



Product Data Sheet

RockFord™ P580/P570 Pressure Transmitter



GOLD SERVICE

In-Line Pressure Transmitter Gauge and Absolute type

This datasheet defines the technical and functional characteristics of the Rockford P850 Smart Pressure Transmitter, an instrument purpose-designed for the continuous measurement of process pressure and the transmission of the measured values over the public mobile network (GPRS/4G LTE) to a central monitoring system, supervisory clients and the plant PLC/DCS. The document is intended for instrumentation, system control, telemetry and industrial monitoring engineers engaged in specification, procurement, installation, commissioning and operation.

the physical description of the instrument a complete, stage by-stage description of the end-to-end data transmission chain from the sensing element to the operator and the PLC ; the telemetry system architecture, described block-by block against the supplied block diagram the measurement principle; the standard measurement ranges with conversions to bar and psi; the technical specification; calibration requirements; configuration and commissioning; diagnostics; compliance information; and ordering data.

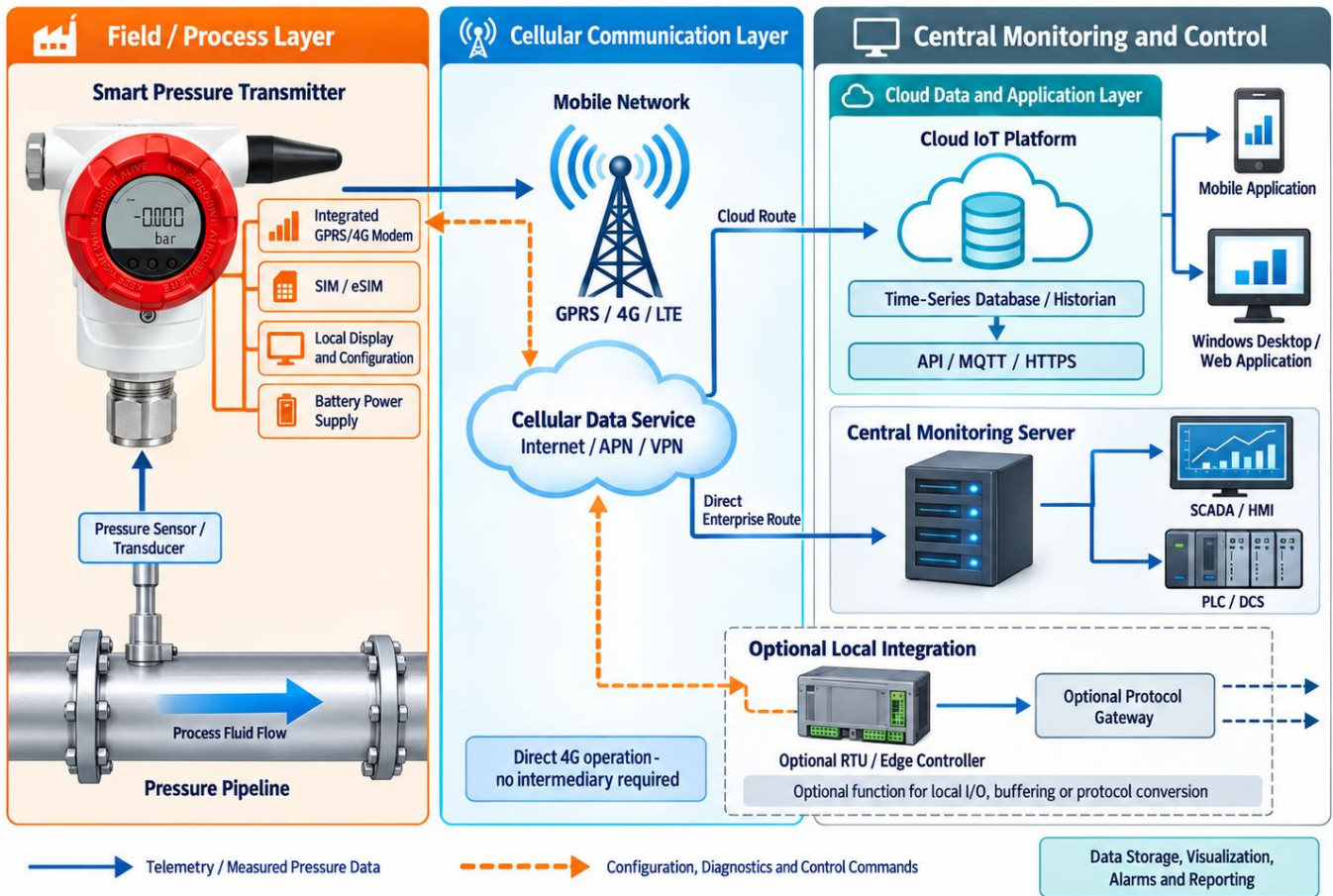
Unless otherwise stated, all pressures are gauge and expressed in SI units (kPa, MPa), with equivalent values



