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Series 523

GRANVILLE-PHILLIPS®
WIDE RANGE COLD CATHODE TRANSDUCER

The Series 523 is a revolutionary vacuum transducer using the combination of diverse materials and two different types of discharge. It provides a low-cost, wide-range cold cathode suitable for industrial coatings, analytical instruments, and general vacuum applications. The design of the Series 523 is the right fit for applications requiring limited accuracy. It covers a wide pressure range from Atmosphere to 10^{-7} Torr, without the use of a conventional heat loss (Pirani) sensor, for measurement from 10^{-2} Torr to Atmosphere.

Features & Benefits

- Single transducer provides a wide measurement range of 10^{-7} Torr to Atmosphere, eliminating the need for multiple gauges
- Unique high pressure discharge cell, replaces the need for a second technology vacuum sensor
- Mountable in any orientation for ease of use and flexibility of design
- Simple analog output for ease of integration
- Cost-effective replacement gauge assembly lowers total cost of ownership

Applications

For vacuum users requiring limited accuracy and operating within the pressure range of Atmosphere to 10^{-7} Torr, the Series 523 is ideal for applications requiring simple, repeatable pressure measurement.

Applications include:

- Analytical equipment (mass spectrometer control)
- Scanning electron microscopes
- Industrial coating systems
- General vacuum base pressure measurement

Pressure & Vacuum Measurement Solutions

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Description

The Series 523 is a low-cost alternative to existing combination cold cathode gauges.

Inverted Magnetron

The Series 523 uses the historic inverted magnetron approach for measuring pressure in the typical cold cathode range from 1 x 10^{-7} to 1 x 10^{-2} Torr. Utilizing a stainless steel anode and cathode with a magnet surrounding the measurement cell, this construction provides similar performance to other inverted magnetron cold cathodes on the market. Accuracy in this range is published at ±50% of Reading.

Paschen's Law

The Series 523 cold cathode does not use the typical Pirani sensor to measure pressure above the cold cathode region, but applies the theory of Paschen's Law. In the region from 10^{-2} Torr to 10 Torr, an enchanced arc discharge is created using a similar anode and cathode approach, on a smaller scale, to measure pressure. Above 10 Torr, a traditional arc discharge provides the measurement. Though the accuracy in this range is not equal to a Pirani type reading, it is adequate to control the high vacuum cold cathode and an indication of the pressure in the medium vacuum range.

Applying Diverse Materials

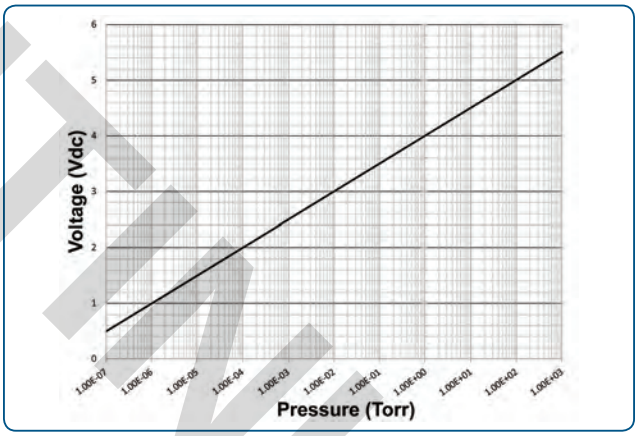
One of the key differences between the Series 523 and historic cold cathode gauges is the material used for vacuum containment and electrical feedthroughs. The Series 523 utilizes a polymer base material for both the vacuum containment and electrical feedthroughs. With the use of a polymer, typical machining constraints of traditional stainless steel construction can be removed and the use of polymer molding techniques can be used to create unique geometries. The polymer has gone through a rigorous material selection protocol taking into consideration outgassing rates, mechanical and temperature properties, and electrical properties. Though the polymer material is not intended to replace the historic metal or glass enclosures, it is very suitable for the vacuum range and applications of the Series 523.

Interface

The Series 523 has a simple log/linear analog output. The output voltage range is from 1 to 9 VDC.



Series 523 Wide Range Cold Cathode Transducer



Analog Output Signal for Nitrogen

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Specifications

Measurement Range for N_2 and Air See Note (1)	1 x 10^{-7} Torr to Atmosphere
Accuracy (N_2)	±50% (5 x 10^{-7} to 1 x 10^{-2} Torr) ±50% (over 10 Torr)
Repeatability	±15% (5 x 10^{-7} to 1 x 10^{-2} Torr)
Input Power	24 VDC, 2.5 W continuous
Weight	<400 g
Operating Temperature	0°C to 40°C (32°F to 104°F) ambient, indoor use only, ordinary protection from moisture
Operation Humidity	0 to 90%
Non-Operating Temperature	0°C to +70°C (32°F to 158°F)
Mounting Orientation	Any
Compliance	CE
Materials Exposed to Gas	Polypropylene, 304 stainless steel

Note:
(1) Do not use the Series 523 Wide Range Cold Cathode Transducer with flammable or explosive gases.

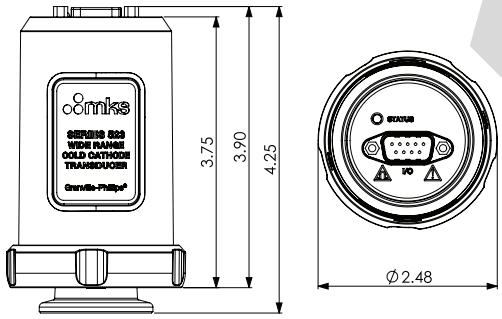
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Ordering Information

Ordering Code Example: 523210-0-0E-T	Code	Configuration
Model		
Series 523 Wide Range Cold Cathode Transducer	523210	523210
Relay Set Points		
No Relay Set Points	0	0
Interface		
Analog	0	0
Fitting		
KF25	E	E
Measurement Units		
Torr	T	T

Replacement Gauge

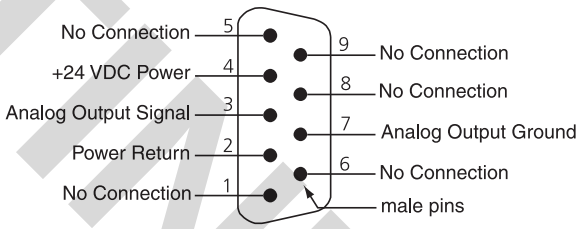
Ordering Code Example: 523100-0E	Code	Configuration
Model		
Series 523 Wide Range Cold Cathode Transducer	523100	523100
Interface		
Analog	0	0
Fitting		
KF25	E	E



Flange	Overall Length
NW25 KF	4.25 (108)

Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches.



PinOuts —

Sub D 9 pin male

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