

# SATRON VL Pressure Transmitter

BLV820  
M2, revision 2  
15.2.2013

**SATRON VL pressure transmitter** belongs to the V transmitter family. The series V transmitters have both analog and smart properties. SATRON VL is used for 0-1.4 kPa...0-15 MPa ranges. It is a 2-wire transmitter with HART® standard communication. In pressure measuring applications SATRON VL transmitters are used for measuring the pressure of clean, sedimenting, crystallizing and sticking materials. The transmitter's sensor is piezoresistive. The rangeability is 100:1 for types VL6 - VL7. The versatile selection of diaphragm materials will meet the needs in most processes. Also the models with special accuracy are included to the series of VL transmitters.



## TECHNICAL SPECIFICATIONS

### Measuring range and span

See Selection Chart.

### Zero and Span adjustment

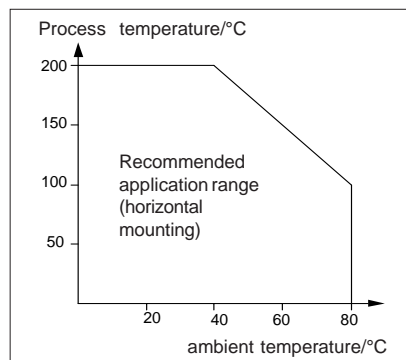
Zero elevation: Calibrated span is freely selectable on the specified range depending from the desired option. This can be made by using external control shafts (analog option), keyboard (display option), HART®/275/375 communicator.

### Damping

Time constant is continuously adjustable 0.01 to 60 s.

### Temperature limits

Ambient: -30 to +80 °C  
Process: -30 to +125 °C / +200 °C  
Shipping and storage: -40 to +80 °C.  
Operating temperature of display: 0 to +50°C (does not affect operation of the transmitter)



**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.

### Pressure limits

Minimum and maximum process pressure: see the appended tables.

### PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC 60770: Reference conditions, specified span, no range elevation, horizontal mounting; AISI316L diaphragm, silicone oil fill

### Accuracy

±0.1 % of calibrated span  
(For spans 1:1-7.5:1).

For spans 7.5:1-100:1,

$\pm[0.025+0.01 \times (\frac{\text{max. span}}{\text{calibrated span}})]\%$  of calibrated span

Special accurate models **BA** and **DA** :  
(Temperature effect on +20°C to +70°C)

±0.075 % of calibrated span  
(For spans 1:1-7.5:1).

For spans 7.5:1-100:1,

$\pm[0.015+0.008 \times (\frac{\text{max. span}}{\text{calibrated span}})]\%$  of calibrated span

(incl. nonlinearity, hysteresis and repeatability)

### Long-term stability

• ±0.1 % of max. span / 1 year

### Temperature effect on -30 °C to +80 °C range, optional

Zero and span error  
• ±0.15 % of max. span, code **E**  
• ±0.5 % of max. span, code **G**

### Temperature effect on +20 °C to +70 °C range, process connections BA and DA

Zero and span error  
• ±0.08 % of max. span, code **S**

### Temperature effect on 0 to +200 °C, code H

• ±1 % of max. span

• Process connection **PA** (VL4 and 5):  
±2 % of max. span

### Mounting position effect

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

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

±0.1 % of span per 2 g to 10-2000 Hz.

### Power supply effect

<±0.01 % of calibrated span per volt.

### Insulation test voltage

500 V rms 50 Hz.

## CONSTRUCTION AND CALIBRATION

### Materials

Diaphragm <sup>1)</sup>: AISI316L (EN 1.4435), Duplex (EN 1.4462), Hast. C 276 (EN 2.4819), Tantalum or Titanium Gr2 (EN 3.7035).  
Other sensing element materials: AISI316L, AISI316.

**Fill fluid** Silicone oil, inert oil or Food oil (Neobee M20).

### Housing with PLUG connector, codes H 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.

### 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

Codes **L** and **K** :  
PTFE hose with AISI316 braiding.

### Pressure limits

#### Pressure capacity

Transmitter type	Max. over-load pressure, MPa	Pressure class, max.
VL3	0.2	PN40
VL4	0.3	PN40
VL5	1.5	PN40
VL6	7.5	PN100
VL7	40.0	PN250

#### Minimum process pressure:

T <sub>proc.</sub> °C	Min. pressure for different fill fluids (kPa, abs.)	
	DC200 100 cSt	Inert oil
20	5	8
40	8	10
80	10	28
120	15	53
160	25	90
200	40	-

<sup>1)</sup> Parts in contact with process medium.