

## DESCRIPTION

The PVC6800 series MEMS composite vacuum transmitter measures from 1.5 atm to medium-low vacuum. The series offers high accuracy, a wide measurement range, and excellent long-term stability and durability at a low cost, making it highly competitive compared to other Pirani vacuum gauges on the market.

The sensing element is based on Posifa's second-generation MEMS thermal conductivity chip design, made using advanced microfabrication techniques to provide superior precision and consistency. The chip measures thermal conductivity and includes an integrated temperature measurement circuit, ensuring high sensitivity and repeatability. Thanks to its low operating temperature, the PVC6800 series is more resistant to contamination compared to filament-based Pirani gauges.

A key feature of the PVC6800 series is the addition of a pressure sensor that ensures accuracy as high as 2.5 % from 1.5 atm to 0.1 atm. The device provides a 0 V to 10 V voltage signal through an FCC-68/RJ45 connector. This voltage signal is compatible with other vacuum gauges on the market, allowing for a "plug-and-play" replacement. When switching from another brand to the PVC6800 series, customers do not need to adjust their systems or change hardware interfaces, as the output curve remains familiar.

The PVC6800 series can also output other standard industrial signals on request, such as 4 mA to 20mA, RS485, RS232, etc.



## FEATURES

- Measurement range:  $10^{-3}$  Torr to 1,125 Torr ( $1.3 \times 10^{-3}$  mbar to 1,500 mbar)
- High accuracy and repeatability
- Adjustable output curve for plug-and-play capability
- More resistant to contamination due to low operating temperature
- Temperature-compensated

## APPLICATIONS

- Freeze dryers
- Lithium battery ovens
- Helium mass spectrometers
- Helium leak detectors
- Vacuum laminating machines
- Vacuum experiment equipment
- Vacuum systems in sampling chambers

## EXTREME OPERATING CONDITIONS

- Operating temperature: -40 °C to 85 °C
- Storage temperature: -40 °C to 90 °C
- Overpressure: 27.5 bar

## TECHNICAL SPECIFICATIONS TABLE

Test Conditions: 24VDC power supply, Ta = 25 °C.

| PARAMETER                      | MIN                                                       | TYP   | MAX       | UNIT    | CONDITION                                                    |
|--------------------------------|-----------------------------------------------------------|-------|-----------|---------|--------------------------------------------------------------|
| Measurement Principle          | Pirani principle                                          |       |           |         |                                                              |
| Measurement Range <sup>1</sup> | 1                                                         |       | 1,125,000 | Micron  | Air, nitrogen, oxygen, CO                                    |
|                                | 1.3x10 <sup>-3</sup>                                      |       | 1500      | mbar    |                                                              |
| Output Voltage                 | 0                                                         |       | 10.23     | V       |                                                              |
| Output Curve                   | 0.61V to 10.23V or 1.2V to 8.68V                          |       |           |         |                                                              |
| Accuracy                       |                                                           | 30%   |           | Reading | 5 micron ~ 15 micron 5x (10 <sup>-3</sup> mbar to 0.02 mbar) |
|                                |                                                           | ±15%  |           | Reading | 15 micron ~ 100,000 micron (0.02 mbar to 133 mbar)           |
|                                |                                                           | ±2.5% |           | Reading | 100,000 micron ~ 1,125,000 micron (133 mbar to 1500 mbar)    |
| Resolution                     |                                                           | 1%    |           | Reading |                                                              |
| Repeatability                  |                                                           | 2%    |           | Reading |                                                              |
| Response Time                  |                                                           | 1     |           | s       |                                                              |
| Power Supply Voltage           | 12                                                        | 24    | 30        | VDC     |                                                              |
| Operating Current              |                                                           | 22    |           | mA      |                                                              |
| Identification Resistance      | 71.5                                                      |       |           | kΩ      | Set at factory                                               |
| Operating Temperature          | -40                                                       |       | 85        | °C      |                                                              |
| Storage Temperature            | -40                                                       |       | 90        | °C      |                                                              |
| Probe Materials                | 316F stainless steel, FR4, glass, nickel, silicon, copper |       |           |         |                                                              |

