

FB2100/FB2200 Flow Computer Battery Field Replacement Guide



For Part Numbers (Kits):

- 399285-01-0: Battery

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

The flow computer includes two different types of main battery enclosures. One uses a strap to hold the battery in place, the other uses a hook-and-loop pad to secure the battery. This guide includes separate procedures depending upon the battery enclosure used.

Restriction

Hazardous area approvals require that any part replaced in the field be the exact same part (like for like). Upgrading or substituting different parts violates hazardous area certification.

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

Item	Field Replacement Kit Part Number
10.5 Ah Lead Acid Battery for use with solar panel	399285-01-0
UL Kit File Number: E192567	



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 approval certification**.

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

- #2 Phillips-head screwdriver
- Hexagonal torque wrenches. Ranges must include 2 to 4 in-lbs (0.2 to 0.5 N-m).

Electrical Ratings

- **Input Voltage:** 10.5 Vdc to 30 Vdc external supply (Max power at 10 watts)



Important

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

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 end cap(s) in a hazardous location could result in an explosion.

WARNING

EXPLOSION HAZARD -Substitution of any components may impair suitability for Class I, Division 2.

WARNING

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

WARNING

EXPLOSION HAZARD – Do not replace batteries unless power has been switched off or the area is known to be non-hazardous. Change batteries **only** in an area known to be non-hazardous.

Note

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

Removing/Replacing the Main Power Battery (Strap Holds Battery)

UL Listed Lead Acid Battery Field Installed Accessory Kit for Use in Class I, Division 2, Groups A, B, C, and D.

- Flow Computer Lead Acid Battery Field Installed Accessory Kit Part No. 399285-01-0 for Use with UL Listed Class I, Division 2, Groups A, B, C, & D Model Series FB2100 and FB2200

WARNING

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.

Keep the replacement battery pack handy during the procedure.

1. Remove the plastic tabs covering the connectors on the new battery pack.

Removing Plastic Tabs from New Battery Pack



2. Open the enclosure.
3. Loosen the two captive fastening screws at the top of the of the battery compartment and carefully rotate the electronics assembly towards you to reveal the inside of the battery compartment. A strap prevents the front of the compartment from rotating too far forward.

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Loosen Captive Fastening Screws and Rotate Assembly Forward



4. If you have an internal solar regulator installed in the battery compartment, you must remove the termination cover. Remove the two screws (left and right) that fasten the termination cover to the solar regulator, and then set the termination cover aside. (If you don't have an internal solar regulator, skip to Step 5.)



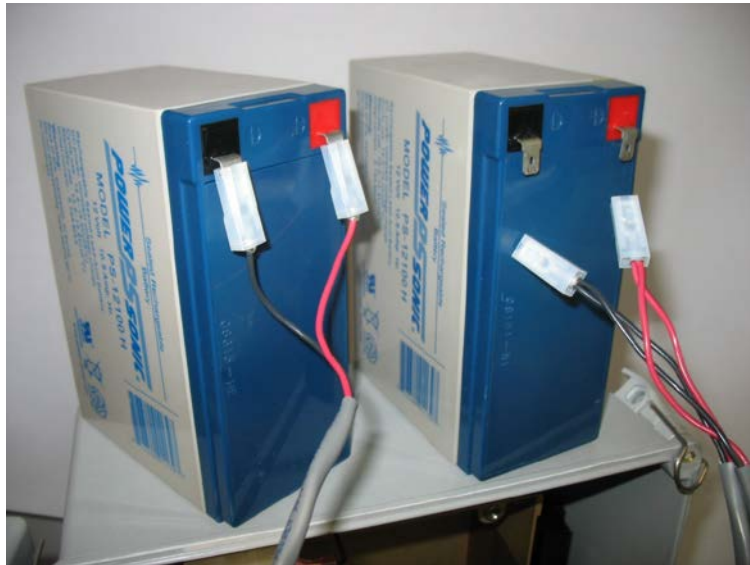
5. A strap with a VELCRO® brand fastener holds the battery in place. Unstrap the battery but leave the connectors on the current battery connected. Gently lift the battery with the battery cable attached out of the compartment. You may want to place it on top of the flow computer enclosure.

Unstrap the Old Battery Pack (Leave Connected to Cable)



6. Place the old battery on top of the flow computer enclosure and place the new battery next to it.

Old Battery (left) and New Battery (right) Sit on Enclosure



7. The battery cable is divided into two branches, each with its own pair of connectors. Take the free pair of connectors and connect them to the **new** battery; the red (positive) wire connector attaches to the red connection point on the new battery and the black (negative) wire connector attaches to the black connection point on the new battery.

