

PENNINGVAC

Transmitter

PTR 90 N, PTR 90 N S

Short form manual

300544671_002_C1

Part numbers:

230070V02

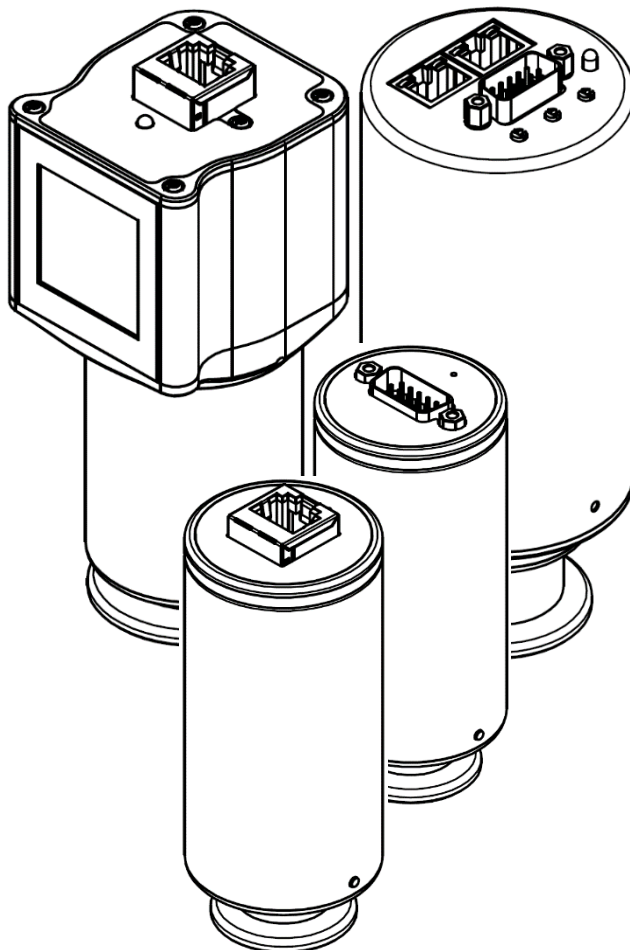
230071V02

230072V02

230085V02

230088V02

230089V02



RoHS Compliant



Safety: Symbols used



Critical

Failure to read message could result in damage to the equipment.



Attention

Calls attention to important procedures, practices, or conditions.



Caution

Refer to manual. Failure to read message could result in personal injury or serious damage to the equipment or both.

Personnel Qualifications



Skilled personnel

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
Consider possible reactions between the materials and the process media. Consider possible reactions (e.g. explosion) of the process media due to the heat generated by the product.
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.



Critical



Danger: Magnetic fields

Strong magnetic fields can disturb electronic devices like heart pacemakers or impair their function.

Maintain a safety distance of ≥ 10 cm between the magnet and the heart pacemaker or prevent the influence of strong magnetic fields by antimagnetic shielding.

Liability and Warranty

Leybold assumes no liability and the warranty becomes null and void if the end-user or third parties:

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories not listed in the product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

Transmitter failures due to contamination or wear and tear, as well as expendable parts (filament), are not covered by the warranty.

Package Contents

The PTR 90 N transmitter package contains these items:

- 1 pcs. PTR 90 N transmitter
- 1 pcs. English Short form manual (P/N: 300544671_002_C1)
- 1 pcs. German Short form manual (P/N: 300544671_001_C1)
- 1 pcs. Product Inspection and Test Report
- 1 pcs. Pin for adjusting settings via button

If any items are missing contact Leybold.

This short form manual provides the basic information for simple use and setup.

For system integration and advanced setup refer to Operating Manual

300544657_002, which can be found at the Leybold webpage www.leybold.com

Description

The PTR 90 N vacuum transmitter offers a wide measuring range from 1×10^{-8} to 1000 mbar and is based on measurement of thermal conductivity (MEMS Pirani, MP) and cold cathode (CC) ionization current.

