

VSM - Smartline Vacuum Transducer Pirani / Cold Cathode

Absolute Pressure 1000 to 5×10^{-9} mbar

PROFI[®]
NET

PROFI[®]
BUS

EtherCAT[®]

RS485

0-10 V



VSM at a glance

- Wide range combi sensor Pirani / cold cathode
- Automatic control of the cold cathode by the Pirani
- Switch-on of cold cathode at low pressure increases lifetime
- Robust sensor design
- Excellent ignition behavior
- Insensitive against inrush of air
- Overpressure stability up to 16 bar
- Correct pressure readings by means of separate gas type correction factors for Pirani and cold cathode

Features of the Smartline product family

- Digital RS485 interface and additional analog output signal 0 - 10 V, EtherCAT, Profibus or Profinet
- Large, integrated LCD display
- Adjustment of zero and atmospheric pressure via pushbutton or interface
- Two independent, potential-free relay switch points
- LEDs for device status and switch points
- Scalable output signal for an easy replacement of existing transducers
- Protection class up to IP54
- UHV suitable due to metal-sealed stainless steel sensor (helium leakage rate $< 5e-10$ mbar l/s)
- Easy connection with PLCs
- Rugged, EMI-proof metal housing
- Digital transmission of data of up to 500 m
- Bluetooth adapter available
- Suitable for 2 / 4 channel controllers VD12 / VD14
- VacuGraph™ Windows software to visualize, analyze and save measurements
- Easily replaceable sensor heads with stored calibration data

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Technical Data

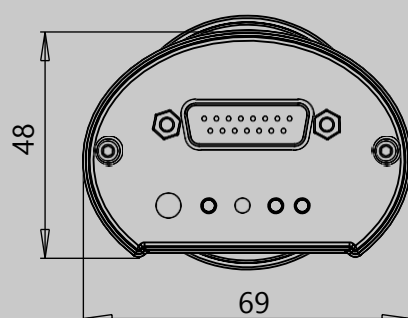
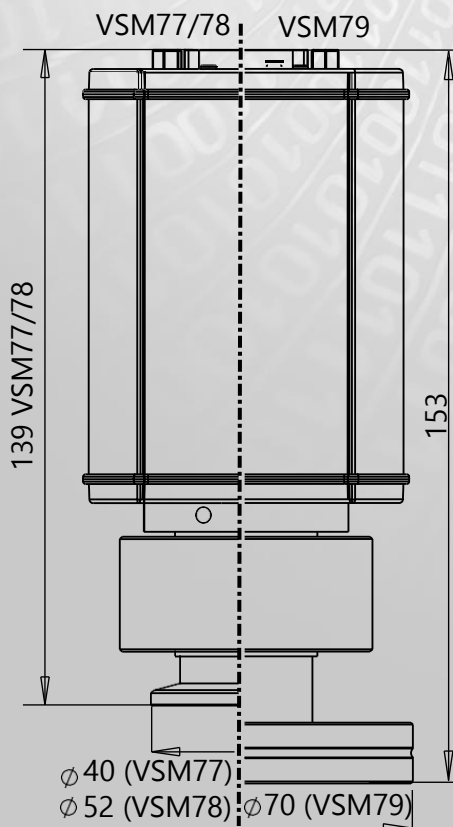
Measurement Principle	Heat conduction Pirani / Cold cathode (inv. magnetron), dep. on gas type
Measurement Range	1000 - 5×10^{-9} mbar (750- 5×10^{-9} Torr)
Max. Overload	10 bar abs. up to 16 bar abs. (with CERT31P)
Accuracy	1000 - 10 mbar: Approx. 30 % f. reading, 10 - 2×10^{-3} mbar: 10 % f. reading, 2×10^{-3} mbar - 1×10^{-8} mbar: 25% f. reading
Repeatability	10 - 1×10^{-2} mbar: Approx. 2% f.r., 1×10^{-2} - 1×10^{-8} mbar: Approx. 7% f.r.
Materials With Vac. Contact	Stainl. steel 1.4307, tungsten, nickel, glass, molybdenum, Al_2O_3 ceramic
Anode Voltage	< 2.5 kV
Reaction time	50 ms (switch-on cold cathode < 2s)
Operating Temperature	+5...+60°C
Storage Temperature	-40...+65°C
Bake Out Temperature	Max. 160°C at the flange (voltage supply switched-off)
Voltage Supply	20 - 30 VDC
Power Consumption	Max. 3 W, add. 0.8 W f. EtherCAT / relays / LCD, add. 1 W for Profibus, 1.8 W for Profinet
Output Signal	0 - 10 VDC, min 10 k Ω , measuring range 1.82 - 8.6 VDC, log. per default except for EtherCAT, Profinet, Profibus
Serial Interface	RS485: 9.6 kBd to 115 kBd, 8 databit, 1 stopbit, no parity, EtherCAT, Profinet, Profibus
Switch Points	2x relay, potential free, 50 VAC / 2 A or 30 VDC / 2 A, max. 60 VA except for EtherCAT, Profinet, Profibus
Electrical Connection	RS485/0-10V: SubD, 15-pole, male RS485/EtherCAT/Profinet: 1x M12 A / 2x M12 D, female RS485/Profibus: 1x M12 A / 1x M12 D, female
Vacuum Connection	DN 25 ISO-KF (VSM77), DN 40 ISO-KF (VSM78), DN 40 CF-F (VSM79)
Protection Class	Up to IP54 (SubD with XB15SL05 connector)
Weight	555 g (VSM77)

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Dimensions in mm



Model designations

- VSM77D DN 25 ISO-KF, 0 - 10 V and RS485
- VSM78D DN 40 ISO-KF, 0 - 10 V and RS485
- VSM79D DN 40 CF-F, 0 - 10 V and RS485

- VSM77DL DN 25 ISO-KF, 0 - 10 V and RS485, with LCD display
- VSM78DL DN 40 ISO-KF, 0 - 10 V and RS485, with LCD display
- VSM79DL DN 40 CF-F, 0 - 10 V and RS485, with LCD display

- VSM77E DN 25 ISO-KF, EtherCAT and RS485
- VSM78E DN40 ISO-KF, EtherCAT and RS485
- VSM79E DN 40 CF-F, EtherCAT and RS485

- VSM77PB DN 25 ISO-KF, Profibus and RS485
- VSM78PB DN 25 ISO-KF, Profibus and RS485
- VSM79PB DN 25 ISO-KF, Profibus and RS485

- VSM77PN DN 25 ISO-KF, Profinet and RS485
- VSM78PN DN40 ISO-KF, Profinet and RS485
- VSM79PN DN 40 CF-F, Profinet and RS485

Set

- VD1277P: Set including a 2 channel controller VD12, VSM77D, measuring cable 2 m

Accessories

- CERT31P: overpressure stability 16 bar, incl. testing certificate 3.1
- Replacement sensor heads: B_VSM77, B_VSM78, B_VSM79
- SLCASE Smartline protective plastic case, SLN4 plug-in power supply, SLKUSB interface converter RS485-USB, VGR VacuGraph software lite version

Further accessories as well as detailed information about our product family can be found in our Smartline brochure.

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