

SATRON VVF_e pressure transmitter

BLV811
August 31, 2009

SATRON VVF_e pressure transmitter belongs to V-transmitter family. The series V transmitters have both analog and smart properties. SATRON VVF_e is used for 0 - 4 kPa...0-500 kPa ranges. The transmitter communicates in a 2-wire system. SATRON VVF_e pressure transmitter is suitable for liquid level measurements in ground, rock and ships' tanks, drill well and in open channels. SATRON VVF_e pressure transmitter can be used to measure contaminating liquids. Possible foam on the surface of the measured liquid does not disturb the measurement. SATRON VVF_e does not require compressed air supply. The transmitter's sensor is piezoresistive. The transmitter communicates digitally using the HART® protocol.



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

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.

Response time

Maximum 100 ms

Temperature limits

Process: -10 to +80 °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).

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: 10-35 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:
 $\pm[0.025+0.010 \times (\frac{\text{max. span}}{\text{calibrated span}})]\%$ 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 -20...+80 °C

Zero and span shift, type VVF_e5: ±0.15 % of max. span

Zero and span shift, type VVF_e4: ±0.25 % of max. span

Mounting position effect

Zero error <0.15 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.

European Directive Information

European Pressure Equipment Directive (PED) (97/23/EY)
- Sound Engineering Practice
Electro Magnetic Compatibility (EMC directive 2004/108/EC)

Insulation test voltage

500 V rms 50 Hz.

CONSTRUCTION AND CALIBRATION

Wetted materials

Metal parts: AISI316L/317L
Jacket of cable: PUR
Other materials: AISI303/316
Fill fluid Silicone oil or inert oil.

Housing with PLUG connector, codes H and P

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

Housing with junction box/terminal strip, code M

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

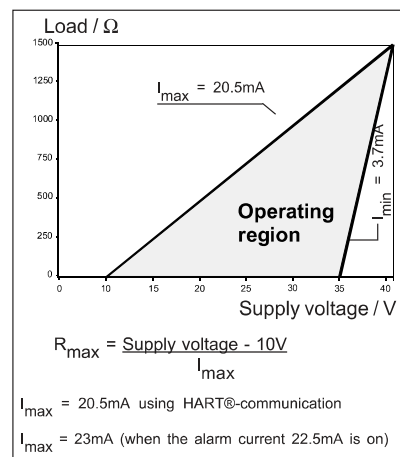
Housing with PLUG connector, codes **H** and **P**:
PLUG connector, connector type DIN 43650 model AF; Pg9 gland for cable; wire gross-section 0.5 to 1.5 mm².

Housing with junction box/terminal strip, code **M**:

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

Weight

Transmitter
- with housing type **H** : 0,7 kg
- with housing type **P** : 0,75 kg
- with housing type **M** : 0,9 kg



| 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 |
| VVF _e 4 | 0.3 | PN40 | 20 | 5 | 8 |
| VVF _e 5 | 1.5 | PN40 | 40 | 8 | 10 |
| | | | 80 | 16 | 28 |
| | | | 120 | 21 | 53 |