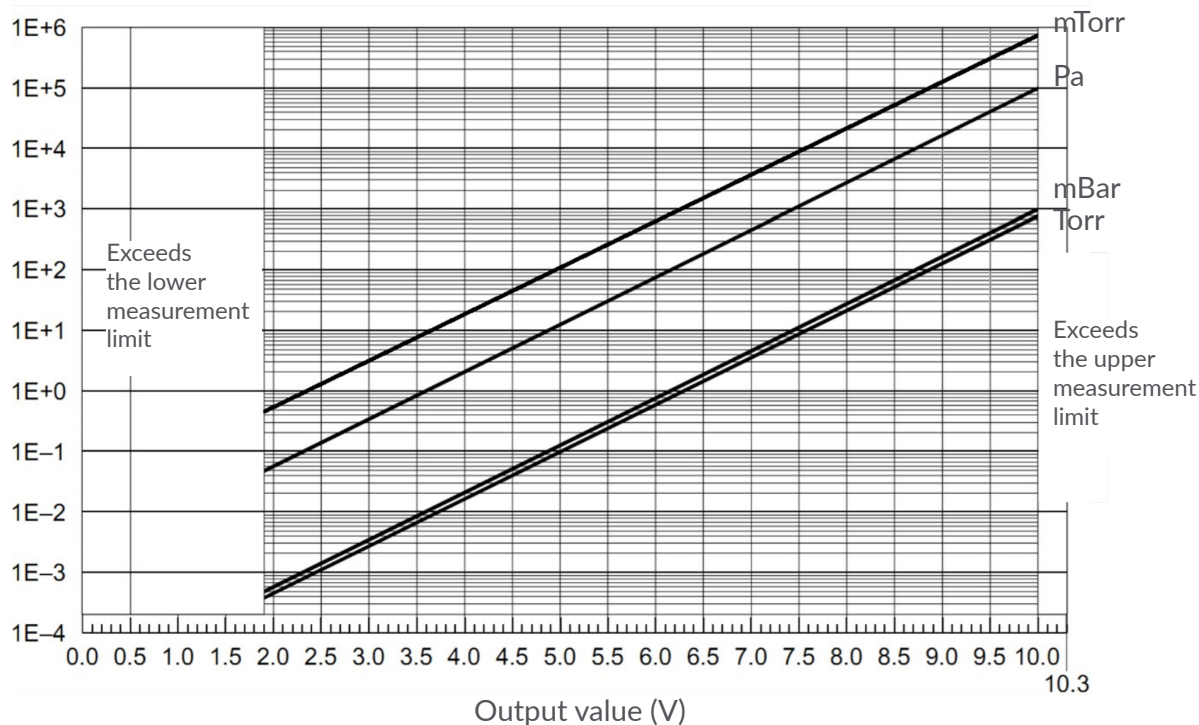
1: Calibrated for air environments, supports use in nitrogen, oxygen, and carbon monoxide environments. For other gas environments, please contact Posifa for customization.

2: To replace 3PCx-0xx-xxx0 or 3PCx-0xx-xxx1, please specify in advance when placing your order.

3: 1 Micron = 1mTorr = 0.13Pa = 1.3 x 10<sup>-3</sup>mbar.

## OUTPUT CURVE (TYPICAL CURVE)

Vacuum Level (Pa)



## CONVERSION RELATIONSHIP

PVC6816-0 (0.61~10.23V) Curve formula

$$P = 10^{\frac{U - c}{1.286}}$$

| U | P    | c     |
|---|------|-------|
| V | mbar | 6.143 |
| V | Torr | 6.304 |
| V | Pa   | 3.572 |

