

MODEL

# FT2A

**BESTOBELL**  
**AQUATRONIX**

SINCE / DEPUIS 1953

BEP-Bestobell  
[www.bestobell.com](http://www.bestobell.com)

## Fox Thermal Gas Mass Flow Meter

### HIGHLIGHTS

- Measures gas flow rate in SCFM, NM3/HR, LBS/HR, KG/HR, & many more
- Wide measurement range; 100:1 turndown typical
- Measures process gas temperature
- 4-20mA for flow rate & temperature; pulse output for flow/total
- USB port to connect to a PC standard; Modbus RTU (RS485), BACnet MS/TP (RS485), Profibus-DP, DeviceNet or Ethernet Modbus TCI
- Insertion and Inline models
- Welded, 316 SS sensor construction; Hastelloy C276 optional
- Microprocessor based, field programmable electronics
- On-board 2 line x 16 character, backlit display with configuration panel to view/set readings and parameters
- Free FT2A View™ Software available
- NIST traceable calibration
- Low-end sensitivity for leak detection
- Negligible pressure drop
- No moving parts design
- FM (U.S.) & FMc (CANADIAN) approved for Class I, II, III, Division 2, Groups A, B, C, D, E, F, G T4A hazardous locations. NEMA 4X and CE approved
- EMC Certification to: EN 61326-1:2013
- Low Voltage Directive (LVD): 2014/35/EU
- Product Safety Testing: EN 61010-1: 2010
- Weld Testing: EN ISO 15614-1 and EN ISO 9606-1 ASME B31.3



# THERMAL MASS TECHNOLOGY

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## THEORY OF OPERATION

Fox Thermal Flow Meters use a constant temperature differential (constant  $\Delta T$ ) technology to measure mass flow rate of air and gases. The thermal mass flow sensor consists of two Resistance Temperature Detectors (RTD's). The sensor elements are constructed of a reference grade platinum wire wound around ceramic mandrels that are inserted into stainless steel or Hastelloy tubes.

The Reference RTD measures the gas temperature. The instrument electronics heat the mass flow sensor, or heated element, to a constant temperature differential (constant  $\Delta T$ ) above the gas temperature and measures the cooling effect of the gas flow. The electrical power required to maintain a constant temperature differential is directly proportional to the gas mass flow rate. The microprocessor linearizes this signal to deliver a linear 4-20mA signal.

## NIST TRACEABLE FACTORY CALIBRATION

Fox calibrations are performed with NIST traceable flow standards. Whether you require a straightforward air calibration or a complex mixed gas calibration, our goal is to achieve the highest accuracy and the fastest turnaround time.

The Fox Calibration Lab employs a wide range of gases, gas mixtures, temperatures, pressures, and line sizes to simulate actual fluid and process conditions. This real-world approach improves installed accuracy and minimizes measurement uncertainty.

## MODEL FT2A

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### GAS MASS FLOW METER & TEMPERATURE TRANSMITTER

The Fox Model FT2A measures gas flow rate in standard units without the need for temperature or pressure compensation. It provides isolated 4-20mA and pulse outputs for flow rate, and a 4-20mA output for process gas temperature. The pulse output is normally used for totalization.

With an on-board 2 line x 16 character, backlit display, operators can view flow rate, total, elapsed time, process gas temperature, and alarms. The display is also used in conjunction with the Configuration Panel to configure flow meter settings, pulse output frequency scaling, pipe area, zero flow cutoff, flow filtering (damping), display configurations, diagnostics and high or low alarm limits.

The Model FT2A is available in both insertion and inline models. The insertion meter is easily installed by drilling a hole in the pipe and welding on a 3/4" NPT branch outlet.

A Fox-supplied compression fitting secures the probe in place. The inline model is available in 1/4-inch to 6-inch sizes and includes built-in flow conditioners that eliminate the need for long, straight pipe runs. The meter can be ordered with flange or NPT end connections.

Both models are supplied with 316 stainless steel wetted materials standard or Hastelloy C-276 as an option (inline flow bodies also available in carbon steel). A USB port to connect to a computer or laptop is standard; interface options include Modbus RTU (RS485), BACnet MS/TP (RS485), Profibus-DP, DeviceNet, or Ethernet Modbus TCP.

