

# Optimizing Your Oil and Gas Measurement Operations



## **FB1000 and FB2000 Series Flow Computers**

Minimize lost and unaccounted for, improve safety performance, improve data and cyber security, all while reducing costs.



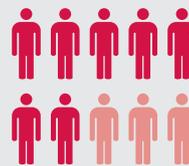
## Maintaining measurement integrity, meeting cost targets, and reaching safety and security goals can be overwhelming.

Too often you can face tradeoffs, and those tradeoffs could expose the company to risk, employees to harm, or make it harder to minimize lost and unaccounted for. Maintaining the integrity of your measurement system while also enhancing safety, meeting cost targets, and achieving security goals can be challenging. Keeping personnel and property safe are critical objectives, but when your team is operating over a large territory driving from hazardous area to hazardous area it isn't easy. Doing more with fewer resources makes it more critical than ever that your electronic devices and fiscal data are not being compromised. Delivering fiscal measurement integrity while meeting business operational objectives is in your reach.

“Traffic fatalities up as much as 1050% in high activity shale play”  
–Texas Department of Transportation



“One estimate is that 30% of the existing workforce will retire in the next 5 years, and take a large slice of the operating and commissioning experience into retirement .”  
–Kolmetz.com



“42% of abnormal situations or upsets in processing facilities are caused by people or their work context.”  
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“Seventy-eight percent of [Energy Sector IT professionals] said they experienced a cyber-attack from an external source, and thirty percent have seen an attack from an inside employee.”  
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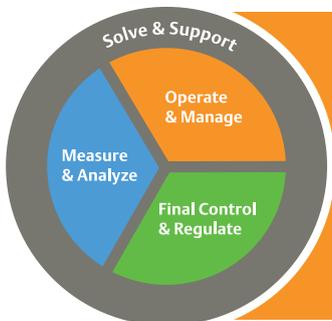


Instead of being distracted by frequent emergencies and problems, what if you could improve productivity and achieve the lowest cost while still protecting your people and the environment?

## Emerson's FB1000-Series and FB2000-Series Flow Computers for Oil and Gas Measurement Operations



Emerson flow computers are designed to enhance your measurement operations by improving metrology performance, reducing measurement uncertainty and ensuring compliance with measurement contracts. Field engineers will notice the wide array of benefits that make their jobs easier, while management will appreciate the improved operational efficiency, and peace of mind gained through improved safety and security measures.



To perform at your best, you need to continuously monitor and optimize in real-time, with potential upsets addressed before they become reality. Across thousands of square miles you need intelligent agents acting on your behalf, spanning the chasm between monitoring and decision-making with wisdom of years of experience.

Process Control • SCADA • Safety & Compliance • Operations Management  
Asset Reliability • Decision Support & Data Management



By simplifying the configuration process with built-in expertise, you are able realize efficiencies that help address critical workforce issues.

## Achieve precise measurement and accounting.

Precise measurement systems enable you to control lost and unaccounted for, minimize reconciliation work, and maintain a solid reputation with your customers.

[Accuracy ▶ p5](#)

## Reduce total costs for measurement systems.

In the modern era, we all face the same challenge: do more with fewer resources. The FB1000 and FB2000 help achieve this. By reducing the time to configure a device, the time to perform tasks in the field, and your dependence on expert resources, you can truly achieve more with less.

[Efficiency ▶ p9](#)

## Keep your personnel safe and reduce incidents.

The FB1000 and FB2000 flow computers have been designed with features that keep your teams off the road and out of hazardous areas and reduce the total number of high-risk operations.

[Safety & Environment ▶ p7](#)

## Maintain security and integrity of fiscal data.

Our new flow computers are designed with IT compliance in mind from the ground up, making it easy to satisfy your organizations policies to establish a secure infrastructure.

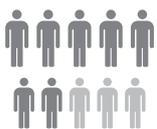
[Security ▶ p11](#)



## Achieve precise measurement and accounting

Emerson's flow computer family has a range of capabilities that make measurement systems more accurate and robust, helping reduce some of the stress of being a measurement professional. The flow computers deliver a sound measurement platform, helping to enhance your customer relations, and eliminate major discrepancies.

### What's your challenge?



"One estimate is that 30% of the existing workforce will retire in the next 5 years, and take a large slice of the operating and commissioning experience into retirement."

