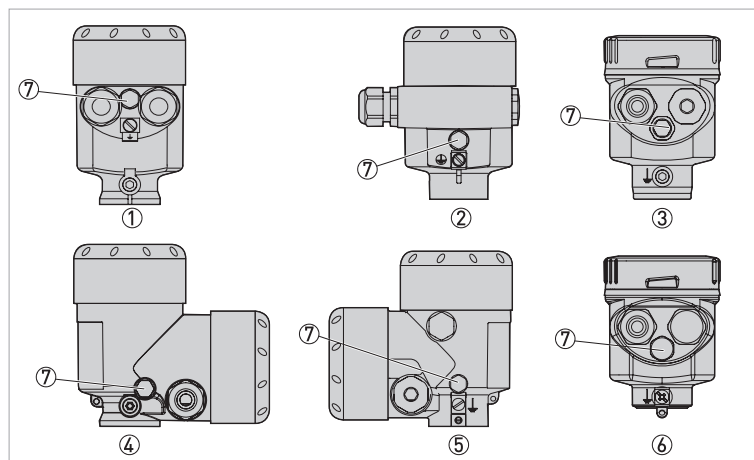
The accuracy of the measurement is only guaranteed if the transmitter and accompanying impulse line(s), if any, have been correctly installed. In addition, extreme ambient conditions including large fluctuations in temperature, vibrations and shocks should be kept as far away as possible from the measuring equipment.

3.3 Venting

The ventilation for the electronics housing is assured via a filter element in the vicinity of the cable glands, which is permeable to air but water-absorbent.

In order to ensure effective ventilation, the filter element must be always free of deposits.

Do not use a high-pressure cleaner to clean the housing. The filter element may become damaged and as a result moisture can penetrate into the housing. The exception to this is the IP69K single chamber housing.



- ① Single chamber housing, plastic, stainless steel precision casting
- ② Single chamber housing, aluminium
- ③ Single chamber housing, stainless steel electro-polished
- ④ Double chamber housing, plastic
- ⑤ Double chamber housing, aluminium
- ⑥ Single chamber housing IP69k
- ⑦ Filter element

3.4 Measurement setup for measuring the process pressure

The following points should be observed in this application:

- The pressure transmitter must be mounted above the measuring point.

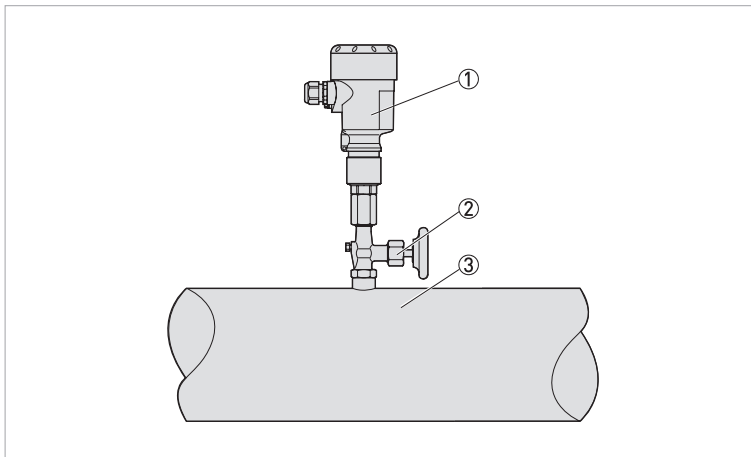


Figure 3-1: Measurement setup for measuring the process pressure of gases

- ① Pressure transmitter
- ② Shut-off valve
- ③ Tapping point

3.5 Measurement setup for measuring steam

The following points should be observed in this application:

- The pressure transmitter should be connected via a syphon to protect the measuring cell from non-permitted high temperatures.
- Siphon to be kept free of insulation.
- When using superheated steam, the siphon must be filled with water prior to start-up.

