

SmartTrak

Thermal Mass Flow Controllers
for High Accuracy Process Gas Applications





SIERRA

Flow:
200.018

SmartTrak 100
MODBUS RTU

Compad

MASS FLOW

Accurate. Reliable. Adaptable.

The No-Compromise MFC.

Process engineers in semiconductor manufacturing, biotechnology, aerospace, renewable energy and many other industries choose thermal mass technology for their most demanding flow control applications. The reason is obvious: Thermal mass flow devices contain no moving parts and are unaffected by upstream temperature and pressure fluctuations, resulting in exceptional accuracy and reliability.

Sierra Instruments pioneered the development of industry-leading flow measurement and control devices. Our flagship product, the SmartTrak 100 thermal mass flow controller (MFC), provides precise control of process gases such as nitrogen, argon, carbon dioxide, and methane over a wide range of flow rates. Combining superior physics, high reliability and unparalleled flexibility, SmartTrak 100 stands apart from competitive mass flow controllers.



SmartTrak 100



SmartTrak 50

Superior Physics for the Highest Accuracy

To build a great instrument, you start with great physics. The SmartTrak 100 employs an inherently linear laminar flow element, a corrosion-resistant capillary sensor tube, high-purity platinum resistance temperature detector wire and a powerful on-board micro-processor. Together, they produce an accurate, reliable and repeatable telemetry signal proportional to the true mass flow rate. NIST-traceable calibration for each process gas results in an overall accuracy of +/- 0.5% of full scale.

Flow Control You Can Count On

The small internal volume and frictionless design of the control valve combine with an optimized control algorithm to deliver highly responsive operation with negligible overshoot.

Each sensor component is tested for reliability and repeatability during a rigorous 70-day burn-in period. All assembly is performed in a Class 6 clean room environment.

A Device that Adapts to Your Needs

Gas flow applications aren't cookie-cutter cases; each one has its unique technical and business challenges. Every SmartTrak 100 is pre-programmed for up to 10 gases that are field selectable. Technicians can easily change set points, flow rates, engineering units and more using our intuitive user interface.

For particularly challenging applications, our dedicated customization team will tailor instruments to your precise requirements—for free, in most cases. In short, the SmartTrak 100 fits into your system — not the other way around.

The Making of a World-Class Mass Flow Controller

At a macro level, the SmartTrak 100 instrument can be conceptualized as consisting of four core technologies, each of which contributes to its unparalleled accuracy, adaptability and reliability.

Calibration: NIST-traceable

The SmartTrak 100 must be carefully calibrated for each gas to be monitored and metered. Sierra is one of few manufacturers today that perform a detailed 10-point NIST-traceable primary standard calibration across the entire mass flow range with calibration system accuracies as good as +/- 0.15% of reading.



Communication: Human & System Interface

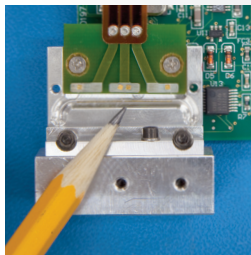
Technicians can easily and quickly configure the SmartTrak 100 in the field using the intuitive menu system or remotely using our free software on a desktop computer. The SmartTrak 100 can also be integrated into the network via standard protocols such as Modbus, Profibus and Foundation Fieldbus.



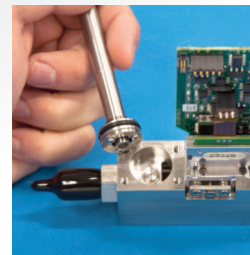
The optional Compod mounts to the face of any SmartTrak to set up simple process control systems without the need for PLCs or computers. Monitor network functionality, faults and system upsets and daisy-chain multiple devices.

Capture: Capillary Sensor Technology

The heart of the SmartTrak 100 is a platinum-wound capillary sensor that directly measures mass flow. Our patented laminar flow element eliminates non-uniformities and conditions the flow for the capillary bypass where the mass flow measurement occurs.



Control: Precision Valve



The SmartTrak 100 controls the gas flow using a proprietary frictionless hovering valve, which allows the valve seat to assume the exact height above the valve orifice necessary to maintain flow to the set point.

SmartTrak Highlights

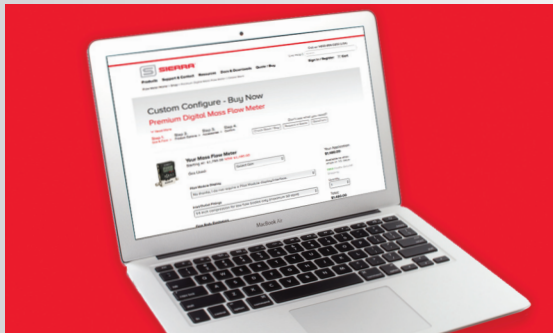
- Direct mass flow from 0.1 sccm to 1000 slpm
- Linear performance for high accuracy +/- 0.5% full-scale
- Small footprint for easy replacement of legacy devices
- Precision calibration with 10-point NIST primary standards
- Supports ten gases, customizable and field selectable
- Manual selection of gas, flow rate, engineering units and more
- Computer control using free desktop software
- Custom instruments for challenging and unusual applications
- Lifetime support anywhere in the world
- For more detailed information, see SPECIFICATIONS



Uncompromising Commitment to QDPICS

Quality

The SmartTrak 100 is engineered for reliability. Each stainless steel part in a Sierra MFC is manufactured by precision CNC machines, then meticulously inspected, cleaned, and hand assembled into the final product in Sierra's clean room.



We perform primary standard 10-point calibration over the entire mass flow range. For large-volume users, we can also help you set up your own calibration lab.

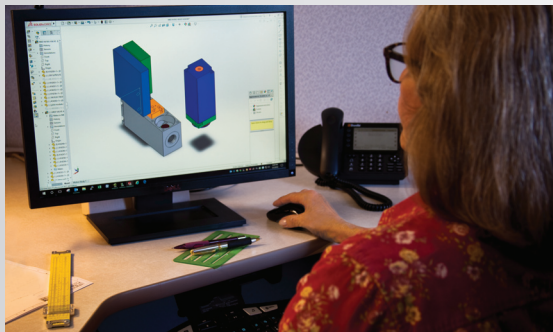
Delivery

The ability to order and receive MFCs quickly can be critical to prevent stoppages in an existing production line as well as deploy a new process according to schedule. Sierra Instruments is the only MFC vendor that ships most products within 24 hours from our online ordering portal.



People

To the dedicated staff at Sierra Instruments, building the world's best mass flow controllers is more than a job — it's our passion. That's why Sierra Instruments has an exceptional record of employee retention and job longevity -- many have been here 10 years and more.



Innovation

The development of an industrialized metal-sheathed thermal mass flow sensor in the early 80s was Sierra's initial contribution to the state of the art. Sierra has more than 30 patents, the majority of which are still being used in products today. Our R&D effort is focused on sensor improvement and firmware and software development to improve the algorithms used in fluid measurement and control.



Customer Support

Our technical support staff has years of experience helping customers with their flow applications and troubleshooting questions. We put our 40 years of manufacturing experience to work for you when we calibrate or service your instrument.



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