

# FB1100/FB1200 Flow Computer Sensor Assembly Field Replacement Guide



For Part Numbers (Kits):

See tables on pages iii through v for part/kit numbers

## 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](mailto: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**.

**Table 1. FB1100 Sensor Assembly Part Numbers (Use Selection Column to Generate UL-listed Kit Number)**

| <b>Integral Sensor</b>                                                                                                                                                                                                                                                                                                                                                                          |                                                                                | <b>Selection</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------|
| <b>Differential Pressure Range &amp; Accuracy</b>                                                                                                                                                                                                                                                                                                                                               | <b>Approvals</b>                                                               |                  |
| 25 Inches H <sub>2</sub> O (62.3 mbar) DP, 0.1% Accuracy<br><b>Notes:</b><br><ul style="list-style-type: none"> <li>0.1% Accuracy is not available on Traditional Flange.</li> <li>25" DP option is available only with static pressure options G4 or A4 and the maximum pressure is limited to 2000 psi.</li> <li>Available only with stainless steel sensor &amp; coplanar flange.</li> </ul> | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B221             |
| 250 Inches H <sub>2</sub> O (623 mbar) DP, 0.1% Accuracy<br><b>Note:</b> 0.1% Accuracy is not available on Traditional Flange.                                                                                                                                                                                                                                                                  | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B222             |
| 250 Inches H <sub>2</sub> O (623 mbar) DP, 0.075% Accuracy                                                                                                                                                                                                                                                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B122             |
| 1000 Inches H <sub>2</sub> O (2.5 bar) DP, 0.1% Accuracy<br><b>Notes:</b><br><ul style="list-style-type: none"> <li>0.1% Accuracy is not available on Traditional Flange.</li> <li>1000" DP range with 0.1% accuracy available only with Stainless steel sensor and coplanar flange.</li> <li>1000" DP range not available with 300 psi static pressure.</li> </ul>                             | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B223             |
| 1000 Inches H <sub>2</sub> O (2.5 bar) DP, 0.075% Accuracy<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                           | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B123             |
| <b>Static Pressure Range - for use with Multivariable Sensor (B22* or B12* above)</b>                                                                                                                                                                                                                                                                                                           |                                                                                |                  |
| MV 300 psi gauge (20.7 barg)<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                                                         | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G6               |
| MV 300 psi absolute (20.7 bara)<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A6               |
| MV 1500 psi gauge (103.4 barg)                                                                                                                                                                                                                                                                                                                                                                  | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G7               |
| MV 1500 psi absolute (103.4 bara)                                                                                                                                                                                                                                                                                                                                                               | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A7               |
| MV 3600 psi gauge (250 barg)<br><b>Note:</b> When used with 25" DP option, maximum working pressure is 2000 psi/137.9 Bar.                                                                                                                                                                                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G4               |
| MV 3600 psi absolute (250 bara)<br><b>Note:</b> When used with 25" DP option, maximum working pressure is 2000 psi/137.9 Bar.                                                                                                                                                                                                                                                                   | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A4               |
| <b>Sensor Material &amp; Flange Type</b>                                                                                                                                                                                                                                                                                                                                                        |                                                                                |                  |
| Stainless Steel Sensor and Coplanar Flange                                                                                                                                                                                                                                                                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 2E12             |
| Hastelloy Diaphragm and Hastelloy Coplanar Flange<br><b>Note:</b> Not available with a 1000" 0.1% accuracy sensor or a 25" sensor.                                                                                                                                                                                                                                                              | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 3E13             |
| Stainless Steel Sensor and Traditional Flange<br><b>Note:</b> 0.1% Accuracy is not available on Traditional Flange.                                                                                                                                                                                                                                                                             | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 2F12             |
| <b>Sensor Material Certificates</b>                                                                                                                                                                                                                                                                                                                                                             |                                                                                |                  |
| Not Required                                                                                                                                                                                                                                                                                                                                                                                    | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q0R              |
| 3.1 B Traceability certs to EN 10205                                                                                                                                                                                                                                                                                                                                                            | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q8R              |
| NACE MRO 175/ISO 15156 requires Hastelloy Diaphragm Option<br><b>Note:</b> Available only with 3E13.                                                                                                                                                                                                                                                                                            | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q15R             |
| NACE MRO 103 - requires Hastelloy Diaphragm Option<br><b>Note:</b> Available only with 3E13.                                                                                                                                                                                                                                                                                                    | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q25R             |