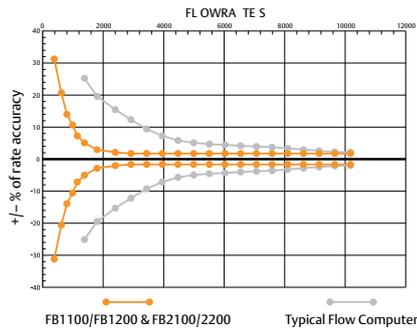
-Kolmetz.com

### What's your opportunity?

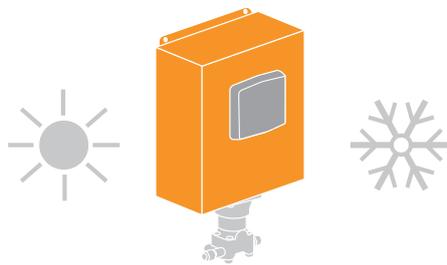


Configuration work-flows make it easier than ever to configure metering and measurement functionality, ensuring that even your newest employees can do it right the first time.

## Reduce Measurement Uncertainty



**Inherent Accuracy of Pressure & DP sensors** minimizes measurement errors in real environments.



**Best in class temperature measurement** performance, reduces uncertainty by 75% with sensor matching.

### CALIBRATION LOG - FB1200

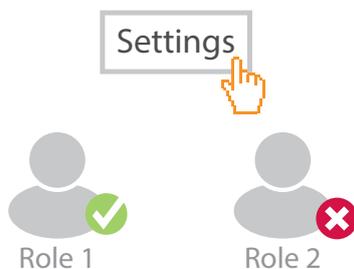
2/16/2013	In spec, no cal required
2/16/2014	In spec, no cal required
2/16/2015	In spec, no cal required
2/16/2016	In spec, no cal required
2/16/2017	In spec, no cal required

**Long term stability** of Emerson sensors for DP & Pressure, ensures ongoing accurate measurement, long after the last calibration was performed.

## Ensure Data Integrity



**Expanded on-board data storage** provides up to 365 days of secure backup of essential data to enhance the audit trail.



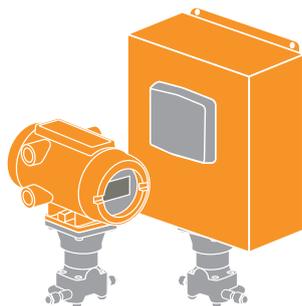
**Role-based Security** protects metering settings.

### Setup

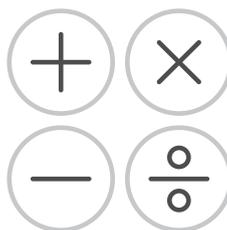


**Pre-configured operations** reduces incorrect metering setup.

## Easily Monitor and Prove Compliance



**Single firmware version** includes globally required fiscal flow and fluid property calculations.



**Independently verified calculations** ensure compliance to required measurement standards.



**Legal Events** are reported separately from operational events to simplify auditing.



For more information on Emerson Flow Computers, visit [Emerson.com](http://Emerson.com)



## Keep Your Personnel Safe and Reduce Incidents

Keeping personnel and property safe are critical objectives, but when your team is operating over a large territory driving from hazardous area to hazardous area it isn't easy. With this in mind, the FB1000-Series and the FB2000-Series have been designed with features that keep your team off the road, out of hazardous areas, and reduce the number of high risk operations required.

### What's your challenge?

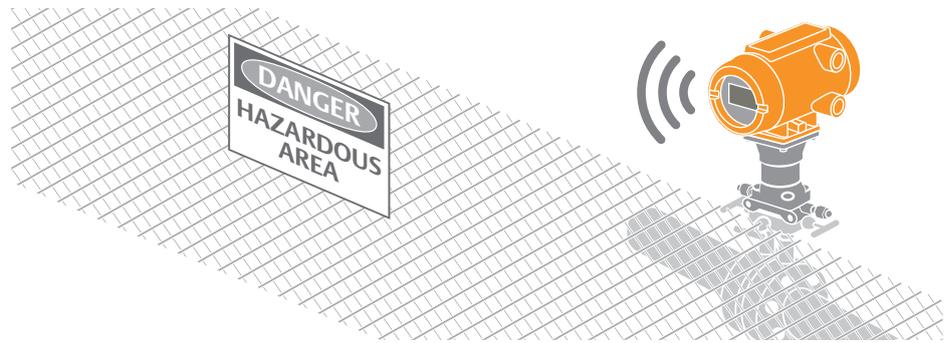


"Traffic fatalities up as much as 1050% in high activity shale play"  
-Texas Department of Transportation

### What's your opportunity?

Eliminate manual operator rounds, get more done and keep your workforce away from hazardous areas by using Emerson's FB1000-Series and FB2000-Series flow computers.

## Keep Your People Out of the Hazardous Area



Secure Mobile SCADA allows local connection to the Flow Computer from a designated safe area for monitoring, data collection and configuration.

