



## SAGE PRIME™ THERMAL MASS FLOW METER FOR GASES FEATURING IN-SITU CALIBRATION CHECK

### SAGE PRIME™ THERMAL MASS FLOW METER FOR GASES

Sage Prime is the top selling meter in our Product Line. The Sage Prime 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 below). 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).

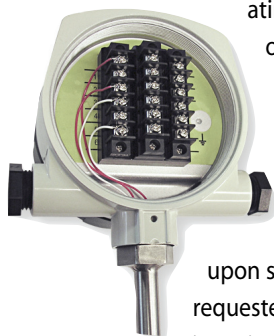
The Sage Prime Flow Meter is offered in Integral or Remote Style (which has Lead-Length Compensation up to 1000 feet as well as an Explosion Proof Junction Box). Specify any standard probe length or flow body size. It has a 4-20 mA output as well as a pulsed output of Totalized Flow (solid state transistor drive). In addition, Sage Prime supports full Modbus® compliant RS485 RTU communications (IEEE 32 Bit Floating Point).

Sage Prime is CE approved, and CSA, UL and ATEX approved for Hazardous Service<sup>2</sup> (see "Approvals" under the "Technology" tab on the website).

### CONTINUOUS DIAGNOSTICS & FIELD CONFIGURABILITY

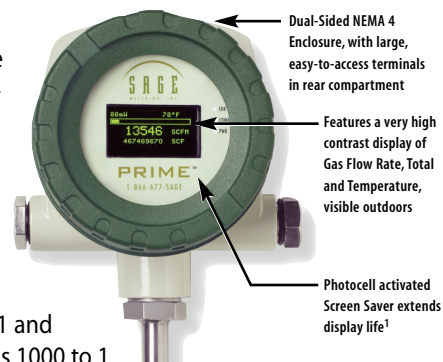
Sage Prime has continuous diagnostics. The raw calibration milliwatts (mw) is always displayed in the upper left hand corner of the meter's display. At any time, you can check this reading at a "No Flow" (0 SCFM) condition, and compare the reading to the original reported "No Flow" value noted on the last few lines of your meter's Certificate of Conformance or the Flow Meter's data tag. This in-situ diagnostic procedure not only checks the sensor performance and the "Live Zero" calibration point, but it also verifies that the sensor is clean. It essentially 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. This simple field diagnostic procedure, in addition, verifies that the sensor is free from contamination, even without inspection.

Although Sage Prime is fully configured upon shipment for the pipe and process conditions requested, if changes are needed, Addresser software is optionally available.



### 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., 1 SCFM in a 6" pipe)
- Negligible Pressure Drop – Will not impede the flow or waste energy
- No Moving Parts – Eliminates costly bearing replacements, and prevents undetected accuracy shifts
- Dirt Insensitive – Provides sustained performance
- Low cost-of-ownership
- Ease of installation and convenient mounting hardware



### SPECIFIC BENEFITS OF THE SAGE PRIME

- High contrast photo-emissive OLED display with numerical Flow Rate, Total and Temperature, as well as Graphical Flow Indicator
- Calibration milliwatts (mw) is continuously displayed, providing for ongoing diagnostics, and in-situ calibration check
- Photocell activated Screen Saver to extend display life
- Proprietary digital sensor drive circuit provides enhanced signal stability and unaffected by process temperature & pressure changes
- Modbus® compliant RS485 RTU communications
- 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)
- Powerful state-of-the-art microprocessor technology for high performance mass flow measurement and low cost-of-ownership
- Remote Style has Lead-Length Compensation. Allows remote electronics up to 1000 feet from probe; Explosion Proof Junction Box has no circuitry, just terminals (suitable for harsh environments)
- Low power dissipation, under 2.5 Watts (e.g. under 100 ma at 24 VDC)
- Field reconfigurability via optional Addresser software
- Flow conditioning built into In-Line flow meters (1/2" and up)
- Captive Flow Conditioners for Insertion meter applications, if required

<sup>1</sup> Note, a built-in photocell continuously monitors the ambient light, and adjusts the display brightness for optimum long-term life, and also senses motion which automatically switches display from Screen Saver mode to Normal mode

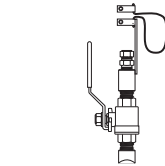
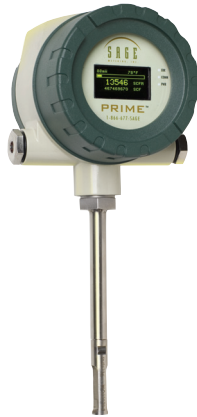
<sup>2</sup> Only available with 24VDC powered meters

