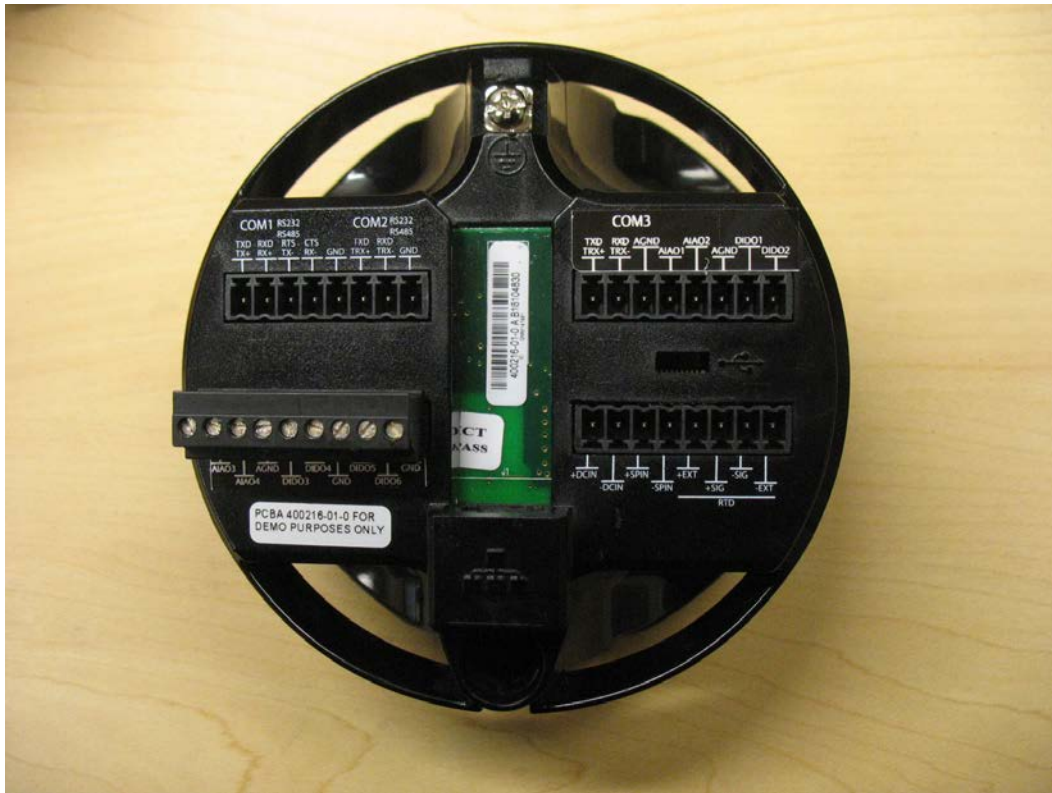


FB1100/FB1200 Flow Computer Termination Board Field Replacement Guide



For Part Numbers (Kits):