## Reduce the Frequency of Site Visits

### CALIBRATION LOG - FB1200

2/16/2013	In spec, no cal required
2/16/2014	In spec, no cal required
2/16/2015	In spec, no cal required
2/16/2016	In spec, no cal required
2/16/2017	In spec, no cal required

Reduce calibration frequency with the long-term stability of the flow computers.



Expanded history capacity makes data collection from remote sites less time-critical.



12 Month autonomous battery option solves power issues at remote sites where solar may not be practical.

## Respond To Alarms More Effectively



Simplified alarm architecture is more flexible and reliable with reduced nuisance alarms, improving fault detection and response.



Increased ability to diagnose issues and alarm patterns.



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## Reduce Total Costs for Measurement Systems

In the modern era, we all face the same challenge: do more with fewer resources. The FB1000-Series and FB2000-Series will help you achieve this. By reducing the time to configure a device, time to perform tasks in the field, and reducing your dependence on expert resources you will truly be able to achieve more with less.

### What's your challenge?



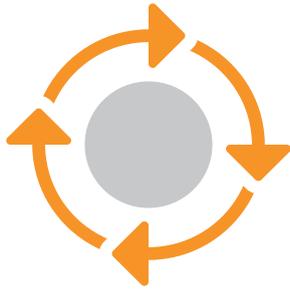
"42% of abnormal situations or upsets in processing facilities are caused by people or their work context."  
– Abnormal Situation Management Consortium

### What's your opportunity?



Preventing abnormal situation is key to reducing cost impact and remedial activities. Our solutions help you to avoid preventable upsets and to recover more quickly if they happen.

## Reduce Time Spent in the Field



**Guided workflow setup** for common operations such as calibration, verification and plate changes.



**Reduce work time in the hazardous area** with local Mobile SCADA connectivity.

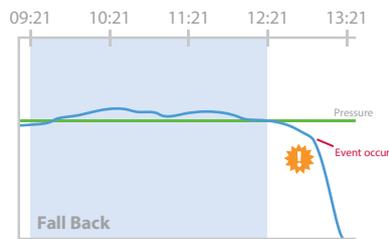


**Long-term stability** reduces the need to calibrate as frequently.

## Spend Less Time Reconciling Data



**Long term stability** reduces risk of lost and unaccounted for exposures.

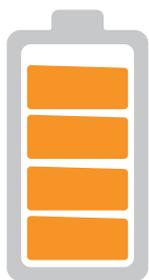


**Enhanced fall-back** options allow metering to continue in the event of external problems.

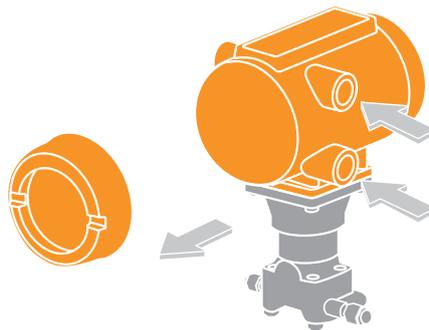


**FBxConnect** tool makes data validation easy by generating .CFX files.

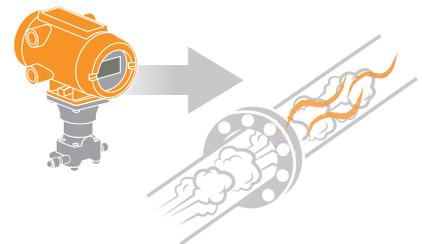
## Fewer Unforeseen Site Installation Issues



**Low power options** provide solutions where power is limited or unavailable, including solar and autonomously powered units.



**Field wiring** has never been easier, with increased conduit entries, configurable I/O points and larger screw terminals.



**Odorizers and Samplers** can be driven directly from the flow computer pulse outputs.



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## Maintain Security and Integrity of Fiscal Data

Our new flow computers are designed with IT compliance in mind from the ground up, making it easy to satisfy your organization's policies to establish a secure infrastructure.

### What's your challenge?



"Seventy-eight percent of [Energy Sector IT professionals] said they experienced a cyber-attack from an external source, and thirty percent have seen an attack from an inside employee."

-Tripwire

### What's your opportunity?

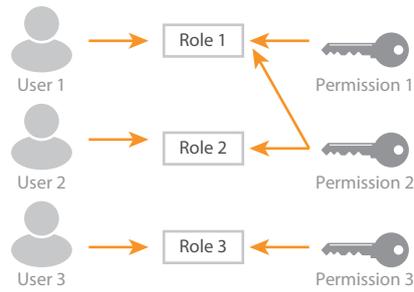


Robust security enhancements help mitigate the risks of unauthorized access. By reducing opportunities for unauthorized access we can greatly reduce the likelihood of various attack vectors.

