SATRON VG pressure transmitter belongs to the series V transmitters which will have both analog and smart properties. SATRON VG is used for 0-1.4 kPa...0-25 MPa ranges. It is a 2-wire transmitter with HART® standard communication.

In pressure measuring applications SATRON VG 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 VG6 - VG7.

TECHNICAL SPECI FICATIONS

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, keyboard (display option) or 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 0 to +200 °C (temp. code H) Shipping and storage: -40 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: See the appended tables.

Volumetric displacement

< 0.5 mm³/max. span
 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.

PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC60770: Reference conditions, specified span, no range elevation, horizontal mounting; O-ring seals, AISI316L diaphragm, silicone oil fill.

Accuracy

±0.05 % of calibrated span (span 1:1-5:1 /max.range). On the measuring ranges 5:1-100 :1:

±[0.025+0.01 x (max.span calibrated span)]% of

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability ±0.1 % / max. span / 1 year

Temperature effect

on -20 to +80 °C range (process temperature code N) Zero and span error: ±0.15 % of max. span.
on 0 to +200 °C range

(process temperature codeH) Zero and span error: ±1 % of max. span, VG6 - VG8 ±2 % of max. span, VG4 VG5

Mounting position effect

Zero error < 0.32 kPa, which can be calibrated out.

Vibration effect (IEC 68-2-6: FC): ±0.1 % of measuring range/ 2g/10 to 2000 Hz 4g/10 to 100 Hz

Power supply effect

< ±0.01 of calibrated span per volt

Insulation test voltage 500 V rms 50 Hz

CONSTRUCTION AND CALIBRATION Materials

Diaphragm ¹⁾: AISI316L (EN 1.4435), Duplex (EN 1.4462), Hast. 276 (EN 2.4819), CoNi-alloy, Titanium Gr2 (EN 3.7035) or Tantalum. Coupling ¹⁾: AISI316L (EN 1.4404), Duplex (EN 1.4462), Hast.C276 (EN 2.4819) or Titanium Gr2 (EN 3.7035). Other sensing element materials: AISI316, SIS 2343.

Filling fluid: Silicone oil, food industry oil or inert oil

Enclosure class IP66

¹⁾ Parts in contact with process medium

Pressure limits

Maximum process pressure, MPa

VG3 0.2 PN40 VG4 0.3 PN40 VG5 1.5 PN40 VG6 7.5 PN100 VG7 40.0 PN250	Trans- mitter type	Max. overload pressure	Pressure class
VG4 0.3 PN40 VG5 1.5 PN40 VG6 7.5 PN100 VG7 40.0 PN250	VG3	0.2	PN40
VG5 1.5 PN40 VG6 7.5 PN100 VG7 40.0 PN250	VG4	0.3	PN40
VG6 7.5 PN100 VG7 40.0 PN250	VG5	1.5	PN40
VG7 40.0 PN250	VG6	7.5	PN100
	VG7	40.0	PN250
VG8 100.0 PN250	VG8	100.0	PN250

Housing with PLUG connector,

housing type 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, housing type codes 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.



Supply voltage for transmitter without intrinsic safety (not ATEX)

Minimum process pressure

T _{proc.}	Minimum pressure for different fill fluids (kPa, abs.)		
°C	DC200 100 cSt	Inert oil	
20	5	8	
40	8	10	
80	16	28	
120	21	53	

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Calibration

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

Electrical connections

Housing with PLUG connector, **H** and **T**: PLUG connector, connector type DIN 43650 model AF; Pg9 gland for cable; wire cross-section 0.5 to 1.5 mm 2 .

Housing with junction box/terminal strip, M and N : M20x1.5, 1/2-NPT inlet; screw terminals for 0.5 to 2.5 mm $^{\rm 2}$ wires

Process connections

G1 connecting thread

Process couplings: See Selection Chart and installation instructions or technical specification: Couplings for Transmitters ${\bf G150}$.

Weight

Transmitter	
- with housing type H and T :	0.7 kg
- with housing type M ja N :	1.2 kg

Product Certifications

European Directive Information

Electro Magnetic Compatibility (EMC directive 2004/108/EC)

All pressure transmitters

Atex Directive (94/9/EC)

Satron Instruments Inc. complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/ 23/EC)

All Pressure Transmitters : - Sound Engineering Practice

Hazardous Locations Certifications

European Certifications

ATEX Intrinsic Safety

Certification No. : DNV-2007-OSL-ATEX- 1346X

(£x) II 1 GD T135°C EEx ia II C T4 -20° G Tamb ≤ 50°C
 (£x) II 2 GD T135°C EEx ia II C T4 -20° G Tamb ≤ 50°C

Input Parameters : $U_i = 28 V$ $I_i = 93 mA$ $P_i = 0.651 W$ $C_i = 5 nF$ $L_i = 0.2 mH$

Special Conditions for Safe Use (X) :

The enclosure with plastic window and the plastic DIN43650 connector must not be installed in potentially explosive atmosphere requiring category 1 apparatus. The non-conducting surface of the sensor element may be charged by the flow of non-conducting media, so there may be electrostatic hazard with IIC-gases. These units should be marked 2 GD.