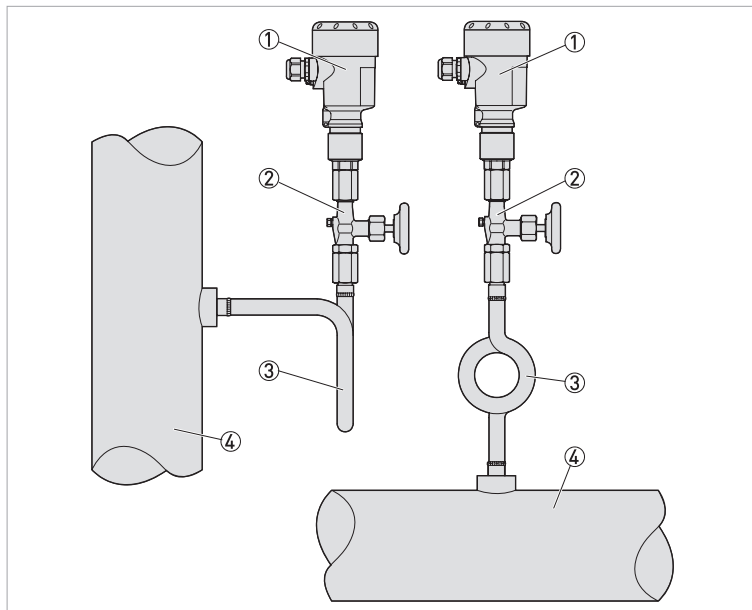


Figure 3-2: Measurement setup for measuring steam

- ① Pressure transmitter
- ② Shut-off valve
- ③ Syphon
- ④ Tapping point

3.6 Measurement setup for measuring fluids

The following points should be observed in this application:

- The pressure transmitter must be mounted below the measuring point.

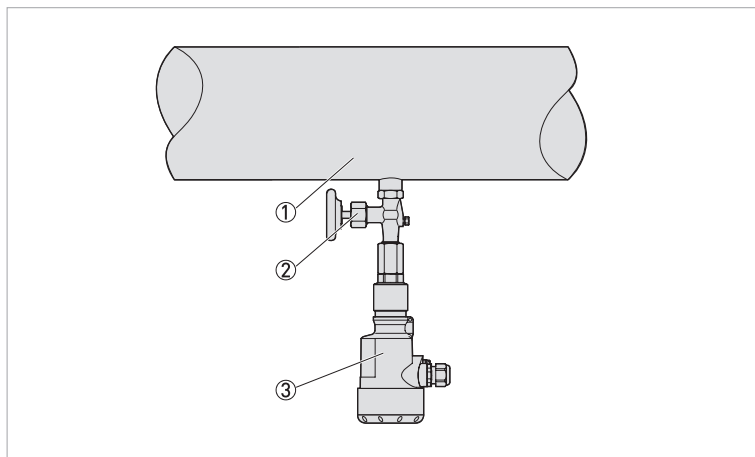


Figure 3-3: Measurement setup for measuring fluids

- ① Tapping point
- ② Shut-off valve
- ③ Pressure transmitter

3.7 Measurement setup for level measurement

The following points should be observed in this application:

- The pressure transmitter should be mounted below the lowest level.
- The pressure transmitter should be protected from filling/emptying current and agitator surges when mounted.

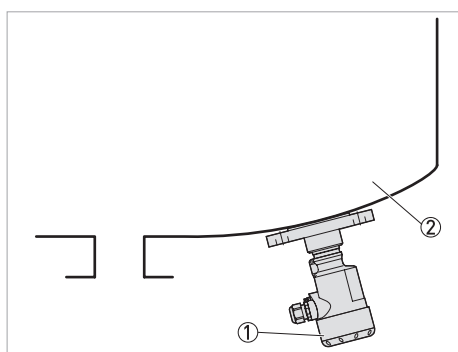


Figure 3-4: Measurement setup for level measurement

- ① Pressure transmitter
- ② Tank

3.8 External housing

A mounting plate is available as an option to facilitate the mounting of the external housing. For further information refer to *Technical data* on page 8.

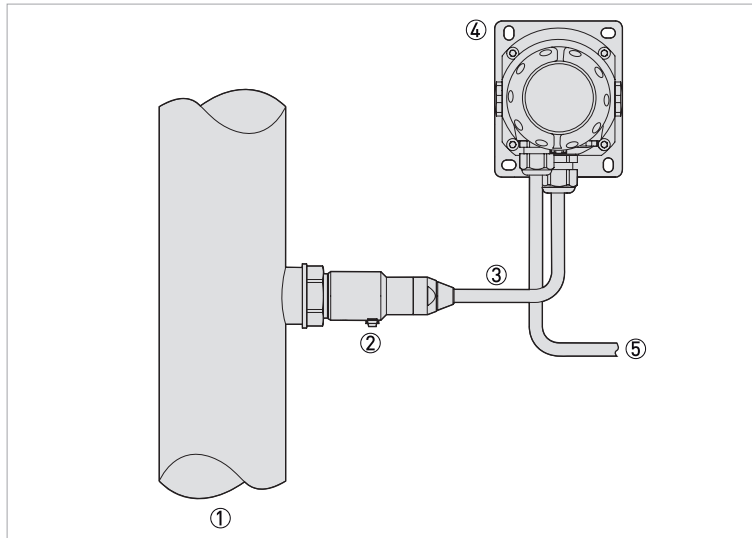


Figure 3-5: Measurement setup with an external housing

- ① Tapping point
- ② Sensor assembly
- ③ Connecting cable
- ④ External housing
- ⑤ Signal cable

