

AMZ 5450



DESCRIPTION

AMZ 5450 industry standard pressure transmitters are based on a proven capacitive pressure sensor and silicon piezoresistive sensor technology, they feature high performance, resistance to overpressure and stability in dynamic pressure and temperature environments. Certain parameters, including ZERO and SPAN are configurable in hazardous area using special magnetic tool. Local LCD display features backlight and is mountable at 0, 90, 180 and 270 degrees providing flexibility in transmitter installation angle.

SPECIFICATIONS

Pressure ranges: 15 mbar to 600* bar

Overpressure: up to 1050 bar

Accuracy: up to $\pm 0.075\%$

Output: 4...20 mA

Communication: HART®

Approvals: 0Ex ia IIC T6...T4 Ga X / 1Ex d IIC T6...T4 Gb X

Sensor: capacitive stainless steel / silicon piezoresistive

Pressure port: 1/2" NPTF, other threads, adapters, remote diaphragm seal options

Turndown: up to 100:1

Display: LCD with backlight

APPLICATIONS

Liquid, steam and gas pressure measurement

Level monitoring in open tanks

* Ranges over 70 bar feature piezoresistive sensor technology

Appearance, mounting kit contents and/or specifications are subject to change without prior notice. We are constantly working on further improvement of our products.
Delivery is subject to standard terms of delivery.
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TECHNICAL SPECIFICATIONS

MEASURING RANGES

Capacitive sensor			Piezoresistive sensor		
Gauge pressure range P_N^*	Turndown ratio P_N/P_{set}	Overpressure	Gauge/Absolute pressure range P_N^*	Turndown ratio P_N/P_{set}^*	Overpressure
0...1.5 kPa	20:1	1 MPa	-	-	-
0...7.5 kPa	40:1	4 MPa	-	-	-
0...37 kPa	100:1	13.8 MPa	0...37 kPa	10:1	0.1 MPa
0...187 kPa	100:1	13.8 MPa	0...187 kPa	10:1	0.6 MPa
0...690 kPa	100:1	13.8 MPa	0...690 kPa	10:1	1.5 MPa
0...2 MPa	100:1	13.8 MPa	0...2 MPa	10:1	6 MPa
0...7 MPa	100:1	13.8 MPa	0...7 MPa	10:1	10 MPa
-	-	-	0...20 MPa	10:1	30 MPa
-	-	-	0...40 MPa	10:1	105 MPa
-	-	-	0...60 MPa	10:1	105 MPa

* By default, nominal range (P_N) equals the upper range limit (URL) while lower range limit (LRL) is 0. The gauge pressure transmitter with capacitive sensor can have LRL equal to negative URL, or -100 kPa for URL ≥ 187 kPa.

Pressure transmitter supports the following measurement units: inH₂O, inHg, ftH₂O, mmH₂O, mmHg, psi, bar, mbar, g/cm², kg/cm², Pa, kPa, MPa, atm, Torr. The setting is changed either via HART[®] modem/communicator or locally using special magnetic tool. P_{set} is the range set by user. The pressure transmitter supports the following measurement units: inH₂O, inHg, ftH₂O, mmH₂O, mmHg, psi, bar, mbar, g/cm², kg/cm², Pa, kPa, MPa, atm, Torr. To select the units either HART[®] modem/communicator or local setup using special magnetic tool can be used. When switching units, the range of the digital display range should be taken into account.

PERFORMANCE

Pressure range	Turndown	Accuracy, % of span*	
		Capacitive sensor	Piezoresistive sensor
$P_N = 1.5$ kPa	$P_N/P_{set} \leq 5$	± 0.1	-
	$5 \leq P_N/P_{set} < 20$	$\pm [0.015 \cdot (P_N/P_{set}) + 0.025]$	-
7.5 kPa $\leq P_N \leq 60$ MPa	$P_N/P_{set} \leq 10$	± 0.075	$\pm [0.02 \cdot (P_N/P_{set}) + 0.08]$
	$10 \leq P_N/P_{set} < 40$	$\pm [0.00375 \cdot (P_N/P_{set}) + 0.0375]$	-
	$40 \leq P_N/P_{set} < 100$	$\pm [0.00465 \cdot (P_N/P_{set}) + 0.0015]$	-

