Smartline
Intelligent Vacuum Measurement

Smartline

PRESSURE
CH1 : 1.35E-1
CH2 : 958.3
mbar
REL : 1 2

THYRACONT
Vacuum Instruments

LEDs for status
and switch points

Interfaces: **0-10 V, RS485,**
EtherCAT. PROFI® PROFI®
NET BUS

THYRACONT

mbar
2.6 E-7

Smartline

Push-Button for
readjustment and degas

Two independent
relay switch points

Optional
LCD display

Easily exchangeable
replacement sensors

1e-11	1e-10	1e-9	1e-8	1e-7	1e-6	1e-5	1e-4	1e-3	1e-2	1e-1	1	10	100	1000

mbar

VSR - Piezo / Pirani

VSP and VCP - Pirani

VSM - Pirani / Magnetron

VSI - Magnetron

VSH - Pirani / Bayard Alpert

Ultra-High-Vacuum	High-Vacuum	Fine-Vacuum	Rough-Vacuum
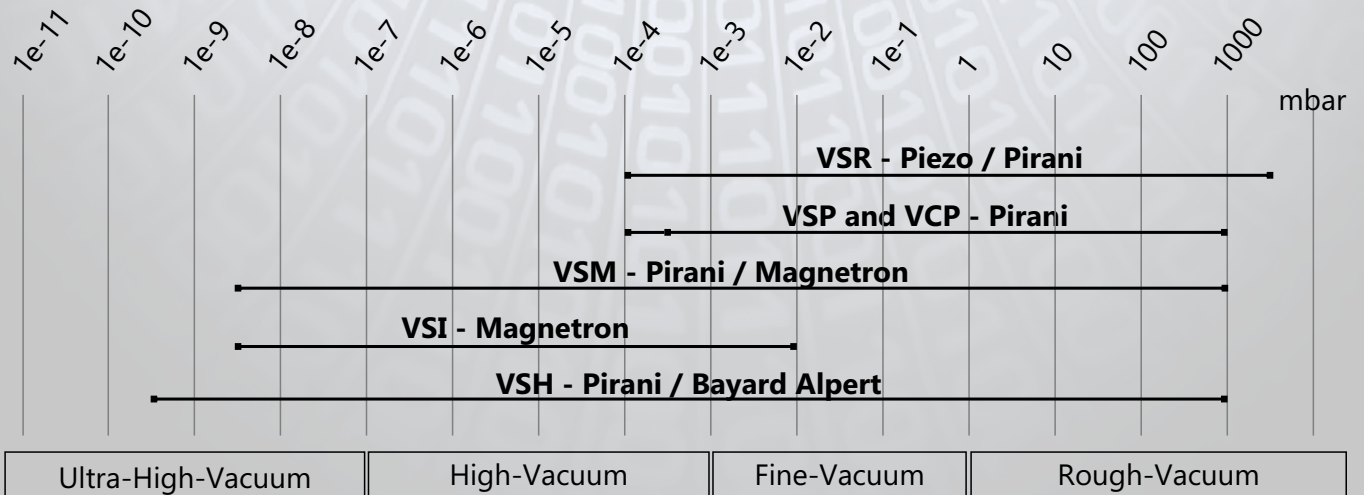
Versatile transducers

Smartline® transducers measure the entire measuring range from 1200 mbar to 5e-10 mbar. With modern combination sensors, these transducers are able to enter different pressure areas like fine and high vacuum with high precision simultaneously.

Smart controlling

Intelligent micro controllers assume the automatic control of the sensors and guarantee an optimal interaction between Pirani and ionization measuring cell at an equally high flexibility. Switching and transition ranges between the sensors can be configured individually. The transducers status and error messages can be connected with the relays in order to generate a signal for the plant control.

Integrated display

The optional, back lit LCD display enables quick control of the measurement directly at the transducer and lights noticeably red in a case of error.
The display can be rotated by 180° by software command. Thus, the display is also clearly legible at horizontal installation.

LEDs

The transducers' LEDs show the status of the gauge as well as the status of the switching points.

Digital interfaces

All Smartline transducers have a RS485 interface and and either an additional 0-10 V output, EtherCat, Profibus or Profinet interface. The Bluetooth adapter SLKBT enables a wireless communication.

Long-Lasting sensors

The ionization sensors of the Thyracont Pirani with increased measuring range are only switched on at a very low pressure. This conserves the sensor technology and allows a long lifetime of the gauges.