Fox has certified cleaning and bagging procedures for flow meters to be used in oxygen applications.

## DIMENSIONS

### INSERTION STYLES

Assuming there is no insulation or retractor, Fox recommends the following probe lengths:

| Pipe Size                  | Probe Length |
|----------------------------|--------------|
| 1.5" (40mm) to 6" (150mm)  | 6-inch       |
| 8" (200mm) to 12" (300mm)  | 9-inch       |
| 14" (350mm) to 18" (450mm) | 12-inch      |

Use the equation below for larger pipe sizes

| Probe Lengths in inches (cm) = |             |
|--------------------------------|-------------|
| 6.0 (15.2)                     | 9.0 (22.9)  |
| 12.0 (30.5)                    | 15.0 (38.1) |
| 18.0 (45.7)                    | 24.0 (61.0) |
| 30.0 (76.2)                    | 36.0 (91.4) |

### EQUATION

Equation for selecting insertion flow meter probe length:

Probe length =  $\frac{1}{2}$  pipe ID (in inches) + 3" + thickness of insulation (if any) + 10" (for retractor if supplied). Round up to the next standard probe length available.

**Note:** Contact Fox for longer probes.

## APPROVALS

CE Mark: Approved

EMC Directive: 2014/30/EU

Electrical Equipment for Measurement, Control and Lab Use:  
EN61326-1:2013

Low Voltage Directive (LVD): 2014/35/EU

Product Safety Testing: EN 61010-1: 2010

Pressure Equipment Directive: 2014/68/EU Article 13

Weld Testing: EN ISO 15614-1 and EN ISO 9606-1, ASME B31.3

### INLINE STYLES

Inline pipe sizes, materials, and end connections are listed in the table below.

| Inline pipe sizes in inches = |   |   |   |      |   |   |   |      |   |   |   |
|-------------------------------|---|---|---|------|---|---|---|------|---|---|---|
| 0.25                          | ○ | ● |   | 0.50 | ○ | ● | ● | 0.75 | ○ | ● | ● |
| 1.00                          | ○ | ● | ● | 1.25 | ○ | ● | ● | 1.50 | ○ | ● | ● |
| 2.00                          | ○ | ● | ● | 2.50 | ○ | ● | ● | 3.00 | ○ | ● | ● |
| 4.00                          | ○ | ● | ● | 6.00 | ○ | ● | ● |      |   |   |   |

○= SS   ●= CS   ●= NPT Ends   ●= 150lb flanges

Note: See [FT2A Model Codes](#) document for more information.

Note: Inline flow bodies include built-in flow conditioners.

[FC20 Flow Conditioners](#) are available as an option for insertion flow meters.

### PROBE DIAMETER

Insertion and inline flow Meters: Probe diameter:  $\frac{1}{2}$ "

### DRAWINGS

See [FT2A Dimensional Drawings](#) on Fox Thermal website.



Try the Fox Thermal online configurator to request a quote for a meter suited for your specific process conditions.

[foxthermal.com/configure](https://foxthermal.com/configure)

# SPECIFICATIONS

## PERFORMANCE SPECS

### Flow Accuracy:

Inline meter:  $\pm 1\%$  of reading  $\pm 0.2\%$  of full scale.  
All other sizes: 8 diameters of straight, unobstructed pipe upstream and 4 downstream required.  
Insertion meter:  $\pm 1\%$  of reading  $\pm 0.2\%$  of full scale.  
15 diameters upstream of straight, unobstructed pipe upstream and 10 downstream required.  
( $\frac{1}{4}$ " size): 6" (152mm) of straight, unobstructed pipe upstream and downstream required.

**Flow Repeatability:**  $\pm 0.2\%$  of full scale

**Flow Response Time:** 0.9 seconds (one time constant)

### Temperature Accuracy:

$\pm 1.8^\circ\text{F}$  ( $\pm 1.0^\circ\text{C}$ ) over  $-40$  to  $250^\circ\text{F}$  ( $-40$  to  $121^\circ\text{C}$ );  
 $\pm 3.6^\circ\text{F}$  ( $\pm 2.0^\circ\text{C}$ ) over  $250$  to  $650^\circ\text{F}$  ( $121$  to  $343^\circ\text{C}$ ).  
Minimum velocity 60 SFPM.

