

SATRON VV pressure transmitter

BLV810
August 31, 2009

SATRON VV pressure transmitter belongs to V-transmitter family. The series V transmitters have both analog and smart properties. SATRON VV is used for 0-1.4 kPa...0-0.5 MPa ranges. The transmitter communicates in a 2-wire system.

SATRON VV pressure transmitter is suitable for liquid level measurements in ground, rock and ships' tanks, and in open channels.

SATRON VV pressure transmitter can be used in corrosive conditions and to measure contaminating liquids. Possible foam on the surface of the measured liquid does not disturb the measurement. SATRON VV does not require compressed air supply.

The transmitter's sensor is piezoresistive. The rangeability is 50:1 for type VV5. 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) or HART®/275/375 communicator.

Damping

Time constant is continuously adjustable 0.01 to 60 s.

Temperature limits

Process: -10 to +125 °C
Ambient: -30 to +80 °C
Shipping and storage: -40 to +80 °C.
Operating temperature of display: 0 to +50°C (does not affect operation of the transmitter)

Equipment cabinet is recommended for extremely demanding conditions.

Pressure limits

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

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 is not allowed in reference pressure channels.

PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC 60770: Reference conditions, specified span, no range elevation, 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- 50:1:

$\pm[0.01+0.012 \times (\frac{\text{max. span}}{\text{calibrated span}})]\%$ of calibrated span (incl. nonlinearity, hysteresis and repeatability)

Long-term stability

±0.1 % of max. span per 12 months

Temperature effect on compensated temperature ranges

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

Mounting position effect

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

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

±0.1 % of measuring range/
2 g/10 to 2000 Hz
4 g/10 to 100 Hz

Power supply effect

<±0.01 % of calibrated span per volt.

Insulation test voltage

500 V rms 50 Hz.

CONSTRUCTION AND CALIBRATION

Materials

Diaphragm ¹⁾: AISI316L / 317L, Hast. C276 or Tantalum.
Sensing element ¹⁾: AISI316, PTFE/ AISI316 or PVC
Other materials: SIS2343
Fill fluid Silicone oil or inert oil.

Housing with PLUG connector, codes H, P and T

Housing: AISI316/303
Seals: Viton® and NBR
TEST jacks: MS358Sn/PVDF, protected with silicone rubber shield.
PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

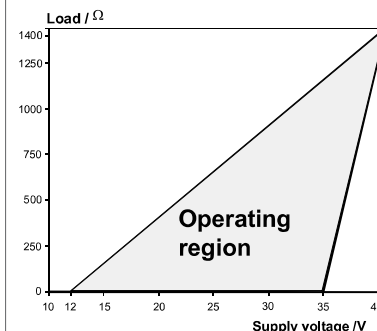
Housing with junction box/terminal strip, codes M and N

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

Connection cable between sensing element and housing

(code **L** and **K**):
PTFE hose with AISI316 braiding.

Equipment cabinet Rital AE1380, Steel cabinet with polyester paint.



Min. load using HART® - communication 250 Ω

$R_{\text{max}} = \text{Supply voltage} - 12 \text{ V}$

I_{max}

$I_{\text{max}} = 20.5 \text{ mA}$ using HART®-communication

$I_{\text{max}} = 23 \text{ mA}$ (when the alarm current 22.5 mA is on)

Supply voltage for transmitter without intrinsic safety (not ATEX)

Enclosure class: IP66.

Calibration

For customer-specified range with 1 s. damping. (If range is not specified, transmitter is calibrated for maximum range.)

Electrical connections

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

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

M20x1.5, 1/2-NPT inlet; screw terminals for 0.5 to 2.5 mm² wires.

¹⁾ Parts in contact with process medium

Pressure limits			Minimum process pressure		
Maximum process pressure, MPa			T _{proc.} °C	Minimum process pressure for different fill fluids (kPa, abs.)	
Transmitter type	Max. overload pressure	Pressure class		DC200 100 cSt	Inert oil
VV...3	0.2	PN40	20	5	8
VV...4	0.3	PN40	40	8	10
VV...5	1.5	PN40	80	16	28