Natural Gas & Propane Immersible Thermal Gas Mass Flow Meter

FEATURES

- Fast response flow meter optimized for natural gas or propane measurement applications
- 200 millisecond response to changes in flow rate
- Programmable pulse output for remote totalization
- Optional Modbus communication
- Smart electronics permit field adjustment of critical flow meter settings
- Field validation of flow meter calibration
- Outstanding rangeability
- 2 x 12 backlit LCD display totalizer values along with instantaneous flow display
- Minimal flow blockage and low pressure drop
- CE approved





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DESCRIPTION

ierra Instruments' BoilerTrak™ Immersible
Thermal Mass Flow Meter provides an
optimized solution for natural gas or propane
flow measurement applications. BoilerTrak is
designed to provide an economical solution to new
regulations for the burning of natural gas or propane
in heaters and boilers. The meter's sensor offers
long-term reliability and a 200 millisecond response
to changes in flow rate.

The versatile microprocessor-based transmitter integrates the functions of flow-range adjustment, meter validation and diagnostics in a probe-mounted NEMA 4X (IP65) housing. Mass flow rate and totalized flow, as well as other configuration variables, are displayed on the meter's 2 x 12 backlit LCD panel.

The meter also provides an optical/galvanic isolated 4-20 mA output and two alarm outputs along with a programmable pulse output for remote totalization. An optional Modbus Communications package is also available. The programmable transmitter is easily configured via RS-232 and Sierra's Smart Interface™ Windows™ based software (supplied with the meter) or three push buttons in the device. Optimized natural and propane measurement for 1, 2, 3, 4 inch sch. 40 pipe sizes.

Performance Specifications

Accuracy of Point Velocity

- +/- 1% of full scale (actual gas calibration)
- +/- 1% of full scale +/- 3% of reading (correlation)

Repeatability

+/- 0.2% of full scale

Temperature Coefficient

- +/- 0.02% of reading per °F within +/- 50°F of customer specified conditions
- +/- 0.03% of reading per °F within +/- 50°F to 100°F of customer specified conditions
- +/- 0.04% of reading per °C within +/- 25°C of customer specified conditions
- +/- 0.06% of reading per °C within +/- 25°C to 50°C of customer specified conditions

Pressure Coefficient

0.02% of full scale per psi for natural gas / Methane / Propane

Response Time

200 milliseconds to 63% of final velocity value

Operating Specifications

Gases

Natural gas, Propane, Methane

Gas Pressure

O psig to 120 psig (O to 8 barg) Note: actual gas calibration limited to 30 psig (2 barg)

Pressure Drop

Negligible

Gas & Ambient Temperature

Gas -40°F to 176°F (-40°C to 80°C)

Note: actual gas calibration limited to 50°F to 100°F (10°C to 38°C)

Ambient . . . -40°F to 120°F (-40°C to 50°C)

Power Requirements

15-18 VDC (regulated), 625 mA draw maximum - Standard operating input voltage to allow for up to 12,000 SFPM flows

15-24VDC Extended operating input voltage to allow for up to 17,000 SFPM flows at Power input of 18VDC or greater, at <18VDC max flow is 12,000 SFPM.

Note: BoilerTrak is not available in other power configurations due to safety concerns. Older BoilerTraks, which operated at 15-18VDC, must stay at 15-18VDC. You can power our NEW BoilerTraks from 15-24VDC, but you cannot power an old 15-18VDC BT from >18-24VDC or damage will occur.

Standard Calibrated Flow Rates	
In various sizes of	f schedule 40 piping - STP = 70°F, 1atm (21°C, 101.3 kpa)
1.25"	80 SCFM (2.1 NM ³ /min)
1.5"	110 SCFM (2.9 NM ³ /min)
2"	185 SCFM (4.9 NM ³ /min)
2.5"	265 SCFM (7.0 NM ³ /min)
3"	410 SCFM (10.8 NM ³ /min)
4"	705 SCFM (18.5 NM ³ /min)
6"	1600 SCFM (42.1 NM ³ /min)

(L) DIMENSIONS	
Code	L
L04	4.0 (101.6)
L06	6.0 (152.4)
L09	9.0 (228.6)
L13	13.0 (330.2)

Operating Specifications (cont.)

Output Signal

Linear 0–5 VDC and 4-20 mA proportional to mass flow rate. Modbus RTU Digital Communication

Alarms

Hard contact user-adjustable high and low

Dead band adjustable with Smart Interface™ software Relay ratings..... Maximum 42 VAC or 42 VDC, 140 mA

Displays

Alphanumeric 2 x 12 digit backlit LCD

Adjustable variables via on-board switches (password protected)

or with Smart Interface™ software Adjustable variables Full scale (50 to 100 %)

Time Response (1 to 7 seconds)
Correction factor setting (0.5 to 5)

Zero and span

Totalizer

Eight digits (99,999,999) in engineering units Resettable by software or on-board switches

Software

Smart Interface™ Windows™-based software Minimum 8 MB of RAM, preferred 16 MB of RAM

RS-232 communication

> Low flow cut-off adjustment Linearization adjustment Save / Load configurations Flow meter validation

