EMERSON FB1100 Flow Computer Instructions

Safe Use Instructions – Emerson FB1100
Part D301768X012
June 2021
Safe Use Instructions: Emerson FB1100 Flow Computer

Safe Use Instructions
Remote Automation Solutions

Contents

FB1100 Flow Computer

Emerson FB1100 Flow Computer
Flow Computer
Remote Automation Solutions
F B1100 RATINGS. INPUT VOLTAGE: 5.7-30VDC RATINGS. POWER: 10 WATTS MAX AMBIENT TEMP. -40°C s Tamb s80 c1C CE 0081 DEMKO 15 ATEX 1349X IECEx UL 1 5.0024X II 2 G TEMPERATURE CODE: 14 Ex db II B T4 Gb
SIN
MODEL CONFIG.
DATE MFD.
Bristol Inc. 1100 Buckingham St. Watertown, CT. 06795
WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD -SEE INSTRUCTIONS
WARNING: DO NOT CONNECT OR DISCONNECT WHEN THE AREA IS KNOWN TO BE HAZARDOUS
COMPLIES WITH FCC CLASS A LIMITS THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES
CONDUCTORS TO BE RATED FOR z85°C
25 **BATTERY-NONE**
REFER TO THE USER MANUAL FOR ADDITIONAL INSTALLATION INSTRUCTIONS

Figure 1. Emerson FB1100 Label (Flameproof)
Use this safe use instruction (SUI) document with the Emerson FB1100 Flow Computer Instruction Manual (part D301752X012) and the Emerson FB1100 Flow Computer
Quick Start Guide (part D301785X012). For full cautions and descriptions of installation and troubleshooting procedures, refer to these manuals. If you require training for this product, contact your local sales office. The Emerson FB1100 Flow Computer (or “FB1100”) with ATEX approval may be ordered with an optional factory-installed interactive display (“HMI module”) or an optional factory-installed Wi-Fi ® (802.11 b/g) communications
Remote Automation Solutions

Statement of Conformity

Hereby, Remote Automation Solutions declares that the Emerson FB1100 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

Lead acid battery and solar power options are not for use in ATEX applications.
Flameproof:

- Contact your authorized sales and service representative for any maintenance or repair beyond the routine maintenance of the FB1100 flow computer. Do not alter or disassemble any of the fireproof joints of the FB1100 flow computer.
- The scalable pressure transmitters provided with the FB1100 flow computers contain a thin-wall diaphragm. Installation, maintenance, and use must take into account the environmental conditions to which the diaphragm is subjected. Follow the manufacturer's instructions for installation and maintenance to ensure safety during the device's lifetime.
- Refer to Table 1 for replacement parts. Non-sparking:
- Make provisions to ensure, in the event of transient disturbances, that the rated voltage does not exceed 140% of the peak rated voltage.
- 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 60079-0:2012+A11:2013 and IEC 60079-0 6 th Edition. Install flow computers with displays in areas where the risk of impact is low.

Table 1. Replacement Parts

Replacement Part	Kit Number	Field Replacement Guide document number
End Caps (aluminum only)	399122-01-0 and 399123016-KIT	D301814X012
HMI Module Display Assembly	399379-01-0, 621627011-KIT, 399 380-01-0, 621627020-KIT	D301816X012
CPU Board	399134018-KIT	D301802X012
Termination Board and Terminal Bl ock	399185-01-1, 400216010-KIT, 395 791014-KIT, 395803000-KIT	D30120X012
Sensor Assembly	Variable Kit Number	D301842X012
Coin Cell Battery	395620-03-1	D301854X012

Specifications

POWER
Operating Range: 5.7 Vdc to 30 Vdc (10W max power).
ENCLOSURE
Housing and Caps: Die-cast painted aluminum or optional stainless steel.
ENVIRONMENTAL
Operating Temperature: Flameproof (Ex db): –40°C to +80°C.
Non-sparking (Ex nA): –40°C to +80°C.
Storage Temp.: –40°C to +85°C.
Operating Humidity: 5-95% non-condensing per IEC 60068-2-3.
WEIGHT
6,75 Kg (14.9 lb): Aluminum housing with MVS coplanar flange sensor

4,22 Kg (9.3 lb): Aluminum housing without sensor 13,27 Kg (29.5 lb): Stainless steel housing with MVS coplanar flange sensor

APPROVALS
Evaluated to the following European Standards (EMC): EN 61326-1:2013 (Emissions)
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 60079-1:2014
EN 60079-15:2010
Evaluated to the following Standards (IEC): IEC 60079-0 (2011), 6 th Edition
IEC 60079-1 (2014), 7 th Edition
IEC 60079-15 (2010), 4 th Edition
Product Markings for Hazardous Locations:

Ex db IIB T4 Gb (–40°C ≤ Tamb ≤ +80°C),  II 2 G CE
Cert. No. DEMKO 15 ATEX 1349X

Ex nA IIC T4 Gc (–40°C ≤ Tamb ≤ +80°C),  II 3 G. CE
Cert. No. DEMKO 15 ATEX 1367X

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 FB1100 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 FB1100. Wiring of powered equipment could result in personal injury or property damage.
The following tools are required for installation, maintenance, and troubleshooting:

- 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.
- Torque wrench.
- 14 mm (9/16-inch) and 10 mm (3/8-inch) hexagonal wrenches.