- Analog voltage output
- RS232 Serial Communication Interface (P/N: 230088V02. See Communication Protocol 300544663)
- EtherCAT Communication Interface (P/N: 230089V02. See Communication Protocol 300544664)
- Integrated touchscreen display (P/N: 230085V02. For more information, see Operating Manual 300544657_002)
- Standalone use or with Graphix controllers (P/N: 230680V01, 230681V01, 230682V01)

Technical Data

Measuring range (N₂ and Air): 1×10^{-8} to 1000 mbar

Accuracy ⁽¹⁾ (N ₂):	1×10^{-8} to 1×10^{-3} mbar (CC):	±30% of reading
	1×10^{-4} to 1×10^{-3} mbar (MP):	±10% of reading
	1×10^{-3} to 100 mbar (MP):	± 5% of reading
	100 to 1000 mbar (MP):	± 25% of reading

Repeatability ⁽¹⁾ (N₂): 1×10^{-3} to 100 mbar: ± 2% of reading

Common specifications:

Supply Voltage: 9 – 30 VDC

Power consumption: < 2 Watt

Fuse (thermal recoverable): 200 mA

Analog output (100 Ω impedance): 2-8.6 VDC, Log. 0.6 VDC/decade

Analog output resolution: 16 bit

Analog output update rate: 16 Hz

Sensor fail analog output (Pirani): 10 VDC

Materials exposed to vacuum⁽²⁾: 304 stainless steel, sealing material FPM

Mechanical Setpoint relay(s):

Setpoint relay(s):

P/N: 230070V02, 230071V02, 230072V02, 230085V02: 0

P/N: 230088V02: 3

Setpoint relay range:

1×10^{-8} to 1000 mbar

Setpoint relay contact rating:

1 A / 30 VDC/AC (resistive load)

Setpoint relay contact resistance:

100 m Ω (max)

Setpoint relay response time:

<100 ms

Setpoint relay contact endurance:

100,000 cycles (min)
(30 VDC/1 A load)

Setpoint relay contact endurance:

2,000,000 cycles (min)
(30 VDC/0.2 A load)

Software setpoint relays:

P/N: 230089V02:

2

Setpoint relay response time:

< 20 ms

Internal volume:

KF25

28.6 cm³

KF40

21.7 cm³

CF46

32.7 cm³

Housing material:

Stainless steel 304

Weight:

P/N: 230070V02, 230088V02:

321 g

P/N: 230089V02:

600 g

P/N: 230085V02:

550 g

P/N: 230071V02:

358 g

P/N: 230072V02:

576 g

Maximum allowed pressure:

6000 mbar

Operating temperature:

0 to 40 °C (32 to 104 °F)

Bake out temperature (Power off):

85 °C (185 °F)

Filament temperature:

35 °C above ambient temperature

Leak rate

< $5 \cdot 10^{-9}$ mbar·L/s

(1) Accuracy and repeatability are typical values measured in Nitrogen atmosphere after zero adjustment at ambient temperature.

(2) For the full list of all materials exposed to process gases please contact Leybold.

User Switch

The user switch can be used to perform vacuum zero or atmospheric adjustment. Refer to Operating Manual 300544657_002 before pressing the user switch.

Calibration and adjustment

The transmitter is factory calibrated when delivered. Additional adjustment is normally not required. Refer to Operating Manual 300544657_002 for calibration and adjustment recommendations.

Installation

Install the PTR 90 N away from pumps and gas sources and where vibration is minimized to give the most representative pressure measurement. The PTR 90 N can be mounted in any orientation, without compromising accuracy and performance. Refer to Operating Manual 300544657_002 for installation specifications and recommendations.



Critical



The PTR 90 N is not intended for use in corrosive or explosive environments. Refer to materials exposed to vacuum for process compatibility.

Electrical Connection

Use a cable with a male RJ45/FCC68 or male 15 pin HD Sub D connector with strain relief to ensure proper electrical connection and to reduce stress on the connectors.

To comply with EN61326-1 immunity requirements, use a braided, shielded cable. Connect the braid to the metal hoods at both ends of the cable with the end for power supply connected to earth ground.



Attention

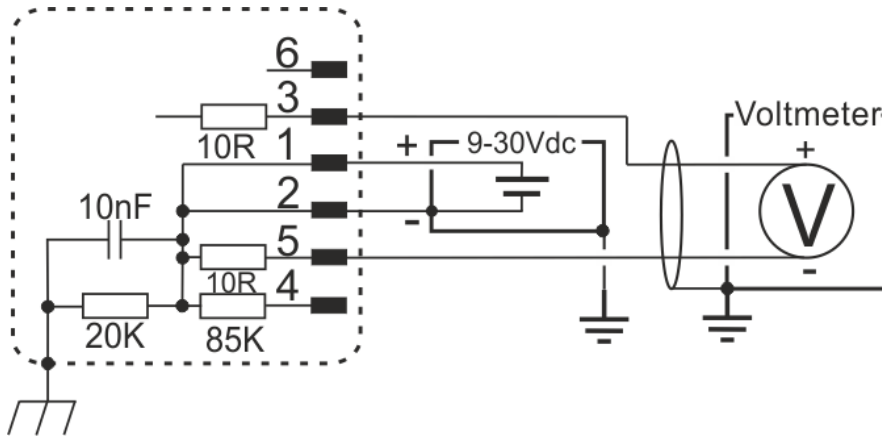
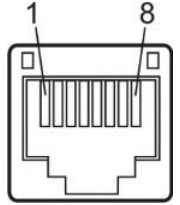