- 399185-01-1
- 400216010-KIT
- 395791014-KIT
- 395803000-KIT

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 Termination Boards

⚠ CAUTION

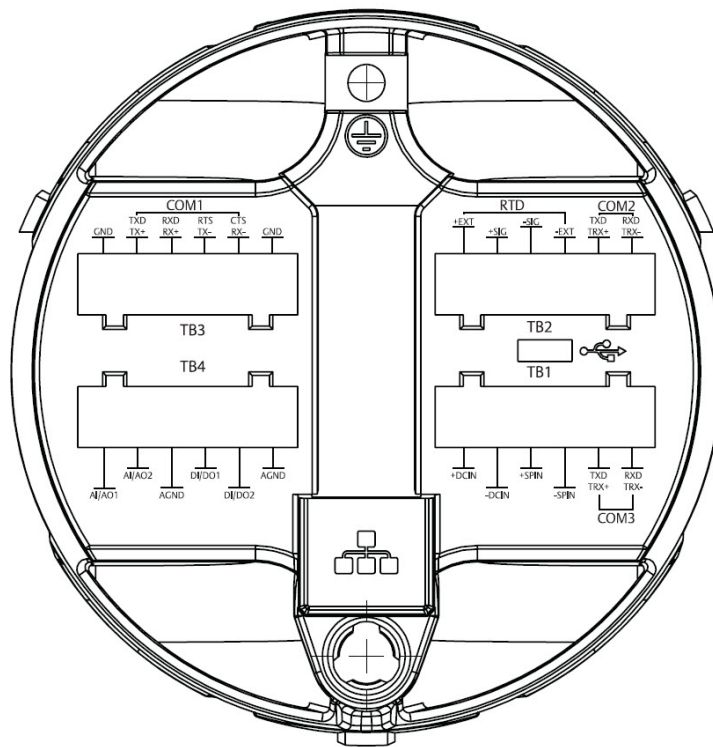
MAY CAUSE INJURY TO PERSONNEL OR DAMAGE EQUIPMENT

Because I/O, ground, and other wires enter the flow computer through conduit fittings and then connect to the termination board, a qualified technician must disconnect all wiring coming into the flow computer and pull it out through the conduit fittings in order to replace the termination board.

You must then install the new termination board and completely rewire the unit.

If not already done, be sure to label all wires before disconnecting so you can identify them later during the rewiring process.

The FB1100 Flow Computer includes a single type of termination board that uses 6-connector pluggable terminal blocks.

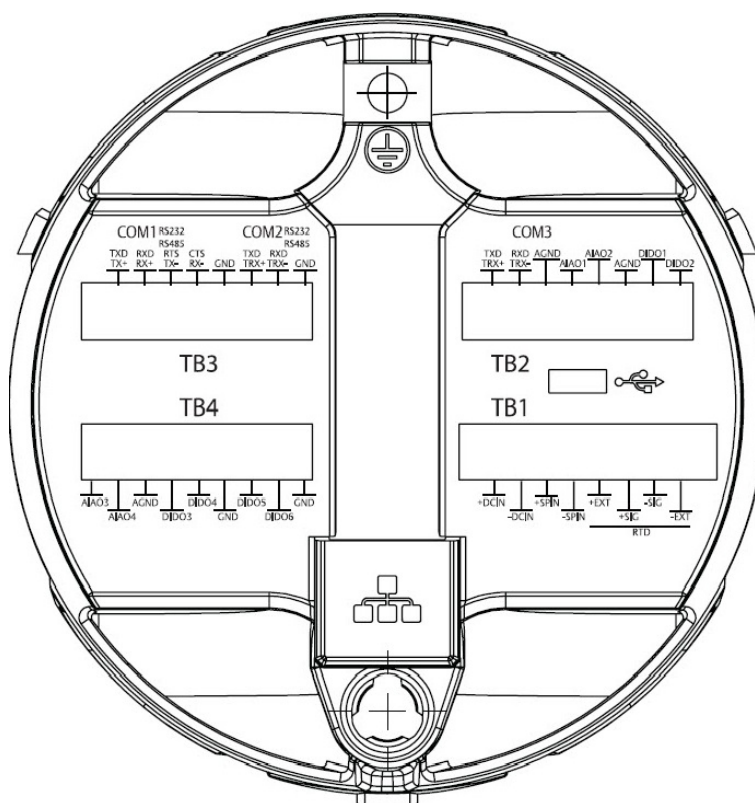


The FB1200 Flow Computer supports the same termination board and blocks. In addition, if the FB1200 Flow Computer is purchased with the 6-channel expansion I/O board, it uses a different termination board with 8 (or in one case 9) connector pluggable terminal blocks.

FB1100/FB1200 Flow Computer Termination Board Field Replacement Guide

D301820X012

November 2020



The basic methods for replacing termination boards or for replacing termination blocks are the same. The only differences occur in the number of connectors on a terminal block used on a termination board.



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
Termination Board (used with 6-connector pluggable terminal blocks)	399185-01-1
Termination Board (used with 8-connector pluggable terminal blocks on any FB1200 Flow Computer which has a 6-channel expansion I/O board)	400216010-KIT

Item	Field Replacement Kit Part Number
6-connector pluggable terminal blocks (pack of 4)	395791014-KIT
8-connector pluggable terminal blocks (pack of 4) – (Used with any FB1200 Flow Computer which has a 6-channel expansion I/O board)	395803000-KIT

Ambient Temperature Range

May be used up to a *maximum* ambient temperature of 80 °C and a *minimum* ambient temperature of -40 °C; see product data plate (on device) for ambient temperature.

