



ALMASS

Thermal Mass Flowmeter
ATMF8000 Inline Series

GENERAL



SMC inline mass Flowmeters are thermal dispersion type, utilizing the 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 include 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 and 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 are available ranging from the low cost blind meters to the more advanced SP models. Calibration Self Check: Each meter has built in diagnostics - a display of the calibration mill watts (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 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
- ❑ Up to four independent, switchable flow curves
- ❑ High contrast photo-emissive OLED display with rate, total, temperature and graphic display
- ❑ User-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 mill watt (mw) for ongoing diagnostics
- ❑ Standard software available with multi-curve fit programs
- ❑ Low power dissipation; under 2W
- ❑ Flow conditioners included with all meters



SPECIFICATION

- | | | | |
|------------------------------|--|---|---|
| ● Process Connection : | Threaded, Flanged | ● Housing protection : | NEMA 4, Class 1, Div 1, Groups B, C, & D |
| ● Process temperature : | 149°C (300°F) | ● Ex-protection : | II 2 GD EEx d IIC T2 or T3 |
| ● Operating pressure : | 69 Barg (1000 PSIG) | |  °  |
| ● Mass Flow rate : | See model selection guide section | ● Cable (remote version) : | 300 meters |
| ● Flow units : | Kg/hr., Kg/mn, Kg/s Lb./hr., Lb./m Lb./s | ● Wetted materials : | 316 SSS (Hastelloy, etc..) |
| | NCMH, SCFM, NLPM, SLPM | ● weight (approximate) : | |
| | Mt/s, F/mn, BTU/Hr., BTU/min | ● Integral Type : | |
| ● Gas temperature effect : | 0.01% /° C | 1/4" to 1" | 1 to 4 Kg (2.2 - 8.8Lb) |
| ● Accuracy (and linearity) : | ±[1% of Reading + (.5% FS)] | 1 1/4" to 2 1/2" | 2-3 Kg (4.4 - 6.6Lb) |
| | ± 0.2% of Full Scale | 3" and 4" | 4-5 KG (8.81 - 22Lb) |
| ● Repeatability : | ± 0.25% of Full Scale | ● Remote Type : | |
| ● Turn down ratio : | Over 100:1 | 1/4" to 1" | 3 to 6 Kg (6.6 - 13.2 Lb.) |
| ● Response time : | Less than one second | 1 1/4" to 2 1/2" | 6-8 Kg (13.2 - 17.6 Lb.) |
| ● Material : | 316SS as per DIN 1.4571 (AISI 316 Ti) | 3" and 4" | 8-10 KG (17.6-22 Lb.) |
| ● Linear signal output : | 0-5 V _{DC} & 4-20 mA | | |
| ● Pulse output : | scalable | | |
| ● Relays : | Two 1-amp, SPDT | | |
| | User-selectable alarm functions | | |
| ● Display units : | Flow, Total flow, Switch settings | | |
| | Temperature, Elapsed time | | |
| ● RAM Back-up : | Lithium Battery | | |
| ● Data storage : | EPROM storage up to 10 years | | |
| ● | | | |
| ● Signal Interface : | RS232 & RS485, MODBUS, etc.. | Notes:-weight +0.5 kg (1 Lb.) for 150# flanges + 1kg (2.2Lb) for 300# | |
| | | ● Power requirements : | 115VAC @, 1/8 A 230VAC @ 1/16 A |
| | | | 24 VDC @ 1/4A |
| | | ● Power Consumption : | 2 Watts or less |
| | | ● NIST traceable : | Standard for all calibration |



บริษัท ฟลูเทค จำกัด
FLU - TECH CO., TD

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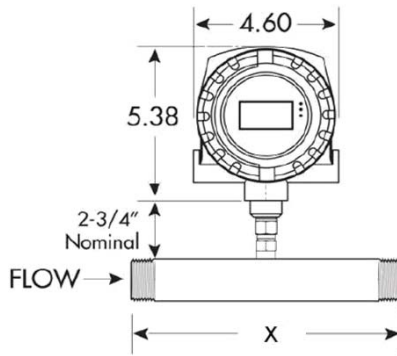
845/3-4 Thepharak RD., T. Thepharak, A. Muang, Samutprakan 10270 THAILAND

