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PENNINGVAC Transmitter PTR 90 N



PENNINGVAC Transmitter PTR N analog (left); digital (middle), with Display (right)

The PENNINGVAC transmitter combines the cold cathode ionization principle with the MEMS-Pirani sensor. This allows the complete coverage of the measurement range from 1 x 10^{-8} mbar to atmosphere by a single transmitter. The compact design, broad measurement range and cost efficiency make this transmitter the perfect gauge for several applications.

Advantages to the User

- Enhanced reliability through automatically turning on the cold cathode by the MEMS-Pirani
- Significantly higher accuracy in the upper range by using the MEMS Pirani
- Longer lifetime due to low cold cathode turn on pressure
- High reproducibility
- Available with display for pressure units, set point parameters and operation status
- Wide measurement range combining two sensor technologies into a single output
- Ease of serviceability by modular design of the cold cathode
- Automatic zeroing during pump down cycle for improved accuracy
- LED ring to indicate status of the sensor
- Measurement signal insensitive to mounting position

Typical Applications

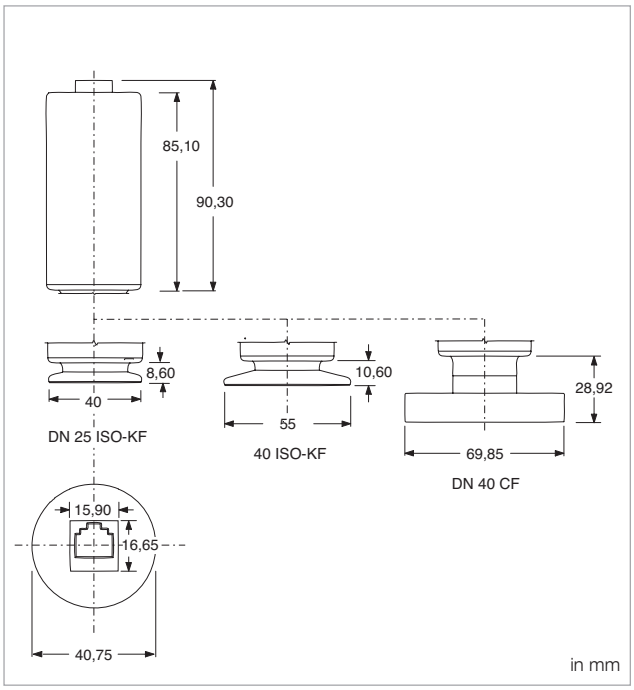
Typical Applications within the measurement range from 1 x 10^{-8} mbar to atmosphere are:

- General vacuum base pressure measurement
- Sputtering and coating technology
- Analytical technology (e. g. mass spectrometer control)
- Vacuum Furnaces
- Multipurpose pressure measurement and control up to the high vacuum range
- Metallurgy
- Scanning electron microscopes
- Process industry

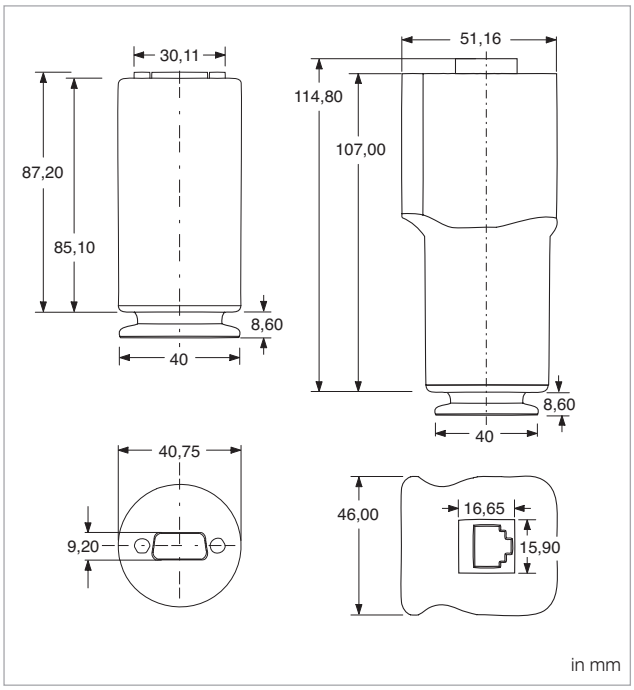
Option

For protection of the sensor PTR 90 N against contamination, radiation and other disturbing factors the installation of a baffle is recommended.

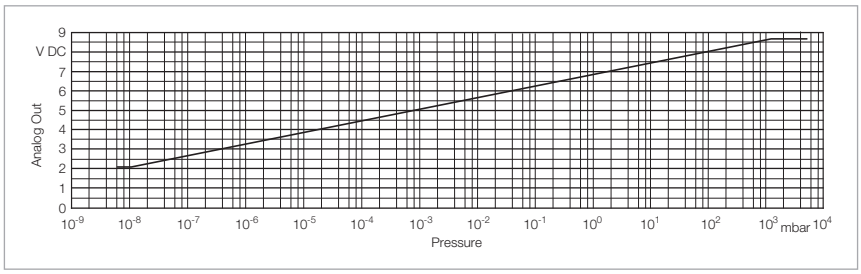
Two types of baffles are available:
A build-in version for CF connections is mounted in the sensor; the baffle for ISO-KF connections is integrated in a centering ring.