IP68 version (25 bar)

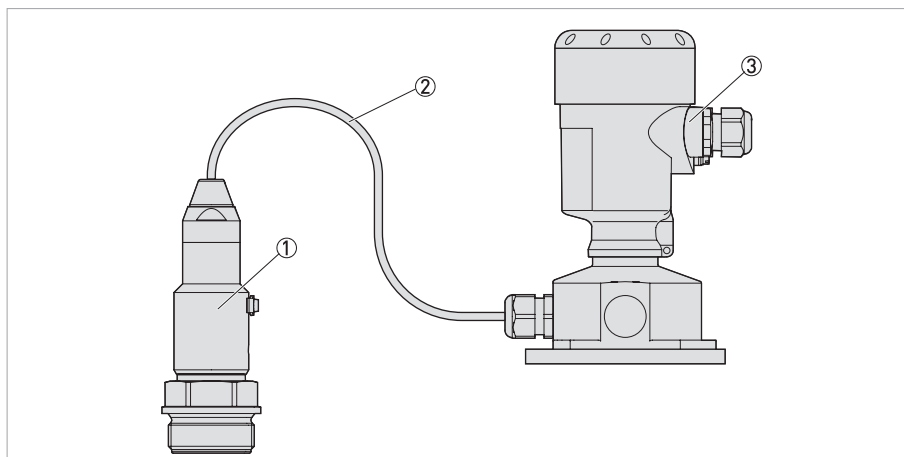


Figure 3-6: Process assembly

- ① Sensor assembly
- ② Connection cable
- ③ External housing

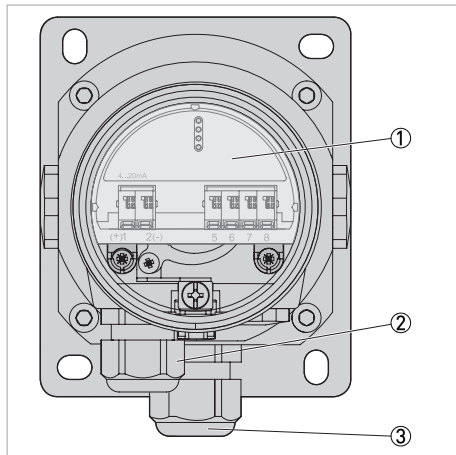


Figure 3-7: External housing (IP68)

- ① Electronic insert
- ② Cable gland for the power supply
- ③ Cable gland for the sensor connection cable

4.1 Safety instructions

All work on the electrical connections may only be carried out with the power disconnected. Take note of the voltage data on the nameplate!

Observe the national regulations for electrical installations!

Observe without fail the local occupational health and safety regulations. Any work done on the electrical components of the measuring device may only be carried out by properly trained specialists.

Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

4.2 Notes for electrical cables

The device must be grounded to a spot in accordance with regulations in order to protect personnel against electric shocks.

Cables may only be connected when the power is switched off! Since the transmitter has no switch-off elements, overcurrent protection devices, lightning protection and/or energy isolating devices must be provided by the customer.

4.2.1 Requirements for signal cables supplied by the customer

If the signal cable was not ordered, it is to be provided by the customer. The following requirements regarding the electrical specifications of the signal cable must be observed:

Specifications for standard signal cables

- Test voltage: ≥ 500 VAC RMS (750 VDC)
- Temperature range: $-40\dots+105^{\circ}\text{C}$ / $-40\dots+221^{\circ}\text{F}$
- Capacity: ≤ 200 pF/m / 61 pF/ft
- Inductance: ≤ 0.7 $\mu\text{H}/\text{m}$ / 0.2 $\mu\text{H}/\text{ft}$
- Use cable with round cross section.
- A cable outer diameter of 5...9 mm / 0.2...0.35" ensures the seal effect of the cable gland. If you are using cable with a different diameter or cross-section, exchange the seal or use a suitable cable gland.
- We generally recommend the use of a shielded cable for HART[®] multidrop mode.

4.2.2 Laying electrical cables correctly

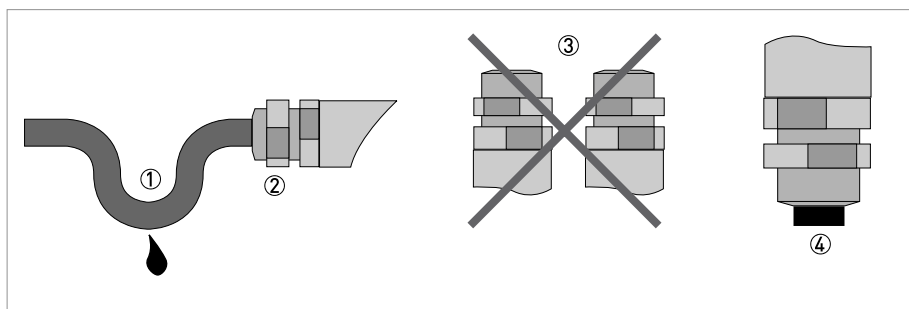


Figure 4-1: Protect housing from dust and water

- ① Lay the cable in a loop just before the housing.
- ② Tighten the screw connection of the cable entry securely.
- ③ Never mount the housing with the cable entries facing upwards.
- ④ Seal cable entries that are not needed with a plug.

