

SATRON VT pressure transmitter

BPV710
March 1, 2005

SATRON VT pressure transmitter belongs to the series V-transmitters which will have both analog and smart properties. SATRON VT is used for 0-26,5 kPa...0-100 MPa ranges. The transmitter communicates in a 2-wire system. In pressure measuring applications SATRON VT-transmitters are used for measuring the pressure of clean gases, steam and non-crystallizing liquids. The transmitter's sensor is piezoresistive. The rangeability is 25:1. The transmitter communicates digitally using the HART® protocol.



TECHNICAL SPECIFICATIONS

Measuring range and span

See Selection Chart.

Zero and Span adjustment

Zero elevation: Calibrated span is freely selectable on the specified range depending from the desired option.

This can be made by using external control shafts (analog option), keyboard (display option), HART®275 communicator.

Damping

Time constant is continuously adjustable 0,01 to 60 s.

Temperature limits

Ambient: -30 to +80 °C

Process: -30 to +125 °C, DIN 16288
0 to +200 °C, DIN3852-X-G½A

Shipping and storage: -40 to +80 °C.

Pressure limits Min. and max. process pressure: See the appended tables.

Volumetric displacement

< 0.5 mm³ / max. span

Output 2-wire (2W), 4-20 mA, user selectable for linear, square root, inverted signal or the transfer function (16 points) specified by the user

Supply voltage and permissible load

See the load capacity diagram;
4-20 mA output: 12-35 VDC.

Humidity limits

0-100 % RH; freezing of condensed water not allowed in reference pressure channels.

PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC770: Reference conditions, specified span, no range elevation, horizontal mounting; AISI316L diaphragm, silicone oil fill.

Accuracy

±0.1 % of calibrated span

(span 1:1-7.5:1 / max.range).

On the measuring ranges 7.5:1-25:1:

$$\pm[0.01+0.012 \times \left(\frac{\text{max. span}}{\text{calibrated span}}\right)]\% \text{ of calibrated span}$$

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability

±0.1 %/max. span/12 months

¹⁾ Parts in contact with process medium

Temperature effect on compensated temperature ranges -20...+80 °C

Zero and span shift:

±0.15 % of max. span

0 to +200 °C, (process connection, code 3, DIN3852-X-G½A, Flush Mounted) ±1 % of max. span, VT6 - VT7
±2 % of max. span, VT5

Mounting position effect

(VT5, VT6 and VT7)

Zero error < 0.32 kPa, which can be calibrated out.

VT8: mounting position has no effect

Vibration effect (IEC 68-2-6: FC):

±0.1 % of measuring range/

2g/10 to 2000 Hz

4g/10 to 100 Hz

Power supply effect

< ±0.01 of calibrated span per volt

EMC-test standards

GENERIC EMISSION STANDARD:

EN 50081 - 2: 1993

Normative reference:

EN 55022:1987/class A

GENERIC IMMUNITY STANDARD:

EN 50082 - 2: 1995

Normative references:

EN 61000-4-2, -4, -5, -8, -11

ENV 50140, ENV 50204, ENV 50141

Insulation test voltage

500 V rms 50 Hz

CONSTRUCTION AND CALIBRATION

Materials

Diaphragm ¹⁾: AISI316L, Duplex (Wnr. 1.4462), Hast. C22/C276 or Titanium (VT8).

Other sensing element materials:

AISI316, SIS 2343.

Filling fluid: Silicone oil or inert oil (VT5, VT6 and VT7)

Enclosure class IP66

Housing with PLUG connector, housing type codes **H** and **T**

Housing: AISI316, Seals: Viton® and NBR

TEST jacks: MS358Sn/PVDF, protected with silicone rubber shield.

PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

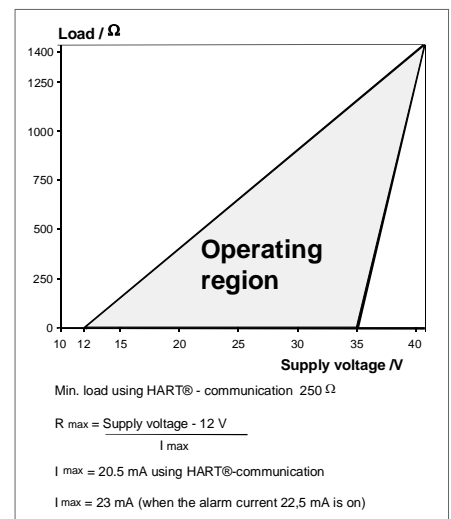
Housing with junction box/terminal strip, housing type codes **M** and **N**

Housing: AISI303/316, Seals: Nitrile and Viton®; Nameplates: Polyester

Connection hose between sensing element and housing :

Codes **L** and **K** :

PTFE hose with AISI316 braiding.



Pressure limits

Maximum process pressure, MPa

Transmitter type	Max. overload pressure	Pressure class
VT5	1.5	PN40
VT6	7.5	PN100
VT7	40.0	PN250
VT8	100.0	PN1000

Minimum process pressure (VT8: no min. pressure limitations)

T _{proc.} °C	Minimum pressure for different fill fluids (kPa, abs.)	
	DC200 100 cSt	Inert oil
20	5	8
40	8	10
80	16	28
120	21	53

SATRON VT pressure transmitter

Calibration

For customer-specified range with minimum damping. (If range is not specified, transmitter is calibrated for maximum range.)

Electrical connections

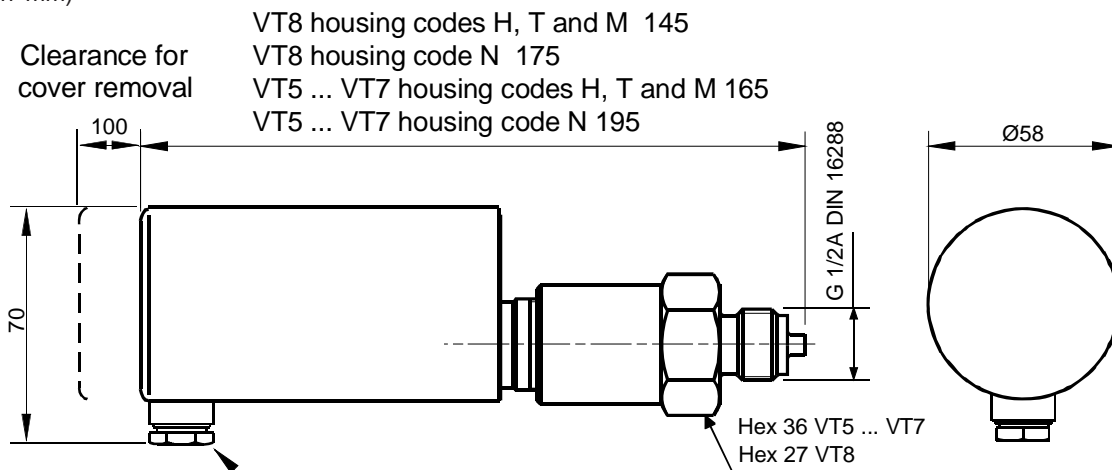
Housing with PLUG connector,
H and T:
 PLUG connector, connector type DIN 43650 model AF; Pg9 gland for cable; wire gross-section 0.5 to 1.5 mm².

