

SATRON VT_e pressure transmitter belongs to the series V-transmitters which will have both analog and smart properties. SATRON VT_e is used for 0-4 kPa ...0-100 MPa ranges. The transmitter communicates in a 2-wire system. In pressure measuring applications SATRON VT_e-transmitters are used for measuring the pressure of clean gases, steam, sedimenting, crystallizing and sticking liquids. The transmitter's sensor is piezoresistive. The rangeability is 100:1 for types VT_e6 - VT_e8. 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 made by using HART®275/375 communicator.

Damping

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

Response time

max. 100 ms

Temperature limits

Ambient: -30 to +80 °C

Process: -30 to +125 °C

Shipping and storage: -40 to +80 °C.

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: 10-35 VDC.

Humidity limits

0-100 % RH; freezing of condensed water not allowed in reference pressure channels.

PERFORMANCE SPECIFICATIONS

Tested in accordance with IEC770:
Reference conditions, specified span, no range elevation, horizontal mounting;
AISI316L diaphragm, silicone oil fill.

Accuracy

±0.1 % of calibrated span

(span 1:1- 7.5:1 /max.range).

On the measuring ranges 7.5: 1 - 100:1:

$\pm [0.025 + 0.010 \times (\frac{\text{max. span}}{\text{calibrated span}})] \%$ of calibrated span

(incl. nonlinearity, hysteresis and repeatability)

Long-term stability

±0.1 %/max. span/12 months

Temperature effect on compensated temperature ranges -20...+80 °C

Zero and span shift, types VT_e5 - VT_e8:
±0.15 % of max. span

Zero and span shift, type VT_e4:
±0,25 % of max. span

Mounting position effect (VT_e4 ... VTA_e7)

Zero error < 0.15 kPa, which can be calibrated out.

VT_e8: mounting position has no effect

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

European Directive Information

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

Model VT_e8 :

- Module A Conformity Assessment

All other models :

- Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (89/336/ETY)

Insulation test voltage

500 V rms 50 Hz

CONSTRUCTION

Wetted materials:

AISI316L, Titanium (VT_e8).

Other materials:

AISI316, AISI303

Housing with PLUG connector, housing type codes H and P

Housing: AISI316, Seals: Viton® and NBR TEST jacks: MS358Sn/PVDF, protected with TPE rubber shield.

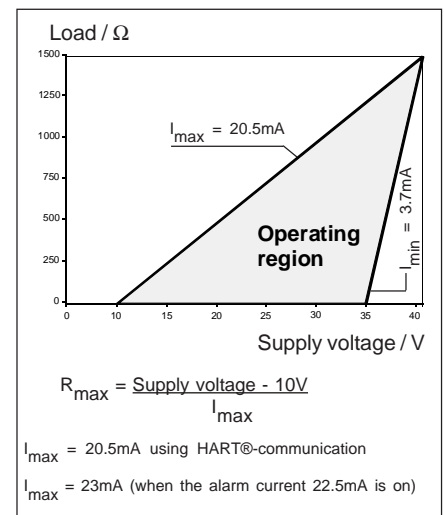
PLUG connector: PA6-GF30 jacket, Silicone rubber seal, AISI316 retaining screw.

Housing with junction box/terminal strip, housing type code M

Housing: AISI303/316, Seals: Nitrile and Viton®; Nameplates: Polyester

Filling fluid: Silicone oil or inert oil (VT_e4 ... VTA_e7)

Enclosure class IP66



Pressure limits

Maximum process pressure, MPa

Transmitter type	Max. overload. pressure, MPa	Pressure class
VT _e 4	0.3	PN40
VT _e 5	1.5	PN40
VT _e 6	7.5	PN100
VTA _e 7	40.0	PN250
VT _e 8	100.0	PN1000

Minimum process pressure

(VT_e8 : no min. pressure limitations)