4.2.3 Cable preparation

The device is connected with standard two-wire cable without shielding. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, a shielded cable should be used.

Check which outer diameter is suitable for the cable gland in order to ensure the sealing effect according to the specified IP protection class.

- 5...9 mm / 0.20...0.35" (standard)
- 6...12 mm / 0.24...0.47" (optional)
- 10...14 mm / 0.40...0.55" (optional)

The terminals in the terminal compartment are designed for wire cross-sections of up to 1.5 mm². To ensure a proper connection, you should strip the cable 40...50 mm / 1.6...2".

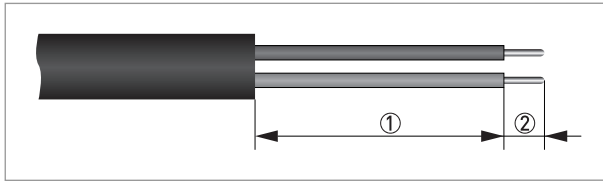


Figure 4-2: Stripping the cable

- ① 40...50 mm / 1.6...2"
- ② 5 mm / 0.2"

4.2.4 Cable entry 1/2-14 NPT (female)

With plastic housings, the NPT cable gland or the conduit steel tube must be screwed without grease into the thread. For further information about max. torque for all housings refer to *Technical data* on page 8.

4.2.5 Connector pin assignment

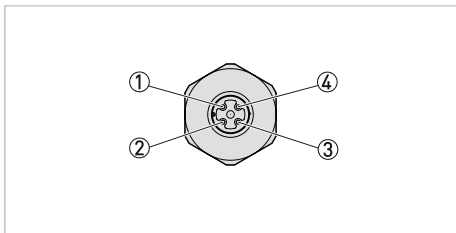


Figure 4-3: Connector M12 x 1, 4-pin

- ① VS+
- ② Not connected
- ③ Not connected
- ④ VS-

Contact pin	Colour of cable	Electronic insert for terminal
Pin ①	Brown	1
Pin ④	Blue	2

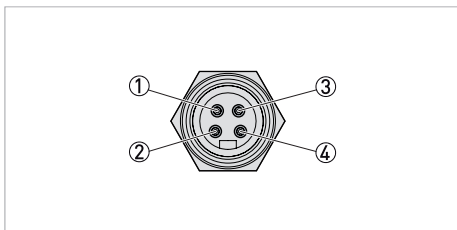


Figure 4-4: 7/8 connector, Foundation Fieldbus (FF)

- ① VS-
- ② VS+
- ③ Not connected
- ④ Cable shield

Contact pin	Colour of cable	Electronic insert for terminal
Pin ①	Blue	1
Pin ②	Brown	2
Pin ④	Green / yellow	Grounding

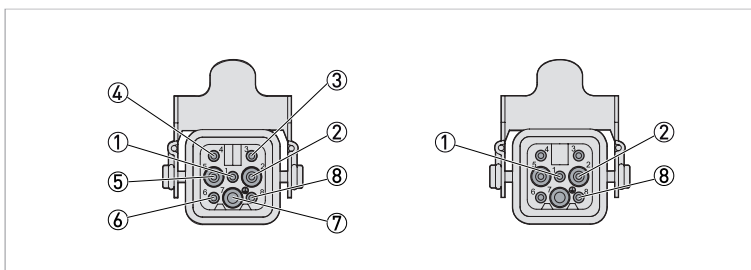


Figure 4-5: Connector, Harting HAN 8D (left) and Harting HAN 7D (right)

- ① VS-
- ② VS+

Contact pin	Colour of cable	Electronic insert for terminal
Pin ①	Black	1
Pin ②	Blue	2
Pin ⑧	Green / yellow	Grounding

4.2.6 Connection to the power supply

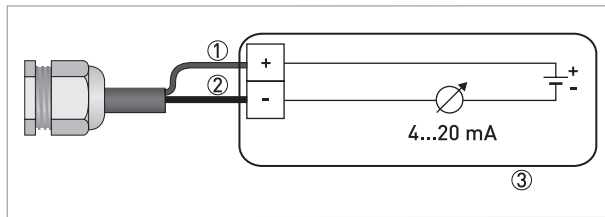


Figure 4-6: Connection to the power supply

- ① Red
- ② Black
- ③ Power supply with load

4.2.7 Cable shield and grounding

If a shielded cable is necessary, connect the cable shield on both ends to the grounding potential.