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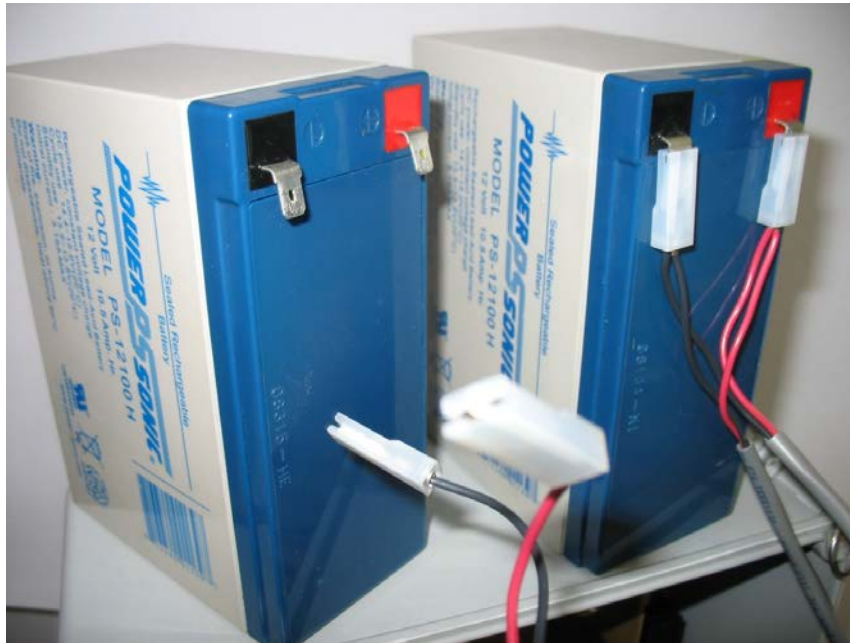
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Connect New Battery (Both Batteries Now Connected)



8. Now disconnect the **old** battery from its connectors and set the old battery aside (be sure to dispose of it safely in accordance with local regulations).

Old Battery Disconnected (left) New Battery Remains Connected (right)



9. The battery strap must already be threaded through the holes of the battery compartment.



10. Pick up the new battery and carefully ease it into the battery compartment with the writing on the battery facing out and the connectors on the upper right-hand side. Nothing (including the strap) can be **behind** the battery.



11. Carefully push the battery under the solar regulator (if present) and against the back of the compartment, now strap it in tightly by pulling the ends of the strap.

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12. The strap includes a narrow opening into which you can slide the other end of the strap to help you tighten it.



13. Route the extra portion of the strap as well as the wires of the free portion of the battery cable so that they sit in an open area of the battery compartment.
14. If you had to remove the termination cover of an internal solar regulator (Step 4), re-attach the termination cover.
15. Rotate the electronics assembly up against the battery compartment and tighten the captive fastening screws with a torque value of 2 to 4 in-lbs (0.2 to 0.5 N-m) to close the compartment.
16. Close the flow computer enclosure.

Removing/Replacing the Main Power Battery (Pad Holds Battery)

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

- Flow Computer Lead Acid Battery Field Installed Accessory Kit Part No. 399285-01-0 for Use with UL Listed Class I, Division 2, Groups A, B, C, and D Model Series FB2100 and FB2200

⚠ WARNING

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.

Keep the replacement battery pack handy during the procedure.

1. Remove the plastic tabs covering the connectors on the new battery pack.

Removing Plastic Tabs from New Battery Pack



2. Open the enclosure.

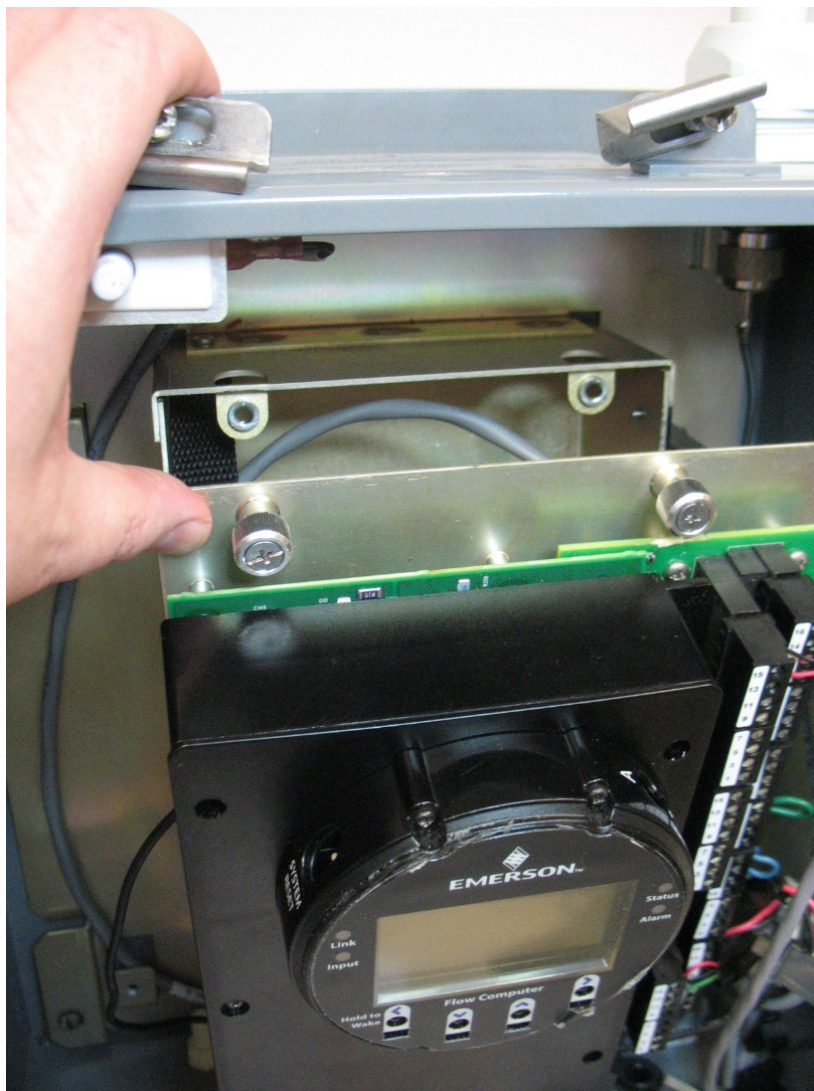
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3. Loosen the two captive fastening screws at the top of the of the battery compartment and carefully rotate the electronics assembly towards you to reveal the inside of the battery compartment. A strap prevents the front of the compartment from rotating too far forward.