# SAGE PRIME™ STYLES AND SPECIFICATIONS

Sage Metering is your source for monitoring, measuring and controlling the gas mass flow in your industrial process, building management system or environmental application. Our high performance, NIST Traceable, Thermal Mass Flow Meters will help increase productivity, reduce energy costs, maximize product yields, and/or help reduce environmental insult. Sage provides high quality In-Line and Insertion Thermal Mass Flow Meters for a wide variety of industrial, commercial, and environmental monitoring needs, including carbon credit verification for Greenhouse Gas reduction.

Our experienced application engineers, many of whom have worked in the Thermal Mass Flow marketplace since its inception, will assist you in choosing the proper gas Flow Meter for your application – and they will be pleased to offer installation guidance to assure that the meter(s) selected will perform as accurately as possible. Additionally, our Service Staff stand ready to support you with any after-sale assistance that you may require.

## SIP SERIES – INTEGRAL

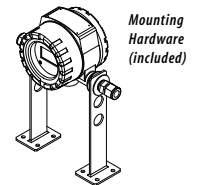


Optional SVA05 Isolation Valve Assembly



Optional Programmable Dongle or Addresser software

## SRP SERIES – REMOTE



Mounting Hardware (included)

### PRIME SIP/SRP

Accuracy<sup>4</sup> is  $\pm 0.5\%$  of Full Scale  $\pm 1\%$  of reading with a turn-down of 100 to 1 and resolution as much as 1000 to 1. Repeatability is 0.2%. The Flow Meter is Sage Metering, Inc. PRIME Series, with the trade name Sage Prime™.

The electronics has an isolated 4 to 20 mA 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 (IEEE 32 Bit Floating Pt).

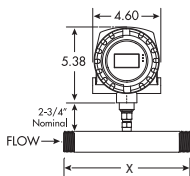
### INTEGRAL STYLE ELECTRONICS

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 with Screen Saver, 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

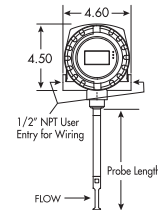
Electronics is Remote Style, with rugged windowed dual compartment NEMA enclosure with display. The display is a high contrast photo-emissive OLED display with Screen Saver, and it displays Mass Flow Rate, Totalized Flow and Temperature as well as a graphical representation of Flow Rate in a horizontal 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.



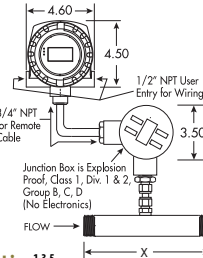
#### SIP In-Line<sup>1,3,5</sup>

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



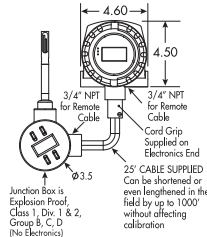
#### SIP Insertion<sup>2</sup>

Flow Element is Insertion Style, consisting of a 1/2" OD probe (3/4" optional) with lengths up to 36" long (typically 15" long) suitable for insertion into the center of a process pipe



#### SRP In-Line<sup>1,3,5</sup>

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<sup>2</sup>

Flow Element is Insertion Style, consisting of a 1/2" OD probe (3/4" optional) with lengths up to 36" long (typically 15" long) suitable for insertion into the center of a process pipe

## ENGINEERING SPECIFICATIONS OF OPTIONAL SAGE PRIME PLUS

This is an optional version of Sage Prime offering a separate ground for the 24VDC Power Supply (optional 5 VDC or 12 VDC Power Supplies) which isolates the Modbus

ground from the power supply ground. All other features of Prime PLUS are identical to the standard Sage Prime, except Approvals do not apply at this time.

- 1 Male NPT ends are standard, with flanged ends, tube, or butt weld optionally available
- 2 Mounting hardware such as Isolation Valve Assemblies, Compression Fittings, and Flanges, are optional
- 3 Chart of Flow Body length "X" is on page 10 of the "Sage Gas Flow Meters" brochure (see "In-Line Flow Meters")
- 4 Enhanced accuracy available upon request, especially if turndown limited. Contact Sage
- 5 Flow Conditioners are built into In-Line Style Flow Bodies from 1/2" to 4"



See Sage Metering 12 page Product Brochure for additional information and product benefits, or visit us at [www.sagemetering.com](http://www.sagemetering.com)