

Technical bulletin 197 μFLO^{G4} and XFC^{G4} 6200/6201EX system reset and RTD input performance deviation

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Proprietary information

1. Introduction

1.1. μ FLO^{G4} and XFC^{G4}6200/6201EX

Some number of the released μ FLO^{G4} and XFC^{G4}6200/6201EX units may exceed the published temperature accuracy specifications over the full operating temperature range. Approximately one fourth of shipped μ FLO^{G4} units and one half of XFC^{G4}6200/6201EX units will register flowing temperature within our published specification: $\pm 0.35^{\circ}\text{F}$ over a normal operating range (with field bias applied), excluding the uncertainty of the RTD element itself.

Abnormal flow computer and RTU processor system resets have been detected, verified, and corrected. Processor resets have been reported on some G4 products manufactured from March 2012 through January 2013. A hardware modification to the 32MB processor card, also referred to as "engine card", has been implemented as well as software modifications that correct the system resets. Upgraded 32MB engine cards with pre-loaded software are available for the μ FLO^{G4} and XFC^{G4}6200/6201EX product lines.

2. Description

The μ FLO^{G4} and XFC^{G4}6200/6201EX units are designed to utilize a small electronic board (about the size of a stamp) that is an interface between the main electronics board and the internal pressure sensors and RTD input. Extensive testing has confirmed that there are two issues that adversely affect the RTD (temperature) measurement.

First, as shipped from the factory, a nominal ~ 2 degrees F bias may be needed on existing μ FLO^{G4} units and ~ 0.5 degrees F on XFC^{G4}6200/6201EX units when first commissioning the units. We recommend that, upon installation, the temperature reading be verified against a reference temperature and the RTD bias be adjusted to agree with the reference temperature.

Second, performance outside our published specification of: $\pm 0.35^{\circ}\text{F}$ over a full operating range may be observed on some units and conditions. (Refer to Technical Bulletin 195 for additional information).

Both of these issues have been corrected on new factory units.

In March of 2012, the ABB Totalflow G4 products underwent an engine card upgrade. This small board contains the processor, data and program memory, as well as communications and electrical power management components for the G4 products. The upgrade was necessary to keep pace with memory component availability. At that time, we took the opportunity to double the engine card's memory capacity from 16MB to 32MB.

In the fall of 2012, information gained from Totalflow testing/monitoring and reports from customers indicated that some devices were experiencing system resets. As the ambient temperature decreased, an increase in system resets was occurring. In the past few months, a major effort involving manufacturing, sustainability and R&D has focused specifically on resolving this issue. We have determined that the voltage regulator required by the new 32MB memory component which was introduced in early 2012, has shown susceptibility to lower voltage outputs than may be required by the processor during transitions from warm to cold temperatures. As the ambient temperature decreases, the voltage also decreases to a level where system resets can occur. This is not occurring on all units. However, it is recommended that all 32 MB engine cards with part numbers in the ranges listed in the following section be replaced.

Software code has been thoroughly evaluated and significant number of changes made to increase the stability and reliability of this code.

3. Is your product impacted?

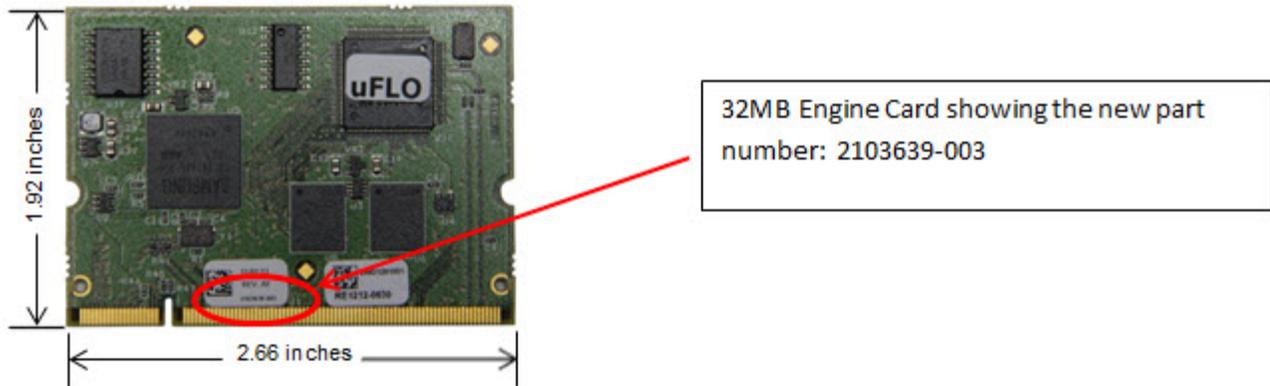
The affected hardware is the 32MB engine card used on G4 products prior to February 2013. (See Technical Bulletin 196 referring to XFC^{G4} and XRC^{G4} products).

Table 3-1. Impacted products

Product Model:	Engine Card:	Software:	Impacted versions:
μFLO ^{G4}	2103639-001 and 2103639-002	Operating System	2104464-005 or older
		FLASH (US)	2104497-011 or older
		FLASH (Selectable Units)	2104498-011 or older
XFC ^{G4} 6200/6201EX	2103639-001 and 2103639-002	Operating System	2104447-004 or older
		FLASH (US)	2104159-025 or older
		FLASH (Selectable Units)	2104158-025 or older

4. Resolution

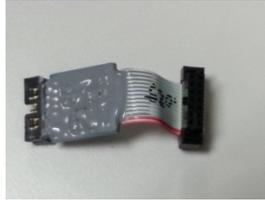
The voltage regulator was replaced on the 32MB engine card. The modified engine card has been thoroughly tested over temperature and does not exhibit the voltage drop at reduced operating temperatures that the previously used regulator exhibited. This voltage drop was the root cause of the 32MB engine card system resets that were randomly observed and has been resolved with the newly modified engine card. The new engine card may be identified by part number 2103639-003 or greater on the card itself. Each card will also have a sticker indicating the hardware platform that it is designed for. The new engine shown card below reflects that it is the new part and is for a μFLO^{G4}.



