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Find the *Brooks Instrument 5860i* at our website: ***Click HERE***

Data Sheet
DS-TMF-5860i-MFM-eng
October, 2008

Industrial Mass Flowmeter Model 5860*i*

Features and Benfits

- Mass flow measurement
- Fast response - flow signal less than 6 seconds to 98% of final value
- ±1% full scale accuracy including linearity
- Flow Rates: 0-3 sccm to 0-30 slpm
- Repeatability: ±0.25% of rate
- Linear output signal, 0-5 Vdc and 4-20 mA or 0-20 mA
- All wetted parts are 316 stainless steel
- No moving parts
- All solid state electronics
- Compact
- Removable sensor
- Insensitive to mounting attitude
- 15-28 Vdc powered
- Subminiature D-connector electrical interface for RFI immunity



Model 5860i

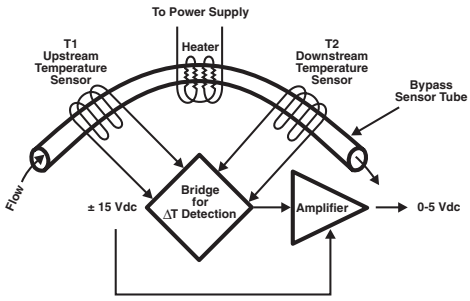


Figure 1 Principle of Operation

Description

The Brooks® Model 5860*i* Mass Flowmeter accurately measures and controls gas flow. The heart of the system is the flow sensor which produces an electrical output signal linear with mass flow rate used for indicating and/or recording. Both 0-5 Vdc and 4-20 mA or 0-20 mA linear output signals are available for flexibility in interfacing with readout equipment. Many options are offered to provide a versatile system of mass flow measurement.

Principle of Operation

The operating principle of the Brooks Mass Flowmeter is thermodynamic. A precision power supply directs heat to the midpoint of the sensor tube carrying a constant percentage of flow. On the same tube equidistant upstream and downstream of the heat input are resistance temperature measuring elements.

With no flow, the heat reaching each temperature element is equal. With increasing flow, the flow stream carries heat away from the upstream element, T1, and an increasing amount towards the downstream element, T2. An increasing temperature difference develops between the two elements, and this difference is proportional to the mass flow rate. A bridge circuit interprets the temperature differential and an amplifier provides a 0-5 Vdc, 4-20 mA or 0-20 mA linear output signal.

Specifications

Flow Ranges:
Any full scale flow rate from 3 sccm* to 30 slpm, (Nitrogen equivalent)
*Standard pressure and temperature in accordance with SEMI (Semiconductor Equipment and Materials Institute) standard: 0°C and 101.3 kPa (760 Torr). Specify at time of ordering.

Ratings:
Maximum Operating Pressure: 4500 psi (31.03 MPa)
Ambient/Operating Temperature: 40°F to 150°F (5°C to 65°C)
Non-operating: -13°F to +212°F (-25°C to 100°C)

Performance:
Accuracy: ±1% full scale including linearity at calibrated conditions. ±1.5% full scale including linearity for flow ranges greater than 20 slpm.
Repeatability: 0.25% of rate

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Specifications (continued)

Response Time:
Less than 6 seconds to within 2% of full scale of final value for a 0 to 100% flow step.

Control / Usable Range: 50 to 1

Sensitivity to Mounting Attitude:
±0.5% F.S. maximum deviation from specified accuracy after rezeroing under 200 psig. Specify mounting attitude at time of order to insure optimum performance.

Temperature Sensitivity:
Zero: Less than ±0.075% F.S. per degree C
Span: Less than ±1.0% F.S. shift from original calibration over 10-50°C range

Pressure Sensitivity:
0.03% per PSI up to 200 PSIG

Power Supply Sensitivity:
Negligible over the allowable voltage range

Output Signal:
0 to 5 Vdc into 2000 ohms (or greater) load. Maximum ripple 3 mV. 0/4-20 mA, max. loop resistance is power supply dependent, 500 ohms maximum loop resistance.