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| Integral Sensor         |                                                                                | Selection |
|-------------------------|--------------------------------------------------------------------------------|-----------|
| Calibration Certificate |                                                                                |           |
| Not Required            | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | M0        |
| Required                | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | M4        |

**Example Model Number:** *B222G72E12Q0RM4* = 250 Inches H2O (623 mbar) DP, 0.1% Accuracy, MV 1500 psi gauge, Stainless Steel Sensor and Coplanar Flange, No Sensor Material Certificates Required, and Calibration Certificate Required.

**Table 2. FB1200 Sensor Assembly Part Numbers (Use Selection Column to Generate UL-listed Kit Number)**

| Integral Sensor                                                                                                                                                                                                                                                                                                                                                                    |                                                                                | Selection |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------|
| Differential Pressure Range & Accuracy                                                                                                                                                                                                                                                                                                                                             | Approvals                                                                      |           |
| 25 Inches H2O (62.3 mbar) DP, 0.1% Accuracy<br><b>Notes:</b><br><ul style="list-style-type: none"> <li>0.1% Accuracy is not available on Traditional Flange.</li> <li>25" DP option is available only with static pressure options G4 or A4 and the maximum pressure is limited to 2000 psi.</li> <li>Available only with stainless steel sensor &amp; coplanar flange.</li> </ul> | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B221      |
| 250 Inches H2O (623 mbar) DP, 0.1% Accuracy<br><b>Note:</b> 0.1% Accuracy is not available on Traditional Flange.                                                                                                                                                                                                                                                                  | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B222      |
| 250 Inches H2O (623 mbar) DP, 0.075% Accuracy                                                                                                                                                                                                                                                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B122      |
| 1000 Inches H2O (2.5 bar) DP, 0.1% Accuracy<br><b>Notes:</b><br><ul style="list-style-type: none"> <li>0.1% Accuracy is not available on Traditional Flange.</li> <li>1000" DP range with 0.1% accuracy available only with Stainless steel sensor and coplanar flange.</li> <li>1000" DP range not available with 300 psi static pressure.</li> </ul>                             | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B223      |
| 1000 Inches H2O (2.5 bar) DP, 0.075% Accuracy<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                           | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B123      |
| No Differential Pressure Required, Static Pressure only<br>accuracy 0.1%<br><b>Note:</b> Available only with inline sensor option (2K11)                                                                                                                                                                                                                                           | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B2        |
| No Differential Pressure Required, Static Pressure only,<br>accuracy 0.075%<br><b>Note:</b> Available only with inline sensor option (2K11)                                                                                                                                                                                                                                        | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | B1        |
| Static Pressure Range - for use with Multivariable Sensor (B22* or B12* above)                                                                                                                                                                                                                                                                                                     |                                                                                |           |
| MV 300 psi gauge (20.7 barg)<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                                            | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G6        |
| MV 300 psi absolute (20.7 bara)<br><b>Note:</b> 1000" DP range not available with 300 psi static pressure.                                                                                                                                                                                                                                                                         | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A6        |
| MV 1500 psi gauge (103.4 barg)                                                                                                                                                                                                                                                                                                                                                     | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G7        |

