



ATMASS

Insertion Thermal Mass Flowmeter ATMF-IS Series

GENERAL

The SMC insertion mass Flowmeters are thermal dispersion type, utilizing constant temperature difference method of measuring Gas Mass Flow Rate. It contains two reference grade platinum RTD sensors clad in a protective 316 SS sheath. Features direct Mass Flow for gases, wide rangeability, low pressure drop, very low end sensitivity, and no moving parts. The SMC ATMF series is microprocessor based, does not have any potentiometers. Electronics can be Integral Style, or remote mount with rugged windowed dual compartment enclosure with local or remote display. Four models available from the low cost blind meters to the more exotic featured SP models. Calibration Self Check: Flow Meter has built in diagnostics - a display of the calibration milliwatts (mw) can be used to check the sensor's operation by being compared to the original reported "zero flow" value noted on meter's Certificate of Conformance (last few lines) and metallic tag. This convenient in-situ field diagnostic procedure verifies that the original factory calibration hasn't drifted, shifted, or changed. This "Sensor Functionality and Zero Self Check" also verifies that the sensor is free from contamination, even without inspection.



FEATURES

- Direct mass flow measurement of any gas with actual gas calibration
- Opto-isolated outputs, with graphic display
- Tracking of overall gas consumption over a turndown ratio of at least 100:1
- Isolated 4-20 mA output and pulsed output of Totalized Flow
- high contrast photo-emissive OLED display with rate, total, temperature and graphic display
- Selectable engineering units, dynamically converts the flow rate and total flow
- Can measure higher velocity than any other thermal mass meter - up to 203 m/s
- Display calibration milliwatt (mw) for ongoing diagnostics
- Standard software available with multi-curve fit programs
- Low power dissipation under 2W
- Available with ATEX, FM/CSA or NH versions

SPECIFICATIONS

• Process Connection: Threaded, Flanged, Ball valve • Process temperature: 0 to +300°C • Operating pressure: 69 Barg (1000 PSIG) • Mass Velocity: 0.07 to 203 normal meters per second • Flow units: Kg/hr, Kg/mn, Kg/s Lb/hr, Lb/m Lb/s NCMH, SCFM, NLPM, SLPM Mt/s, F/mn, BTU/Hr, BTU/min • Gas temperature effect: Minor < ±20% of calibration pressure • Gas temperature effect: 0.01%/°C • Accuracy (and linearity) ±[1% of Reading +(.5% FS)] • Repeatability: ± 0.25% of Full Scale • Turn down ratio: Over 100:1 • Response time: Less than one second • Material: 316SS as per DIN 1.4571 (AISI 316 Ti) • Display units: Flow, Total flow, Switch settings Temperature, Elapsed time • RAM Back-up: Lithium Battery User-selectable alarm functions • Display units: Flow, Total flow, Switch settings • Data storage: EPROM storage up to 10 years • Housing protection: NEMA 4, Class 1, Div 1, Groups B, C, & D	• Ex-protection: II 2 GD EEx d IIC T2 or T3  • Cable (remote version): 300 meters • Wetted materials: 316 SSS (Hastelloy and Monel optional) • weight: - Integral Ex proof: 4.0 kg - Remote Ex proof: 7.0 kg - Integral Non-Ex proof: 1.5 kg - Remote Non Ex proof: 3.0 kg • Linear signal output: 0-5 V_{DC} & 4-20 mA • Pulse output: scalable • Relays: Two 1-amp, SPDT User-selectable alarm functions • Signal Interface: RS232 & RS485, MODBUS, etc.. • Power requirements: 115V_{AC} @, 1/8 A 230V_{AC} @ 1/16 A 24 V_{DC} @ 1/4A, 12 V_{DC} • Power Consumption: 2.5 Watts (SP), or less 6W other models • NIST traceable calibration: Standard • Self diagnostics functions: A_{DC}, D_{AC} Alarm relay for EMI impulse noise
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■ ATMF-IS-SIX



ATEX Zone I, II 2 G Ex d IIB+H2 T6 Gb
 Calibration milliwatt (mw) displayed for ongoing diagnostics
 Available in 12V_{DC}, 24V_{DC}, 115-230V_{AC} (2.5W)
 Calibration self-check (built in diagnostics)
 Available with MODBUS RS485-RTU or HART or BACnet
 Remote Windowed Enclosure - Dual compartment with terminal access, and Explosion Proof Junction Box
 Accuracy (and linearity) : $\pm[1\% \text{ of Reading} + (.5\% \text{ FS})]$
 Separate power and output terminals
 Optional programmable USB dongle to adjust electronics
 4 line OLED displays rate, total, temperature and graphical Flowrate
 Available with either high and low pressure ball valve retractor

