Gas Mass Flow Meters for Oil & Gas, Industrial, and Wastewater Applications

Model FT4A
- 4-20mA for flow rate or temperature; HART communication option
- Choice of second output: pulse output for flow/total or RS485 Modbus RTU

Model FT4X
- Two 4-20mA for flow rate or temperature; HART communications option
- Optional RS485 Modbus RTU
- Pulse output for flow/total
- Contact input for totalizer/ elapsed time reset
- Programmable local date/time and Contract Time
- 40 24-hour totals (40 contract days)
- Standard Data Logger with date/time stamped event and alarm logs
- Power off totalizer
- Optional remote electronics enclosure mounting

Model FT4A and FT4X
- 2nd Gen DDC-Sensor™ technology
- Gas-SelectX®: menu of field selectable gas compositions
- Average Gross Heating Value and Density of Gas Mix
- CAL-V® True Calibration Validation
- Measures gas flow rate in SCFD, MCFD & many more
- Wide measurement range: up to 1000:1 turndown; 100:1 typical
- USB port to connect to a PC, standard
- Insertion probes for pipes 1.5" and larger
- Welded, 316 SS sensor construction
- Microprocessor based, field-programmable electronics
- Standard on-board 2 line x 16 character, backlit display with configuration panel
- NIST traceable calibration
- Low-end sensitivity for vents and leak detection
- Negligible pressure drop
- Free FT View™ Software available
- FM (U.S.) & FMc (CANADIAN) approved for Class I, Div 1; ATEX/IECEx approved for Zone 1
- NEMA 4X and CE Mark
- Accuracy Compliant with BLM 3175 & API 14.10

Models FT4A & FT4X

Thermal Mass Flow Meters and Temperature Transmitters

Accuracy Compliant with BLM 3175 & API 14.10:
- Flare Gas
- Sales Gas
- Fuel Gas
- VRU's

Expansion of the Gas-SelectX® Menu

Perfect for applications with changing gas compositions, the Gas-SelectX® calibration gas menu feature for the Model FT4A and FT4X flow meters allows the user to choose from a menu of several common gases or gas mixtures for their application.

The Gas-SelectX® feature has three gas menus with the following available gases:

Pure Gas Menu	Mixed Gas Menu	O&G Gas Menu
Air	Air	Methane (C1)
Argon	Argon	Ethane (C2)
Butane	Butane	Propane (C3)
Carbon Dioxide	Carbon Dioxide	i-Butane (C4)
Methane	Methane	n-Butane (C4)
Natural Gas	Nitrogen	Pentanes (C5)
Nitrogen	Oxygen	Hexanes (C6)
Oxygen	Helium	Carbon Dioxide
Helium	Hydrogen	Nitrogen
Hydrogen	Propane	Heptanes (C7)
Propane		Octanes (C8)
		Nonane+(C9+)

The meter's proprietary algorithms allow the user to switch gases or gas mixes in the field, as needed. The Pure and Mixed Gas Menus make the FT4A and FT4X ideal for measurement of biogas/digester gas, Liquefied Petroleum Gas (LPG) and a variety of mixed industrial gases. The O&G Menu is geared for use in upstream Oil & Gas applications. Whether you need to measure natural gas, air, flare gas, vent gas, or digester gas, Gas-SelectX® brings these options and more to the user with a quick push of a button.

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SPECIFICATIONS

Performance Specs

Flow Accuracy:
Air: ±1% of reading ±0.2% of full scale
Other gases: ±1.5% of reading ±0.5% of full scale
Accuracy specification applies to customer's selected flow range
Maximum range: 15 to 60,000 SFPM (0.07 to 280 NMPS)
Minimum range: 15 to 1,000 SFPM (0.07 to 4.7 NMPS)
Straight, unobstructed pipe requirement:
    15 diameters upstream; 10 downstream.

Flow Repeatability: ±0.2% of full scale

Flow Response Time: 0.8 seconds (one time constant)

Temperature Accuracy: ±1° F (±0.6° C)

Calibration:
Factory Calibration to NIST traceable standards
CAL-V®: In-situ, operator-initiated calibration validation

Operating Specs

Gas-SelectX® Gas Selections:
Pure Gas, Mixed Gas, and Oil & Gas Mixed Gas Menus to suit any application. See the Fox website for more information on availability of current gases.

