

# THERMOVAC Transmitters

## TTR 100 / TTR 100 S2



The Pirani Capacitance Diaphragm Gauge is the first vacuum gauge which combines ceramic capacitance diaphragm and thermal conductivity technologies. Unlike standard heat transfer technology, the Oerlikon Leybold Vacuum TTR 100 offers superior accuracy and gas-type-independent readings between 100 mbar and 1500 mbar.

### Advantages to the User

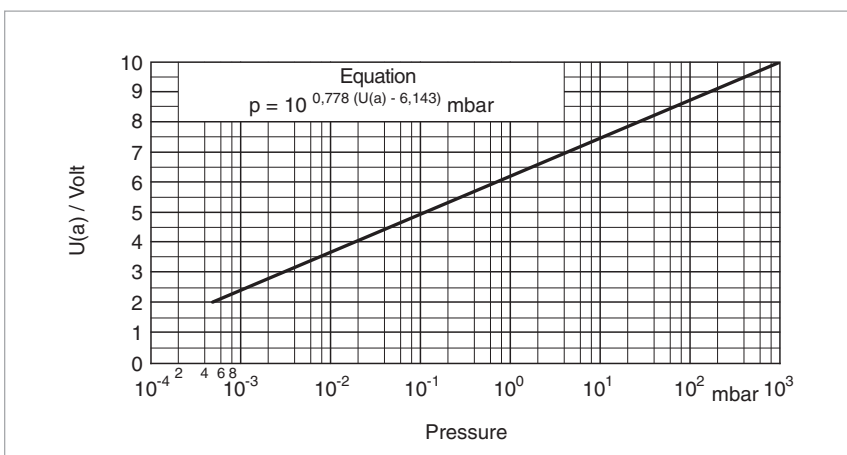
- Wide measurement range from  $5 \times 10^{-4}$  to 1500 mbar
- Gas-type-independent pressure measurement between 100 mbar and 1500 mbar
- Available with up to two integrated relays (TTR 100 S2)
- Mounts in any orientation
- 0 to 10.3 V analog output for easy system integration
- Compact design
- Flow independent
- Rapid cycling
- Follows true pressure in pump and vent

### Typical Applications

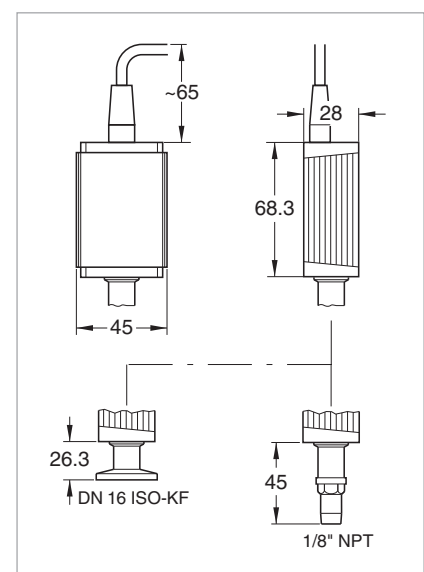
- Loadlock control
- Forevacuum pressure monitoring
- Safety circuits in vacuum systems
- General measurement and control in the medium and rough vacuum range
- Control of high vacuum ionization gauges

### Option

Dust and other particles may cause increasing measurement errors and reduced lifetime. Therefore we recommend the installation of a fine filter in critical applications. Fine filters are listed in section "General", para. "Connection Accessories for Small Flanges".



