



**SIERRA®**



**PRODUCT LINE CATALOG**

Flow meter solutions for those who demand precision.

LOW

# Industrial Flow Meters



InnovaMass®

## VORTEX / InnovaMass

### Models

- 240i Inline
- 241i Insertion

### Description

- Completely re-designed “iSeries”
- 5-in-1: Mass & volumetric flow rate, temperature, pressure, density
- Raptor II OS for best performance
- New Applications: FloPro™, qMix™, Dial-A-Pipe™, Dial-A-Fluid™, ValidCal™
- Field firmware upgrade capability
- Thermal energy / BTU measurement

### Fluids Measured

- Steam, Gases, and Liquids

### Flow Range (30:1 turndown)

- Liquids:
  - 1.0 ft/s (0.3 m/s) Velocity Min.
  - 30 ft/s (9.14 m/s) Velocity Max.
- Gas & Steam:
  - Velocity Minimum /  $\rho$  = fluid density
  - $\sqrt{\frac{25}{\rho}}$  ft/s (see note 1)     $\sqrt{\frac{37}{\rho}}$  m/s (see note 2)
  - Velocity Maximum / 300 ft/s (91.5 m/s)

**Note 1:** in lb<sub>m</sub>/ft<sup>3</sup>    **Note 2:** in kg/m<sup>3</sup>

### Digital Communications

- HART, Modbus, Profibus DP, Foundation Fieldbus, BACnet, USB, RS-232

### Hazardous Area Approvals

- CE, cFMus, ATEX, PED, IECEx

### INLINE VERSION

#### Accuracy

- Mass flow: +/-1.0% of reading (liquids); +/-1.5% of reading (gas & steam)
- Volumetric: +/-0.7% of reading (liquids); +/-1.0% of reading (gas & steam)

#### Repeatability

- Mass flow: +/- 0.2% of reading
- Volumetric: +/- 0.1% of reading

### INSERTION VERSION

#### Accuracy

- Mass flow: +/-1.2% of reading (liquids); +/-2.0% of reading (gas & steam)
- Volumetric: +/-1.0% of reading (liquids); +/-1.5% of reading (gas & steam)

#### Repeatability

- Mass flow: +/- 0.2% of reading
- Volumetric: +/- 0.1% of reading



InnovaSonic®

## ULTRASONIC / InnovaSonic

### Models

- 203 Fixed installation economical
- 207i Thermal Energy/BTU
- 210 Portable

### Description

- Transit-time ultrasonic
- Clamp-on outside of pipe for easy set up
- Thermal energy/BTU measurement
- Proprietary Raptor II Flow Engine
- Real time density, flow profile adjustment
- Real time heat capacity adjustment
- Fixed installation and portable versions
- High accuracy at low and high flows

### Fluids Measured

- Water and liquids; Tolerant of liquids with small amounts of air bubbles or suspended solids

### Flow Range (30:1 turndown)

- Bi-directional flow range of 0.16 ft/s to 40 ft/s (0.05 to 12 m/s) version dependent
- Pipe sizes from 2 to 236 inches (50 to 6000 mm) version dependent

### Digital Communications

- RS-232, RS-485, USB, Modbus RTU
- BACnet (207i only)

### Accuracy & Repeatability

#### 203 Economical

- Accuracy: +/- 1.0% of reading
- Repeatability: +/- 0.3% of reading

#### 207i Fixed Installation

- Accuracy: +/- 0.5% of reading from 0.16 to 40 ft/s (0.05 to 12 m/s)
- Repeatability: +/- 0.15% of reading >0.16 ft/s (0.05 m/s)

#### 210 Portable

- Accuracy: +/- 0.5% of reading
- Repeatability: +/- 0.3% of reading



InnovaSwitch®

## FLOW/LEVEL SWITCH InnovaSwitch

### Models

- 615

### Description

- Ultra sensitive with fast response time
- Switches on a flow/no flow condition
- Ideal for industrial pump protection
- Unique high temperature to 850°F (454°C)
- 2-year workmanship warranty
- Buy online, next day shipment

### Fluids Measured

- Gases and liquids

### Accuracy

- Range of 0.01 to 5 sfps (0.003 to 1.524 smps) in liquids and 0.1 to 500 sfps (0.03 to 152.4 smps) gases

