



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...+85 °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)	-20...+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...+85 °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 316L (1.4404)			
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 mm ²	6...8 mm	
Binder 723 (5 pin)	IP67	0.75 mm ²	6...8 mm	
M12x1 (5 pin)	IP67	0.75 mm ²	6...8 mm	
Buccaneer (4 pin)	IP68	1.5 mm ²	6...8 mm	
Cable gland, M12x1.5	IP67	0.14 mm ²	5 mm	
Cable gland, stainless steel	IP68	0.14 mm ²	7.5 mm	
Field housing, cable gland M20x1.5	IP67	1.5 mm ²	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

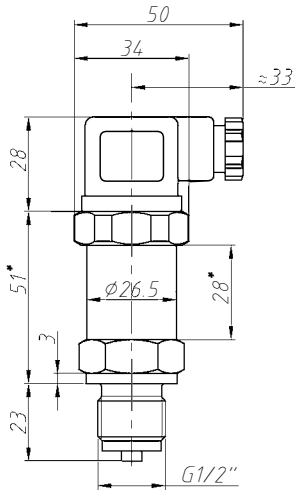
Circuits		DIN 43650	M12x1	Binder 723	Buccaneer	Cable gland	Field housing with M20x1.5 cable gland
2-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	shield	GND	4	5	4	yellow-green	1
3-wire	power +	1	1	3	1	white	2
	power -	2	2	4	2	brown	3
	signal +	3	3	1	3	green	4
	shield	GND	4	5	4	yellow-green	1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

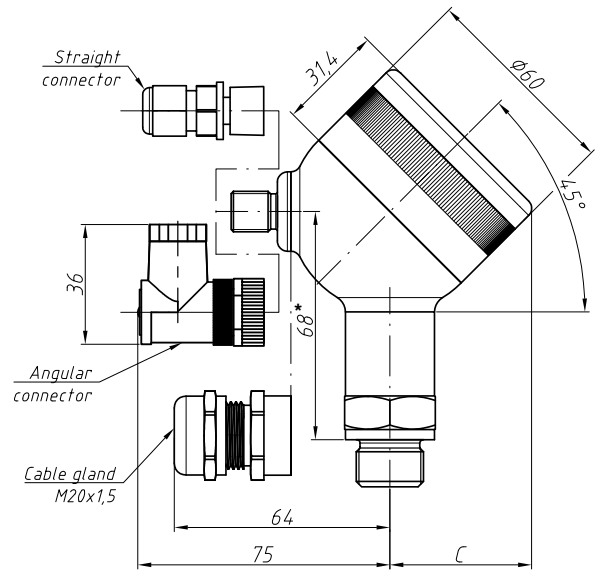
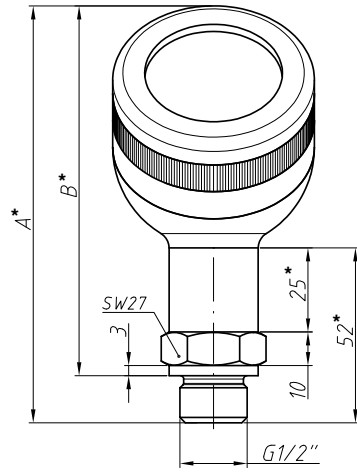
DIN 43650A (IP65)	Cable gland M12x1.5 (IP67)	M12x1 straight connector (IP67)	M12x1 angular connector (IP67)
<p>Technical drawing of DIN 43650A connector. Side view shows a height of 33 mm and a width of 33 mm. The base diameter is 10 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>	<p>Technical drawing of Cable gland M12x1.5 (IP67). Side view shows a diameter of $\phi 16,5$ mm, a height of 21 mm, and a base diameter of 10 mm. A detail shows a length of $\sim 2\text{mm}$. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>	<p>Technical drawing of M12x1 straight connector (IP67). Side view shows a diameter of 17 mm, a height of 4.5 mm, and a base diameter of 10 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>	<p>Technical drawing of M12x1 angular connector (IP67). Side view shows a diameter of $\phi 20$ mm, a height of 26 mm, and a base diameter of 10 mm. The total height is 41.5 mm, and the distance from the base to the top of the connector is 30 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>
Binder 723 (IP67)	Buccaneer (IP68)	Stainless steel cable gland (IP68)	
<p>Technical drawing of Binder 723 connector. Side view shows a diameter of $\phi 21,5$ mm, a height of 57.5 mm, and a base diameter of 10 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, 4, and 5.</p>	<p>Technical drawing of Buccaneer connector. Side view shows a diameter of $\phi 23,5$ mm, a height of 92 mm, a diameter of $\phi 40$ mm at the base, and a small protrusion of 6 mm. A detail shows a height of 68 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>	<p>Technical drawing of Stainless steel cable gland (IP68). Side view shows a diameter of $\phi 22$ mm, a height of $\sim 4\text{mm}$, a distance of 15 mm from the base to the top of the gland, and a base diameter of 10 mm. The front view shows a hexagonal base with four terminals labeled 1, 2, 3, and 4.</p>	

DIMENSIONS (mm)

Standard



Field housing



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

- * Housing of pressure transmitter with welded sensor is 8 mm longer.
- 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.
- Housing of pressure transmitter with URL < 40 kPa is 16 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
M20x1.5; G1/2" DIN 3852	M16x1.5 DIN 3852	G1/4"; M12x1; M12x1.25 M12x1.5 DIN 3852	M10x1 DIN 3852
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

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