Ensure a low impedance electrical connection between the PTR 90 N transmitter body and the grounded vacuum system to shield the sensor from external electromagnetic sources.

Part Numbers: 230070V02, 230071V02, 230072V02, 230085V02:
I/O Connector (8 pin RJ45/FCC68)

PIN Description

1 Power + (9-30 VDC)	5 Analog Output -
2 Power return -	6 Status
3 Analog Output +	7 Not Connected
4 ID-Resistor, 85 k Ω ($\pm 1\%$)	8 Not Connected

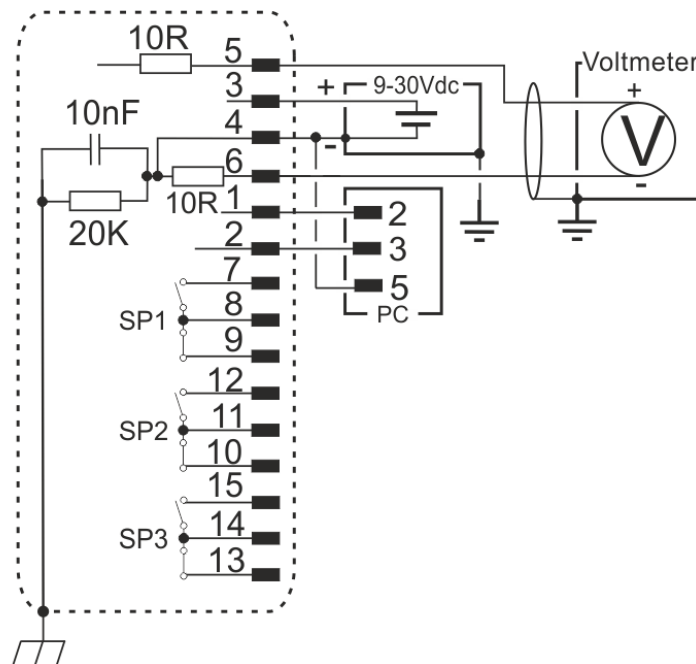
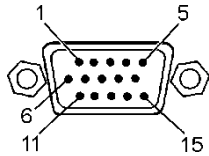


Part Numbers: 23088V02:

I/O Connector (15 pin HD Sub D male)

PIN Description

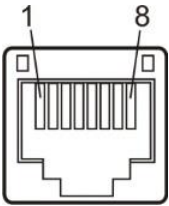
1 RS232 Transmit	9 Relay 1, Normally Closed
2 RS232 Receive	10 Relay 2, Normally Closed
3 Power + (9-30 VDC)	11 Relay 2, Common
4 Power return -	12 Relay 2, Normally Open
5 Analog Output +	13 Relay 3, Normally Closed
6 Analog Output -	14 Relay 3, Common
7 Relay 1, Normally Open	15 Relay 3, Normally Open
8 Relay 1, Common	