The software (operating system and flash) has also been updated and is installed on the appropriate engine cards. Users will be able to identify any units that may have this upgrade installed by referring to the attached sticker and verifying the part number to be 2103639-003 or greater.

Please note that this only affects engine cards with the base part number 2103639. If you have an engine card that is a different base part number, this Technical Bulletin does not apply.

A retrofit kit (part number 2104738-001) is available that will correct the RTD temperature deviation and should be installed at the time the new engine card is installed. The new engine card and RTD upgrade cable (also referred to as a smart cable) must both be installed to correct both issues described in this technical bulletin.



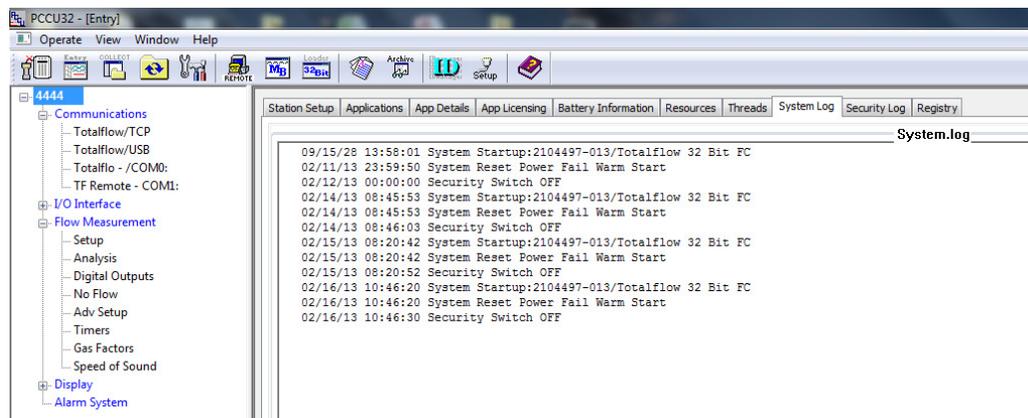
4.1. Upgrade procedure

These steps are not meant to replace your company requirements.

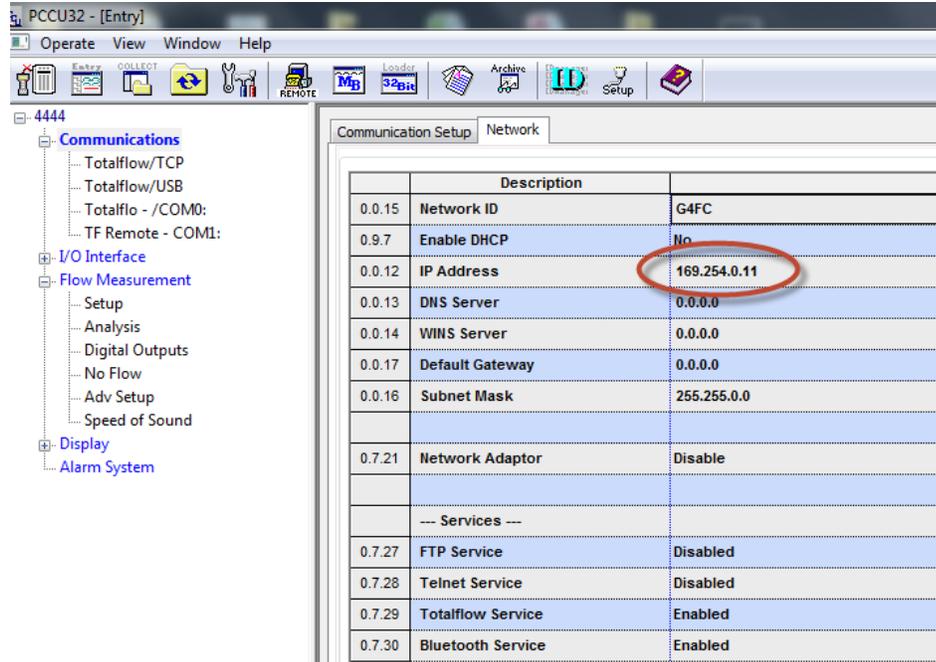
WARNING: The procedural steps in this Technical Bulletin DO NOT address cautionary steps to perform when equipment is installed in Classified Hazardous Locations. Refer to the user manual for the product for precautions prior to performing any of the steps of this procedure.

There are several options for how to update the meter once the new engine card is installed. We will cover 3 of the options in the steps below. In **Option A**, you will manually configure your meter as if it were new. In **Option B**, you will save the existing configuration and restore it in the new engine card – this will include only station files and calibration files. In **Option C**, you will pull the tfData and tfCold files from the current engine card and put them into the new engine card. This option restores ALL historical data and events. Most of the steps below can be followed for any option. The steps that are part of one of the options will be labeled as such.