Required Tools

- #1 Phillips-head screwdriver
- #2 Phillips-head screwdriver
- 3/32-inch flat head screwdriver (for 3.81 mm pitch terminal block connections)
- 1/8-inch flat-head screwdriver (for 5.08 pitch terminal block connections)
- 3mm hexagonal torque wrench. Ranges must cover 10 to 12 in-lbs (1.1 to 1.4 N-m).

Electrical Ratings

- **I/O Ratings** (FB1200 Flow Computer):
 - 4 Digital Outputs: 0.5A, 24Vdc
 - 2 Analog Outputs: 4-20 mA



Important

Only use accessories 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**.

WARNING

EXPLOSION HAZARD – Substitution of any components may impair suitability for Class I, Division 1 or Class I, Division 2.

WARNING

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

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.

Removing/Replacing the HMI Module

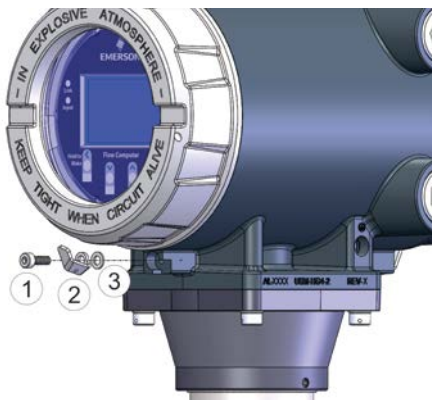
UL Listed Termination Board Field Installed Accessory Kit for Use in Class I, Division 1, Groups C, D; Class I, Division 2, Groups A, B, C, and D

- Flow Computer Termination Board Field Installed Accessory Kit Part No. 399185-01-1 for use with UL Listed Model Series FB1100.
- Flow Computer Termination Board Field Installed Accessory Kit Part No. 400216010-KIT for use with UL Listed Model Series FB1200.

To replace the termination board, you first need to remove the battery enclosure/HMI module assembly to gain access to the termination board screws on the inside of the flow computer.

1. Remove the front and rear end caps. 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 or rear).

Front End Cap



Rear End Caps

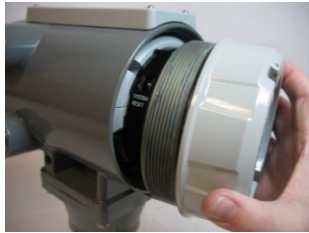


3. Unscrew the end cap turning it counter-clockwise until the cover comes off. Set it aside in a safe location.

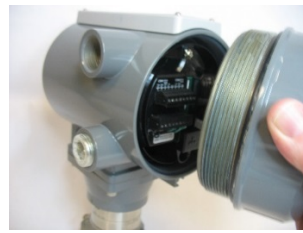
Note

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

Front End Cap (unscrewed)



Rear End Cap (unscrewed)



Important

When replacing the rear end cap, ensure wires connecting to the terminal plate do not get crimped or caught between the end cap threads and the enclosure.

4. Disconnect power at terminal TB1 on the termination board.
5. Disconnect all terminal blocks and disconnect all wires (I/O, grounding, communications) coming into the flow computer.
6. With a #2 Phillips-head screwdriver loosen the two captive fastening screws on the battery pack enclosure.

Captive Fastening Screws



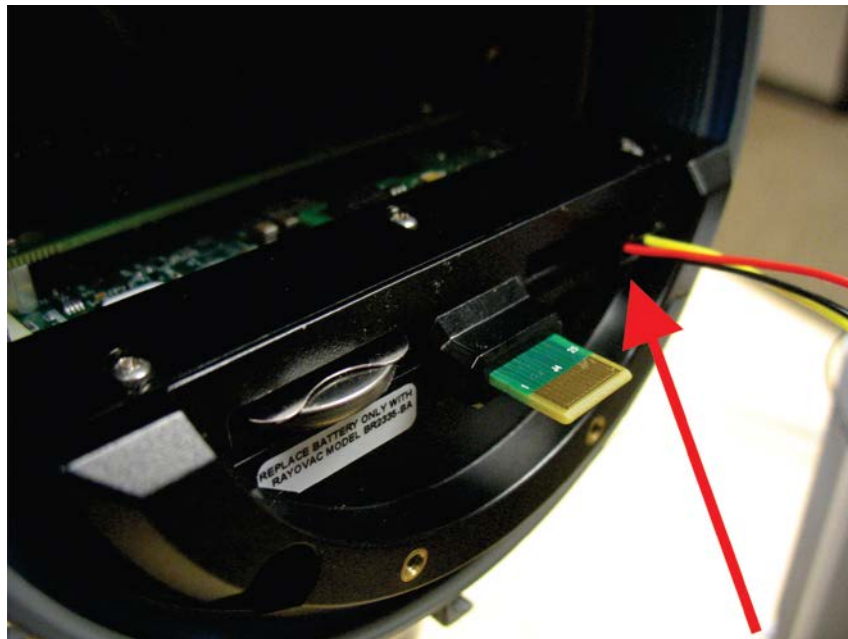
7. With a #1 Phillips-head screwdriver, loosen the two bottom captive fastening screws on the HMI module. Leave the two top screws on the HMI module connected to the battery pack enclosure.



