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# APZ 3420 s

## SANITARY PRESSURE TRANSMITTER WITH FLUSH DIAPHRAGM

## DESCRIPTION

APZ 3420 s is a sanitary version of our standard pressure transmitter with the flush diaphragm. All-welded design and smooth surfaces ensure absence of zones for potential contaminants collection. Process connection options of taper socket with grooved union nut as per DIN 11851 and clamping socket as per DIN 32676 provide quick disconnection for diaphragm cleaning. Optionally, APZ 3420 s can be equipped with a heat sink element for high temperature media applications.

## SPECIFICATIONS

Pressure ranges: 100 mbar to 40 bar
Basic accuracy: up to ±0.25%
Outputs: 4...20 mA (Ex ia optional); 0...20 mA; 0...10 V; 0...5 V; HART®; RS-485 / Modbus RTU; other
Sensor: silicon piezoresistive
Pressure port: taper socket with groved union per as DIN 11851, clamping socket as per DIN 32676, Tri-Clamp; other
Fill fluid: Food grade oil, FDA approved*
Media temperature: -20…+125 °C (up to +300 °C with heat sink option)
Ambient temperature: -20…+85 °C
Optional: field housing with/without graphics display
Optional: heat sink (up to +300 °C)
Optional: pressure port with optional capillary tube

## APPLICATIONS

Food and beverage plants
Pharmaceutical plants
Biotechnology industry
Cosmetics manufacturing

* Upon request

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## TECHNICAL SPECIFICATIONS

### MEASURING RANGES

| Pressure range, bar | | Overpressure, bar | Burst pressure, bar |
|---|---|---|---|
| Gauge | Absolute | | |
| -1...0 | - | | |
| 0...0.1 | - | 1.0 | 1.5 |
| 0...0.16 | - | 1.0 | 1.5 |
| 0...0.25 | 0...0.25 | 1.0 | 1.5 |
| 0...0.40 | 0...0.40 | 1.0 | 1.5 |
| 0...0.60 | 0...0.60 | 3.0 | 4.0 |
| 0...1.0 | 0...1.0 | 3.0 | 4.0 |
| 0...1.6 | 0...1.6 | 6.0 | 8.0 |

| Pressure range, bar | | Overpressure, bar | Burst pressure, bar |
|---|---|---|---|
| Gauge | Absolute | | |
| 0...2.5 | 0...2.5 | 6.0 | 8.0 |
| 0...4.0 | 0...4.0 | 15 | 20 |
| 0...6.0 | 0...6.0 | 15 | 20 |
| 0...10 | 0...10 | 30 | 40 |
| 0...16 | 0...16 | 60 | 80 |
| 0...25 | 0...25 | 60 | 80 |
| 0...40 | 0...40 | 100 | 150 |

| PERFORMANCE | P > 0.4 bar | P ≤ 0.4 bar |
|---|---|---|
| Accuracy, % of span* | ≤ ±0.25 (standard) / 0.20 (option) | ≤ ±0.5 (standard) |
| Temperature effect (% of span / 10 °C) | ≤ ±0.15 | ≤ ±0.25 |
| Compensated range | -20…+80 °C | 0…+80 °C |
| Compensated range (option) | -40…+60 °C | -40…+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%) | ≤ 5 ms with analog output, ≤ 200 ms with digital output | |

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

### OPERATING CONDITIONS

| | | | |
|---|---|---|---|
| Medium temperature | -20...+125 °C; option: -20...+150 °C, 0...+300 °C (depends on diaphragm seal design and fill fluid) | | |
| 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 | -20…+80 °C | -20…+60 °C | -20…+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 | FKM; EPDM; NBR |
| Diaphragm | stainless steel 316L (1.4435) |
| Wetted parts | diaphragm, process connection, seals |
| Pressure port | clamping socket as per DIN 32676: DN 25 (1″) / DN 40 (1 1/2″) / DN 50 (2″);<br>taper socket with groved union as per DIN 11851: DN 25 / DN 40 / DN 50;<br>G 1″ DIN 3852 Flush diaphragm, EHEDG |