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

SATRON VT_e pressure transmitter

BPV711

February 15, 2008

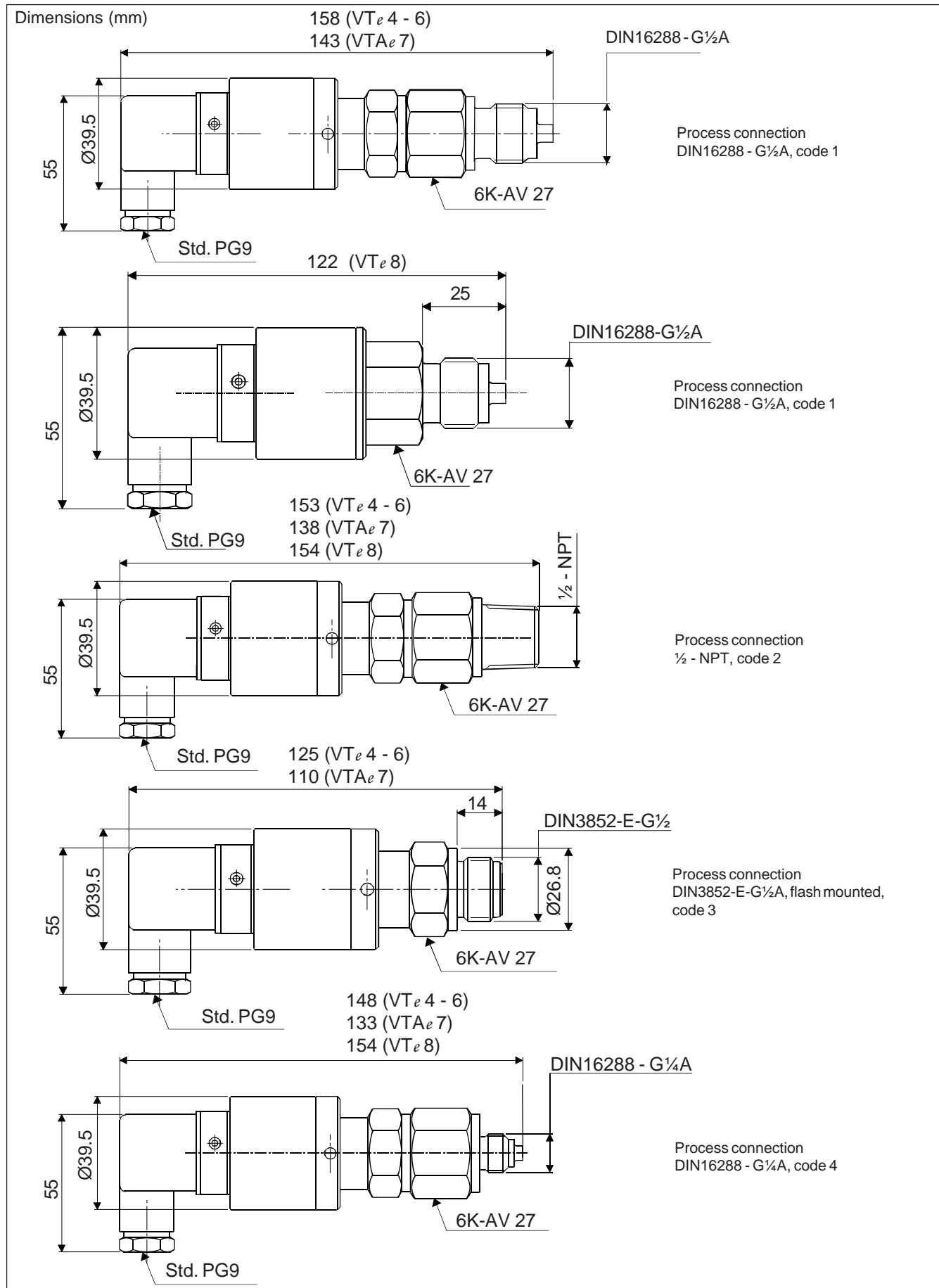
Electrical connections

Housing with PLUG-connector, code **H**, connector type DIN 43650 model AF; Pg9 gland for cable; wire gross-section 0,5 to 1,5 mm².