**Calibration:** Factory calibration to NIST traceable standards

## OPERATING SPECS

### Units of Measurement (field-selectable):

SCFM, SCFH, NMPS, NM3/M, NM3/H, NM3/D, NLPS, NLPM, NLPH, MCFD, MSCFD, SCFD, MMSCFD, MMSCFM, SMPs, SM3/D, SM3/H, SM3/M, LB/S, LB/M, LB/H, LB/D, KG/S, KG/M, KG/H, SLPM, SFPM, MT/H

### Flow Rates for Insertion Flow Meters:

15 to 60,000 SFPM (0.07 to 280 NMPS) - Air at  $70^\circ\text{F}$  ( $20^\circ\text{C}$ ) & 1 ATM  
Turndown: up to 1000:1; 100:1 typical

To determine if an insertion flow meter will operate properly, divide the maximum flow rate by the pipe area. The application is acceptable if the velocity is within the velocity range above.

Typical Flow Ranges for Insertion Flow Meters

| Pipe Diameter | SCFM       | MSCFD      | NM <sup>3</sup> /Hr |
|---------------|------------|------------|---------------------|
| 1.5" (40mm)   | 0 - 840    | 0 - 1,220  | 0 - 1,325           |
| 2" (50mm)     | 0 - 1,400  | 0 - 2,020  | 0 - 2,210           |
| 2.5" (63mm)   | 0 - 2,000  | 0 - 2,880  | 0 - 3,150           |
| 3" (80mm)     | 0 - 3,100  | 0 - 4,440  | 0 - 4,890           |
| 4" (100mm)    | 0 - 5,300  | 0 - 7,650  | 0 - 8,360           |
| 6" (150mm)    | 0 - 12,000 | 0 - 17,340 | 0 - 18,930          |
| 8" (200mm)    | 0 - 20,840 | 0 - 30,020 | 0 - 32,870          |
| 10" (250mm)   | 0 - 32,800 | 0 - 47,250 | 0 - 51,740          |
| 12" (300mm)   | 0 - 46,600 | 0 - 67,180 | 0 - 73,500          |

Flow Ranges for Inline Meters

| Pipe Diameter | SCFM       | MSCFD      | NM <sup>3</sup> /Hr |
|---------------|------------|------------|---------------------|
| 0.25"         | 0 - 7.5    | 0 - 10.8   | 0 - 11.8            |
| 0.5"          | 0 - 125    | 0 - 180    | 0 - 200             |
| 0.75"         | 0 - 220    | 0 - 320    | 0 - 350             |
| 1"            | 0 - 360    | 0 - 520    | 0 - 570             |
| 1.25"         | 0 - 625    | 0 - 900    | 0 - 990             |
| 1.5"          | 0 - 840    | 0 - 1,220  | 0 - 1,325           |
| 2"            | 0 - 1,400  | 0 - 2,020  | 0 - 2,210           |
| 2.5"          | 0 - 2,000  | 0 - 2,880  | 0 - 3,150           |
| 3"            | 0 - 3,100  | 0 - 4,440  | 0 - 4,890           |
| 4"            | 0 - 5,300  | 0 - 7,650  | 0 - 8,360           |
| 6"            | 0 - 12,000 | 0 - 17,340 | 0 - 18,930          |

NOTE! Standard conditions of air at  $70^\circ\text{F}$  and one atmosphere.  
Consult factory for other gases and for flow ranges above and below those listed above.

### Gas Pressure (maximum):

Insertion: 500 psig (34.5 barg)  
316 SS inline w/NPT ends: 500 psig (34.5 barg)  
316 SS inline w/150lb flanges: 230 psig (16 barg)  
CS inline w/NPT ends: 300 psig (20.1 barg)  
CS inline w/150lb flanges: 285 psig (19.7 barg)  
Retractor: 125 psig (8.6 barg)

### Notes:

- Check with factory for higher pressure options.
- When teflon ferrule option ordered, gas pressure is 60psig (4.1 barg) maximum.
- Pressure ratings stated for temperature of  $100^\circ\text{F}$  ( $38^\circ\text{C}$ ).