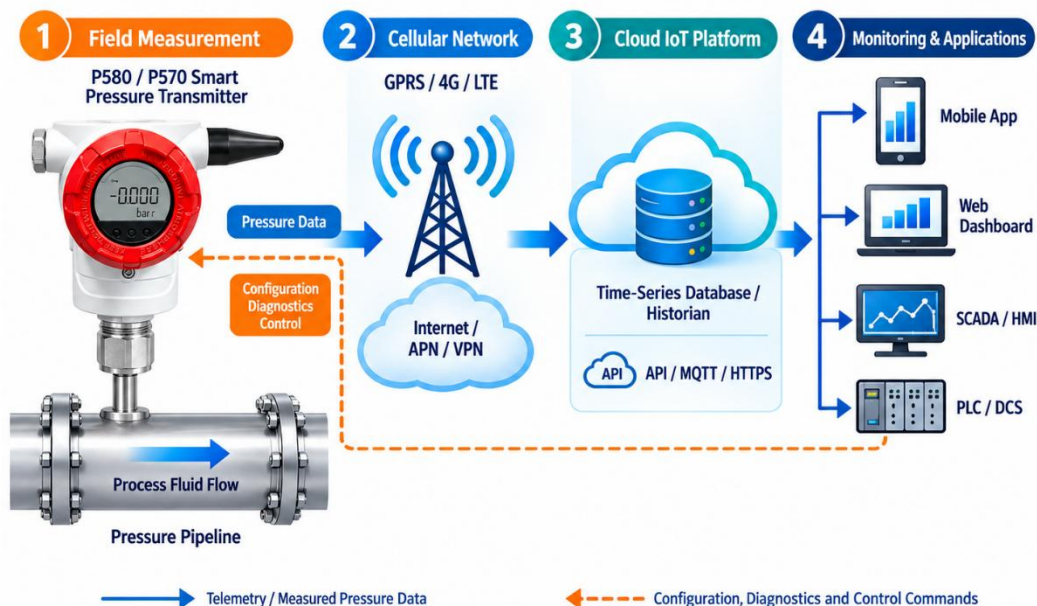
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P580/P570 Pressure Transmitter – GPRS/4G Telemetry & Remote Monitoring Architecture



P580 / P570 Smart Pressure Transmitter – GPRS/4G Remote Monitoring Architecture



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APPLICATIONS

- Easy installation with all solutions fully assembled
- leak-tested and calibrated
- Meet your application needs with an unsurpassed offering

FEATURES

- Reference accuracy 0.04% of span
- Installed total performance of 0.14% of span
- 10-year stability of 0.2% of URL
- SIL2/3 certified (IEC 61508)

Reference accuracy

Stated reference accuracy equations include terminal-based linearity, hysteresis, and repeatability. For wireless, FOUNDATION™ Fieldbus, and PROFIBUS® PA devices, use calibrated range in place of span.

