



Series 903

INVERTED MAGNETRON TRANSDUCER COLD CATHODE SENSOR

Using the inverted magnetron design principle, the HPS® Series 903 can operate at pressures much lower than a traditional cold cathode sensor, as low as 10^{-10} Torr. A unique design feature to the 903 is a second feedthrough for ion collection, ensuring accurate reading results. Since the 903 has no filament, it is resistant to vibration damage and is unaffected by sudden inrushes of air. Its rugged design and ability to efficiently operate in harsh environments provide fast, dependable, and stable pressure measurement.

Features & Benefits

- Wide pressure measurement range from 3.0×10^{-10} to 5.0×10^{-3} Torr for high vacuum applications
- Integrated electronics for space and cost savings
- Linearized analog output
- Isolated ion collector increases sensor's resistance to effects of contamination
- High voltage can be deactivated at higher pressures to lessen the potential for sensor contamination
- One set point with LED status indicator is standard for process control
- Sensor is interchangeable without calibration
- No filament to burn out for low maintenance
- Gas-type sensitive
- CE marked

Applications

With a wide measurement range of 3×10^{-10} to 5×10^{-3} Torr, the HPS® Series 903 is well-suited for high vacuum applications, including pressure measurement of high vacuum chambers and control or start-up of high vacuum systems with its standard relay set point. It is useful as a complete pressure measurement and control system or as a module in more sophisticated pressure control environments, making it especially attractive to OEM equipment manufacturers.

The Series 903 is suitable for industrial, process, and analytical applications such as high energy physics, laser production, ion implantation, mass spectrometry, or PVD.

Description

The Standard 903 has one relay set point standard for process control that can be set to trip anywhere within its set point range. Set point activation status is shown with one of three LED indicators. Power and high voltage status are also indicated.

The high voltage activation feature is a convenient way for you to shut off power to the 903 locally without shutting down your entire system. Deactivating the high voltage at pressures above 10^{-2} Torr reduces the effects of contamination in the sensor.

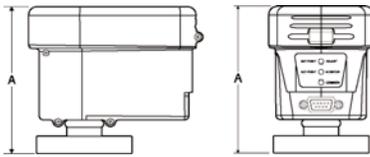
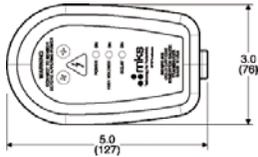
Due to differing ionization potentials for different gases, the 903 is a simple solution for locating medium to fine leaks in vacuum systems. It complements a mass spectrometer leak detector, which is more efficient in finding smaller leaks.

Also offered is an alternate pinout version of the 903 (see pinout diagram), that matches the pinout found on hot cathode ion gauge transducers from other manufacturers, allowing retrofitting without software changes to your system. Note that the 903AP has no relays and a different output signal than the standard 903.



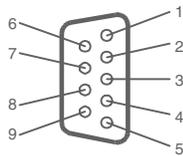
Specifications and Ordering Information

Dimensions



| Flange | A |
|-----------|------------|
| NW 40 KF | 4.18 (106) |
| 2 3/4" CF | 4.24 (108) |
| 1" Tube | 4.03 (102) |
| NW 25 KF | 4.18 (102) |

Pinout



| Standard | Alternate |
|----------------------|----------------------|
| 1) Relay - NO | 1) HV enable |
| 2) Relay - NC | 2) - VIN |
| 3) + VIN | 3) Analog Output (+) |
| 4) - VIN | 4) + VIN |
| 5) Analog Output (+) | 5) no conn |
| 6) Relay - Common | 6) no conn |
| 7) Relay - Disable | 7) Analog Output (-) |
| 8) Analog Output (-) | 8) no conn |
| 9) HV enable | 9) Status |

Specifications

| | |
|---------------------------------------|---|
| Measuring Range | 3.0 x 10 ⁻¹⁰ to 5.0 x 10 ⁻³ Torr |
| Set Point Range (Std 903 only) | 1.0 x 10 ⁻⁹ to 1.0 x 10 ⁻³ Torr |
| Repeatability | Approx. 5% of reading |
| Calibration Gas | Air/nitrogen |
| Operating Temperature Range | 0° to 50° C (32° to 122° F) |
| Maximum Bakeout Temperature | 400° C (752° F) without electronics |
| Relative Humidity | 80% maximum for temperatures less than 31° C, decreasing linearly to 50% maximum at 40° C |
| Relay (Std. 903 only) | 1 relay set point |
| Contact Rating | SPDT, 1 A @ 30 VDC, resistive |
| Relay Hysteresis | 150 mV |
| Relay Response | < 50 msec (0 to 99%) for Δp from 5.0 x 10 ⁻⁹ to 3.0 x 10 ⁻⁴ Torr |
| Power Requirements | 14 to 30 VDC, 3 Watts max |
| Output Voltage | 30 Ω maximum output impedance |
| 903 (Standard) | 1.5 to 8.7 VDC |
| 903 (AP) | 0.5 to 7.7 VDC |
| Installation Orientation | Any |
| Internal Volume | 0.9 in. ³ (15.0 cm ³) maximum |
| Materials Exposed to Vacuum | 304 and 302 stainless steel, aluminum, Inconel® X-750, glass, alumina ceramic |
| Display LED Indications | Set point (red), high voltage (yellow), and power (green) |
| 903 (Standard) | Vacuum (red), high voltage (yellow), and power (green) |
| 903 (AP) | ABS plastic, UL94-5V flame rating (with conductive coating) |
| Electronic Casing | 2.3 lb (1.04 kg) |
| Weight (with CF Flange) | EMC Directive, General Product Safety Directive |
| CE Certification | |

Ordering Information:

| Part Number | Description | Price |
|-------------|-------------------------------------|-------|
| 109030001 | Series 903 Transducer, NW 40 KF | |
| 109030002 | Series 903 Transducer, 2 3/4" CF | |
| 109030003 | Series 903 Transducer, 1" Tube | |
| 109030004 | Series 903 Transducer, NW 25 KF | |
| 109030111 | Series 903 Transducer AP, NW 40 KF | |
| 109030112 | Series 903 Transducer AP, 2 3/4" CF | |
| 109030113 | Series 903 Transducer AP, 1" Tube | |
| 109030114 | Series 903 Transducer AP, NW 25 KF | |
| 104230101 | Sensor Rebuild - KF 40 | |
| 104230102 | Sensor Rebuild - 2 3/4" CF | |
| 104230103 | Sensor Rebuild - 1" Tube | |
| 104230104 | Sensor Rebuild - KF 25 | |
| 100002353 | Internal Rebuild Kit | |



MKS Global Headquarters

90 Industrial Way
 Wilmington, MA 01887
 Tel: (978) 284.4000
 Tel: (800) 227.8766 (in USA)
 Web: www.mksinst.com
 Email: mks@mksinst.com

MKS Vacuum Technology

HPS® Products
 5330 Sterling Drive
 Boulder, CO 80301
 Tel: (303) 449.9861
 Tel: (800) 345.1967 (in USA)