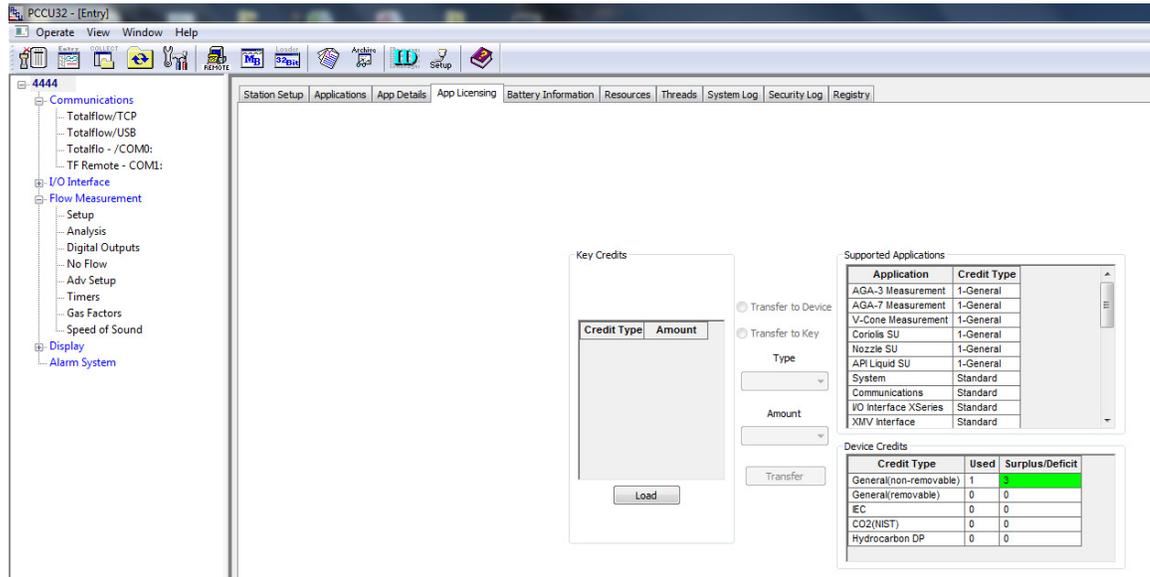
1. As founds (Perform calibration checks)
2. Remote and Local collects as needed, including a laptop file.
3. Check system log and tube events and resolve any issues (i.e. meter asleep, battery issues, etc.)



- If using Ethernet, record IP address.