Tel. 0 2384 6060, Fax 0 2384 5701, Email : sales@flutech.co.th, www.flutech.co.th

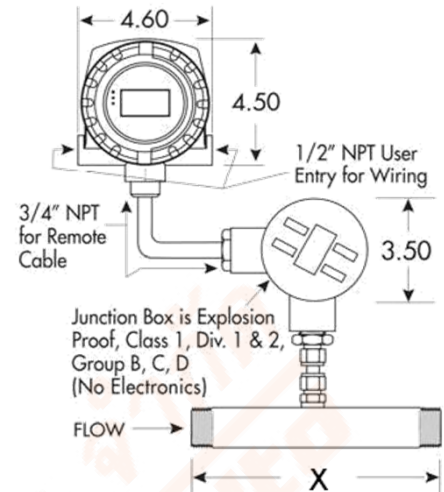
ATMF8000IL "X" Dimensions

IN-LINE METER DIMENSIONS	
Pipe Size x Flow Body Length ³	Expl. Proof (B)
1/4" x 6"	7.33"
3/8" x 6"	7.39"
1/2" x 7"	7.45"
3/4" x 7"	7.58"
1" x 8"	7.70"
1-1/4" x 10"	7.83"
1-1/2" x 12"	7.95"
2" x 15"	8.20"
2-1/2" x 18"	8.45"
3" x 20"	8.70"
4" x 25"	9.20"

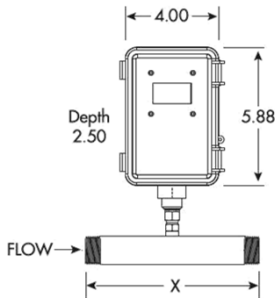
ATMF8000IL-SP-I (Integral)



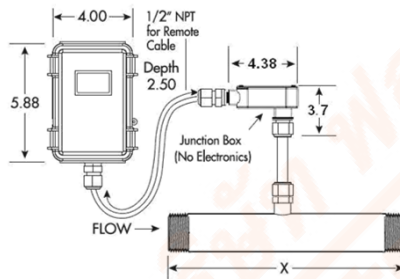
ATMF8000IL-SP-R (Remote)



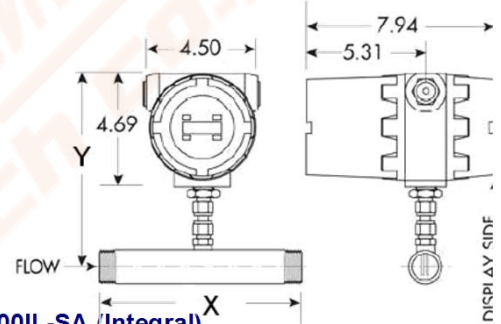
ATMF8000IL-SC-(Integral)



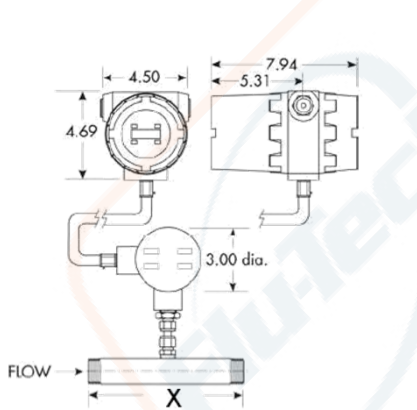
ATMF8000IL-SC (Remote)



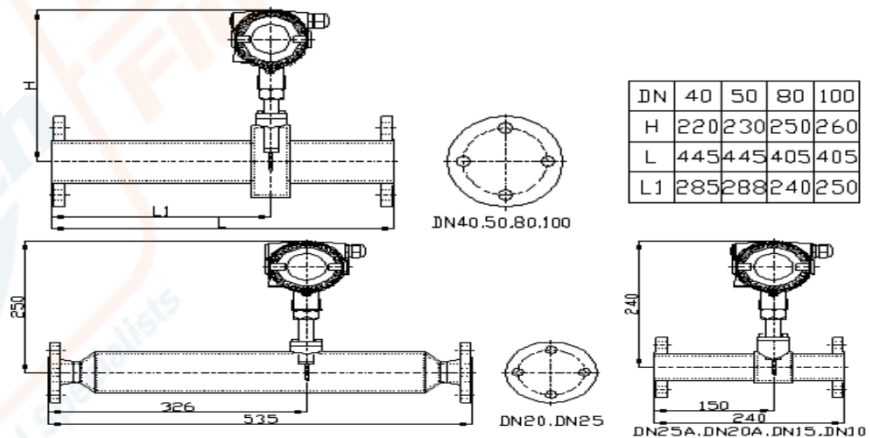
ATMF8000IL-SIX (Integral)



