



FB2100 Quick Reference Guide

(Replacement for FloBoss™ 407, 503, and ControlWave® GFC where control is not required)

The FB2100 is a cost-effective low-power field mount flow computer that measures and monitors gas flow for a single differential or linear meter run.

Designed for simple configuration and ease of use, the cost effective FB2100 flow computer focuses on metering applications where control is not required. The FB2100 provides a full audit trail, including enhanced history, alarm and event logs. The I/O options can be as simple as a single discrete output (DO) for driving an odorizer or can be expanded to give two user configurable analog (AI or AO) channels and two user configurable discrete (DI, DO or PI) channels. The FB2100 includes power options for remote sites and flexible communication capabilities for both remote and SCADA connected sites.

Features

- Increased measurement confidence and reduced measurement uncertainty
- Measurement and I/O capability focused on metering applications
- Industry leading differential and static pressure measurement including 5-year stability
- High accuracy temperature measurement including curve matching with Callendar Van Dusen equation
- Reduced need to re-calibrate and less time spent on site
- Simplified configuration and set-up with the new FBxConnect™ Tool
- Flexible design with configurable I/O power and communication options to meet site needs
- Standard firmware supports global calculations for orifice, cone, Venturi, nozzle, turbine, PD, Auto Adjust, Coriolis, and conditioning orifice plate
- Simple selection of engineering units to suit local requirements
- Global Hazardous Area Approvals – Class 1 Div2, ATEX & IEC Ex n
- Corrosion-resistant aluminum and fiberglass enclosure options include radio mounting bracket and battery box for solar use
- Mobile SCADA allows secure local wireless access from safe area
- Ease of integration with support for Modbus, ROC, BSAP and DNP3 protocols
- Enhanced security preventing unauthorized access
- Enhanced alarming and historical data storage and improved audit trail
- API 21.1 compliant

Firmware

The base firmware in the FB2100 flow computer measures static pressure, differential pressure or pulse frequency, and temperature for a single meter run. The flow computer performs gas flow calculations based on those inputs in either U.S., metric, or other user-selectable units based on the calculation type.

The firmware supports the following flow calculations:

- AGA 3 1992/2013 (volume, mass/density, and mass/relative density)
- ISO 5167 1991/1998/2003 (orifice, Venturi, and nozzle)
- Rosemount 405C Compact Orifice and 1595 Conditioning Orifice Plate
- McCrometer V-Cone® and Wafer Cone®
- NUFLO™ Cone
- AGA 7 2006 (pulsed turbine, PD, ultrasonic, and coriolis meter)
- AGA 11 2013
- Auto-Adjust™ meter

The firmware supports the following property calculations:

- AGA 8 1994 (Detailed, Gross 1, and Gross 2)
- NX-19 1962/MOD/VDI/VDE 2040
- ISO 12213 2009 (parts 2 and 3)
- S-GERG 1991 (Std., Alt 1, Alt 2, and Alt 3)
- GPA 2172 2009 (including saturated vapor calculation)
- ISO 6976 1995 (Superior and Inferior)

The firmware accepts heating value and relative density from any of the following sources:

- Fixed value
- Periodic download from SCADA
- An external signal, such as an analog input
- Calculated based on gas composition

The firmware includes the following flow rates and totals:

- Indicated volume
- Corrected (standard) volume
- Mass
- Energy

The firmware supports a fallback mode when a process variable's value is questionable. The fallback options can be one of the following:

- Use last good value
- Use a fixed fallback value

Power Options

You can power the FB2100 with an external DC power supply or from an internal rechargeable battery linked to a solar system. The internal battery can power the FB2100 for up to 50 days without charging under normal operating condition.

Note: Internal battery option is available with Class 1 Div 2 only.

Inputs and Outputs

Base I/O

In addition to the integral pressure sensor, the FB2100 includes the following I/O in the base unit:

- One discrete output (DO)
The DO can be software configured as scaled pulse output, latched, toggled, momentary, or timed duration output. The solid state, normally open switch is rated at 500mA and is often used to drive an odorizer.
- One RTD/PRT (2, 3 or 4 wire)

Expansion I/O

The FB2100 can also be supplied with the following expanded I/O:

- Two analog channels – individually software selectable as analog inputs (AI) or analog outputs (AO)
- Two discrete channels – individually software selectable as either discrete inputs (DI), discrete outputs (AO) or pulsed inputs (PI)
- One RTD/PRT (2, 3 or 4 wire)

Analog Inputs (AI) are individually software configurable for either 4 to 20mA or 1 to 5 Vdc operation. In order to keep measurement uncertainty at a minimum, when external transmitters are being used, both the AI and AO channels have industry leading measurement accuracy with an excellent performance over a wide ambient temperature range.

Each Digital Input (DI) channel can also be software configured to function as a latched DI.

The Digital Output (DO) channels are solid-state normally open switches rated at 500 mA, enough to drive most samplers directly. Each channel can be software configured as a latched, toggled, momentary, timed duration output (TDO), or scaled pulse output.

The PI channels are most commonly used to interface with turbine meters, Coriolis meters, ultrasonic meters, and Positive Displacement (PD) meters. The high speed input supports signals up to 10.5 KHz.

Communications

The FB2100 has three user selectable serial communications ports with support for RS-232, RS-422, and/or RS-485 operation and one optional port that provides Mobile SCADA, Wi-Fi communications:

- COM1 – 4-wire serial communications. Software selectable for RS-232, RS-422, or RS-485 operation.
- COM2 – 2-wire serial communications. Software selectable for RS-232 or RS-485 operation.
- COM3 – 2-wire serial communications. Software selectable for RS-232 or RS-485 operation.
- COM4 – Mobile SCADA with Wi-Fi (802.11 b/g) communications (optional)

The FB2100 supports DNP3, Modbus slave (ASCII and RTU), BSAP and ROC protocols on all serial ports.

Mounting Options

The FB2100 supports either direct mount to a manifold on the pipeline, simple wall mounting or mounted on a two-inch pipe with the stainless steel pipe mounting kit.

For more information and detailed specifications refer to FB2100 spec summary on website.

C1 D2 / Zone 2

FB2100

- Gas DP & Linear Meters
- MVS, RTD / PRT, 1 x DO
 - add 2 AI / O, 2 DI / O
- Data Logging & History
- Simple Metering Applications

FB2200

- DP & Linear Meters
- 1 or 2 Meter Runs
- Isolated I / O Options
- PID & Simple Logic Blocks
- Internal Radio

C1 D1 / Zone 1

FB1100

- Gas DP Flow Computer
- MVS, RTD / PRT, 1 x DO
- Data Logging & History
- Simple Metering Applications – Charts

FB1200

- DP & Linear Filters
- 1 or 2 Meter Runs
- Expandable I / O Options
- PID & Simple Logic Blocks

No Control / Limited Functionality

Expandable I / O, Control, 2ND Meter Option

Increasing Functionality