### Relative Humidity:

90% RH maximum; non-condensing

### Temperature:

Std sensor:  $-40$  to  $250^\circ\text{F}$  ( $-40$  to  $121^\circ\text{C}$ )  
HT Sensor:  $-40$  to  $650^\circ\text{F}$  ( $-40$  to  $343^\circ\text{C}$ )  
Enclosure:  $-40$  to  $158^\circ\text{F}$  ( $-40$  to  $70^\circ\text{C}$ ) DC Power  
 $-4$  to  $158^\circ\text{F}$  ( $-20$  to  $70^\circ\text{C}$ ) AC Power

**Note:** Display dims below  $-4^\circ\text{F}$  ( $-20^\circ\text{C}$ ); function returns once temperature rises again.

Remote sensor junction box ambient temperature:  
 $-40$  to  $212^\circ\text{F}$  ( $-40$  to  $100^\circ\text{C}$ )

### Input Power: (without the Anybus serial communication option)

24VDC  $\pm 10\%$ , 0.4 Amps (standard DC Power)  
100 to 240VAC  $\sim (+10\%/-15\%)$ , 50-60Hz, 0.2 Amps  
(with AC power option)

### Input Power: (with Anybus serial communication option)

24VDC  $\pm 10\%$ , 0.7 Amps (standard DC Power)  
100 to 240VAC  $\sim (+10\%/-15\%)$ , 50-60Hz, 0.2 Amps  
(with AC power option)

**Note:** Fluctuations of AC and DC power supply are not to exceed  $\pm 10\%$  of rating.

Class I Equipment (Electrical Grounding Required for Safety).

Installation (Over-voltage) Category II for transient over-voltages.

### Outputs:

Two isolated 4-20mA outputs (output one is for flow rate & output two is programmable for flow rate or temperature); fault indication per NAMUR NE43.

Isolated pulse output 0 to 100Hz, 5 to 24 volts p/p for flow (the pulse output can be used as an isolated solid state output for alarms); 20mA max.

### Serial Communication:

USB connector for connecting to a laptop or computer is standard; free PC-based software tool - FT2A View™ - provides complete configuration, remote process monitoring and data logging functions.

Optional isolated communication outputs: RS485-Modbus, BACnet MS/TP, Profibus-DP, DeviceNet, or Ethernet Modbus TCP.

### 4-20mA Loop Verification:

Simulation mode used to align 4-20mA output with the input to customer's PLC/DCS.

## PHYSICAL SPECS

### Sensor Material:

316 stainless steel standard; Hastelloy C276 optional

### Inline Flow Body Material:

316 Stainless Steel flow bodies standard; Optional A106 Grade B carbon steel flow bodies and A105 flanges.

### Enclosure:

NEMA 4X, aluminum, dual conduit entries with  $\frac{3}{4}$ " NPT or optional M20 x 1.5mm.

### Remote Sensor Cable:

5-conductor, 18 AWG, twisted, shielded, 100 feet maximum.