Pressure range	Turndown	Temperature effect, % of span / 10 °C		Long-term stability
		Capacitive sensor	Piezoresistive sensor	
$P_N = 1.5$ kPa	$P_N/P_{set} \leq 5$	$\pm [0.075 \cdot (P_N/P_{set}) + 0.025]$	-	$\pm 0.2\%$ URL / year
	$5 < P_N/P_{set} \leq 20$	$\pm [0.050 \cdot (P_N/P_{set}) + 0.150]$	-	
$P_N = 7.5$ kPa	$P_N/P_{set} \leq 5$	$\pm [0.040 \cdot (P_N/P_{set}) + 0.025]$	-	$\pm 0.15\%$ URL / 5 years
	$5 < P_N/P_{set} \leq 40$	$\pm [0.030 \cdot (P_N/P_{set}) + 0.075]$	-	
37 kPa $\leq P_N \leq 60$ MPa	$P_N/P_{set} \leq 5$	$\pm [0.010 \cdot (P_N/P_{set}) + 0.030]$	$[0.02 \cdot (P_N/P_{set})]$	$\pm 0.15\%$ URL / 5 years
	$5 < P_N/P_{set} \leq 100$	$\pm [0.012 \cdot (P_N/P_{set}) + 0.023]$	$[0.02 \cdot (P_N/P_{set})]$	

* Accuracy includes non-linearity, hysteresis and non-repeatability.

Compensated range	-20...+80 °C; -40...+60 °C (optional)
Power supply effect (Nominal power supply: 24 V $\pm 10\%$)	$\leq \pm 0.05\%$ of span / 10 V
Load resistance effect	$\leq \pm 0.05\%$ of span / kOhm
Response time (10...90%)	≤ 200 ms

OPERATING CONDITIONS

Medium temperature	-40...+105 °C (depends on seal)					
Ambient temperature	-40...+85 °C (consult temperature class for Ex versions)					
Storage temperature	-40...+85 °C					
Approvals	1Ex d IIC T6...T4 Gb X			0Ex ia IIC T6...T4 Ga X		
Temperature class	T4	T5	T6	T4	T5	T6
Ambient temperature	-40...+85 °C	-40...+70 °C	-40...+60 °C	-40...+80 °C	-40...+60 °C	-40...+50 °C
Vibration resistance	10 - 60 Hz, 0.21 mm peak to peak displacement / 60 - 2000 Hz, 3g					
Shock resistance	100 g / 1 ms					
Sensor service life	> 100×10 ⁶ cycles					

MECHANICAL SPECIFICATIONS

Pressure port material	stainless steel 316L (1.4404) and aluminium alloy
Housing material	aluminium die cast with epoxy painting (grey)
Seal (for adapters with DIN 3852 pressure port)	EPDM (-40...+105 °C); FKM (-25...+105 °C); NBR (-25...+105 °C)
Diaphragm	stainless steel 316L (1.4435)
Mounting kit, Mounting bracket	carbon steel, stainless steel
Display protective cover	polycarbonate
Wetted parts	diaphragm, pressure port, seal
Pressure port	1/2" NPTF (standard) M20x1.5 EN 837 (with adapter); M20x1.5 DIN 3852 (with adapter) G1/2" EN 837 (with adapter); G1/2" DIN 3852 (with adapter); 1/2" NPT external thread (with adapter) remote diaphragm seal options
Electrical connection	cable gland 1/2" NPT; cable gland M20x1.5
Ingress protection	IP67
Dimensions, mm, max	177×116×110
Weight, kg, max	3.5
Explosion protection version	General industry; Intrinsically safe 0Ex ia IIC T6...T4 Ga X; Flameproof enclosure 1Ex d IIC T6...T4 Gb X. The design allows local configuration in hazardous area using special magnetic tool (supplied).

