

HPM10V Piezoresistive Vacuum Gauge



Nanjing Hangjia Electronic Technology Co., Ltd.

Overview

HPM10V is a piezoresistive vacuum gauge. It uses a silicon piezoresistive sensor as the sensitive element and directly measures pressure using a vacuum connection. Its analog output signals such as 0-5 or 0-10 VDC are proportional to the measured pressure and are not affected by the type and composition of the process gas. The diffused silicon chip inside the sensor is encapsulated by a stainless steel 316L diaphragm and cavity. A specially developed dedicated circuit board ensures stable and reliable performance and a compact appearance. The HPM10V piezoresistive vacuum gauge has high measurement accuracy and excellent long-term stability. The internal high-quality silicon piezoresistive sensor is temperature compensated and has a wide operating temperature range. The vacuum gauge is small in overall size, easy to use and reliable, and is suitable for low vacuum precision measurement of complex gas compositions.

Application

- ◆ Vacuum application
- ◆ Laboratory and research and development
- ◆ Semiconductor industry
- ◆ Vacuum packaging
- ◆ Plasma etching process equipment

Features

- ◆ Silicon piezoresistive principle
- ◆ High precision and good stability
- ◆ Detection is not affected by gas type and composition
- ◆ Fast response and low hysteresis
- ◆ Direct pressure measurement, analog output signal is proportional to the measured pressure
- ◆ Support various pressure interfaces KF, CF, VCR, etc. in the vacuum industry

Technical Parameters

Measuring Range							
Absolute (kPa)	Rated pressure	10	20	50	100	150	200
	Overload	100	100	150	200	400	400
Note: For other measuring ranges, please contact us.							
Measuring Medium							
Type	Various gases compatible with contact materials						
Output Signal/Power Supply							
Standard	4~20mA		/ Vs=10~30 V _{DC}				
Standard	0~5VDC		/Vs=8.5~30 V _{DC}				

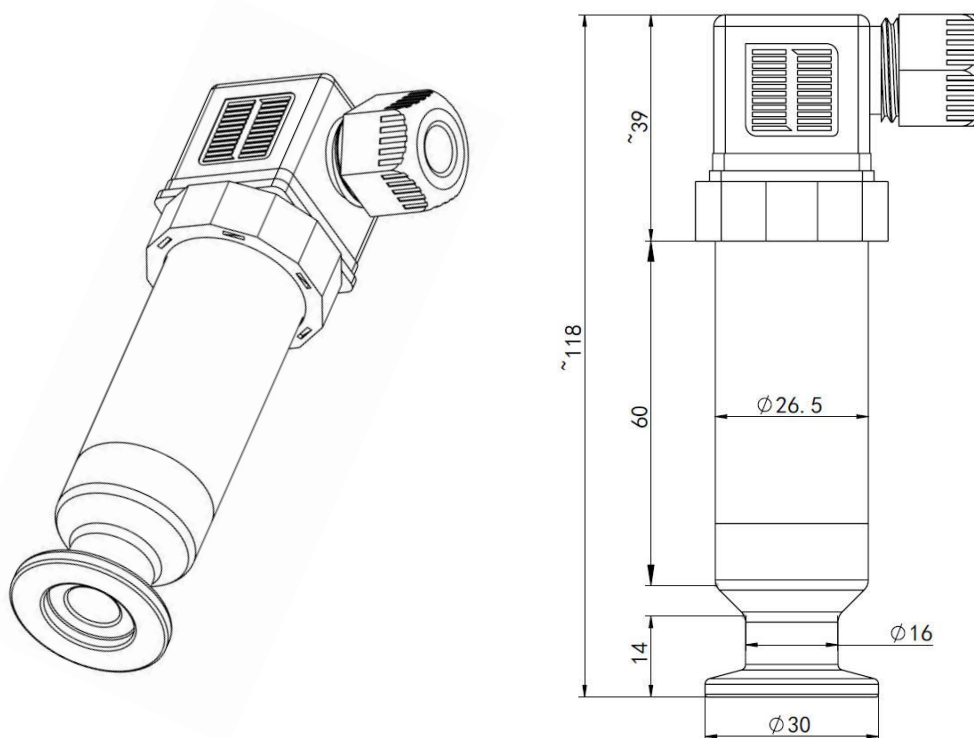
Standard	0~10VDC /Vs=12~30 V _{DC}
Standard	RS485 /Vs=10~30 V _{DC}
Performance	
Accuracy	±0.25%FS (typical) ±0.1%FS (optional) * Only for range P≥35kPaA
Long-term stability	±0.30%FS/year, ≤35kPa ±0.20%FS/year, >35kPa
*Accuracy complies with IEC 60770 (non-linearity, hysteresis, repeatability)	
Environment Conditions	
Temperature range	Working temperature: -40~100℃ Ambient temperature: -30~85℃ Storage temperature: -30~85℃
Protection grade	IP65
Temperature Drift	
Compensation temperature	0~70℃, ≤35kPa; -10~80℃, >35kPa
Temperature drift of zero point	±1.0%FS (Within compensation temperature)
Temperature drift of full scale	±1.0%FS (Within compensation temperature)
Electrical Protection	
Short circuit protection	Support
Reverse polarity protection	No damage, circuit does not work
Mechanical stability	
Vibration	20g(20~5000Hz)
Impact resistance	50g(11ms)
Insulation	
Insulation resistance	>200MΩ @500VDC
Dielectric strength	<2mA @ 500VAC 1min

