

# 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](http://www.sierrainstruments.com)



# BoilerTrak<sup>TM</sup> 620S-18-S



## Description

Sierra Instruments' BoilerTrak<sup>TM</sup> 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<sup>TM</sup> Windows<sup>TM</sup> 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.

Windows is a registered trademarks of Microsoft.

## 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

15 to 18 VDC (regulated), 625 mA draw maximum

Note: BoilerTrak is not available in other power configurations due to safety concerns

## Standard Calibrated Flow Rates

In various sizes of schedule 40 piping - STP = 70°F, 1atm (21°C, 101.3 kpa)

1.25"	80 SCFM (2.1 NM <sup>3</sup> /min)
1.5"	110 SCFM (2.9 NM <sup>3</sup> /min)
2"	185 SCFM (4.9 NM <sup>3</sup> /min)
2.5"	265 SCFM (7.0 NM <sup>3</sup> /min)
3"	410 SCFM (10.8 NM <sup>3</sup> /min)
4"	705 SCFM (18.5 NM <sup>3</sup> /min)
6"	1600 SCFM (42.1 NM <sup>3</sup> /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

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. . . . . 304SS, glass coating epoxy

### Enclosure

NEMA 4X (IP65) powder-coated cast aluminum

### Electrical Connections

One 1/2-inch female NPT

### Mounting

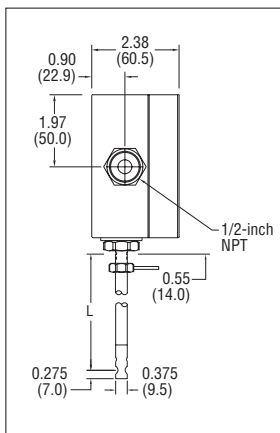
3/8-inch tube compression fitting with 1/2-inch male NPT

### Certifications

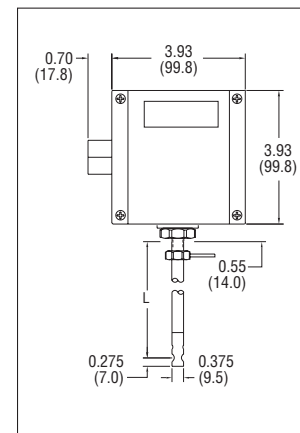
CE approved

## Dimensional Specifications

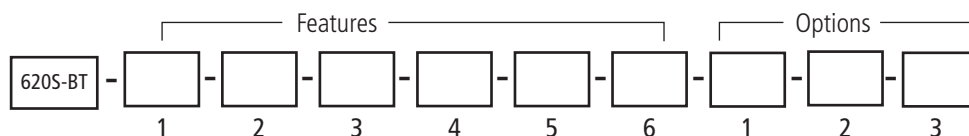
NEMA 4X—Side View (EN2)



NEMA 4X—Front View (EN2)



## ORDERING INFORMATION



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

Parent Number	
<b>620S-BT</b>	BoilerTrak™ Insertion Mass Flow Meter optimized for natural gas and propane. 15-18 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	
<b>L04</b>	3.7-inches (9.5 cm)
<b>L06</b>	6-inch (15 cm)
<b>L09</b>	9-inch (23 cm)
<b>L13</b>	13-inch (33 cm)
<b>L ( )</b>	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	
<b>EN2</b>	NEMA 4X (IP65) Enclosure. Mounted directly on probe.
<b>EN4( )</b>	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 mounting bracket and 1/2-inch Female NPT connection.

Feature 5: Display	
<b>NR</b>	No readout
<b>DD</b>	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
<b>DD-NRT</b>	Totalizer cannot be reset in the field.

Option 1: Digital Communications	
<b>PULSE</b>	Totalizer pulse output (1 Hz max)
<b>MB</b>	Modbus communications protocol

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

Feature 2: Mounting Accessories	
<b>M0</b>	None. Customer to supply own mounting hardware
<b>M1</b>	Compression fitting for 3/8-inch probe feed through by x 1/2-inch Male NPT
<b>M1-M2( )</b>	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
<b>M3</b>	Flat Duct Bracket. 3/8-inch tube compression fitting.
<b>M4( )</b>	Curved duct Bracket with 3/8-inch tube compression fitting. Specify duct O.D. in parentheses.
<b>M6</b>	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: Output	
<b>V1</b>	0-5 VDC, linear
<b>V3</b>	0-10 VDC, linear
<b>V4</b>	4-20 mA, linear

Feature 6: Gas	
<b>8</b>	Methane (natural gas) calibration (1.0% full scale)
<b>9</b>	Methane (natural gas) correlation (3.0% reading plus 1% full scale )
<b>12</b>	Propane calibration (1.0% full scale)
<b>13</b>	Propane correlation (3.0% reading plus 1.0% full scale )
<b>99</b>	Other--consult factory

Note: Full scale calibrations available to 12,000 sfp

Option 3: Power Supplies	
<b>900-T1</b>	Power Supply, 15 VDC (for BoilerTrak only)

