

VSI

The digital cold cathode transducer VSI measures absolute pressure in the high vacuum range.

Its microcontroller intelligence allows for individual adjustment of sensor parameters to the application.

Smartline represents cutting edge technology providing safe, precise and cost effective process control.

Typical Applications

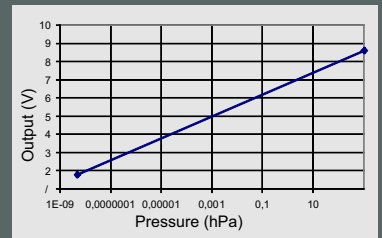
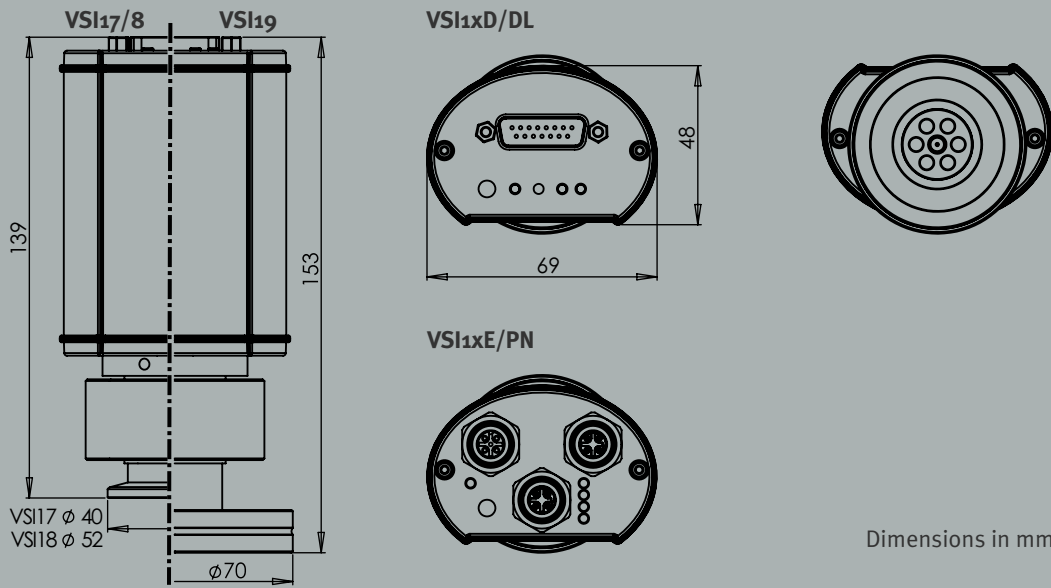
- Analytical instruments
- Coating plants and vapor deposition
- Industrial furnaces
- Process engineering
- Sputtering plants
- Semiconductor technology
- Mass spectrometry
- Medical engineering
- High energy physics
- Measuring and controlling in high vacuum

Smartline Vacuum Transducer Absolute Pressure 2×10^{-3} to 5×10^{-9} mbar



Benefits

- Cathode sensor is controlled either automatically or manually by the user
- Fast ignition due to a special technology
- Robust industrial design, rugged, EMI-proof metal housing
- Low magnetic stray field
- Insensitive against inrush of air due to automatic switch-off
- Two independent, potential-free relay switch points (VSI1xD/DL)
- LEDs for device status and switch points
- High measurement accuracy
- Easily replaceable sensor heads with stored calibration data
- Precise pressure readings by means of gas type correction factor
- Suitable for Thyracont 2 and 4 channel display and control units VD12 / VD10
- Digital and analog output signal / interfaces: 2.199 - 7.801 Volt, RS485, EtherCAT, Profinet
- Output signal scalable according to required output characteristics for an easy replacement of existing transducers
- Large, colored, integrated LCD display with background illumination (VSI1xD/DL)
- Easy connection with PCs and PLCs
- The digital output signal can be transmitted without interference over long distances (up to 500 m)
- Protection class IP54 for VSI1xE, VSI1xPN, with adapter also for models VSI1xD/DL available
- Vacuum connection by stainless steel small flange DN 25 ISO-KF, DN 40 ISO-KF or conflat flange DN 40 CF-F



$$V_{out} / V = 2.199 \log(p / \text{mbar}) + 7.801$$

$$p / \text{mbar} = 10^{(V_{out} / V - 7.801) / 2.199}$$

Technical Data

| | |
|---------------------------------|---|
| Measuring Principle | Cold cathode ionization sensor (inverted magnetron), depending on gas type |
| Material In Contact With Vacuum | Stainl. steel 1.4307, nickel, tungsten, molybdenum, glass, ceramic |
| Measurement Range | $2 \times 10^{-3} - 5 \times 10^{-9}$ mbar (Torr), max. overpressure 10 bar abs. |
| Accuracy | $2 \times 10^{-3} - 2 \times 10^{-8}$ mbar: <25% from reading |
| Repeatability | $2 \times 10^{-3} - 2 \times 10^{-8}$ mbar: Approx. $\pm 7\%$ from reading |
| Response Time | <50 ms (1s for activating the cold cathode) |
| Cathode Voltage | Max. 2.5 kV |
| Voltage Supply | 20 - 30 VDC |
| Electrical Connection | VSIxD/DL: D-Sub, 15-pin, male; optional: FCC68 (P_VSI003) VSIxE, VSIxPN: M12 circular connector, female, lockable, 1x A standard, 5pol., 2x D coded, 4pol. |
| Power Consumption | Max. 3 W, additionally 0.8 W f. EtherCAT / relays / LCD |
| Operating Temperature | +5...+60°C |
| Storage Temperature | -40...+65°C |
| Maximum Bake Out Temperature | 160°C at flange (electronic detached) |
| Output Signal | 0 - 10 VDC, measuring range 1.819 - 8.6 VDC, log., 0.6 V/decade configurable; resistor > 10kΩ (VSIxD/DL) |
| Interface | RS485: 9.6 kBd to 115 kBd, address switch 1 - 16 optionally EtherCAT, Profinet |
| Switch Points | 2 switch-over relays, 50 VAC / 2 A, 30 VDC / 2 A, max. 60 VA (VSIxD/DL) |
| Vacuum Connection | DN 25 ISO-KF (VSI17), DN 40 ISO-KF (VSI18), DN 40 CF-F (VSI19) |
| Protection Class | VSI1xE, VSI1xPN: IP54 VSI1xD/DL: IP40, IP54 with adaptor (see accessory data sheets) |
| Weight | Approx. 555 g |

Product Codes

- **VSI17D**
DN 25 KF, output 0 - 10 V and Rs485
- **VSI17DL**
As VSI17D, with LCD display
- **VSI17E**
DN 25 KF, EtherCAT and Rs485
- **VSI17PN**
DN 25 KF, Profinet and Rs485
- **VSI18D**
DN 40 KF, output 0 - 10 V and Rs485
- **VSI18DL**
As VSI18D, with LCD display
- **VSI18E**
DN 40 KF, EtherCAT and Rs485
- **VSI18PN**
DN 40 KF, Profinet and Rs485
- **VSI19D**
DN 40 CF, output 0 - 10 V and Rs485
- **VSI19DL**
As VSI19D, with LCD display
- **VSI19E**
DN 40 CF, EtherCAT and Rs485
- **VSI19PN**
DN 40 CF, Profinet and Rs485

Accessories:

- **Calibrated replacement sensor heads**
B_VSM77, B_VSM78, B_VSM79

For further accessories see separate accessory data sheets

Alterations reserved (VSI170711)