



DESCRIPTION

AMZ 5050 differential industry standard pressure transmitters are based on a proven capacitive pressure sensor technology and feature high performance, resistance to overpressure and stability in dynamic pressure and temperature environments. Certain parameters, including ZERO and SPAN are configurable in hazardous areas by use of 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

Differential pressure ranges: 15 mbar to 70 bar
Static pressure / overpressure: up to 138 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
Turndown: up to 100:1
Display: LCD with backlight
Pressure port: 1/4" NPTF, 1/2" NPT (adapter), remote diaphragm seal options

APPLICATIONS

Liquid, steam and gas differential pressure measurement Filters and pumps diagnostics
Level monitoring in pressurized tanks Flow measurement

TECHNICAL SPECIFICATIONS

MEASURING RANGES

Differential pressure range, P_N^*	Turndown ratio P_N/P_{Set}	Permissible static pressure (line pressure)	Overpressure
0...1.5 kPa	20:1	1 MPa	1 MPa
0...7.5 kPa	40:1	4 MPa	4 MPa
0...37 kPa	100:1	13.8 MPa	13.8 MPa
0...187 kPa	100:1	13.8 MPa	13.8 MPa
0...690 kPa	100:1	13.8 MPa	13.8 MPa
0...2 MPa	100:1	13.8 MPa	13.8 MPa
0...7 MPa	100:1	13.8 MPa	13.8 MPa

* By default, nominal range (P_N) equals the upper range limit (URL) while lower range limit (LRL) is 0. The LRL can be set to negative URL; 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
$P_N = 1.5$ kPa	$P_N/P_{Set} \leq 5$	±0.1
	$5 < P_N/P_{Set} \leq 20$	±[0.015 · (P_N/P_{Set}) + 0.025]
7.5 kPa ≤ P_N ≤ 7 MPa	$P_N/P_{Set} \leq 10$	±0.075
	$10 < P_N/P_{Set} \leq 40$	±[0.00375 · (P_N/P_{Set}) + 0.0375]
	$40 < P_N/P_{Set} \leq 100$	±[0.00465 · (P_N/P_{Set}) + 0.0015]

Pressure range	Turndown	Temperature effect, % of span / 10 °C	Long-term stability	Line pressure effect	
				Zero Error**	Span Error
$P_N = 1.5$ kPa	$P_N/P_{Set} \leq 5$	±[0.075 · (P_N/P_{Set}) + 0.025]	±0.2% URL / year	±0.1% URL / 1 MPa	±0.2% of reading / 1 MPa
	$5 < P_N/P_{Set} \leq 20$	±[0.050 · (P_N/P_{Set}) + 0.150]			
$P_N = 7.5$ kPa	$P_N/P_{Set} \leq 5$	±[0.040 · (P_N/P_{Set}) + 0.025]	±0.15% URL / 5 years	±0.03% URL / 1 MPa	±0.06% of reading / 1 MPa
	$5 < P_N/P_{Set} \leq 40$	±[0.030 · (P_N/P_{Set}) + 0.075]			
37 kPa ≤ P_N ≤ 7 MPa	$P_N/P_{Set} \leq 5$	±[0.010 · (P_N/P_{Set}) + 0.030]	±0.15% URL / 5 years	±0.005% URL / 1 MPa	±0.03% of reading / 1 MPa
	$5 < P_N/P_{Set} \leq 100$	±[0.012 · (P_N/P_{Set}) + 0.023]			

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

** Eliminated through zero trim when static pressure is at operational level.

Compensated range	-20...+80 °C; -40...+60 °C (optional)
Power supply effect (Nominal power supply: 24 V ±10%)	≤ ±0.05% of span / 10 V
Load resistance effect	≤ ±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 / 11 ms					
Sensor service life	> 100×10 ⁶ cycles					

MECHANICAL SPECIFICATIONS

Housing, flanges	stainless steel 316L (1.4404) and aluminium alloy
Seal	EPDM (-40...105 °C); FKM (-25...105 °C); NBR (-25...105 °C); PTFE (-40...105 °C)
Diaphragm	stainless steel 316L (1.4435)
Mounting kit, Mounting bracket	carbon steel, stainless steel
Display protective cover	polycarbonate
Wetted parts	diaphragm, flanges, seal
Pressure port	1/4" NPT; 1/2" NPT (with adapter); remote diaphragm seals
Electrical connection	cable gland 1/2" NPT; cable gland M20x1.5
Ingress protection	IP67
Dimensions, mm, max	177x116x110
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