Part Numbers: 230089V02:
2 x I/O Connector (8 pin RJ45/FCC68): <IN> and <OUT>

PIN Description

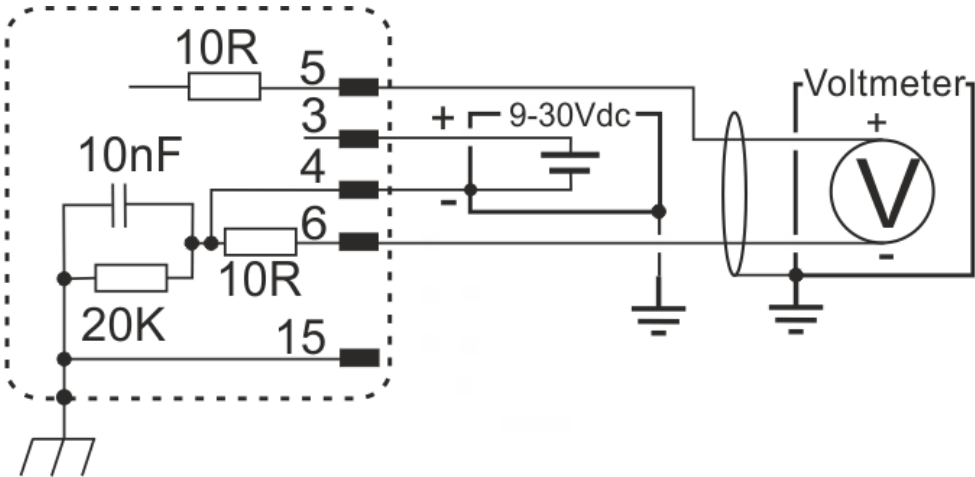
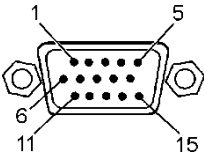
1 TD+	5 Not Connected
2 TD-	6 RD-
3 RD+	7 Not Connected
4 Not Connected	8 Not Connected



Part Numbers: 230089V02:
I/O Connector (15 pin HD Sub D male)

PIN Description

1 Not Connected	9 Not Connected
2 Not Connected	10 Not Connected
3 Power + (9-30 VDC)	11 Not Connected
4 Power return -	12 Not Connected
5 Analog Output +	13 Not Connected
6 Analog Output -	14 Not Connected
7 Not Connected	15 Chassis GND
8 Not Connected	



Analog output

The analog voltage output (16 bit resolution) provides a logarithmic 0.6 VDC/decade. Connect the signal to a differential input.

