# FB1100/FB1200 Flow Computer Battery Field Replacement Guide


## For Part Numbers (Kits):

- 399103-01-5: Battery Pack (lithium)
- 399186-01-8: Battery Pack (lead acid)
- 399457-00-0: Battery Pack (lead acid - Enersys)



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# Device Safety Considerations

- ## Reading these Instructions

  Before operating the device, read these instructions carefully and understand their safety implications. In some situations, improperly using this device may result in damage or injury. Keep this manual in a convenient location for future reference. Note that these instructions may not cover all details or variations in equipment or cover every possible situation regarding installation, operation, or maintenance. Should problems arise that are not covered sufficiently in the text, immediately contact Customer Support for further information.

- ## Protecting Operating Processes

  A failure of this device – for whatever reason -- may leave an operating process without appropriate protection and could result in possible damage to property or injury to persons. To protect against this, you should review the need for additional backup equipment or provide alternate means of protection (such as alarm devices, output limiting, fail-safe valves, relief valves, emergency shutoffs, emergency switches, etc.). Contact Remote Automation Solutions for additional information.

- ## Returning Equipment

  If you need to return any equipment to Remote Automation Solutions, it is your responsibility to ensure that the equipment has been cleaned to safe levels, as defined and/or determined by applicable federal, state and/or local law regulations or codes. You also agree to indemnify Remote Automation Solutions and hold Remote Automation Solutions harmless from any liability or damage which Remote Automation Solutions may incur or suffer due to your failure to ensure device cleanliness.

- ## Grounding Equipment

  Ground metal enclosures and exposed metal parts of electrical instruments in accordance with OSHA rules and regulations as specified in *Design Safety Standards for Electrical Systems*, 29 CFR, Part 1910, Subpart S, dated: April 16, 1981 (OSHA rulings are in agreement with the National Electrical Code). You must also ground mechanical or pneumatic instruments that include electrically operated devices such as lights, switches, relays, alarms, or chart drives.
  **Important**: Complying with the codes and regulations of authorities having jurisdiction is essential to ensuring personnel safety. The guidelines and recommendations in this manual are intended to meet or exceed applicable codes and regulations. If differences occur between this manual and the codes and regulations of authorities having jurisdiction, those codes and regulations must take precedence.

- ## Protecting from Electrostatic Discharge (ESD)

  This device contains sensitive electronic components which be damaged by exposure to an ESD voltage. Depending on the magnitude and duration of the ESD, it can result in erratic operation or complete failure of the equipment. Ensure that you correctly care for and handle ESD-sensitive components.

# System Training

A well-trained workforce is critical to the success of your operation. Knowing how to correctly install, configure, program, calibrate, and trouble-shoot your Emerson equipment provides your engineers and technicians with the skills and confidence to optimize your investment. Remote Automation Solutions offers a variety of ways for your personnel to acquire essential system expertise. Our full-time professional instructors can conduct classroom training at several of our corporate offices, at your site, or even at your regional Emerson office. You can also receive the same quality training via our live, interactive Emerson Virtual Classroom and save on travel costs. For our complete schedule and further information, contact the Remote Automation Solutions Training Department at 800-338-8158 or email us at *education@emerson.com*.

# Ethernet Connectivity

This automation device is intended to be used in an Ethernet network which **does not** have public access. The inclusion of this device in a publicly accessible Ethernet-based network is **not recommended**.

# Removing/Replacing Batteries

Refer to the table below for the correct field replacement kit part number.

| Main Battery Type | Used with Orig. Model Spec Code(s) | Field Replacement Kit Part Number |
|---|---|---|
| Integral Battery Pack Unplugged" – Lithium (FB1100 Flow Computer only) | D3 | 399103-01-5 (See page 3 of this guide for replacement instructions) |
| Integral Battery Pack – Lead Acid for use with solar panel (Integral Solar Panel (D5) for Class I Division 2 only) | D1, D4, D5 | 399186-01-8<br>399457-00-0 (Enersys battery)<br>See page 7 of this guide for replacement instructions) |
| **UL File Number for these kits: E192567** | | |

**Important**

When replacing one of the lead acid batteries, ensure your flow computer has the correct CPU and charger board for the battery type. See the following compatibility chart:

### Charger Board and Lead Acid Battery Compatibility

| | CPU Type | |
|---|---|---|
| Lead Acid Battery Type | CPU and Charger Board 399381-01-0 | CPU and Charger Board 399381-02-0 (for Enersys battery) |
| 399186-01-8 | Supported | Not Supported |
| 399457-00-0 (Enersys) | Supported | Supported |

### Ambient Temperature Range

May be used up to a *maximum* ambient temperature of 80°C and a *minimum* ambient temperature of –40°C; refer to the data plate attached to the device for ambient temperature.