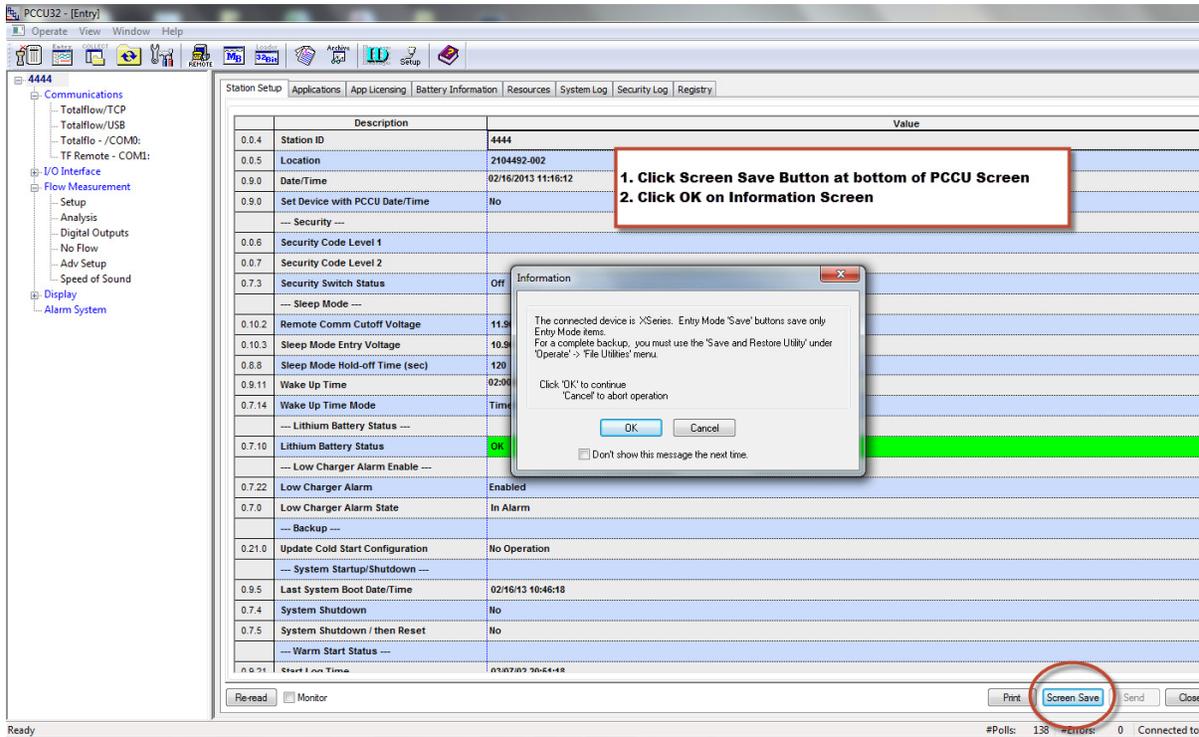


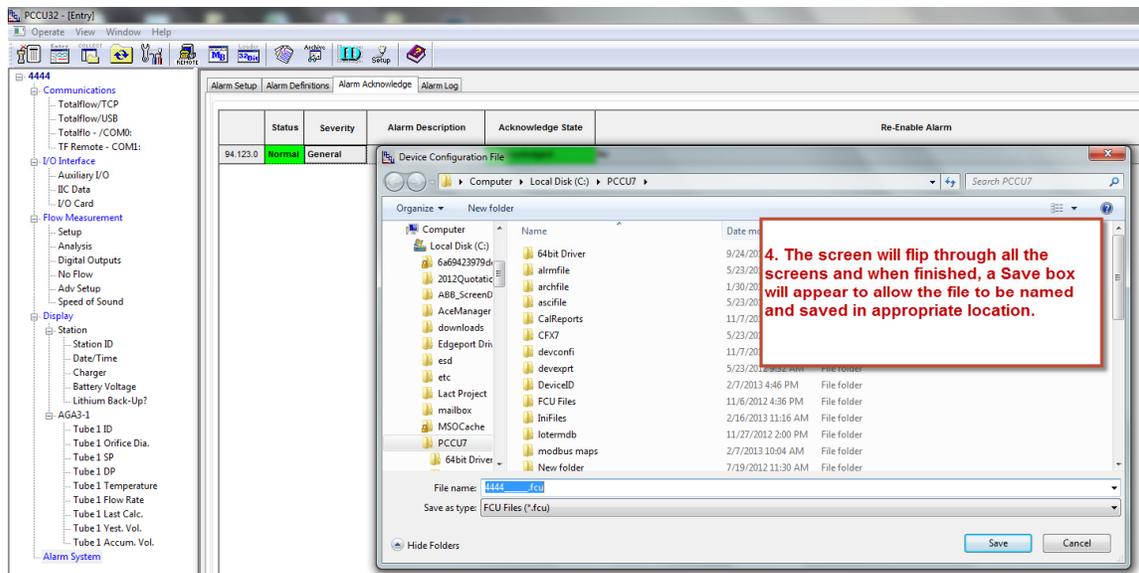
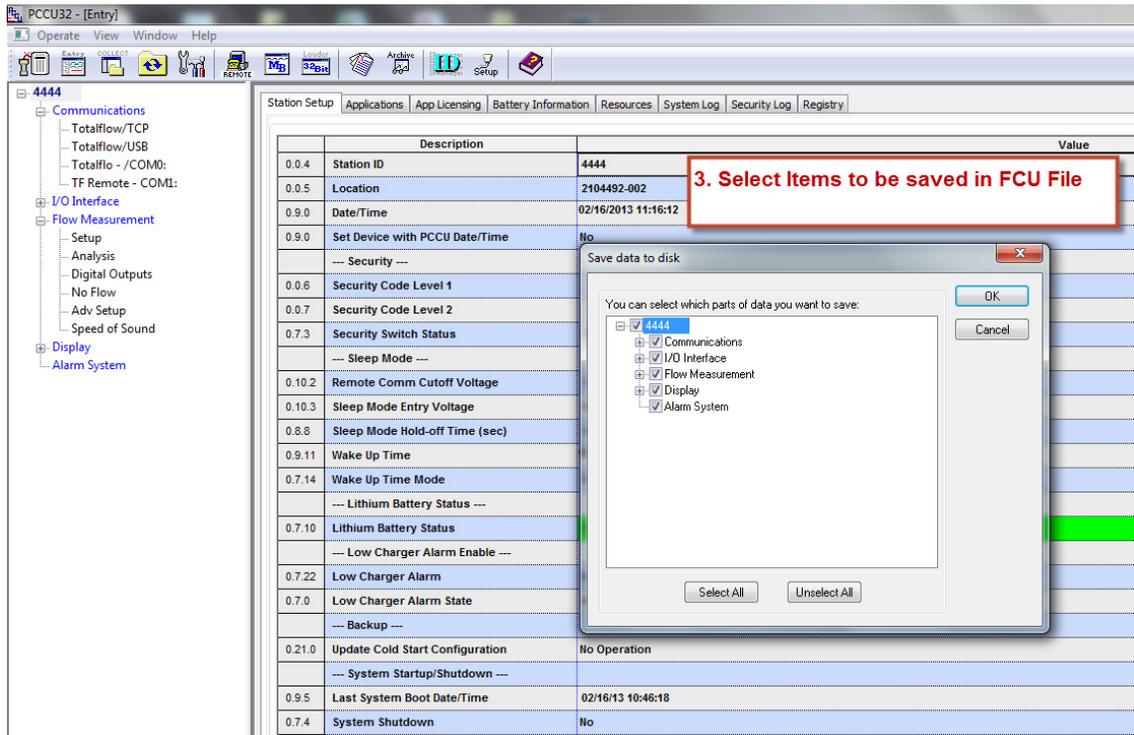
- Check app credits/licensing. A μ FLO^{G4} comes standard with 2 application credits, and the EX^{G4} comes standard with 4 application credits. If you have more credits than what are noted above, please contact Order Entry (800-442-3097, Option 1) and request a credit key be sent with those extra credits.



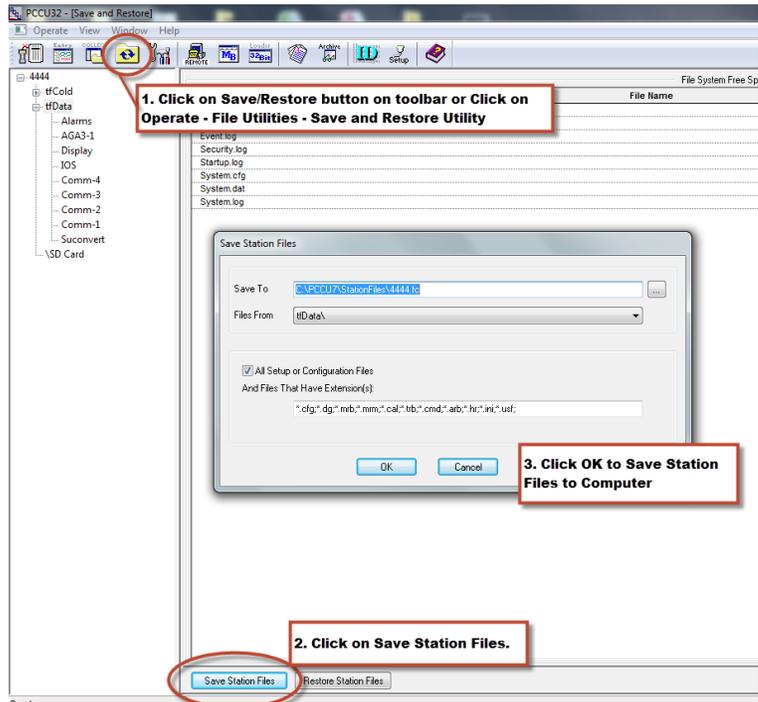
- Before proceeding, you will need to get the information out of the current engine card that will be put back into the new card. Follow the option below that corresponds to the method you will be using. (See page 4 for a description of the 3 options).