Units of Measurement:
SCFM, SCFH, NM3/M, NM3/H, NM3/D, NLPS, NLPM, NLPH, MCFD, MSCFD, SCFD, MMSCFD, MMSCFM, SM3/D, SM3/H, SM3/M, LB/S, LB/M, LB/H, LB/D, KG/S, KG/M, KG/H, SLPM, MT/H

Flow Velocity Range: 15 to 60,000 SFPM (0.07 to 280 NMPS)
    Turndown: up to 1000:1; 100:1 typical

Flow Ranges			
Pipe Diameter	SCFM	MSCFD	NM3/Hr
1.5" (40mm)	0 - 850	0 - 1,220	0 - 1,520
2" (50mm)	0 - 1,400	0 - 2,020	0 - 2,504
3" (80mm)	0 - 3,080	0 - 4,440	0 - 5,508
4" (100mm)	0 - 5,310	0 - 7,650	0 - 9,496
6" (150mm)	0 - 12,040	0 - 17,340	0 - 21,530
8" (200mm)	0 - 20,850	0 - 30,020	0 - 37,284
12" (300mm)	0 - 46,650	0 - 67,180	0 - 83,420

Note: To determine if the meter will operate accurately in other pipe sizes, divide the maximum flow rate by the pipe area. The application is acceptable if the resulting velocity is within the velocity range above. Check Fox website for velocity calculator.

Gas Pressure insertion meter: 500 psig (34.5 barg) max.
Gas Pressure retractor: 150 psig (10.3 barg) max.

Relative Humidity: 90% RH maximum; non-condensing

Temperature:
DDC-Sensor™: -40 to 250°F (-40 to 121°C)
Enclosure: -40 to 158°F (-40 to 70°C)*
*Note: Display dims below -4°F (-20°C); function returns once temperature rises again.

Input power: 12 to 28 VDC, 6 watts max. (CE requirement)
Full input power range: 10 to 30 VDC.

Outputs (FT4A):
One standard isolated 4-20mA output for flow or temperature; fault indication per NAMUR NE43; HART communication option.
Second output for pulse or RS485 Modbus RTU.
Isolated pulse output: 5 to 24VDC, 10mA max., 0 to 100Hz for flow (the pulse output can be used as an isolated solid state output for alarms).

Inputs/Outputs (FT4X):
Two isolated 4-20mA outputs for flow or temperature; fault indication per NAMUR NE43; HART communication option.
Isolated pulse output: 5 to 24VDC, 10mA max., 0 to 100Hz for flow (the pulse output can be used as an isolated solid state output for alarms).
Contact input for totalizer/ elapsed time reset

Serial Communication:
Optional isolated communication outputs: RS485 Modbus RTU. USB connector for connecting to a laptop or computer is standard. Free PC-based software tool - FT View™ - provides complete configuration, remote process monitoring and data logging functions.

4-20mA and Pulse Verification:
Simulation mode used to align 4-20mA output and pulse output (if ordered) with the input to customer's PLC/DCS.

Physical Specs

Sensor Material: 316 stainless steel

Enclosure: NEMA 4, aluminum, dual ¾" FNPT conduit entries.

Fox recommends the following probe lengths (without insulation):

Pipe Diameter	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 (LL*) 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)

*See dimensional drawing on page 3.

Dimensional

Probe diameter: ¾"

Approvals

CE Mark: Approved
 EMC Directive: 2014/30/EU
 Emissions and Immunity Testing: EN61326-1:2013

FM (U.S.) & FMc (CANADA): Approved
 Class I, Division 1, Groups B, C, D; Class II, Division 1, Groups E, F, G; and Class III, Division 1; T4, Ta = -40˚ to 70˚C; Class I, Zone 1, AEx/ Ex db IIB + H2 T4; Gb Ta = -40°C to 70°C; Type 4X, IP66/67

ATEX (FM16ATEX0013X): Approved
 II 2 G Ex db IIB + H2 T4; Gb Ta = -40˚C to 70˚C; IP66/67
 II 2 D Ex tb IIIC T135˚C; Db Ta = -40˚C to 70˚C; IP66/67

IECEx (IECEx FMG 16.0010X): Approved
 Ex d IIB + H2 T4; Gb Ta = -40˚C to 70˚C; IP66/67
 Ex tb IIIC T135˚C; Db Ta = -40˚C to 70˚C; IP66/67

ATEX and IECEx Standards:

EN 60079-0:2012 + A11:2013	IEC 60079-0:2011
EN 60079-1:2014	IEC 60079-1:2014
EN 60079-31:2014	IEC 60079-31:2013
EN 60529:1991 + A1:2000	IEC 60529:2001