Characteristic of the THERMOVAC Transmitters



Dimensional drawing for the TTR 100

## Technical Data

## THERMOVAC Transmitter

### TTR 100 / TTR 100 S2

|                                                                                                                                                     |                                    |                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement principle                                                                                                                               |                                    | Thermal conductance according to Pirani combined with capacitance diaphragm                                                                                                                            |
| Measurement range<br>(air, O <sub>2</sub> , CO, N <sub>2</sub> )                                                                                    | mbar (Torr)                        | 5 x 10 <sup>-4</sup> to 1500 (3.8 x 10 <sup>-4</sup> to 1125)                                                                                                                                          |
| Accuracy<br>1 x 10 <sup>-3</sup> to 50 mbar<br>50 to 950 mbar<br>ATM (atmospheric pressure)                                                         |                                    | ± 15% of reading<br>± 5% of reading<br>± 2.5% of reading                                                                                                                                               |
| Repeatability                                                                                                                                       |                                    | ± 2% of reading                                                                                                                                                                                        |
| Trigger (only TTR 100 S2)<br>Setting range with potentiometer<br>Relay contacts<br>closed<br>open<br>Hysteresis<br>Contact rating<br>Relay status   |                                    | 2<br>1.5 x 10 <sup>-3</sup> to 1400 mbar<br>N.O. / potential free<br>at low pressure (lamp lit)<br>at high pressure or no supply (lamp off)<br>10% of threshold<br>30 V DC / 1 A<br>active: LED, green |
| Output signal analog<br>Measurement range<br>Voltage vs. pressure                                                                                   |                                    | 0 to 10.3 V<br>+1.9 to +10.23 V<br>1.286 V / decade, logarithmic                                                                                                                                       |
| Output impedance<br>Minimum load impedance<br>Response time                                                                                         |                                    | 2 x 4.7 Ohm, short circuit-proof<br>10 kOhm<br>10 ms                                                                                                                                                   |
| Power supply<br>Voltage (ripple ≤ 1 V <sub>pp</sub> )<br>Consumption, max.<br>Fuse to be connected                                                  |                                    | +15 to +30 V DC<br>2.5 W<br>1 AT (time delay)                                                                                                                                                          |
| Electrical connection                                                                                                                               |                                    | FCC-68, 8 way with shield                                                                                                                                                                              |
| Cable length, max.                                                                                                                                  | m                                  | 100                                                                                                                                                                                                    |
| Materials exposed to vacuum<br>(process media)<br>Vacuum connection<br>Pirani filament<br>Capacitance sensor cell<br>Feedthrough<br>Other materials |                                    | stainless steel<br>tungsten<br>Al <sub>2</sub> O <sub>3</sub><br>glass<br>Ni, Cu, NiFe, SnAg, AgPd                                                                                                     |
| Internal volume<br>DN 16 ISO-KF<br>1/8" NPT                                                                                                         | cm <sup>3</sup><br>cm <sup>3</sup> | 6<br>8                                                                                                                                                                                                 |
| Over-pressure rating, abs.                                                                                                                          | bar                                | 5                                                                                                                                                                                                      |
| Temperature<br>Operation (ambient)<br>Storage<br>Bakeout at flange, max.<br>Filament temperature                                                    | °C<br>°C<br>°C<br>°C               | +10 to +50<br>-20 to +65<br>+80<br>< 160                                                                                                                                                               |
| Relative humidity                                                                                                                                   |                                    | < 80% at temperatures < +31 °C,<br>decreasing to 50% at +40 °C                                                                                                                                         |
| Mounting orientation any                                                                                                                            |                                    | any                                                                                                                                                                                                    |
| Use                                                                                                                                                 |                                    | Indoors only, altitudes up to 2000 m NN                                                                                                                                                                |
| Protection class                                                                                                                                    | IP                                 | 40                                                                                                                                                                                                     |
| Weight<br>DN 16 ISO-KF<br>1/8" NPT                                                                                                                  | kg (lbs)<br>kg (lbs)               | 0.09 (0.20)<br>0.09 (0.20)                                                                                                                                                                             |

## Ordering Information

## THERMOVAC Transmitter

### TTR 100 / TTR 100 S2

|                                                                                                                                   |                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Without switching threshold<br>TTR 100, DN 16 KF<br>TTR 100, 1/8" NPT                                                             | <b>Part No. 230 026</b><br><b>Part No. 230 028</b>                                                                                                                                                                                                       |
| With switching threshold<br>TTR 100 S2, DN 16 KF<br>TTR 100 S2, 1/8" NPT                                                          | <b>Part No. 230 027</b><br><b>Part No. 230 029</b>                                                                                                                                                                                                       |
| Calibration                                                                                                                       | see section "Miscellaneous", para. "Oerlikon Leybold Vacuum Calibration Service"                                                                                                                                                                         |
| Connection cable, FCC 68 on both ends,<br>8 way, shielded<br>5 m<br>10 m<br>15 m<br>20 m<br>30 m<br>40 m<br>50 m<br>75 m<br>100 m | <b>Type A</b><br><b>Part No. 124 26</b><br><b>Part No. 230 012</b><br><b>Part No. 124 27</b><br><b>Part No. 124 28</b><br><b>Part No. 124 29</b><br><b>Part No. 124 30</b><br><b>Part No. 124 31</b><br><b>Part No. 124 32</b><br><b>Part No. 124 33</b> |
| Accessories                                                                                                                       | The installation of a spiral tube is recommended<br>in connection with applications involving contamination (oil vapors or dusts)                                                                                                                        |

## Note

- Measurement errors caused by the increased conductance of the component need to be taken into account
- Low vibration mounting must be ensured
- The sensor must be connected at the upper end