

SATRON VDtL differential pressure transmitter belongs to V-transmitter family. The series V transmitters have both analog and smart properties. SATRON VDtL is used for 1.4 kPa...3 MPa ranges. The transmitter communicates in a 2-wire system. In pressure measuring applications SATRON VDtL transmitters are used for liquid level, pipeline pressure and density measurements. SATRON VDtL transmitter is equipped with an SOS (Silicon On Sapphire) sensing element. 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®275/375 communicator.

Damping

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

Temperature limits

Process temperature:
range **3**: +10 to +80 °C
ranges **4, 5** and **6**: -30 to +120 °C
Ambient temperature: -30 to +80 °C
Shipping and storage: -30 to +80 °C.
Operating temperature of display: 0 to +50°C (does not affect operation of the transmitter)

Pressure limits

Withstands 40 bar static pressure and unequal pressure load without damage to the transmitter. Pressure class: see Process Connections. See the following table for minimum pressure limits.

Minimum process pressure:

T _{proc} °C	Min. pressure for different fill fluids (kPa, abs.)	
	DC200 10 cSt	Inert oil
20	5.0	8.0
60	12.0	18.5
80	16.0	28.0
120	21.0	53.0

Volume of negative-side process chamber: 2 cm³.

Process chamber's volumetric displacement for maximum span: 0.1 cm³

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 IEC 60770: Reference conditions, specified span, no range elevation, horizontal mounting; AISI316L diaphragm, silicone oil fill.

Accuracy

±0.07 % of calibrated span
(span 1:1-7.5:1 /max.range).
On the measuring ranges 7.5:1-25:1:

$$\pm \left[0.01 + 0.008 \times \left(\frac{\text{max. span}}{\text{calibrated span}} \right) \right] \% \text{ of calibrated span}$$

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability

±0.1 %/max. span for 12 months

Temperature effect on compensated temperature range

Ambient: Zero and span shift: ±0.5 % of max. span.
Process: Zero error: ±0.5 % of max. span (ranges 4,5 and 6),
±1 mbar per 10 K (range 3)

Static pressure effect on Zero

• ±0.5 % of max. span per 4 MPa

Mounting position effect

Deviation from horizontal position causes a zero shift that can be calibrated out.

Power supply effect

< ±0.01 % of calibrated span per volt.

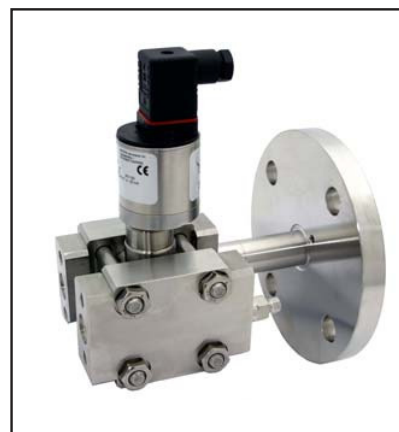
Insulation test voltage

500 V rms 50 Hz

CONSTRUCTION AND CALIBRATION

Materials

Diaphragms¹⁾: AISI316L / 317L, Duplex (EN 1.4462), Hast. C276, Nickel, Titanium Gr2 or Tantalum.
Flanges¹⁾ and vent valves¹⁾: AISI316, Duplex or Hast. C276.
O-ring on sensing element: PTFE.
Other sensing element materials: AISI316, SIS 2343, SIS 2324.
Mounting bolts and nuts for sensor flanges: AISI316



Fill fluid

Silicone oil (DC200, 10 cSt) or inert oil or food industry oil (Neobee M-20).

Housing with PLUG connector, 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, 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.

Calibration

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

Enclosure class: IP66.

Process connections

See Selection Table

¹⁾ Parts in contact with process medium.