The equipment shall be installed and connected according to the manufacturers instructions.



I max = 20.5 mA using HART®-communication

I max = 23 mA (when the alarm current 22,5 mA is on)

Supply voltage for transmitter with certified intrinsic safety (ATEX)



Wiring Housing with PLUG connector, codes $\mbox{ H}$ and $\mbox{ T}$

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• G1/2 female, M550393

Flanges: Dimensions of flanged couplings, see the installation and setting-up instructions



Selection C	hart				
Adjustability	Span, min	Span, max	Measuring range		
VG3	1.4 kPa (14 mbar)	35 kPa (350 mbar)	- 35+35 kPa (-350350 mbar)		
VG4 VG5	4 KMa (40 Mbar) 10 kPa (100 mbar)	100 KPa (1000 Mbar) 500 kPa (5000 mbar)	- 100+ 100 KPa (-10001000 MDar) -100 +500 kPa (-1000 - 5000 mbar)		
VGA5	10 kPa (100 mbar)	500 kPa (5000 mbar)	0+500 kPa (05000 mbar), abs.		
VG6	0.03 MPa (0.3 bar)	3 MPa (30 bar)	-0.1+3 MPa (-130 bar)		
VGA6	0.03 MPa (0.3 bar)	3 MPa (30 bar)	0+3 MPa (030 bar), abs.		
VG7	0.15 MPa (1.5 bar)	15 MPa (150 bar) 25 MPa (250 bar)	0+15 MPa (0150 bar), abs.		
	S 4-20mA DC/HART® -pro		-0,1+25 WFa (-1250 bai)		
Capat			(1) (1)		
Proc	ess seal 4 metal/metal tape	r 5 O-ring FPM (Vit	ton®) ⁽¹⁾ 6 O-ring EPDM ⁽¹⁾		
	Wetted materials	Codo Matorial	Diaphragm coating		
	2 AISI316L (EN 1.4435)	6 Titanium Gr2 (*) (
	3 Hast. C 276 (*) (**)	7 CoNi-alloy (*) (no	t ranges 3-4) Y diamond (specify only		
	5 Tantalum (*) (**)	8 Duplex (EN 1.4462)) (*) (**) when coated)		
	Fill fluid S Silicon oil	G Inert oil A Food a	and beverage special oil (Neobee M20)		
Housing type H Housing with PLUG-connector, DIN43650, no display, inlet PG9 T Housing with PLUG-connector and with manual adjust, DIN43650, no display, inlet PG9, (no ATEX) M Housing with junction box/terminal strip, no display, inlet M20x1,5 N Housing with junction box/terminal strip, with display, inlet M20x1,5					
	Process	temperature limits N -30	tion T Atex Intrinsic Safety, (±x) IT GD T135 C () . +125 °C H 0 +200 °C (*) (**)		
	┶╖┷╗┷╗┍┷┑				
coupling PASVE [®] moun Specify special Special size of o N 1/2 NPT	nting valve, specify separately in couplings separately in the orde electrical inlet G Pg13.5 P P	6 Titanium Gr2 8 Duplex n the order er lug connector DIN 43650			
Special features Remote electroni	cs (specify only if housing conr	nected with cable to sensing	g element)		
L Hose protect K Hose protect	le with protection hose ed with PTFE/AISI316 braiding, ed with PTFE/AISI316 braiding,	straight , angle of 90°			
_ength of conne	ction cable between sensing e	element and housing			
2 2 m cable	3 m cable etc. (max. 10 r	m)			
Mounting parts for	or remote electronics for Ø 51	mm tube			
No mounting p	arts 1 Mounting parts				
Documentation			I		
alibration certif	cate AE English	_			
nstallation and	operating instructions I E	English IF	Finnish		
Material certification No materia MC1 Raw materia MC2 Raw materia MC3 Raw materia	tes I certificate ial certificate without appendices ial certificate for wetted parts, in ial certificate for wetted parts, in	s, in accordance with SFS-E accordance with SFS-EN 1 accordance with SFS-EN 1	EN 10204-2.1 (DIN 50049-2.1) standard 10204-2.2 (DIN 50049-2.2) standard 10204-3.1 B (DIN 50049-3.1 B) standard		
We reserve the righ	t for technical modifications without	prior notice.	(*) = only process seal code 4 (**) = not for range 3 (***) = Housing H and N = (***) = Housing H and N = (***)		
HART is the registe Pasve is the registe Hastelloy is the register Teflon is the register Viton is the register	red trademark of HART Communica red trademark of Satron Instruments tered trademark of Haynes Internation d trademark of E.I. du Pont de Nemour red trademark of DuPont Down Elas	ation Foundation. s Inc. nal. s & Co. stomer.	ATEX transmitters with display are the model without membrane key. (****) = Min. process temperature limits 0 °C (1) = EHEDG - certified		
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