



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 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.

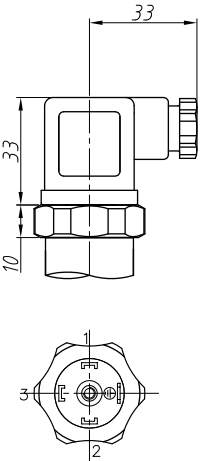
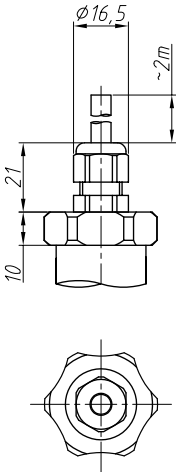
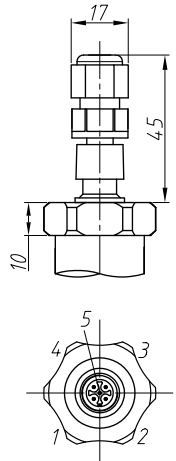
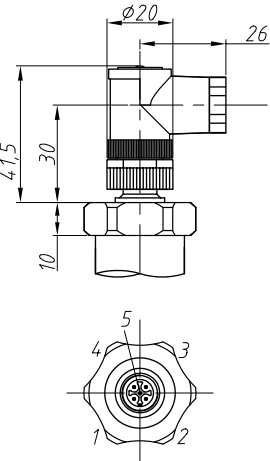
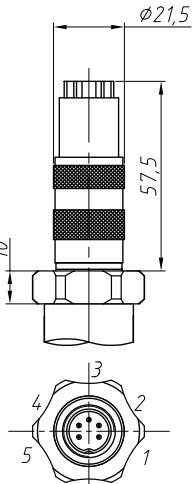
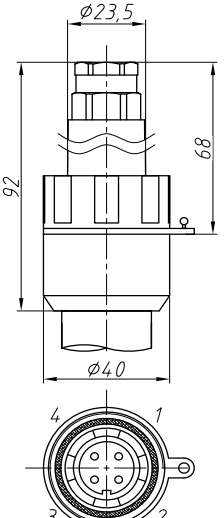
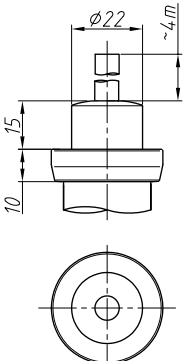
Safe values for intrinsically safe design 0Ex ia IIC T6...T4 Ga X:

| 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

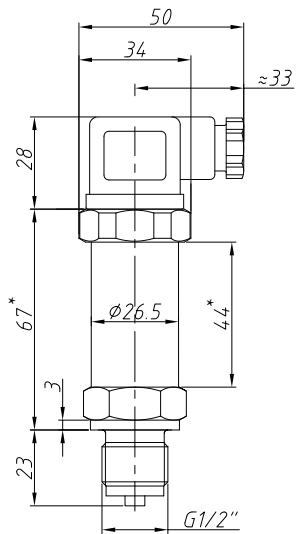
| Circuits | | DIN 43650 | M12x1 | Binder 723 | Buccaneer | Cable gland | Field housing with M20x1.5 cable gland |
|---------------|----------|-----------|-------|------------|-----------|--------------|--|
| 2-wire | power + | 1 | 1 | 3 | 1 | white | 2 |
| | power - | 2 | 2 | 4 | 2 | brown | 3 |
| |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

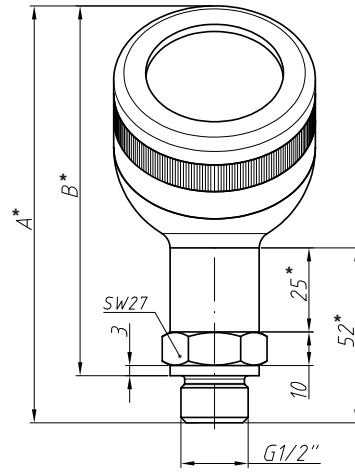
| DIN 43650A (IP65) | Cable gland M12x1.5 (IP67) | M12x1 straight connector (IP67) | M12x1 angular connector (IP67) |
|--|--|--|---|
|  |  |  |  |
| Binder 723 (IP67) | Buccaneer (IP68) | Stainless steel cable gland (IP68) | |
|  |  |  | |

DIMENSIONS (mm)

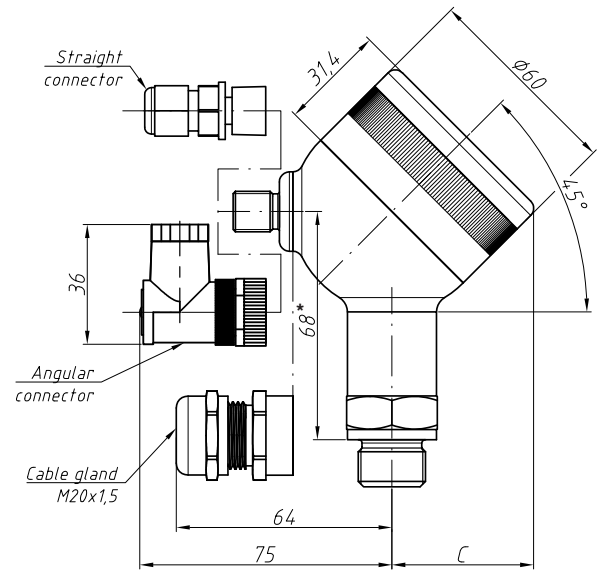
Standard



Field housing



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



*Housing of Ex ia version is 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 |
|---|-----------------------------------|---|----------------|
| | | | |
| 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 |