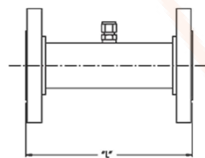
ATMF8000IL-SIX (Remote)



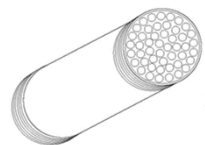
ATMF8000IL-SA (Integral)



Flow Conditioning Screens FOR FLOW BODIES 1/2" AND UP¹



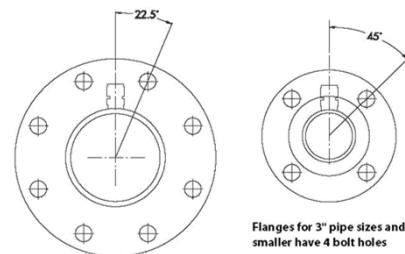
LENGTH "L" SAME AS NON-FLANGED METER (See table on page 31. For example, 1" x 8" flow body has an 8" length. The length will be the same whether an NPT flow body, or whether flanged. If a flanged flow body, the 8" dimension will be a Face-to-Face dimension.)



Screens shown with NPT fitting.

¹ Note, Flow conditioning is also available for insertion meter applications

Flanged Ends for In-Line Meter (OPTIONAL)



Flanges for 3/4" pipe sizes and up, have 8 bolt holes

Flanges for 3" pipe sizes and smaller have 4 bolt holes

ATMF8000IL-SIX

Heavy Industrial Windowed Explosion Proof Dual Compartment enclosure
 Remote Explosion Proof Junction Box for remote mount option
 ATEX Zone I, II 2 G Ex d IIB+H2 T6 Gb
 Available in 12V_{DC}, 24V_{DC}, 115-230V_{AC} (under 6W)
 Accuracy (and linearity) : \pm [1% of Reading + (.5% FS)]
 4-20 mA isolated output (optionally HART)
 One dry contact relay (Pulsed Output, or Trip High or Trip Low)
 RS232 communication and menuing software
 Zero Calibration Self Check Diagnostics
 Optional programmable USB dongle to adjust electronics
 Displays rate, total, temperature and graphical flowrate,
 Calibration mill watt (mw) displayed for ongoing diagnostics

ATMF8000IL-SC

Any Non-hazardous gases
 Temperature -40° to 200°F (93°C), Optional to 300°F (149°C)
 Accuracy (and linearity) : \pm [1% of Reading + (.5% FS)]
 Integral and remote styles
 Digital system allows raw signal validation (milli-watts)
 24 VDC or 115VAC/230 VAC
 Photo-emissive OLED graphical display (Flow Rate, Totalizer, Temperature)
 4 to 20 mA for Rate; 24VDC pulse for Totalized value
 RS232 Communication
 Modbus® compliant RS485 RTU communications (optional)
 Field re-configurability via optional Addresser software

ATMF8000IL-SP

Available in 12V_{DC}, 24V_{DC}, 115-230V_{AC} (2.5W)
 Calibration self-check (built in diagnostics)
 Available with MODBUS (IEEE 32 Bit floating point) and RS485
 Remote Windowed Enclosure - Dual compartment
 with separate terminal access, and explosion proof junction box
 Accuracy (and linearity) : \pm [1% of Reading + (.5% FS)]
 CE, UL, CSA Ex proof Class1, Div1, Group B,C,D
 Separate power and output terminals
 Optional programmable USB dongle to adjust electronics
 Displays rate, total, temperature and graphical flowrate,
 Portable rechargeable barrier powered version available
 Calibration mill watt (mw) displayed for ongoing diagnostics