Option A – Collect the fcu file (or use another method to document the meter configuration, such as screenshots or manually recording the station set up). For best results, make sure you are in Expert view.



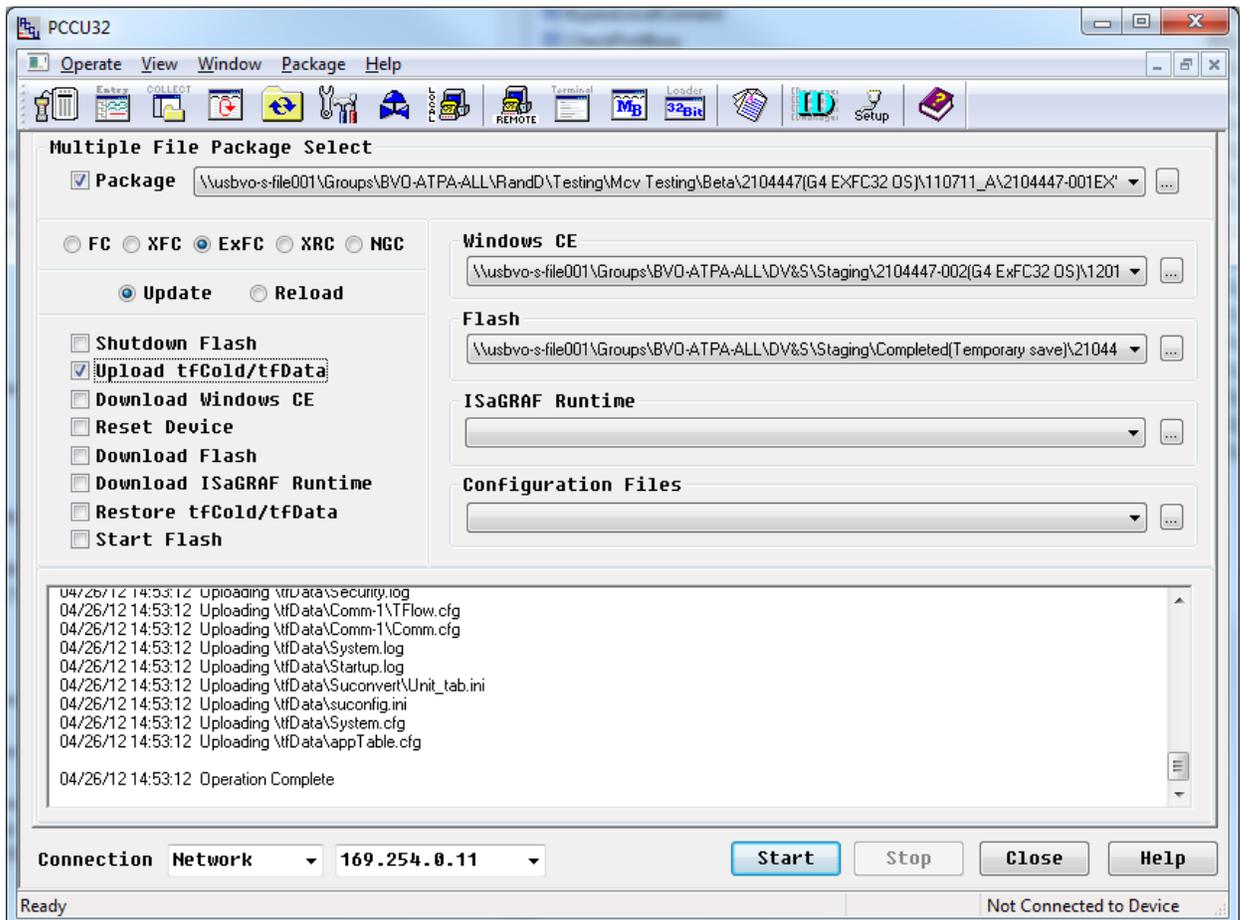


Option B – Save the existing configuration to be restored. Keep in mind this only includes station files and calibration files.

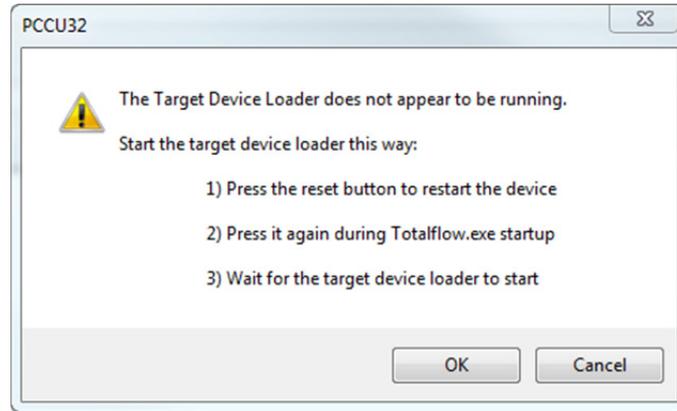


Option C – Upload tfData and tfCold. This will grab all station files, events, log records, log files, and historical data.

- a. Using PCCU's 32 Bit Loader screen, select the appropriate device type, select "Update" mode, check "Upload tfCold/tfData", and click Start.