Housing with junction box/terminal strip, **M**: M16x1.5 inlet; screw terminals for 0.5 to 2.5 mm² wires

Weight

Transmitter
 - with housing types **H** : 0,3 kg
 - with housing type **P** : 0,35 kg
 - with housing type **M** : 0,5 kg

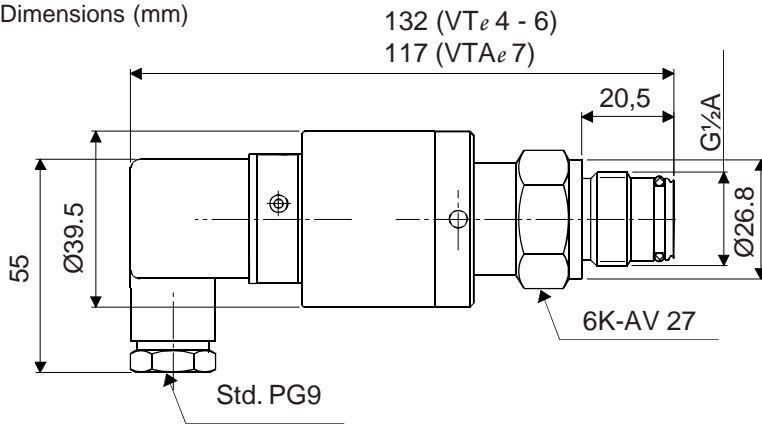


SATRON VT_e pressure transmitter

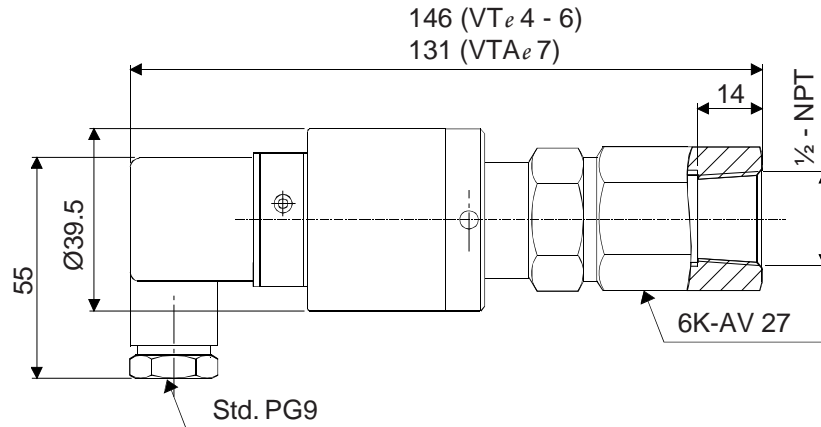
BPV711

February 15, 2008

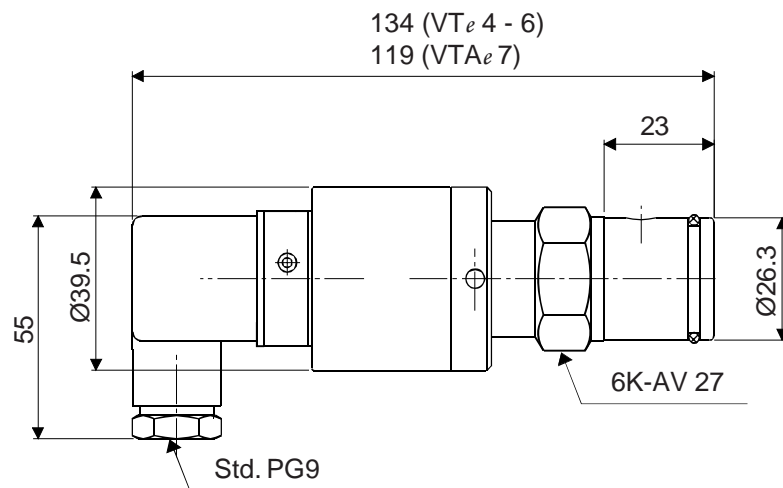
Dimensions (mm)