Unpacking

You receive the FB1100 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 FB1100. When selecting an installation site, be sure to check all clearances. The FB1100 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 FB1100 (with optional LCD and optional MVS sensor)

2. The FB1100 mounts either directly to a manifold on the pipeline or indirectly on a two-inch pipe or pole. See Figures 6 and 7.

Figure 6. FB1100 using Coplanar Mount

Figure 7. FB1100 on Pipe Mount

Grounding

Remove the front and rear covers of the FB1100 as detailed in either Chapter 2 of the Emerson FB1100 Flow Computer Instruction Manual (part D301752X012) or in the Emerson FB1100 Flow Computer Quick Start Guide (part D301785X012). Store the covers in a secure location.
If your company has no specific grounding requirements, install the FB1100 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 FB1100’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 FB1100 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 FB1100 depends on whether the pipeline has cathodic protection. On pipelines with cathodic protection, electrically isolate the FB1100 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

Review the power wiring descriptions in Chapter 2 of the Emerson FB1100 Flow Computer Instruction Manual (part D301752X012). Wire the FB1100 through the conduit fittings on the side of the housing. The terminal blocks accept 2mm in diameter/3mm 2 or smaller wiring. 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 bare wire to prevent short circuits.
Allow some slack when making connections to prevent strain.
Verify the hook-up polarity is correct.
To make DC power supply connections:

- Optionally, install a surge protection device at the service disconnect.
- Install a fuse at the input power source.
- Remove the terminal block connector from the socket.
- Insert each bare wire end into its appropriate connector and secure the wire (see Figure 8).
- Plug the terminal block connector back into the socket.

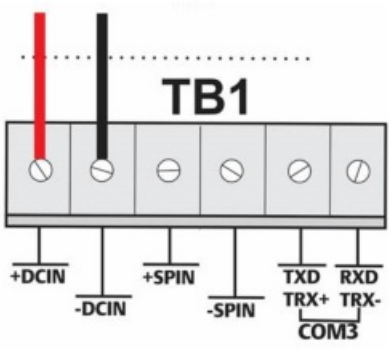

Figure 8. Wiring to DC Power Supply

Wiring to Communications

Connect the wiring to the terminal blocks on the communications module. Refer to either Section 2.13 in Chapter 2 of the Emerson FB1100 Flow Computer Instruction Manual (part D301752X012) or the Emerson FB1100 Flow Computer Quick Start Guide (part D301785X012) for wiring schematics and explanations. Once you have wired the communications and I/O, replace the front and rear covers of the FB1100. Powering Up the FB1100

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.
To start up the FB1100, apply power.
When you turn 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 FB1100
You must install Emerson's Field Tools configuration software (which includes FBxConnect™) on your PC to configure the FB1100 for use. Refer to the Emerson
FB1100 Flow Computer Quick Start Guide (part D301785X012) for instructions on installing and using this software.

Resetting the FB1100

If you are experiencing problems that appear to be software related, try resetting the FB1100. Refer to the Service

and Troubleshooting chapter of the Emerson
FB1100 Flow Computer Instruction Manual (part D301752X012) 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 FB1100

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

Returning the FB1100

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.

   Place the device into a box safe for shipping or storage.

For customer service and technical support visit **www.Emerson.com/SupportNet**.

Global Headquarters,
North America, and Latin America: Emerson Automation Solutions Remote Automation Solutions
6005 Rogerdale Road
Houston, TX 77072 U.S.A.
T +1 281 879 2699 | F +1 281 988 4445
www.Emerson.com/RemoteAutomation
Europe: Emerson Automation Solutions Remote Automation Solutions
Unit 1, Waterfront Business Park
Dudley Road, Brierley Hill
Dudley DY5 1LX UK
T +44 1384 487200
Middle East/Africa: Emerson Automation Solutions
Remote Automation Solutions
Emerson FZE
P.O. Box 17033
Jebel Ali Free Zone – South 2
Dubai U.A.E.
T +971 4 8118100 | F +971 4 8865465
Asia-Pacific: Emerson Automation Solutions
Remote Automation Solutions
1 Pandan Crescent
Singapore 128461
T +65 6777 8211| F +65 6777 0947

Documents / Resources

	**EMERSON FB1100 Flow Computer** [pdf] Instructions FB1100 Flow Computer, FB1100, Flow Computer, Computer

References

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