VSH

Smartline Vacuum Transducer
Absolute Pressure 1000 to 5 x 10^{-10} mbar

The digital combination transducer VSH (Pirani/hot cathode) measures absolute pressure from atmospheric pressure to ultrahigh vacuum.

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

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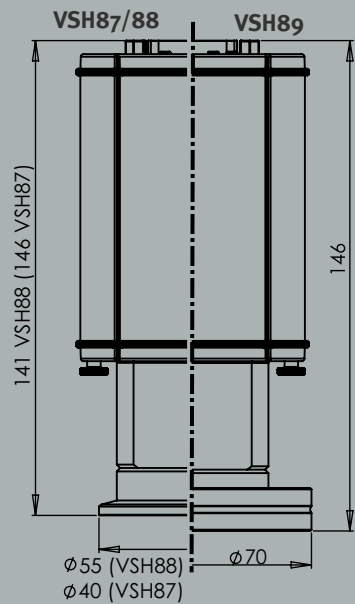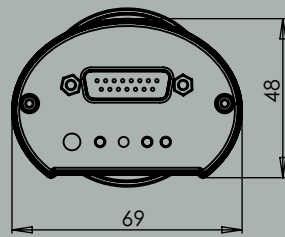

Smartline

Typical Applications

- Analysis technology

- Coating plants and vapor deposition

- Sputtering plants

- Measuring and controlling in the fine and ultrahigh vacuum range

- Vacuum furnaces

- Process engineering

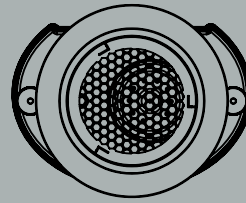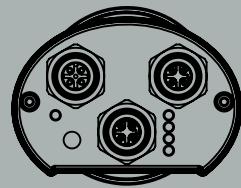- Space simulation chambers

Benefits

- Wide range sensor Pirani / Bayard Alpert

- The hot cathode sensor is automatically controlled by the Pirani

- Pirani with extended range allows operation of hot cathode at lower pressure and increases lifetime

- Excellent accuracy and repeatability

- Low thermal and electrical interference with the vacuum process

- Small volume of the measuring cell e. g. 20 cm^3 for VSH88D

- Bayard Alpert with blowing resistant, yttrium coated double filament

- Insensitive against inrush of air

- Two independent, potential-free relay switch points (VSH8xD/DL)

- LEDs for device status and switch points

- Easily replaceable sensor heads with stored calibration data

- Correct pressure readings by means of separate gas type correction factors for Pirani and hot cathode

- Suitable for Thyracont 2 and 4 channel display and control units VD12 / VD10

- Digital RS485 interface and additional analog output signal 1.219-8.6 V, EtherCAT or Profinet

- Digital adjustment of zero and atmospheric pressure via pushbutton or interface

- Large, integrated LCD display with background illumination (VSH8xDL)

- Display flashes in bright red color in case of error, compared to green ligthing in the normal mode (VSH8xDL)

- 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 for VSH8xE, VSH8xPN, with adapter also for models VSH8xD/DL available

- Vacuum connection by stainless steel small flange DN 25 ISO-KF, DN 40 ISO-KF or conflat flange DN 40 CF-F
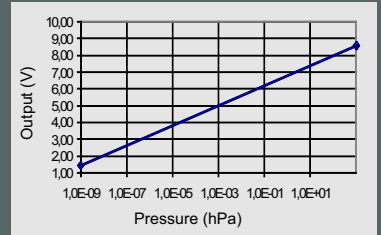
VSH87/88   VSH89

VSH8xD/DL

VSH8xE/PN

141 VSH88 (146 VSH87)

146

48

69

⌀55 (VSH88)
⌀40 (VSH87)

⌀70

Dimensions in mm

$$V_{out} /V = 0,6 \log (p/mbar) + 6,8$$

$$p /mbar = 10^{(\ (V_{out} /V - 6,8)\ /\ 0,6\ )}$$

Technical Data

Measuring Principle	Pirani / Bayard Alpert, depending on gas type
Materials In Contact With Vacuum	Stainl. steel 1.4307, Ni, W, Pl, yttrium coated iridium, glass
Measurement Range	1000 - 5 x10^{-10} mbar (750 - 5 x10^{-10} Torr), max. overpressure 4 bar abs.
Accuracy	1000 - 10 mbar: ‹ 30 % from reading 10 - 1 x 10^{-8} mbar: ‹ 10 % from reading
Repeatability	±2 % (10 - 1 x 10^{-2} mbar), 5% (1 x10^{-2} - 1 x 10^{-8} mbar)
Response Time	‹ 200 ms (2 s while switching BA emission current)
Emission Current	Automatic switching 10 µA, 100 µA, 1 mA, 2 mA
Degas	Ohmic heating of the anode
Voltage Supply	20 - 30 VDC
Electrical Connection	VSH8xD/DL: SubD, 15pol., male, lockable VSH8xE, VSH8xPN: M12 circular connector, female, lockable, 1x A standard, 5pol., 2x D coded, 4pol.
Power Consumption	Max. 8 W, add. 1 W f. degas and 0.8 W f. EtherCAT/relays/LCD, add. 1.8 W for Profinet
Operating Temperature	+5...+60ºC
Storage Temperature	-40...+65ºC
Maximum Bake Out Temperature	180ºC at the flange (electronic detached)
Output Signal	0 - 10 VDC, measuring range 1.219 - 8.6 VDC, log., 0.6 V/decade load resistor › 10k Ω (VSH8xD/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 (VSH8xD/DL)
Vacuum Connection	DN 25 ISO-KF (VSH87), DN 40 ISO-KF (VSH88), DN 40 CF-F (VSH89)
Protection Class	VSH8xE, VSH8xPN: IP54 VSH8xD/DL: IP40, IP54 with adaptor (see accessory data sheets)
Weight	Approx. 555 g

Product Codes

•**VSH87D**
DN 25 ISO-KF, 0 - 10 V and RS485

• **VSH87DL**
As VSH87D, with LCD display

•**VSH87E**
DN 25 ISO-KF, EtherCAT and RS485

•**VSH87PN**
DN 25 ISO-KF, Profinet and RS485

•**VSH88D**
DN 40 ISO-KF, 0 - 10 V and RS485

•**VSH88DL**
As VSH88D, with LCD display

•**VSH88E**
DN 40 ISO-KF, EtherCAT and RS485

•**VSH88PN**
DN 40 ISO-KF, Profinet and RS485

•**VSH89D**
DN 40 CF-F, 0 - 10 V and RS485

•**VSH89DL**
As VSH89D, with LCD display

•**VSH89E**
DN 40 CF-F, EtherCAT and RS485

•**VSH89PN**
DN 40 CF-F, Profinet and RS485

Accessories

• **Replacement sensor heads**
B_VSH87, B_VSH88, B_VSH89

Alterations reserved (VSH170710)