DIGITAL DISPLAY (optional)

Display	Value
Display digits	-1999...+9999
Display accuracy	0.1 % of span ± 1 digit

ELECTRICAL SPECIFICATIONS

Output signal	Power supply	Load resistance	Power consumption
4...20 mA / HART®	9...44 V (DC)	$\leq [(U_s - U_{s_Min}) / 0.02 \text{ A}] \text{ Ohm}^*$	$\leq 21 \text{ mA}$
Minimum value of the supply voltage		Without HART®, U_{S_Min}	With HART®, U_{S_Min_HART}
With backlight off		9 V	14 V
With backlight on		12 V	17 V

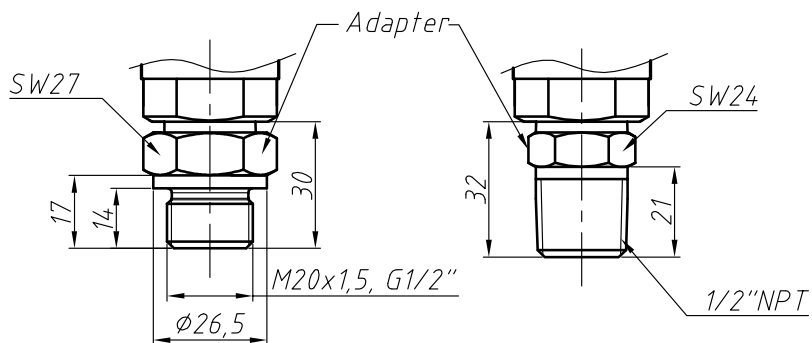
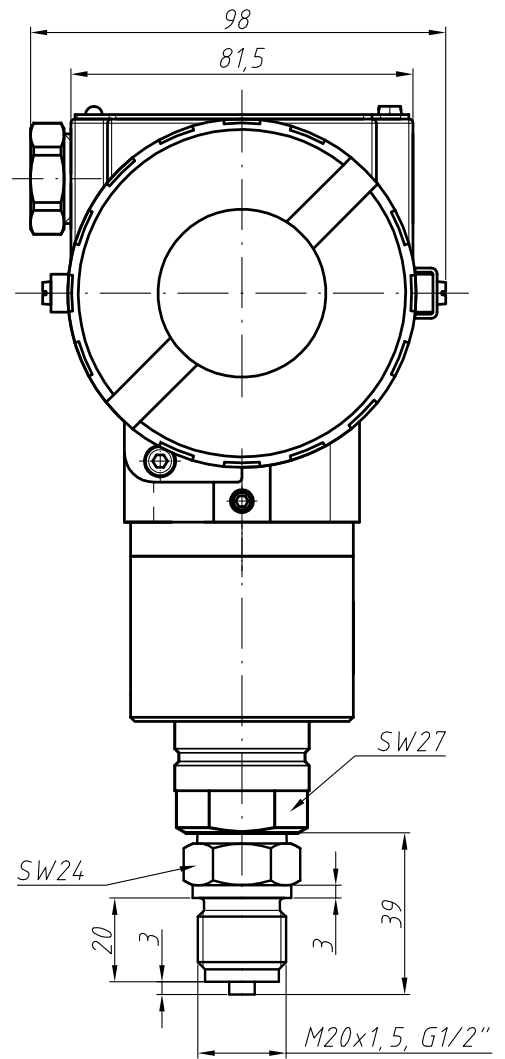
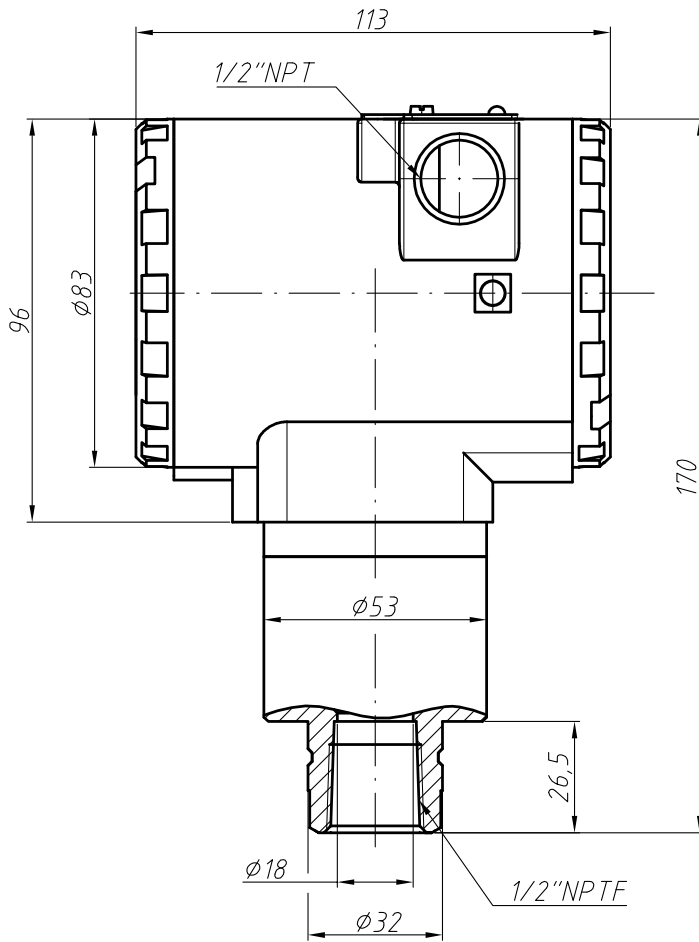
* Minimum load resistance for HART® communication: 250 Ohm.

