

**DESCRIPTION**

APZ 3230 is based on a silicon piezoresistive sensor without media isolation diaphragm and therefore is capable of measuring very low pressures and vacuum. Compatible with non-aggressive and non-corrosive gases and low viscosity oils, APZ 3230 has a great long-term stability and reduced temperature error comparing to the traditional models with diaphragms. Dry sensor makes this model preferable in applications where media contamination with filling oil is not desirable.

**SPECIFICATIONS**

Pressure ranges: 6 mbar to 1 bar

Accuracy: up to  $\pm 0.25\%$

Outputs: 4...20 mA (option – Ex ia); 0...20 mA; 0...10 V; 0...5 V; HART®; RS-485 / Modbus RTU

Sensor: silicon piezoresistive, no media isolation

Pressure port: G1/2"; G1/4"; 1/2" NPT; 1/4" NPT; M20x1.5; other.

Media temperature: -40...+90 °C

Ambient temperature: -40...+85 °C

Optional: field housing with/without graphics display

**APPLICATIONS**

Medical equipment

Laboratory instruments

Clean rooms

HVAC

Vacuum applications

## TECHNICAL SPECIFICATIONS

### MEASURING RANGES

Pressure range, mbar Gauge	Overpressure, mbar	Burst pressure, mbar	Pressure range, mbar Gauge	Overpressure, mbar	Burst pressure, mbar
0...-1000	3000	5000	0...100	300	500
0...6.0	30	60	0...160	1000	1700
0...10	60	100	0...250	1000	1700
0...16	60	100	0...400	1000	1700
0...25	60	100	0...600	3000	5000
0...40	150	250	0...1000	3000	5000
0...60	150	250			

PERFORMANCE	P > 400 mbar	40 mbar ≤ P ≤ 400 mbar	P < 40 mbar
Accuracy, % of span*	≤ ±0.25	≤ ±0.5	≤ ±1
Temperature effect (% of span / 10 °C)	≤ ±0.1	≤ ±0.15	≤ ±0.2
Compensated range	0...+50 °C	0...+50 °C	0...+50 °C
Power supply effect	≤ ±0.05% of span / 10 V		
Load resistance effect	≤ ±0.05% of span / kOhm		
Long-term stability	≤ ±0.2% of span / year		
Response time (10...90%)	≤ 1 ms with analog output, ≤ 200 ms with digital output		

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

### OPERATING CONDITIONS

Medium temperature (depends on seal)	-40...+90 °C		
Ambient temperature	-40...+85 °C		
Storage temperature	-40...+85 °C		
Approval	0Ex ia IIC T6...T4 Ga X		
Temperature class	T4	T5	T6
Ambient temperature	-40...+80 °C	-40...+60 °C	-40...+50 °C
Vibration resistance	10 g RMS, 20–2000 Hz		
Shock resistance	100 g / 11 ms		
Service life	> 100 x 10 <sup>6</sup> cycles		

### MECHANICAL SPECIFICATIONS

Pressure port material	stainless steel 316L (1.4404)			
Housing material	stainless steel 316L (1.4404)			
Seal	EPDM (-40...+90 °C); NBR (-25...+90 °C); FKM (-25...+90 °C);			
Diaphragm	silicon, pyrex, RTV			
Wetted parts	Diaphragm, pressure port, seal			
Pressure port	G 1/2" DIN 3852 / EN 837	G 1/4" DIN 3852 / EN 837	1/2" NPT	1/4" NPT
	M20x1.5 DIN 3852 / EN 837	M16x1.5 DIN 3852 / EN 837	M12x1.5 DIN 3852 / EN 837	
	M12x1.25 DIN 3852 / EN 837	M12x1 DIN 3852 / EN 837	M10x1 DIN 3852	
<b>Electrical connection</b>	<b>Ingress protection</b>	<b>Cross section</b>	<b>Cable diameter</b>	
DIN 43650A (4 pin)	IP65	1.5 mm <sup>2</sup>	6...8 mm	
Binder 723 (5 pin)	IP67	0.75 mm <sup>2</sup>	6...8 mm	
M12x1 (5 pin)	IP67	0.75 mm <sup>2</sup>	6...8 mm	
Buccaneer (4 pin)	IP68	1.5 mm <sup>2</sup>	6...8 mm	
Cable gland, M12x1.5	IP67	0.14 mm <sup>2</sup>	5 mm	
Cable gland, stainless steel	IP68	0.14 mm <sup>2</sup>	7.5 mm	
Field housing, cable gland M20x1.5	IP67	1.5 mm <sup>2</sup>	7...10 mm	