### Required Tools

- #1 Phillips-head screwdriver
- #2 Phillips-head screwdriver
- Hexagonal torque wrenches with 3mm, #1, and #2 Phillips-head bits. Ranges must include 4 to 6 in-lbs (0.5 to 0.7 N-m), and 10 to 12 in-lbs (.1 to 1.4 N-m)

**Important**

Use **only** accessories (batteries) supplied with the flow computer or sold by Emerson as spare parts for this flow computer. **Substituting** a part you obtain elsewhere (such as a battery) **voids your certification**.

**⚠ WARNING**

EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

**⚠ WARNING**

EXPLOSION HAZARD – Batteries must only be changed in an area known to be non-hazardous.

**⚠ WARNING**

EXPLOSION HAZARD –There are no user-serviceable parts inside the battery pack. Do not open the battery pack as you may damage the battery pack or injure yourself.

**⚠ DANGER**

EXPLOSION HAZARD: Ensure the area in which you perform this operation is non-hazardous. Performing this operation in a hazardous area could result in an explosion.

**⚠ DANGER**

EXPLOSION HAZARD: Never remove end cap(s) in a hazardous location. Removing cover(s) in a hazardous location could result in an explosion.

**Note**

Use these cells **only** in devices where servicing of the cell circuit and replacement of the lithium cells will be done by a trained technician.

**Important**

If this equipment is used in a manner not specified by the manufacturer, the protection provided by equipment may be impaired.

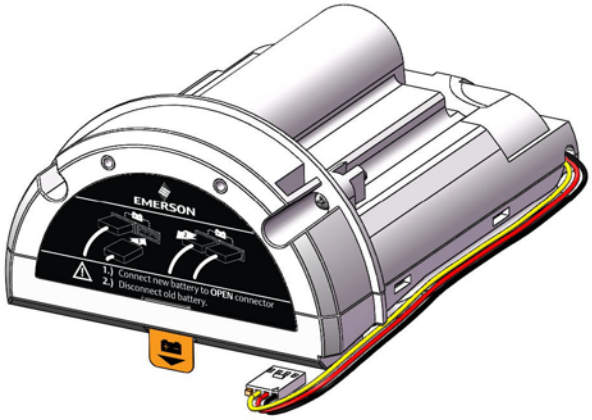
# Removing/Replacing the Main Power Battery (Lithium Battery)

Periodically you must replace the main battery pack. FBxConnect provides a battery life indicator showing the number of days of usage to help you monitor battery life. In addition, for lithium batteries only, the Status LED shows yellow when the battery is low and needs to be replaced.

UL Listed Battery Field Installed Accessory Kit for use in Class I, Division 1, Groups C & D and Class I, Division 2, Groups A, B, C, and D

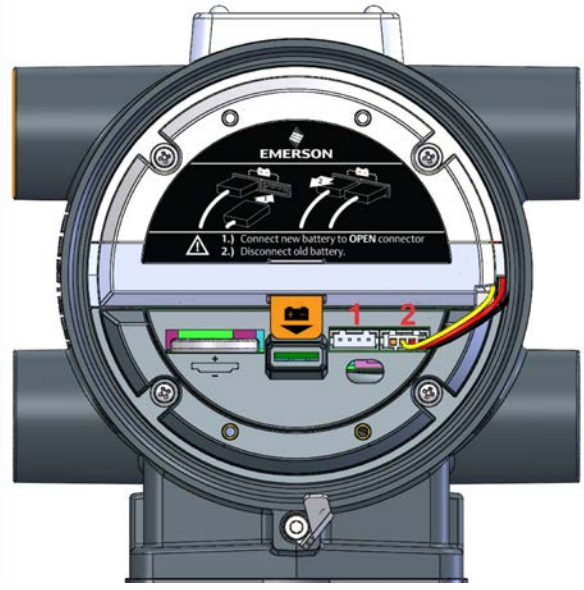
- Flow Computer Integral Lithium Battery Pack Field Installed Accessory Kit Part No. 399103-01-5 for use with UL Listed Class I, Division 1, Groups C, and D and Class I, Division 2, Groups A, B, C, and D Model Series FB1100

## Battery Pack




The device provides two battery connectors, enabling you to hot-swap the battery pack in a non-hazardous location.