Model: P580	$\pm 0.035\%$ If $TD > 10$ ($TD = URL/Span$) : $\pm(0.035 \times TD)\%$;
Model: P570	$\pm 0.035\%$ If $TD > 10$ ($TD = URL/Span$) : $\pm(0.035 \times TD)\%$;

Long term stability

$\pm 0.02\%$ of URL for 10 years, ± 50 °F (28 °C) temperature changes

Dynamic performance

4 - 20 mA HART	FOUNDATION Fieldbus and PROFIBUS PA Protocols	Typical HART transmitter response time
100 ms	152 ms	

Vibration effect

Less than ± 0.1 percent of URL when tested per the requirements of IEC60770-1: 1999 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

Power supply effect

Less than ± 0.001 percent of calibrated span per volt change.

$\pm 0.001\%$ /10V (12~42V DC)

Electromagnetic compatibility

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation

Range and sensor limits

Range	Minimum span	Gauge pressure		Absolute	
		Lower (LRL)	Upper (URL)	Lower (LRL)	Upper (URL)
1					
2	0.5 mbar	0	10 Kpa (0.1 bar) (100 mbar)	-101 Kpa (-1.01 bar) (-14.70 psi)	10 Kpa (0.1 bar) (100 mbar)
3	2 mbar	0	40 Kpa (0.4 bar) (400 mbar)	-101 Kpa (-1.01 bar) (-14.70 psi)	40 Kpa (0.4bar) (400 mbar)
4	5 mbar	0	100 Kpa (1 bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	100 Kpa (1bar)
5	12.5 mbar	0	250 Kpa (2.5 bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	250 Kpa (2.5bar)
6	25 mbar	0	400 Kpa (4 Bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	400 Kpa (4bar)
7	50 mbar	0	1 MPa (10 Bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	1 MPa (10bar)
8	100 mBar	0	2.5 MPa (25 Bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	2.5 MPa (25 Bar)
	150 mbar	0	4 MPa (40 Bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	4 MPa (40 Bar)
9	500 mbar	0	10 MPa (100 Bar)	-101 Kpa (-1.01 bar) (-14.70 psi)	10 MPa (100 Bar)
10	1 Bar	0	25 MPa (250 Bar)	-	-
11	2 Bar	0	40 MPa (400 Bar)	-	-
	4 Bar	0	60 MPa (600 Bar)	-	-

4–20 mA HART

Power supply

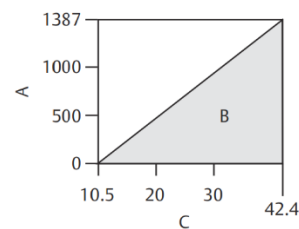
External power supply required. Standard transmitter (4–20 mA) operates on 10.5–42.4 Vdc with no load.

Load limitations

Maximum loop resistance is determined by the voltage level of the external power supply described

by: Max. loop resistance = 43.5 (power supply voltage - 10.5)

Communication requires a minimum loop resistance of 250 ohms.



A. Load (Ωs)
B. Operating region
C. Voltage (Vdc)

Ambient Temperature Effects

- (-20 ... +65 °C) : $\pm(0.035 \times TD + 0.025) \% \times \text{Span}$: Every 10°C is $\pm 0.025 \% \times \text{Span}$ (TD=1)
- (-40 ... +20 °C) and (+65 ... +85 °C) : $\pm(0.1 \times TD + 0.025) \% \times \text{Span}$

Process

- Silicone fill sensor: -40 - +250 °F (-40 - +121 °C)
- Inert fill sensor: -40 - +185 °F (-40 - +85 °C)

Humidity limits

- 0–100 percent relative humidity

Damping

Analog output response to a step input change is user-enterable from 0.0 to 60 seconds for one time constant. This software damping is in addition to sensor module response time

FUNCTIONAL SPECIFICATIONS

External Zero Adjustment

External zero is continuously adjustable with 0.01% incremental resolution of span. Re-range can be done locally using the range setting switch.

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90° will cause zero shift up to 0.25kPa which can be corrected by the zero adjustment.

