VACUUM TECHNOLOGY
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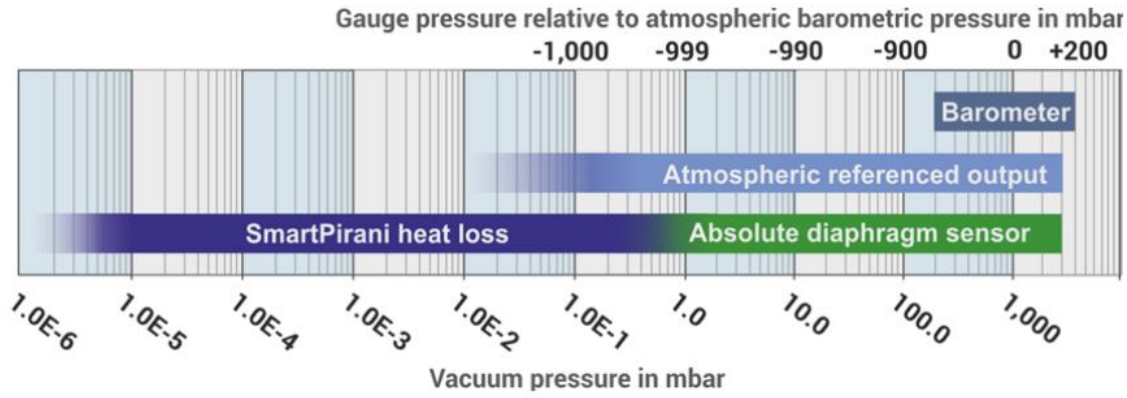
The HVPM-7 SmartPirani™ ATM transducer is designed for semiconductor load-lock precision pressure control and other vacuum applications where accurate pressure measurement relative to atmospheric ambient pressure is important.
It offers best-in-class performance with wider measurement range, higher accuracy, faster measurement cycle than legacy load-lock transducers and other load-lock sensor solutions.
The SmartPirani ATM is based on a patent pending technology that has established new standards by extending the useable measuring range for thermal conductivity Pirani heat-loss vacuum gauges by 1-3 decades.

All-in-one multi-sensor transducer solution
The HVPM-7 is a true multi-sensor transducer with four pressure outputs combining a barometric ambient sensor, a wide-range heat-loss Pirani, an absolute diaphragm sensor and a signal relative to atmospheric pressure to optimize pressure control of a modern load-lock vacuum chamber. The diaphragm sensor reading is gas independent from 2 to 1,333 mbar absolute.



A Load-lock is a vacuum chamber used for loading devices like semiconductor wafers from the ambient air pressure to the vacuum processing chamber. The Load-lock is typically cycled between atmospheric barometric ambient pressure and an adequate vacuum pressure required to transfer the wafers to the processing vacuum chamber. Accurate control of pressure in the load-lock vacuum chamber is critically important to prevent ambient air and particulate contamination of the load-lock and wafers.

Programmable settings and parameters
The transducer settings and parameters can be user-programmed to control vacuum system and application parameters.
The digital serial interface enables diagnostics, predictive maintenance, service, calibration, setpoint configuration, analog output scaling and acquisition of real-time vacuum pressure measurements for on-screen visualization. The serial USB programmer in combination with the free, intuitive configuration software is a plug-and-play solution for transducer programming, real-time measurements and diagnostics.

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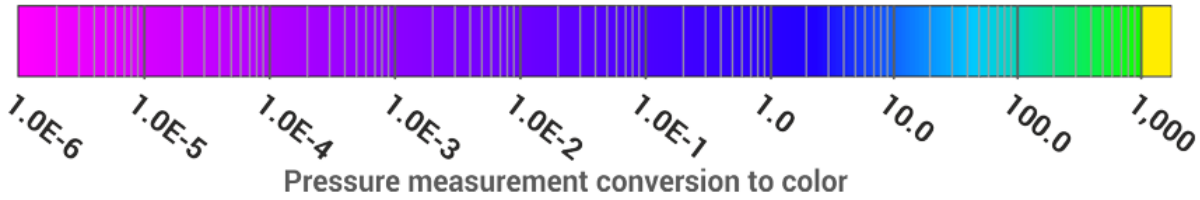
Analog voltage output
The analog output can be user-configured via the S4-Connect™ or RS-232/RS-485 interface to any arbitrary scaling in the range 0-10 VDC. The analog output scaling feature enables amplified signal in a limited pressure range. Furthermore, a wide selection of analog output scaling options to emulate other vendors' vacuum gauges and transducers is available. An optional secondary analog output enables external monitoring of both the full-range vacuum pressure and the pressure signal relative to atmospheric pressure.