In the device, the cable shield must be connected directly to the internal ground terminal.

The ground terminal outside on the housing must be connected to the grounding potential with low impedance.

In hazardous areas, the grounding is carried out according to the installation instructions.

Significant potential differences exist inside galvanization plants as well as on vessels with cathodic corrosion protection. A two-sided shield grounding can cause unacceptably high shield currents as a result.

The metallic and wetted parts (process connection, cap flange, measuring cell and separating diaphragm etc.) are conductive connected with the inner and outer ground terminal on the housing.

4.3 Electrical connection

The connection of the power supply and the signal output is carried out via spring-loaded terminals in the housing. The display and adjustment module is connected via contact pins with the interface adapter.

4.3.1 Connection in the terminal compartment

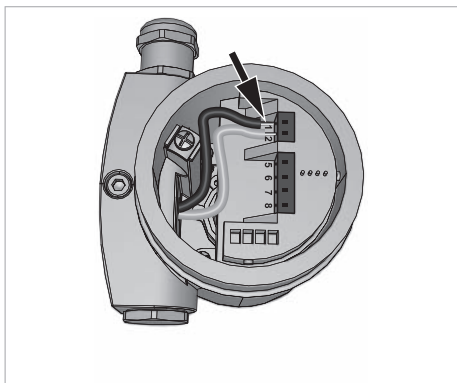


Figure 4-7: Terminal compartment from above

Procedure

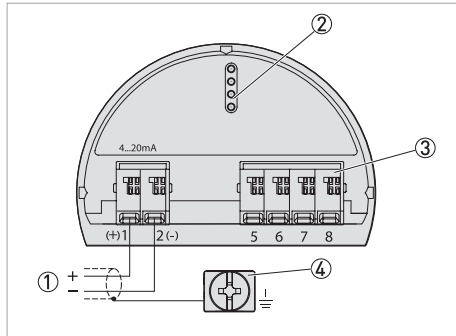
- Unscrew the housing cover.
- If present, remove the display and adjustment module by turning it to the left.
- Loosen union nut of the cable gland.
- For preparation of connection cable refer to *Cable preparation* on page 42.
- Push the cable through the cable gland into the terminal compartment.
- Insert the wire ends into the open terminals according to the wiring plan. Flexible cores with cable end sleeves as well as solid cores can be inserted directly into the terminal openings. In case of flexible cores, press the spring terminal with a small screwdriver to open the terminal opening.
- Check the proper hold of the wires in the terminals by lightly pulling on them.
- Connect the cable shield to the internal ground terminal, connect the outer ground terminal to the customer/plant equipotential bonding.
- Tighten the union nut of the cable gland. The sealing ring must completely enclose the cable.
- Screw the housing cover back on.

4.3.2 Single chamber housing

For devices used in hazardous areas, additional safety notes apply; please refer to the Ex documentation.

The following illustration applies to both the non-Ex as well as the Ex ia, the Ex d and the Ex d ia version.

Electronics compartment



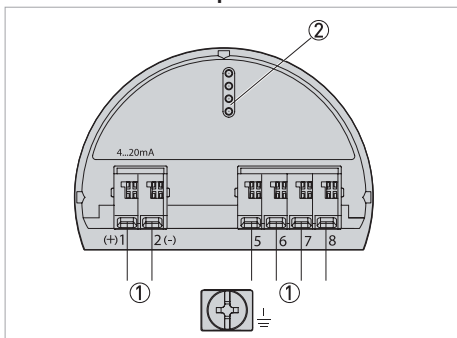
- ① Power supply / signal output
- ② Interface adapter for the display and adjustment module
- ③ Digital interface
- ④ Ground terminal for connection of the cable shield

4.3.3 Double chamber housing

For devices used in hazardous areas, additional safety notes apply; please refer to the Ex documentation.

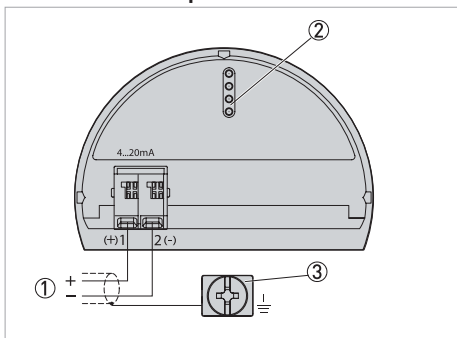
The following illustration applies to both the non-Ex as well as the the Ex ia, and the Ex d version.