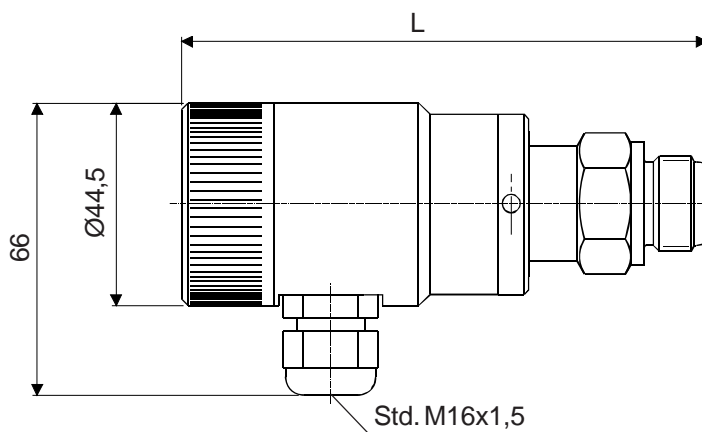
Process connection
G1/2A, flash mounted, with o-ring,
code 5



Process connection
1/2 - NPT (female), code 6



Process connection
PMC 1" (Ø26,3), code 7



Housing with junction box, code M

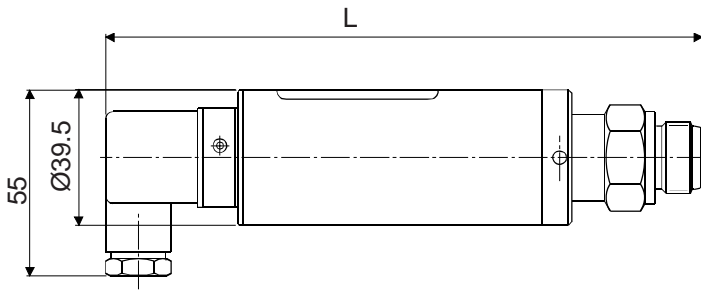
- Process connection 1, VT_e 4 - 6, dimension L = 150
- Process connection 1, VTA_e 7, dimension L = 135
- Process connection 1, VT_e 8, dimension L = 110
- Process connection 2, VT_e 4 - 6, dimension L = 145
- Process connection 2, VTA_e 7, dimension L = 130
- Process connection 2, VT_e 8, dimension L = 145
- Process connection 3, VT_e 4 - 6, dimension L = 115
- Process connection 3, VTA_e 7, dimension L = 100
- Process connection 4, VT_e 4 - 6, dimension L = 140
- Process connection 4, VTA_e 7, dimension L = 125
- Process connection 4, VT_e 8, dimension L = 145
- Process connection 5, VT_e 4 - 6, dimension L = 120
- Process connection 5, VTA_e 7, dimension L = 110
- Process connection 6, VT_e 4 - 6, dimension L = 135
- Process connection 6, VTA_e 7, dimension L = 120
- Process connection 7, VT_e 4 - 6, dimension L = 125
- Process connection 7, VTA_e 7, dimension L = 110

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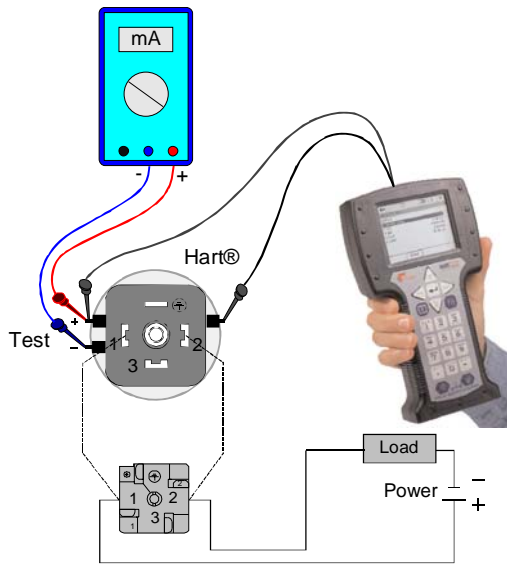
February 15, 2008