| 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 |

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## 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 ± 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 | ≤ [($U_S$ – 12 V) / 0.02 A] Ohm* | ≤ 26 mA |
| 4…20 mA / HART® | 18…42 V (with display) | ≤ [($U_S$ – 18 V) / 0.02 A] Ohm* (with display) | |
| 4…20 mA / 3-wire | 12…36 V | ≤ 500 Ohm | |
| 0…20 mA / 3-wire | | | |
| 0…10 V / 3-wire | | ≥ 10 kOhm | < 7 mA |
| 0…5 V / 3-wire | | ≥ 5 kOhm | |
| 0.5…4.5 V / 3-wire | 5 V | | ≤ 2 mA |
| 0.5…4.5 V / 3-wire | 6…15 V | | ≤ 7 mA |
| RS-485 / Modbus RTU | 12…36 V | - | ≤ 7 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:

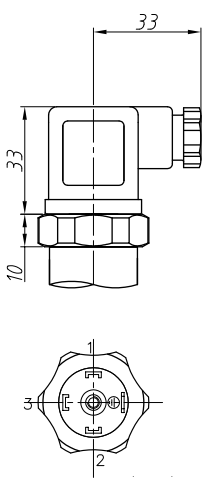
| Parameter | 2-wire | 3-wire, 4-wire |
|---|---|---|
| Maximum voltage, Ui | 28 V | 6 V |
| Maximum current, Ii | 93 mA | 60 mA |
| Maximum power, Pi | 660 mW | 100 mW |
| Maximum internal inductance, Li | 10 µH | 10 µH |
| Maximum internal capacitance, Ci | 15 nF | 500 nF |

## ELECTRICAL CONNECTIONS / PIN ASSIGNMENT

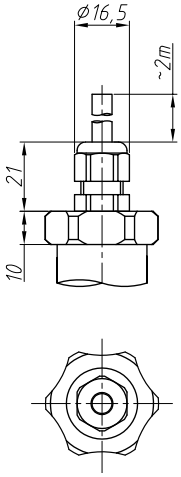
| Circuits | | DIN 43650 | M12x1 | Binder 723 | Buccaneer | Cable gland | Field housing with M20x1.5 cable gland |
|---|---|---|---|---|---|---|---|
| 2-wire | power + | 1 | 1 | 3 | 1 | white | 2 |
| | power - | 2 | 2 | 4 | 2 | brown | 3 |
| | shield | GND | 4 | 5 | 4 | yellow-green | 1 |
| 3-wire |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

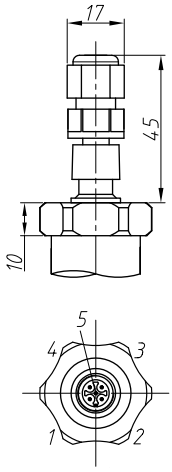
DIN 43650A (IP65)



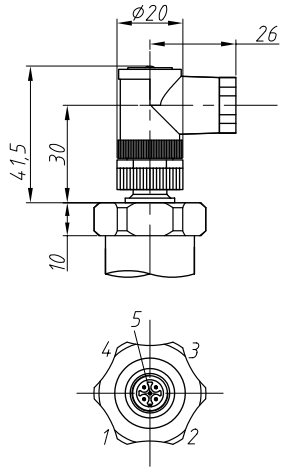

Cable gland M12x1.5 (IP67)



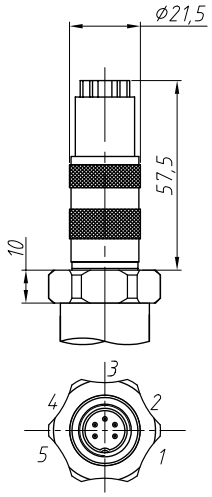

M12x1 straight connector (IP67)