Scalable output signal

The analogue 0-10 V output signal can be scaled accordingly to the desired characteristic curve.
Thus, an exchange of existing transducers, independent of the manufacturer and without programming effort, is easily possible. We also offer adapters (e.g. FCC68) if the transducer should be changed but the cable should be kept.

Easy configuration

The Smartline transducers can be connected to a PC by means of a SLKUSB adapter. Thus, the gas tpye correction factors or switch points can be changed with the VacuGraph™ Windows software. (Lite version free of charge available). Programming skills will not be necessary. Alternatively, the transducer can be configured by software command via RS485 interface.

Relay switching points

Smartline transducers with RS484 / 0-10 V interface have potential-free relay switching points as a standard by which vacuum pumps and processes can be controlled.

Replacement sensors

The calibrated sensor heads of our Smartline transducers can be exchanged by the user with a few simple steps. Maintenance is reduced to the bare minimum. With their consistently metal sealed sensors (helium leakage rate <5e-10 mbar l/s), the Smartline transducers are suited optimally for high-vacuum applications.

Vacuum controller

The VD12 two channel controller and the VD14 four channel controller are available for all Smartline transducers.
The controllers have large, backlit displays and selection menus are easy to read.

Automatic identification

The transducers are connected to the controller in chains (see grafic below). The controller identifies automatically which types of transducers are connected.

Process control

Thyracont´s VD12 and VD14 provide two and four programmable relay switch points for comfortable process control.

Interfaces

Data can be exchanged with a PLC or with the VacuGraph software by means of the RS232 interface and the USB interface.

VacuGraph® software

The parameters of the controller and as well as the parameters of the transducers (e.g. units, output characteristics, gas type correction factors, switch points, etc.) can be easily adjusted using VacuGraph Windows software (lite version available free of charge) or alternatively via software command.

Data analysis

VacuGraph can store measure-ment data, permitting the user to retain a quality record and compare current data against a previously stored baseline.
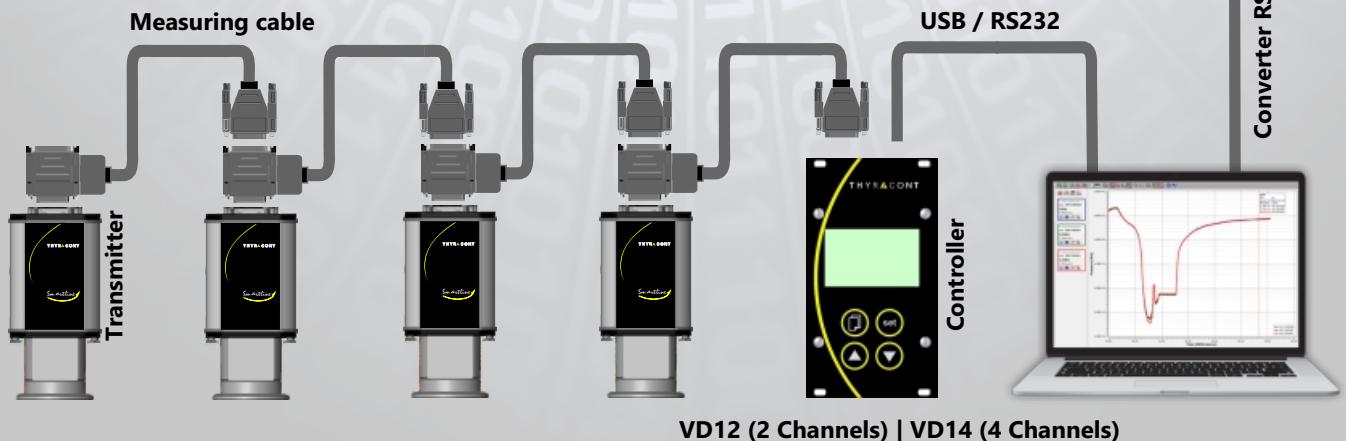
Practical tools

Features such as a tool to calculate the leakage rate or the pumping speed complement Thyracont´s VacuGraph software. With the firmware upgrade-assistant, the device firmware can easily be updated and enhanced with new functions.

Bluetooth® and VacuSniff®

With the combination of the SLKBT interface converter RS485/Bluetooth and the free VacuSniff™ app measurement values can be received and transferred to an existing Smartline RS485 bus.
The pressure measurement readings of up to 16 Smartline transducers can, for example, be displayed numerically with the app on a smartphone or tablet. An integrated alarm function informs the user as soon as pressure undercuts or exceeds a defined value. Hence, the user always has an eye on measurements even during the assembly or maintenance of his plant.