Physical Specifications

Wetted Material

Probe..... 316SS

Sensor..... glass coating epoxy

Enclosure

NEMA 4X (IP65) powder-coated cast aluminum

Electrical Connections

One 1/2-inch female NPT

Mounting

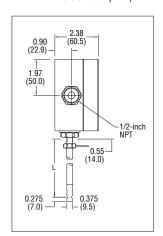
3/8-inch tube compression fitting with 1/2-inch male NPT

Certifications

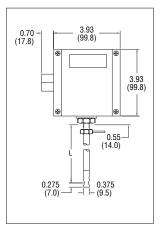
CE approved

Dimensional Specifications

NEMA 4X — Side View (EN2)

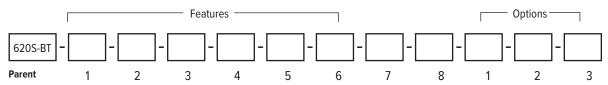


NEMA 4X — Front View (EN2)



All dimensions are inches. Millimeters are in parentheses. Certified drawings are available on request.

ORDERING INFORMATION



Instructions: To order the 620S-BT please fill in each number block by selecting the codes from the corresponding features below and following pages.

Parent Numbe

620S-BT

BoilerTrak™ Insertion Mass Flow Meter optimized for natural gas and propane. 15-24 VDC input power with a 3/8-inch in diameter probe. Includes "Smart Electronics" with PC configuration software, calibrated temperatures up to 100F and pressures up to 30 psig (2.1 barg) real gas calibration and 120 psig (8.3 barg) correlation. 200 msec response. CE approved. 4-20 mA and 0-5 VDC linear output.

NOTE: ALL slpm flow ranges also available in nlpm. * Flow bodies are sized for nitrogen flow rates. Other gases must be converted to equivalent nitrogen flow. Use K-factor and size accordingly.

Feature 1: Probe Length	
L04	3.7-inches (9.5 cm)
L06	6-inch (15 cm)
L09	9-inch (23 cm)
L13	13-inch (33 cm)
L()	Special Length - Specify length in parentheses. Maximum 24-inch (61 cm). Minimum 3.7-inches (9.5 cm)

Note: For Digital communication options, see Option 2.

Feature 3: Electronics Enclosure	
EN2	NEMA 4X (IP65) Enclosure. Mounted directly on probe.
EN4()	Remote NEMA 4X (IP65) Enclosure with Junction Box Mounted up to 200 feet (61m) away from the probe with junction box mounted on probe. Includes remote electronics enclosure and 1/2-inch Female NPT connection.

Feature 5: Output	
V1	0-5 VDC, linear
V3	0-10 VDC, linear
V4	4-20 mA, linear

Feature 6	Feature 6: Display	
NR	No readout	
DD	Digital display. 2 x 12 digit, backlit, LCD display indicates flow rate and totalized mass in engineering units. Simplifies configuration settings and provides system status information	
DD-NRT	Totalizer cannot be reset in the field.	

Option 1: Digital Communications	
PULSE	Totalizer pulse output (1 Hz max)
МВ	Modbus communications protocol

Option 2: Certificates	
МС	Material certificatesUS Mill certs on all wetted parts
СС	Certificate of conformance
NACE	NACE certificate for sour gas
LT	Leak test certificate
PT	Pressure test certificate

Feature 2: Mounting Accessories	
МО	None. Customer to supply own mounting hardware
M1	Compression fitting for 3/8-inch probe feed through by x 1/2-inch Male NPT
M1-M2()	Compression fitting for 3/8-inch probe feed through by x 1/2-inch Male NPT including Weldolet. 1/2-inch Female NPT. Welds to pipe Specify pipe O.D. in parentheses
М3	Flat Duct Bracket. 3/8-inch tube compression fitting.
M4()	Curved duct Bracket with 3/8-inch tube compression fitting. Specify duct O.D. in parentheses.
M6	Conex (Viton® compression fitting) packing gland can be used with customer supplied ball valve for live insertion or removal up to product maximum pressures. Compression fitting for 3/8-inch probe feed through by x 1/2-inch Male NPT.

Feature 4: Power Input (620S-BT Only)	
15V	15-18 VDC standard operating input voltage to allow for up to 12,000 SFPM flows. For 620S-BT meters only.
24V	15-24 VDC extended operating input voltage to allow for up to 17,000 SFPM flows at a Power Input of 18VDC or greater, at <18VDC max flow is 12,000 SFPM. For 620S-BT meters only.

Note: New Feature 4 Power Input is for 620S-BT BoilerTrak models only. Do not select either of thse for standard 620S.

Feature 7: Gas	
8	Methane (natural gas) calibration (1.0% full scale)
9	Methane (natural gas) correlation (3.0% reading plus 1% full scale)
12	Propane calibration (1.0% full scale)
13	Propane correlation (3.0% reading plus 1.0% full scale)

Option 3	Option 3: Mounting Orientation	
LU	Mounting left side, flow up. Example when ordering: DD-NRT-LU	
LD	Mounted left side, flow down. Example when ordering: DD-NRT-LD	
RU	Mounted right side, flow up. Example when ordering: DD-NRT-RU	
RD	Mounted right side, flow down. Example when ordering: DD-NRT-RD	