ATMF8000IL-SA

Low cost Air, O2 and N2 ONLY (0.3Nm/s~60Nm/s)
 Temperature Range -40~+100°C (212°F)
 Accuracy (and linearity) : \pm [1% of Reading + (.5% FS)]
 Integral windowed Nema 4X Enclosure
 Remote Windowed Nema 4X with explosion proof junction box
 AC85~265V or DC13.5~42V
 2-Line Backlit Touch Screen Display & 4 Button Menuing Keypad
 4~20mA@HART or RS-485
 Maximum pressure 40 barg (580 PSIG)
 Display - Mass , volumetric flow (normalized)
 Total flow, Velocity and temperature

Procedures to specify our inline mass meters

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 unites 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 VDC or 115 VAC or 230 VAC
Configuration	See below transmitter styles

➤ Model Selection Guide

ATMF Series Inline meters												
Example ATMF-8000IL-SP-I-05-15"-TFC05-DC24-O2 (40 nmpps, 40C and 12 Barg)												
AMF 8000 IL-		X	XXX	XXX	XXXXx	XXXXX"	XXXX	XXXXXXXX	XXX	XXXX	Description	
INTEGRAL INDUSTRIAL MASS FLOW METER (includes graphical display) (ATEX/CSA Exd)	SIX										Transmitter	
LOW COST MASS FLOW METER (Air, O2 and N2 ONLY (0.3Nm/s~60Nm/s)	SA											
Non-Hazardous MASS FLOW METER (includes graphical display)	SC											
INTEGRAL INDUSTRIAL MASS FLOW METER (includes graphical display) (CSA Exd)	SP											
Integral		I										Style
Remote		R										
¼" X 6"L IN-LINE FLOWBODY**			025								Connection	
¾" X 6"L IN-LINE FLOWBODY			030									
½" X 7"L IN-LINE FLOW BODY			050									
¾" X 7"L IN-LINE FLOW BODY w/ Flow Conditioners			075									
1" X 8"L IN-LINE FLOW BODY w/ Flow Conditioners			100									
1¼" X 10"L IN-LINE FLOWBODY w/ Flow			125									
1½" X 12"L IN-LINE FLOW BODY w/ Flow			150									
2" X 12"L IN-LINE FLOW BODY w/ Flow			200									
2½" X 12"L IN-LINE FLOWBODY w/ Flow			250									
3" X 12"L IN-LINE FLOW BODY w/ Flow Conditioners (Requires Flanges)			300									
4" X 12"L IN-LINE FLOW BODY w/ Flow Conditioners (Requires Flanges)			400									
TUBE VERSUS PIPE (Follows the Flow Body Product Code)			TUBE									
150LB ANSI RAISED FLANGED ENDS				S150FLG								
300LB ANSI RAISED FLANGED ENDS				S300FLG								
12 V _{DC}					12VDC						Power Supply	
24V _{DC}					24VDC							
110-115 V _{AC}					115VAC							
220-240V _{AC}					230VAC							
Put gas type and max velocity					Gas?						Gas	
OPTIONS (please contact SMC for others not included here)												
BASIC ADDRESSER SOFTWARE AND ULINX (RS485 TO USB) FOR SP models					ADDRESSER						Options	
ADVANCED RECONFIGURATION SOFTWARE FOR SP models (DOWNLOAD)					ADDRESSER PLU							
DONGLE ASSEMBLY W/ CABLE FOR SP model					DONGLEWCBL							
NON-STD CABLE LENGTH FOR REMOTE METERS -					CBL xxx							
AFTER-CAL DATA AND CERTIFICATE					CACERT							
HASTELLOY SENSOR					HSILS							
HIGH TEMP OPERATION (GAS FROM 200 - 350° F- 93°C to 177°C)					HTO1							
VERY HIGH TEMPERATURE OPERATION (GAS FROM 350 - 450°F 177°C to 232°C)					HTO2							
EXTREME HIGH TEMPERATURE OPERATION (GAS TO 750°F or 400 °C					HTO3							
Extra RANGES (up to four)only for SE and SG models					RG2							
OXYGEN FINAL CLEAN (with Certificate)					OFC							