SAGE PRIME™ HVAC SERIES THERMAL MASS FLOW METERS FOR NATURAL GAS

SAGE PRIME™ HVAC SERIES THERMAL MASS FLOW METER

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

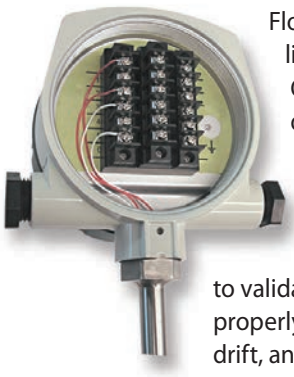
The Sage Flow Meters are ideal for sub-metering gas usage for billing or zone balancing; to provide data to help reduce energy costs; for cost accounting; and to aide combustion efficiency strategies for the boilers that produce steam for heating.

The HVAC Series is available as an In-Line or Insertion style meter and provides a 4-20 mA analog output proportional to flow rate, as well as pulsed outputs of totalized flow, and includes an easy to read graphical display of flow and total (either in an integral package or remote configuration). An RS485 Modbus or optional BACnet interface is also available for communicating with energy dash-boards or other software Masters. Additionally, the Modbus output allows for field reconfigurability or validation with SageCom™ software (a separate flyer is available titled "SageCom™/ Validation and Configuration Software)".

All Sage Prime HVAC Series of Thermal Mass Flow Meters are temperature-compensated and pressure insensitive, and are calibrated over the full range of your specified application in our automated NIST calibration facility at Sage headquarters in Monterey, California. A minimum of 110 data samples are taken to provide 1% of reading over a turndown of at least 100 to 1.

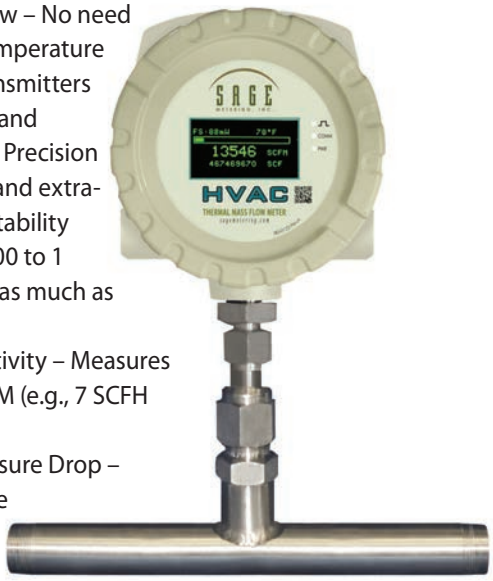
CONTINUOUS DIAGNOSTICS & FIELD CONFIGURABILITY

The Sage HVAC Series has continuous diagnostics. The raw calibration milliwatts (mW) is always displayed in the upper left hand corner of the meter's display. At any time, you can check this reading at a "No Flow" (0 SCFM) condition, and compare the reading to the original reported "No Flow" value noted on the last few lines of your meter's Certificate of Conformance or the Flow Meter's data tag.



This in-situ diagnostic procedure which checks the sensor performance and the "Live Zero" calibration point, provides a means to validate that the meter is operating properly, verifies that there is no shift or drift, and eliminates the need for annual factory calibrations.

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 extra-ordinary 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 or Compressed Air
- 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 (DC Models)
- Modbus compliant RS485 RTU communications or optional BACnet
- Isolated 4-20 mA output and pulsed output of Totalized Flow
- Rugged, user-friendly packaging with easy terminal access
- Option for Solar Energy use (12VDC models)
- Field reconfigurability via optional SageCom™ software (with Modbus)
- Flow conditioning built into In-Line flow meters (1/2" and up)
- Optional dry contact relay module—specify DCR-DC

POTENTIAL BUYERS

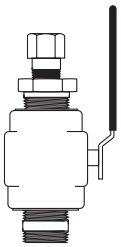
- Mechanical Contractors
- Performance Contractors
- Boiler Distributors
- Campuses and Universities
- Energy Service Companies (ESCOs)

Sage Metering, Inc. / 8 Harris Court / Bldg D-1 / Monterey, CA 93940 / 866-677-SAGE (7243) / 831-242-2030 / Fax 831-655-4965 / www.sagemetering.com

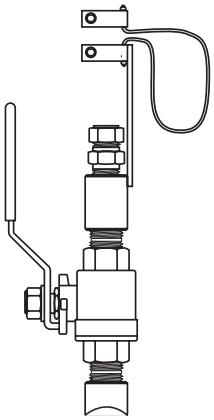
SAGE HVAC SERIES STYLES AND SPECIFICATIONS

F5100 SERIES

Insertion Meter Shown (In-Line also available)