### Repeatability

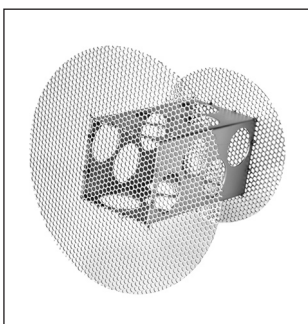
- +/- 1% of set point (Flow) or 1/32" (0.8mm) Level

### Stability

- Drift <0.5% from calibrated set point over a range of +/-50°F

### Operating Temperature Range

- Standard -100°F to 390°F (-73.3°C to 200°C)
- Medium Temperature to 572°F (300°C)
- High Temperature to 850°F (454°C)



FlowTrak™

## CONDITIONERS / FlowTrak

### Description

- Creates uniform flow profile to maximize accuracy in constrained piping areas
- Reduce upstream piping diameters to less than 3 diameters
- Use upstream of any gas flow meter
- Proven Dual-Plate inline flow conditioning technology
- Creates uniform flow profile at an economical price
- Low pressure drop

- May be used in very large diameter pipes
- Designed for use with ANY point velocity flow measurement device

### Fluids Measured

- Gas metering applications

### Straight Length Improvement

- Diameters relative to flow profile disturbance in brackets ( )
- One 90° Elbow: FlowTrak (1); Orifice plate (28)
- Two 90° Elbows Same Plane: FlowTrak (3); Orifice plate (36)

- Two 90° Elbows Different Planes: FlowTrak (5); Orifice plate (62)
- Reducer - 4/1: FlowTrak (3); Orifice plate (14)
- Globe Valve - Fully Open: FlowTrak (2); Orifice plate (32)

# Select by Application

## GAS / Industrial

- InnovaMass 240i, 241i (Vortex)
- QuadraTherm 640i, 780i (Thermal)
- SteelTrak 640S, 780S (Thermal)
- BoilerTrak 620S (Thermal)
- FastFlo 620S (Thermal)
- InnovaSwitch Flow/Level 615 (Thermal)

## GAS / Flow Conditioning

- FlowTrak (Dual-Plate Inline)

## GAS / MFCs – OEM & Scientific

- SmartTrak 100 (Capillary Thermal)
- SmartTrak 50 (Capillary Thermal)
- SideTrak 840 (Capillary Thermal)
- TopTrak 820, MassTrak 810C (Capillary Thermal)
- RedySmart (MEMS-based Thermal)
- RedyCompact (MEMS-based Thermal)
- FastTrak 730 (Thermal)
- Specialty MFCs – Low flow, IP67, Low DeltaP, High Pressure (Capillary Thermal)
- FloBox – Digital Control / Power Supplies

## GAS / Calibration

- CalTrak 800, XL (Primary standard piston prover)

## LIQUID

- InnovaSonic 203, 207i, 210 (Ultrasonic)
- InnovaMass 240i, 241i (Vortex)
- InnovaSwitch Flow/Level 615 (Thermal)

## STEAM

- InnovaMass 240i, 241i (Vortex)
- InnovaSwitch Flow/Level 615 (Thermal)



QuadraTherm®

### Thermal Mass / QuadraTherm

#### Models

- 640i Insertion Probe
- 780i Inline

#### Description

- Highest accuracy thermal meter in the world
- Multivariable outputs: Mass flow rate, temperature, pressure
- Patented "QuadraTherm" 4-Sensor thermal technology
- Patented no-drift DrySense™ sensor, lifetime warranty
- Inline version has built-in flow conditioning
- No moving parts, low pressure drop, high 1000:1 turndown

- Free user software
- Change gas in the field
- Change pipe size in field (insertion version)
- Validate in field for in-situ calibration
- Certified for GHG measurement meeting EPA (40 CFR Part 98)
- Hazardous-area location approvals
- Buy online, next day shipment

#### Fluids Measured

- Measure all non-condensing clean gases
- Flammable gases

#### Flow Ranges (100:1 Turndown)

- Very low flows and high flows up to 60000 sfp (305 smps)

#### Accuracy\*

- **780i Inline**
- +/- 0.5% of reading above 50% of full scale
- **640i Insertion**
- +/- 0.75% of reading above 50% of full scale
- \* Verified by an independent NIST & NVLAP accredited lab

