

Low Pressure [LP] 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 100 Deg C and operating pressure between 50 and 250 Torr

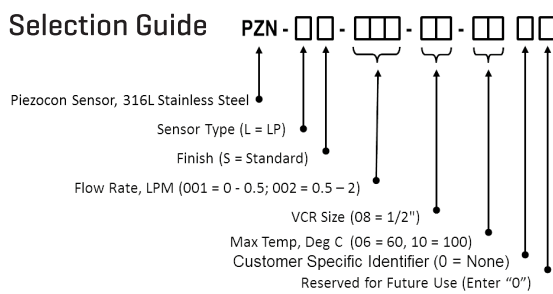
Ideal for applications requiring low pressure and higher temperature, such as CVD and ALD

Operates in either monitor or control mode, providing real-time feedback and control of gas or vapor concentration and flux delivery

Specifications

Low Pressure Sensor	
Range of Concentration (Binary Mixture Only)	0 - 100%
Maximum Operating Pressure	250 Torr
Minimum Operating Pressure	50 Torr
Range of Flow Rates	0 - 0.5 LPM; 0.5 - 2 LPM
Temperature Range (Sensor)	0 - 60 Deg C; 60 - 100 Deg C
Temperature Range (Controller)	0 - 40 Deg C
Pressure Connections	Male VCR: 1/2"
Leakage to Atmosphere	< 1x10 ⁻⁹ 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; Kapton; Viton
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)

Selection Guide



Typical Measurements for Low-Pressure Sensors

Precursor Chemical	Typical Process	Concentration % Qp/Qtotal *	Accuracy % Qp/Qtotal *	Repeatability % Qp/Qtotal *	Matching %
Pentakis-dimethylamno-tantalum, PDMAT (@ 80C, 50 torr)	ALD	0.8	0.0106	0.0014	0.0840
Tungsten Hexacarbonyl, W[CO] ₆ (@80C, 50 torr)	ALD	5.02	0.0194	0.0026	0.0156
Titanium Tetrachloride, TiCl ₄ (@20C, 100 torr)	ALD	9.6	0.0352	0.0046	0.0276
Trimethyl Phosphite, TMPi (@ 20C, 100 torr)	ALD	20.7	0.0602	0.0080	0.0048

Example precursors in Ar carrier gas

* Qp = Precursor Volumetric Flow, Qtotal = 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