Weight

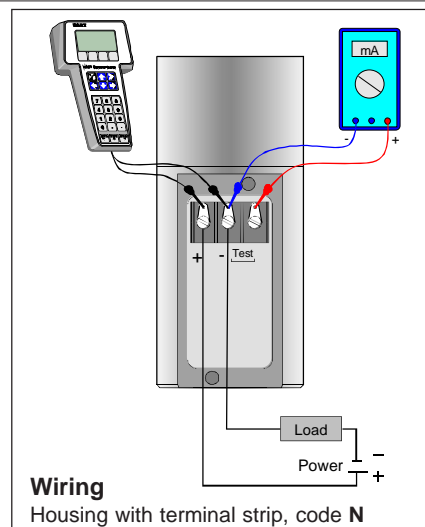
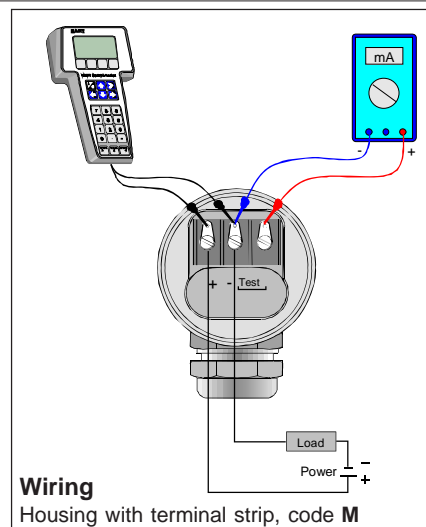
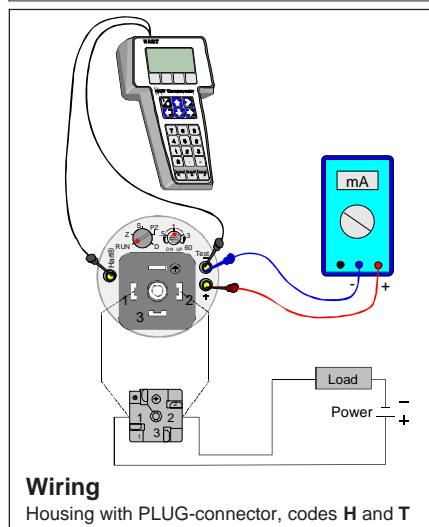
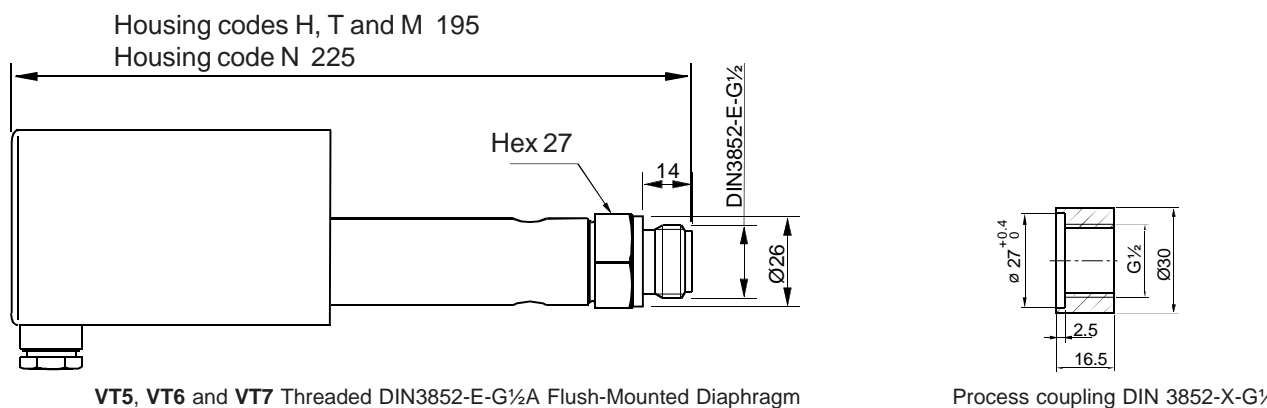
Transmitter
 - with housing types **H** and **T** : 0,7 kg
 - with housing type **M** : 1.2 kg
 - with housing type **N** : 1.3 kg

Housing with junction box/terminal strip,
M and N:
 M20x1.5, 1/2-NPT inlet; screw terminals for 0.5 to 2.5 mm² wires