#### Repeatability

- +/- 0.15% of full scale

#### Digital Communications

- Foundation Fieldbus, HART, Modbus RTU, and Profibus DP

#### Approvals

- cFMus, ATEX, IECEx, PED, GOST R, Chinese Pattern, CE



SteelTrak® / SteelMass®

### Thermal Mass SteelTrak & SteelMass

#### Models

- SteelMass 640S Insertion probe
- MultiTrak 670S Multi-point insertion
- SteelTrak 780S Inline
- SteelTrak 780S Inline Ultra High Purity

#### Description

- Insertion, Inline and multi point configurations
- Patented no-drift DrySense™ sensor, lifetime warranty
- No moving parts, low pressure drop, high turndown 100:1
- Insertion and inline, totalizing gas mass flow

- Inline version built-in flow conditioning for only 3-diameters up, zero downstream
- Free user software
- Validate in field for in-situ calibration
- Economical NEMA 4X enclosure available
- High temperature to 800°F (430°C) available
- Axial and purge designs for dirty gases
- Certified for GHG measurement meeting EPA (40 CFR Part 98)
- Hazardous-area location approvals

#### Fluids Measured

- All all non-condensing clean gases
- Flammable gases

#### Flow Range (100:1 Turndown)

- Wide flow range from 0 to 20,000 sfp (100 smps)

#### Accuracy

- +/- 1.0% of reading plus +/-0.5% of full scale

#### Repeatability

- +/- 0.2% of full scale

#### Digital Communications

- Foundation Fieldbus, HART, Modbus RTU, and Profibus DP

#### Approvals

- FM, CSA, CRN, ATEX, PED, GOST R, Chinese Pattern, CE



BoilerTrak™

### Thermal Mass BoilerTrak & FastFlo

#### Models

- BoilerTrak 620S-BT Insertion probe
- FastFlo 620S Insertion probe

#### Description

- Increase efficiency with fast response time within 200 milliseconds
- No moving parts, low pressure drop, high turndown 100:1
- BoilerTrak optimized for methane, propane and natural gas
- FastFlo optimized for air, nitrogen, and inert gas measurement
- Free user software

- Validate in the field for easy in-situ calibration
- Certified for GHG measurement meeting EPA (40 CFR Part 98)
- Easily install in the field or retrofit
- Buy online, next day shipment

#### Flow Range (100:1 Turndown)

- Wide flow range from 0 to 20,000 sfp (100 mps)

#### Accuracy

- +/- 1% of full scale

#### Repeatability

- +/- 0.2% of full scale

#### Digital Communications

- Modbus RTU

#### Fluids Measured

- **FastFlo 620S**
- Measure all non-condensing clean gases
- **BoilerTrak 620S-BT**
- Flammable gases: methane, propane, natural gas

#### Approvals

- CE, GOST R, Chinese Pattern

# Mass Flow Meters, Controllers



SmartTrak® 100

## DIGITAL / SmartTrak 100

### Models

- 100L Low Flow
- 100M Medium Flow
- 100H High Flow

### Description

- Highest performance multi-gas MFC
- Navigate easily with large multi-function display interface
- Free user software
- Primary Standard calibration & NIST traceability
- Make adjustments in the field
- Proprietary frictionless-hovering, direct-acting control/shut-off valve

- User-friendly pilot module display interface is front-mounted, hand-held, or remote mounted
- Leak integrity  $5 \times 10^{-9}$  sml/sec of helium
- CE Approved
- Buy online, next day shipment

### Fluids Measured

- All clean gases including toxics and corrosives
- Dial-A-Gas allows you to change between 10 gases with one unit

### Accuracy

- +/- 1.0% of full scale
- +/- 0.5% of full scale available

### Repeatability

- +/- 0.2% of full scale

### Digital Communications

- Foundation Fieldbus, Ethernet, Modbus RTU, and Profibus DP

### Flow Range

(Turndown - Meters 100:1 / Controllers 50:1)

- 100L Low Flow**
- 0 to 10 sccm (smlm) to 0 to 50 slpm (nlpm)
- 100M Medium Flow**
- 0 to 300 slpm (nlpm)
- 100H High Flow**
- 0 to 1000 slpm (nlpm)