SmartPirani ATM RGB LED indicator
New RGB LED for pressure indication

The SmartPirani™ ATM introduces a new approach for visually determining the measured pressure by a multi-color LED that smoothly changes color throughout the pressure range. This selectable visual function is a low-cost alternative to integrated displays and provides a rough visual indication of the measured pressure. It also provides a clear visual warning if the vacuum system is pressurized above ambient pressure.



Pressure measurement conversion to color

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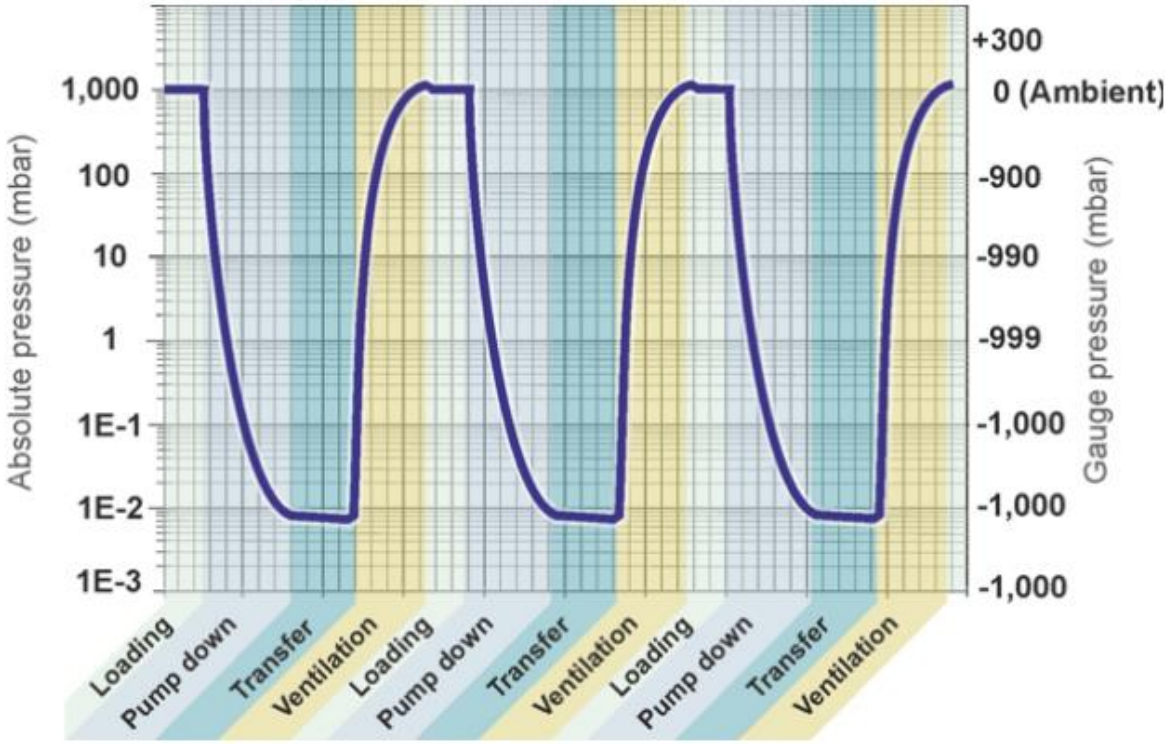
Reliable and robust pressure control
For optimized load-lock performance several pressure parameters need to be accurately and reliably controlled. The SmartPirani™ ATM transducer has three independent solid-state switch relays that can be configured to control venting, the transfer chamber gate-valve and the load-lock door.



Compared to traditional electro-mechanical relays, the solid-state relays offer superior reliability and faster switching time while providing arc free contacts and generating no EMI (electromagnetic interference) when switching contacts. The SmartPirani™ ATM control relays are designed to last and are UL listed, CSA recognized, and EN/IEC 60950-1 certified for maximum confidence when used to control critical vacuum processes and high-cycle load-lock applications.

APPLICATIONS FOR SMARTPIRANI™ ATM VACUUM TRANSDUCERS
Semiconductor load-locks on processing equipment
Mass spectrometers
Scanning electron microscopes
Furnace heat treatment
PVD coating of glass, optics, tools, packaging and decorative surfaces

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