**DIGITAL DISPLAY (only for field housing version)**

Display type	OLED 128x64 pixels (30x16 mm)
Displayed units	bar, mbar, MPa, kPa, Pa, psi, mmHg, mWc, ftH2O, %, mA, user
Displayed values range	-1999...9999
Display accuracy	0.1 % of span $\pm$ 1 digit
Settling time	< 1 s (with damping disabled)
Damping	0.3...30 s (programmable)

**ELECTRICAL SPECIFICATIONS**

Output signal	Power supply, $U_s$	Load resistance, R	Power consumption
4...20 mA / 2-wire	12...36 V	$\leq [(U_s - 12 \text{ V}) / 0.02 \text{ A}] \text{ Ohm}^*$	$\leq 26 \text{ mA}$
4...20 mA / HART®	18...42 V (with display)	$\leq [(U_s - 18 \text{ V}) / 0.02 \text{ A}] \text{ Ohm}^*$ (with display)	
4...20 mA / 3-wire	12...36 V	$\leq 500 \text{ Ohm}$	$< 7 \text{ mA}$
0...20 mA / 3-wire		$\geq 10 \text{ kOhm}$	
0...10 V / 3-wire			
0...5 V / 3-wire		$\geq 5 \text{ kOhm}$	$\leq 2 \text{ mA}$
0.5...4.5 V / 3-wire	5 V		$\leq 7 \text{ mA}$
0.5...4.5 V / 3-wire	6...15 V		$\leq 7 \text{ mA}$
RS-485 / Modbus RTU	12...36 V	-	$\leq 7 \text{ mA}$

\* For 4...20 mA / HART® output signal, minimum load resistance for digital communication: 250 Ohm.

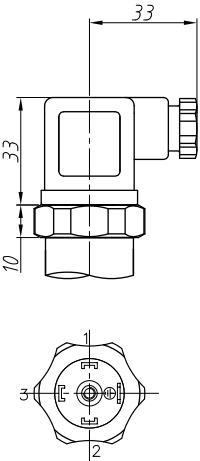
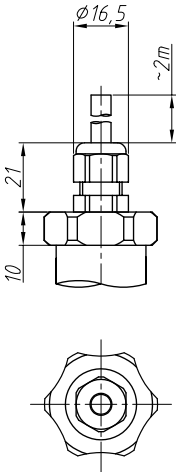
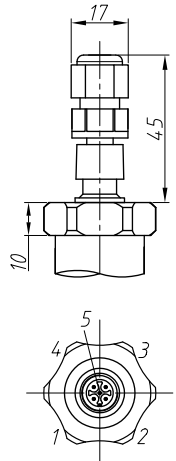
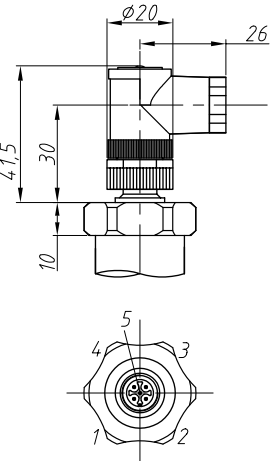
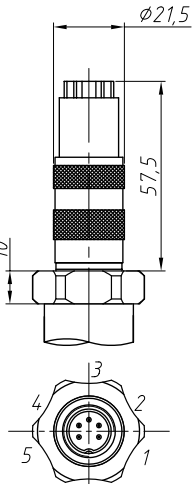
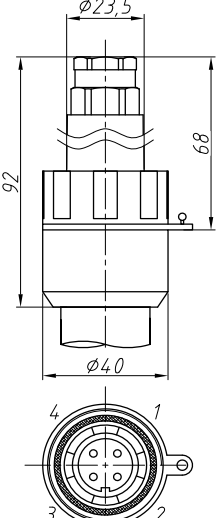
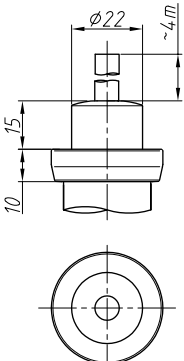
Safe values for intrinsically safe design 0Ex ia IIC T6...T4 Ga X:

Parameter	2-wire	3-wire, 4-wire
Maximum voltage, $U_i$	28 V	6 V
Maximum current, $I_i$	93 mA	60 mA
Maximum power, $P_i$	660 mW	100 mW
Maximum internal inductance, $L_i$	10 $\mu\text{H}$	10 $\mu\text{H}$
Maximum internal capacitance, $C_i$	15 nF	500 nF

**ELECTRICAL CONNECTIONS / PIN ASSIGNMENT**

Circuits		DIN 43650	M12x1	Binder 723	Buccaneer	Cable gland	Field housing with M20x1.5 cable gland
2-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	shield	GND	4	5	4	yellow-green	1
3-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	signal +	3	3	1	3	green	4
	shield	GND	4	5	4	yellow-green	1
RS-485 4-wire	power +	-	3	3	-	white	-
	power -	-	1	1	-	brown	-
	A	-	4	4	-	yellow	-
	B	-	5	5	-	green	-
	shield	-	2	2	-	yellow-green	-

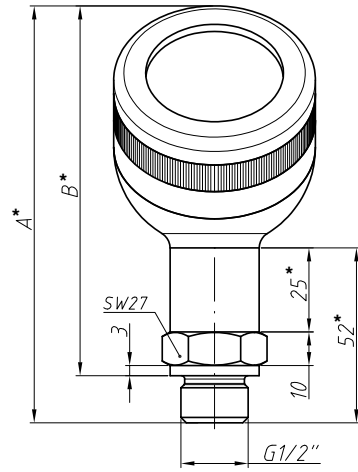
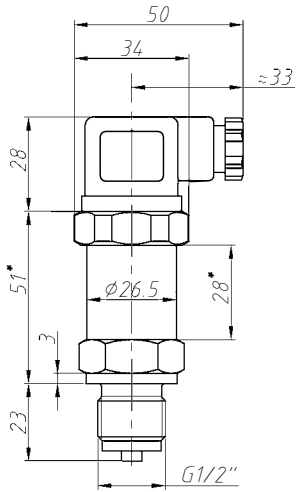
## ELECTRICAL CONNECTIONS, DIMENSIONS (mm)

DIN 43650A (IP65)	Cable gland M12x1.5 (IP67)	M12x1 straight connector (IP67)	M12x1 angular connector (IP67)
			
Binder 723 (IP67)	Buccaneer (IP68)	Stainless steel cable gland (IP68)	
			

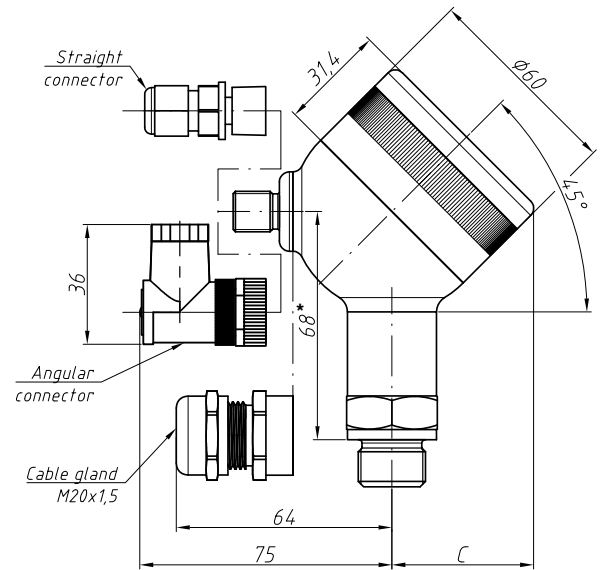
## DIMENSIONS (mm)