Higher & lower flows available upon request



SmartTrak® 50

## DIGITAL / SmartTrak 50

### Models

- 50L Low Flow
- 50M Medium Flow

### Description

- Economical digital mass flow meter and controller
- Powerful digital high-performance at OEM pricing
- Save money with volume discounts
- Navigate easily with large display
- Free user software
- Choice of aluminum or 316 stainless-steel construction

- Compact size makes drop-in replacement easy
- Local display and digital setpoint
- Optional analog setpoint/output signals
- Field adjustable zero and span
- Primary Standard calibration & NIST traceability
- Leak integrity  $5 \times 10^{-9}$  sml/sec of helium
- CE Approved
- Buy online, next day shipment

### Fluids Measured

- All clean gases including toxics and corrosives

### Accuracy

- +/- 1.0% of full scale

### Repeatability

- +/- 0.25% of full scale

### Digital Communications

- RS-232, RS-485 (Multi-drop)

### Flow Range

(Turndown - Meters 100:1 / Controllers 50:1)

- 50L Low Flow**
- 0 to 10 sccm (smlm) to 0 to 50 slpm (nlpm)
- 50M Medium Flow**
- 0 to 200 slpm (nlpm)

Higher flows available upon request



Specialty MFCs

## DIGITAL / Specialty MFCs

### Models

- MicroTrak 101 Ultra Low Flow
- SmartTrak 140 Ultra Low Delta P
- SmartTrak 100-HP Ultra High Pressure
- MaxTrak 180 Industrial NEMA 6 (IP67)

### Description

- Digital MFC's engineered for challenging applications
- Ultra-low flow rates down to 0.1 sccm (smlm)
- Ultra-low pressure drop  $\Delta P$  of 4.5 psid (310 mBard)
- Industrial approval ratings of NEMA 6 & IP67 ratings

- High pressure up to 5000 psig (345 barg)
- Many other versions available, consult factory
- Leak integrity  $5 \times 10^{-9}$  sml/sec of helium
- Free user software
- CE Approved

### Fluids Measured

- All clean gases including toxics and corrosives

### Accuracy

- +/- 1.0% of full scale

### Repeatability

- +/- 0.2% of full scale

### Flow Range

(Turndown - Meters 100:1 / Controllers 50:1)

- Mass flow rates up to 1000 slpm (nlpm); higher upon request
- Low flow ranges under 4 sccm (smlm), with a minimum controllable mass flow rate of 0.1 sccm (smlm)

### Digital Communications

- (may vary based on version)
- Foundation Fieldbus, Ethernet, Modbus RTU, and Profibus DP



MEMS-based Thermal MFCs

## DIGITAL / Redy Series

### Models

- RedySmart meters and controllers
- RedyCompact meters and regulators

### Description

- Ultimate OEM solution, make gas mixing blocks
- Direct mass flow rate measurement/control
- Large digital display, free user software
- Micro Electro-Mechanical System (MEMS) technology
- Direct mass flow using thermal CMOS sensor

- Primary standard calibration & NIST traceability
- CE approved
- Buy online, next day shipment
- Lifetime no-drift sensor warranty

### Fluids Measured

- Air, N<sub>2</sub>, O<sub>2</sub>, He, Ar, CO<sub>2</sub>, H<sub>2</sub>, CH<sub>4</sub>, C<sub>3</sub>H<sub>8</sub>
- Other gases and mixes upon request

### Accuracy

- Actual gas calibration over entire range
- RedySmart: +/- 1.0% full scale
- RedyCompact: +/- 2.0% full scale

### Repeatability

- RedySmart: +/- 0.2% full scale
- RedyCompact: +/- 0.5% full scale

### Flow, Temperature & Pressure Ranges

- Flow: 0 to 500 slpm (nlpm)
- Temperature: 32 - 122°F (0 - 50°C)
- Pressure: 3 - 160 psia (0.2 - 11 bara)

### Additional Features:

- RedySmart™**
- Modbus RTU included on every instrument
- Precision electromagnetic control valve
- Fast response (80 ms)
- 18 - 30 VDC power
- RedyCompact™**
- Compact footprint
- Designed to replace VA meters
- Battery operated
- Large touch screen with rotational adjustment
- Precision needle valve to regulate flow



# Mass Flow Meters, Controllers



SideTrak®

## ECONOMICAL MFC / SideTrak

### Models

- 840L Low Flow
- 840M Medium Flow
- 840H High Flow

### Description

- Dependable analog mass flow control for over 30 years
- Cleanable sensor tube for dirty gases
- Precision control with low pressure drop
- Durability with rugged construction
- Available in a wide variety of enclosures, process connections, input/output options and control electronics.