Mitat (mm)

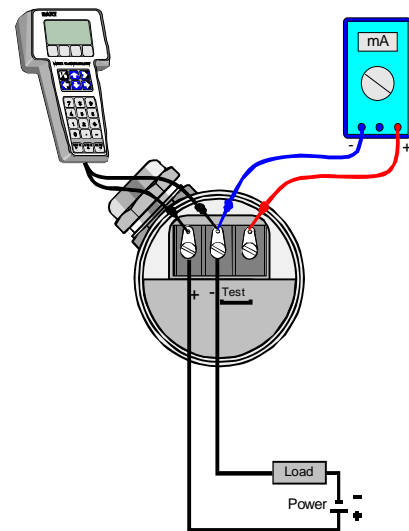


Housing with plug connection and display, code **P**

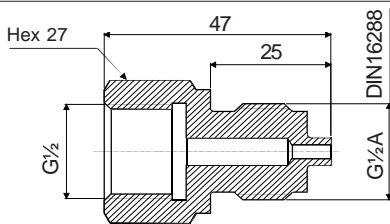
- Process connection 1, VT_e 4 - 6, dimension L = 215
- Process connection 1, VTA_e 7, dimension L = 200
- Process connection 1, VT_e 8, dimension L = 180
- Process connection 2, VT_e 4 - 6, dimension L = 210
- Process connection 2, VTA_e 7, dimension L = 195
- Process connection 2, VT_e 8, dimension L = 210
- Process connection 3, VT_e 4 - 6, dimension L = 180
- Process connection 3, VTA_e 7, dimension L = 165
- Process connection 4, VT_e 4 - 6, dimension L = 205
- Process connection 4, VTA_e 7, dimension L = 190
- Process connection 4, VT_e 8, dimension L = 210
- Process connection 5, VT_e 4 - 6, dimension L = 190
- Process connection 5, VTA_e 7, dimension L = 175
- Process connection 6, VT_e 4 - 6, dimension L = 200
- Process connection 6, VTA_e 7, dimension L = 185
- Process connection 7, VT_e 4 - 6, dimension L = 190
- Process connection 7, VTA_e 7, dimension L = 175



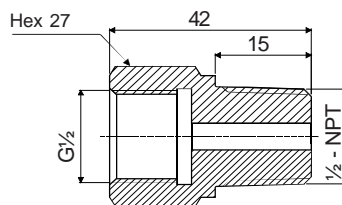
Wiring housing codes H and P



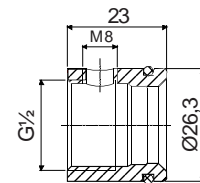
Wiring housing code M



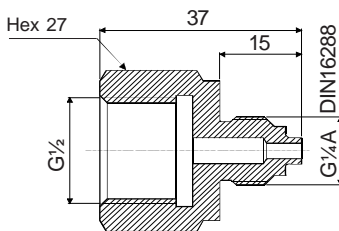
Thread DIN16288 - G $\frac{1}{2}$ A
Order code : T1320291



Thread $\frac{1}{2}$ - 14 NPT, male
Order code : T1320293

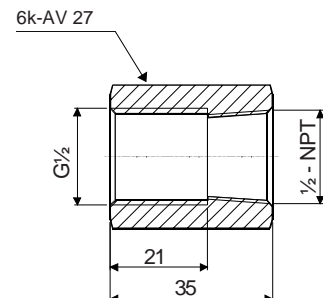


PMC 1" (Ø26,3), for process connection code 5
Order code : T1320310



Thread DIN16288 - G $\frac{1}{4}$ A
Order code : T1320292

The process connection of the flush mounted transmitters can be changed using modification