Standard

Field housing

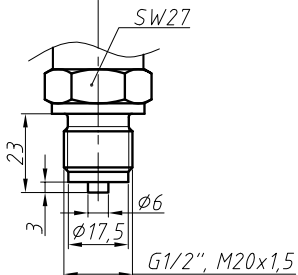
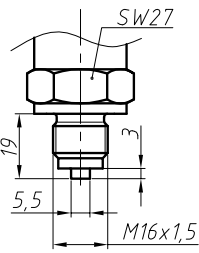
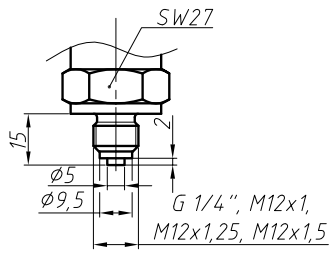
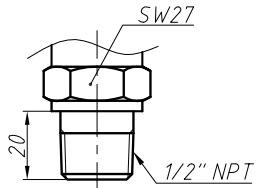
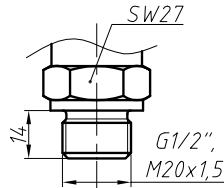
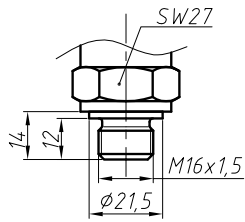
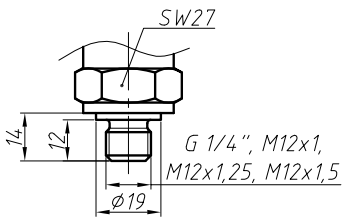
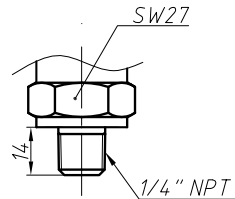
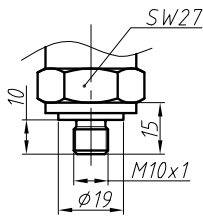


	A	B	C
with display	124	110	42
without display	121	107	39



\* Housing of Ex ia version is 25 mm longer.  
 Housing of pressure transmitter with RS485 / ModbusRTU output signal is 34 mm longer.  
 Housing of pressure transmitter with HART® output signal is 42 mm longer.

## PRESSURE PORTS, DIMENSIONS (mm)

M20x1.5; G1/2" EN 837	M16x1.5 EN 837	G1/4"; M12x1; M12x1.25 M12x1.5 EN 837
 <p>SW27</p> <p>23</p> <p>3</p> <p><math>\phi 17,5</math></p> <p><math>\phi 6</math></p> <p>G1/2", M20x1,5</p>	 <p>SW27</p> <p>19</p> <p>3</p> <p>5,5</p> <p>M16x1,5</p>	 <p>SW27</p> <p>15</p> <p>2</p> <p><math>\phi 5</math></p> <p><math>\phi 9,5</math></p> <p>G 1/4", M12x1, M12x1,25, M12x1,5</p>
1/2" NPT	M20x1.5; G1/2" DIN 3852	M16x1.5 DIN 3852
 <p>SW27</p> <p>20</p> <p>1/2" NPT</p>	 <p>SW27</p> <p>14</p> <p>G1/2", M20x1,5</p>	 <p>SW27</p> <p>14</p> <p>12</p> <p>M16x1,5</p> <p><math>\phi 21,5</math></p>
G1/4"; M12x1; M12x1.25 M12x1.5 DIN 3852	1/4" NPT	M10x1 DIN 3852
 <p>SW27</p> <p>14</p> <p>12</p> <p>G 1/4", M12x1, M12x1,25, M12x1,5</p> <p><math>\phi 19</math></p>	 <p>SW27</p> <p>14</p> <p>1/4" NPT</p>	 <p>SW27</p> <p>10</p> <p>15</p> <p>M10x1</p> <p><math>\phi 19</math></p>

