



SATRON[®]

PREON™ VDt Differential Pressure Transmitter

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#LookCloser

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. It is a 2-wire transmitter with HART® standard communication. In pressure measuring applications SATRON VDt transmitters are used for measuring differential pressure and absolute pressure. SATRON VDt transmitter is equipped with an SOS (Silicon On Sapphire) or piezoresistive sensing element. The rangeability is 25:1.



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 local display option, Si-Tool or HART® 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 +50°C (does not affect operation of the transmitter).

Pressure limits

Type	Max. overload pressure, v MPa	Pressure class
VDt2	4	PN40
VDt3	10	PN100
VDt4-5	10	PN100
VDt6	10	PN100
VDt3, 4, 5	40	PN420
VDt6	15	420

Min. and max. process pressure:
Transmitter operates within specifications for pressures above 10 mbar abs.

Type	Volume (cm³)	
	Standard transmitter	with hydraulic seal
VDt2...6	2.5	2.0

Process chamber volume (cm³)

Volume of negative-side process chamber: < 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

PERFORMANCE SPECIFICATIONS

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

Accuracy

±0.05 % of calibrated span
(span 1:1–5:1 /max.range).

On the measuring ranges 5:1–60:1:

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

For VDt2:

±0.15 % of calibrated span
(span 1:1–5:1 /max.range).

On the measuring ranges 5:1–60:1:

$$\pm[0.03+0.024 \times \left(\frac{\text{max. span}}{\text{calibrated span}} \right)] \% \text{ of calibrated span}$$

Special accurate diaphragm **AISI304:**

±1.5 % of calibrated span
(For spans 1:1 – 60:1)

(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, PN100: ±0.3 % / 10MPa

Overpressure effect on Zero of max. span

VDt2: ±0,5 % / 4 MPa;
VDt3...6: 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

Diaphragms¹⁾: AISI316L (EN 1.4435), AISI304 (EN 1.4301), Duplex (EN 1.4462), Hastelloy® C276 (EN 2.4819) or Tantalum.

Flanges¹⁾ and vent valves¹⁾: AISI316, Duplex or Hastelloy®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)

¹⁾ Parts in contact with process medium.

Fill fluid

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

Housing with PLUG connector, H

Housing: AISI316

Seals: FPM

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: FPM, EPDM

Nameplates: PE

Enclosure class: IP66.

Process connections

See Selection Table.

Calibration

For customer-specified range with 1 s. damping. Min. factory calibration range: 10mbar (VDt2). (If range is not specified, transmitter is calibrated for maximum range.)

Electrical connections

Housing with PLUG connector, H

PLUG connector, connector type DIN

43650 model AF; Pg9 gland for cable;

wire cross-section 0.5 to 1.5 mm²

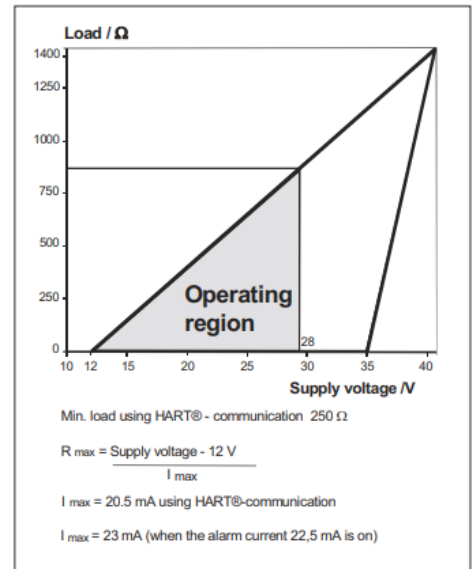
Housing with junction box/terminal strip, **M** and **N**:
M20x1.5, 1/2-NPT inlet; screw terminals for 0.5 to 2.5 mm² wires.

PRODUCT CERTIFICATIONS

European Directive Information:
Electro Magnetic Compatibility EMC Directive 2014/30/EU