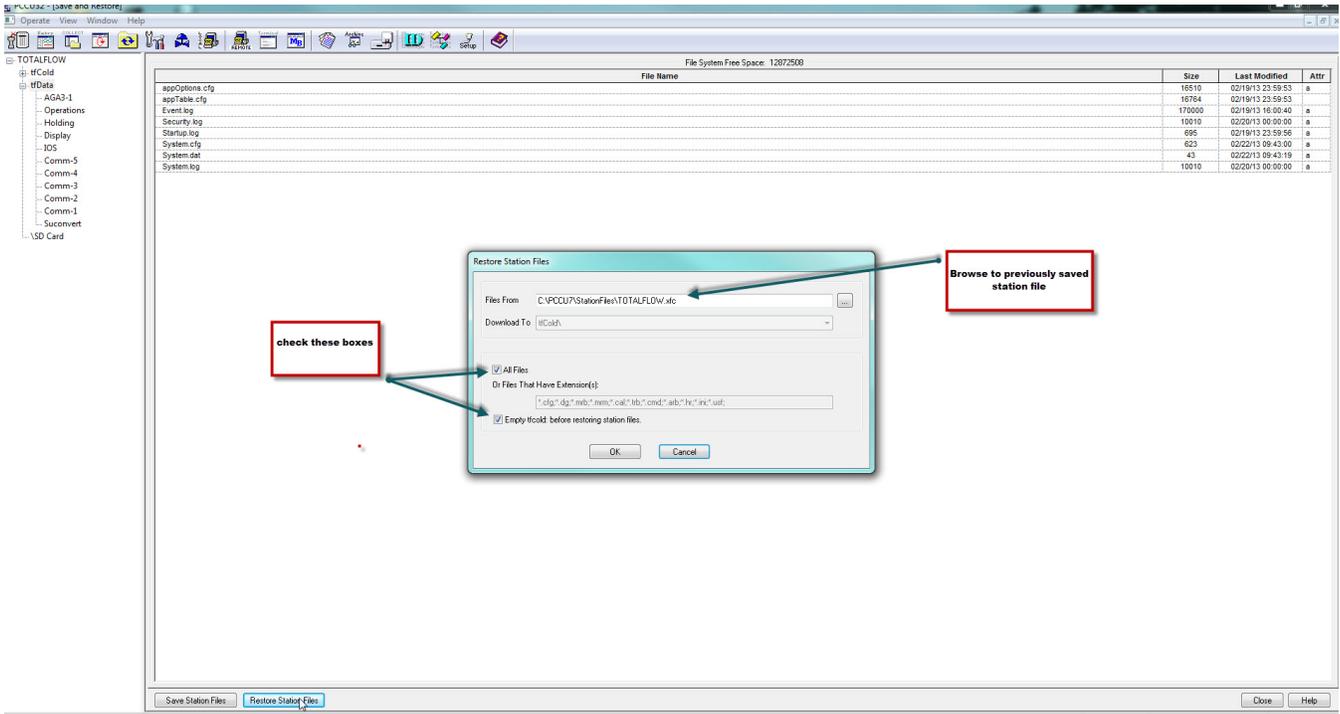
- b. When using Serial/USB, you will be required to put the meter into the “Device Loader” mode. Once you click on the Start button, a box will pop up in the middle of the screen stating that the Target Device Loader does not appear to be running.



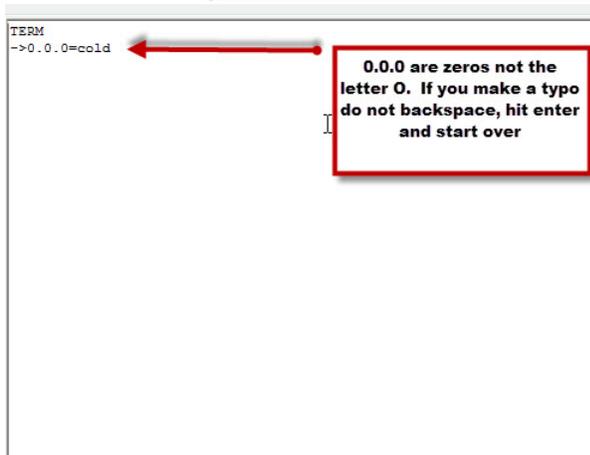
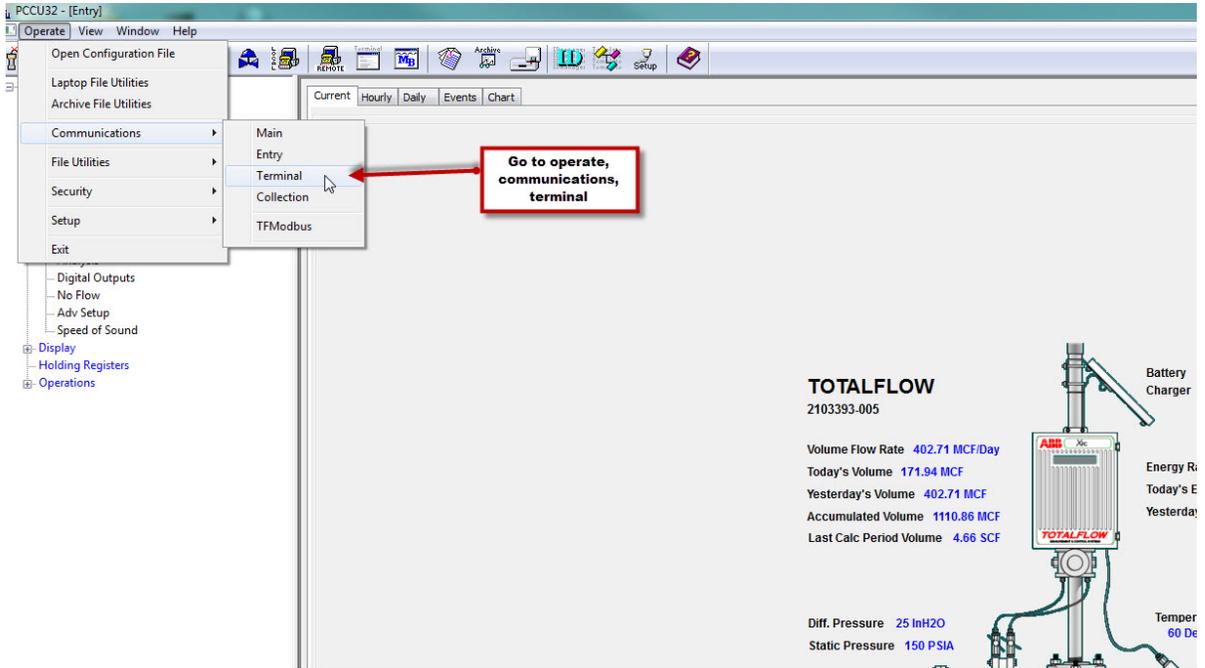
- c. Press the Reset button (left side of the board) in one time – watch the meter’s display until “Totalflow.exe Startup” scrolls, and then push the reset button again.
- d. Watch the display on the meter until “Device Loader” is displayed. Once this happens, click “OK” in the box above (PCCU). The download will begin and the progress will be shown at the bottom of the 32 Bit Loader screen and on the display on the meter. The data uploaded out of the meter will be in the PCCU7 directory under a folder called “Upload”.
7. Power down meter
 8. Unplug all peripheral devices (display, pccu connector, comms, phoenix connectors that are being used, etc.)
 9. Remove lithium battery or disable memory backup jumper
 10. If desired, install the new Smart Cable (μ FLO^{G4} and EX^{G4} only). Skip to section 4.2 for μ FLO^{G4} instructions or section 4.3 for EX^{G4} instructions.
 11. Remove the engine card.
 12. Insert new engine card.
 13. Reconnect all peripheral devices (display, PCCU connector, comms. phoenix connectors, etc. that are being used, etc.)
 14. Power device up and **wait for device to go thru boot sequence and start scrolling.**
 15. Reconnect lithium battery or enable memory backup jumper

