EMERSON D301770X012 FB2100 Flow Computer Instruction Manual

Safe Use Instructions:
Emerson FB2100 Flow Computer

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Contents

Emerson FB2100 Flow Computer

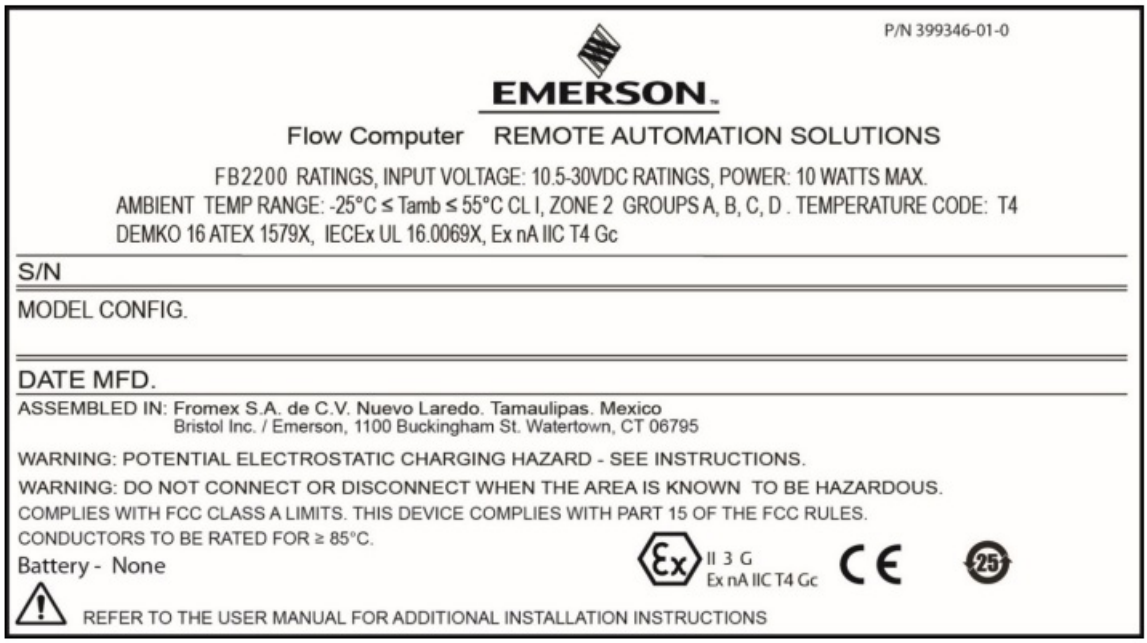

Figure 1. Emerson FB2200 Label (Non-sparking with Integral Sensor)

Use this safe use instruction (SUI) document with the Emerson FB2100 Flow Computer Instruction Manual (part D301784X012). For full cautions and descriptions of installation and troubleshooting procedures, refer to this manual. If you require training for this product, contact your local sales office.

The Emerson FB2100 Flow Computer (or “FB2100”) with ATEX approval may be ordered with any of the optional communications or I/O modules listed in the product data
sheet Emerson FB2100 Flow Computer (part D301792X012).

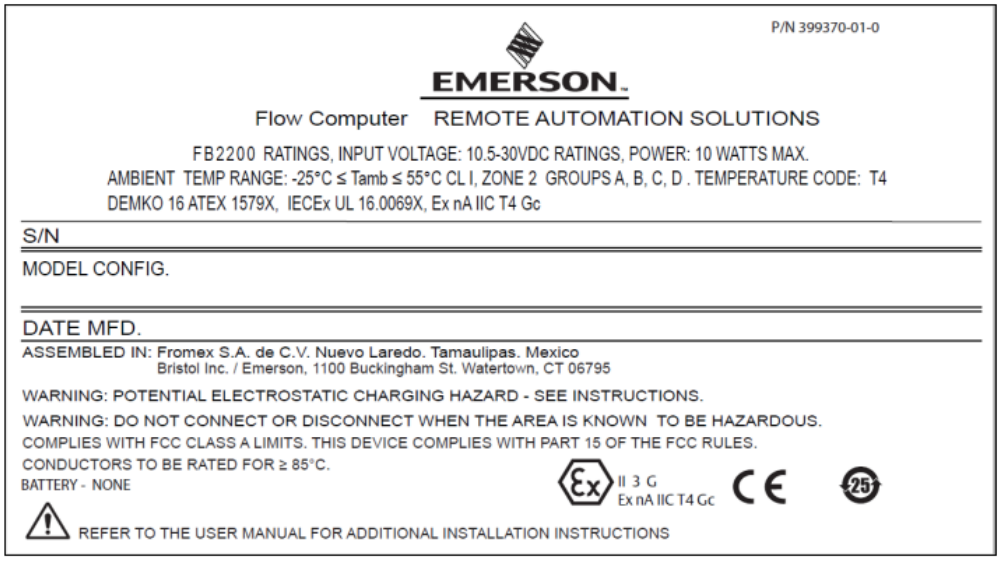

Figure 2. Emerson FB2200 Label (Non-sparking without Integral Sensor)