Electronics compartment



- ① Internal connection to terminal compartment
- ② Interface adapter for the display and adjustment module

Terminal compartment

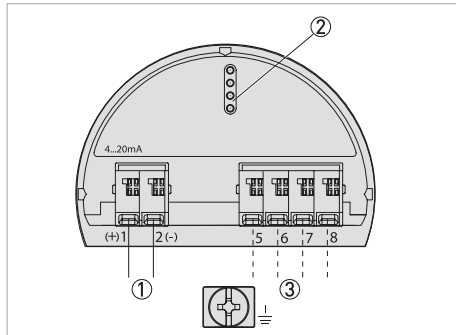


- ① Power supply / signal output
- ② Interface adapter for the display and adjustment module
- ③ Ground terminal for connection of the cable shield

4.3.4 Double chamber housing Ex d ia

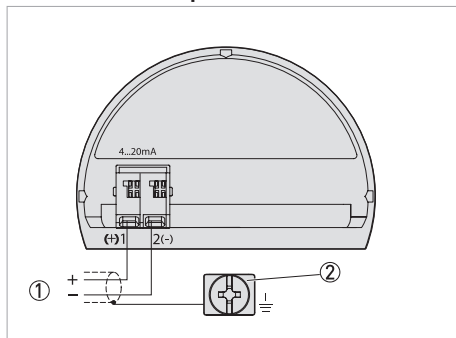
For devices used in hazardous areas, additional safety notes apply; please refer to the Ex documentation.

Electronics compartment



- ① Power supply / signal output
- ② Interface adapter for the display and adjustment module
- ③ Digital interface

Terminal compartment



- ① Power supply / signal output
- ② Ground terminal for connection of the cable shield

5.1 Order code

The characters of the order code highlighted in light grey describe the standard.