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| Integral Sensor                                                                                                                    |                                                                                | Selection |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------|
| MV 1500 psi absolute (103.4 bara)                                                                                                  | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A7        |
| MV 3600 psi gauge (250 barg)<br><b>Note:</b> When used with 25" DP option, maximum working pressure is 2000 psi/137.9 Bar.         | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G4        |
| MV 3600 psi absolute (250 bara)<br><b>Note:</b> When used with 25" DP option, maximum working pressure is 2000 psi/137.9 Bar.      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A4        |
| <b>Static Pressure Range - for use only with Static Pressure Sensor (B1 or B2 above)</b>                                           |                                                                                |           |
| SP 150 psi gauge (10.34 barg)                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G2        |
| SP 150 psi absolute (10.34 bara)                                                                                                   | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A2        |
| SP 800 psi gauge (55.15 barg)                                                                                                      | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G3        |
| SP 800 psi absolute (55.15 bara)                                                                                                   | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A3        |
| SP 4000 psi gauge (275.79 barg)                                                                                                    | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | G4        |
| SP 4000 psi absolute (275.79 bara)                                                                                                 | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | A4        |
| <b>Sensor Material &amp; Flange Type</b>                                                                                           |                                                                                |           |
| Stainless Steel Sensor and Coplanar Flange                                                                                         | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 2E12      |
| Hastelloy Diaphragm and Hastelloy Coplanar Flange<br><b>Note:</b> Not available with a 1000" 0.1% accuracy sensor or a 25" sensor. | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 3E13      |
| Stainless Steel Sensor and Traditional Flange<br><b>Note:</b> 0.1% Accuracy is not available on Traditional Flange.                | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 2F12      |
| Stainless Steel inline connection 1/2" 14 NPT Female - use with Static Pressure only option B1 or B2 above                         | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | 2K11      |
| <b>Sensor Material Certificates</b>                                                                                                |                                                                                |           |
| Not Required                                                                                                                       | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q0R       |
| 3.1 B Traceability certs to EN 10205                                                                                               | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q8R       |
| NACE MRO 175/ISO 15156 requires Hastelloy Diaphragm Option<br><b>Note:</b> Available only with 3E13.                               | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q15R      |
| NACE MRO 103 - requires Hastelloy Diaphragm Option<br><b>Note:</b> Available only with 3E13.                                       | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | Q25R      |
| <b>Calibration Certificate</b>                                                                                                     |                                                                                |           |
| Not Required                                                                                                                       | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | M0        |
| Required                                                                                                                           | Class 1 Div 2 UL, IEC Ex N, ATEX Ex N<br>Class 1 Div 1 UL, IEC Ex d, ATEX Ex d | M4        |

**Example Model Number:** B222G72E12Q0RM4 - 250 Inches H2O (623 mbar) DP, 0.1% Accuracy, MV 1500 psi gauge, Stainless Steel Sensor and Coplanar Flange, No Sensor Material Certificates Required, and Calibration Certificate Required.

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# Removing/Replacing Sensor Assemblies

## DANGER

EXPLOSION HAZARD: To replace the sensor you must completely remove the flow computer from its installation location and move it to a non-hazardous area. Ensure the area is non-hazardous before disconnecting the flow computer.

---

## 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 boards inside, 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 sensor assembly.

You must then reinstall all boards and modules 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.

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### Field Replacement Kit Part Numbers

Refer to [Table 1](#) (for FB1100) or [Table 2](#) (for FB1200) on pages [iii](#) through [v](#) to determine the correct field replacement kit part number.

### Required Tools

- #1 Phillips-head screwdriver
- #2 Phillips-head screwdriver
- 3/32-inch flat head screwdriver (for 3.81 mm pitch terminal block connections on FB1200 Flow Computer with additional I/O).
- 1/8-inch flat-head screwdriver (for 5.08 mm pitch terminal block connections)
- Hexagonal torque wrenches. Ranges must include 4 to 6 in-lbs (0.5 to 0.7 N-m), and 8 to 12 in-lbs (0.9 to 1.4 N-m).
- 2 mm hex wrench (for manipulating rotation set screws)
- 3 mm hex wrench (for end cap clamps)

### Ambient Temperature Range

May be used up to a maximum ambient temperature of 80C and a minimum ambient temperature of -40C; see end product data plate for ambient temperature.

### Electrical Ratings

- **Input Voltage:** 5.7-30Vdc, 10 Watts Max



### Important

Only use accessories supplied with the flow computer or sold by Emerson as spare parts for this flow computer. If you substitute a part you obtain elsewhere **you will void your certification unless it is the identical part from the same manufacturer** as that supplied with the flow computer from Emerson.

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### WARNING

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

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### WARNING

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

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### 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.

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### DANGER

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

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## Removing/Replacing the Sensor Assembly

UL Listed Sensory Assembly Field Installed Accessory Kits for Use in Class I, Division 1, Groups C and D, Class I, Division 2, Groups A, B, C, D. See Table 1 (for FB1100) or Table 2 (for FB1200) to determine correct UL Listed kit numbers.