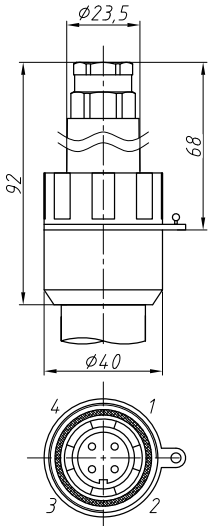

M12x1 angular connector (IP67)



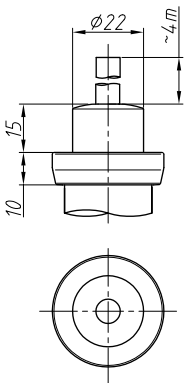

Binder 723 (IP67)




Buccaneer (IP68)

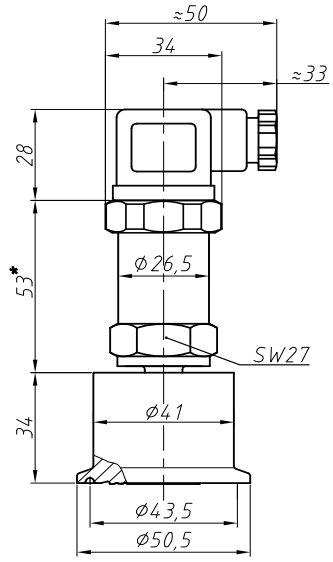



Stainless steel cable gland (IP68)