Statement of Conformity

Hereby, Remote Automation Solutions declares that the Emerson FB2200 Flow Computers are in compliance with the essential requirements and other relevant provisions of European Directives 2014/30/EU (EMC), and 2014/34/EU (ATEX).

Specific Conditions of Use

- Use equipment in an area of not more than pollution degree 2.
- Make provisions to ensure, in the event of transient disturbances, that the rated voltage does not exceed 140% of the peak rated voltage.
- Lead acid battery and solar power options are not for use in ATEX applications.
- Impact tests on the display were conducted based on Group II values for the low risk of mechanical danger, in accordance with Table 13 of both EN 00790:2012+A11:2013
  and IEC 60079-0 6 th Edition. Install flow computers with displays in areas where the risk of impact is low.
- In Zone 2 installations, ensure that the flow computer is installed and used to prevent the danger of electrostatic charges.
- The FB2100 enclosure requires a tool to open. Refer to the Physical Security section in Chapter 1 of the Emerson FB2100 Flow Computer Instruction Manual (part D301784X012) for further details.
- Refer to Table 1 for replacement parts.

Table 1. Replacement Parts

Replacement Part	Kit Number	Field Replacement Guide document number
8-Channel Expansion I/O Board	400217010-KIT	D301804X012
6-Channel Expansion I/O Board	400215010-KIT	D301803X012
HMI Module Display Assembly	399379-01-0, 621627011-KIT, 399380-01-0, 621627020-KIT	D301822X012
I/O Termination Board	400210010-KIT, 358807010-KIT	D301805X012
CPU Enclosure and Electronics	621673-01-0, 621674-01-0, 621675-01-0, 621676-01-0, 621678-01-0, 400209010-KIT, 399260-01-0, 399264-01-0, 400211010-KIT	D301803X012
Sensor	Variable Kit Number	D301843X012
Door Accessories	399291-01-0, 399267-01-0, 399266-01-0, 621661010-KIT, 399394-00-0	D301825X012
Relay	395828-01-0	D301847X012
Coin Cell Battery	395620-03-1	D301855X012

Specifications

POWER
Operating Range: 10.5 Vdc to 30 Vdc (10W max power) ENCLOSURE
Housing:
Powder-coat aluminum, with lockable door Compression-molded fiberglass, with a lockable door
ENVIRONMENTAL
Operating Temperature:
Non-sparking (Ex nA): –25°C to +55°C.
Storage Temp.: –40°C to +85°C.
Operating Humidity: 5-95% non-condensing per IEC 60068-2-3.
WEIGHT
6.94 kg (15.3 lbs) (fiberglass enclosure)
10.75 kg (23.7 lbs) (aluminum enclosure)
APPROVALS
Evaluated to the following European Standards (EMC):
EN 61326-1:2013 (Emissions)
EN 61326-2-3:2013 (Immunity)
Immunity
EN 61000-4-2 (Electro Static Discharge)

EN 61000-4-3 (Radiated Immunity)
EN 61000-4-4 (Fast Transients)
EN 61000-4-5 (Surges)
EN 61000-4-6 (Conducted RF)
EN 61000-4-8 (Power Frequency Magnetic Field)
EN 61000-4-17 (Voltage Ripple)
EN 61000-4-29 (Voltage Dips and Interrupts)

Evaluated to the following Approval Standards:
Directive 2014/34/EU
EN 60079-0:2012+A11:2013
EN 60079-15:2010
Evaluated to the following Standards (IEC):
IEC 60079-0 (2011), 6th Edition
IEC 60079-15 (2010), 4th Edition
Product Markings for Hazardous Locations:
Ex nA IIC T4 Gc (–25°C ≤ Tamb ≤ +55°C),

Cert. No. DEMKO 16 ATEX 1579X

DANGER
When installing units in a hazardous area, make sure all installation components selected are labeled for use in such areas. Installation and maintenance must be performed only when the area is known to be non-hazardous. Installation or maintenance in a hazardous area could result in personal injury or property damage.
Always turn off the power to the FB2100 before you attempt any type of wiring. Wiring of powered equipment could result in personal injury or property damage.
To avoid circuit damage when working inside the unit, use appropriate electrostatic discharge precautions, such as wearing a grounded wrist strap.
Check the input power polarity before connecting power to the FB2100. Wiring of powered equipment could result in personal injury or property damage.