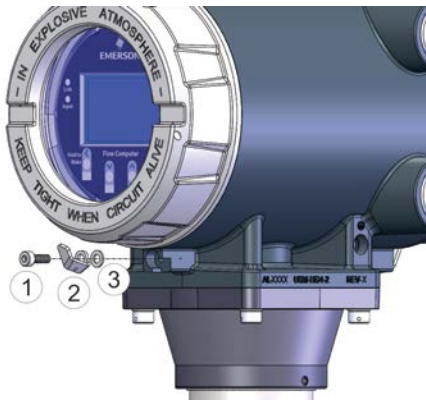
### Note

The removal/replacement procedure is the same for all sensor assemblies listed in this guide.

To replace the sensor assembly, you first need to remove the battery enclosure/HMI module assembly, the I/O termination board, and the CPU module.

1. Remove the front and rear end caps. Remove the retaining clamps on the end caps (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



### Rear End Cap



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

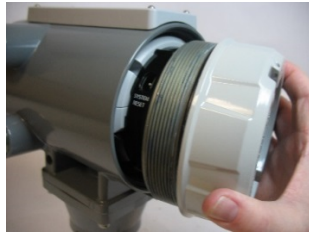
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### Note

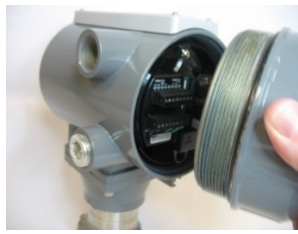
If you need more leverage, place a long screwdriver or other appropriate tool across the two notches in the end cap to act as a pry bar.

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#### Front End Cap Removal



#### Rear End Cap Removal



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 recessed captive-fastening screws on the battery pack enclosure.



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.



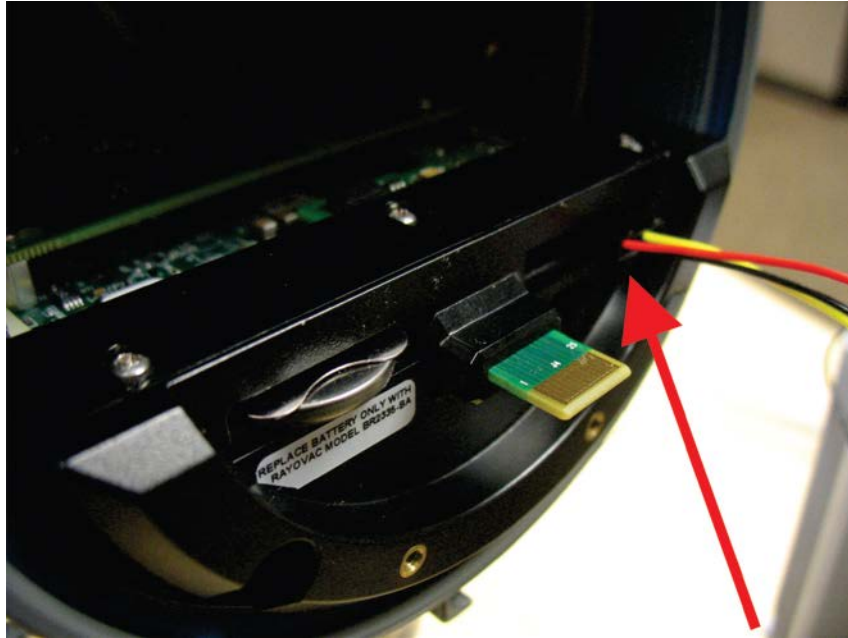
9. If the battery pack enclosure holds an internal battery, disconnect the battery connector.