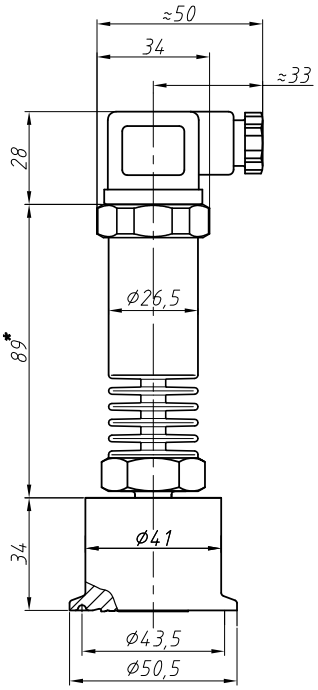


## DIMENSIONS (mm)

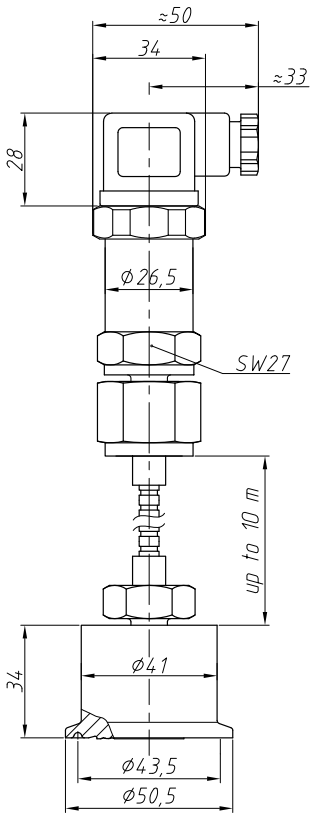
Standard



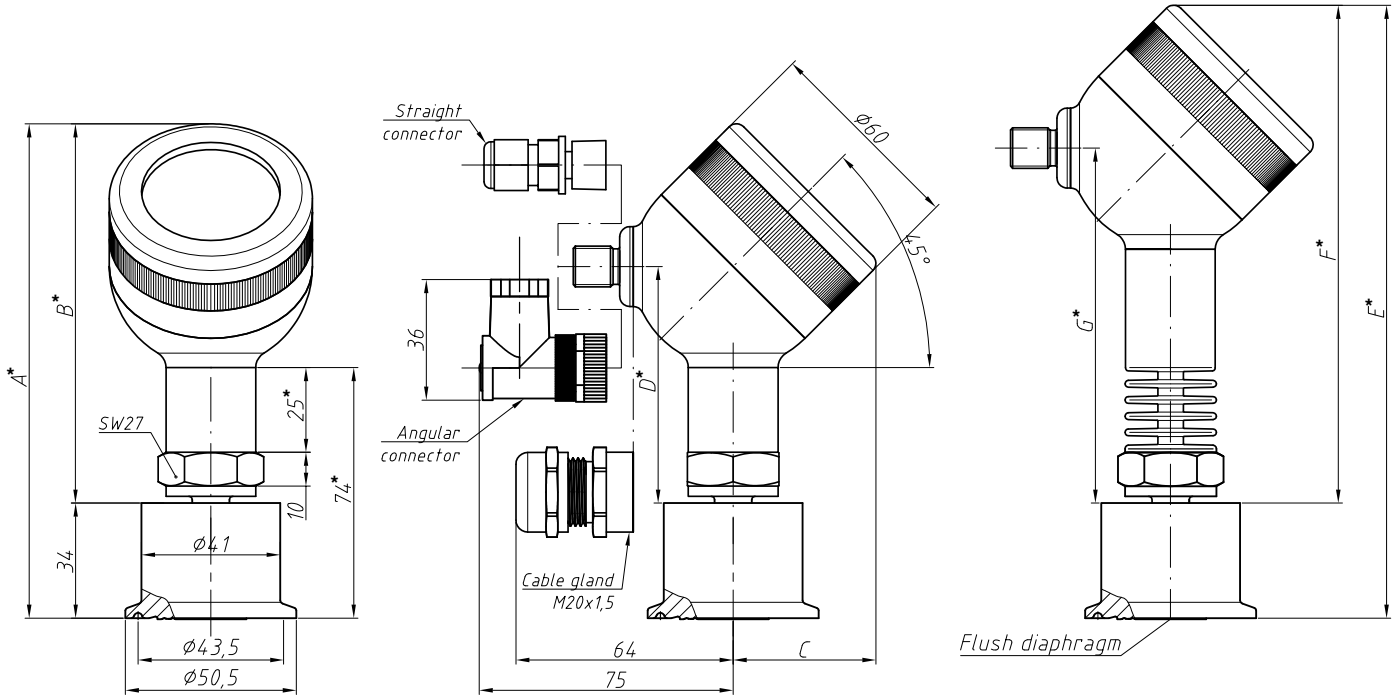

With heat sink




Remote diaphragm seal




Field housing

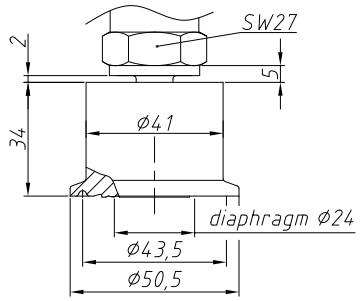



| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| with display | 146 | 112 | 42 | 70 | 181 | 147 | 105 |
| without display | 143 | 109 | 39 | 70 | 178 | 144 | 105 |

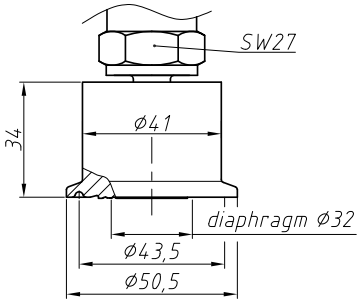
* Housing of Ex ia version is 25 mm longer.
Housing of pressure transmitter with RS485 / ModbusRTU output signal is 34 mm longer.
Housing of pressure transmitter with HART® output signal is 42 mm longer.