ORDERING CODE				-X	-X	-XXXX	-X	-XX	-X	-XXX	-X	-XX
<b>MEASUREMENT TYPE</b>												
Gauge				G								
Vacuum, LRL = -1000 mbar				V								
<b>UNIT OF MEASUREMENT</b>												
mbar				R								
kPa				H								
Other (specify when ordering)				X								
<b>UPPER RANGE LIMIT (URL)</b>												
mbar		kPa										
6.0	6000	0.6	0600									
10	1001	1.0	1000									
16	1601	1.6	1600									
25	2501	2.5	2500									
40	4001	4.0	4000									
60	6001	6.0	6000									
100	1002	10	1001									
160	1602	16	1601									
250	2502	25	2501									
400	4002	40	4001									
600	6002	60	6001									
1000	1003	100	1002									
Other	XXXX	Other	XXXX									
<b>ACCURACY</b>												
0.25% (P > 400 mbar) (standard)				C								
0.5% (40 mbar ≤ P ≤ 400 mbar) (standard)				D								
1% (P < 40 mbar) (standard)				E								
Other (specify when ordering)				X								
<b>ELECTRICAL CONNECTION</b>												
DIN 43650A				10								
Binder 723				20								
M12x1, straight connector				30								
M12x1, angular connector				31								
Cable gland M12x1.5 + cable 2 m				40								
Stainless steel cable gland + cable 4 m				41								
Buccaneer				50								
Field housing without display, cable gland M20x1.5				60								
Field housing with display, cable gland M20x1.5				67								
Field housing with display, straight connector M12x1				64								
Field housing with display, angular connector M12x1				65								
Other (specify when ordering)				XX								
<b>OUTPUT SIGNAL</b>												
4...20 mA / 2-wire (standard)				A								
4...20 mA / 2-wire, 0Ex ia IIC T6...T4 Ga X				Q								
4...20 mA / 3-wire				B								
0...20 mA / 3-wire				C								
0...10 V / 3-wire				D								
0...5 V / 3-wire				E								
0.5...4.5 V / 3-wire, U <sub>S</sub> = 5 V, 0Ex ia IIC T6...T4 Ga X				R								
0.5...4.5 V / 3-wire, U <sub>S</sub> = 6...15 V				K								
RS-485 / Modbus RTU				M								
4...20 mA / HART®				H								
Other (specify when ordering)				X								

## ORDERING CODE (CONTINUED)

	APZ 3230	-X	-X	-XXXX	-X	-XX	-X	-XXX	-X	-XX
<b>PRESSURE PORT</b>										
								M20x1.5 DIN 3852 (standard)	200	
								M20x1.5 EN 837 (standard)	201	
								G1/2" DIN 3852 (standard)	720	
								G1/2" EN 837 (standard)	721	
								G1/4" DIN 3852 (standard)	740	
								G1/4" EN 837	741	
								M16x1.5 DIN 3852	160	
								M16x1.5 EN 837	161	
								M12x1.5 DIN 3852	122	
								M12x1.5 EN 837	123	
								M10x1 DIN 3852	100	
								M12x1 DIN 3852	120	
								M12x1 EN 837	121	
								1/4" NPT	840	
								1/2" NPT	820	
								Other (specify when ordering)	XXX	
<b>SEALS</b>										
								FKM (-25...+90 °C, standard)	F	
								NBR (-25...+90 °C)	N	
								EPDM (-40...+90 °C)	E	
								Other (specify when ordering)	X	
<b>VERSION</b>										
								Standard	00	
								Zero trim (requires ZCON 100 configurator)	01	
								Compound filled version	16	
								Other (specify when ordering)	XX	

Example: APZ 3230-G-R-4001-D-10-A-100-F-00

## ACCESSORIES

				
DZ 10 Pressure snubber	ZCON 100 Zero trim and range selection device	ANZ 200 Plug-in display for transmitters with 4-20 mA output	PZ 1024 Power supply unit	BZ 05 / BZ 10 Dry air junction box for submersible transmitters