# VSH - Smartline Vacuum Transducer Pirani / Hot Cathode

Absolute Pressure 1000 to $5 \times 10^{-10}$ mbar

**Smartline**

PROFI NET®
EtherCAT®
RS485
0-10 V

## Overview VSH vacuum transducer

- Wide range combination sensor Pirani / Bayard Alpert
- Excellent accuracy and repeatability
- Bayard Alpert with blowing resistant, yttrium coated double filament
- Longterm tests confirm excellent life time: up to 100,000 shock venting cycles

- Switch-on of the hot cathode at lower pressure enhances durability
- Automatic control of the hot cathode by the Pirani
- Seperate gas correction factors for Pirani and hot cathode

## Overview Smartline vacuum transducers

- Digital RS485 interfaces plus 0-10 V output signal, EtherCAT or PROFINET, Bluetooth adapter SLKBT for wireless communication
- PROFINET transducers support MRP
- Exchangeable sensor heads with stored calibration data
- Large LCD display (exc. EtherCAT, PROFINET)
- Readjustment of zero and atmosphere by push-button or interface
- LEDs for device status and switch points
- Two independent, potentialfree relay switch points (exc. EtherCAT, PROFINET)

- Protection class up to IP54
- 0-10 V output signal can be scaled according to the required output characteristics. Exchange of existing vacuum gauges easily, independent of the manufacturer, without programming effort
- Intelligent sensors for simplified integration according to Industry 4.0 standards
- Metal sealed stainless steel sensor cell, suitable for UHV (He leackage rate <5e-10 mbar l / s)
- Expansion with 2 channel controller VD12 or 4 channel controller VD14 possible
- VacuGraph™ Windows software for visualisation, analysis and storage of measuring data

**THYRACONT**
Vacuum Instruments

# VSH - Smartline Vacuum Transducer Pirani / Hot Cathode
## Absolute Pressure 1000 to 5 x 10$^{-10}$ mbar
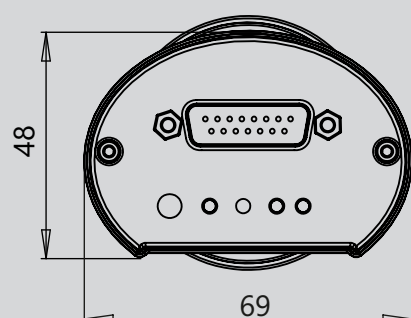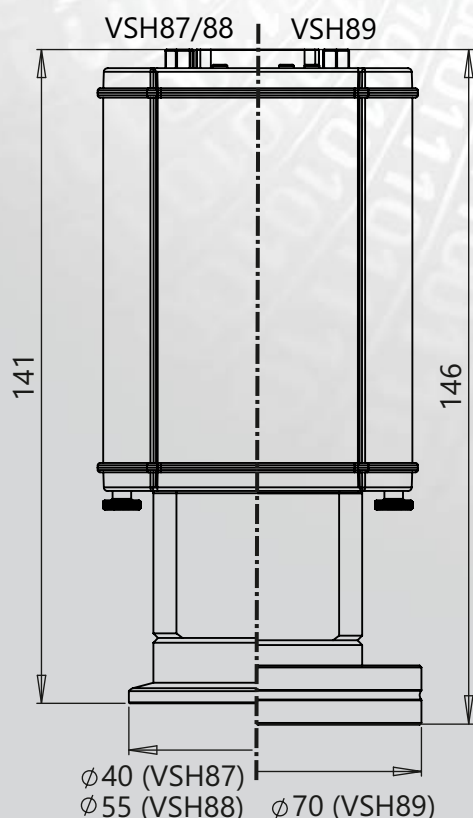
## Technical Data

| | |
|---|---|
| Measurement Principle | Heat conduction Pirani / Hot Cathode Bayard Alpert, dep. on gas type |
| Measurement Range | 1000 - 5e-10 mbar (750 - 5e-10 Torr) |
| Max. Overload | 4 bar |
| Accuracy | 1000 - 10 mbar: Approx. 30 % f. r., 10 - 1e-8 mbar: Approx. 10 % f. r. |
| Repeatability | 10 - 1e-2 mbar: 2 %, 1e-2 - 1e-8 mbar: 5% |
| Materials With Vac. Contact | Stainl. steel 1.4307, tungsten, nickel, glass, platinum, iridium, yttria oxide |
| Filaments Bayard Alpert | Yttria coated iridium |
| Emission Current | 9 µA, 100 µA, 1.0 mA, 2.0 mA |
| Degas Method | Ohmic heating of the anode |
| Reaction Time | 50 ms (switching of emission current < 2s) |
| Operating Temperature | +5...+60°C (Profinet +5...+50°C) |
| Storage Temperature | -40...+65°C |
| Bake Out Temperature | Max. 180°C at the flange (voltage supply switched-off) |
| Voltage Supply | 20 - 30 VDC |
| Power Consumption | Max. 8 W, add. 1 W f. degas and 0.8 W f. EtherCAT/relays/LCD, add. 1.6 W for Profinet |
| Output Signal | 0 - 10 VDC, min. 10 kΩ, measuring range 1.219 - 8.6 VDC, log. except for EtherCAT, Profinet |
| Digital Interface | RS485: 9,6 kBd to 115 kBd, 8 databit, 1 stopbit, no parity EtherCAT, Profinet |
| Switch Points | 2x relay, potential free, 49 VAC / 2 A, 30 VDC / 2 A, max. 60 VA except for EtherCAT, Profinet |
| Electrical Connection | RS485/0-10V: SubD, 15-pole, male RS485/EtherCAT/Profinet: 1x M12 A / 2x M12 D, female |
| Vacuum Connection | DN 25 ISO-KF (VSH87), DN 40 ISO-KF (VSH88), DN 40 CF-F (VSH89) |
| Protection Class | Up to IP54 (SubD with XB15SL05 adaptor) |
| Weight | Approx. 475 g (VSH88) |

# VSH - Smartline Vacuum Transducer Pirani / Hot Cathode
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## Dimensions in mm

VSH87/88 | VSH89

141

146

⌀40 (VSH87)
⌀55 (VSH88)  ⌀70 (VSH89)

48

69

## Model designations

- VSH87D    DN 25 ISO-KF, 0-10 V and RS485
- VSH88D    DN 40 ISO-KF, 0-10 V and RS485
- VSH89D    DN 40 CF-F, 0-10 V and RS485

- VSH87DL   DN 25 ISO-KF, 0-10 V, RS485, LCD display
- VSH88DL   DN 40 ISO-KF, 0-10 V and RS485, LCD display
- VSH89DL   DN 40 CF-F, 0-10 V and RS485, LCD display

- VSH87E    DN 25 ISO-KF, EtherCAT and RS485
- VSH88E    DN 40 ISO-KF, EtherCAT and RS485
- VSH89E    DN 40 CF-F, EtherCAT and RS485

- VSH87PN   DN 25 ISO-KF, Profinet and RS485
- VSH88PN   DN 40 ISO-KF, Profinet and RS485
- VSH89PN   DN 40 CF-F, Profinet and RS485

## Set

VD1288P: Set including a 2 channel controller VD12, VSH88D, measuring cable 2 m

## Accessories

- Replacement sensor heads: B_VSH87A, B_VSH88A, B_VSH89A
- 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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