16. At this point, you will reconfigure your meter using the option selected previously.

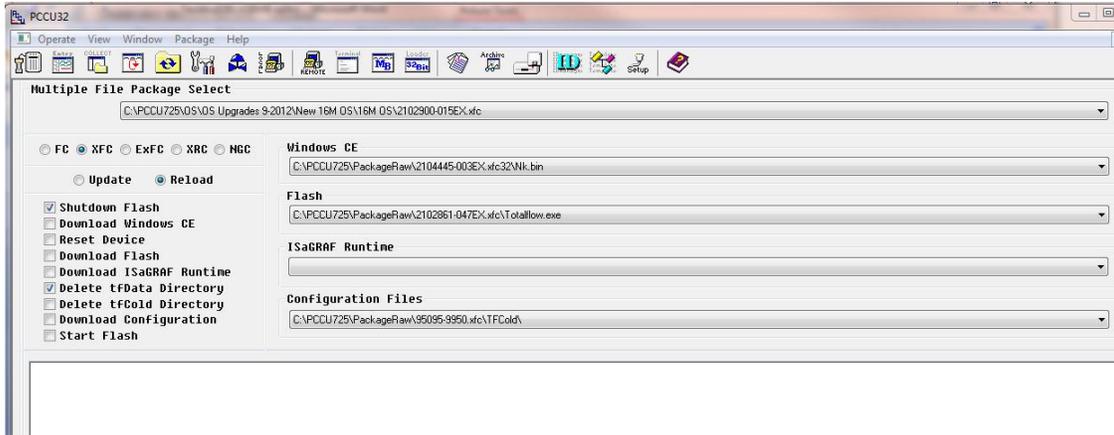
- a. **Option A** – Open the fcu file or other documentation that contains the meter information and configure your meter manually.



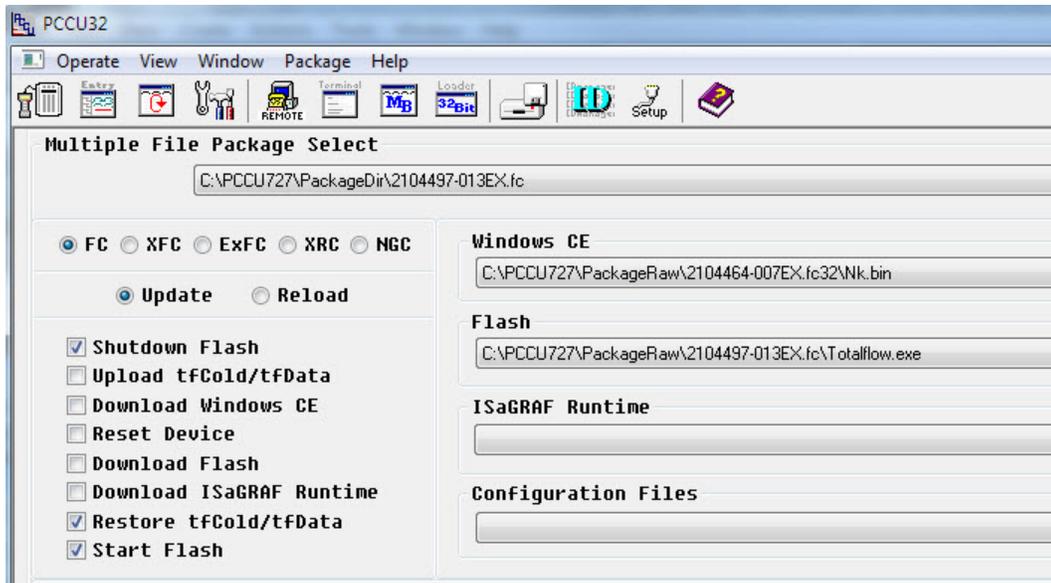
b. **Option B** – Restore station files.