## PRESSURE PORTS, DIMENSIONS (mm)

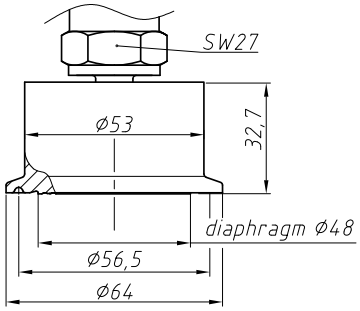
Clamping socket as per DIN 32676 DN 25 (1″)



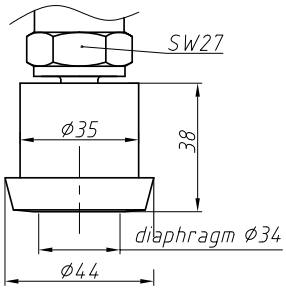

Clamping socket as per DIN 32676 DN 40 (1 1/2″)



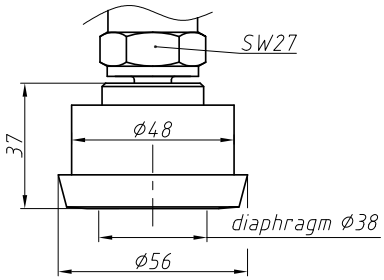

Clamping socket as per DIN 32676 DN 50 (2″)



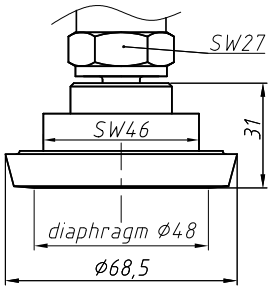

Taper socket with grooved union as per DIN 11851 DN 25



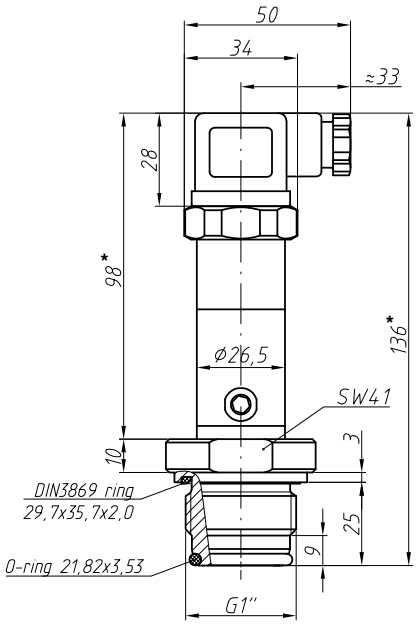

Taper socket with grooved union as per DIN 11851 DN 40




Taper socket with grooved union as per DIN 11851 DN 50




G1″ Flush diaphragm, EHEDG



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## ORDERING CODE

| APZ 3420 s | -X | -X | -XXXX | -X | -XX | -X | -XXX | -X | -XX |
|---|---|---|---|---|---|---|---|---|---|
| **MEASUREMENT TYPE** | | | | | | | | | |
| Gauge | G | | | | | | | | |
| Absolute (0.25 ≤ P ≤ 40 bar) | A | | | | | | | | |
| Vacuum, LRL = -1 bar | V | | | | | | | | |
| **UNIT OF MEASUREMENT** | | | | | | | | | |
| bar | | B | | | | | | | |
| kg/cm² | | S | | | | | | | |
| $mH_2O$ | | W | | | | | | | |
| kPa | | H | | | | | | | |
| Other (specify when ordering) | | X | | | | | | | |

**UPPER RANGE LIMIT (URL)**

| bar, kg/cm² | | $mH_2O$ | | kPa | |
|---|---|---|---|---|---|
| 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 |
| 1.6 | 1600 | 16 | 1601 | 160 | 1602 |
| 2.5 | 2500 | 25 | 2501 | 250 | 2502 |
| 4.0 | 4000 | 40 | 4001 | 400 | 4002 |
| 6.0 | 6000 | 60 | 6001 | 600 | 6002 |
| 10 | 1001 | 100 | 1002 | 1000 | 1003 |
| 16 | 1601 | 160 | 1602 | Other | XXXX |
| 25 | 2501 | 250 | 2502 | | |
| 40 | 4001 | Other | XXXX | | |
| Other | XXXX | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ACCURACY** | | | | | | | | | |
| 0.25% (P > 0.4 bar) (standard) | | | | C | | | | | |
| 0.50% (P ≤ 0.4 bar) (standard) | | | | D | | | | | |
| 0.20% (P > 0.4 bar) | | | | 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 | | | | |
| **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…20 mA / 3-wire | | | | | | C | | | |
| 0…5 mA / 3-wire | | | | | | S | | | |
| 0…10 V / 3-wire | | | | | | D | | | |
| 0…5 V / 3-wire | | | | | | E | | | |
| 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 | | | |