Thread $\frac{1}{2}$ - 14 NPT, female
Order code : M1050471

Selection Chart

Adjustability	Span, min	Span, max	Measuring range
VT _e 4	4 kPa (40 mbar)	100 kPa (1000 mbar)	-100...+100 kPa (-1000...1000 mbar)
VT _e 5	10 kPa (100 mbar)	500 kPa (5000 mbar)	-100...+500 kPa (-1000...5000 mbar)
VT _e 6	0.03 MPa (0.3 bar)	3 MPa (30bar)	-0,1...+3 MPa (-1...+30 bar)
VTA _e 6	0.03 MPa (0.3 bar)	3 MPa (30 bar)	0...+3 MPa (0...+30 bar), abs.
VTA _e 7	0.15 MPa (1.5 bar)	15 MPa (150 bar)	0...+15 MPa (0...+150 bar), abs.
VT _e 8	1 MPa (10 bar)	100 MPa (1000 bar)	-0.1...+100 MPa (-1...+1000 bar)

Output **S** 4-20mA DC/HART®

Process connection

1	DIN16288-G½A (male)	5	G½A (male), (flash mounted), with o-ring, not VT _e 8
2	½ - NPT (male)	6	½ - NPT (female)
3	DIN 3852-E-G½A (male), (flash mounted), not VT _e 8	7	PMC 1" (outside diameter 26.3 mm), not VT _e 8
4	DIN16288 - G¾A (male)		

Wetted materials

Body

Code	Material
2	AISI316L

Diaphragm

Code	Material
2	AISI316 (no VT _e 8)
6	Titanium (only VT _e 8)

Fill fluid (specify for types VT_e 4 ... VTA_e7) **S** Silicone oil **G** Inert oil (*)

Housing type

H	Housing with plug connector, DIN43650, no display, inlet PG9
P	Housing with plug connector, DIN43650, display, inlet PG9
M	Housing with junction box / terminal strip, no display, inlet M16x1,5

Explosion proof **0** No explosion proof classification

Special size of electrical inlet

N 1/2 NPT **G** Pg13.5

Documentation

Installation and operating instructions **IE** English **IF** Finnish

Material certificates

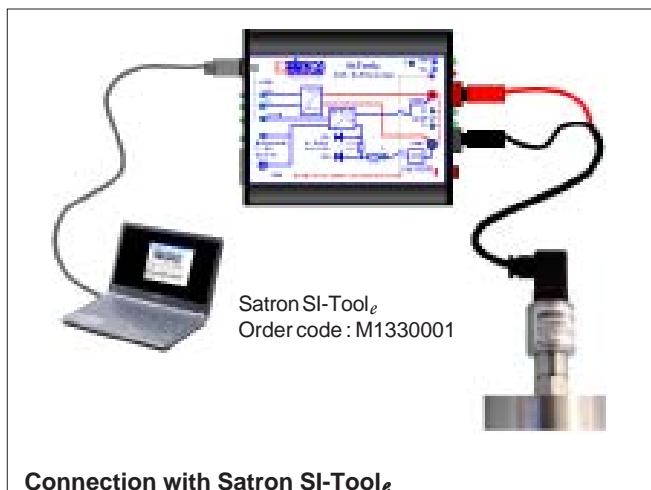
- O** No material certificate
- MC1** Raw material certificate without appendixes, in accordance with SFS-EN 10204-2.1 (DIN 50049-2.1) standard
- MC2** Raw material certificate for wetted parts, in accordance with SFS-EN 10204-2.2 (DIN 50049-2.2) standard
- MC3** Raw material certificate for wetted parts, in accordance with SFS-EN 10204-3.1 B (DIN 50049-3.1 B) standard