**FT2A Insertion Flow Meter/Temperature Transmitter**  
**MODEL CODES**

**MODEL FT2A**

|                                                                                                                                                                                                                                  | Code        | Description                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------|
| <b>Parent Model No.*</b>                                                                                                                                                                                                         | <b>FT2A</b> | <b>Insertion Mass Flow meter &amp; Temperature Transmitter; includes display</b>                      |
| <b>Feature 1: Probe*</b>                                                                                                                                                                                                         | <b>06IE</b> | <b>Insertion meter with 6-inch probe (all 6" probes will have an equal length sensor)</b>             |
| See "Calculating Probe Lengths" Below                                                                                                                                                                                            | <b>09I</b>  | <b>Insertion meter with 9-inch probe</b>                                                              |
|                                                                                                                                                                                                                                  | <b>12I</b>  | <b>Insertion meter with 12-inch probe</b>                                                             |
|                                                                                                                                                                                                                                  | <b>15I</b>  | <b>Insertion meter with 15-inch probe</b>                                                             |
|                                                                                                                                                                                                                                  | <b>18I</b>  | <b>Insertion meter with 18-inch probe</b>                                                             |
| ¾" MNPT compression fitting included at no charge                                                                                                                                                                                | <b>24I</b>  | <b>Insertion meter with 24-inch probe</b>                                                             |
|                                                                                                                                                                                                                                  | <b>30I</b>  | <b>Insertion meter with 30-inch probe</b>                                                             |
|                                                                                                                                                                                                                                  | <b>36I</b>  | <b>Insertion meter with 36-inch probe</b>                                                             |
|                                                                                                                                                                                                                                  | <b>15R</b>  | <b>15" Probe w/ 125 PSI retractor &amp; full port valve - 3/4" male NPT, 316 SS wetted parts</b>      |
| Adding an "E" after the probe code (i.e. 09IE, 18RE, etc.) will provide an equal length sensor. Equal length sensors must be specified for 1.5" (40mm) and 2" (50mm) pipes. 15R is shipped standard with an equal length sensor. | <b>18R</b>  | <b>18" Probe w/ 125 PSI retractor &amp; full port valve - 3/4" male NPT, 316 SS wetted parts</b>      |
|                                                                                                                                                                                                                                  | <b>24R</b>  | <b>24" Probe w/ 125 PSI retractor &amp; full port valve - 3/4" male NPT, 316 SS wetted parts</b>      |
|                                                                                                                                                                                                                                  | <b>30R</b>  | <b>30" Probe w/ 125 PSI retractor &amp; full port valve - 3/4" male NPT, 316 SS wetted parts</b>      |
|                                                                                                                                                                                                                                  | <b>36R</b>  | <b>36" Probe w/ 125 PSI retractor &amp; full port valve - 3/4" male NPT, 316 SS wetted parts</b>      |
|                                                                                                                                                                                                                                  | <b>R1</b>   | <b>Crank Retractor 1.5" NPT, 600 PSI, no valve - 316 SS wetted parts**</b>                            |
|                                                                                                                                                                                                                                  | <b>R2</b>   | <b>Crank Retractor 1.5", 150# flange, no valve - 316 SS wetted parts**</b>                            |
|                                                                                                                                                                                                                                  | <b>R3</b>   | <b>Crank Retractor 1.5", 300# flange, no valve - 316 SS wetted parts**</b>                            |
|                                                                                                                                                                                                                                  |             | <b>Probes over 36" and flange mounting options</b>                                                    |
| <b>Feature 2: Sensor Material*</b>                                                                                                                                                                                               | <b>SS</b>   | <b>316 stainless steel sensor and compression fitting</b>                                             |
|                                                                                                                                                                                                                                  | <b>SH</b>   | <b>Hastelloy C-276 sensor w/ 316SS compression fitting</b>                                            |
|                                                                                                                                                                                                                                  | <b>SJ</b>   | <b>Hastelloy C-276 sensor and probe; Monel compression fitting</b>                                    |
|                                                                                                                                                                                                                                  | <b>SL</b>   | <b>Hastelloy C-276 sensor and probe; Hastelloy C-276 compression fitting</b>                          |
| <b>Feature 3: Sensor Type*</b>                                                                                                                                                                                                   | <b>ST</b>   | <b>Standard Sensor -40 to 250F (-40 to 121C)</b>                                                      |
|                                                                                                                                                                                                                                  | <b>HT</b>   | <b>High Temperature Sensor -40 to 650F (-40 to 343C) E3 or E4 required - AIR ONLY, 8,000 SFPM Max</b> |
| <b>Feature 4: Enclosure and Power*</b>                                                                                                                                                                                           | <b>E1</b>   | <b>Local NEMA 4X enclosure, 24VDC powered</b>                                                         |
|                                                                                                                                                                                                                                  | <b>E2</b>   | <b>Local NEMA 4X enclosure, 85 to 264VAC powered</b>                                                  |
|                                                                                                                                                                                                                                  | <b>E3</b>   | <b>Remote J-box, 24VDC powered, 100' max, cable sold separately ***</b>                               |
|                                                                                                                                                                                                                                  | <b>E4</b>   | <b>Remote J-box, 85 to 264VAC powered, 100' max, cable sold separately ***</b>                        |
| <b>Feature 5: Bus Options*</b>                                                                                                                                                                                                   | <b>B0</b>   | <b>No communication bus</b>                                                                           |
|                                                                                                                                                                                                                                  | <b>MB</b>   | <b>Modbus RTU (RS 485)</b>                                                                            |
|                                                                                                                                                                                                                                  | <b>BN</b>   | <b>BACnet MS/TP (RS 485)</b>                                                                          |
|                                                                                                                                                                                                                                  | <b>BD</b>   | <b>DeviceNet</b>                                                                                      |
|                                                                                                                                                                                                                                  | <b>BP</b>   | <b>Profibus-DP</b>                                                                                    |
|                                                                                                                                                                                                                                  | <b>BE</b>   | <b>Ethernet Modbus TCP</b>                                                                            |
| <b>Feature 6: Calibration*</b>                                                                                                                                                                                                   | <b>G1</b>   | <b>Air, N2: MF less than 1200 SCFM (2040 NM3H)</b>                                                    |
| MF = Maximum Flow Rate<br>Calibration prices listed here are for new flowmeter orders only.<br>Contact Fox for recalibration prices.                                                                                             | <b>G2</b>   | <b>Air, N2: MF above 1200 SCFM (2040 NM3H)</b>                                                        |
|                                                                                                                                                                                                                                  | <b>G3</b>   | <b>Ar, CO2, H2, CH4, Natural Gas, O2: MF less than 1000 SCFM (1700 NM3H)****</b>                      |
|                                                                                                                                                                                                                                  | <b>G4</b>   | <b>Ar, CO2, H2, CH4, Natural Gas, O2: MF above 1000 SCFM (1700 NM3H)****</b>                          |
|                                                                                                                                                                                                                                  | <b>G5</b>   | <b>CO, He, Ammonia, Propane: MF less than 700 SCFM (1190 NM3H)</b>                                    |
|                                                                                                                                                                                                                                  | <b>G6</b>   | <b>CO, He, Ammonia, Propane: MF above 700 SCFM (1190 NM3H)</b>                                        |
|                                                                                                                                                                                                                                  | <b>G7</b>   | <b>Biogas, Digester Gas, Flare Gas, Flash Gas, Vent Gas****</b>                                       |
|                                                                                                                                                                                                                                  |             | <b>All other gases</b>                                                                                |
| <b>Optional</b>                                                                                                                                                                                                                  | <b>NRT</b>  | <b>Non Resettable Totalizer</b>                                                                       |

