VSR

Smartline Vacuum Transducer
Absolute Pressure 1200 to 1×10^{-4} mbar

The combination of piezo and Pirani sensor in the digital VSR vacuum transducer offers high precision and excellent resolution in the rough and fine vacuum range.

Microcontroller intelligence automatically manages the optional interplay of both vacuum sensors.

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

Typical Applications

- Load locks
- Analysis technology
- Coating plants
- Vacuum furnaces
- Leakage tests
- Operational control of roughing pumps
- Process engineering
- Mass spectrometers
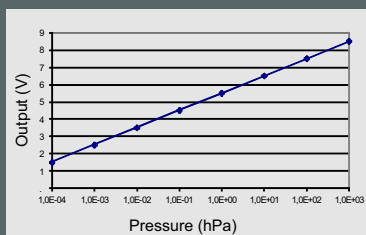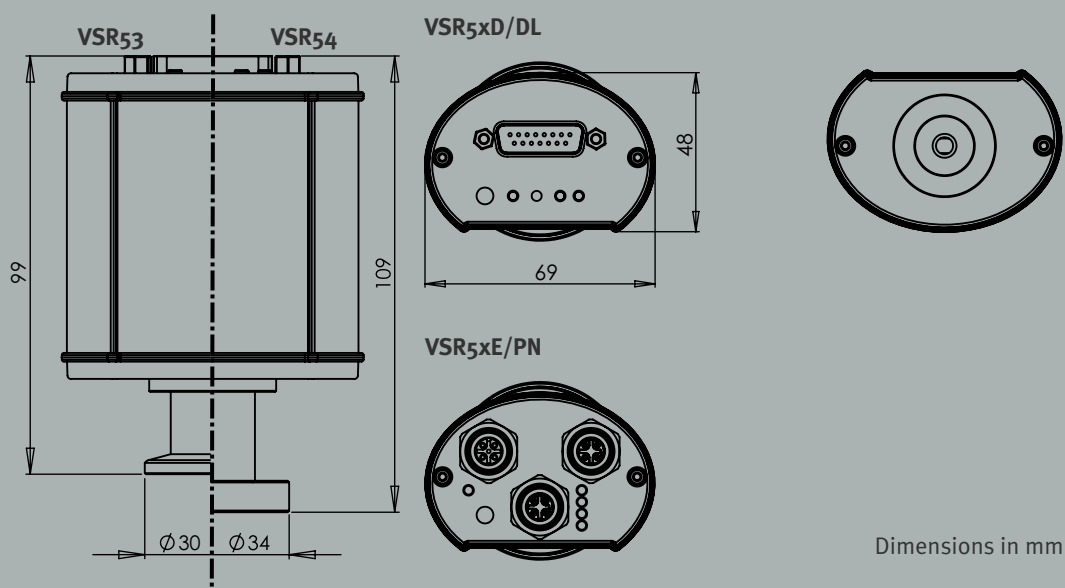- Safety circuits in vacuum systems

Benefits

- Wide measuring range due to combination sensor piezo / Pirani
- High accuracy and optimal resolution over the whole measuring range
- Two independent, potential-free relay switch points (VSR5xD/DL)
- Short response time
- Excellent reproducibility and long term stability
- Small measuring cell volume e. g. 2 cm³ for VSR53D
- Metal sealed stainless steel sensor, suitable for UHV applications
- Filament is protected against oil and solvent vapors by a metal screen
- Stable measurements due to optimized temperature compensation
- Easily replaceable sensor heads with stored calibration data
- Measurements independent of gas type above 20 mbar and adjustable gas type correction factors for Pirani sensor
- LEDs for device status and switch points

- Digital RS485 interface and additional analog output signal 1.5-8.58 V, Profinet or EtherCAT
- Digital adjustment of zero and atmospheric pressure via pushbutton or interface
- Large, integrated LCD display with background illumination (VSR5xDL)
- Display flashes in bright red color in case of error, compared to green ligthing in the normal mode (VSR5xDL)
- Easy connection with PLCs
- The digital output signal can be transmitted error-free over long distances (up to 500 m)
- Baud rate 9.6 kBd to 115 kBd
- Rugged, EMI-proof metal housing
- Suitable for Thyracont 2 and 4 channel display and control units VD12 / VD10
- Protection class IP54 for VSR5xE, VSR5xPN, with adapter also for models VSR5xD/DL available
- Vacuum connection using stainless steel small flange DN 16 ISO-KF or conflat flange DN 16 CF-F

VSR53 VSR54

VSR5xD/DL

VSR5xE/PN

66

109

48

69

Ø 30 Ø 34

Dimensions in mm

$$V_{out} (V) = \log (p(hPa)) + 5.5$$

$$p (hPa) = 10^{(V_{out}(V) - 5.5)}$$

Technical Data

Measuring Principle	Diaphragm piezo resistive / Pirani
Materials In Contact With Vacuum	Stainless steel 1.4307, nickel, gold, silicon oxide, tungsten, glass
Measurement Range	1200 - 1 x 10^{-4} mbar (900 - 1 x 10^{-4} Torr), max. overpressure 4 bar abs.
Accuracy	1200 - 10 mbar: ±0.3% full scale 10 - 2 x 10^{-3} mbar: ±10% from reading
Repeatability	1200-10 mbar: ±0.1 % full scale, 10 - 2 x 10^{-3} mbar: ±2% from reading
Reaction Time	1200 - 10 mbar: ‹ 30ms (piezo) 10 - 2 x 10^{-3} mbar: ‹ 100 ms (Pirani)
Voltage Supply	20 - 30 VDC
Electrical Connection	VSR5xD/DL: SubD 15pol., male, lockable VSR5xE, VSR5xPN: M12 circular connector, female, lockable, 1x A standard, 5pol., 2x D coded, 4 pol.
Power Consumption	2.5 W, add. 0.8 W for EtherCAT / relays /LCD, add. 1.8 W for Profinet
Operating Temperature	+5...+60°C (rel. humidity max . 80% at 30°C noncondensing)
Storage Temperature	-40...+65°C
Max. Bake Out Temperature	150°C at the flange
Output Signal	0-10 VDC, measuring range 1.5 to 8.58 VDC, logarithmic, 1V / decade, load resistor › 10 k Ω (VSR5xD/DL)
Serial Interface	RS485: 9.6 kBd to 115 kBd, address switch 1 - 16
Switch Points	2 switch-over relays, 50 VAC / 2 A, 30 VDC / 2 A, max. 60 VA
Vacuum Connection	DN 16 ISO-KF (VSR53), DN 16 CF-F (VSR54)
Protection Class	VSR5xE, VSR5xPN: IP54 VSR5xD/DL: IP40, IP54 with adaptor (see accessory data sheets)
Weight	220 g (VSR53D)

Product Codes

• **VSR53D**
DN16 ISO-KF, 0-10V and RS485

• **VSR53DL**
As VSR53D, with LCD display

• **VSR53E**
DN16 ISO-KF, EtherCAT and RS485

•**VSR53PN**
DN16 ISO-KF, Profinet and RS485

• **VSR54D**
DN16 CF-F, 0-10V and RS485

• **VSR54DL**
AS VSR54D, with LCD display

• **VSR54E**
DN16 CF-F, EtherCAT and RS485

•**VSR54PN**
DN16 CF-F, Profinet and RS485

Accessories:

• **Replacement sensor heads**
B_VSR53, B_VSR54