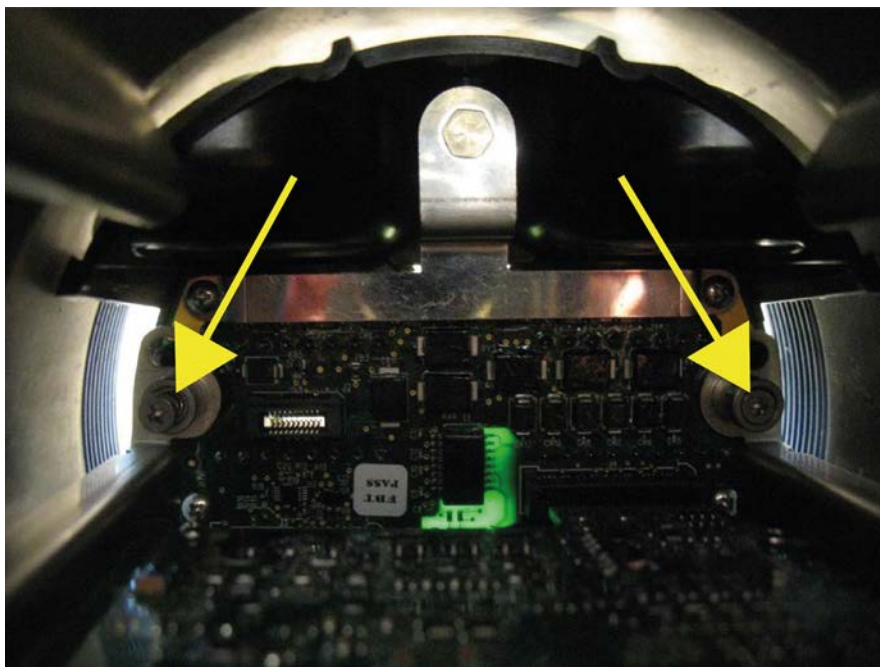
8. Grasp the HMI module and gently pull it and the battery pack enclosure out of the housing.



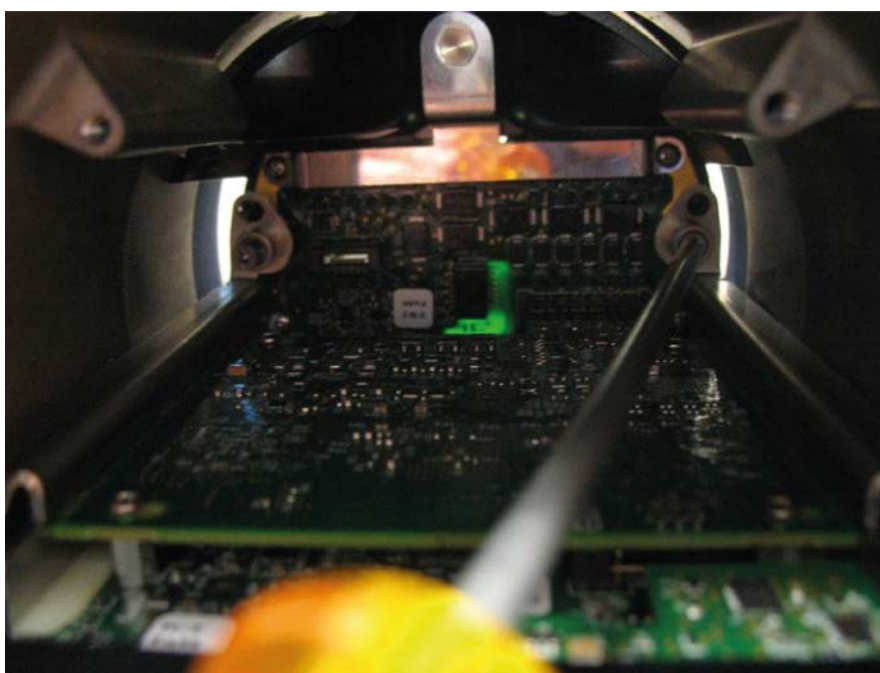
9. If the battery pack enclosure holds an internal battery, disconnect the battery connector.