U – Voltage output

P – Different vacuum units

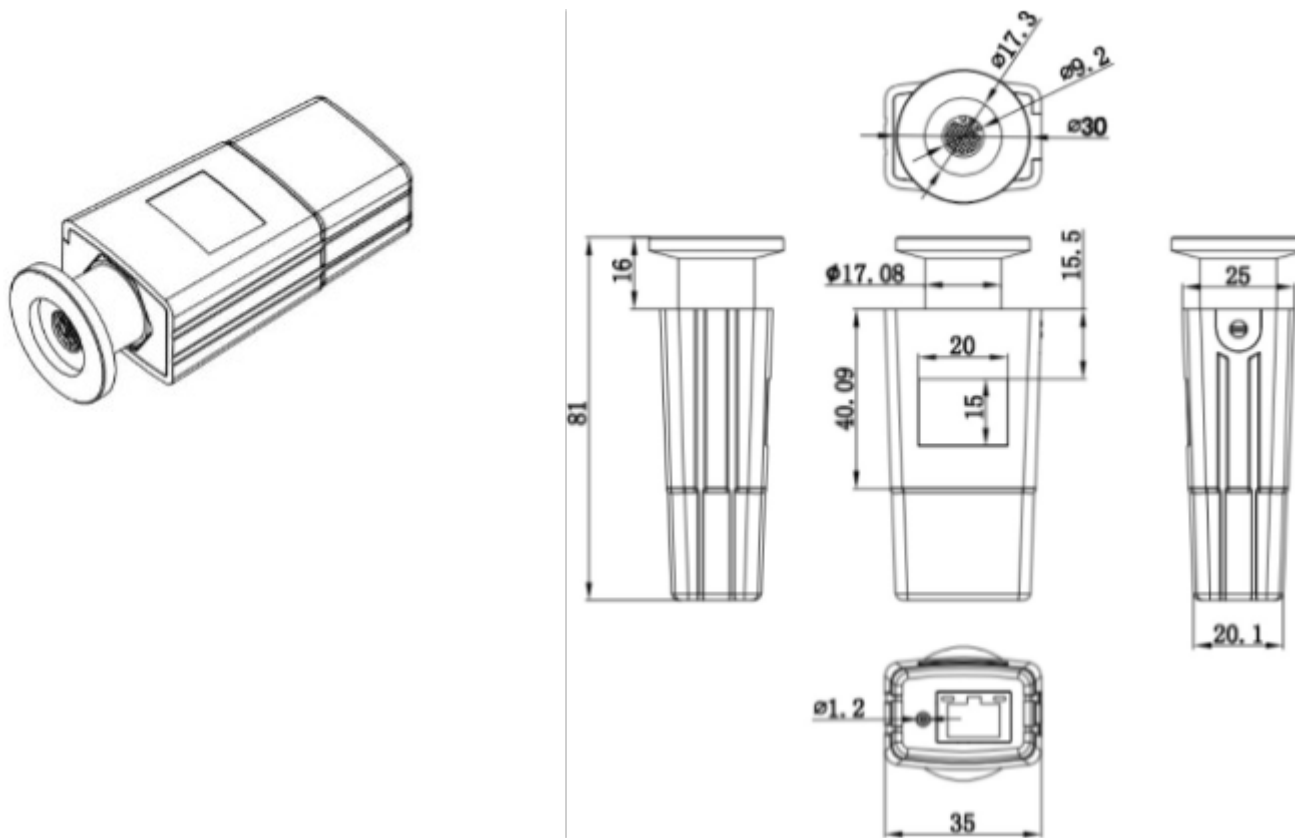
c – Constant for different vacuum units

PVC6816-1 (1.2~8.68V) Curve formula

$$P = 10^{U - c}$$

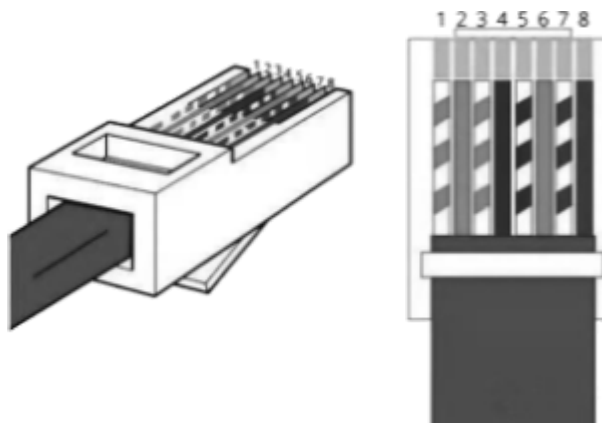
| U | P    | c     |
|---|------|-------|
| V | mbar | 6.143 |
| V | Torr | 6.304 |
| V | Pa   | 3.572 |

## PACKAGE DIMENSIONS



## PIN DEFINITION

|      |                             |
|------|-----------------------------|
| Pin1 | Power supply (+) (12~30VDC) |
| Pin2 | Power supply (-)            |
| Pin3 | Output Signal (+)           |
| Pin4 | Identification              |
| Pin5 | Output Signal (-)           |
| Pin6 | NC                          |
| Pin7 | NC                          |
| Pin8 | NC                          |



## ORDERING INFORMATION

| PART NUMBER | SPECIFICATIONS                                                                |
|-------------|-------------------------------------------------------------------------------|
| PVC6816-0   | DN 16 ISO-KF, nominal tube resistance 27 kΩ, compatible with PCG550 and TTR91 |
| PVC6816-M   | DN 16 ISO-KF, nominal tube resistance 36 kΩ, compatible with APG100-XM        |
| PVC6816-L   | DN 16 ISO-KF, nominal tube resistance 43 kΩ, compatible with APG100-XLC       |
| PVC6816-1   | DN 16 ISO-KF, nominal tube resistance 71.5 kΩ, compatible with 925 and PCG550 |

PVC68 XX-X

|               |
|---------------|
| 0=0.61~10.23V |
| 1=1.2~8.68V   |
| .....         |
| .....         |
| 16=KF16       |
| 35=CF35       |
| .....         |

## CROSS-REFERENCE GUIDE

| INDUSTRY PART NUMBER | POSIFA PART NUMBER |
|----------------------|--------------------|
| PCG550 3PCx-0xx-xxx0 | PVC6816-0          |
| TTR 91 230035        | PVC6816-0          |
| APG100-XM NW16       | PVC6816-M          |
| APG100-XLC NW16      | PVC6816-L          |
| 925                  | PVC6816-M          |
| PCG550 3PCx-0xx-xxx1 | PVC6816-1          |

### NOTE:

Please contact Posifa and its distributors for more product information and datasheets.