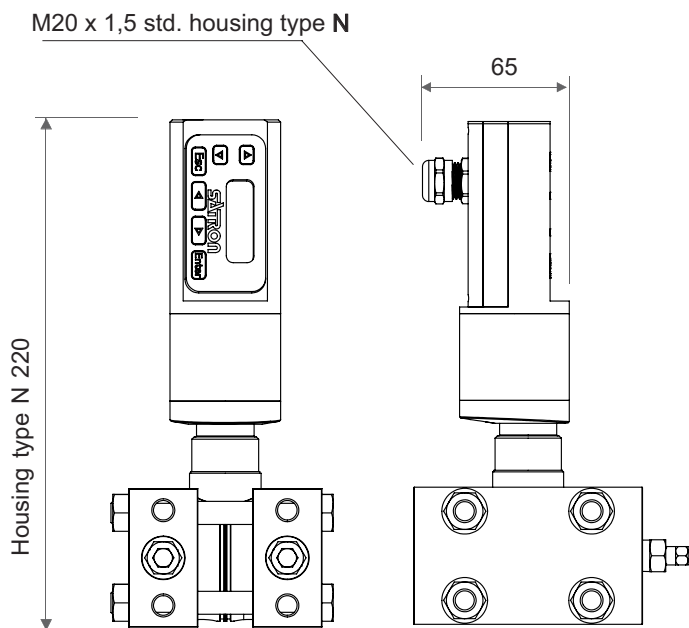
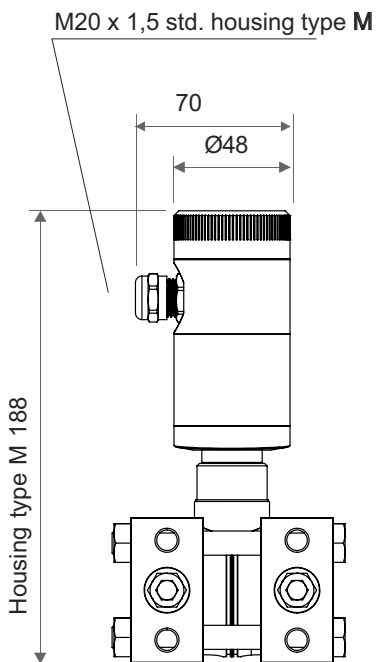
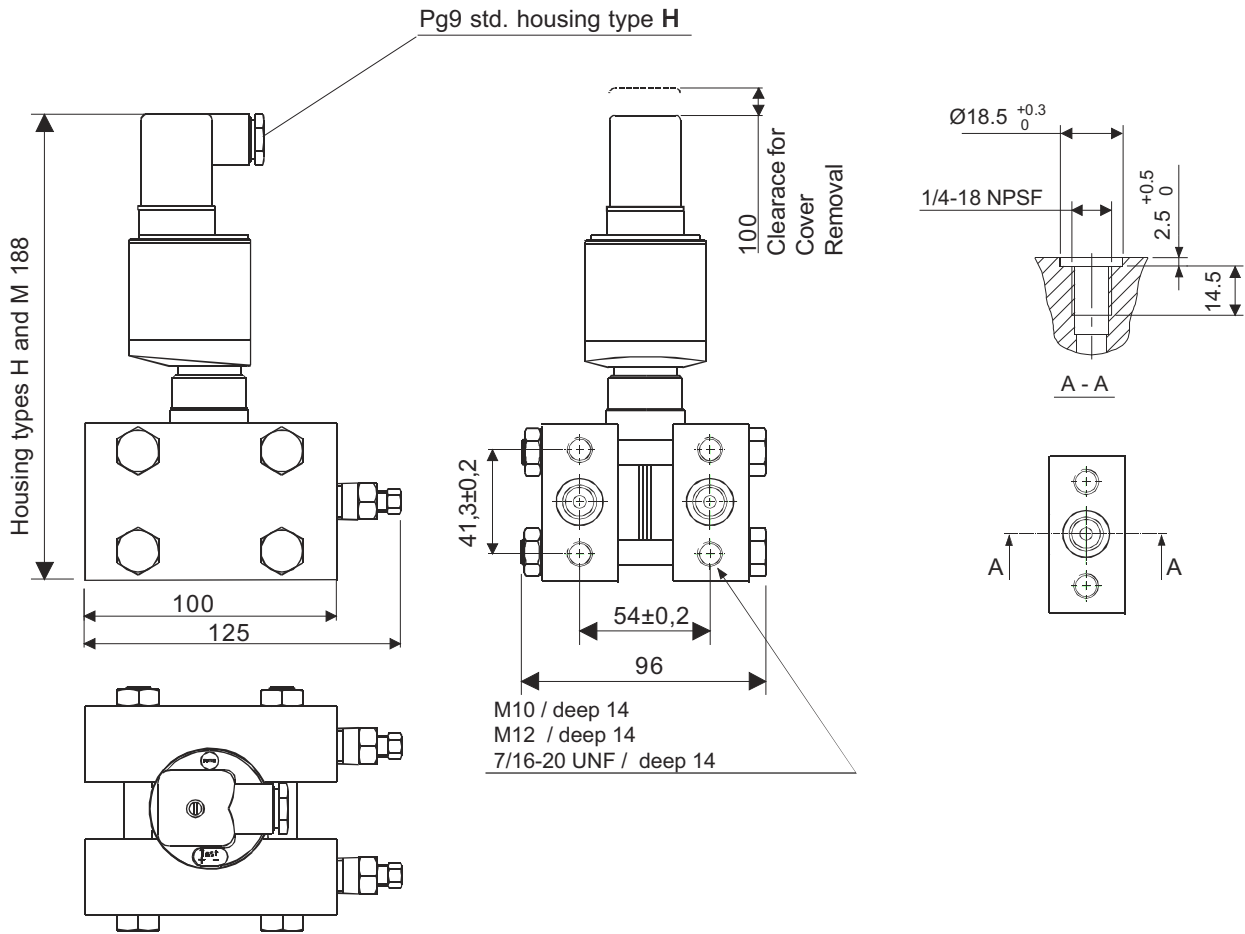
European Pressure Equipment Directive (PED) 2014/68/EU

All pressure transmitters
• Sound Engineering Practice
Transmitters with nominal pressure higher than 200 bar fulfill the requirements of the Conformity Assessment procedure Module A of the directive.