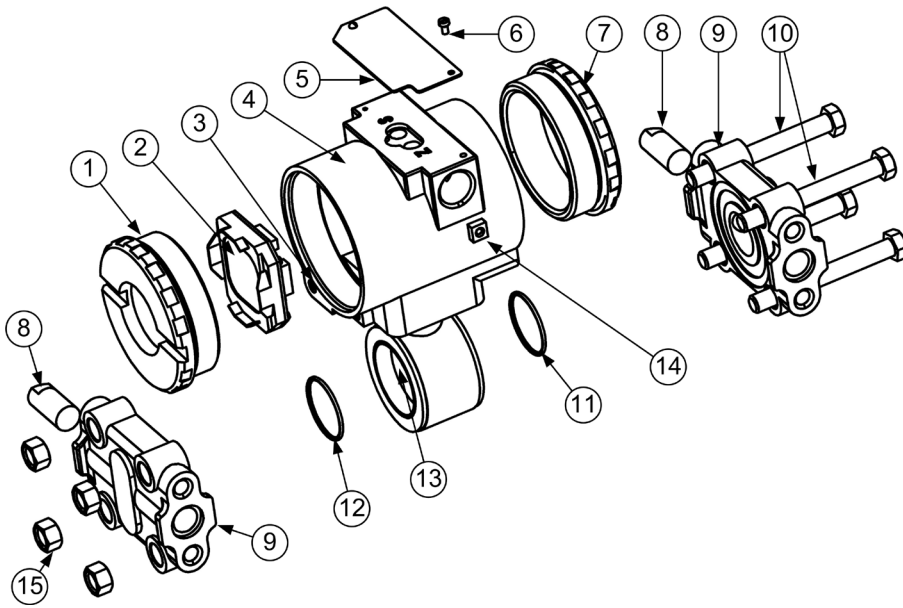
Output signal	Power supply	Load resistance	Power consumption
4...20 mA / HART®	9...44 V (DC)	$\leq [(U_S - U_{S_Min}) / 0.02 \text{ A}] \text{ Ohm}^*$	$\leq 21 \text{ mA}$
Minimum value of the supply voltage		Without HART®, U_{S_Min}	With HART®, $U_{S_Min_HART}$
With backlight off		9 V	14 V
With backlight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