Leak Integrity: 1 x 10^{-9} atmosphere scc/sec. Helium

Power Requirements: +15 to +28 Vdc @ 90 mA

Materials of Construction

Fittings and Transducer Assy. - Wetted parts 316 SS
O-rings and Gaskets - Standard: Viton® fluoroelastomers and Buna-N; Optional: Kalrez®

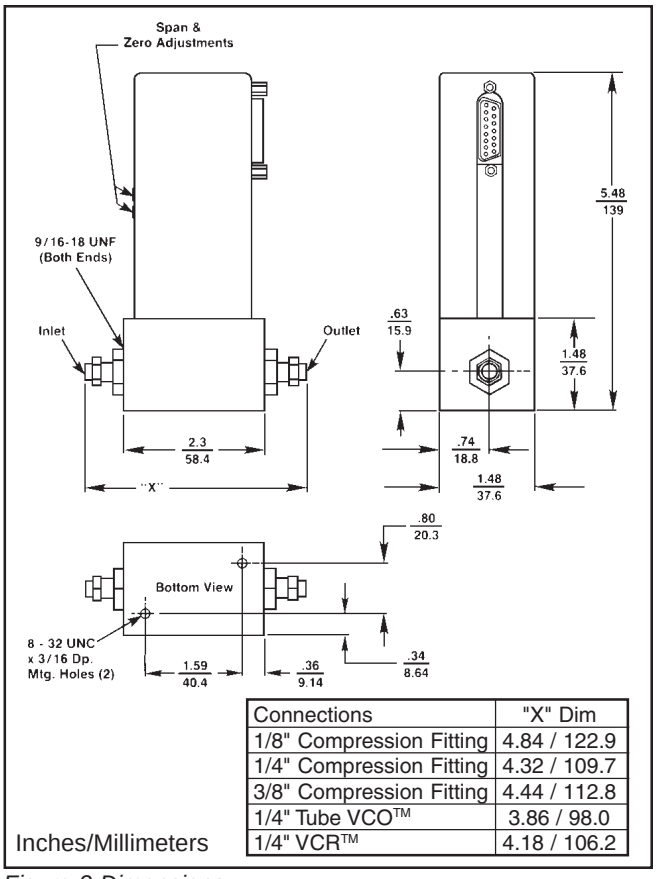
Electrical Connections:
D-connector, 15-pin type (DA-15P).

Accessories

Model 0151: Power Supply/Indicator
Model 0152/54: Power Supply/Indicator (2 or 4 meters)
Inlet Filters
Open Frame Power Supplies, P/N 544-D-058-AAA

Ordering Information

1. Flow sensor
a. Type of gas to be metered
b. Operating temperature and pressure of gas
c. Flow range
d. Inlet and outlet connections
2. Power Supply
3. Indicator (digital)
4. With or without interconnecting cable
5. Additional accessories



Inches/Millimeters

Connections	"X" Dim
1/8" Compression Fitting	4.84 / 122.9
1/4" Compression Fitting	4.32 / 109.7
3/8" Compression Fitting	4.44 / 112.8
1/4" Tube VCO™	3.86 / 98.0
1/4" VCR™	4.18 / 106.2

Figure 2 Dimensions

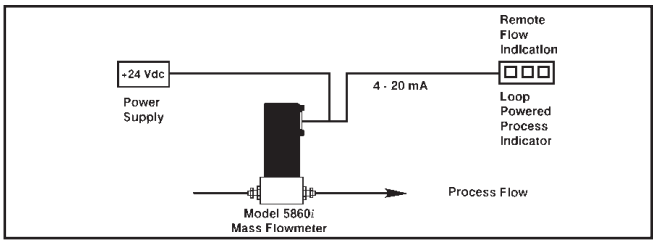


Figure 3 Typical Configuration

TRADEMARKS
Brooks ..... Brooks Instrument, LLC
Kalrez ..... DuPont Dow Elastomers
VCO ..... Cajon Co.
VCR ..... Cajon Co.
Viton ..... DuPont Performance Elastomers

Specifications Subject to Change Without Notice

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