Weight (kg)			
Type	Housing Type		
	H	M	N
VDt2...6	4,0	4,6	4,6

Dimensions (in mm)



Selection Chart

VDt	Differential Pressure transmitter	VAt	Absolute Pressure Transmitter (ranges 4 to 7, range 0...xx, abs.)				
	Adjustability (±)	Span, min.	Span, max.				
2	0,1 kPa (1 mbar) ¹⁾	6 kPa (60 mbar)	-6...+6 kPa (-60...+60 mbar)				
3	1,4 kPa (14 mbar)	35 kPa (350 mbar)	-35 kPa...+35 kPa (-350...+350 mbar)				
4	4 kPa (40 mbar)	100 kPa (1000 mbar)	-100...+100 kPa (-1000...+1000 mbar)				
5	26,5 kPa (265 mbar)	500 kPa (5000 mbar)	-500...+500 kPa (-5000...+5000 mbar)				
6	0,145 MPa (1,45 bar)	3 MPa (30 bar)	-3...+3 MPa (-30...+30 bar)				
	Output	S 4-20mA DC/HART® -protocol					
	Process Connection	<table border="0"> <tr> <td>D M10, PN40 range 2/PN100 ranges 3...6, IEC 61518</td> <td>H M12, PN420 ranges 3, 4, 5 and 7, IEC 61518</td> </tr> <tr> <td>A M10, PN420 ranges 3, 4, 5 and 7, IEC 61518</td> <td>U 7/16-20 UNF, (PN420 ranges 3, 4 and 5)</td> </tr> </table>		D M10, PN40 range 2/PN100 ranges 3...6, IEC 61518	H M12, PN420 ranges 3, 4, 5 and 7, IEC 61518	A M10, PN420 ranges 3, 4, 5 and 7, IEC 61518	U 7/16-20 UNF, (PN420 ranges 3, 4 and 5)
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	Wetted materials	Flanges	Diaphragm				
	Code	Material	Code				
	2	AISI316L (EN 1.4404)	2				
	3	Hastelloy® C276 (EN 2.4819)	3				
			5				
			8				
			A				
			Material				
			9				
			Gold / Rhodium (specify only when coated)				
	Diaphragm coating	Code					
		Material					
		9					
		Gold / Rhodium (specify only when coated)					
	Fill fluid	S Silicone oil	G Inert fluid				
	Housin type	<table border="0"> <tr> <td>H Housing with PLUG-connector, DIN43650, no display, inlet PG9</td> </tr> <tr> <td>M Housing with junction box/terminal strip, no display, inlet M20x1,5</td> </tr> <tr> <td>N Housing with junction box/terminal strip, with display, inlet M20x1,5</td> </tr> </table>		H Housing with PLUG-connector, DIN43650, no display, inlet PG9	M Housing with junction box/terminal strip, no display, inlet M20x1,5	N Housing with junction box/terminal strip, with display, inlet M20x1,5	
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M Housing with junction box/terminal strip, no display, inlet M20x1,5							
N Housing with junction box/terminal strip, with display, inlet M20x1,5							
	Explosion proof	O No explosion proof					

Example code

VDT 5 S D 22 S H O

Special features (specify only if necessary)

Special electronics (specify only if housing connected with hose to sensing element)

- **connecting cable with protection hose**

L Hose protected with PTFE/AISI316 braiding, straight

K Hose protected with PTFE/AISI316 braiding, angle of 90°

Length of cable between sensing element and housing (specify only if housing connected with cable to sensing element)

2 2m cable 3 3m cable etc. (max. 10m)

Optional items - order separately

Threaded process adapters (only specify for (-) side)

Code	Type
M860298	Oval flange G1/2 PN100 M10
M550428	Oval flange G1/4 PN100 M10
M550431PN420	Oval flange 1/2 -NPT PN420 M10

Special size of electrical inlet, for housing types M or N

T1410026	1/2NPT	T1410024	Plug DIN 43650
T1410027	Pg13.5	T1410025	M12 4-pin

Material Certificates

MC1 Raw materials certificate without appendixes, in accordance with SFS-EN 10204-2.1 (DIN 50049-2.1) standard

MC2 Raw materials certificate for wetted parts with appendixes, in accordance with SFS-EN 10204-2.2 (DIN 50049-2.2) standard

MC3 Raw materials certificate for wetted parts with appendixes, in accordance with SFS-EN 10204-3.1B (DIN 50049-3.1B) standard

¹⁾ Minimum span for factory calibration 1kPa (10mbar)

²⁾ Not for ranges 2-3

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