Dimensional drawing for the PENNINGVAC transmitter PTR 90 N



Dimensional drawing for the PENNINGVAC transmitters PTR 90 N, RS 232 (left) and PTR 90 N



Characteristics of the PENNINGVAC Transmitters PTR 90 N

Technical Data

PENNINGVAC Transmitter PTR 90 N

Measurement range	**mbar (Torr)**	1.0 x 10^{-8} to 1000 (0.75 x 10^{-8} to 750)
Measurement uncertainty of reading (typical) [1]		
Cold cathode	**mbar**	1 x 10^{-8} to 5 x 10^{-4} ±30 %
MEMS Pirani	**mbar**	5 x 10^{-4} to 1 x 10^{-3} ±10 % 1 x 10^{-3} to 100 ±5 % 100 to 1000 ±25 %
Repeatability of reading (typical) [1]	**mbar**	1 x 10^{-3} to 100 ±2 %
Sensor		Cold cathode and MEMS Pirani
Measurement principle		Cold cathode ionization and thermal conductivity
Supply voltage	**V DC**	9 to 30
Power consumption	**W**	< 2
Electrical connection	**V**	FCC 68, RJ 45 (analog) / RS232 (digital)
Analog output		V_{out} = log 0.6 (P_{mbar}) + 6.8
	V DC	2.0 to 8.668 / 2.0 to 8.667 [RS 232]
Resolution	**bit**	16
Impedance	**Ω**	100
Update rate	**Hz**	16
Interfaces		FCC 68, RJ45 (analog) / RS232 (digital)
Set point		
Range	**mbar (Torr)**	1.0 x 10^{-8} to 1000 (0.75 x 10^{-8} to 750)
Relay		0 / 2 [RS 232]
Relay contact rating		1 A at 30 V AC / DC, resistive load
Relay contact resistance, max.	**mΩ**	100
Relay contact endurance, min.		
1.0 A at 30 V DC load		100 000
0.2 A at 30 V DC load		2 000 000
Status indicators		LED-ring (360°)
Max. cable length	**m**	100
Overpressure limit (abs.)	**bar**	6
Operating temperature range [2]	**°C (°F)**	0 to 60 (32 to 140)
Storage temperature range	**°C (°F)**	-20 to +65 (-4 to 149)
Max. bakeout temperature	**°C (°F)**	85 (185)
Max. rel. humidity	**% n.c.**	0 – 95
Installation orientation		Any
Materials exposed to vacuum		304 stainless steel, 403 stainless steel, Ceramic (Al_2O_3),Tin, Gold, Viton®, Titanium
Dead volume (DN 25 ISO-KF), approx	**cm^3**	28.6
Weight (DN 25 ISO-KF)	**g**	321
Protection class	**IP**	40
CE certification		EMC Directive 2014/30/EEC
Controller type		DISPLAY ONE / THREE and GRAPHIX ONE / TWO / THREE

[1] Accuracy and repeatability are typical values measured with Nitrogen gas at ambient temperature after zero adjustment
[2] There may be minimal deviation tolerances in the range of 40 – 60 °C

Ordering Information

PENNINGVAC Transmitter PTR 90 N

	Part No.
PTR 90 N, DN 25 ISO-KF, FCC 68 / RJ 45	**230070V02**
PTR 90 N, DN 25 ISO-KF, Display, FCC 68 / RJ 45	**230085V02**
PTR 90 N, DN 25 ISO-KF, 2 SP, RS 232	**230088V02**
PTR 90 N, DN 40 ISO-KF, FCC 68 / RJ 45	**230071V02**
PTR 90 N, DN 40 CF, FCC 68 / RJ 45	**230072V02**
Replacement cathode plate for PTR 90 N / PTR 225 N (up to serial no. 17022777352) for PTR 90 N / PTR 225 N (from serial no. 17022777353)	 ***)** **EK16292V02**
Replacement anode ring for PTR 90 N / PTR 225 N (up to serial no. 17022777352) for PTR 90 N / PTR 225 N (from serial no. 17022777353)	 ***)** **E20028712V02**
Baffle, with centering ring (FPM (FKM)) DN 25 ISO-KF DN 40 ISO-KF	 **230 078** **230 079**
Calibration	see chapter “Miscellaneous”, para. “Leybold Calibration Service”
Operating Units DISPLAY ONE DISPLAY THREE GRAPHIX ONE GRAPHIX TWO GRAPHIX THREE	 **230 001** **230 025** **230680V01** **230681V01** **230682V01**
Connection cable, FCC 68 on both ends [1)] 5 m 10 m 15 m 20 m 30 m 50 m 75 m 100 m	**Type A** **124 26** **230 012** **124 27** **124 28** **124 29** **124 31** **124 32** **124 33**
Connection cable, RS 232 [1)] 5 m 10 m 15 m 20 m RS232 / USB Converter for setpoint definition of RS232 gauges	**Type G** **230550V01** **230551V01** **230552V01** **230553V01** **230399V02**

*) Please contact leybold for the correct replacement

1) See chapter “Connection cables for Active Sensors”

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