



# SAGE PARAMOUNT™ (400 Series) INDUSTRIAL THERMAL MASS FLOW METER FOR GASES

## SAGE PARAMOUNT™ INDUSTRIAL THERMAL MASS FLOW METER FOR GASES

(Includes Free SageCom™ Validation and Configuration Software)

The Sage Paramount™ Industrial Thermal Mass Flow Meter provides state-of-the-art components, a dual-sided, explosion-proof, NEMA 4X enclosure, a fast response to rapid temperature fluctuations, and a terminal arrangement with a 3-way switch for externally or internally isolating the 4-20 mA or for non-isolated, self-powered operation (see photo below).

One of the most compelling features of the Paramount™ is its accompanying free software, SageCom™. The SageCom™ software effortlessly connects the Sage Paramount to your PC via a separate mini USB connector<sup>1</sup> (cable supplied) located within the back terminal enclosure. This connector is independent of the normal Modbus communication channel allowing validation or reconfigurability of your Paramount, even while its standard Modbus output is connected to a network of additional Paramount meters going to the SCADA system.

The innovative features of the new software permit the user to reconfigure the meter (change full scale, change pipe size [4" or larger], modify engineering units, and more). Also, you can change gas constituents in the field, log real-time data, perform a loop check on the plant's 4-20 mA, and validate the meter's operation through three different diagnostic steps, including the Sage In-Situ Calibration Verification. When finished, print a Validation Report, complete with time and date stamps, serial number, and other pertinent data (ideal for QC departments, ISO requirements, or auditors). When finished, press the Return button, and the totalizer counts back to its original reading before having run the diagnostics.

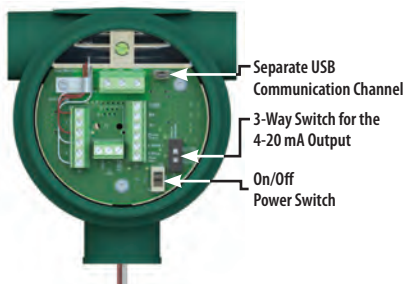
## SAGE PARAMOUNT™ FEATURES AND CONFIGURATIONS

The Sage Paramount Thermal Mass Flow Meter features a bright, high contrast, photo-emissive OLED display of Flow Rate, Total and Temperature in a robust, dual-sided NEMA 4X 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. It is powered by 24VDC (optional 115/230VAC).

The Sage Paramount 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 Paramount supports full Modbus compliant RS485 RTU communications as well as optional HART™ or BACnet.

## DIV. 1 OR DIV. 2 HAZARDOUS APPROVALS<sup>1</sup>

Sage Paramount is now optionally available with a Class I, Division 1, Groups B, C, D rating (specify "DIV1"). If not specified, the standard product will be provided with a Class I, Division 2, Groups B, C, D rating (see footnote 1 below).



- Separate USB Communication Channel
- 3-Way Switch for the 4-20 mA Output
- On/Off Power Switch

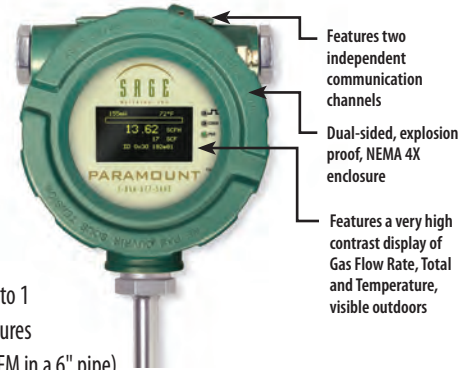
Scan here for terminal details



<sup>1</sup> Div. 1: Optional on 115/230 VAC powered or 24 VDC powered meters: Class I, Division 1, Groups B, C, D, T6; Div. 2: Standard on 24 VDC meters (not available on 115/230 VAC meters): Class I, Division 2, Groups B, C, D, T4.

## 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
- Ease of installation and convenient mounting hardware



- Features two independent communication channels
- Dual-sided, explosion proof, NEMA 4X enclosure
- Features a very high contrast display of Gas Flow Rate, Total and Temperature, visible outdoors