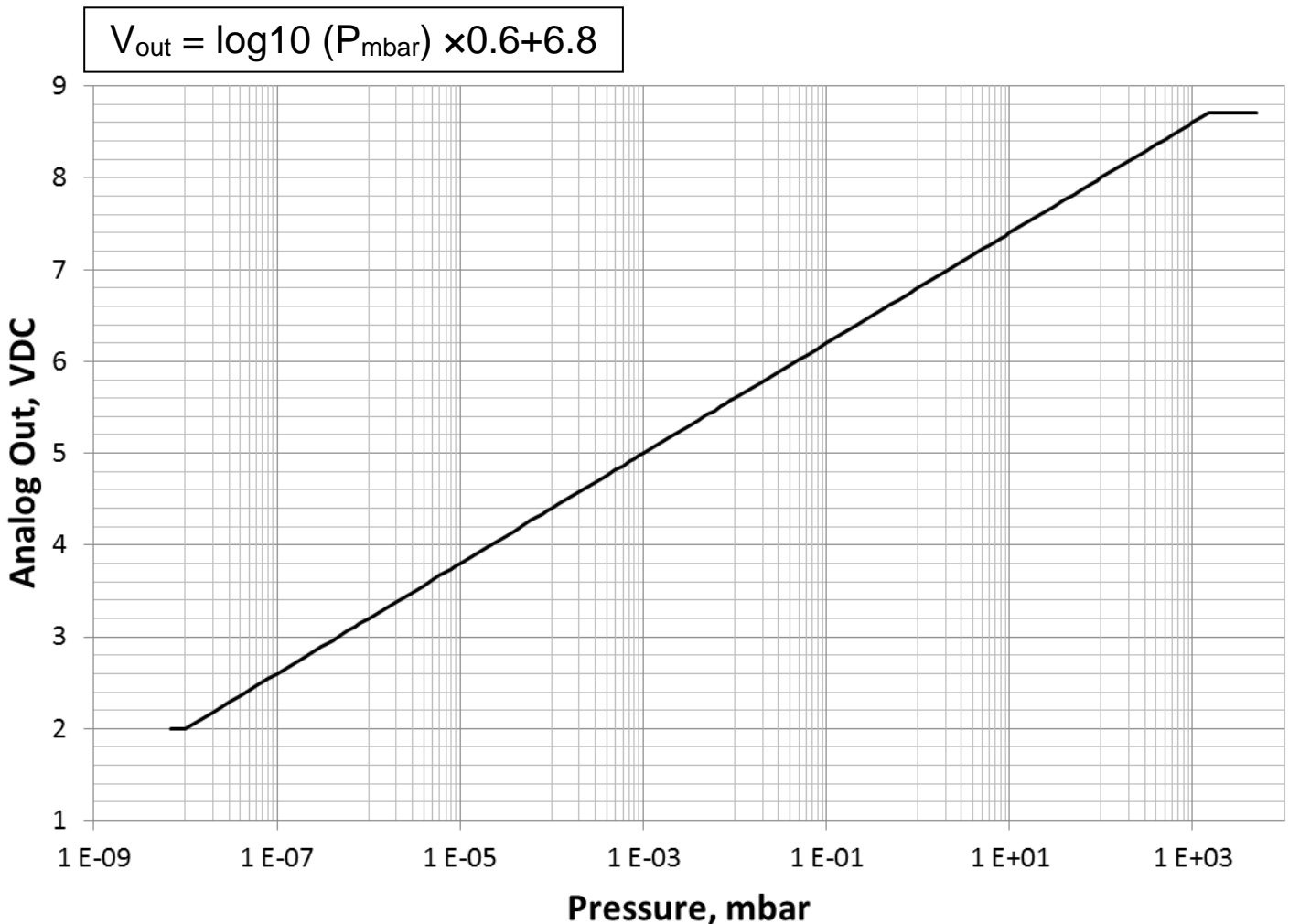


Caution



Do not connect the negative side of the analog output to the power supply return or to any other ground. The voltage drop from supply