10. Set the battery pack enclosure/HMI module assembly.
11. Look into the housing from the front. Two captive fastening screws on the inside of the housing hold the termination board in place.



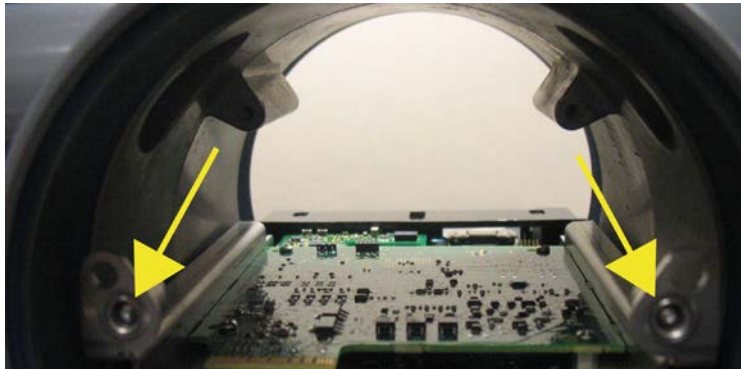
12. With a #2 Phillips-head screwdriver loosen the two captive fastening screws.



13. Now grasp the termination board bezel from the back of the unit and pull out the termination board assembly.



14. You should be able to see through the housing from back to front and see the opposite end of the captive fastening screws that you saw in Steps 11 and 12.



15. Take the new (**replacement**) termination board (399185-01-1 or 400216010-KIT) and align it with the captive fastening screw holes and press it into the back of the housing onto the captive fastening screws.



16. Tighten the screws that you loosened in Step 12. Torque screws to 6 in-lbs (0.7 N-m).
17. Take the battery pack enclosure/HMI module assembly you removed in Step 8. Being careful to keep the battery wire and its connector free, carefully slide the assembly into the front of the housing so that the HMI module mates with the green and yellow connector from the CPU module. Tighten the screws to hold the assembly in place. Torque screws to 6 in-lbs (0.7 N-m). If battery-powered, re-connect the battery.
18. You can now proceed to rewire all connections (I/O, communications, grounding) to the flow computer. Please refer to the instruction manual for wiring installation instructions.

Removing/Replacing Pluggable Terminal Blocks

UL Listed Terminal Block Field Installed Accessory Kit for Use in Class I, Division 1, Groups C, D; Class I, Division 2, Groups A, B, C, D

- Flow Computer 6-connector pluggable terminal block Field Installed Accessory Kit Part No. 395791014-KIT for use with UL Listed Model Series FB1100.
- Flow Computer 8-connector pluggable terminal block Field Installed Accessory Kit Part No. 395803000-KIT for use with UL Listed Model Series FB1200.

If one or more terminal blocks becomes damaged, you may need to replace them.

- For 6-connector terminal blocks you need a 1/8 inch flat head screwdriver.



- For 8-connector (or 9-connector) terminal blocks you need a 3/32 inch flat head screwdriver.

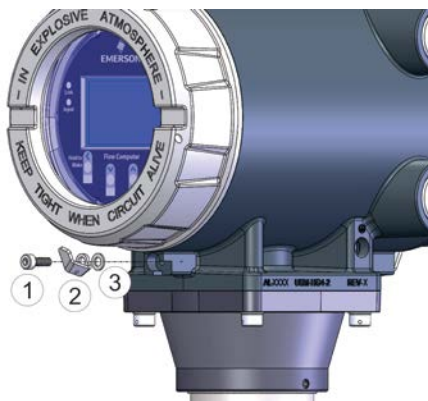


Tip

If you have more than one terminal block to replace, we recommend you replace one terminal block at a time to avoid confusion.