Loosen Captive Fastening Screws and Rotate Assembly Forward



4. A VELCRO brand fastener on the back of the battery secures it to the back of the battery compartment. Leave the connectors on the current battery connected. Place your fingers behind the battery pack and pry it off of the fastener on the back of the compartment; you may need to use both hands. Gently lift the battery with the battery cable attached out of the compartment. You may want to place it on top of the flow computer enclosure.

Pry Out Old Battery Pack (Leaving Connected to Cable)



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5. Place the old battery on top of the flow computer enclosure and place the new battery next to it.

Old Battery (left) and New Battery (right) Sit on Enclosure



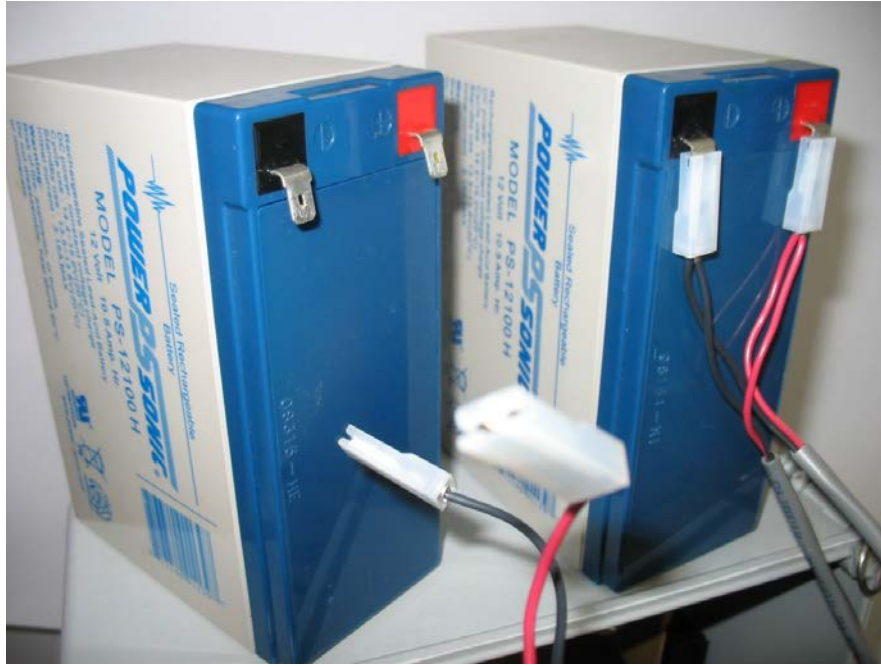
6. The battery cable is divided into two branches, each with its own pair of connectors. Take the free pair of connectors and connect them to the **new** battery; the red (positive) wire connector attaches to the red connection point on the new battery and the black (negative) wire connector attaches to the black connection point on the new battery.

Connect New Battery (Both Batteries Now Connected)



7. Now disconnect the old battery from its connectors and set the old battery aside (be sure to dispose of it safely in accordance with local regulations).

Old Battery (left) Disconnected; New Battery (right) Remains Connected



8. Pick up the new battery and align it with the lower left edge of the battery compartment with the writing on the battery facing out and the connectors on the upper right-hand side. Press it against the back of the compartment so the fastener pad on the back of the battery secures to the back of the battery compartment. Route the wires of the free portion of the battery cable so that they sit in the open area at the top of the battery compartment.
9. Rotate the electronics assembly up against the battery compartment and tighten the captive fastening screws with a torque value of 2 to 4 in-lbs. (0.2 to 0.5 N-m) to close the compartment.
10. Close the flow computer enclosure.

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