current will produce errors in the analog output.

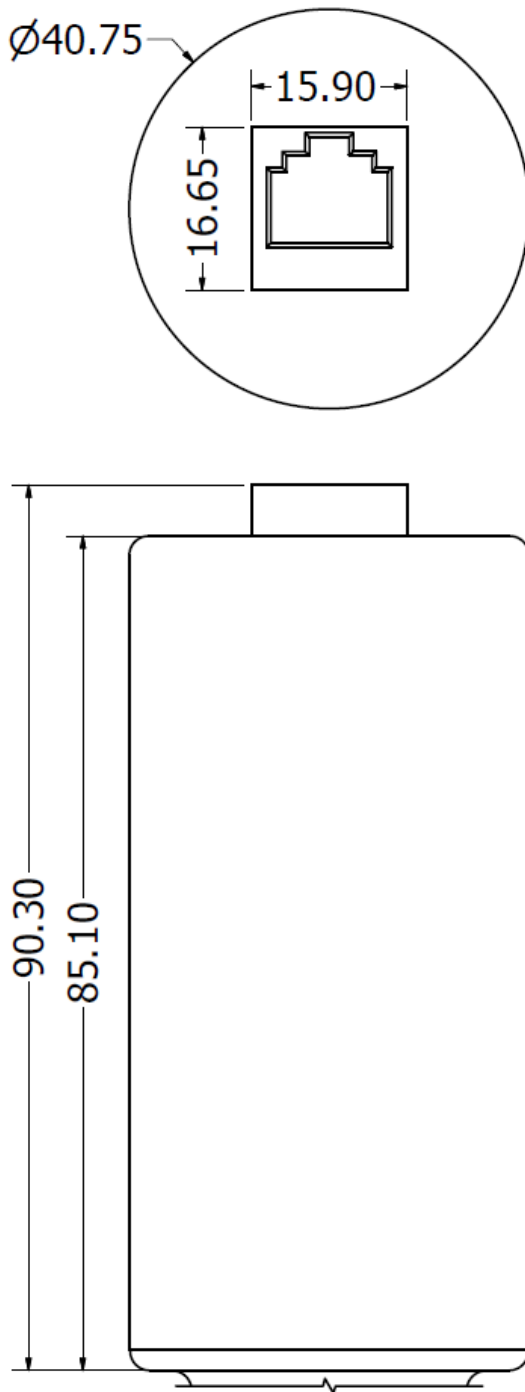
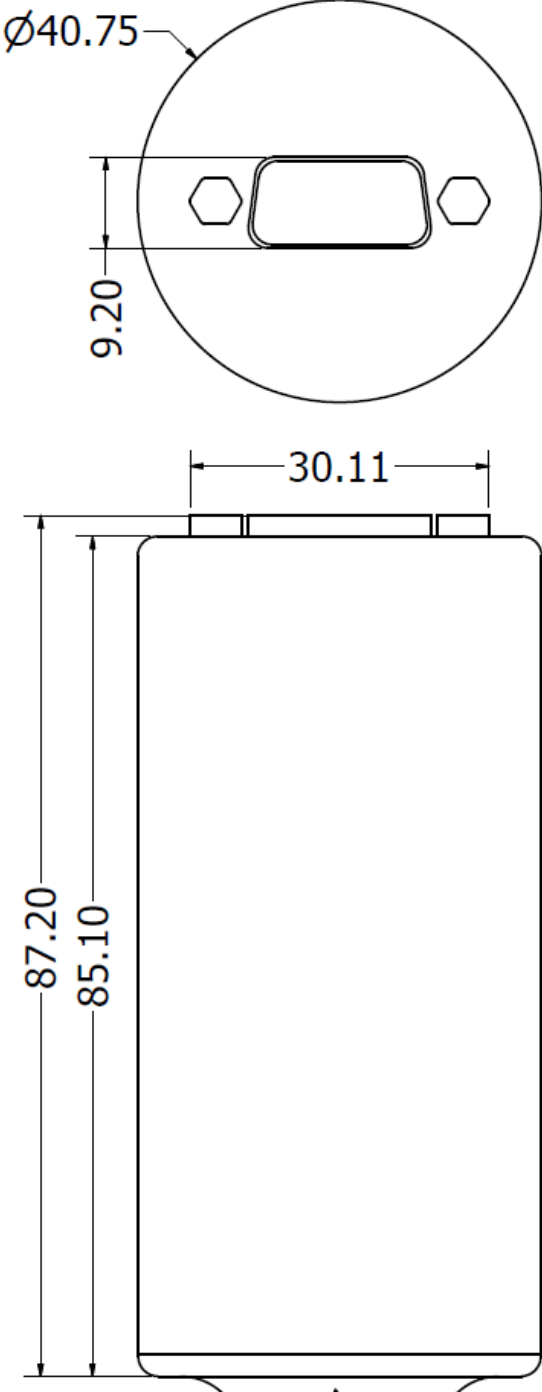
Analog output voltage vs. pressure graph (Nitrogen)