Calibration

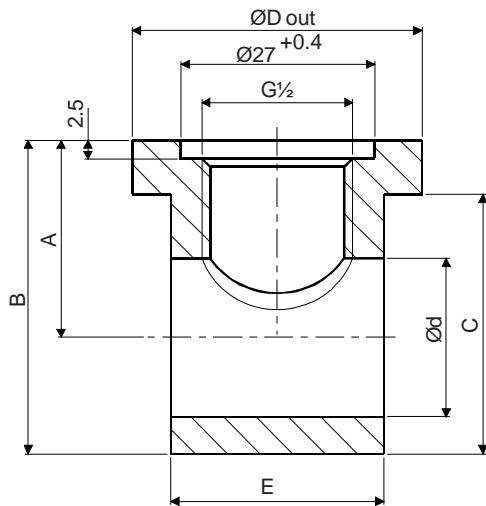
Transmitter is calibrated for maximum range with 0.5 sec. damping

Calibration for customer-specified range and item positioning must be mentioned in the order.

(*) = Oxygen cleaning must be ordered separately!



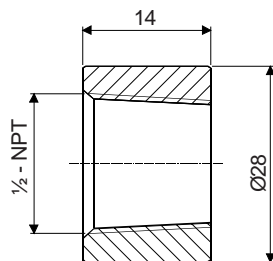
Process couplings



Pipe size	Dim. ØD out	Dim. A	Dim. B	Dim. C	Dim. Ød	Dim. E	Order code
DN15	40	27.5	43.5	36	22 ^{+0.2} ₀	29.5	M1050395
DN20	40	30.5	49	42	27.5 ^{+0.3} ₀	26	M1050396
DN25	50	33.5	55.5	48	34 ^{+0.5} _{+0.2}	29.5	M1050397

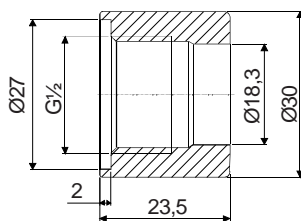
Other sizes, please contact Satron Instruments Inc.

T-coupling DIN 3852-X-G¹/₂, sizes DN15 - 25



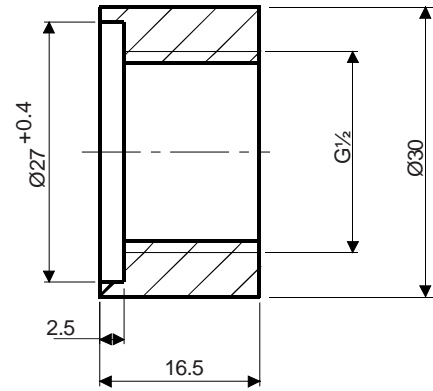
Order code: M1050368

Process coupling 1/2 - NPT



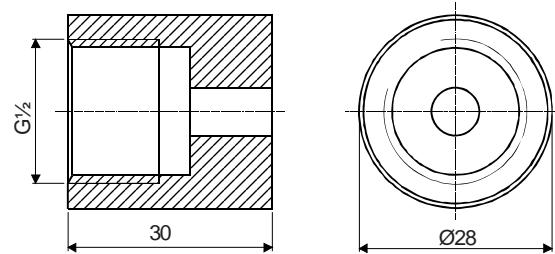
Order code: M1050515

Coupling G¹/₂ (for process connection code 5)



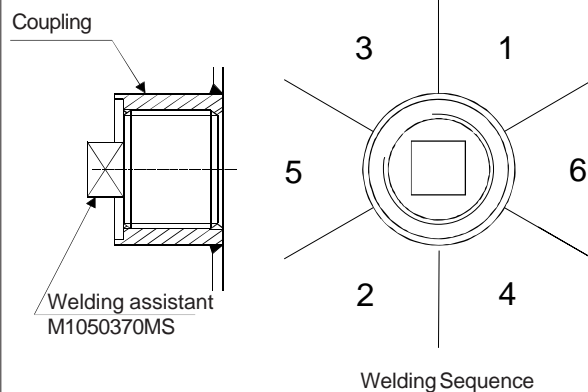
Order code: M1050369

Process coupling DIN 3852-X-G¹/₂



Order code: M1050367

Process coupling DIN 16288 - G¹/₂



Welding the coupling M1050369

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