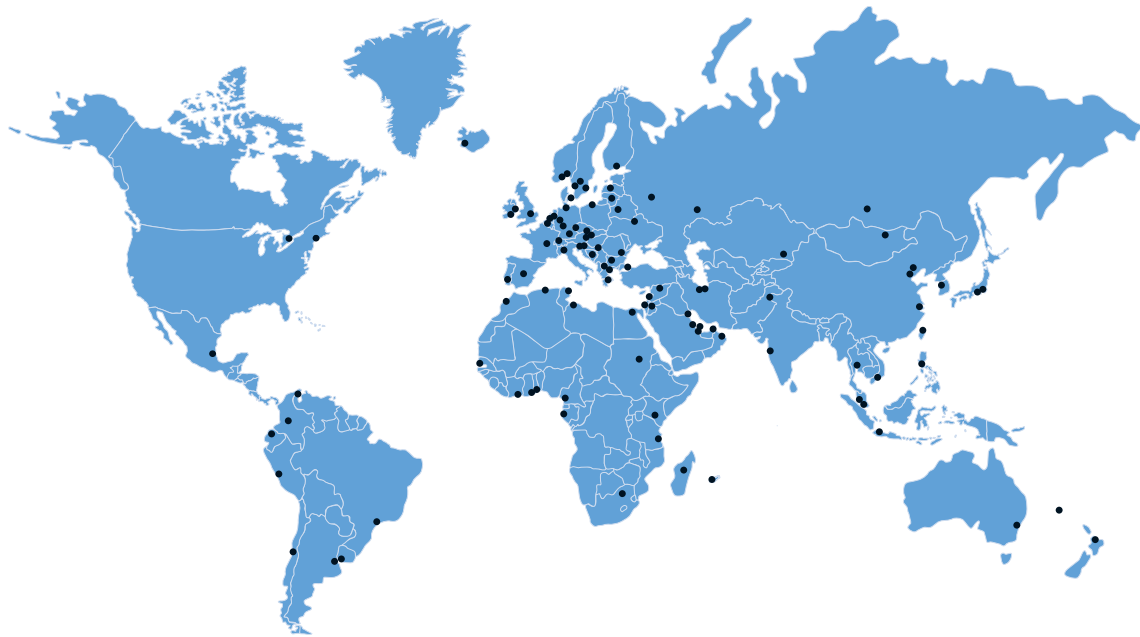
OPTIBAR PC 5060 C

VGK5	4	Approval	
	AX	Non Ex-zone Europe	WX Ex-free zone International
	AC	ATEX II 1G, 2G Ex ia IIC T6	WC IEC Ex ia IIC T6
	AD	ATEX II 1/2G, 2G Ex d ia IIC T6	WD IEC Ex d ia IIC T6
	AE	ATEX II 1/2G, 2G Ex d IIC T6	WE IEC Ex d IIC T6
	AR	ATEX II 1D, 1/2D, 1/3D, 2D IP66	WR IEC Ex t IIIC T... IP66
	AH	ATEX II 1G, 1/2G 2G Ex ia IIC + II 1D, 1/2D, 1/3D, 2D IP66	WH IEC Ex ia IIC T6 + IEC Ex t IIIC T... IP66
	AT	ATEX II 1G, 1/2G, 2G Ex ia IIC + 1/2/-D Ex t IIIC IP67/66	W1 IEC Ex d ia IIC T6 + IEC Ex t IIIC T... IP66
	A1	ATEX II 1/2G, 2G Ex d ia IIC + II 1D, 1/2D, 1/3D, 2D IP66	WL IEC Ex d IIC T6 + IEC Ex t IIIC T... IP66
	AL	ATEX II 1/2G, 2G Ex d IIC + II 1D, 1/2D, 1/3D, 2D IP66	
	AS	ATEX II 1/2/-D Ex t IIIC IP67/66 T.. Da/Db/-	
		Process connection / Material	
	DU	Thread ISO228 G1/2 EN837-1, 316 L	
	CS	Thread ISO228 G1/2, 11 mm bore, DIN 3852, Duplex (1.4462)	
	EA	Thread ISO228 G1/2, 11 mm bore, Duplex (1.4462)	
	LF	Thread ANSI 1/2-14 NPT (female) - 1/4-18 NPT (female), 316 L	
	DL	Thread ANSI 1/2-14 NPT (female), 316 L	
	C2	Thread DIN 13 M20x1.5, EN 837-1, 316 L	
	C3	Thread ISO 228 G1/2, DIN 3852, 316 L, flush	
	C5	Thread ISO 228 G1, DIN 3852, 316 L	
	DA	Thread ISO 228 G1, G1/2, DIN 3852, 316 L	
	DH	Thread ISO 228 G1, cone 40°, 316 L, flush	
	AV	Clamp DN25 (1") PN16, DIN 32676 / ISO 2852, 316 L, flush	
	AT	Clamp DN40 (1 1/2") PN16, DIN 32676 / ISO 2852, 316 L, flush	
	AR	Clamp DN50 (2") PN16, DIN 32676 / ISO 2852, 316 L, flush	
	AW	Clamp 2 1/2" (77.5 mm) PN10, ISO 2852, 316 L, flush	
	AA	Flange DRD PN40, 316 L	
	FR	Varivent® N, DN40 - 162 PN25, 316 L	
	E5	Compression fitting DIN 11851, DN25, PN40, 316 L	
	EZ	Compression fitting DIN 11851, DN40, PN40, 316 L	
	NB	Compression fitting DIN 11851, DN50, PN40, 316 L	
	FC	SMS, DN25, PN6, 316 L	
	FA	SMS, DN38, PN6, 316 L	
	FB	SMS, DN51, PN6, 316 L	
	A2	Flange DN15, PN40, Form C, DIN 2501, 316 L	
	BX	Flange DN20, PN40, Form C, DIN 2501, 316 L	
	N7	Flange DN25, PN40, Form C, DIN 2501, 316 L	

BD	Flange DN25, PN40, Form C with extension, DIN 2501, 316 L
B3	Flange DN32, PN40, Form C, DIN 2501, 316 L
CR	Flange DN40, PN40, Form B1, EN 1092-1, 316 L
CQ	Flange DN50, PN40, Form B1, EN 1092-1, 316 L
NC	Flange DN50, PN40, Form C with extension, DIN 2501, 316 L
BP	Flange DN65, PN40, Form C, DIN 2501, 316 L
CH	Flange DN80, PN40, Form B1, EN 1092-1, 316 L
CD	Flange DN100, PN40, Form C, DIN 2501, 316 L
FQ	Flange DN100, PN40, Form C with extension, DIN 2501, 316 L
A6	Flange DN150, PN40, Form C, DIN 2501, 316 L
BW	Flange 1" 150lb RF, ASME B16.5, 316 L
CI	Flange 1 1/2" 150lb RF, ASME B16.5, 316 L
CA	Flange 2" 150lb RF, ASME B16.5, 316 L
BG	Flange 2" 300lb RF, ASME B16.5, 316 L
BH	Flange 2" 600lb RF, ASME B16.5, 316 L
CB	Flange 3" 150lb RF, ASME B16.5, 316 L
B6	Flange 3" 300lb RF, ASME B16.5, 316 L
B4	Flange 3" 600lb RF, ASME B16.5, 316 L
BB	Flange 4" 150lb RF, ASME B16.5, 316 L
BA	Flange 4" 300lb RF, ASME B16.5, 316 L
B9	Flange DN15 16K FF, JIS B2200, 316 L
Sealing concept	
S	Single
D	Double
Gasket / Temperature	
A	FKM: -20...+130°C / -4...+266°F
B	FKM: -20...+150°C / -4...+302°F
C	FKM: -40...+130°C / -40...+266°F
D	EPDM: -40...+130°C / -40...+266°F
E	EPDM: -40...+150°C / -40...+302°F
F	FFKM: -15...+130°C / +5...+266°F
G	FFKM: -15...+150°C / +5...+302°F
1	FFKM (Kalrez® 6375): -20...+130°C / -4...+266°F
K	FFKM (Kalrez® 6375): -20...+150°C / -4...+302°F
Pressure type	
A	Absolute pressure
G	Gauge pressure
Measuring range	
A	0...25 mbar / 0...0.33 psi
B	0...100 mbar / 0...1.4 psi
C	0...400 mbar / 0...7.5 psi
D	0...1 bar / 0...14 psi
E	0...2.5 bar / 0...36 psi
G	0...10 bar / 0...145 psi

