

## VSR

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
- Leakages tests
- Operational control of roughing pumps
- Process engineering
- Mass spectrometers
- Safety circuits in vacuum systems

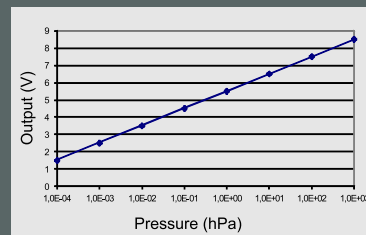
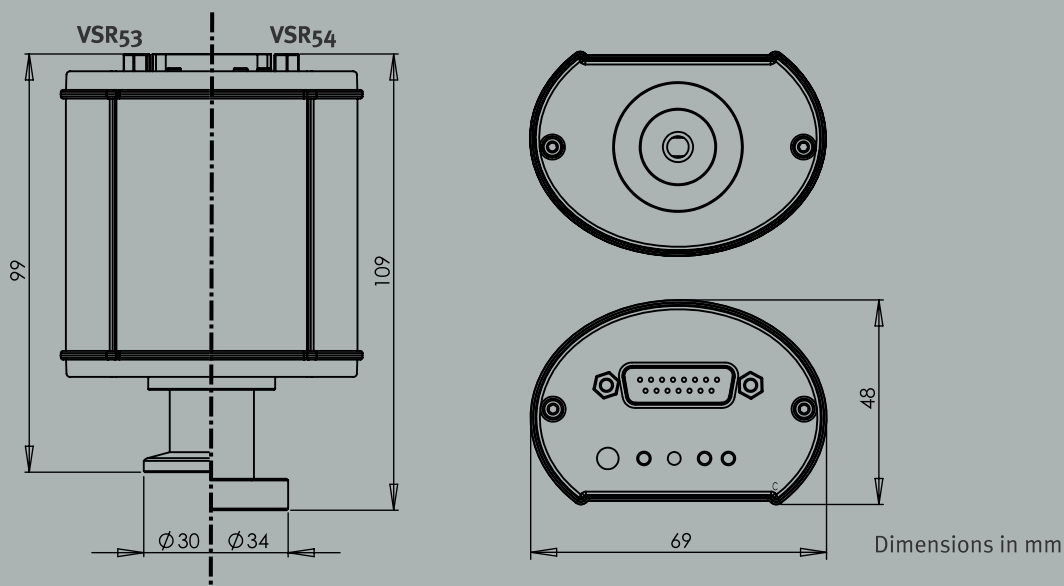
## Smartline Vacuum Transducer Absolute Pressure 1200 to $1 \times 10^{-4}$ mbar



*Smartline*

### 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
- Short response time
- Excellent reproducibility and long term stability
- Small measuring cell volume e. g. 2 cm<sup>3</sup> 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 or EtherCAT
- Digital adjustment of zero and atmospheric pressure via pushbutton or interface
- Large, integrated LCD display with background illumination (VSR53DL, VSR54DL)
- Display flashes in bright red color in case of error, compared to green lighting in the normal mode (VSR53DL, VSR54DL)
- 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
- Protection class IP54 (VSR53E, VSR54E)
- Suitable for Thyracont 2 and 4 channel display and control units VD12 / VD10
- Vacuum connection using stainless steel small flange DN 16 ISO-KF or conflat flange DN 16 CF-F



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

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

## 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 - $1 \times 10^{-4}$ mbar ( $900 - 1 \times 10^{-4}$ Torr), max. overpressure 4 bar abs.
Accuracy	1200 - 10 mbar: $\pm 0,3\%$ full scale 10 - $2 \times 10^{-3}$ mbar: $\pm 10\%$ from reading
Repeatability	1200-10 mbar: $\pm 0,1\%$ full scale, 10- $2 \times 10^{-3}$ mbar: $\pm 2\%$ from reading
Reaction Time	1200 - 10 mbar: $< 30\text{ms}$ (piezo) 10 - $2 \times 10^{-3}$ mbar: $< 100\text{ms}$ (Pirani)
Voltage Supply	20 - 30 VDC
Electrical Connection	VSR53D/DL, VSR54D/DL: SubD 15pol., male, lockable VSR53E, VSR54E: M12 circular connector, female, lockable, 1x A standard, 5pol., 2x D coded, 4 pol.
Power Consumption	2.5 W, additionally 0.8 W for EtherCAT / relays /LCD
Operating Temperature	+5...+60°C (rel. humidity max . 80% at 30°C noncondensing)
Storage Temperature	-40...+65°C
Max. Bake Out Temperature	125°C at the flange
Output Signal	0-10 VDC, measuring range 1.5 to 8.58 VDC, logarithmic, 1V / decade, load resistor $> 10\text{ k}\Omega$ (VSR53D/DL, VSR54D/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	IP54 (VSR53E, VSR54E), IP40 (VSR53D/DL, VSR54D/DL)
Weight	220 g (VSR53D)

## Product Codes

• **VSR53D**  
Combi transducer piezo-Pirani,  
1200 -  $1 \times 10^{-4}$  mbar,  
DN16 ISO-KF connection,  
output RS485 and 0-10V

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

• **VSR53E**  
As VSR53D,  
output RS485 and EtherCAT

• **VSR54D**  
Combi transducer piezo-Pirani,  
1200 -  $1 \times 10^{-4}$  mbar,  
DN16 CF-F connection,  
output RS485 and 0-10V

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

• **VSR54E**  
As VSR54D,  
output RS485 and EtherCAT

## Accessories:

• **SLN4**  
Plug-in power supply 24 V

• **SLKUSB**  
Interface converter RS485-USB

• **VGR**  
VacuGraph™ software for Windows

• **W1515002**  
Measuring cable for VD12 and  
VD10, shielded, 2 m

• **W1515006**  
As W1515002, 6 m

• **W1515020**  
As W1515002, 20 m

• **Replacement sensor heads**  
B\_VSR53, B\_VSR54

Alterations reserved (VSRA03)