■ ATMF-IS-SP

FM/CSA Class1, Div2, Groups BCD T4-lower cost than SIX
 Calibration milliwatt (mw) displayed for ongoing diagnostics
 Available in 12V_{DC}, 24V_{DC}, 115-230V_{AC} (2.5W)
 Calibration self-check (built in diagnostics)
 Available with MODBUS RS485-RTU or HART or BACnet
 Remote Windowed Enclosure - Dual compartment with terminal access, and Explosion Proof Junction Box
 Accuracy (and linearity) : $\pm[1\% \text{ of Reading} + (.5\% \text{ FS})]$
 Separate power and output terminals
 Optional programmable USB dongle to adjust electronics
 4 line OLED displays rate, total, temperature and graphical Flowrate,
 Available with either high and low pressure ball valve retractor



■ ATMF-IS-NH

Designed for inexpensive Non-hazardous use with Exd Enclosure
 Low power dissipation, under 2.5 Watts (e.g., under 100 ma at 24 V_{DC})
 Accuracy (and linearity) : $\pm[1\% \text{ of Reading} + (.5\% \text{ FS})]$
 Integral and remote styles
 24 V_{DC} or 115V_{AC}/230 V_{AC}
 Flow Rate, Totalizer
 Available with either high and low pressure ball valve retractor
 Modbus® compliant RS485 RTU communications
 Field reconfigurability via optional software
 2 line OLED displays rate, total
 Diagnostic & graphic display and/or HART see SIX or SP style

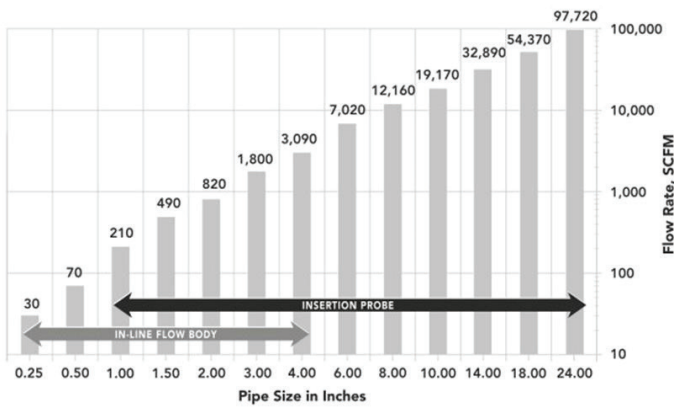


■ ATMF-IS-Remote Style

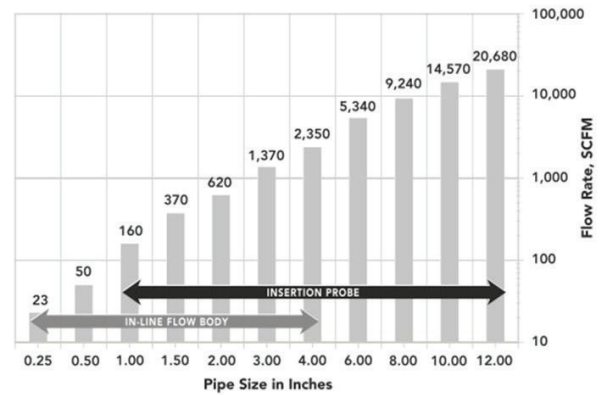
Remote electronics/transmitter configuration for NH, SP and SIX
 Remote dual compartment (IP67) NEMA 4 line with OLED display
 4 line rate, total, temperature and graphical Flowrate (SIX and SP)
 2 line displays rate, total, for NH versions
 Integral junction box connected to remote electronics 25ft (7.6M)
 6-conductor can be lengthened or shortened without affecting accuracy
 max loop resistance 10 ohms, over 1000 ft (300M)
 Must be grounded at transmitter
 Integral explosion proof Junction Box has no circuitry, only terminal wires
 Integral Junction box terminals are suitable for harsh environments
 Integral Ex proof Junction Box (Class 1, Div 1, Groups B, C, D),



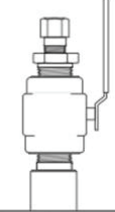
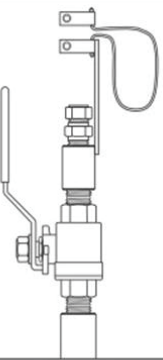
■ Air flow rate versus pipe size (note: 1 SCFM=1.7 NCMH)