| OPTIONS |                                    | OPTIONS |                                                                               |
|---------|------------------------------------|---------|-------------------------------------------------------------------------------|
| Part #  | Description                        | Part#   | Description                                                                   |
| 108046  | 1.5" FC10 SS Flow Conditioner***** | 101570  | 5-conductor, 18 AWG PVC shielded cable for remote. Specify feet (100' max.)   |
| 108047  | 2" FC10 SS Flow Conditioner*****   | 102299  | 90 degree elbow kit - makes housing upright in vertical pipes (E1 or E2 only) |
| 108048  | 2.5" FC10 SS Flow Conditioner***** | 890000  | Flow meter cleaned and bagged for Oxygen service                              |
| 108049  | 3" FC10 SS Flow Conditioner*****   | 105758  | Remote Mounting Kit (E3 or E4 only)                                           |
| 108050  | 4" FC10 SS Flow Conditioner*****   | 102878  | Teflon Ferrule Kit, 60psi max.                                                |
| 108051  | 5" FC10 SS Flow Conditioner*****   | 105397  | Extra instruction manual                                                      |
| 108052  | 6" FC10 SS Flow Conditioner*****   | 104870  | USB Cable, A-male/mini USB-B male, 6 feet                                     |
| 108053  | 8" FC10 SS Flow Conditioner*****   | 100657  | Stainless Steel Tags                                                          |
| 108054  | 10" FC10 SS Flow Conditioner*****  | 999992  | Certificate of Conformance                                                    |
|         |                                    | 999995  | Certificate of Origin                                                         |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTES:</b> | <p>* The Parent Model Number and one of each Feature must be specified.<br/>Example: FT2A-09I-SS-ST-E2-B0-G1</p> <p>** Retractors R1 - R3: Minimum pipe size is 2.5". Maximum pipe size is 1/2 the pipe diameter + valve dimension cannot exceed 19.5"</p> <p>*** Recommend 105758 Remote Mounting Kit option</p> <p>****G3 and G4 refer to pipeline-quality dry natural gas, whereas naturally occurring gas from oil fields constitutes a mixed gas requiring a G7 calibration</p> <p>***** FC10 Flow Conditioners are designed for use in schedule 40 pipes only</p> |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>Insertion flow meters can be installed on 1.5" pipes or larger. Quote Inline Flow meters for pipes smaller than 1.5".</p> <p>Calculating Probe Length - Position the Fox Sensor in the center of the pipe. Use the following to calculate the probe length:<br/> <b>Probe Length = 1/2 pipe diameter (D) + 3" + insulation + retractor (for codes 15R through 36R, add 10"). Round up to next larger probe available.</b><br/>         Always quote an equal length sensor for 1.5" (40mm) and 2" (50mm) pipes.<br/>         D = pipe diameter; Insulation = Thickness of insulation ( if any); Retractor = Dimension of retractor (10"), if supplied.<br/> <b>Example 1: Pipe ID = 10", no insulation or retractor: 5" + 3" = 8". Round up to 9" probe (09I).</b><br/> <b>Example 2: Pipe ID = 10" with retractor, no insulation: 5" + 3" + 10"(retractor) = 18" (18R probe with retractor).</b></p> |  |
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**FT2A Inline Flow Meter/Temperature Transmitter  
MODEL CODES**