## SPECIFIC BENEFITS OF THE SAGE PARAMOUNT™

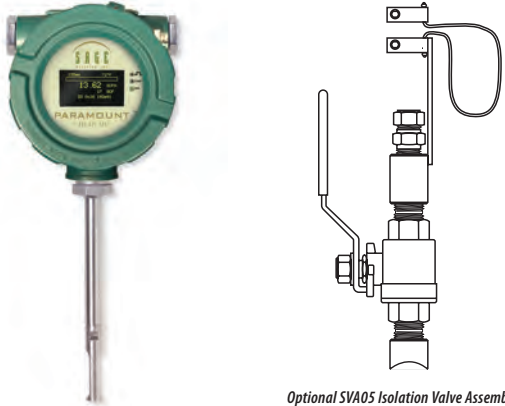
- Features in-situ "Field Zero Calibration Check" of sensor's performance – verifies that the sensor is clean, and assures that there is no drift, or shift in the flow meter
- Each Paramount order includes a free copy of the powerful SageCom™ validation and configuration software
- Choice of Div. 1 or Div. 2 (standard) hazardous models
- 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
- Features both 1/2" dia. probe as well as optional rugged 3/4" probe and sensor with double seal (for insertion style)
- Measures velocities as high as 35000 SFPM (e.g., 3100 SCFM in a 4" Pipe)
- Proprietary digital sensor drive circuit provides enhanced signal stability and unaffected by process temperature & pressure changes
- Modbus compliant RS485 RTU communications standard as well as separate USB communication channel
- HART™ or BACnet optional
- Fast response to rapid temperature changes
- Isolated 4-20 mA output and pulsed output of Totalized Flow
- Rugged, user-friendly packaging with well-marked and easy terminal access including separate USB port
- 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 24VDC)
- Flow conditioning built into In-Line flow meters (1/2" and up)
- Captive Flow Conditioners for Insertion meter applications, if required

# SAGE PARAMOUNT™ 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 and flare gas monitoring.

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 stands ready to support you with any after-sale assistance that you may require.

## 401 SERIES INTEGRAL



Optional SVA05 Isolation Valve Assembly

## 402 SERIES REMOTE



Mounting Hardware (included)

### PARAMOUNT 401/402

Standard accuracy is  $\pm 0.5\%$  of Full Scale  $\pm 1\%$  of reading with a turndown of 100 to 1 and resolution as much as 1000 to 1. Repeatability is 0.2%. NOTE: Enhanced accuracy optionally available with limited turn-down<sup>4</sup>.

The electronics has an isolated 4 to 20 mA output proportional to Mass Flow Rate as well as pulsed outputs of Totalized Flow (24VDC solid-state transistor drive<sup>6</sup>). In addition, Modbus RS485RTU communications is standard (HART™ or BACnet optional), along with a USB channel.

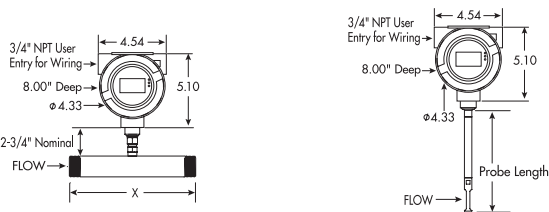
### INTEGRAL STYLE ELECTRONICS

Electronics is Integral style, with rugged windowed dual compartment, explosion-proof, NEMA 4X enclosure with local display. The display is a high contrast, photo-emissive OLED display, and 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, explosion-proof, NEMA 4X enclosure with display. The display is a high contrast photo-emissive OLED display, and 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 Expl Proof (Class I, 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 ft of lead-length compensated cable. The cable (6-conductor) can be lengthened or shortened without affecting accuracy (max loop resistance 10 ohms, over 1000 ft), if grounded properly, at transmitter.

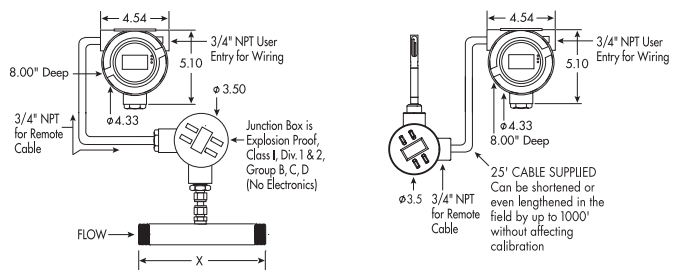


#### 401 In-Line<sup>1,3,5</sup>

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

#### 401 Insertion<sup>2,7</sup>

Flow Element is Insertion style, consisting of a 1/2" OD probe (3/4" optional) with lengths from 6" to 36" suitable for insertion into the center of a process pipe



#### 402 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

#### 402 Insertion<sup>2,7</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

- 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 shown in the table on the right
- 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" (6" optional)
- 6 10 Amp Dry Contact external relay available for Totalized Flow (specify DCR-DC accessory)
- 7 Captive Flow Conditioners are available for pipes up to 36"
- 8 6" In-Line Flow Meters optionally available

IN-LINE METER DIMENSIONS <sup>8</sup>	
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"

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