Engine Air Intake Mass Flow Meter For Engine and Vehicle Testing Applications

**Features**

- High performance research-grade instrument
- 200 millisecond response to changes in flow rate
- High accuracy of +/- 1% of full scale over a broad range of flow ensures compliance with ISO 8178-1
- Outstanding 15:1 turndown gives high accuracy at low idle conditions
- Low pressure drop
- Plug and play operation with Sierra’s Model BG-3 particulate sampling system
- Dual-plate laminar flow conditioning element for constrained piping environments
- Widely used in engine & vehicle testing applications
- Smart electronics permit field adjustment of critical flow meter settings
- Field validation of flow meter calibration
- 2 x 12 backlit LCD display
- CE approved
- Interfaces & Calibrates via BG-3

**Description**

The Air-Trak™ Model 628S was originally designed to work specifically with Sierra’s Model BG-3 engine emissions sampling system as an extremely fast, accurate, and repeatable engine air intake mass flow meter. However, the instrument has proven to be an excellent solution across the board in all engine testing applications.

Air-Trak™ is specifically designed to measure engine air intake mass flow rate. The meter uses Fast-Flo™ Sensor Technology for an extremely fast 200 millisecond response-time making it ideal for the toughest transient test cycles.

Integral Dual-Plate laminar flow conditioning elements and wide 15:1 turndown make Air-Trak™ a flexible solution for the constrained piping environments commonly found in today’s engine test cells.

In addition, the versatile microprocessor-based instrument 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. Air-Trak™ also provides an optical/galvanic isolated 4-20 mA output and two alarm outputs. The programmable transmitter is easily configured via RS 232 and Sierra’s Smart Interface™ Windows™ based software or via three push buttons inside the instrument. Air-Trak™ is available in body sizes from 1 inches to 24 inches (316 stainless steel tubing).
Operating Specifications (cont.)

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 (9,999,999) in engineering units
Resettable by software, on-board switches or external magnet

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

Performance Specifications

Accuracy of Point Velocity
+/- 1% of full scale above 10% full scale

Repeatability
+/- 0.5% of full scale below 10% full scale
+/- 2% of reading above 10% 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% per psi for air

Response Time
200 milliseconds to 63% of final velocity value

Operating Specifications

Gases
Air

Gas Pressure
120 psig (8 barg) maximum design pressure

Pressure Drop
Negligible

Gas & Ambient Temperature
Gas ............... 14° to 176°F (-10° to 80°C)
Ambient ............ 32° to 120°F (0° to 50°C)

Power Requirements
18 to 30 VDC (regulated), 625 mA maximum

Output Signal
Linear 0–5 VDC, 1000 ohms minimum load resistance or
Linear 4–20 mA proportional to mass flow rate,
700 ohms maximum resistance power supply dependent
User-selectable. Active non-galvanically separated or
passive galvanically separated (loop power required)

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

Wetted Material
Probe ................. 316SS
Flow Body ........... 316SS tubing
Sensor ............... 304SS, glass coating epoxy

Enclosure
NEMA 4X (IP65) powder-coated cast aluminum

Electrical Connections
One 1/2-inch female NPT

Certifications
CE approved

Ordering the Air-Trak™ Model 628S

<table>
<thead>
<tr>
<th>BODY SIZE</th>
<th>628S Air-Trak™ Engine Air Intake Flow Meter</th>
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</thead>
<tbody>
<tr>
<td>BW1</td>
<td>1-inch (2.5 cm)</td>
</tr>
<tr>
<td>BW1.5</td>
<td>1.5-inch (3 cm)</td>
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<tr>
<td>BW2</td>
<td>2-inches (5 cm)</td>
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<td>BW4</td>
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<tr>
<td>BW6</td>
<td>6-inches (15 cm)</td>
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<tr>
<td>BW8</td>
<td>8-inches (20 cm)</td>
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