## Battery Pack (in Flow Computer)



In the following procedure, you slide out the first battery pack (leaving it connected), attach the new battery to the second (available) connector (so both batteries are connected), and then disconnect the old battery pack.

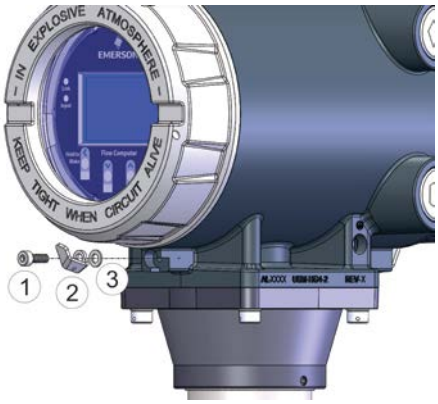
Keep the replacement battery pack handy during the procedure.

**⚠ WARNING**

EXPLOSION HAZARD – Batteries must only be changed in an area known to be non-hazardous. See notices at the front of this document.

1. Remove the retaining clamp on the front end cap (if present) using a 3 mm hexagonal wrench.

**Components of Retaining Clamp Assembly**




1 Screw
2 Retaining Clamp
3 Washer

2. Grasp the end cap.

**Front End Cap**

3. Unscrew the end cap turning it counter-clockwise until the cover comes off. Set it aside in a safe location.

**Note**

If you need more leverage, place a long screwdriver or other appropriate tool across the two notches in the end cap to act as a pry bar.

Front End Cap (unscrewed)

4. With a #2 Phillips-head screwdriver loosen the two captive fastening screws on the battery pack.

Captive Screws


5. With a #1 Phillips-head screwdriver, loosen the two bottom captive fastening screws on the HMI module. Leave the two top screws on the HMI module connected to the battery pack.

Captive Screws (loosened)


6. Grasp the HMI module and gently pull it and the battery pack out of the enclosure, leaving the battery still connected.

HMI Module (removed)

7. Connect the new battery to the open connector. Route the wires so they are in the recessed area. Make sure the wires don't get caught in the end cap threads.

Flow Computer (two batteries connected)

8. Disconnect the old battery pack's connector from the unit and set the old battery pack aside.
9. Slide the new battery pack into the unit. Tighten its two captive fastening screws.
10. Loosen the top captive fastening screws on the HMI module to separate it from the old battery pack.
11. Align the HMI module with the new battery pack and the tab on the CPU carrier bezel. Gently press the HMI module on, being careful not to pinch the battery wires. Tighten all four captive screws with a torque value of 4 to 6 in-lbs (0.5 to 0.7 N-m).
12. Carefully align the end cap threads with the threads of the enclosure and replace the front end cap. Screw the end cap clockwise (eight full turns) until it is tightly sealed to the enclosure. Endcaps must have at least 8 full threads engaged upon reassembly.

**Note**
If you need more leverage, place a long screwdriver or other appropriate tool across the two notches in the end cap to act as pry bar.

13. If applicable, tighten the retaining clamp using the screw and washer onto the end cap using a 3mm hexagonal wrench. When tightening, torque to 10 to 12 in-lbs (1.1 to 1.4 N-m).

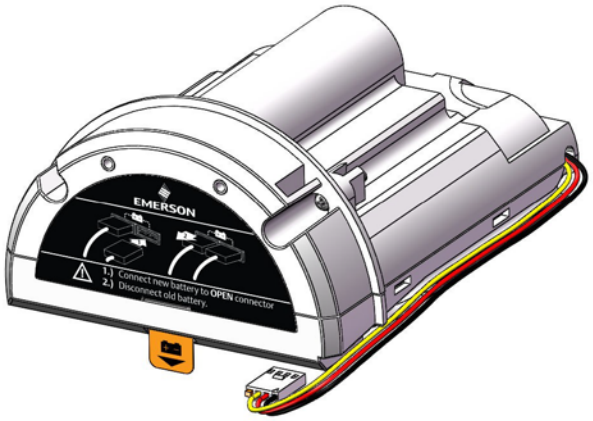
# Removing/Replacing the Main Power Battery (Lead Acid Battery)

Periodically you must replace the main battery pack. FBxConnect provides a battery life indicator showing the number of days of usage to help you monitor battery life.