The following tools are required for installation, maintenance, and troubleshooting:

- A personal computer running Microsoft® Windows® 7 Professional or Windows 8.1 Pro, or Windows 10 Pro and Emerson Field Tools configuration software (providing FBxConnect™).
- #1 and #2 Phillips (cross-head) screwdrivers.
- 3 mm (1/8-inch) flat-head screwdriver.

Unpacking
You receive the FB2100 in a box. Remove it from the box. Examine the packing list carefully to ensure you have all components.

Installation

1. Find a suitable location for the FB2100. When selecting an installation site, be sure to check all clearances. The FB2100 housing is designed to withstand a variety of inclement conditions. The optional LCD should be visible and accessible for the on-site operator.

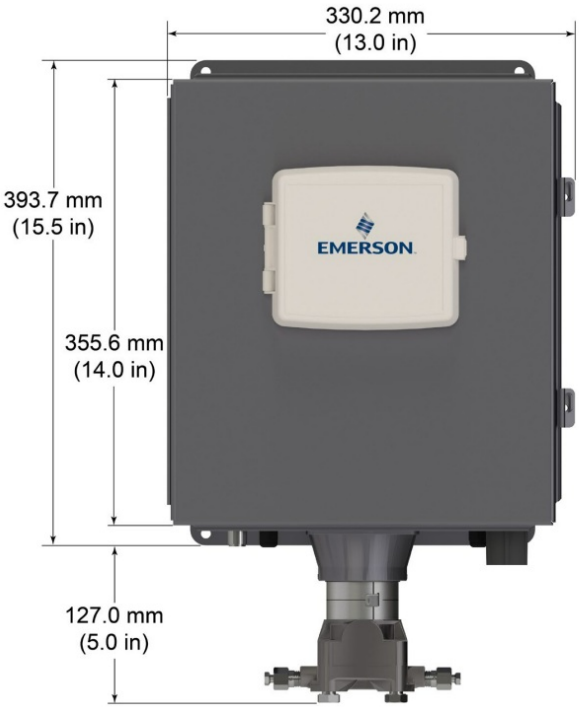

Figure 3. Front View of the FB2200 (Aluminum Enclosure) (with optional integral MVS sensor)

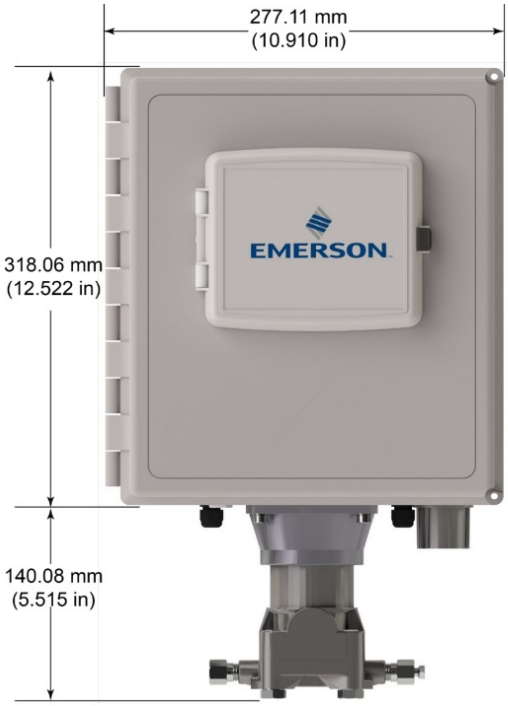

Figure 5. Front View of the FB2200 (Fiberglass Enclosure) (with optional integral MVS sensor)

