

APZ 3421

PRECISION PRESSURE TRANSMITTER



DESCRIPTION

APZ 3421 is a high precision pressure transmitter. Based on a silicon piezoresistive sensor and electronic module with an active temperature compensation technology it features exceptional accuracy and response time. APZ 3421 features a wide variety of options such as graphics display and digital interfaces to suit virtually any high precision measurement application.

SPECIFICATIONS

Pressure ranges: 40 mbar to 600 bar

Basic accuracy $\pm 0.1\%$

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

Sensor: silicon piezoresistive

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

Media temperature: -20...+105 °C

Ambient temperature: -20...+80 °C

Optional: field housing with/without graphics display

APPLICATIONS

Test and measurements

Calibration technology

Laboratory equipment

TECHNICAL SPECIFICATIONS

MEASURING RANGES

Pressure range, bar		Overpressure, bar	Burst pressure, bar	Pressure range, bar		Overpressure, bar	Burst pressure, bar
Gauge	Absolute			Gauge	Absolute		
-1...0	-	3.0	4.0	0...6.0	0...6.0	15	20
0...0.04	-	0.3	1.0	0...10	0...10	30	40
0...0.06	-	0.3	1.0	0...16	0...16	60	80
0...0.10	-	1.0	1.5	0...25	0...25	60	80
0...0.16	-	1.0	1.5	0...40	0...40	100	150
0...0.25	0...0.25	1.0	1.5	0...60	0...60	100	150
0...0.40	0...0.40	1.0	1.5	0...100	0...100	150	230
0...0.60	0...0.60	3.0	4.0	0...160	0...160	300	450
0...1.0	0...1.0	3.0	4.0	0...250	0...250	530	780
0...1.6	0...1.6	6.0	8.0	0...400	0...400	1050	1580
0...2.5	0...2.5	6.0	8.0	0...600	0...600	1050	1580
0...4.0	0...4.0	15	20				

PERFORMANCE		P > 0.1 bar	P ≤ 0.1 bar
Accuracy, % of span*		≤ ±0.1	≤ ±0.2
Temperature effect (% of span / 10 °C)		≤ ±0.02	≤ ±0.04
Compensated range		-20...+80 °C	0...+80 °C
Compensated range (optional)		-40...+60 °C	-20...+60 °C
Power supply effect		≤ ±0.05% of span / 10 V	
Load resistance effect		≤ ±0.05% of span / kOhm (transmitters with current output)	
Long-term stability		≤ ±0.1% 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)	-20...+105 °C		
Ambient temperature	-20...+80 °C		
Storage temperature	-20...+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 ⁶ cycles		

MECHANICAL SPECIFICATIONS

Pressure port material	stainless steel 304 (1.4301) standard; 316L (1.4404) - optional			
Housing material	stainless steel 316L (1.4404)			
Seal	EPDM (-20...+105 °C); NBR (-20...+100 °C); FKM (-20...+105 °C); welded (-20...+105 °C)			
Diaphragm	stainless steel 316L (1.4435)			
Wetted parts	Diaphragm, pressure port, seal			
Pressure port	G1/2" DIN 3852 / EN 837	G1/4" 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	
	G1/2" DIN 3852 Open port	G1/2" DIN 3852 Flush diaphragm	G3/4" DIN 3852 Flush diaphragm	
	M20x1.5 DIN 3852 Open port	M20x1.5 DIN 3852 Flush diaphragm		
Electrical connection	Ingress protection	Cross section	Cable diameter	
DIN 43650A (4 pin)	IP65	1.5 mm²	6...8 mm	
Binder 723 (5 pin)	IP67	0.75 mm²	6...8 mm	
M12x1 (5 pin)	IP67	0.75 mm²	6...8 mm	
Buccaneer (4 pin)	IP68	1.5 mm²	6...8 mm	
Cable gland, M12x1.5	IP67	0.14 mm²	5 mm	
Cable gland, stainless steel	IP68	0.14 mm²	7.5 mm	
Field housing, cable gland M20x1.5	IP67	1.5 mm²	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	$\leq 500 \text{ Ohm}$	$\leq 2 \text{ mA}$
0.5...4.5 V / 3-wire	5 V	$\geq 5 \text{ kOhm}$	
0.5...4.5 V / 3-wire	6...15 V	$\geq 5 \text{ kOhm}$	$\leq 7 \text{ mA}$
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.

