

# SATRON VD differential pressure transmitter

BPdV750  
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**SATRON VD differential pressure transmitter** belongs to V-transmitter family. The series V transmitters have both analog and smart properties. SATRON VD is used for 0-0.1kPa...0-15 MPa ranges. The transmitter communicates in a 2-wire system. In pressure measuring applications SATRON VD transmitters are used for measuring differential pressure and vacuum pressure. SATRON VD transmitter is equipped with an SOS (Silicon On Sapphire) sensing element. The rangeability is 15:1. 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

Sensing element operating:  
• -30 to +120 °C  
(type VD6 -20 to +120 °C)  
Electronics operating: -30 to +80 °C  
Shipping and storage: -50 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:

Type	Max. overload pressure, MPa		Pressure class
	CoNi diaphragm	Other diaphragms	
VD2	4	3	PN40
VD3	10	4	PN100
VD4,5	10	6	PN100
VD6	10	10	PN100
VD7	20	20	PN200
*3...5	40	6	PN400
*7	40	6	PN400

\* types H and U: See Selection Table.

Transmitter operates within specifications for pressures above 10 mbar abs.

### Process chamber volume (cm³)

Type	Volume (cm³)	
	Standard transmitter	With hydraulic seal
VD2	135	-
VD3...7	20	3.30

### Process chamber's volumetric displacement

Type	Volumetric displacement (mm³/max. span)	
	Standard transmitter	With hydraulic seal
VD2	800	-
VD3	200	200
VD4	400	400
VD5	470	470
VD6	700	80
VD7	80	80

1) Parts in contact with process medium.

**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

### PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC 60770: Reference conditions, specified span, no range elevation, horizontal mounting; CoNi diaphragm, silicone oil fill.

### Accuracy

±0.2 % of calibrated span (span 1:1-7.5:1 /max.range).  
On the measuring ranges 7.5:1-15:1:  
±[0.01+0.025 x (max.span / calibrated span)]% of calibrated span

(incl. nonlinearity, hysteresis and repeatability)

### Long-term stability

±0.25 %/max. span for 12 months

### Temperature effect on compensated temperature ranges -20 to 80 °C

Zero and span shift: ±1.0 % of max. span (double for type VD2)

### Static pressure effect on Zero of max. span

VD2: ±0.2 % per 4 MPa  
VD3...7, PN100: ±0.3 % per 10 MPa;  
PN200: ±0.4 % per 20 MPa;  
PN400: ±0.6 % per 40 MPa.

### Overpressure effect on Zero of max. span

VD2, 3: ±1.0 % per 4 MPa;  
VD4...7: PN100/200: ±0.7 % per 10 MPa; PN400: ±2.5 % per 40 MPa.

### Mounting position effect

Deviation from horizontal position causes a zero shift that can be calibrated out. (Only horizontal position is recommended for type VD2 transmitters.)

### Power supply effect

< ±0.01 % of calibrated span per volt.

### Insulation test voltage

500 V rms 50 Hz



## CONSTRUCTION AND CALIBRATION

### Materials

Diaphragms<sup>1)</sup>: CoNi alloy, AISI316L / 317L or Hast. C276.

Flanges<sup>1)</sup> and vent valves<sup>1)</sup>: AISI316 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: AISI303/316

Seals: Viton® and NBR

TEST jacks: MS358Sn/PVDF, protected with silicone rubber shield.

PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