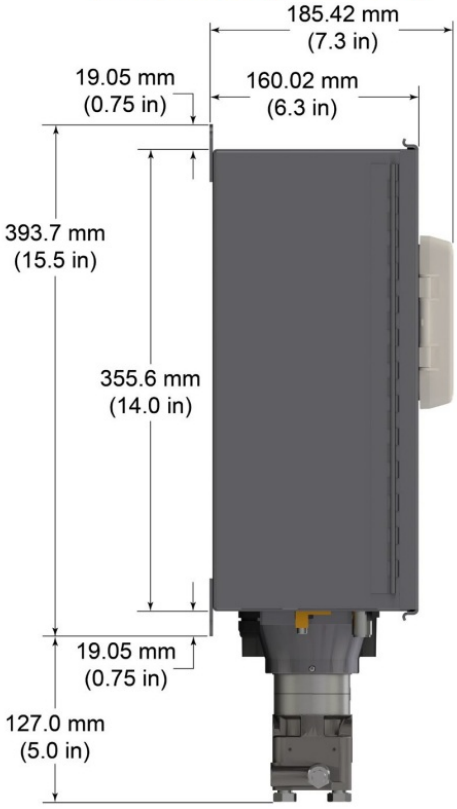

Figure 4. Side View of the FB2200 (Aluminum Enclosure) (with optional integral MVS sensor)

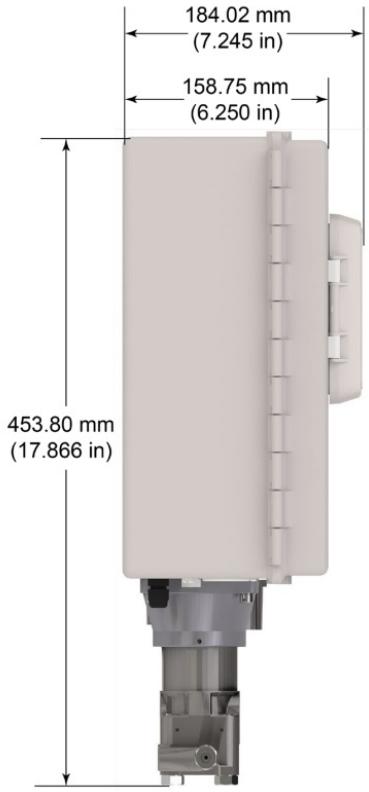

Figure 6. Side View of the FB2200 (Fiberglass Enclosure) (with optional integral MVS sensor)

2. The FB2100 mounts on a two-inch pipe or pole (see Figure 7) or can be wall- or panel-mounted using the four holes in the case and suitable attachments.

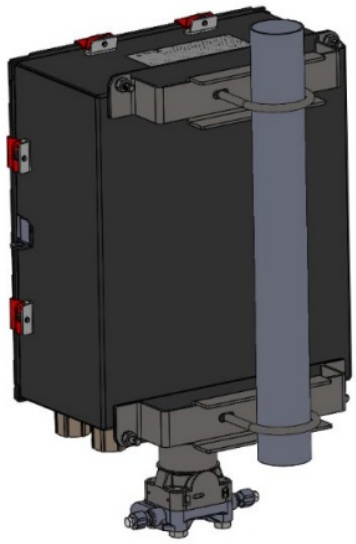

Figure 7. FB2200 (Aluminum Enclosure) on Pipe Mount

Grounding

Open the front door of the FB2100 as detailed in either Chapter 2 of the Emerson FB2100 Flow Computer Instruction Manual (part D301784X012) or in the Emerson FB2100 Flow Computer Quick Start Guide (part D301788X012).
If your company has no specific grounding requirements, install the FB2100 as a “floating” (unconnected to ground) system using the ground lug and routing the ground wire through one of the conduit fittings. Otherwise, follow your company’s specific grounding practices. However, if you are making a connection between a grounded device and an EIA-232 (RS-232) port, ground the FB2100’s power supply.

If you must ground the equipment, observe the following guidelines:

- When the equipment uses a DC voltage source, the grounding system must terminate at the service disconnect. All equipment grounding conductors–including wire or conduit carrying the power supply conductors–must provide an uninterrupted electrical path to the service disconnect.
- Improper grounding or poor grounding practices can often cause problems, such as introducing ground loops into the system. Properly grounding the FB2100 helps to reduce the effects of electrical noise on the unit’s operation and protects against lightning. Install a surge protection device at the service disconnect on DC voltage source systems to protect the installed equipment against lightning and power surges.
- Ensure that the flow computer’s ground is separate from the cathodic protection ground.
- The grounding installation method for the FB2100 depends on whether the pipeline has cathodic protection. On pipelines with cathodic protection, electrically isolate the FB2100 from the pipeline. All earth grounds must have an earth-to-ground rod or grid impedance of 25 ohms or less, as measured with a ground system tester.

Wiring to Power

Wire the FB2200 through the conduit fittings on the bottom of the housing. The terminal blocks accept wiring 2mm in diameter/3mm2 or smaller. To connect the wire to the removable block compression terminals:

- Bare the end (6mm maximum) of the wire.
- Insert the bared end of the wire into the clamp beneath the termination screw.
- Tighten the screw.