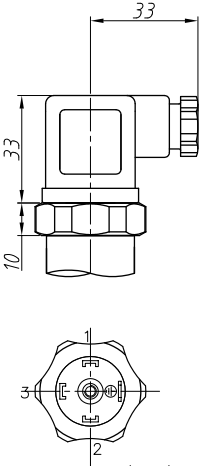
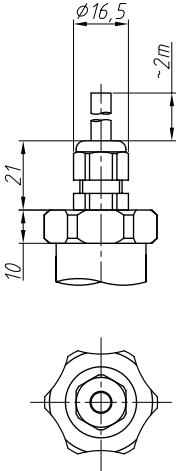
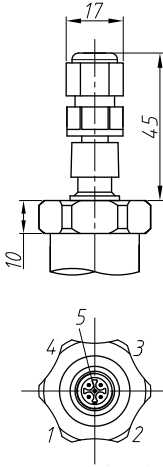
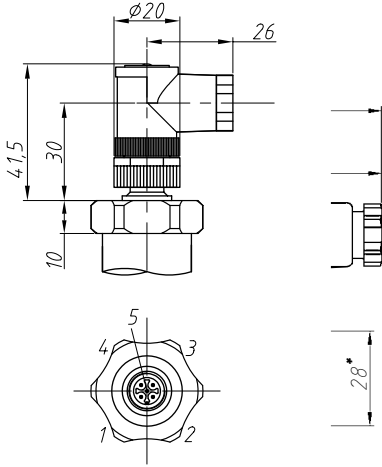
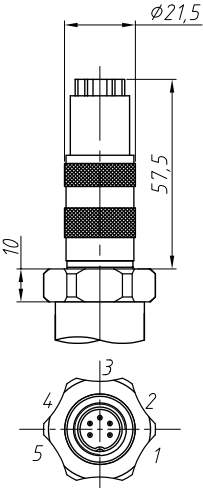
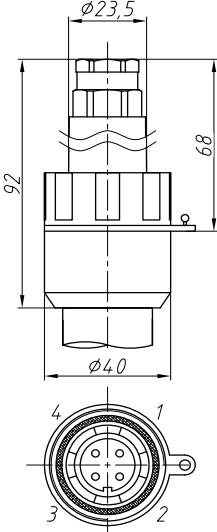
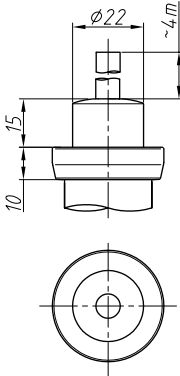
Safe values for intrinsically safe design 0Ex ia IIC T6...T4 Ga X:

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 μH	10 μH
Maximum internal capacitance, C_i	15 nF	500 nF

ELECTRICAL CONNECTIONS / PIN ASSIGNMENT

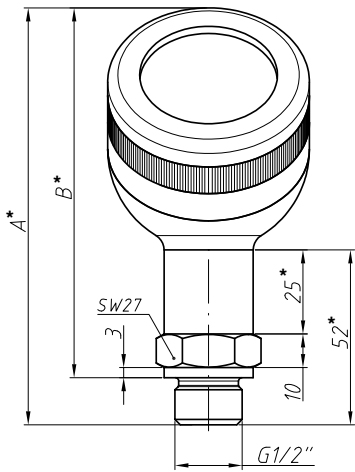
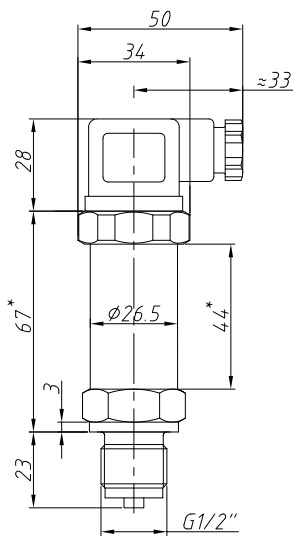
Circuits		DIN 43650	M12x1	Binder 723	Buccaneer	Cable gland	Field housing with M20x1.5 cable gland
2-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	shield	GND	4	5	4	yellow-green	1
3-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	signal +	3	3	1	3	green	4
	shield	GND	4	5	4	yellow-green	1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