UL Listed Battery Field Installed Accessory Kit for use in Class I, Division 1, Groups C, and D, Class I, Division 2, Groups A, B, C, and D

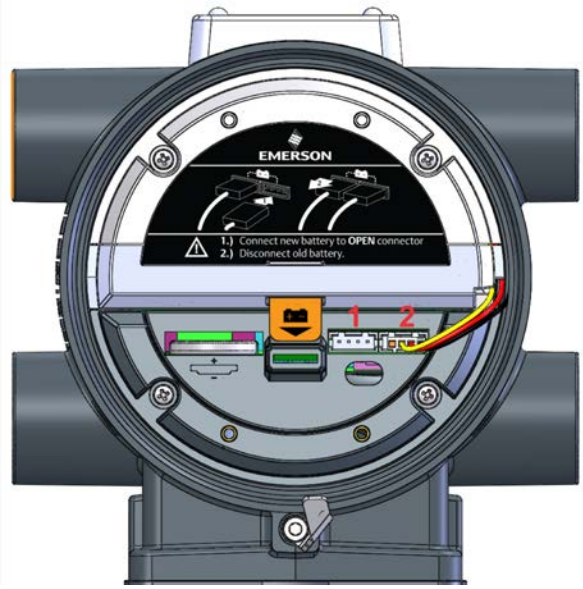
- Flow Computer Integral Lead Acid Battery Pack Part No. 399186-01-8 for use with UL Listed Class I, Division 1, Groups C & D, Class I, Division 2, Groups A, B, C, and D Model Series FB1100 and FB1200.
- Flow Computer Integral Lead Acid Battery Pack Part No. 399457-00-0 for use with UL Listed Class I, Division 1, Groups C & D, Class I, Division 2, Groups A, B, C, and D Model Series FB1100 and FB1200.

### Battery Pack




The device provides two battery connectors, enabling you to hot-swap the battery pack in a non-hazardous location.

### Battery Pack (in Flow Computer)




In the following procedure, you slide out the first battery pack (leaving it connected), attach the new battery to the second (available) connector (so both batteries are connected), and then disconnect the old battery pack.

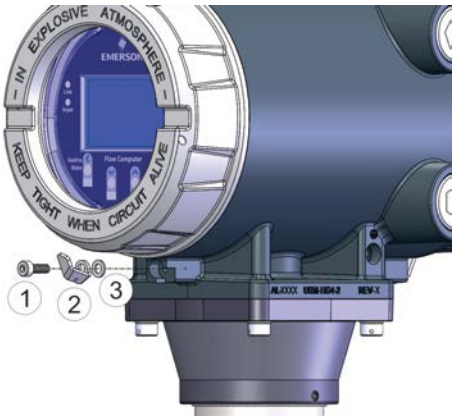
Keep the replacement battery pack handy during the procedure.

## ⚠ WARNING

EXPLOSION HAZARD – Batteries must only be changed in an area known to be non-hazardous. See notices at the front of this document.

1. Remove the retaining clamp assembly on the front end cap (if present) using a 3 mm hexagonal wrench.

### Components of Retaining Clamp Assembly




1 Screw
2 Retaining Clamp
3 Washer

2. Grasp the end cap.

**Front End Cap**

3. Unscrew the end cap by turning it counter-clockwise until it comes off. Set the end cap aside in a safe location.

**Note**

If you need more leverage, place a long screwdriver or other appropriate tool across the two notches in the end cap to act as pry bar.

**Front End Cap (unscrewed)**

4. With a #2 Phillips-head screwdriver loosen the two captive fastening screws on the battery pack.

**Captive Screws**


5. With a #1 Phillips-head screwdriver, loosen the two bottom captive fastening screws on the HMI module. Leave the two top screws on the HMI module connected to the battery pack.

Captive Screws (loosened)


6. Grasp the HMI module and gently pull it and the battery pack out of the enclosure, leaving the battery still connected.

HMI Module (removed)


7. Connect the new battery to the open connector. Route the wires so they are in the recessed area. Make sure the wires don't get caught in the end cap threads.

Flow Computer (two batteries connected)

8. Disconnect the old battery pack's connector from the unit and set the old battery pack aside.
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13. If applicable, tighten the retaining clamp using the screw and washer onto the end cap using a 3mm hexagonal wrench. When tightening, torque to 10 to 12 in-lbs (1.1 to 1.4 N-m).

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 | F +44 1384 487258

**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





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