



SAGE MODEL 51 HVAC SERIES THERMAL MASS FLOW METERS FOR NATURAL GAS

SAGE MODEL 51 HVAC SERIES THERMAL MASS FLOW METER

Sage Model 51 HVAC Series of Thermal Mass Flow Meters measures Natural Gas flow rate and consumption in commercial and municipal buildings, as well as college and university campuses, government facilities, hospitals, shopping centers and office buildings and complexes.

The HVAC Industry (Heating, Ventilation and Air Conditioning) provides processes, products, systems, and services that are aimed at heating, ventilating, and air conditioning buildings and facilities while maintaining thermal comfort, acceptable indoor air quality, and reasonable installation, operation, maintenance, and energy. Thus the need for accurate natural gas monitoring is critical, and the cost-effective Model 51 Thermal Mass Flow Meter is the ideal measurement solution.

The HVAC Series is available as an In-Line or Insertion style meter and provides a 4-20 mA analog output proportional to the NG flow rate, as well as pulsed outputs of totalized flow, and includes an easy to read display of flow rate, total, and temperature. In addition, BACnet communication is provided (or optional Modbus RTU) for communicating with energy dash-boards or other software Masters.

All Model 51 HVAC Thermal Mass Flow Meters are temperature-compensated and pressure insensitive, and are configured to provide a 100 to 1 turndown of natural gas with a Full Scale flow rate based on the pipe size specified. Over 165 samples are taken in the Sage NIST calibration facility to guarantee 1% of reading accuracy.



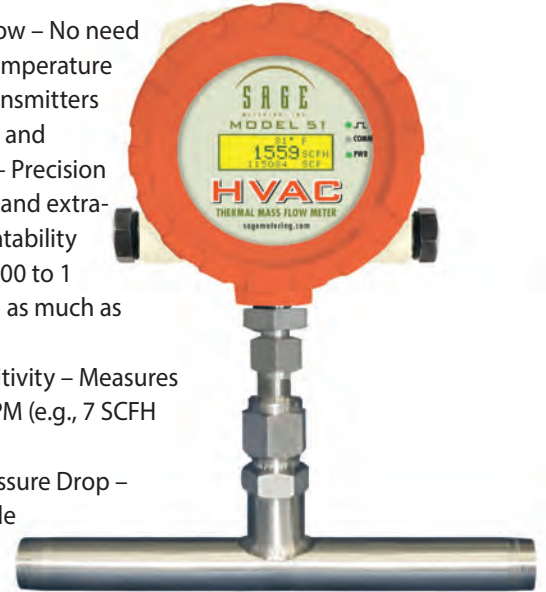
MAJOR BENEFITS OF THERMAL MASS FLOW METERS

Direct Mass Flow – No need for separate temperature or pressure transmitters
High Accuracy and Repeatability – Precision measurement and extraordinary repeatability
Turndown of 100 to 1 and resolution as much as 1000 to 1

Low-End Sensitivity – Measures as low as 5 SFPM (e.g., 7 SCFH in a 2" pipe)

Negligible Pressure Drop – Will not impede flow or waste energy

No Moving Parts – Eliminates costly bearing replacements, and prevents undetected accuracy shifts



FLOW METER ADVANTAGES

Mass flow measurement for Natural Gas

In-line or Insertion meters

Easy to install

High rangeability for low flow and high flow measurement
High reliability

Helps reduce energy consumption

Facilitates LEED credits

Compact design of enclosure is 4-1/8" dia. by 4-1/4" deep

BACnet communications or optional Modbus RTU

Isolated 4-20 mA output of flow rate and pulsed output of Totalized Flow

Rugged, user-friendly packaging with easy terminal access

Flow conditioning built into In-Line flow meters (1/2" and up)