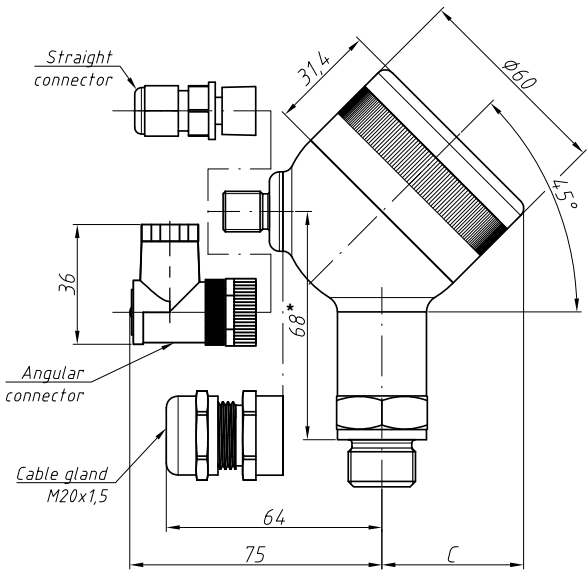
DIMENSIONS (mm)

Standard



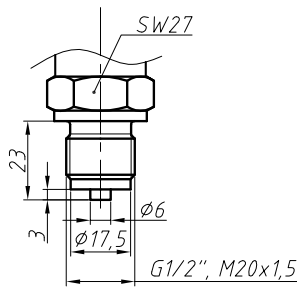
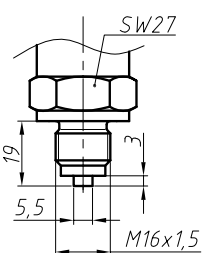
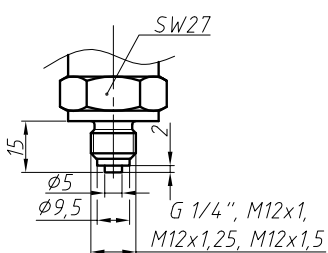
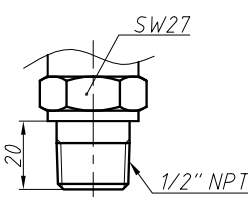
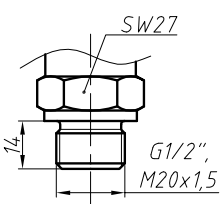
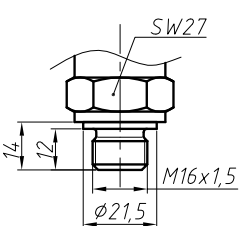
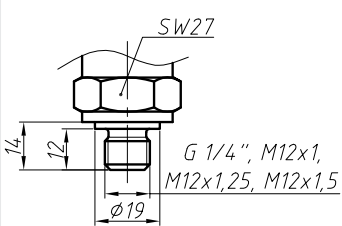
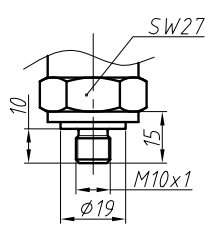
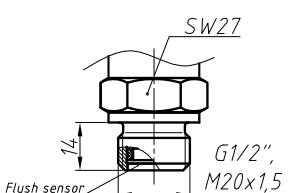
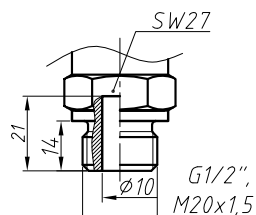
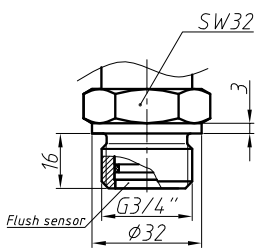
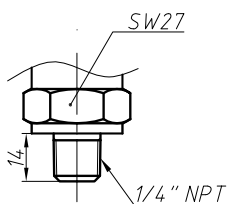
	A	B	C
with display	124	110	42
without display	121	107	39

