PVC6100 Series

MEMS PIRANI GAUGE FOR ATM TO MEDIUM VACUUM

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DESCRIPTION

The PVC6100 series MEMS Pirani gauge for ATM to medium vacuum is the most economical high-performance Pirani gauge on the market. It offers excellent accuracy, a wide range, and long-term stability and longevity, while minimizing the total cost of ownership.

The sensing element of the PVC6100 is based on Posifa's proven second-generation thermal conductivity chip which is made with world-class microfabrication processes that ensure precision and uniformity. The sensor chip measures thermal conductance in an embedded cavity with integrated thermopile to achieve exceptional sensitivity and repeatability. Due to its low working temperature, it's much less susceptible to contamination than filament-based Pirani gauges.

The PVC6100 provides a 0 V - 10 V analog output through an FCC-68/RJ45 connector. The output voltages can be customized to emulate those from other manufacturers' gauges, enabling "plug-and-play" replacement. Customers can realize cost savings and enhanced performance from the PVC6100 without changing system software or connection hardware.

FEATURES

- Wide range: 10^{-4} Torr to ATM (1.3 x 10^{-4} mbar to ATM)
- Accurate and repeatable
- Customizable output voltages for "plug-and-play" replacement
- Resistant to contamination due to low working temperatures

APPLICATIONS

- Freeze dryers
- Mass spectrometers
- Distillation equipment
- Cryogenic cylinders, tanks, and piping
- Heat treat/vacuum furnaces
- Load-lock vacuum systems

ABSOLUTE MAXIMUM RATINGS

- Operating Temperature: -20 °C to 65 °C
- Storage Temperature: -20 °C to 65 °C
- Overpressure: 27.5 bar

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ELECTRICAL CHARACTERISTICS

Test Conditions: Vdd = 24 Vdc, Ta=21°C					
SPECIFICATIONS	**MIN**	**TYP**	**MAX**	**UNIT**	**CONDITIONS**
Measurement Principle	Thermal conductance according to Pirani				
Range	1×10^{-1}		760,000	Micron	Air, O_2, CO, N_2
	1.3×10^{-4}		1,000	mbar	
Output Voltage	0		10.3	Volt	
Voltage vs Pressure	Logarithmic, customizable[1]				
Accuracy		±50 %		Reading	1~15 Micron (10^{-3}~0.02 mbar)
		±15 %		Reading	15~200,000 Micron (0.02~266 mbar)
		±50 %		Reading	200,000~760,000 Micron (266~1,000 mbar)
Resolution		1 %		Reading	
Repeatability		2 %		Reading	
Response Time		1		s	
Supply Voltage	12		30	Vdc	
Operating Current		22		mA	
Gauge Identification	27, 36, 43, 71.5			KΩ	Configured at factory
Operating Temperature	-20		65	°C	
Temperature Compensation	5		60	°C	
Storage Temperature	-20		65	°C	
Wetted Materials	Stainless Steel 316F, FR4, glass, Ni, Si, Au				

Note:
1. Default configurations support "plug-and-play" replacement of PSG500, APG100, TTR91, and MKS 925 gauges.

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MEASUREMENT SIGNAL VS PRESSURE

For PVC6100-P

$p = 10^{((U-c)/1.286)}$

U	p	c
V	mbar	6.143
V	Torr	6.304
V	mTorr	2.448

For PVC6100-M, PVC6100-L, PVC6100-K

$p = 10^{(U-c)}$

U	p	c
V	mbar	6
V	Torr	6.125
V	Pa	4

Where

U voltage output

p pressure

c constant depending on pressure unit

GAS TYPE DEPENDENCE

Calibration is based on air, and valid for O_2, N_2, and CO. For other gas types, a calibration factor must be applied to the pressure reading. Please contact Posifa Technologies for the calibration factor of a specific gas type.

