



Series 909AR

DIGITAL AND ANALOG HOT CATHODE TRANSDUCER

Features and Benefits

- Wide measurement range of 10^{-10} to 10^{-2} Torr for high vacuum process monitoring
- Pressure-controlled EB degas for automated degas without filament shut down
- Compact design with integrated electronics and sensor in one unit
- Two filament design for extended life
- Ease of operation with both analog and RS485/RS232 digital communication
- Simultaneous pressure measurement during degas cycle
- Sensor portion of transducer can be replaced
- Process control set point relay
- UHV-compatible materials used in sensor
- Reliable and repeatable pressure measurement for process stability
- CE marked, compliant with EMC Directive 2004/108/EC and Low Voltage Directive 73/23/EEC

Applications

The wide measurement range makes the HPS® Series 909AR Mini Ion Transducer an ideal measurement tool for high vacuum applications, including pressure measurement of high vacuum chambers and control or start-up of high vacuum systems. It can be used to measure base pressure, and the pressure of back-filled gases. Applications include semiconductor processing and analytical systems.

Description

The HPS® hot cathode sensor is Bayard-Alpert style, which utilizes a fine wire collector located at the center of a grid. Due to its small area, few

x-rays hit the collector; therefore, the gauge can measure very low pressures. The 909AR transducer includes two yttria-coated iridium filaments for reduced downtime. Yttria-coated iridium is resistant to damage caused by high oxygen partial pressures and exposure to atmosphere. The tube sensor operates at lower temperatures, giving a lower chemical reaction rate and minimizing thermal interference. The sensor includes a screen to shield it from large particles.

The Series 909AR includes RS232 / RS485 digital communication as a standard feature. Digital communication allows for all adjustments and monitoring to be delivered real-time, via a host computer. For additional process control, the 909AR has a relay set point. The set point pressure, hysteresis and direction can all be adjusted and monitored via the digital port.

The Series 909AR also features analog controls and analog output with 0 to 10 volts semilogarithmic output, 1 volt per decade for simplified system integration.

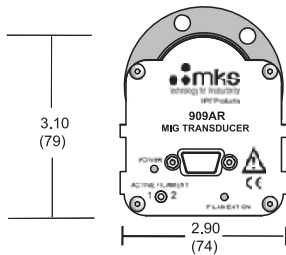
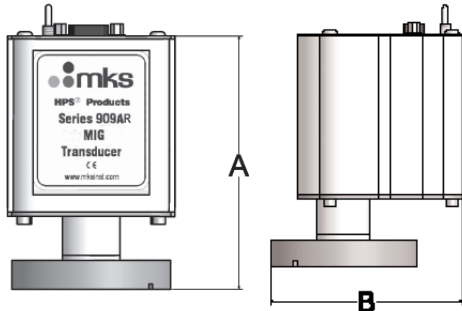
Degas Cycle

After prolonged exposure to process gases, the degas function may be used to remove unwanted contamination from the sensor tube. The 909AR includes a patented electron bombardment degas function which will automatically stop and restart at preset pressures preventing the filament from shutting off. This allows for shorter degas cycles with no need for operator intervention to restart the gauge. Pressure measurement is not interrupted during the degas cycle. The degas function is initiated by user intervention and shuts off automatically after 30 minutes.



Specifications and Ordering Information

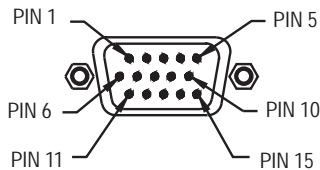
Dimensions



Flange	A	B
2.75" CF	4.37(111)	3.62(92)
1.33" CF	5.09(129)	2.91(74)
ISO-KF 16	4.71(120)	2.83(72)
ISO-KF 25	3.94(100)	3.03(77)
ISO-KF 40	3.94(100)	3.33(85)
1" Tube	4.79(122)	2.75(70)

Dimensions: inch (mm)

Pinout



Pin 1	RS485-	Pin 10	Relay NC
Pin 2	RS485+	Pin 11	Gauge On/Off
Pin 3	+24V	Pin 12	Degas On/Off
Pin 4	Power Ground	Pin 13	Emission Range
Pin 5	Analog Out +	Pin 14	Degas Status
Pin 6	Analog Out -	Pin 15	Gauge Status
Pin 7	No Contact		
Pin 8	Relay NO		
Pin 9	Relay Common		

Specifications

Measurement Range	3.0 X 10 ⁻¹⁰ to 5.0 X 10 ⁻² Torr 4.0 X 10 ⁻¹⁰ to 6.5 X 10 ⁻² mbar 4.0 X 10 ⁻⁸ to 6.5 Pascal
Set Point Range	5.0 X 10 ⁻¹⁰ to 9.5 X 10 ⁻³ Torr 6.5 X 10 ⁻¹⁰ to 1.2 X 10 ⁻² mbar 6.5 X 10 ⁻⁸ to 1.2 Pascal
Calibration Gas	Air/Nitrogen
Operating Temperature Range	0° to 40°C (32° to 104°F)
Relative Humidity	80% maximum for temperatures less than 31°C, decreasing linearly to 50% maximum at 40°C
Digital Communication	RS485 / RS232
Controls	Pressure units, baud rate, address, factory default, user tag, degas, RS485 test, gas correction, emission current, set point functions: value, hysteresis, enable; filament functions: power, protect, selection
Status	Pressure reading and units, set point, filament, active filament, filament operating time, transducer temperature, user tag, model, device type, serial number, firmware and hardware versions, analog output
Relay Contact Rating	1 relay, SPDT, 1 A @ 30VAC/DC, resistive
Response Time	100 milliseconds
Analog Output	0 to 10 VDC, semilogarithmic, 1 volt per decade
Power Requirements	24 VDC, 15 Watts
Accuracy	± 20% typical
Repeatability	Approx. 5% of reading
Sensor Type	Bayard-Alpert
Degas	Electron Bombardment
X-Ray Limit	3 X 10 ⁻¹⁰ Torr
Installation Orientation	Any
Internal Volume (with 2-3/4" CF Flange)	1.4 in ³ (23 cm ³)
Materials Exposed to Vacuum	304 stainless steel, glass, tungsten, platinum clad molybdenum, yttria-coated iridium (filament)
Electronic Casing	Aluminum
Weight (KF)	0.82 lbs (0.37 kg)
CE Certification	EMC Directive 2004/108/EC

Ordering Information:

Part Number	Description
909AR-11	Series 909AR Transducer, CF 1.33, RS232
909AR-12	Series 909AR Transducer, CF 1.33, RS485
909AR-21	Series 909AR Transducer, CF 2.75, RS232
909AR-22	Series 909AR Transducer, CF 2.75, RS485
909AR-31	Series 909AR Transducer, KF 16, RS232
909AR-32	Series 909AR Transducer, KF16, RS485
909AR-41	Series 909AR Transducer, KF 25, RS232
909AR-42	Series 909AR Transducer, KF 25, RS485
909AR-51	Series 909AR Transducer, KF 40, RS232
909AR-52	Series 909AR Transducer, KF40, RS485

Accessories:

Part Number	Description
100011600	Replacement sensor, CF 1.33
100011508	Replacement sensor, CF 2.75
100011603	Replacement sensor, KF 16
100011601	Replacement sensor, KF 25
100011602	Replacement sensor, KF 40



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