**MODEL FT2A**

|                                 | Code | Description                                                                                    |
|---------------------------------|------|------------------------------------------------------------------------------------------------|
| Parent Model No.*               | FT2A | Inline Mass Flow Meter & Temperature Transmitter; includes display                             |
| Feature 1 : Flow body*          |      | <b>316 Stainless steel flow body</b>                                                           |
|                                 | 025P | 1/4 inch, male NPT ends (schedule 40) 5.8" Face-to-face                                        |
|                                 | 05P  | 1/2 inch, male NPT ends (schedule 40) 12" Face-to-face                                         |
|                                 | 075P | 3/4 inch, male NPT ends (schedule 40) 12" Face-to-face                                         |
|                                 | 10P  | 1 inch, male NPT ends (schedule 40) 12" Face-to-face                                           |
|                                 | 125P | 1.25 inch, male NPT ends (schedule 40) 12" Face-to-face                                        |
|                                 | 15P  | 1.5 inch, male NPT ends (schedule 40) 12" Face-to-face                                         |
|                                 | 20P  | 2 inch, male NPT ends (schedule 40) 12" Face-to-face                                           |
|                                 | 25P  | 2.5 inch, male NPT ends (schedule 40) 18" Face-to-face                                         |
|                                 | 30P  | 3 inch, male NPT ends (schedule 40) 18" Face-to-face                                           |
|                                 | 05F  | 1/2 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                       |
|                                 | 075F | 3/4 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                       |
|                                 | 10F  | 1 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                         |
|                                 | 125F | 1.25 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                      |
|                                 | 15F  | 1.5 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                       |
|                                 | 20F  | 2 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                         |
|                                 | 25F  | 2.5 inch, 150# RF flanges (schedule 40) 18" Face-to-face                                       |
|                                 | 30F  | 3 inch, 150# RF flanges (schedule 40) 18" Face-to-face                                         |
|                                 | 40F  | 4 inch, 150# RF flanges (schedule 40) 18" Face-to-face **                                      |
|                                 | 60F  | 6 inch, 150# RF flanges (schedule 40) 24" Face-to-face **                                      |
|                                 |      | <b>A106 Grade B carbon steel flow body (+ A105 flanges - if ordered)*****</b>                  |
|                                 | 20PC | 2 inch, male NPT ends (schedule 40) 12" Face-to-face                                           |
|                                 | 25PC | 2.5 inch, male NPT ends (schedule 40) 18" Face-to-face                                         |
|                                 | 30PC | 3 inch, male NPT ends (schedule 40) 18" Face-to-face                                           |
|                                 | 20FC | 2 inch, 150# RF flanges (schedule 40) 12" Face-to-face                                         |
|                                 | 25FC | 2.5 inch, 150# RF flanges (schedule 40) 18" Face-to-face                                       |
|                                 | 30FC | 3 inch, 150# RF flanges (schedule 40) 18" Face-to-face                                         |
|                                 | 40FC | 4 inch, 150# RF flanges (schedule 40) 18" Face-to-face **                                      |
|                                 | 60FC | 6 inch, 150# RF flanges (schedule 40) 24" Face-to-face **                                      |
| Feature 2: Sensor Material*     | SS   | 316 stainless steel sensor and flow body                                                       |
|                                 | SH   | 316SS flow body with Hastelloy C276 sensor                                                     |
| Feature 3: Sensor Type*         | ST   | Standard Sensor -40 to 250F (-40 to 121C)                                                      |
|                                 | HT   | High Temperature Sensor -40 to 650F (-40 to 343C) E3 or E4, required - AIR ONLY 8,000 SFPM Max |
| Feature 4: Enclosure and Power* | E1   | Local NEMA 4X enclosure, 24VDC powered                                                         |
|                                 | E2   | Local NEMA 4X enclosure, 85 to 264VAC powered                                                  |
|                                 | E3   | Remote J-box, 24VDC powered, 100' max, cable sold separately ***                               |
|                                 | E4   | Remote J-box, 85 to 264VAC powered, 100' max, cable sold separately ***                        |
| Feature 5: Bus Options*         | B0   | No communication bus                                                                           |
|                                 | MB   | Modbus RTU (RS 485)                                                                            |
|                                 | BN   | BACnet MS/TP (RS 485)                                                                          |
|                                 | BD   | DeviceNet                                                                                      |
|                                 | BP   | Profibus-DP                                                                                    |
|                                 | BE   | Ethernet Modbus TCP                                                                            |
| Feature 6: Calibration*         | G1   | Air, N2: MF less than 1200 SCFM (2040 NM3H)                                                    |
|                                 | G2   | Air, N2: MF above 1200 SCFM (2040 NM3H)                                                        |
|                                 | G3   | Ar, CO2, H2, CH4, Natural Gas, O2: MF less than 1000 SCFM (1700 NM3H)****                      |
|                                 | G4   | Ar, CO2, H2, CH4, Natural Gas, O2: MF above 1000 SCFM (1700 NM3H)****                          |
|                                 | G5   | CO, He, Ammonia, Propane: MF less than 700 SCFM (1190 NM3H)                                    |
|                                 | G6   | CO, He, Ammonia, Propane: MF above 700 SCFM (1190 NM3H)                                        |
|                                 | G7   | Biogas, Digester Gas, Flare Gas, Flash Gas, Vent Gas****                                       |
|                                 |      | All other gases                                                                                |
| Optional                        | NRT  | Non Resettable Totalizer                                                                       |