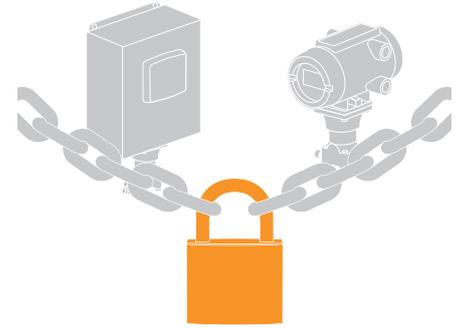
## Customized Security Management



**Robust user authentication** with stronger longer passwords, and ability to set minimum lengths.

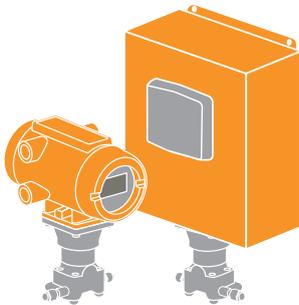


**Role-based security** means that users only have access to functionality appropriate for their responsibilities.



**Security lock-out** prevents multiple login attempts being made by locking users out.

## Secure Fiscal Calculations



A **single firmware** contains all required calculations and engineering units; no need to audit additional user programs.



**Firmware authentication** verifies source of firmware and prevents firmware spoofing attacks.



**Tested algorithms:** flow calculations have been independently tested and verified by Notified Bodies.

## Improved Auditability



**Compare running configuration** with “as-left” version in seconds to pinpoint any differences.



**Split event logs** to meet current best practices for separate legal & operational logs.



**Extended reporting** allows users to report in multiple formats (.csv, .pdf, .afx) as needed.



For more information on Emerson Flow Computers, visit [Emerson.com](http://Emerson.com)

# Emerson FB1000-Series and FB2000-Series Flow Computer for Measurement and Control

## Product overview

The versatile flow computers make it simple to meet and comply with your measurement requirements. Their versatility will help your measurement team achieve their demanding operational goals regardless of their experience level.

[URL.com/ProductDetails](#)

## Key applications

- Fiscal and allocation metering
- Sales metering
- Compressor stations
- Production measurement and control
- Gas gathering

## Key specifications

- Global Hazardous area approvals for Class 1 Div 1 / Zone 1 & Class 1 Div 2 / Zone 2 applications
- Best-in-class measurement uncertainty including 5-year sensor stability
- Global calculations in firmware including AGA, API, GPA, ISO & GERG
- Compatible with Orifice, Cone, Turbine, PD, Venturi, Nozzle, Auto Adjust, Conditioning Orifice and pulsed Coriolis & Ultrasonic meters
- User configurable communication options including Serial, Ethernet & Mobile SCADA
- API 21.1 Compliant



## Key capabilities of FB1000 and FB2000 Series flow computers

### Mobile SCADA™ with Wi-Fi®



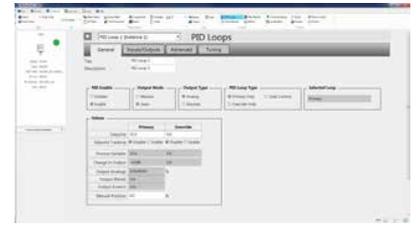
- Through a secure wireless connection, you can use FBxConnect configuration software to view process values, edit configuration parameters, and collect logs stored in the flow computer – all from the safe area.

### Low power design



- Capable of autonomous operations for up to 12 months.

### Easy to use process control



- Native PID loops, boolean logic and math blocks simplifying control setup.

### Automated configuration software



- Designed for ease of use, FBxConnect provides at-a-glance monitoring, quick access to commonly performed tasks, and a guided configuration process to quickly get your measurement up and running.

### Measurement accuracy and reliability



- Equipped with the latest in sensor technology, Emerson flow computers provide high accuracy with long-term stability to help improve measurement confidence and production efficiency.

## Emerson Flow Computer Portfolio

### FB1100



- Single run flow computer that provides robust measurements for up to 12 months in an explosion proof housing.

### FB1200



- Single or dual run flow computer capable of process control for standard applications in an explosion proof housing.

### FB2100



- Single run flow computer with more options for I/O and customization in a NEMA 4/IP66 housing.

### FB2200



- Single or dual run flow computer with up to 21 I/O and metering control capabilities in a NEMA 4/IP66 housing.

Meet your financial and performance objectives by improving measurement accuracy, keeping your people safe and improving workforce efficiency.



With the unmatched accuracy, security and safety of Emerson Flow Computers, you realize the full potential of your measurement investment.

Emerson Automation Solutions  
Remote Automation Solutions  
6005 Rogerdale Road  
Houston, TX 77072 USA

To learn more, visit us online at  
[www.Emerson.com](http://www.Emerson.com)

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