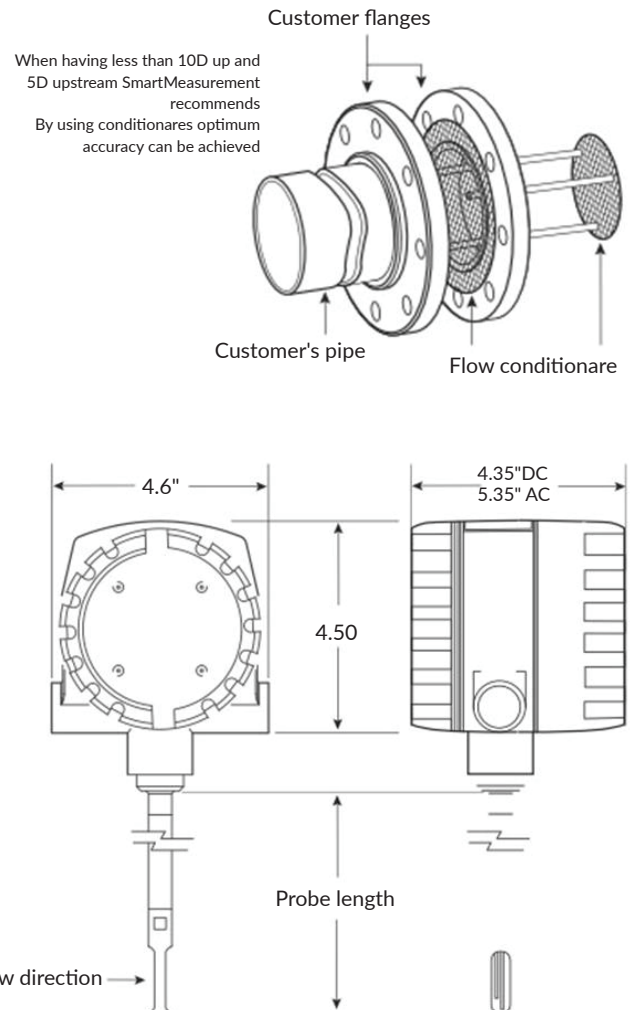
■ Natural flow rate versus pipe size (note: 1 SCFM=1.7 NCMH)



■ Connections options versus pipe size and probe Length

			
	STCF05 Compression Fitting	SVA05LP Isolation Valve Low Pressure	SVA05 Isolation Valve High Pressure
PIPE SIZE	<125 PSIG	<50 PSIG	<250 PSIG
1" – 3.5"	6"	12"	15"
4" – 12"	12"	15"	18"
14" – 24"	15"	18"	24"
30"	18"	24"	30"
36"	24"	30"	36"

■ Flow Conditioner option for ATMF-IS



Procedures to specify our inline mass meters

**** Please contact your local SMC application engineer****

You also need to provide the following information:

GAS COMPOSITION	NIST certified calibration is done with actual or equivalent gas - gas type or mixture MUST be given
FULL SCALE FLOW	Maximum and minimum flow rates and units MUST be provided
LINE SIZE	Line size and connection MUST be provided (see selection guide below for options)
GAS PRESSURE AND TEMPERATURE	Calibration is done at operating or maximum pressure and temperature
ELECTRONICS TEMPERATURE	Temperature of the environment surrounding the Flowmeters electronics.
POWER REQUIREMENTS	Specify requirements such as 12, 24 V _{DC} or 115 V _{AC} or 230 V _{AC}
CONFIGURATION	See below transmitter styles

ATMF SERIES INLINE METERS

EXAMPLE ATMF-8000IS-SP-I-05-15"-TFC 05-DC 24-O2 (40 NMPS, 40C AND 12 BARG)

AMF 8000 IS-		**	**	**	**	**	**	DESCRIPTION	
INTEGRAL INDUSTRIAL MASS FLOW METER (includes graphical display) (ATEX/ CSA Exd-Approved)	SIX							Transmitter	
NON-HAZORDOUS MASS FLOW METER (INCLUDES GRAPHICAL DISPLAY) EXD ENCLOSURE (ATEX)	NH								
INTEGRAL INDUSTRIAL MASS FLOW METER (INCLUDES GRAPHICAL DISPLAY) (CSA EXD -APPROVED)	SP								
1/2" PROBE DIAMETER		050						Probe-Diameter	
3/4" PROBE DIAMETER		075							
Integral			I						Style
Remote			R						
Put insertion length in inches				##"					Insertion length
1" ANSI 150 #					10A150				Connection
1.5" ANSI 150 #					15A150				
2" ANSI 150 #					20A150				
1" ANSI 300 #					10A300				
1.5" ANSI 300 #					15A300				
2" ANSI 300 #					20A300				
1/2" TUBE X 1/2" COMPRESSION FITTING - SS FERRULE (>650 PSIG or 45BARG)					SSCF05				
3/4" TUBE X 3/4" COMPRESSION FITTING - SS FERRULE (>650 PSIG or 45BARG)					SCF07				
1/2" TUBE X 1/2" COMPRESSION FITTING - TEFLON FERRULE (>125 PSIG or 9 BARG)					STCF05				
3/4" TUBE X 3/4" COMPRESSION FITTING - TEFLON FERRULE (>125 PSIG or 9 BARG)					STCF07				
1/2" TUBE X 3/4" ISOLATION VALVE ASSEMBLY (650 PSIG or 45 barg)					SVL05				
1/2" TUBE X 3/4" ISOLATION VALVE ASSEMBLY (50 PSIG or 3.5 barg)					SVA05LP				
3/4" TUBE X 1" ISOLATION VALVE ASSEMBLY (350PSIG or 24 Barg)					SVA07				
12 V _{DC}						12V _{DC}			Power Supply
24V _{DC}						24V _{DC}			
110-115 V _{AC}						115V _{AC}			
220=240V _{AC}						230V _{AC}			
Put gas type and max velocity							Gas?	Gas	
Process Data (T,P flow, etc)					Process Data (T,P flow, etc)				
For larger flanges sizes, probe material (Hasteloy C, Monel) and other options contact SMC									