Safe values for intrinsically safe design 0Ex ia IIC T6...T4 Ga X:

Parameter	2-wire
Maximum voltage, U _i	28 V
Maximum current, I _i	93 mA
Maximum power, P _i	660 mW
Maximum internal inductance, L _i	5 μH
Maximum internal capacitance, C _i	10 nF

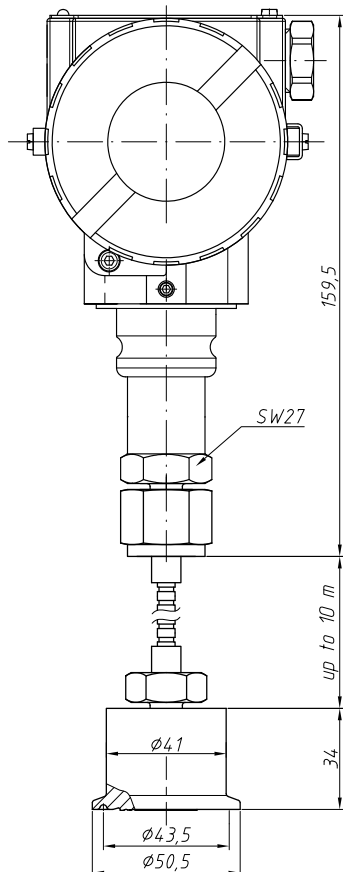
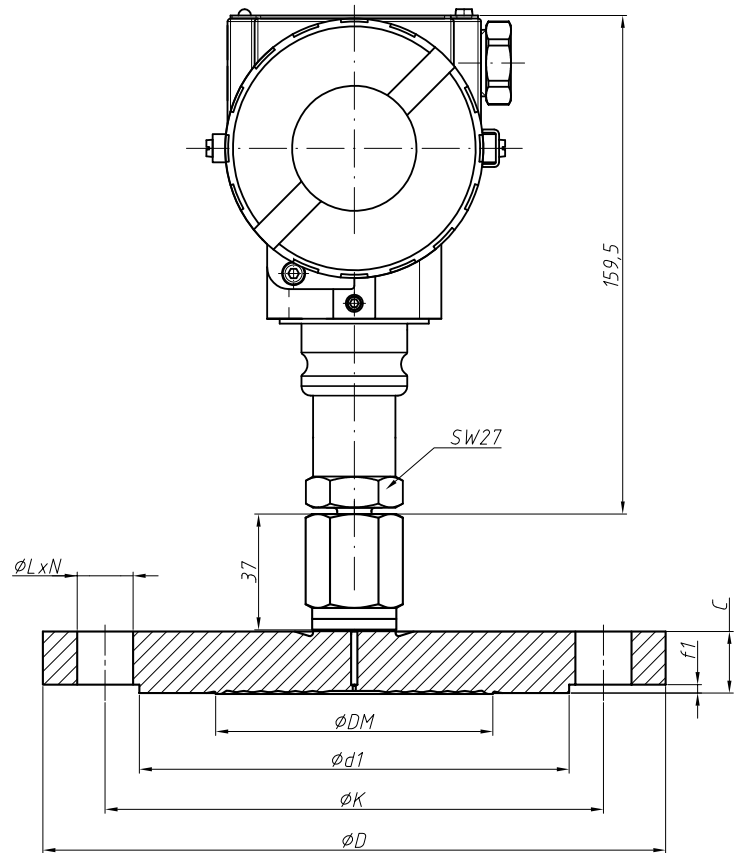
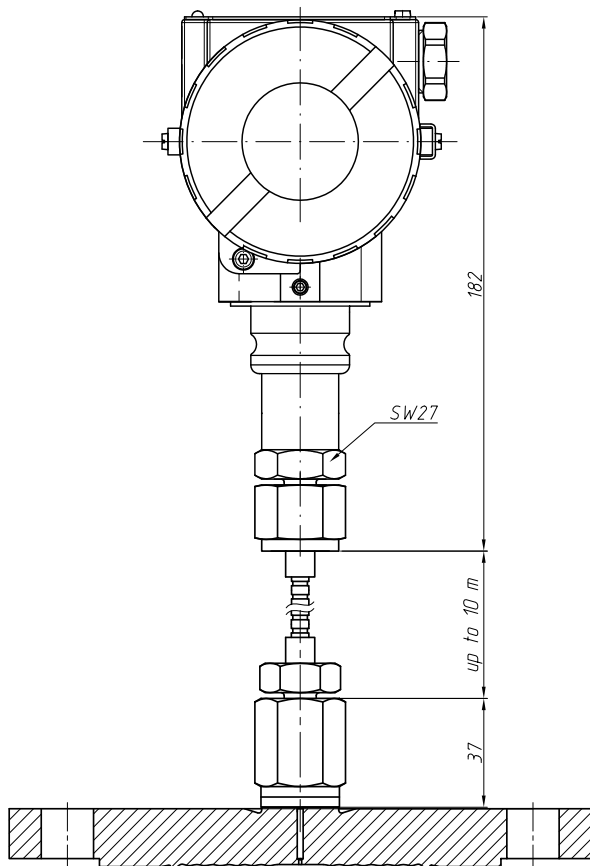
DIMENSIONS (mm)

