

SATRON VT pressure transmitter

BPV710
August 31, 2009

SATRON VT pressure transmitter belongs to the series V-transmitters which will have both analog and smart properties. SATRON VT is used for 0-1.4 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 100:1 for types VT6 - VT8. The transmitter communicates digitally using the HART® protocol.



TECHNICAL SPECIFICATIONS

Measuring range and span

See Selection Chart.

$$\pm [0.025 + 0.01 \times \left(\frac{\text{max. span}}{\text{calibrated span}} \right)] \% \text{ of calibrated span}$$

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 extern control shafts, keyboard (display option), HART@275/375 communicator.

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability

±0.1 %/max. span/12 months

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

Zero and span shift:
±0.15 % of max. span

Damping

Time constant is continuously adjustable 0.01 to 60 s.

Temperature limits

Ambient: -30 to +80 °C

Process: -30 to +120 °C, DIN 16288
-20 to +200 °C, DIN 3852-X

Shipping and storage: -40 to +80 °C.

Operating temperature of display:
0 to +50°C (does not affect operation of the transmitter)

0 to +200 °C, (process connection, code 3, DIN3852-X-G½A, Flush Mounted)
±1 % of max. span, VT6 - VT7
±2 % of max. span, VT4 - VT5

Mounting position effect (VT3 - VT7)

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

VT8: mounting position has no effect

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

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

Supply voltage and permissible load

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

Insulation test voltage

500 V rms 50 Hz

Humidity limits

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

CONSTRUCTION AND CALIBRATION

Materials

Diaphragm¹⁾: AISI316L, AISI317L, Duplex (EN 1.4462), Hast. C22/C276 Tantalum or Titanium Gr2.

¹⁾ Parts in contact with process medium

Other sensing element materials:
AISI316, SIS2343.

Filling fluid: Silicone oil or inert oil (VT3 - VT7)

Enclosure class IP66

Housing with PLUG connector, housing type codes **H**, **P** and **T**
Housing: AISI316, Seals: Viton® and NBR

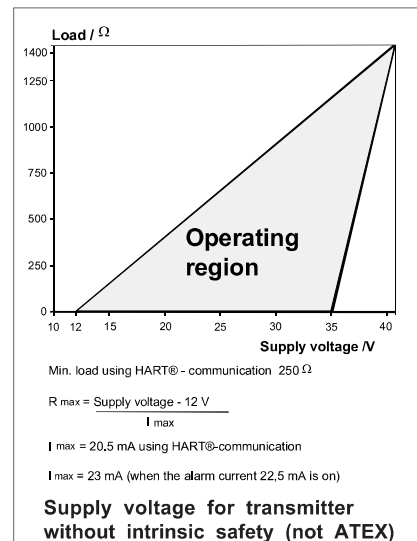
TEST jacks: MS358Sn/PVDF, protected with silicone rubber shield.
PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

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.



PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC 60770:
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 7.5:1-100:1:

Pressure limits

Maximum process pressure, MPa

Transmitter type	Max. overload pressure	Pressure class
VT3	0.2	PN40
VT4	0.3	PN40
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