The FlowSonic® range of ultrasonic fuel flow sensors from Sentronics™ is designed for both performance (optimising fuel use and strategy) and regulatory (balancing performance and limiting peak engine power) applications in motorsport. Three models – Elite, Super, and Pro – are available to suit the full spectrum of racing categories, fuels, and budgets. Key features and advantages include:

- Compact, lightweight, no moving parts
- Highly accurate and repeatable
- Fast measurement rate for dynamic flows
- Extremely robust and vibration-tolerant
- -20 to +120°C temperature range
- Compatible with wide range of fuel types
- Internal processing and diagnostics
- Minimal operating and maintenance cost

FlowSonic® Dimensions (mm)

Complete general assembly drawing and CAD data available for download at www.sentronics.com

FlowSonic® Pin Out Functions

Pin 1 Supply +
Pins 2 / 3 CAN High 1 (CANH1) / CAN Low 1 (CANL1)
Pins 4 / 5 CAN High 2 (CANH2)* / CAN Low 2 (CANL2)*
Pins 6 / 7 Comms A / Comms B
Pin 8 CAN Select**
Pin 9 Ground (GND)

* Elite models only – not connected on other models
** Loom-detect resistor on Elite and Super models only
### FlowSonic® Common Features

**Flow Measurement**
- **Operating flow range**: +/- 8000 ml/min
- **Measurement range**: 500-8000 ml/min
- **Flow outputs and functions**:
  - Calibrated volumetric flow rate (ml/min)
  - Calibrated cumulative volumetric flow (ml)
  - Elapsed time counter (power on, ETI)
  - Run-time (flow time, RTI)
  - Speed of sound (m/s)
- **Pressure drop @ 25ºC**:
  - WEC E20: 5 kPa @ 2000 ml/min, 15 kPa @ 4000 ml/min
  - Diesel: 70 kPa @ 8000 ml/min
- **Temperature Measurement**:
  - 2 x 1000 ohm RTD (1/3 DIN standard)

**Mechanical**
- **Dry weight**: 330 g
- **Fuel capacity**: 15 ml
- **Wetted materials**: FPM, anodised aluminium alloy, stainless steel
- **Fluid operating pressure**: 50 kPa to 2000 kPa, 8000 kPa maximum burst
- **Fuel line connectors**: -6AN fittings 9/16-inch UNF thread

**Electrical Supply**
- **Voltage**: 8V to 30V DC
- **Current**: < 70 mA @ +12 V DC
- **Voltage protection**: Over-voltage 45V DC, reverse polarity -45V DC

**CAN Communications**
- **Design standard**: ISO 11898-2 (high-speed applications)
- **Message format**: 2.0A (11-bit identifier)
- **Baud rate**: 1 Mbit/sec
- **CAN termination resistor**: No

**Configuration Interface**
- **Environmental**
- **Storage temperature**: -40°C to 85°C
- **External pressure rating**: 300 kPa

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### FlowSonic® Model-Specific Features

#### Flow Measurement
- **Repeatability**:
  - **Elite FS-100-02**: +/- 0.05% of reading
  - **Super FS-200-02**: +/- 0.15% of reading
  - **Pro FS-300-02**: +/- 0.25% of reading
- **Uncertainty**:
  - **Elite FS-100-02**: +/- 0.25% of reading
  - **Super FS-200-02**: +/- 0.50% of reading
  - **Pro FS-300-02**: +/- 0.75% of reading

#### Flow outputs and functions
- **Calibrated mass flow rate (g/min)**
- **Calibrated cumulative mass flow (g)**
- **Max/min logging**
- **Firmware security check-sums**

#### Electrical Supply
- **Voltage**: 2.2 kHz
- **Current**: 8V to 30V DC
- **Current protection**: < 70 mA @ +12 V DC

#### CAN Communications
- **Number of outputs**: 2
- **CAN termination resistor**: No

#### Environmental
- **Fluid operating temperature**: -20 to +120°C
- **Environmental protection**: IP68

*Calculated according to ISO/TR using root-sum square method yielding 95% confidence*