- Leak integrity  $5 \times 10^9$  sL/sec of helium
- CE Approved

### Fluids Measured

- All clean gases including toxics, corrosives and combustibles

### Accuracy

- +/- 1.0% of full scale

### Repeatability

- +/- 0.5% of full scale

### Flow Ranges (50:1 Turndown)

#### 840L Low Flow

- 0 to 15 slpm (nlpm)

#### 840M Medium Flow

- 0 to 100 slpm (nlpm)

#### 840H High Flow

- 0 to 500 slpm (nlpm)

Higher flows available upon request



TopTrak®

## ECONOMICAL MFM / MFC TopTrak

### Models

- 810C Nylon
- 820 Nylon
- 820S Stainless Steel
- 826 Aluminum
- 730 Aluminum or Stainless Steel

### Description

- Proven flow measurement with affordable OEM pricing
- Choice of nylon, aluminum or stainless-steel construction
- Save money with volume discounts

- Large, tiltable display readout
- Compact size makes drop-in replacement easy
- Precision measurement with low pressure drop
- CE Approved

### Fluids Measured

- All clean gases; check compatibility with wetted materials

### Accuracy

- +/- 1.5% of full scale

### Repeatability

- +/- 0.5% of full scale

### Flow Ranges (100:1 Turndown)

#### 810C Nylon

- 0 to 50 slpm (nlpm)

#### 820 Nylon

- 0 to 50 slpm (nlpm)

#### 820S Stainless Steel

- 0 to 500 slpm (nlpm)

#### 820S Aluminum

- 0 to 175 slpm (nlpm)

Higher flows available upon request

#### 730 Aluminum or Stainless Steel

- 0 to 700 slpm (nlpm)

Higher flows available upon request



FloBox™

## DIGITAL CONTROL FloBox

### Description

- Feature packed digital performance for analog MFC's
- Large digital display with pushbuttons
- Power one to four units
- Master-slave ratio control
- Independent totalizers and alarms

### Features

- Power input: 100, 110 or 240 VAC (specify when ordering), 50/60 Hz
- Power output: +/- 15 VDC, 250-500 mA
- Signal input from device: User selectable: 0-5 & 0-10 VDC, 4-20 mA
- Analog output: Set point and output user selectable 0-5 & 0-10 VDC, 4-20 mA (250 ohm max load resistance)
- 2 alarms per channel
- Digital output: RS-232, RS-485

### Programmable Functions

(Model 954 four independent channels):

- Valve override: Run, Close, Purge
- Display flow or totalizer
- Engineering units
- Gas name/symbol
- A/D filter rate
- Input signal type
- Alarm high and low values
- Master-slave ratio control
- Calibrate full scale
- Calibrate zero
- Gas correction factor



CalTrak®

## GAS FLOW CALIBRATORS CalTrak

### Models

- 800 Premium
- XL High Flow

### Description

- Quick, easy to use, automatic data capture using free software
- Portable and battery operated
- Results directly traceable to NIST
- Highest accuracy primary standard for labs & industry (compare at  $\pm 0.15\%$  of reading)
- Innovative – 100:1 turndown ratio

- Proven dimensionally-based primary standard accuracy backed by a rigorous uncertainty analysis
- Manufactured to ISO 17025 Standards at a NVLAP accredited lab

### Fluids Measured

- All clean gases; toxic and corrosive gas versions available

### Accuracy

- Highest accuracy of  $\pm 0.15\%$  of reading gas mass flow rate

Note: At gas pressure of 760 mmHg, (1 atm) and a gas temperature of 25°C (77°F) with standardization temperature set to 21.1°C (69.98°F)

### Flow Ranges

#### 800 Premium

- 0.5 sccm to 100 slpm (Across five flow cells)

#### XL High Flow

- 5 slpm to 1500 slpm

# GLOBAL LOCATIONS



California / USA



Michigan / USA



United Kingdom



The Netherlands



India



China

Find other Sierra Flow Centers of Excellence in Mexico, Singapore, and South Korea.



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