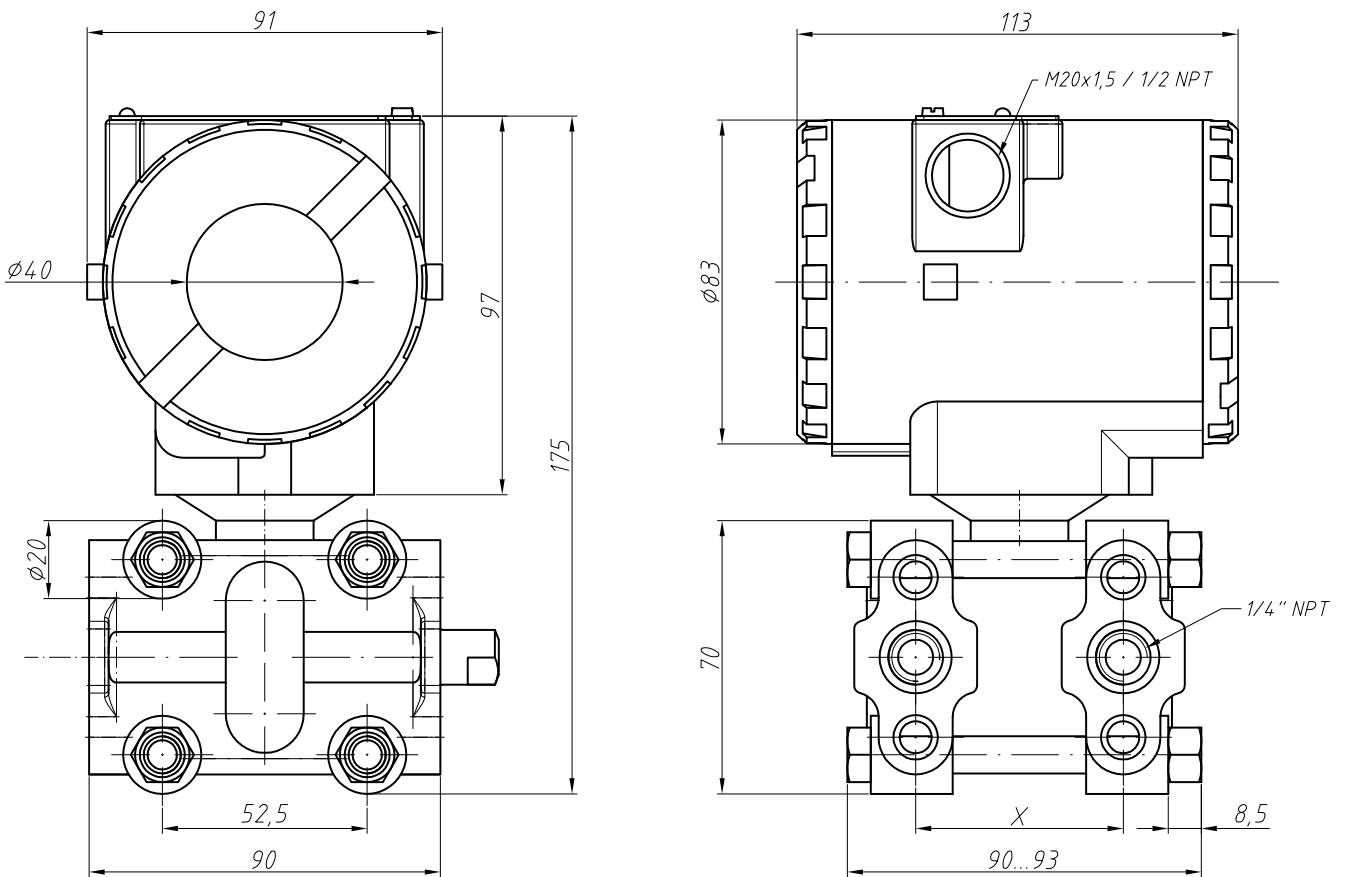
Parameter	2-wire
Maximum voltage, U_i	28 V
Maximum current, I_i	93 mA
Maximum power, P_i	660 mW
Maximum internal inductance, L_i	5 μH
Maximum internal capacitance, C_i	10 nF

COMPONENTS



- 1 – Display protective cover
- 2 – Display (orientation changes in steps of 90°)
- 3 – Locking screw
- 4 – Housing
- 5 – Identification plate
- 6 – Identification plate holding screw
- 7 – Terminal board cover
- 8 – Blanking plug(s)
- 9 – Flanges
- 10 – Flange bolts
- 11, 12 – O-rings
- 13 – Sensor
- 14 – Housing ground screw
- 15 – Clamping nuts

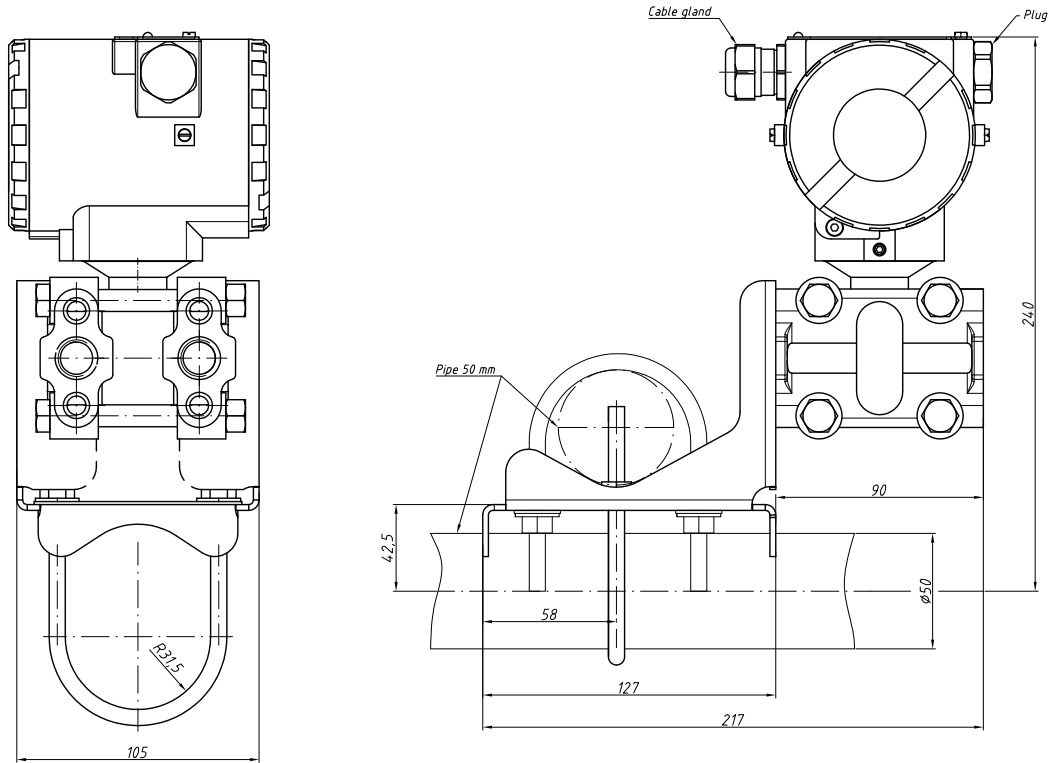
DIMENSIONS (mm)