Expose a minimum of the bare wire to prevent short circuits. Allow some slack when making connections to prevent strain.
Connect the power wiring. Review the power wiring descriptions in Chapter 2 of the Emerson FB2100 Flow Computer Instruction Manual (part D301784X012).

Verify the hook-up polarity is correct.
To make DC power supply connections:

- Remove the terminal block connector from the socket.
- Insert each bare wire end into its appropriate connector and secure the wire (see Figures 7 and 8).
- Plug the terminal block connector back into the socket.

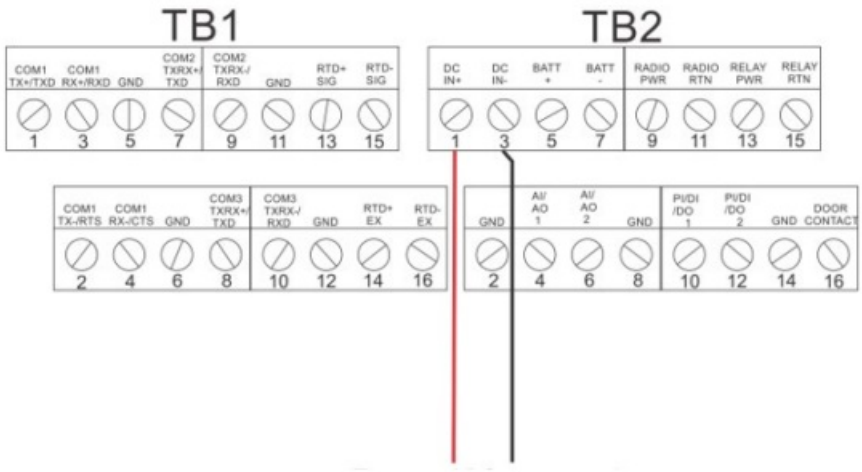

Figure 8. Wiring to DC Power Supply

Refer to the Emerson FB2200 Flow Computer Quick Start Guide (part D301788X012) for detailed instructions on connecting the battery.
Wiring to Communications & I/O
Connect the wiring to the terminal blocks on the I/O and communications modules. Refer to either Section 2.8 in Chapter 2 of the Emerson FB2200 Flow Computer Instruction Manual (part D301784X012) or the Emerson FB2100 Flow Computer Quick Start Guide (part D301788X012) for wiring schematics and explanations.
Once you have wired the communications and I/O, close and secure the cover of FB2200.

Powering Up the FB2100

DANGER
Do not attempt to connect power or disconnect power from the unit in a hazardous area. Ensure the area is non-hazardous. Failure to do so could result in an explosion.

1. To start up the FB2100, apply power.

   When you turn the power on, the backlight on the HMI module lights for about 5 seconds, then turns off. During this time the database begins to initialize. After about 45 seconds the backlight on the HMI turns on again and starts to display live data.

Periodically inspect the wiring for signs of deterioration.
Configuring the FB2100
You must install Emerson's Field Tools configuration software (which includes FBxConnect™) on your PC to

configure the FB2100 for use. Refer to the Emerson FB2100 Flow Computer Quick Start Guide (part D301788X012) for instructions on installing and using this software.

Resetting the FB2100

If you are experiencing problems that appear to be software related, try resetting the FB2100. Refer to the Service and Troubleshooting chapter in the Emerson FB2100 Flow Computer Instruction Manual (part D301784X012) for specific instructions.

Note: You lose all configuration and log data with a reset. If possible, make a backup of the configuration and log data before attempting any type of reset.

Replacing Parts in the FB2100

Refer to Table 1 for a list of user-serviceable parts and their respective Field Replacement Guides.

Returning the FB2100

If you are experiencing problems that appear to be hardware-related, verify the wiring. If you still experience problems, contact your local sales office for return authorization. To return the device:

1. Back up all configuration and data before removing the device from the process. Then remove power from the device and remove all external wiring.
2. Uninstall the device.
3. Place the device into a box safe for shipping or storage.

For customer service and technical support,
visit **www.Emerson.com/SupportNet.**
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North America, and Lat in America:	**Europe:**	**Middle East/Africa:**	**Asia-Pacific:**
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Documents / Resources

	EMERSON D301770X012 FB2100 Flow Computer [pdf] Instruction Manual D301770X012 FB2100 Flow Computer, D301770X012, FB2100 Flow Computer, FB2100, Flow Computer, Computer

References

- Emerson Remote Terminal Unit (RTU) - FB3000 RTU | Emerson US
- SupportNet | Emerson