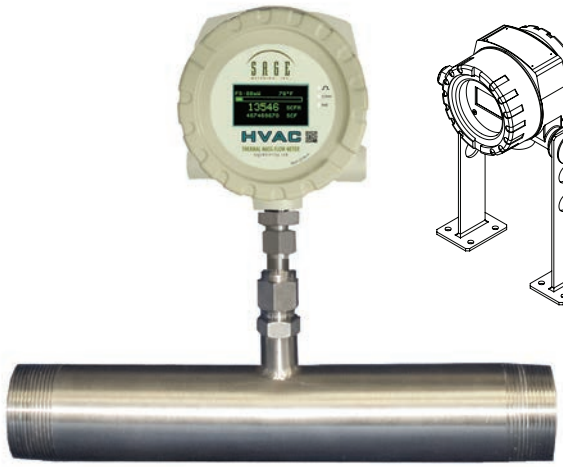


SVA05LP Low Pressure Isolation Valve Assembly



SVA05 Isolation Valve Assembly

F5200 SERIES (NO DISPLAY)



Mounting Hardware (Included)

SIP/SRP HVAC SERIES (F5100) and 100 SERIES (F5200)

Standard accuracy is +/– 1% of reading[1] 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 mA[2] output proportional to Mass Flow Rate as well as pulsed outputs of Totalized Flow (24 VDC solid state transistor drive). In addition, Modbus RS485 RTU communications is standard (or optional BACnet) on the F5100 and Modbus optional on the F5200. Contact Sage for a complete list of HVAC Part Numbers.

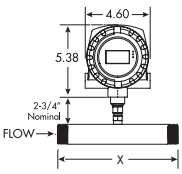
INTEGRAL STYLE ELECTRONICS

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 as well as a graphical representation of Flow Rate in a horizontal bar graph format. In addition, the calibration milliwatts (mW) is continuously displayed, providing ongoing diagnostics.

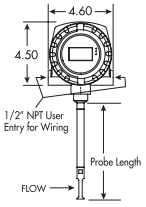
REMOTE STYLE ELECTRONICS

Electronics is Remote style, with rugged windowed dual compartment NEMA 4 enclosure with display. The display is a high contrast photo-emissive OLED display, and it displays Mass Flow Rate, Totalized Flow and Temperature as well as a graphical representation of Flow Rate in a horizontal bar graph format. In addition, the calibration milliwatts (mW) is continuously displayed, providing ongoing diagnostics. Includes Remote Mounting Hardware.

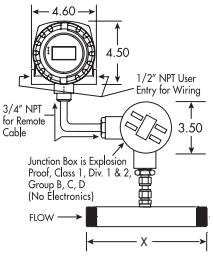
The Flow Element's Junction Box is Explosion Proof (Class 1, Div 1, Groups B, C, D), and does not have any electronics – only a wiring terminal block. The Junction Box is connected to the Remote Electronics by 25 feet of lead-length compensated cable. The cable (6-conductor) can be lengthened or shortened without affecting accuracy (max loop resistance 10 ohms, over 1000 feet), if grounded properly.



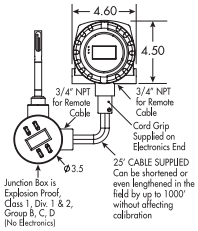
SIP In-Line[4,6,7]
Flow Element is In-Line style consisting of a choice of 316 Stainless Steel Schedule 40 Flow Bodies sized from 1/4" x 6" long to 4" x 12" long



SIP Insertion[5]
Flow Element is Insertion style, consisting of a 1/2" OD probe with lengths up to 36" long (typically 15" long) suitable for insertion into the center of a process pipe



SRP In-Line[4,6,7]
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



SRP Insertion[5]
Flow Element is Insertion style, consisting of a 1/2" OD probe with lengths up to 36" long (typically 15" long) suitable for insertion into the center of a process pipe

SAGE PRIME™ HVAC SERIES THERMAL MASS FLOW METERS FOR GASES

The Sage Prime 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 Flow Rate is also displayed graphically in a horizontal bar graph format. The rear compartment is completely separated from the electronics, and has large, easy-to-access, well marked terminals, for ease of customer wiring (see photo on Page 1). It is powered by 24 VDC (12 VDC optional, or 115/230 VAC). The power dissipation is under 2.5 watts (e.g. under 100 mA at 24 VDC).

The Flow Meter is offered in Integral or Remote style (which has Lead-Length Compensation up to 1000 feet as well as an Explosion Proof Junction Box). Specify pipe size and Full Scale and any standard probe length or flow body size 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 (solid state transistor drive). In addition, Sage Prime HVAC supports full Modbus compliant RS485 RTU communications (IEEE 32 Bit Floating Point) or optional BACnet.

Sage Prime HVAC is CE approved, and CSA, UL approved for Hazardous Service[3] (see "Approvals"under the "DOC-DOWNLOADS" tab on the website).

1 1% of Reading above 500 SFPM (velocity units) for Natural Gas meters
2 For isolated 4-20mA, remove jumper
3 CSA, UL approvals only apply to 24 VDC option
4 Male NPT ends are standard, with flanged ends, tube, or butt weld optionally available
5 Mounting hardware such as Isolation Valve Assemblies, Compression Fittings, and Flanges, are optional
6 Chart of Flow Body length "X" is on Application Data Sheet on website as well as in the Prime User Manual
7 Flow Conditioners are built into In-Line style flow bodies from 1/2" to 4"