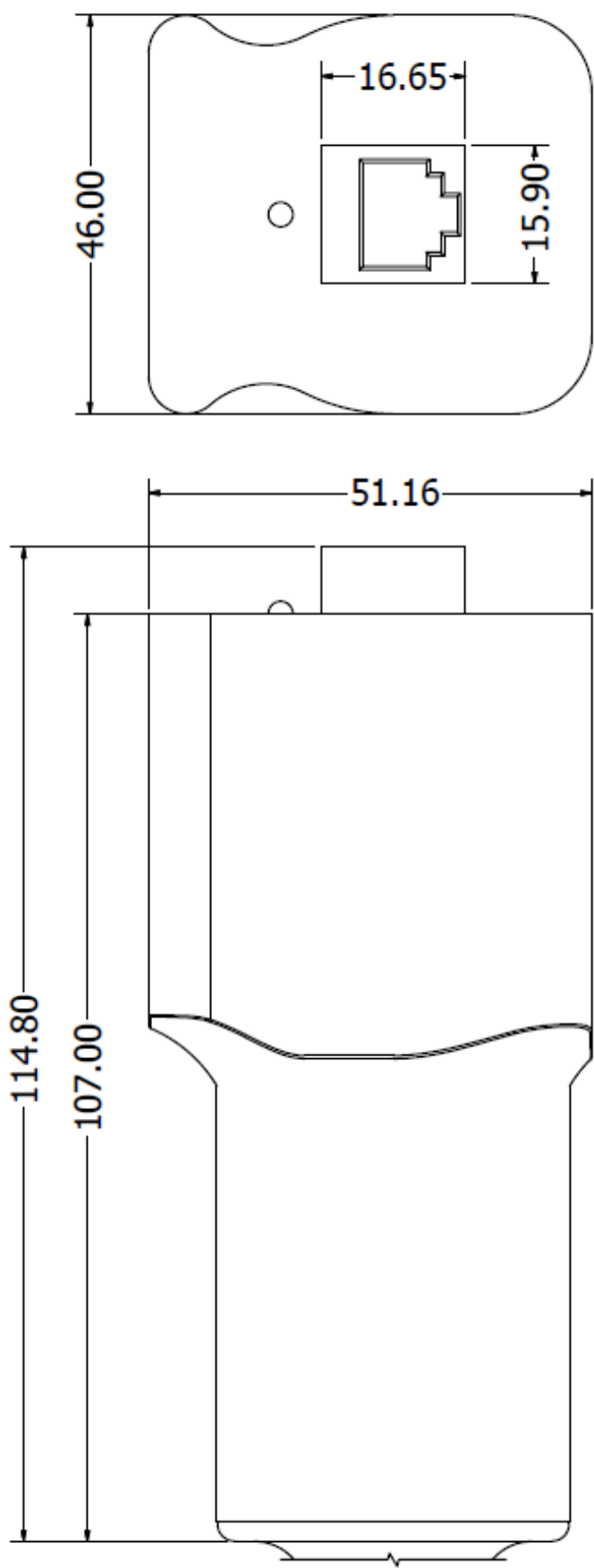
Gas dependence

The PTR 90 N transmitter is based on measurement of thermal conductivity (for the MP-sensor) and consequently its reading depends on gas type and gas concentration. The transmitter is calibrated for Nitrogen, and will read higher pressure values when exposed to atmospheric air. For more information, refer to Operating Manual 300544657_002.

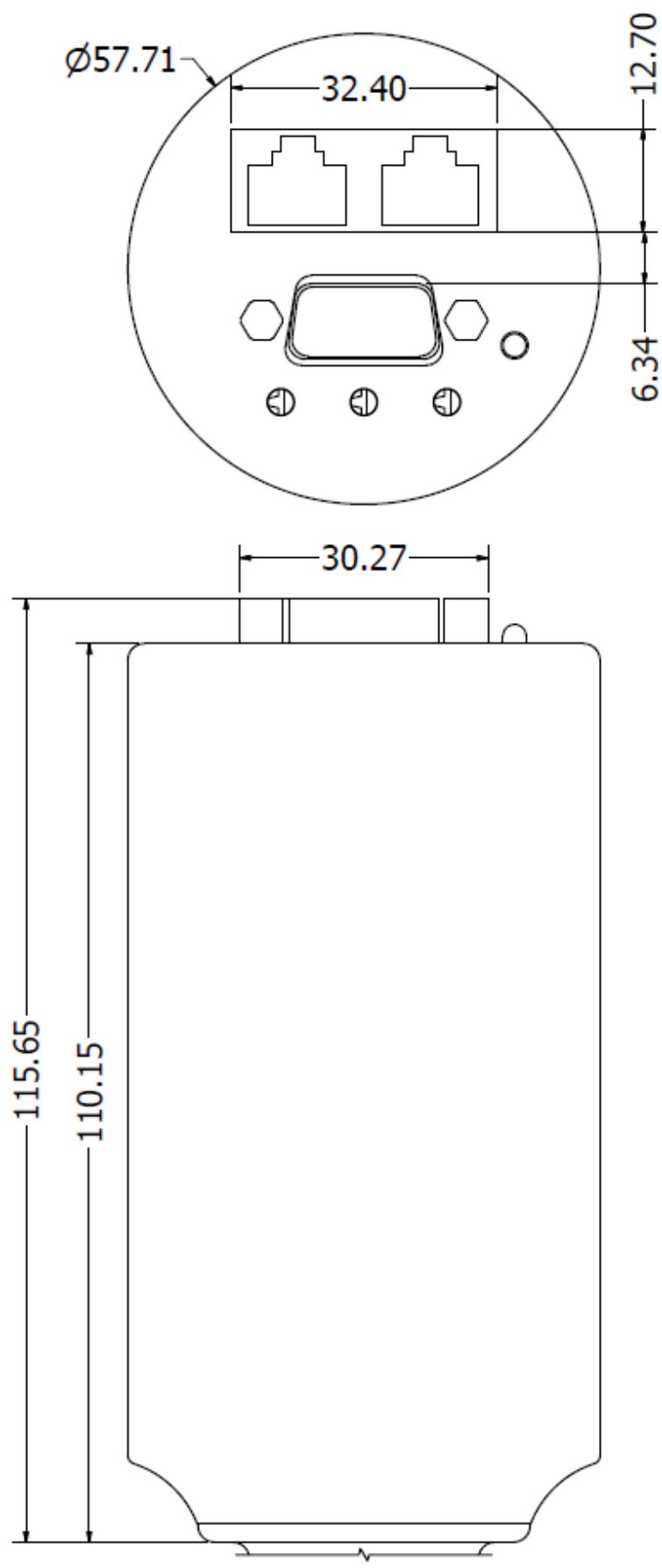
Dimensions [mm]