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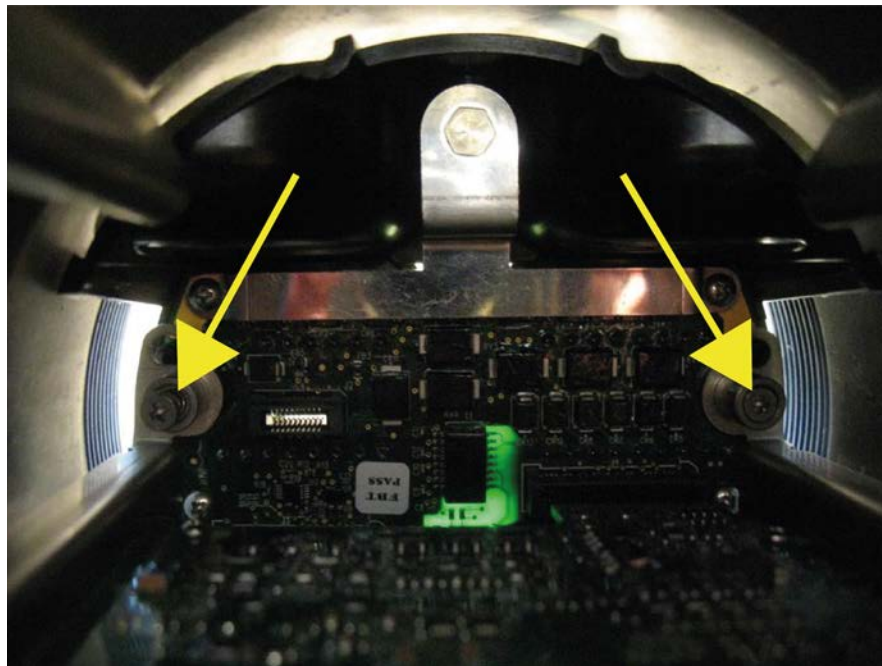
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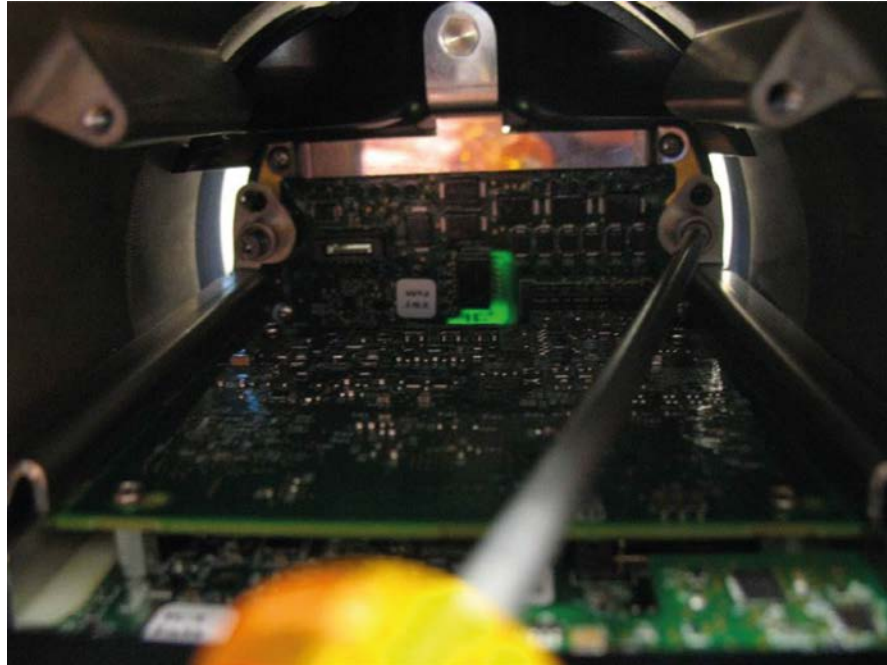


10. Set the battery pack enclosure/HMI module assembly aside. You will need it later.
11. Look into the housing from the front. Two captive fastening screws on the inside of the housing hold the termination board in place.



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.



