SATRON VDt differential pressure transmitter

SATRON VDt differential pressure transmitter belongs to V-transmitter family. The series V transmitters have both analog and smart properties. SATRON VDt is used for 0-0,1kPa...0-15 MPa ranges. The transmitter communicates in a 2-wire system. In pressure measuring applications SATRON VDt transmitters are used for measuring differential pressure and vacuum pressure. SATRON VDt transmitter is equipped with an SOS (Silicon On Sapphire) or piezoresistive sensing elemente. 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 extern control shafts (analog option), keyboard (display option), HART®275/375 communicator.

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

Temperature limits
Sensing element operating:
• -30 to +125 °C
Electronics operating: -30 to +80 °C
Shipping and storage: -50 to +80 °C.
Operating temperature of display: 0 to +50ºC *(does not affect operation of the transmitter)*

Pressure limits
Min. and max. process pressure:

Type	Max. overload pressure, MPa	Pressure class
VDt2	4	PN40
VDt3	10	PN100
VDt4,5	10	PN100
VDt6	10	PN100
VDt3,4,5,7	40	PN400
VDt6	15	PN400

Transmitter operates within specifications for pressures above 10 mbar abs.

Process chamber volume (cm^3)

Type	Volume (cm^3)	
	Standard transmitter	with hydraulic seal
VDt2...7	2.0	1.0

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

[1] Parts in contact with process medium.

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 7.5:1-60:1:

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

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability
±0.1 % of max. span / year

Temperature effect on compensated temperature ranges -20 to 80 °C
Zero and span shift: ±0,15 % of max. span

Static pressure effect on Zero of max. span
VDt2: ±0,2 % / 4 MPa
VDt3...5, PN100: ±0,2 % / 10 MPa
VDt6...7, PN100 / PN400: ±0.3 % / 10 MPa

Overpressure effect on Zero of max. span
VDt2: ±0,5 % / 4 MPa;
VDt3...7: PN100: ±0,3 % / 10 MPa;
PN400: ±1 % / 40 MPa.

Mounting position effect
Zero error ± 0.4 kPa, which can be calibrated out.

Vibration effect (IEC 61298-3):
±0.1 % of measuring range

Power supply effect
< ±0.01 % of calibrated span / volt.

Insulation test voltage
500 V rms 50 Hz

CONSTRUCTION AND CALIBRATION
Materials
Diaphragms [1]: AISI316L, AISI317L, Duplex (EN 1.4462), Hast. C276 or Tantalum.
Flanges [1] and vent valves [1]: 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 (PN400: m.8.8.Zne)

Fill fluid
Silicone oil (DC200, 10 cSt) or inert oil.

Housing with PLUG connector, 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.

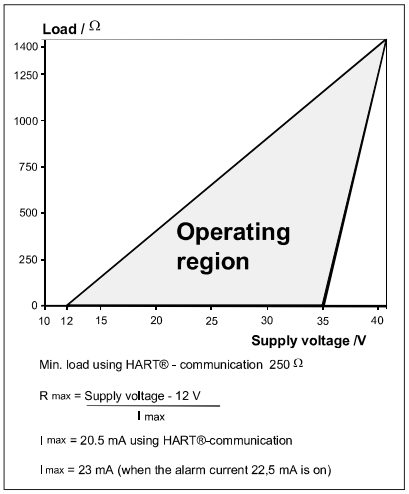
Housing with junction box/terminal strip, M and N
Housing: AISI303/316; Seals: Nitrile and Viton®; Nameplates: Polyester

Connection cable between sensing element and housing
Codes **L** and **K** :
PTFE hose with AISI316 braiding.

Enclosure class: IP66.

Process connections
See Selection Table.

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



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