Measuring cable

USB / RS232

24 VDC

Transmitter

Converter RS485 / USB

Transmitter

Controller

VD12 (2 Channels) | VD14 (4 Channels)

THYRACONT
Vacuum Instruments

Smartline   Accessories and Services

- **SLZUB** accessory set: SLCASE protective case, SLN4 power supply, SLKUSB interface converter RS485-USB, VGR VacuGraph software lite-version

- **SLN4** Plug-in power supply 24V, for one SL transducer, exchangeable AC jack EURO, US, UK, AUS

- **SLKUSB** with 2 m cable and SubD connector, galvanic isolation

- **SLKBT** interface converter RS485 - Bluetooth

- **SLCASE** protective case for Smartline transducers with KF flange

- **VGR VacuGraph** Windows software, full version for download, single or triple license (VGRX3)

- **W1515002 / 6 / 10 / 20** Measuring cable for VD12/14, lengths: 2m, 6m, 10m, 20m

- **W1500002 / 6 / 10 / 20** Measuring cable for transducers, open ends, lengths: 2m, 6m, 10m

- **W1500502 / 6 / 10 / 20** Measuring cable for transducers, open ends and protection class IP54, lengths: 2m, 6m, 10m

- **XB15SL05** mating plug, SUB-D, 15 pole, protection class IP54, for SL transducers

- **WUSB0002** for VD12, VD14 interface cable, 2 m, USB

- **WRSJ0002** for VD12, VD14 interface cable, 2 m, RS232

- **Sensor Heads** B_VSR53, B_VSR54, B_VSP63, B_VSP64, B_VCP63, B_VCP64, B_VSM77, B_VSM78, B_VSM79, B_VSH87, B_VSH88, B_VSH89

- **Various Adapters** for the replacement of competitive products (e.g. SubD to RJ45/FCC68)

- **Baffles** protection of the sensor against pollution, ZZCH016 (DN16KF)/ 25 (DN25KF) / 40 (DN40KF) / 40CF (DN25CF)

- **Calibration**:
  - **ADJCERT**, 4 reference points per pressure decade
  - **ADJCERTHV** 4 reference points per pressure decade, measuring range 1000 – 1e-5 hPa (mbar)
  - **DKDCERT** DAkkS calibration
  - **DKDCERTHV** DAkkS calibration high vacuum, measuring range 1000 - 1e-6 hPa (mbar)

You will find further accessories in our brochure for vacuum components.