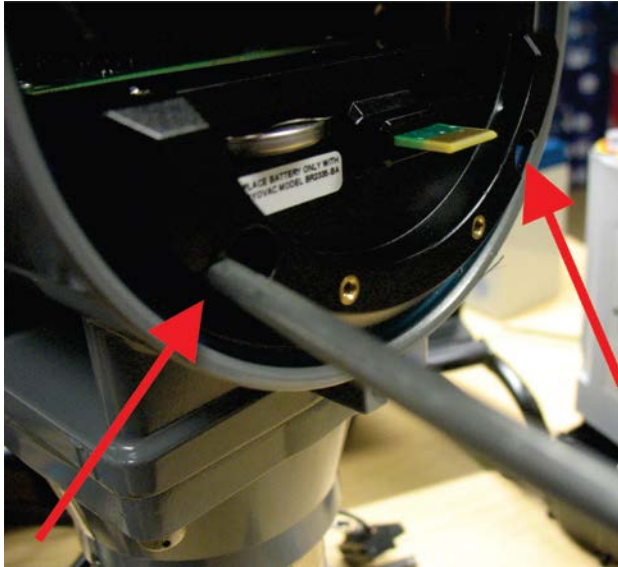
14. With a #2 Phillips-head screwdriver, loosen the two captive fastening screws in the plastic bezel that hold the CPU module in place. (To preserve data, **do not** remove the SRAM backup battery.)

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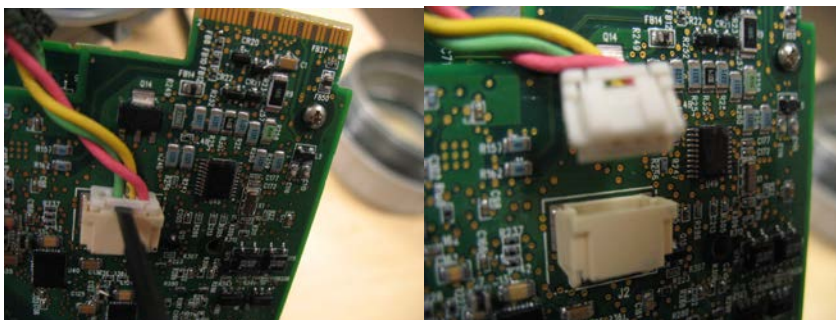
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15. Grasp the plastic bezel and gently pull the CPU module out of the housing.



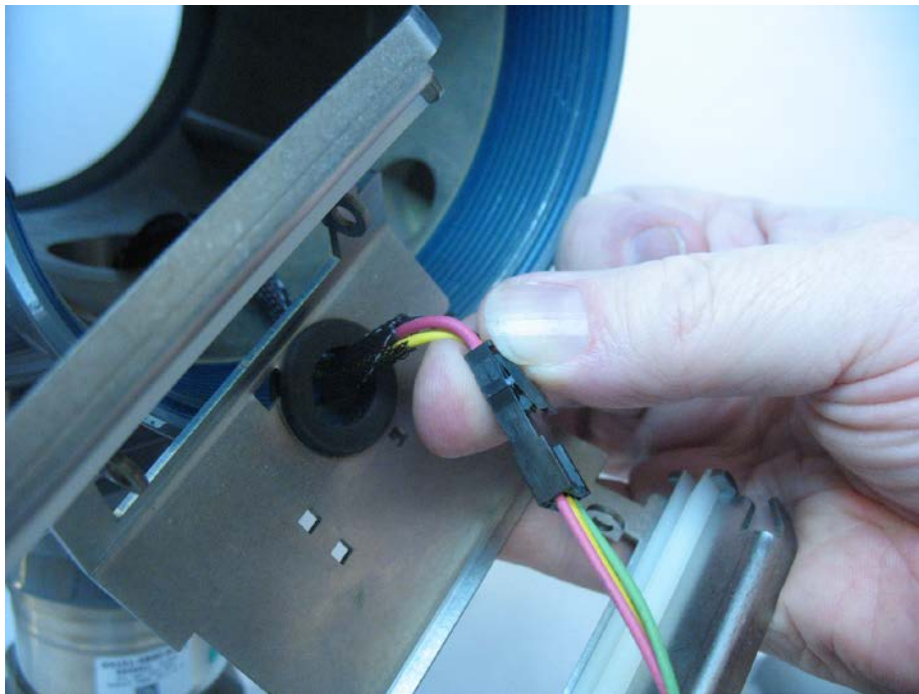
16. Use a 3/32-inch flathead screwdriver to separate the internal wire connector plug from the plug on the bottom of the CPU module.



17. Looking into the **back end** of the enclosure, use a #2 Phillips-head screwdriver to remove the screws that hold the card cage to the enclosure.