Structure Material

Ordering Code	Part	Materials
S4	Pressure Interface	SS304
S6		SS316L
M1	Sensor	SS316L
FK	O-Ring	FKM Fluoro rubber
NB		NBR Nitrile

Structure Drawings

Pressure interface KF16 (VKF16) , Hirschmann/DIN43650 connector (C1)



1. The dimensions listed in the figure may change with the update of the process
2. For other shapes and dimensions, please consult the sales engineer

Electrical Connection

Hirschmann/DIN43650	M12x1-4P
Cable outlet	M12x1-4P with cable

Two-wire 4~20mA current output				
	Power supply+ (+V)	Power supply- (0V/+OUT)	Empty	
Hirschmann/DIN43650	1	2	3, 4	
Cable outlet	Red	Black	-	
M12×1	1	2	3,4	
M12×1 (with cable)	Brown	Black	Blue, White	
Three- wire 0~5V/10V voltage output				
	Power supply+ (+V)	Common Ground (GND)	Output(+OUT)	Empty
Hirschmann/DIN43650	1	2	3	4
Cable outlet	Red	Black	Blue	-
M12×1	1	2	3	4
M12×1(with cable)	Brown	Black	Blue	White
Four-wire Modbus-RTU/RS485				
	Power supply+ (+V)	Power supply- (-V)	RS485A	RS485B
Hirschmann/DIN43650	1	2	3	4
Cable outlet	Red	Black	Yellow	Green
M12×1,4P	1	2	3	4
M12×1(with cable)	Brown	Black	Blue	White

Ordering Guide

Item	Type										
HPM10V	Piezoresistive Vacuum Gauge										
	Range	Pressure Range									
	(0 ~ X)kPa	Fill X directly. Also support Torr or mbar									
		Item	Output								
		B1	4 ~ 20mA								
		B3	0-10V								
		B4	0-5V								
		B7	RS485								
		Item	Process Port								
		VKF16	DN 16 ISO-KF								
		VCF16	DN 16 CF								
		VT4	0.5" outer tube								
		VT2	0.25" outer tube								
		VR8M	1/2 VCR Female, swivel joint.								
		VR4M	1/4 VCR Female, swivel joint.								
		VR4F	1/2 VCR male, swivel joint.								
		VP1	M20*1.5 Male								
		Item	Electronic output								
		C1	DIN43650								
		C2	Cable outlet								
		C5	M12*1								
		CD15	15 Pins, D-sub connector								
		Item	Sensor								
		M1	SS316L Silicon Piezoresistor								
		Item	Housing material								
		S4	304								
		S6	316L								
		Item	Additional Function								
		A	Absolute(typical)								
		QF	Delivery inspection report								
			Other customized requirements								
HPM10V	(0~80)kPa	B1	VKF16	C2	M1	S6	A				