P/N: 230070V02, 230071V02, 230072V02	P/N: 230088V02
 <p>Technical drawing of a rectangular component with a square connector on top. The connector has a diameter of 40.75 mm, a width of 15.90 mm, and a height of 16.65 mm. The component has a total height of 90.30 mm and a height to the top of the connector of 85.10 mm.</p>	 <p>Technical drawing of a rectangular component with a rectangular connector on top. The connector has a diameter of 40.75 mm, a width of 30.11 mm, and a height of 9.20 mm. The component has a total height of 87.20 mm and a height to the top of the connector of 85.10 mm.</p>

P/N: 230085V02

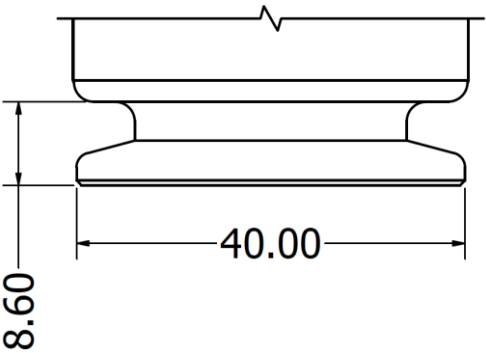


P/N: 230089V02

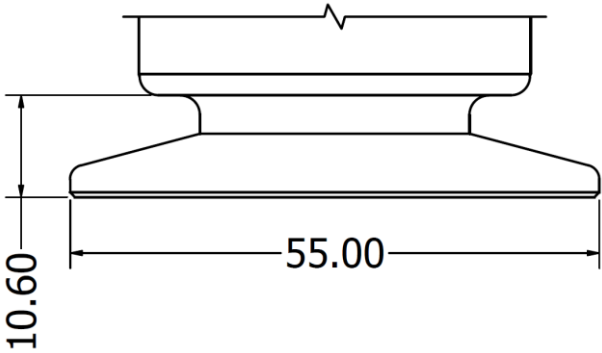


Flanges

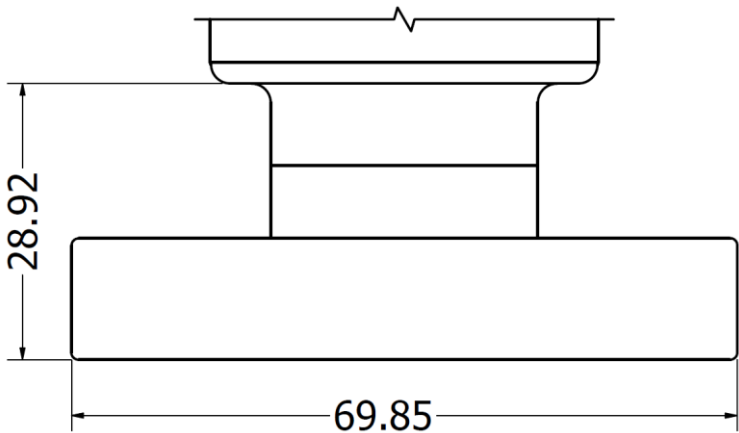
KF 25



KF 40



CF 40



EU Declaration of Conformity

(Translation of original Declaration of Conformity)

The manufacturer: Leybold GmbH
Bonner Strasse 498
D-50968 Köln
Germany

herewith declares that the products specified and listed below which we have placed on the market, comply with the applicable EU Council Directives. This declaration becomes invalid if modifications are made to the product without agreement of Leybold GmbH.

Product designation: PENNINGVAC Transmitter

Type designation: PTR 81 N, PTR 82 N, PTR 90 N, PTR 200 N, PTR 225 N,
PTR 237 N

Part numbers: 15734V02, 15736V02, 230070V02, 230071V02, 230072V02,
230085V02, 230087V02, 230088V02, 230281S02, 230281V02,
230282S02, 230282V02, 89642V02, 230089V02*,
230703V02*

The products complies to the following European Council Directives:

Electromagnetic Compatibility (2014/30/EU)

The following harmonized standards have been applied:

EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use —
EMC requirements — Part 1: General requirements
Immunity: controlled EM environments

EN 55011:2009/A1:2010 Industrial, scientific and medical equipment — Radio-frequency
disturbance characteristics — Limits and methods of measurement
Group 1, Class B (* Class A)

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Cologne, November 16, 2016

Cologne, November 16, 2016



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