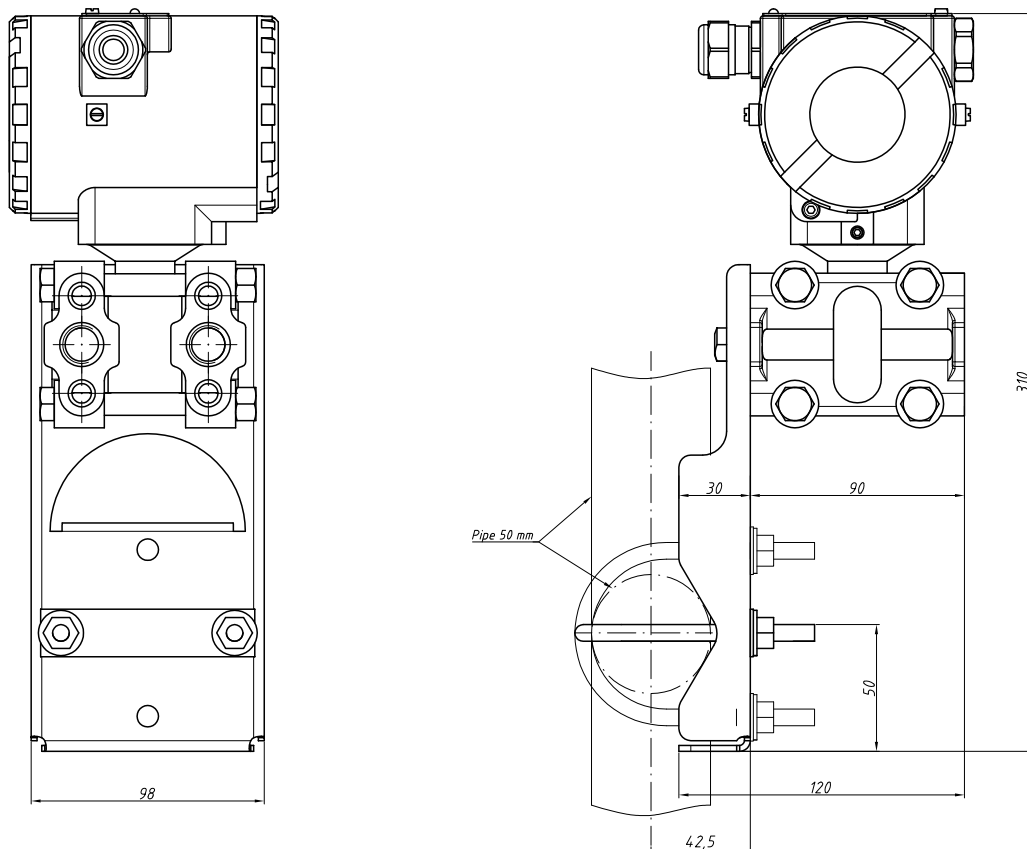
URL, kPa	1,5 - 187	690	2000	7000
X, mm	54	55	56	57

DIMENSIONS (mm)

