

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



www.sierrainstruments.com

18-5-BT
620S
BoilerTrak™
620S



DESCRIPTION

Sierra 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

0 psig to 120 psig (0 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

15V models operate from 15-18VDC (regulated) and draw 625 mA maximum.

24V models operate from 18-24VDC (regulated) and draw 850 mA maximum.

Always refer to the data label on the product, which specifies the DC power input range, before connecting power to the flowmeter.

Warning! Older BoilerTraks, which operated at 15-18VDC, must stay at 15-18VDC.

Standard Calibrated Flow Rulesv

In various sizes of 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)

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

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

Additional features Alarm dead band adjustment

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

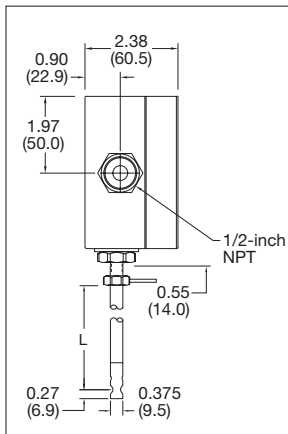
Mounting

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

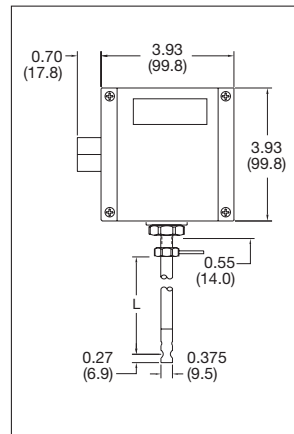
Certifications

CE approved

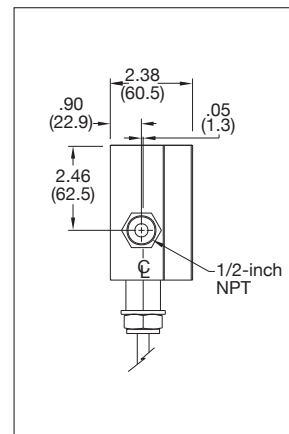
NEMA 4X—
Side View (EN2)



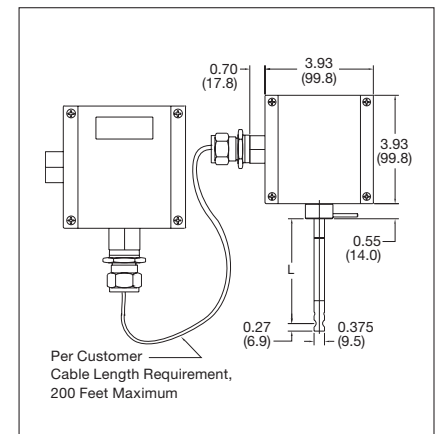
NEMA 4X—
Front View (EN2)



NEMA 4X with Junction Box—
Side View (EN4)

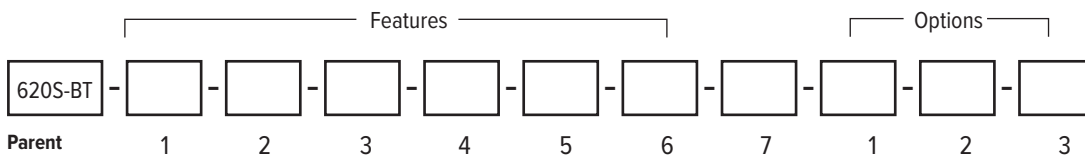


NEMA 4X with Junction Box—
Front View (EN4)



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

ORDERING THE 620-BT



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 Number	
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.

Feature 1: Probe Length	
L04	4-inches (10.2 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 1.

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 2: Mounting Accessories	
M0	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
M3	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	18-24V extended operating input voltage to allow for up to 17,000 SFPM flow. For 620S-BT meters only.

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

ORDERING THE MODEL 620S-BT (continued)

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.

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

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

Option 2: Certificates	
MC	Material certificates--US Mill certs on all wetted parts
CC	Certificate of conformance
NACE	NACE certificate for sour gas
LT	Leak test certificate
PT	Pressure test certificate



Measurably Different.™

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