EFM3000™ Electronic Flow Meter

FERGUSON BEAUREGARD™
New Intelligence In Problem Solving™

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Does accurate and reliable flow measurement at your wellhead, pipeline or gathering system demand precise production control? Check out the new industry standard in dependability, the economical EFM3000™ Electronic Flow Meter. Using state-of-the-art industry components (including an Emerson-Rosemount dual-variable 205 pressure sensor) this meter is designed to operate in the most demanding applications. The EFM3000 provides the accuracy and functionality producers and pipeline operators require for custody transfer applications.

Loaded With Features

Various packaging options are available, including one agency certified for installation in Class 1, Division 1, Group D hazardous environments. A second all-in-one configuration features an all-weather NEMA 4 stainless-steel enclosure, agency approved for Class 1, Division 2, Group D environments. This model offers a 4-line x 20-character LCD panel with through-the-door viewing, an internal 12Vdc battery pack with charge regulator circuits, radio/modem and an optional solar power panel. It can also be field upgraded to include Ferguson Beauregard's patented Auto-Cycle™ plunger-lift control.

User-Friendly Software

Adding to the reliability of the EFM3000 hardware is the EFMaintainer™ PC software. Quick and easy to install, it is judged by industry users to be the most friendly software available. It provides technicians and operations personnel an intuitive method for set-up and configuration of the EFM3000. The EFMaintainer also supports local/remote communications for retrieval of measurement data, reports, alarms, logs and audit records.

Many Communication Options

Communication options include spread spectrum and licensed radio systems, analog and digital cellular modems, and satellite modems. A built-in communications sleep mode helps extend the autonomy of the EFM3000, making it the logical choice for low-power applications. For more extensive applications, the EFM3000 comes standard with four analog inputs, two discrete inputs, and one discrete output. In addition, the serial communications interface uses industry-standard Modbus protocol, supported by many third-party SCADA systems.

Features

- Volume Calculations AGA 3, Nov. 92; AGA 8, July 94 (Detail or Gross)
- 35 Days storage of hourly data
- 300 Alarms; 275 Events
- Differential range 0-250 inches of water
- Static range 0-800 psia/ 0-3626 psia
- Flow logging
- Real-time clock and watchdog timer
- Poll on demand
- Additional Input/Output capacity
- Solar powered with battery backup
- Modbus ASCII & Modbus RTU protocols
- 4 Line 20 character LCD
- Multi level password security

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A DOVER™ COMPANY

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Technical Specifications

Functions	
Functional Capability	Electronic Gas Measurement (Orifi ce Meter) compliant with API MPMS Chapter 21 Section 1-First Edition, September 1993.
Alarms	Low DP, high DP, low AP, high AP, low fl ow rate, high fl ow rate, back fl ow, low fl owing temperature, high flowing temperature, low battery voltage, high battery voltage, auxiliary inputs high and low, discrete input.
Communications	MODBUS Serial Protocol, RTU & ASCII modes.

Sensor	
Type	Field proven dual-variable pressure sensor.
Absolute Pressure (AP)	Upper Range Limit (URL) *Range 3:* 0 -800 psia *Range 4:* 0 -3626 psia *Turndown:* 10:1 of URL *Accuracy:* +0.075%
Differential Pressure (DP)	Upper Range Limit (URL) *Range 2:* 0 -250 in. H20 *Range 3:* 0 –1000 in. H20 *Turndown:* 10:1 of URL *Accuracy:* ±0.075% of Span
Reference Accuracy	Applicable under reference conditions and zero-based spans. Includes combined effects of terminal based linearity, hysteresis, and repeatability.
Static Line Pressure Effects	*DP Zero Accuracy:* ±0.05% of URL/1000 psi *DP Span Accuracy:* ±0.20% of reading/1000 psi
Ambient Temperature Effects(per 50° F)	*AP:* ±0.05% of URL +0.125% of Span *DP:* ±0.025% of URL +0.125% of Span
Firmware Sampling Frequency	*AP:* 10 times/second *DP:* 6 times/second
Process Connections	1/4-18 NPT on 2.125 inch centers (requires a coplanar flange or instrument valve manifold assembly).

Power	
Consumption	0.220 watts (w/o communications device. 4.0 watts when equipped with radio modem in quiescent RX mode).
Battery	12Vdc, 15 AH standard; 57 AH High Capacity System optional.
Solar Panel	10 watts standard; 30 watts High Capacity System optional.
Autonomy Period	18 days @ 15 AH battery (w/o communications device). Firmware "communications device sleep mode" extends the autonomy period.

Input/output	
Serial Ports	1) Local Port / EFMaintainer RS-232 1) Host Port RS-232 or RS-485
Analog Inputs	4) 0-15Vdc total span, 12 bit A/D resolution: 1-5 Vdc input; (or 4-20ma & requiring precision loop resistor(s) & auxillary 24 Vdc loop power supply).
Discrete/Pulse Input	2) Dry Contact Closure
Discrete Output	1) Open Collector, 15Vdc @ 100 ma Max.
Protection	Transient protection is provided in-circuit.

Environmental	
Operating Temperature	-20° to +140° F including LCD readout.
Operating Humidity	Operating Humidity 0 to 95% non-condensing.

Other	
Agency Approvals CSA UL	*EFM3000xp:* Class 1/Div 1/Group D exp proof *EFM3000:* Class 1/Div 2/Group D
Local Readout	LCD 4 x 20 character; temperature compensated.
Enclosure	*EFM3000xp:* Explosion proof machined aluminum *EFM3000:* Stainless steel NEMA 4X
Weight	Approximately 30 lbs (EFM3000 w/15 AH battery)
Dimensions	12" H x 8.5" W x 7.25" D (EFM3000 enclosure)
Configurable Functions	Configured using EFMaintainer software running on laptop or PC.

Contact us today to learn how EFM3000 technology can help improve your measurement accuracy. Visit our web site—or email us at: Automation@FergusonBeauregard.com

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