Output

Two wire 4-20mADC output with digital

communications, linear or square root programmable. HART FSK protocol are superimposed on the 4-20 MADC signal. Output range: 3.9 mA to 20.5 mA

Failure Alarm (the mode can be selected)

Low Mode (min): 3.7 mA, High Mode (max): 21 mA No Mode (hold): Keep the effective value before fault. The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1-1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60 sec by software and added to response time. Up Time < 15s

Ambient Temperature Limits: -40 to 85°C

-20 to 65°C with LCD display or fluorine rubber sealing

Storage and Transportation Temperature Limits

-50 to 85°C, -40 to 85°C with LCD display

Working Pressure Limits (Silicone oil)

From vacuum to upper range limits

Overload Pressure Limits

Span	Low Range		400kPa (Mid Range)	3MPa (Normal)
	6KPa	100KPa		
OPL	4MPa	7MPa	10 MPa	15MPa
Span	10 MPa (H)		20 MPa(H)	40 MPa(H)
OPL	20 MPa		50 MPa	50 MPa

Explosion Protected Type

- NEPSI / ATEX: Ex d IIC T6,
- NEPSI / ATEX: Ex ia II C T4

INSTALL

Supply & Load Requirements

24VDC supply, $R_s \leq (U_s - 12V) / I_{max}$ kQ, $I_{max} = 23$ mA. Maximum voltage limited: 42VDC, Minimum voltage limited: 12VDC, 15VDC (with LCD display) 2300 to 6000 for digital communication

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm².

Process Connection

Default Process Connection: 1/2-NPT female thread, it

can be changed to 1/2-NPT, G1/2, M20x1.5 male thread and KF16 vacuum Connection.