THYRACONT Vacuum Instruments

www.thyracont-vacuum.com

	VSR	VSL	VSP	VCP	VSI	VSM	VSH
Measuring Principle	Piezo resistive / heat conduction Pirani (Pirani, dep. on gas type)		Heat conduction Pirani, depending on gas type		Cold cathode (inv. magnetron), depending on gas type	Heat conduct. Pirani / cold cathode (inv. magnetron) dep. on gas type	Heat conduct. Pirani / Hot Cathode (Bayard Alpert), dep. on gas type
Measuring Range	1200 - 1e-4 mbar (900 - 1e-4 Torr)	Absolute: 1200 - 1e-4 mbar (900 - 1e-4 Torr)	1000 - 1e-4 mbar (750 - 1e-4 Torr)	1000 - 5e-4 mbar (750 - 5e-4 Torr)	2e-3 - 5e-9 mbar (1,5e-3 - 5e-9 Torr)	1000 - 5e-9 mbar (750 - 5e-9 Torr)	1000 - 5.0e-10 mbar (750 - 5.0e-10 Torr)
Max. Overload	4 bar abs.		10 bar abs., up to 16 bar abs. (with CERT31P)				4 bar abs.
Accuracy	1200 - 40 mbar: 0.3 % f. s., 40 - 2e-3 mbar: 10 % f. reading	Absolute: 1200 - 40 mbar: 0.3% f. scale end, 40 - 2e-3 mbar: 10% f. reading Relative: 0.4% f. scale end	1000 - 20 mbar: ca. 30 % f. r., 20 - 0.002 mbar: 10 % f. r.	1000 - 10mbar: Approx. 30 % f. r., 10 - 0.01mbar: 10 % f. r.	2e-3 - 2e-8 mbar: 25 % f. r.	1000 - 10 mbar: approx. 30 % f. r.; 10 - 2e-3 mbar: 10 % f. r. | 2e-3 - 1e-8 mbar: 25 % f. r.	1000 ... 10mbar: approx. 30 % f. r., 10 ... 1e-8 mbar: approx. 10 % f. r.
Repeatability	1200 - 40 mbar: 0.1% full scale | 40 - 1e-2 mbar: 2 % from reading		20 - 2e -3 mbar: 2 % f. r.	10 - 0.01 mbar: 5 % f. r.	10 - 1e-2 mbar: ca. 2% f.r.	10 - 1e-2 mbar: ca. 2% f. r., 1e-2 - 1e-8 mbar: ca. 7% f. r.	10 - 1e-2 mbar: 2 % f. r., 1e-2 - 1e-8 mbar: 5% f. r.
Materials with Vac. Contact	Stainless steel 1.4307, tungsten, nickel, glass, gold, silicon oxide		Stainless steel 1.4307, tungsten, nickel, glass	Stainl. steel 1.4307, platinum /rhodium, nickel, glass	Stainl. steel 1.4307, tungsten, nickel, glass, molybdenum, Al_2O_3 ceramic		Stainl. steel 1.4307, tungsten, nickel, glass, platinum, iridium, yttria oxide
Hot and Cold Cathode relevant data					Anode Material: Molybdenium Emission Current: < 2.5 kV		Filaments: Yttria coated iridium Anode Voltage: 9 µA, 100 µA, 1.0 mA, 2.0 mA Degas Method: Ohmic heating of the anode
Reaction Time	40 ms				50 ms (switch-on cold cathode < 2s)		50 ms (switching of emission current < 2s)
Operating Temp.	+5...60 °C (Profinet +5... +50°C)						
Storage Temp.	-40...+65 °C						
Bake Out Temp.	Max. 150 °C at the flange (voltage supply switched-off)	Max. 125 °C at the flange (voltage supply switched-off)	Max. 150 °C at the flange (voltage supply switched-off)		max. 160 °C at the flange (voltage supply switched-off)		max. 180 °C at the flange (voltage supply switched-off)
Voltage Supply	20 - 30 VDC						
Power Consumption	Max. 3 W, add. 0.8 W f. EtherCAT/ relays / LCD, add. 1.6 W f. Profinet	Max. 2.5 W, add. 0.8 W f. EtherCAT/ relays / LCD, add. 1.6 W f. Profinet	Max. 3 W, add. 0.8 W f. EtherCAT/relays / LCD, add. 1.6 W f. Profinet				Max. 8 W, add. 0.8 W f. EtherCAT/relays / LCD, add. 1.6 W f. Profinet
Output Signal	0-10 VDC, min. 10 kΩ , measuring range 1.5 to 8.5 VDC, log. (Default) except for EtherCAT, Profinet				0 - 10 VDC, min. 10 kΩ, meas. range 2.199 - 7.801 VDC, log. (default) except EtherCat, Profinet	0 - 10 VDC, min. 10 kΩ, meas. range 1.82 - 8.6 VDC, log. (default) except EtherCat, Profinet	0 - 10 VDC, min. 10 kΩ, meas. range 1.219 - 8.6 VDC, log. (default) except EtherCat, Profinet
Serial Interface	RS485: 9.6 ... 115 kBd, ...8 databit, 1 stopbit, no parity, EtherCat, Profinet, Profibus						
Switch Points	2x relays, pot. free, 50 VAC / 2 A, 30 VDC / 2 A, max. 60 VA, except EtherCat and Profinet						
Electrical Connection	RS485/0-10V: SubD, 15-pole, male | RS485/EtherCAT/Profinet: 1xM12 A / 2x M12 D female						
Vacuum Connection	VSR53: DN 16 KF, VSR54: DN 16 CF	VSL53: DN 16 KF, VSL54: DN 16 CF	VSP63: DN 16 KF, VSP64: DN 16 CF	VCP63: DN 16 KF, VCP64: DN 16 CF	VSI17: DN 25 KF, VSI18: DN 40 KF, VSI19: DN 40 CF	VSM77: DN 25 KF, VSM78: DN 40 KF, VSM79: DN 40 CF	VSH87: DN 25 KF, VSH88: DN 40 KF, VSH89: DN 40 CF
Protection Class	IP 40 (IP54)						
Dimensions	99 x 69 x 48 mm (DN 16 KF version)				139 x 69 x 48 mm (DN 25 KF version)		141 x 69 x 48 mm (VSH88)
Weight	195 g (VSR53)	195 g (VSR53)	190 g (VSP63)	190 g (VCP63)	555 g (VSI17)	555 g (VSM17)	475 g (VSH88)