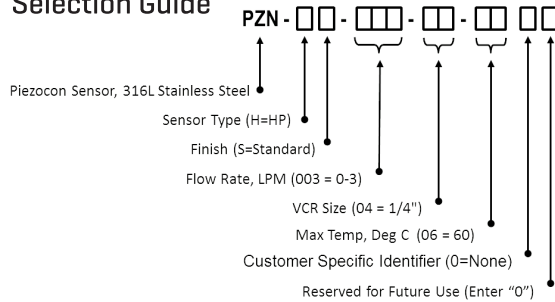


# High Precision (HP) Piezocon Gas Concentration Sensor

- Built using Veeco's industry-leading and production-proven Piezocon technology
- Optimized for use in high-volume manufacturing (HVM) applications where operating temperature is less than 60 Deg C and operating pressure is greater than 500 Torr
- Ideal for applications demanding high precision and low concentration
- Operates in either monitor or control mode, providing real-time feedback and control of gas or vapor concentration and flux delivery

## Selection Guide



## Specifications

	High Precision Sensor
Range of Concentration (Binary Mixture Only)	0 - 100%
Maximum Operating Pressure	8,000 Torr
Minimum Operating Pressure	500 Torr
Range of Flow Rates	0 - 3 LPM
Temperature Range (Sensor)	20 - 60 Deg C
Temperature Range (Controller)	0 - 40 Deg C
Pressure Connections	Male VCR: 1/4"
Leakage to Atmosphere	< 1x10 <sup>-9</sup> atm cc/sec He
VCR Face-to-Face Dimension	124mm (4.88")
Weight (Sensor)	1.3 Kg (2.866 lbs)
Weight (Controller)	1-Channel Controller: 1.0 Kg (2.204 lbs) 4-Channel Controller: 2.8 KG (6.172 lbs)
Sensor Wetted Materials	316L Stainless Steel; viton; Inconel
Complete User Interface Software (Controller)	Monitor Status & Error Codes, Concentration, MFC Flow, Temperature
Communications Interface Options (Controller)	None; Devicenet; Profibus; RS-232; Modbus/TCP; Modbus/RTU; FabComms; Devicenet Master
Power Supply Options (Controller)	100 - 240 VAC, 50 - 60 Hz, 30 VA (internal); 24VDC External (3-wire interface provided for user to connect to their own external 24VDC power); 5VDC External (Veeco provides external 5VDC power supply)

## Typical Measurements for High-Precision Sensors

Precursor Chemical	Typical Process	Concentration % Q <sub>p</sub> /Q <sub>total</sub> *	Accuracy % Q <sub>p</sub> /Q <sub>total</sub> *	Repeatability % Q <sub>p</sub> /Q <sub>total</sub> *	Matching %
Diborane, B <sub>2</sub> H <sub>6</sub>	CVD	1	0.0824	0.0110	0.066
Germane, GeH <sub>4</sub>	CVD	1	0.0163	0.0022	0.013
Phosphine PH <sub>3</sub>	CVD	1	0.0956	0.0127	0.0764
Bis(cyclopentadienyl)magnesium, Cp <sub>2</sub> Mg (@ 50C, 900 torr)	CVD	0.0397	0.0041	0.0005	0.0030

Example precursors in N<sub>2</sub> carrier gas, 1,000 Torr,

\* Q<sub>p</sub> = Precursor Volumetric Flow, Q<sub>total</sub> = Total Volumetric Flow

# Piezocon Gas Concentration Sensor and Delivery Control System

## The Industry Standard for Reproducible Vapor Delivery Control

- The only gas concentration sensor to enable both monitoring and control of mass transfer of the precursor in real time
- Optimized for High Volume Manufacturing, with little to no user intervention and no periodic maintenance or calibration required
- Provides improved process reproducibility and increased yield by tightly controlling the delivery of process gases and precursor chemical vapors
- Lowers cost-of-operation by allowing more efficient use of precursor chemicals, extending the use of precursor sources and reducing waste
- Easier tool-to-tool matching with quantitative information directly meaningful to both equipment and process engineers
- Comprehensive diagnostic capabilities enable higher tool productivity
- Available options cover a broad range of operating pressures, temperatures and flow rates
- IECEx and CE certifications