Field housing



*Housing of Ex ia version is 9 mm longer.
Housing of pressure transmitter with RS485 / ModbusRTU output signal is 18 mm longer.
Housing of pressure transmitter with HART® output signal is 26 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	1/2" NPT
 SW27 23 3 Ø6 Ø17,5 G1/2", M20x1,5	 SW27 19 3 5,5 M16x1,5	 SW27 15 2 Ø5 Ø9,5 G 1/4", M12x1, M12x1,25, M12x1,5	 SW27 20 1/2" NPT
M20x1.5; G1/2" DIN 3852	M16x1.5 DIN 3852	G1/4"; M12x1; M12x1.25 M12x1.5 DIN 3852	M10x1 DIN 3852
 SW27 14 G1/2", M20x1,5	 SW27 14 12 M16x1,5 Ø21,5	 SW27 14 12 G 1/4", M12x1, M12x1,25, M12x1,5 Ø19	 SW27 10 15 M10x1 Ø19
M20x1.5; G1/2" DIN 3852 Flush diaphragm	M20x1.5; G1/2" DIN 3852 Open port	G3/4" DIN 3852 Flush diaphragm	1/4" NPT
 SW27 14 G1/2", M20x1,5 Flush sensor	 SW27 21 14 Ø10 G1/2", M20x1,5	 SW32 3 16 G3/4" Ø32 Flush sensor	 SW27 14 1/4" NPT

ORDERING CODE

APZ 3421		-X	-X	-XXXX	-X	-XX	-X	-XXX	-X	-XX
MEASUREMENT TYPE										
Gauge		G								
Absolute		A								
Vacuum, LRL = -1 bar		V								
UNIT OF MEASUREMENT										
bar		B								
kg/cm ²		S								
mH ₂ O		W								
kPa		K								
MPa		M								
Other (specify when ordering)		X								
UPPER RANGE LIMIT (URL)										
bar, kg/cm ²		mH ₂ O		kPa		MPa				
0.04	0040	0.4	0400	4.0	4000					
0.06	0060	0.6	0600	6.0	6000					
0.10	0100	1.0	1000	10	1001					
0.16	0160	1.6	1600	16	1601					
0.25	0250	2.5	2500	25	2501					
0.40	0400	4.0	4000	40	4001					
0.60	0600	6.0	6000	60	6001					
1.0	1000	10	1001	100	1002	0.1	0100			
1.6	1600	16	1601	160	1602	0.16	0160			
2.5	2500	25	2501	250	2502	0.25	0250			
4.0	4000	40	4001	400	4002	0.4	0400			
6.0	6000	60	6001	600	6002	0.6	0600			
10	1001	100	1002	1000	1003	1	1000			
16	1601	160	1602	Other	XXXX	1.6	1600			
25	2501	250	2502			2.5	2500			
40	4001	400	4002			4	4000			
60	6001	Other	XXXX			6	6000			
100	1002					10	1001			
160	1602					16	1601			
250	2502					25	2501			
Other	XXXX					Other	XXXX			
ACCURACY										
0.1% (P > 0.1 bar) (standard)		A								
0.2% (P ≤ 0.1 bar) (standard)		B								
Other (specify when ordering)		X								
ELECTRICAL CONNECTION										
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								

ORDERING CODE (CONTINUED)

APZ 3421		-X	-X	-XXXX	-X	-XX	-X	-XXX	-X	-XX
OUTPUT SIGNAL										
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				
0.5...4.5 V / 3-wire, U _s = 5 V, 0Ex ia IIC T6...T4 Ga X						R				
0.5...4.5 V / 3-wire, U _s = 6...15 V						K				
RS-485 / Modbus RTU						M				
4...20 mA / HART®						H				
Other (specify when ordering)						X				
PRESSURE PORT										
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				
M10x1 DIN 3852						100				
M12x1 DIN 3852						120				
M12x1 EN 837						121				
M12x1.5 DIN 3852						122				
M12x1.5 EN 837						123				
M16x1.5 DIN 3852						160				
M16x1.5 EN 837						161				
G3/4" DIN 3852 Flush diaphragm						735				
G1/2" DIN 3852 Flush diaphragm						725				
G1/2" DIN 3852 Open port						726				
M20x1.5 DIN 3852 Flush diaphragm						205				
M20x1.5 DIN 3852 Open port						206				
1/4" NPT						840				
1/2" NPT						820				
M12x1.25 DIN 3852						127				
M12x1.25 EN 837						128				
Other (specify when ordering)						XXX				
SEALS										
FKM (-20...+125 °C) (standard)							F			
NBR (-20...+100 °C)							N			
EPDM (-20...+105 °C)							E			
Welded sensor (no seal -20...+105 °C)							W			
Other (specify when ordering)							X			
VERSION										
						Standard		00		
Zero trim (requires ZCON 100 configurator)								01		
Temperature compensated in the range of -20...+60 °C								26		
Compound filled version								16		
Other (specify when ordering)								XX		

Example: APZ 3421-G-B-4001-A-10-A-200-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
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