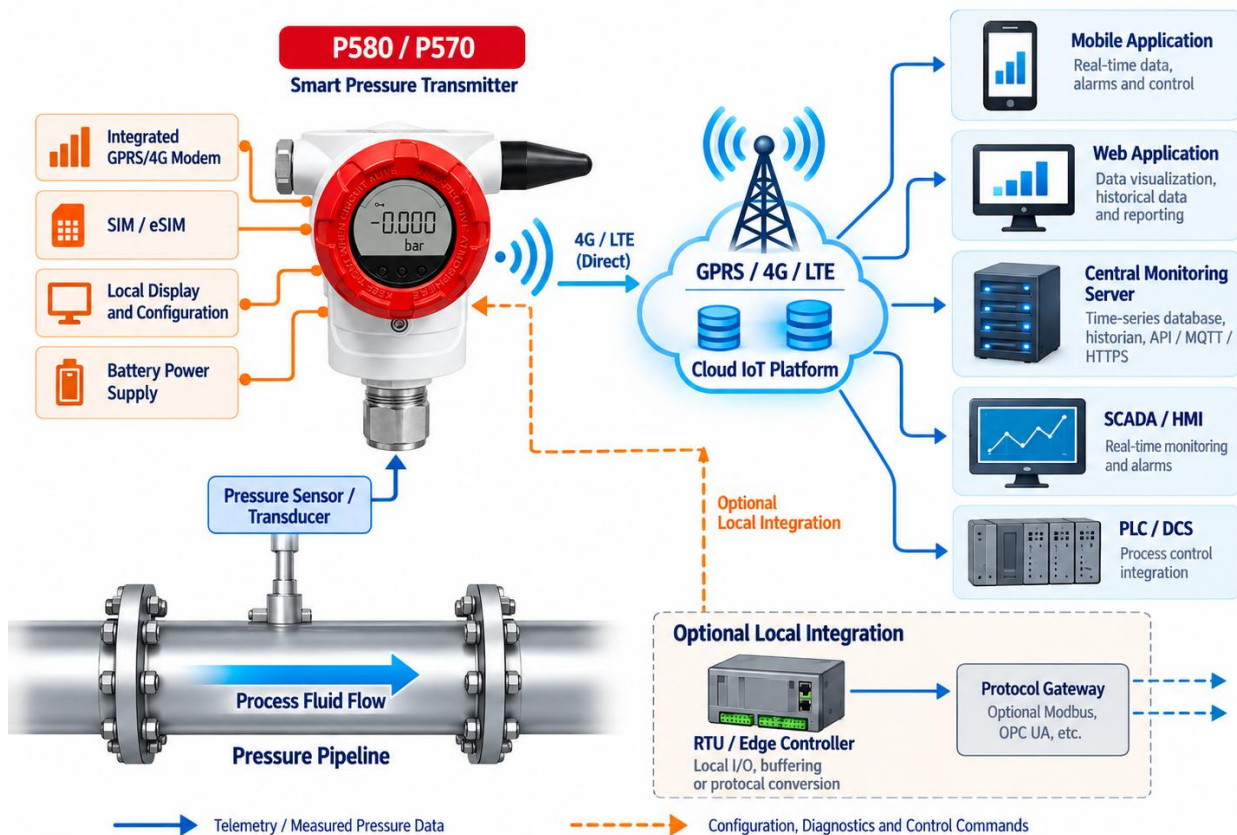
EMC Performance Table

Items	Test items	Basic standards	Test conditions	Performance Level
1	Radiated interference (Housing)	GB/T 9254-2008	30MHz~1000MHz	OK
2	Conducted interference (DC power port)	GB/T 9254-2008	0.15MHz~30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line)8kV(Air)	B
4	RF electromagnetic field immunity	GB/T 17626.3-2006	10V/m (80MHz~1GHz)	A
5	Frequency magnetic field immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	0.5kV (line to line)1kV (line to ground)(1.2us/50us)	B
8	Conducted interference immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz~80MHz)	A

Note:

1. Performance level A description: The technical specifications within the limits of normal performance.
2. Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

P580 / P570 Pressure Transmitter – 4G Telemetry & Monitoring Solution



RockFord P580 Pressure Transmitter

Ordering information



The P850 is a microprocessor-based smart pressure transmitter employing a piezoresistive silicon sensing element situated behind an oil-filled 316L stainless-steel isolation diaphragm. Its defining feature is an integrated GPRS/4G LTE telemetry module, which uploads the measured pressure values directly to a cloud IoT platform over the mobile network, without dependence on a hard-wired field bus. For installations requiring a conventional signal, a 4–20 mA output with HART 7, or an RS-485 Modbus RTU output, may be specified in addition to, or instead of, the telemetry module, providing an independent hard-wired path to the PLC/DCS.

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Online product configurator

Many products are configurable online using our product configurator.

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With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Specifications and options

The purchaser of the equipment must specify and select the product materials, options, and components.

Model codes

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in Figure 1.