H	0...25 bar / 0...360 psi
K	0...60 bar / 0...870 psi
L	0...100 bar / 0...1450 psi
3	-50...50 mbar / -0.7...0.7 psi
4	-200...200 mbar / -3...3 psi
5	-500...500 mbar / -7...7 psi
T	-1...0 bar / -14...0 psi
U	-1...1.5 bar / -14...22 psi
W	-1...10 bar / -14...145 psi
X	-1...25 bar / -14...360 psi
1	-1...60 bar / -14...870 psi
2	-1...100 bar / -14...1450 psi
Y	Customer specific measuring range
Adjustment	
0	Nominal range %
1	Nominal range mbar
2	Nominal range bar
3	Nominal range psi
4	Nominal range Pa
5	Nominal range kPa
6	Nominal range Mpa
7	Nominal range mmH2O
8	Nominal range inH2O
A	Nominal range mmHG
B	Nominal range inHG
C	Nominal range mm (density 1)
D	Nominal range cm (density 1)
E	Nominal range m (density 1)
F	Nominal range in (density 1)
G	Nominal range ft (density 1)
Y	Customer specific adjustment for pressure
Accuracy class	
H	0.05%
E	0.1%
S	0.2%
Electronics	
H	2-wire 4...20 mA / HART®
A	2-wire 4...20 mA / HART® with SIL (in preparation)
F	Foundation Fieldbus
P	Profibus PA
Supplementary electronics	
X	without

Housing	
K	Plastic (PBT), DIN single chamber
R	Plastic (PBT), DIN double chamber
A	Aluminium, DIN single chamber
D	Aluminium, DIN double chamber
8	316 L (electro-polished), DIN single chamber
V	316 L, DIN single chamber
W	316 L, DIN double chamber
Housing version / Ingress protection	
1	compact, IP 66 / 67, NEMA 6P
N	compact, IP 66 / 68 (1 bar), NEMA 6P
M	compact, IP 69K
K	remote, axial PE, IP 66 / 68 (25 bar)
A	remote, axial PUR, IP 66 / 68 (25 bar)
L	remote, lateral PE, IP 66 / 68 (25 bar)
S	remote, lateral PUR, IP 66 / 68 (25 bar)
Electrical connection / Material	
M	M20 x 1.5, plastic, black, 5...9 mm / 0.20...0.35"
0	M20 x 1.5, nickel-plated brass, 4...8.5 mm / 0.16...0.33"
6	M20 x 1.5, nickel-plated brass, sheathed cable
L	M20 x 1.5, stainless steel, 6...12 mm / 0.24...0.47"
D	M20 x 1.5, blind plug
1	M20 x 1.5, DIN43650 plug
C	M20 x 1.5, M12 x 1 A plug
B	M20 x 1.5, M12 x 1 B plug
F	M20 x 1.5, HAN7D plug, straight
G	M20 x 1.5, HAN7D plug, 90°
H	M20 x 1.5, HAN8D plug, straight
W	M20 x 1.5, HAN8D plug, 90°
N	1/2-14 NPT, blind plug
7	1/2-14 NPT, plastic, black, 5...9 mm / 0.2...0.35"
P	1/2-14 NPT, nickel-plated brass, 4...8.5 mm / 0.16...0.33"
8	1/2-14 NPT, nickel-plated brass, sheathed cable
Z	1/2 NPT, 7/8 NPT plug



KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
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- Level meters
- Temperature assemblies
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- Products and systems for the oil & gas industry
- Measuring systems for the marine industry

Head Office KROHNE Messtechnik GmbH
Ludwig-Krohne-Str. 5
47058 Duisburg (Germany)
Tel.: +49 203 301 0
Fax: +49 203 301 103 89
info@krohne.com

The current list of all KROHNE contacts and addresses can be found at:
www.krohne.com

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