18. Looking into the **front end** of the enclosure, pull the card cage out of the enclosure, then disconnect the upper part of the sensor cable and push the lower part through the grommet so you can completely remove the card cage. Set the upper part of the sensor cable aside; you will need it later.



19. Use a 2 mm hex wrench to loosen the two rotation set screws on the side of the enclosure.



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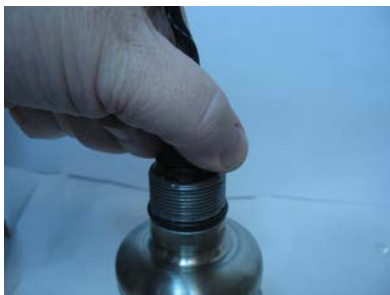
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20. Grasp the sensor with one hand and unscrew the flow computer housing with your other hand until you can lift it off. Then set the enclosure aside.



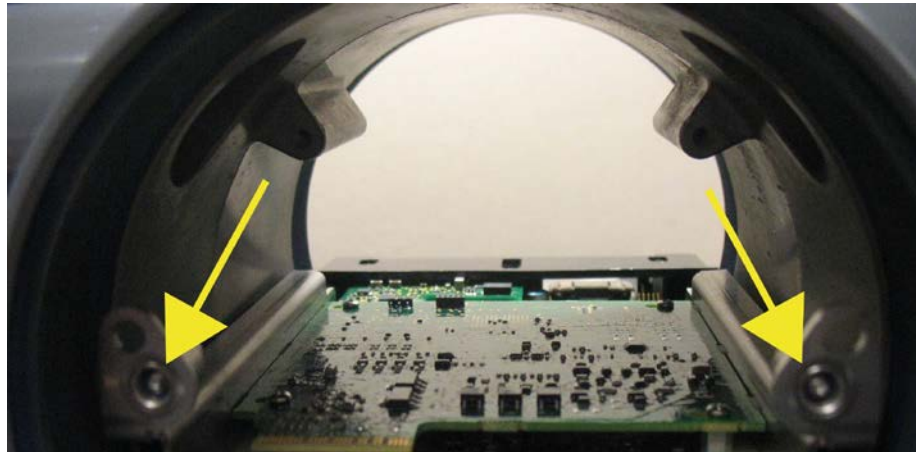
21. Grasp the sensor cable in detach it from the old sensor assembly.



22. Press the sensor cable onto the connector of the new (replacement) sensor assembly.



23. Lower the flow computer housing down onto the new sensor assembly making sure the sensor cable fits through the hole in the bottom of the housing. Now rotate the housing onto the sensor assembly until it is tight and positioned correctly for its installation site.
24. Tighten the rotation set screws. Torque screws to 4 to 6 in-lbs (0.5 to 0.7 N m).
25. Push the sensor cable through the grommet in the card cage.
26. Slide the card cage into its guides and line it up with the matching screw holes of the enclosure, use a #2 Phillips-head screwdriver and screws to attach the card cage securely to the enclosure. Torque screws to 8 to 12 in-lbs (0.9 to 1.4 N m).
27. Re-connect the loose section of the sensor cable to the bottom section of the sensor cable. Snap the connector plug on the upper part of the sensor cable onto the mating plug on the bottom of the CPU module and gently slide the new CPU module into the housing, being careful not to pinch wires. Press firmly into place.
28. Use a #2 Phillips-head screwdriver to tighten the two captive fastening screws in the plastic bezel that hold the CPU module in place. Torque screws to 4 to 6 in-lbs (0.5 to 0.7 N m).
29. Now look at the housing from back to front so you can see the captive fastening screws.



30. Take the termination board, align it with the captive fastening screw holes, and press it into the back of the housing onto the captive fastening screws.

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31. Tighten the screws that you loosened in step 12. Torque screws to 4 to 6 in-lbs (0.5 to 0.7 N m).
32. 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 you loosened in step 6 to hold the assembly in place. Torque screws to 4 to 6 in-lbs (0.5 to 0.7 N m).
33. Tighten the bottom screws of the HMI module you loosened in step 7 with a torque of 4 to 6 in-lbs (0.5 to 0.7 N m).
34. 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.



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