



Sierra Instruments today introduces their new QuadraTherm™ 640i / 780i Thermal Mass Flow Meter Series, marking a disruptive breakthrough in thermal dispersion technology. With its sensor design advancements, coupled with a proprietary iTherm “Brain”, the 780i inline version achieves gas mass flow rate measurement accuracy of $\pm 0.5\%$ of reading above 50% of the full scale (Air) making it the most accurate thermal meter in the industry. Before today, this level of accuracy was never thought possible with thermal dispersion mass flow meters.

At the heart of the 640i / 780i is its revolutionary patented QuadraTherm sensor and proprietary iTherm™ algorithm set. Traditional thermal sensors have two sensors—one temperature sensor and one velocity sensor, each in a separate probe. QuadraTherm introduces four sensors—three precision platinum temperature sensors and one patented no-drift DrySense™ mass velocity sensor, which is backed by a lifetime warranty and uses a proprietary manufacturing process to greatly improve accuracy and long-term stability.

Performance improvements never before possible are gained as the QuadraTherm sensor isolates forced convection (the critical variable for measuring gas mass flow rate) by calculating and then eliminating unwanted heat-transfer components, like sensor stem conduction, one of the major causes of false flow readings. This provides customers a true flow rate reading for their application and unprecedented accuracy in the market.

QuadraTherm and iTherm solve the First Law of Thermodynamics (for thermal dispersion technology) in a fraction of a second for each mass flow data point. They calculate stem conduction and all other unwanted heat loss components, subtract them out, and then compute the mass flow rate from the remaining forced convection component.

The result is a proprietary, fundamentally different gas mass flow rate calculation using all

pertinent variables for the most precise, stable and accurate thermal mass flow measurement possible.

“We are extremely proud of this product which will dramatically change the thermal mass flow market. Using current thermal dispersion technology, mass flow meters have never been able to achieve accuracies of +/- 0.5% of reading. By harnessing over 40 years of hardnosed dedication to excellence in innovation and expertise in thermal dispersion measurement, the advancement of the 640i / 780i mark a disruptive change in thermal mass flow measurement technology.” says Matthew Olin, President of Sierra.

And, with Dial-A-Pipe™, customers can relocate the probe to different pipe sizes and types in the field. With Dial-A-Gas®, iTherm provides gas change capability.

Sierra has developed an iTherm Gas Library which stores proprietary Gas Packets. A Gas Packet is analogous to the DNA of a specific gas. It stores all the parameters needed to instantly calculate the thermodynamic and transport properties of every gas or gas mixture versus temperature and pressure.

Currently, the library has mapped 18 gases and mixtures. And it continues to grow and improve by the day. Furthermore, the millions of data points collected over time in Sierra's metrology laboratories are used to tune the instrument for better performance and accuracy. Customers can expect hundreds of data sets and gas and gas mixture combinations in the future that can be downloaded to their QuadraTherm meter via the internet to upgrade and improve their meter over its lifetime.

For customers who enjoy the many benefits of thermal technology—wide turndown ratios, nominal pressure drop, no moving parts, installation flexibility, and a direct gas mass flow rate measurement—now you get percent of reading accuracy is part of the QuadraTherm total package.

The QuadraTherm is available in two models: the 640i insertion and 780i inline. The QuadraTherm family has a no-drift sensor with lifetime warranty; has multivariable output: mass flow, temperature, pressure (optional); measures all inert and all non-condensing clean gases; flammable gases (methane, propane, hydrogen, and digester gas); repeatability for mass flow

rate is +/- 0.15% ; ValidCal™ Diagnostics to validate calibration in the field; and gas accuracy is +/- 1 °C (1.8 °F).

Go to www.sierrainstruments.com/quadratherm to learn more.