AMZ 5450 with capacitive sensor



DIMENSIONS (mm)

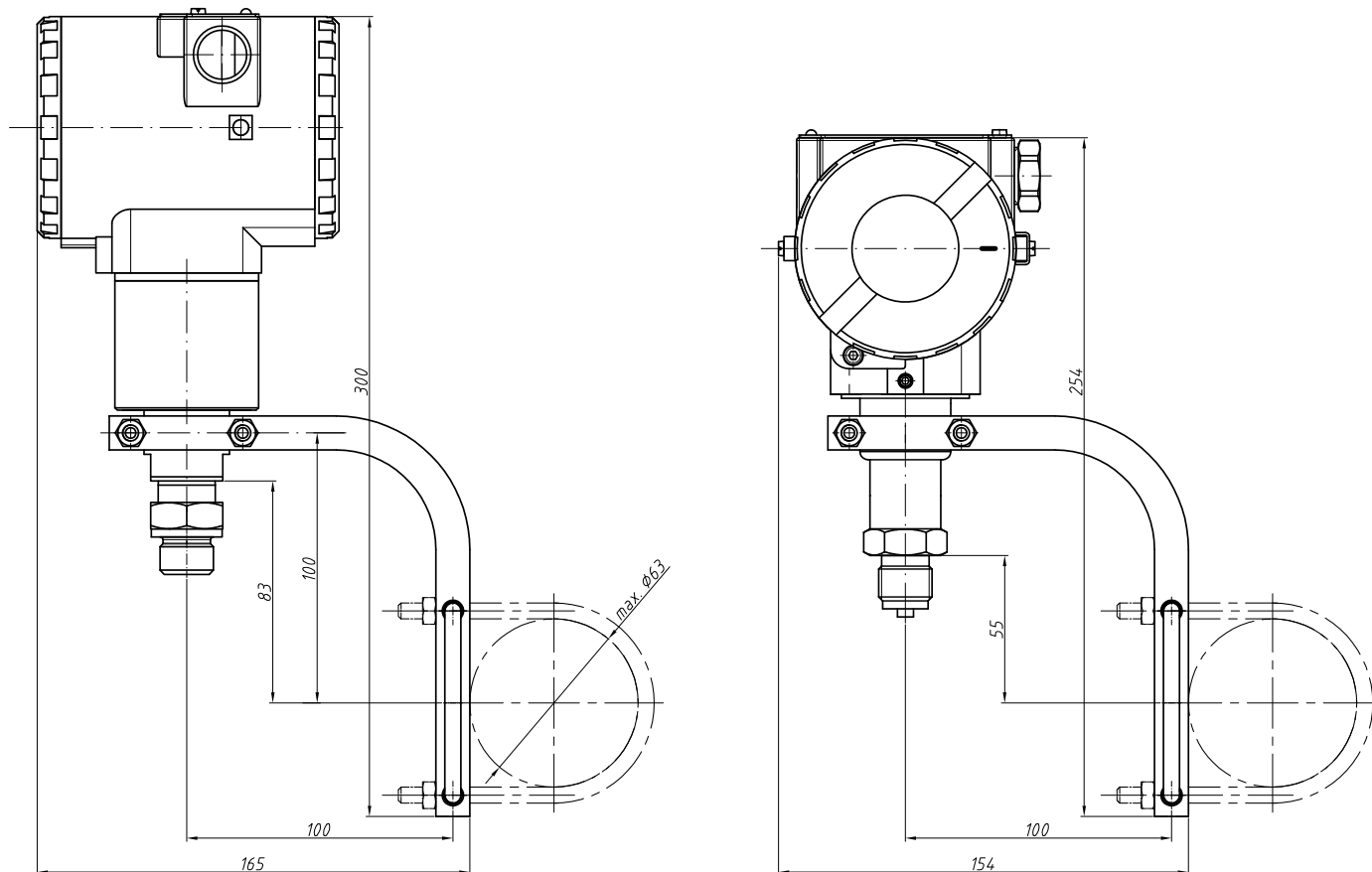
AMZ 5450 with remote diaphragm seal (piezoresistive sensor)



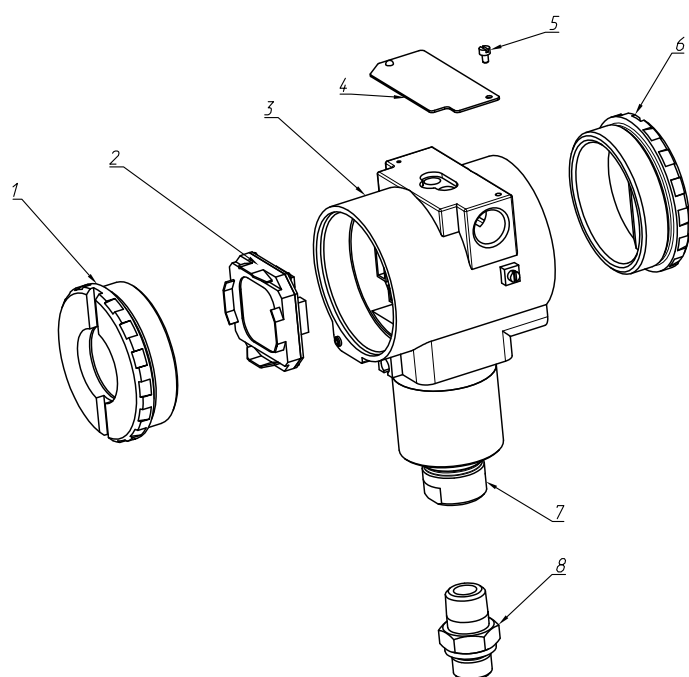
EN 1092-1/B	ϕD	ϕK	$\phi d1$	$f1$	C	ϕDM	ϕL	N
DN 25, PN 40	115	85	68	2	18	34	14	4
DN 40, PN 40	150	110	88		18	48	18	
DN 50, PN 40	165	125	102		20	60	18	
DN 80, PN 16	200	160	138	3	20	89	18	8
DN 100, PN 40	235	190	162		24	89	22	

DIMENSIONS (mm)