## ORDERING CODE (CONTINUED)

| APZ 3420 s | -X | -X | -XXXX | -X | -XX | -X | -XXX | -X | -XX |
|---|---|---|---|---|---|---|---|---|---|
| **PRESSURE PORT** | | | | | | | | | |
| Clamping socket as per DIN 32676 1″/DN 25 (0.6 ≤ P ≤ 16 bar) | | | | | | | C25 | | |
| Clamping socket as per DIN 32676 1 1/2″/DN 40 (0.1 ≤ P ≤ 16 bar) | | | | | | | C40 | | |
| Clamping socket as per DIN 32676 2″/DN 50 (0.1 ≤ P ≤ 16 bar) | | | | | | | C50 | | |
| Taper socket with groved union as per DIN 11851 DN 25 (0.6 ≤ P ≤ 40 bar) | | | | | | | M25 | | |
| Taper socket with groved union as per DIN 11851 DN 40 (0.1 ≤ P ≤ 40 bar) | | | | | | | M40 | | |
| Taper socket with groved union as per DIN 11851 DN 50 (0.1 ≤ P ≤ 25 bar) | | | | | | | M50 | | |
| G 1″ DIN 3852 Flush diaphragm (0.1 ≤ P ≤ 40 bar), EHEDG | | | | | | | 719 | | |
| Hygienic connection with optional capillary tube | | | | | | | RSHXXX** | | |
| Other (specify when ordering) | | | | | | | XXX | | |
| **DIAPHRAGM SEAL FILL FLUID** | | | | | | | | | |
| Silicone oil (-40...+ 150 °C)* | | | | | | | | S | |
| Food grade oil (-20...+ 150 °C)* | | | | | | | | F | |
| High temperature silicone oil (0...+ 300 °C)* | | | | | | | | T | |
| Other (specify when ordering) | | | | | | | | X | |
| **VERSION** | | | | | | | | | |
| Standard (up to +125 °C)* | | | | | | | | | 00 |
| Zero trim for 4...20 mA / 2-wire output (requires ZCON 100 configurator) | | | | | | | | | 01 |
| Heat sink (for high-temperature media up to +300 °C)* | | | | | | | | | 30 |
| Temperature compensated in the range of -40...+60 °C | | | | | | | | | 46 |
| Compound filled version | | | | | | | | | 16 |
| Other (specify when ordering) | | | | | | | | | XX |

* Maximum operating temperature of the transmitter is the minimal value of the two determined by the diaphragm seal, fill fluid and the version (standard, with a radiator). Minimal operating temperature of the transducer is that of the fill fluid.
** Select parameters from Table 1. A unique code will be assigned to this combination. For example the RSH4 code was assigned to a combination flange DN 50 / PN 40, capillary tube 6 m, 316L diaphragm, no seal.

Table 1

| Diaphragm seal | Size | Fill fluid | Capillary tube length | Diaphragm material |
|---|---|---|---|---|
| RSH – Hygienic | DIN 32676:<br>Clamp DN 25 (1″), DN 40 (1½″), DN 50 (2″)<br>DIN 11851:<br>DN 25, DN 40, DN 50. | Silicone oil,<br>High temperature silicone oil,<br>Food grade oil | Direct mounting,<br>With capillary tube – length 0.5 to 10 m | 316L stainless steel |

Example: APZ 3420 s-G-B-4001-B-10-A-C50-S-00 A

## 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