Optional dry contact relay module—specify DCR-DC

POTENTIAL BUYERS

Mechanical Contractors

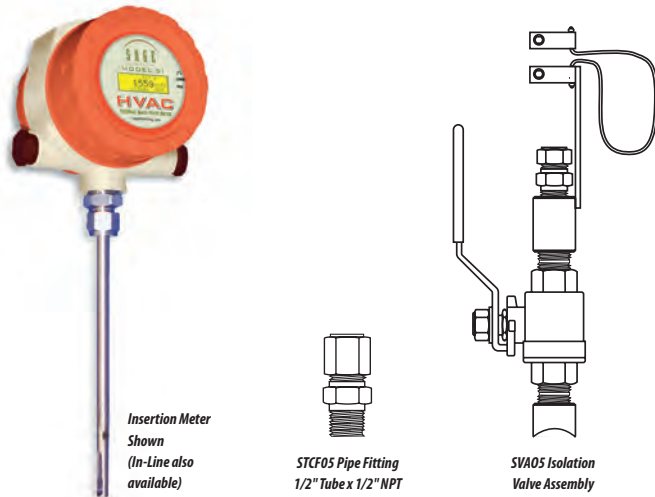
Performance Contractors

Campuses and Universities

Energy Service Companies (ESCOs)

SAGE HVAC SERIES STYLES AND SPECIFICATIONS

MODEL 51 (Shown with Optional Mounting Hardware)



Insertion Meter
Shown
(In-Line also
available)

STCF05 Pipe Fitting
1/2" Tube x 1/2" NPT

SVA05 Isolation
Valve Assembly

MODEL 51 (Shown with In-Line Flow Body)



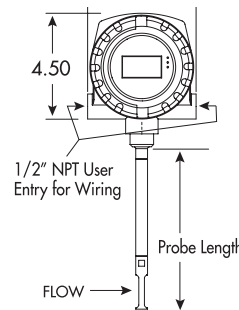
MODEL 51 HVAC SERIES

Standard accuracy is $\pm 1\%$ of reading¹ with a turn-down of 100 to 1 and resolution as much as 1000 to 1. Repeatability is 0.2%. The electronics has a 4 to 20 mA² output proportional to Mass Flow Rate as well as pulsed outputs of Totalized Flow. In addition, BACnet communications is standard (or optionally Modbus).

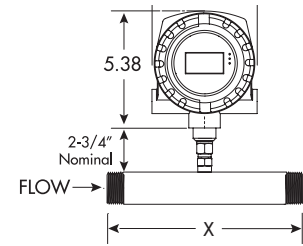
Contact Sage for a complete list of HVAC Part Numbers.

INTEGRAL STYLE ELECTRONICS

Electronics is Integral style, with rugged windowed dual compartment NEMA 4 enclosure with local display. The display is a high contrast photo-emissive OLED display, and it displays Mass Flow Rate, Totalized Flow and Temperature.



Model 51 Insertion³
Flow Element is Insertion style, consisting of a 1/2" OD probe with lengths up to 18" long (typically 15" long) suitable for insertion into the center of a process pipe



Model 51 In-Line⁴
Flow Element is In-Line style consisting of a choice of 316 Stainless Steel Schedule 40 Flow Bodies sized from 1/4" x 6" long to 4" x 12" long

SAGE MODEL 51 HVAC SERIES THERMAL MASS FLOW METERS FOR GASES

The Sage Model 51 HVAC Series Thermal Mass Flow Meter features a bright, high contrast, photo-emissive OLED (Organic LED) display of Flow Rate, Total and Temperature in a robust, yet lightweight, dual-sided NEMA 4 enclosure. The rear compartment is completely separated from the electronics, and has large, easy-to-access, well marked terminals, for ease of customer wiring. It is powered by 24 VDC. The power dissipation is under 2.5 watts (e.g. under 100 mA at 24 VDC).

Specify pipe size and choose SCFM or SCFM units or contact Sage for typical flow rates for your pipe. It has a 4-20 mA output as well as a pulsed output of Totalized Flow pre-configured for your specified pipe size. In addition, Sage Model 51 includes BACnet communications (or optional Modbus).

Sage Model 51 is CE approved, and CSA and UL approved for Hazardous Service.

IN-LINE METER DIMENSIONS

Pipe Size x Flow Body Length

1/4" x 6"	1-1/4" x 10"
3/8" x 6"	1-1/2" x 12"
1/2" x 7"	2" x 12"
3/4" x 7"	2-1/2" x 12"
1" x 8"	3" x 12"
	4" x 12"

¹ 1% of Reading above 500 SFPM (velocity units) for Natural Gas meters

² For isolated 4-20mA, remove jumper (accessible from rear terminal)

³ Mounting hardware such as Isolation Valve Assemblies or Compression Fittings, and Flanges, are optional

⁴ Flow Conditioners are built into In-Line style flow bodies from 1/2" to 4"