AMZ 5450 with angled pipe bracket



COMPONENTS



- 1 – Display protective cover
- 2 – Display (orientation changes in steps of 90 °)
- 3 – Housing
- 4 – Identification plate
- 5 – Identification plate holding screw
- 6 – Terminal board cover
- 7 – Pressure port
- 8 – Adapter

ORDERING CODE

AMZ 5450	-X	-XXXX	-XX	-X	-X	-X	-X	-X	-X	-X	-X	-X	-XX
MEASUREMENT TYPE													
Gauge	G												
Absolute	A												
UPPER RANGE LIMIT (URL)													
Gauge	Absolute												
1.5 kPa	-	1500											
7.5 kPa	-	7500											
37 kPa	37 kPa	3701											
187 kPa	187 kPa	1872											
690 kPa	690 kPa	6902											
2 MPa	2 MPa	2003											
7 MPa	7 MPa	7003											
20 MPa	20 MPa	2004											
40 MPa	40 MPa	4004											
60 MPa	60 MPa	6004											
Other	Other	XXXX											
DIAPHRAGM MATERIAL / FILL FLUID													
Stainless steel / silicone oil		11											
PRESSURE PORT MATERIAL													
Stainless steel 316L		S											
SEALS													
No seal (standard)		W											
FKM (-25...+105 °C)		F											
NBR (-25...+105 °C)		N											
EPDM (-40...+105 °C)		E											
ACCURACY													
0.075% (7.5 kPa ≤ URL ≤ 7 MPa for capacitive sensor)		Z											
0.1% (for URL=1.5 kPa and for piezoresistive sensor)		A											
DISPLAY													
No		0											
Yes		1											
ELECTRICAL CONNECTION													
Cable gland 1/2" NPT		N											
Cable gland M20x1.5		M											
OUTPUT SIGNAL													
4...20 mA / HART®		H											
4...20 mA / HART® / 0Ex ia IIC T6...T4 Ga X		I											
4...20 mA / HART® / 1Ex d IIC T6...T4 Gb X		P											

ORDERING CODE (CONTINUED)

AMZ 5450	-X	-XXXX	-XX	-X	-X	-X	-X	-X	-X	-X	-X	-X	-XX
PRESSURE PORT													
										1/2" NPT (with adapter)	1		
										1/2" NPTF internal thread (standard)	2		
										M20x1.5 EN 837 (with adapter)	5		
										M20x1.5 DIN 3852 (with adapter)	6		
										G1/2" EN 837 (with adapter)	7		
										G1/2" DIN 3852 (with adapter)	8		
										Flange connection with optional capillary tube	RSFXXX*		
										Hygienic connection with optional capillary tube	RSHXXX*		
										Threaded connection with optional capillary tube	RSTXXX*		
VALVE MANIFOLD**													
										No	0		
										Valve manifold included	1		
										Valve manifold installed***	2		
MOUNTING KIT													
										Not included	0		
										Pipe bracket	1		
VERSION													
										Capacitive sensor	00		
										Piezoresistive sensor	0T		
										Special	XX		

* Submit port configuration according to Table 1. A unique code will be assigned to the configuration. For example the RSF9 code was assigned to the following configuration: Flange DN 50 / PN 40; silicone oil; capillary tube 6 m; 316L diaphragm; no seal.

** The valve manifold configuration makes a separate line in the order. Use valve manifold data sheet for the order configuration.

*** The transmitter is supplied assembled with valve manifold and leak tested.

Example: AMZ 5450 G-7003-11-S-F-A-1-N-H-2-0-1-00

Table 1 Remote diaphragm seal options

Type	Size	Filling fluid	Capillary length	Diaphragm	Seal
RSF – Flange	EN 1092-1/B: DN 25, DN 40, DN 50, DN 80, DN 100	Silicone oil; High temperature silicone oil; Food grade oil	Direct mounting; With capillary tube – length 0.5 to 10 m	316L stainless steel	No seal; NBR; PTFE; FKM
RSH – Hygienic	Clamp DIN 32676: DN 25, DN 40, DN 50; DIN 11851: DN 25, DN 40, DN 50				
RST – Threaded	M20x1.5, G1/2", G3/4", G1", G1½"				