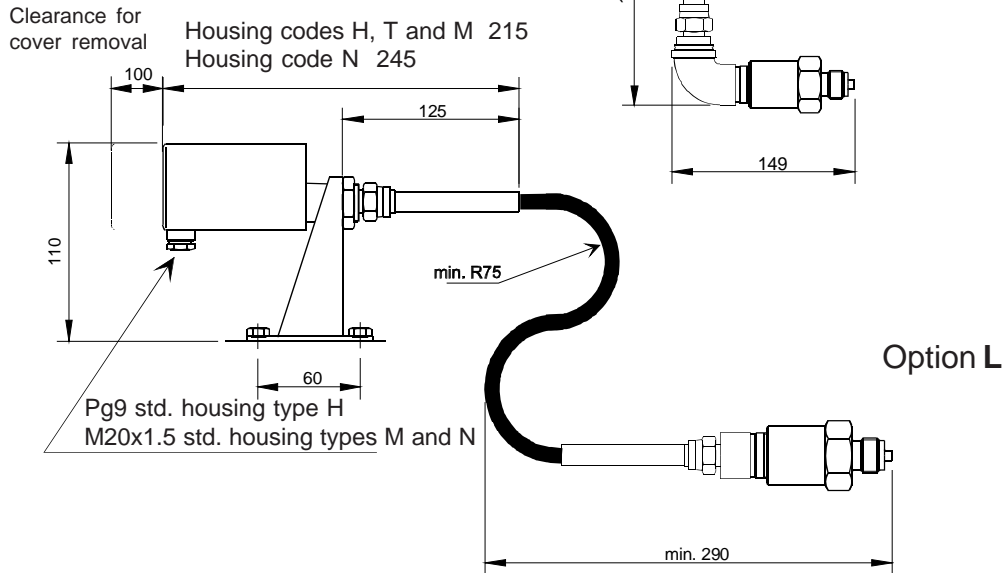
Dimensions (in mm)



Pg9 std. housing types **H** and **T**
 M20x1.5 std. housing types **M** and **N**

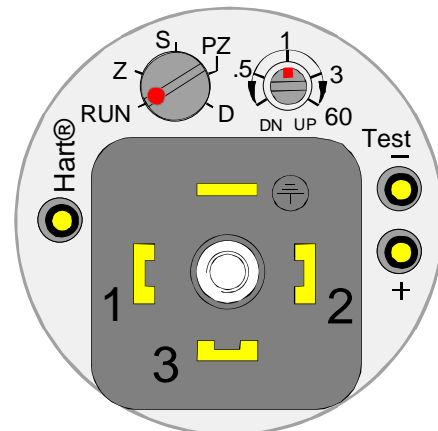


Remote electronics, connecting cable with protection hose, codes **L** and **K**

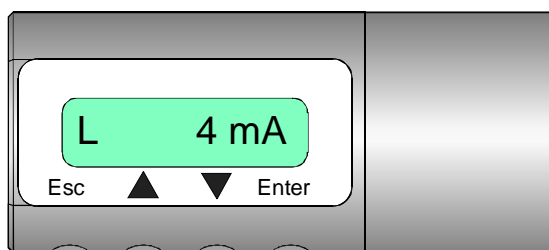


Use of selector switch :

- RUN = working position
- PZ = Process value zero
- D = damping adjustment
- S = Span adjustment
- Z = Zero adjustment
- DN = Down
- UP = Up



Housing with PLUG-connector, code **T**

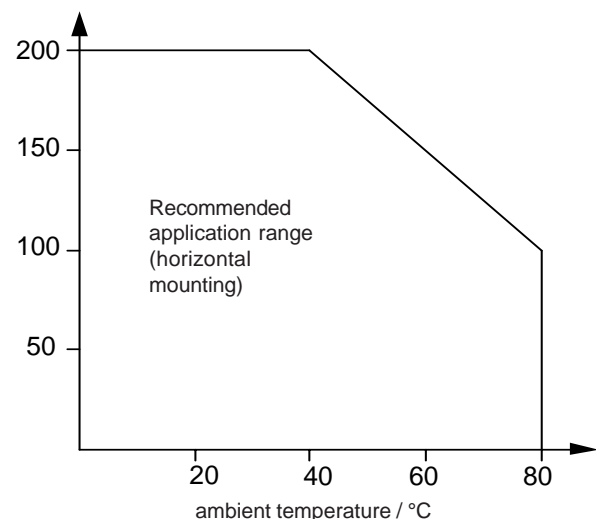


Keyboard :

- Esc = Press **Esc** move back towards the top of the main menu.
- ▲ = Use the **UP** arrow key to move up on the current menu level or to increase the selected parameter value.
- ▼ = Use the **DOWN** arrow key to move down on the current menu level or to decrease the selected parameter value.
- Enter = Press **ENTER** to move to a lower level in a menu or to accept a command or parameter value.

Housing with display, code **N**

Process temperature / °C



Process temperature limits for the transmitter of high temperature