1. Remove the rear end cap by first removing the retaining clamp on the end cap (if present) using a 3 mm hexagonal wrench.

Components of Retaining Clamp Assembly (front clamp shown) Rear End Cap



- 1 Screw
- 2 Retaining Clamp
- 3 Washer

2. Grasp the end cap.

Rear End Cap



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

FB1100/FB1200 Flow Computer Termination Board Field Replacement Guide

D301820X012

November 2020

Note

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

Rear End Cap Removal

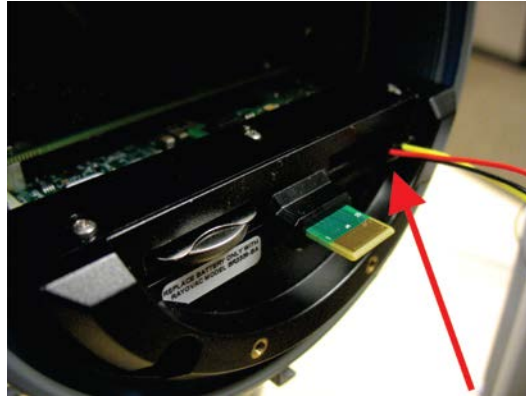


4. Remove power at terminal block TB1.
 5. If your unit doesn't include an internal battery, skip to Step 8. If the unit has an internal battery which is connected, use a #1 Phillips-head screwdriver to loosen the four captive fastening screws on the HMI module.
-

Captive Fastening Screws



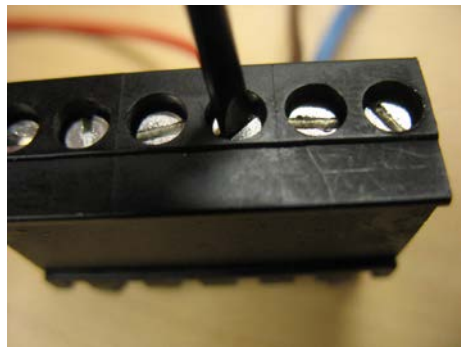
6. Grasp the HMI module and remove it by gently pulling it straight out.
7. If battery-powered, disconnect the internal battery.



8. For the terminal block you want to replace, make sure you note which wire goes to which terminal. If they aren't labeled, you should label them, or take a digital photo so you know which wire goes to which connector of the terminal block.
9. Place your fingers on each of the short sides of the terminal block and gently rock it back and forth so it pops out of the termination board.



10. Use a flat head screwdriver to loosen the screw for each wire coming into the old terminal block. Slide the same wire into the identical position on the new (**replacement**) terminal block and tighten the screw to hold it in place. Repeat for each wire.



11. Repeat steps 8 through 10 for each terminal block you want to replace.
12. If you have an internal battery, you can re-connect it now, and put the HMI module back on. To replace the HMI module, line up the printed circuit board (PCB) with the slot on the back of the replacement module and gently press the new HMI module on. Tighten the four captive fastening screws with a torque of 6 in-lbs (0.7 N-m).

FB1100/FB1200 Flow Computer Termination Board Field Replacement Guide

D301820X012

November 2020

13. You can now plug your new terminal blocks back into the termination board, leaving TB1 last for when you want to restore power.
 14. Carefully align the end cap threads with the threads of the enclosure and replace the rear 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 cover to act as a pry bar.

15. 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).

FB1100/FB1200 Flow Computer Termination Board Replacement Guide

D301820X012

November 2020

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

© 2018-2020 Remote Automation Solutions, a business unit of Emerson Automation Solutions. All rights reserved.

This publication is for informational purposes only. While every effort has been made to ensure accuracy, this publication shall not be read to include any warranty or guarantee, express or implied, including as regards the products or services described or their use or applicability. Remote Automation Solutions (RAS) reserves the right to modify or improve the designs or specifications of its products at any time without notice. All sales are governed by RAS terms and conditions which are available upon request. RAS accepts no responsibility for proper selection, use or maintenance of any product, which remains solely with the purchaser and/or end-user.