With angled pipe bracket

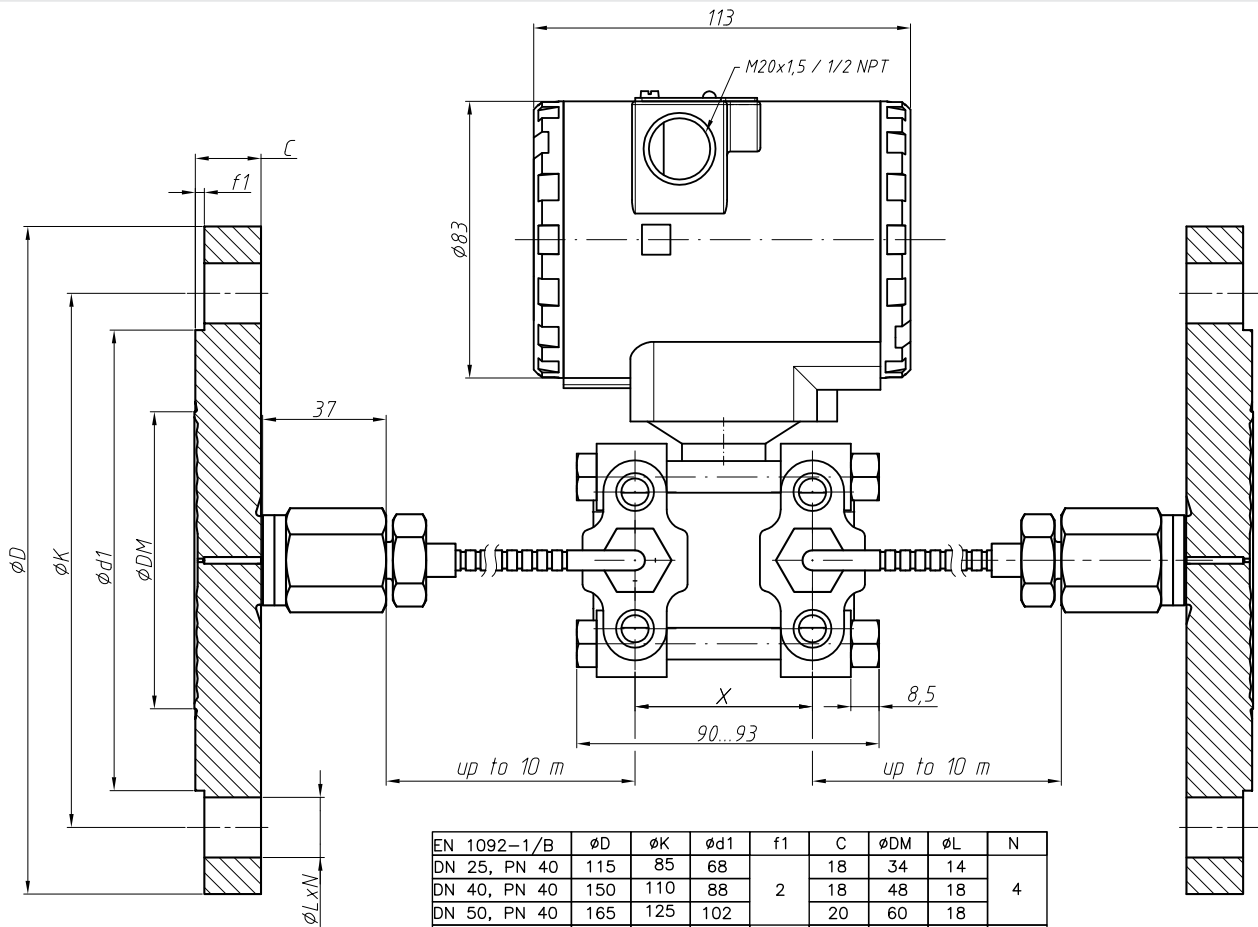


With straight pipe bracket

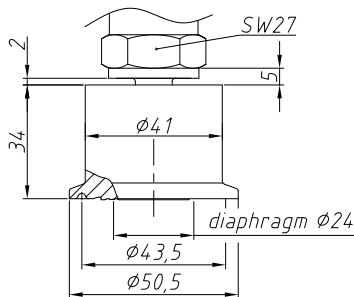


DIMENSIONS (mm)