**OPTIONS**

| Part # | Description                               |
|--------|-------------------------------------------|
| 105397 | Extra instruction manual                  |
| 104870 | USB Cable, A-male/mini USB-B male, 6 feet |
| 100657 | Stainless Steel Tags                      |
| 999992 | Certificate of Conformance                |
| 999995 | Certificate of Origin                     |

**OPTIONS**

| Part#  | Description                                                                   |
|--------|-------------------------------------------------------------------------------|
| 101570 | 5-conductor, 18 AWG PVC shielded cable for remote. Specify feet (100' max.)   |
| 102299 | 90 degree elbow kit - makes housing upright in vertical pipes (E1 or E2 only) |
| 890000 | Flow meter cleaned and bagged for Oxygen service                              |
| 105758 | Remote Mounting Kit (E3 or E4 only)                                           |
| 990056 | Canadian Registration Number (CRN) engraved on flow body                      |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Notes: | <p>* The Parent Model Number and one of each Feature must be specified.<br/>Example: FT2A-20P-SS-ST-E2-B0-G1</p> <p>** Above 2,500 SCFM (4,250 NM3H) consult factory for calibration charge.</p> <p>*** Recommend 105758 Remote Mounting Kit option</p> <p>****G3 and G4 refer to pipeline-quality dry natural gas, whereas naturally occurring gas from oil fields constitutes a mixed gas requiring a G7 calibration</p> <p>*****Canadian Registration Number (CRN) is not available on carbon steel flow bodies</p> |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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