Figure 1: Model Code Example

P580	4-O1-1-A-S-A-1-M1-L-A-A1	CTF-CMF-S1
1	2	3

1. Required model components (choices available on most)

2. Additional options (variety of features and functions that may be added to products)

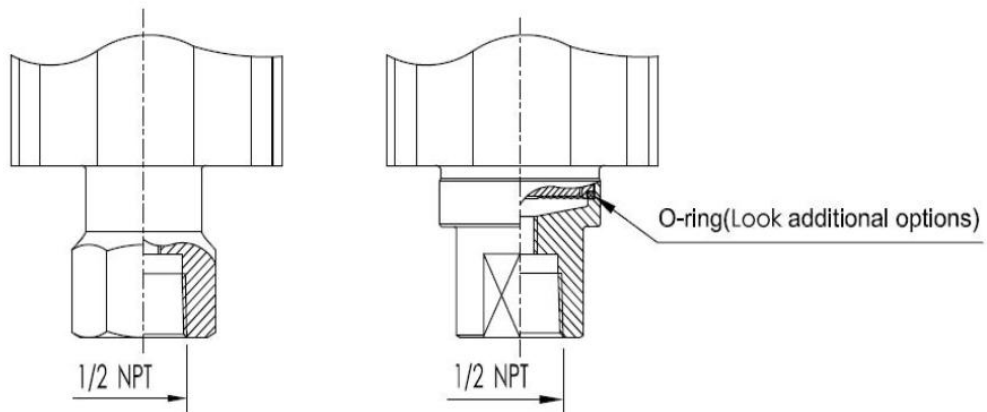
Required model components

Model	Suffix Codes	Description		
P580		In-Line Pressure Gauge Transmitter type		★
P570		In-Line Pressure Absolute Transmitter type		★
Pressure type		Gauge	Absolute	★
	-1	10 Kpa (0.1 bar) (100 mbar)	10 Kpa (0.1 bar) (100 mbar)	★
	-2	40 Kpa (0.4 bar) (400 mbar)	40 Kpa (0.4bar) (400 mbar)	★
	-3	100 Kpa (1 bar)	100 Kpa (1bar)	★
	-4	400 KPa (4 Bar)	400 Kpa (4bar)	★
	-5	1 MPa (10 Bar)	1 MPa (10bar)	★
	-6	2.5 MPa (25 Bar)	2.5 MPa (25 Bar)	★
	-7	4 MPa (40 Bar)	4 MPa (40 Bar)	★
	-8	10 MPa (100 Bar)	10 MPa (100 Bar)	★
	-9	25 MPa (250 Bar)	-	★
	-10	40 MPa (400 Bar)	-	★
	-11	60 MPa (600 Bar)	-	★
Transmitter output	-O1	4–20 mA (HART 7) + 4G telemetry		★
	-O2	4G telemetry only + 4G telemetry		★
	-O3	Modbus RTU + 4G telemetry		★
Process connection style	-1	1/2 NPT Male		★
	-2	1/2 NPT Female		★
	-3	G 1/2 Female		★
	-4	1/4 NPT Male		★
	-5	M20 × 1.5		★
Isolating diaphragm	-A	316L stainless steel		★
	-B	Alloy C-276		★
	-C	Gold-plated		★
	-D	Tantalum		★
	-E	Monel 400 (Alloy 400 - K400)		★
Process Connection Material	-1	316L stainless steel		★
	-2	Alloy C-276		★
	-3	Monel 400 (Alloy 400 - K400)		★
Sensor fill fluid	-S	Silicone Oil		★
	-F	Fluorinated Oil		★
	-V	Vegetable Oil		★
	-I	Inert		★
Housing material	-A	Aluminum		★
	-S	Stainless steel		★
Conduit entry size	-1	1/2 NPT Male		★
	-2	M20 × 1.5		★
Mounting bracket	-N	NON		★
	-M1	304 SST bracket with 304 SST bolts		★
	-M2	316 SST bracket with 304 SST bolts		★
Display	-N	NON		★
	-B	Backlit LCD display		★
	-L	LCD display		★
Configuration buttons	-N	NON		★
	-A	Analog zero and span		★
Accuracy	-A1	±0.035% (1KPa...40MPa)		★
	-A2	±0.005% (Over 40MPa)		★
5-Point calibration	- CTF	5-Point calibration		★
Material traceability certification	- CMF	Material traceability certification		★
Explosion Proof	-S1	Explosion Proof, Ex d ia [ia] q IIC T6		★

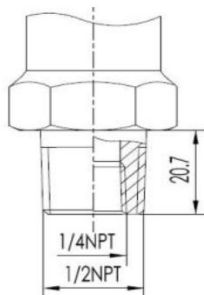
The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

PROCESS CONNECTION

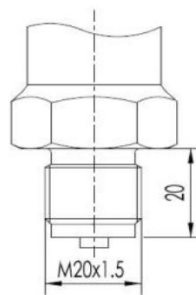
Default Process Connection 1/2-NPT female thread



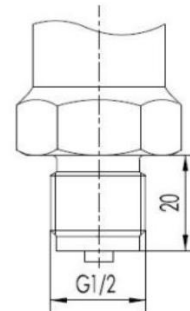
1/2-NPT male thread



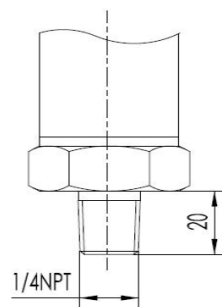
M20x1.5 male thread



G 1/2 male thread



1/4-NPT male thread





All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

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