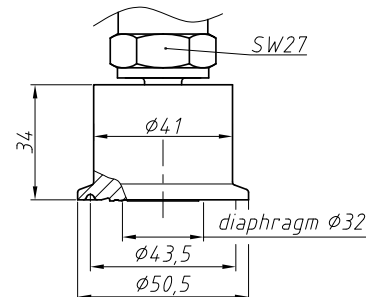
Remote diaphragm seal



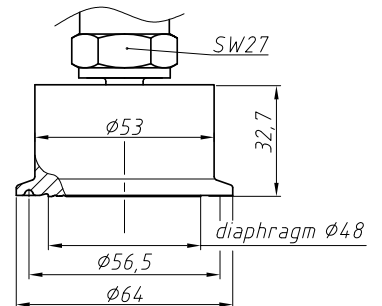
Clamping socket as per
DIN 32676 DN 25 (1")



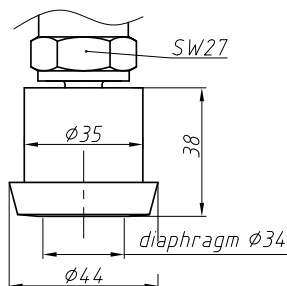
Clamping socket as per
DIN 32676 DN 40 (1 1/2")



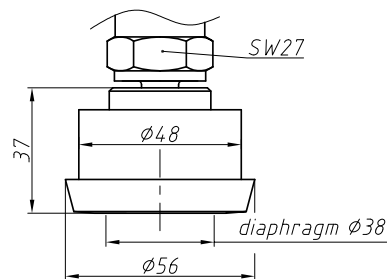
Clamping socket as per
DIN 32676 DN 50 (2")



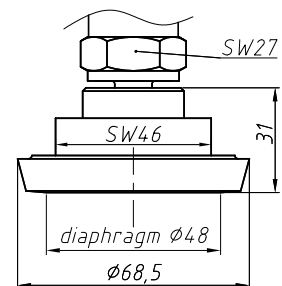
Taper socket with grooved union as per
DIN 11851 DN 25



Taper socket with grooved union as per
DIN 11851 DN 40



Taper socket with grooved union as per
DIN 11851 DN 50



ORDERING CODE

AMZ 5050		-X	-XXXX	-XX	-XX	-X	-X	-X	-X	-X	-X	-X	-X	-X	-X	-XX
MEASUREMENT TYPE		Differential	D													
UPPER RANGE LIMIT (URL)																
	1.5 kPa		1500													
	7.5 kPa		7500													
	37 kPa		3701													
	187 kPa		1872													
	690 kPa		6902													
	2 MPa		2003													
	7 MPa		7003													
	Other		XXXX													
STATIC PRESSURE																
	1 MPa (URL 1.5 kPa)		01													
	4 MPa (URL 7.5 kPa)		04													
	13.8 MPa (URL 37 kPa and above)		13													
DIAPHRAGM MATERIAL / FILL FLUID																
	Stainless steel / silicone oil		11													
FLANGE MATERIAL																
	Stainless steel 316L		S													
SEALS																
	FKM (-25...+105 °C, standard)		F													
	NBR (-25...+105 °C)		N													
	EPDM (-40...+105 °C)		E													
	PTFE (-40...+105 °C)		P													
ACCURACY																
	0.075% (URL ≥ 7.5 kPa)		Z													
	0.1% (URL = 1.5 kPa)		A													
DISPLAY																
	No		0													
	Yes		1													
DRAIN VALVES LOCATION																
	No drain valves		V													
	Opposite pressure ports		A													
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 5050	-X	-XXXX	-XX	-XX	-X	-X	-X	-X	-X	-X	-X	-X	-X	-X	-X	-XX
PRESSURE PORT																	
													1/4" NPT	4			
													1/2" NPT (with adapter)	2			
													Flange connection with optional capillary tube	RSFXXX*			
													Hygienic connection with optional capillary tube	RSHXXX*			
VALVE MANIFOLD**																	
														No	0		
														Valve manifold included	1		
														Valve manifold installed***	2		
MOUNTING KIT																	
														Not included	0		
														Pipe bracket, straight	1		
														Pipe bracket, angled	2		
VERSION																	
																Standard	00

Example: AMZ 5050-D-7003-13-11-S-F-A-1-V-N-H-2-0-1-00

* Submit separate port configuration for both H and L ports according to Table 1. A unique code will be assigned to the configuration. For example the RSF92 code was assigned to the following configuration:

H side: Flange DN 80 / PN 16; silicone oil; direct mounting; 316L diaphragm; no seal.

L side: Flange DN 80 / PN 16; silicone oil; capillary tube 3 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.

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				