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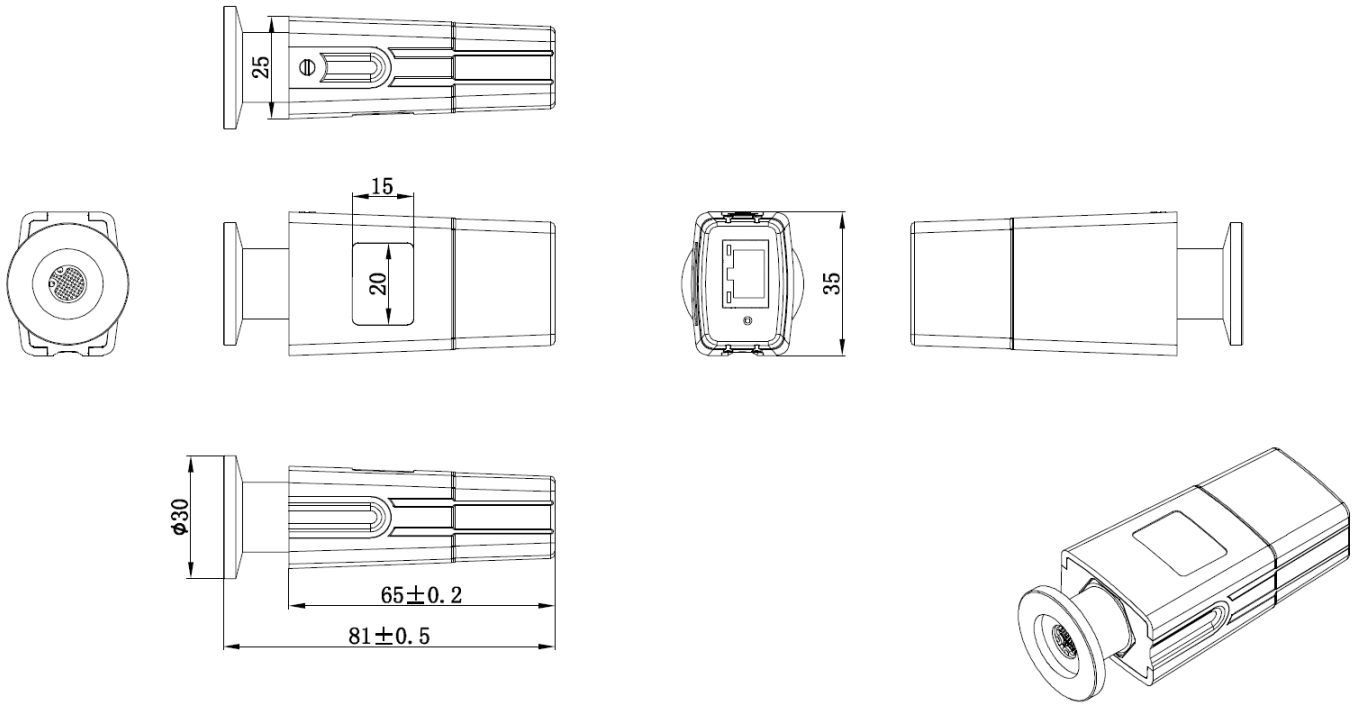
PACKAGE DIMENSIONS

PVC6116 (DN 16 ISO-KF)



FCC-68/RJ 45 Connection

Pin	Description
1	Supply
2	Supply common, GND
3	Signal, voltage
4	Gauge identification
5	Signal common
6	N/C
7	N/C
8	N/C

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ORDERING INFORMATION

PART NUMBER	SPECIFICATIONS
PVC6116-USP	DN 16 ISO-KF, gauge ID 27 kΩ, compatible with PSG500, TTR91
PVC6116-USM	DN 16 ISO-KF, gauge ID 36 kΩ, compatible with APG100-XM
PVC6116-USL	DN 16 ISO-KF, gauge ID 43 kΩ, compatible with APG100-XLC
PVC6116-USK	DN 16 ISO-KF, gauge ID 71.5 kΩ, compatible with 925

REPLACEMENT SELECTION GUIDE

MANUFACTURER PART NUMBER	POSIFA PART NUMBER
PSG500 350-060	PVC6116-USP
TTR 91 230035	PVC6116-USP
APG100-XM NW16	PVC6116-USM
APG100-XLC NW16	PVC6116-USL
925-xx4x	PVC6116-USP
925-xx4x-0073	PVC6116-USK
925-xx8x	PVC6116-USM