- c. **Option C** – Restore all files.
 - i. Delete tfData Directory

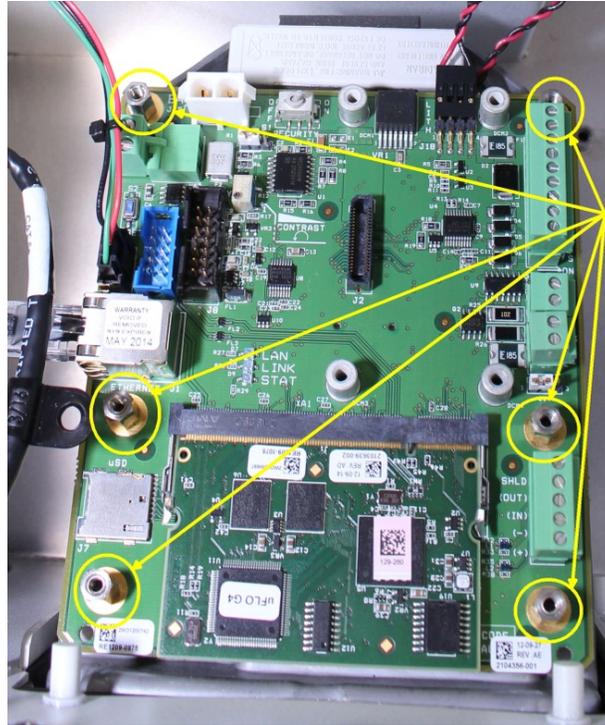


- ii. Restore tfCold

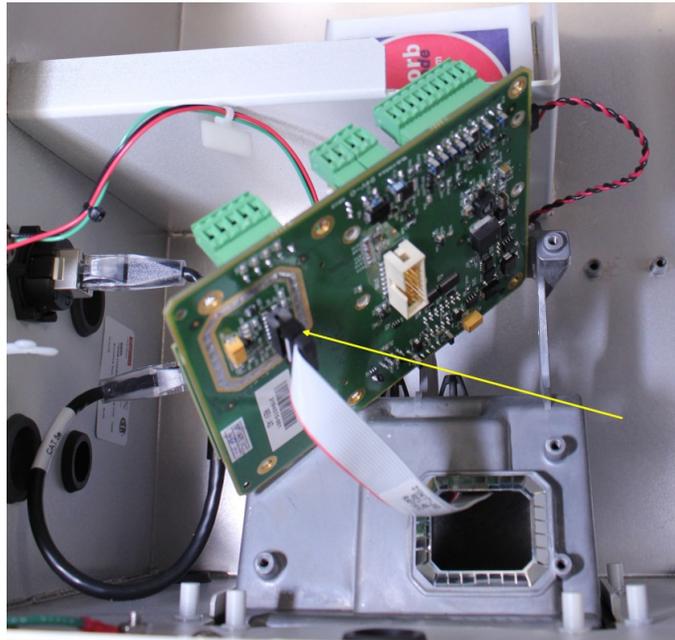


17. Replace IP if needed (see step 4 above)
18. Check App/License credits (see step 5 above)
19. Verify that the battery shows a voltage other than 0. If the battery voltage shows to be zero, power the meter down and reseal the engine card. Power it back up and re-verify battery voltage.
20. Verify functionality (DP, Static, Temp reading values). Recalibrate meter per your company procedure.
21. As lefts
22. Verify Calibrations on external devices (AI's, AO's, etc.)

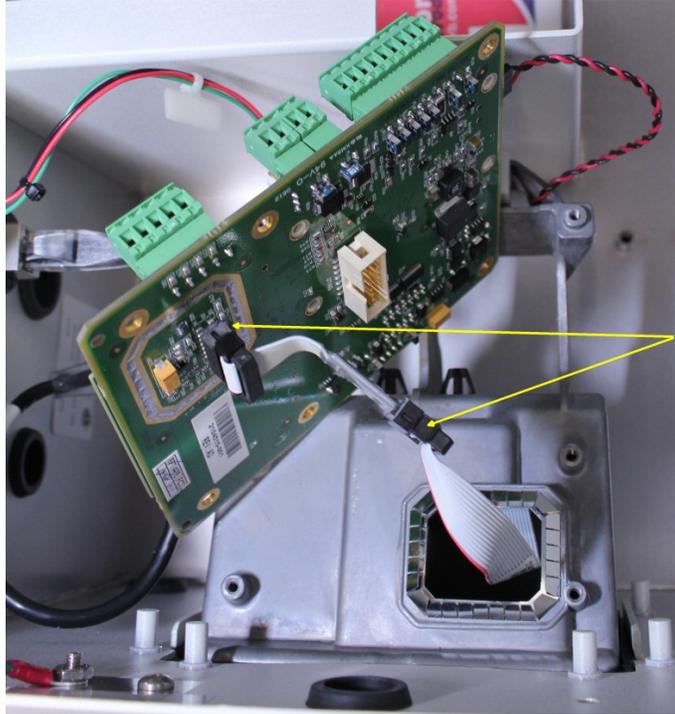
2. Remove the 6 hex nuts.



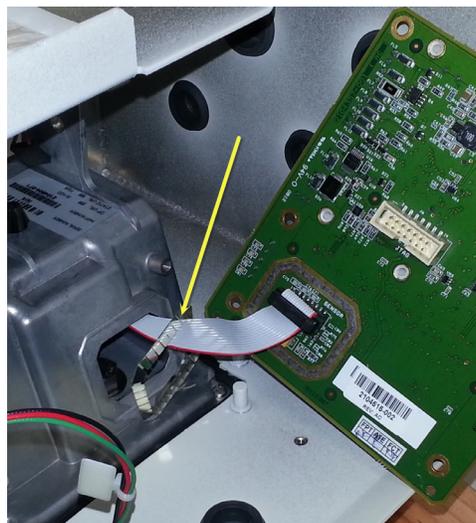
3. Detach the sensor cable from the board.



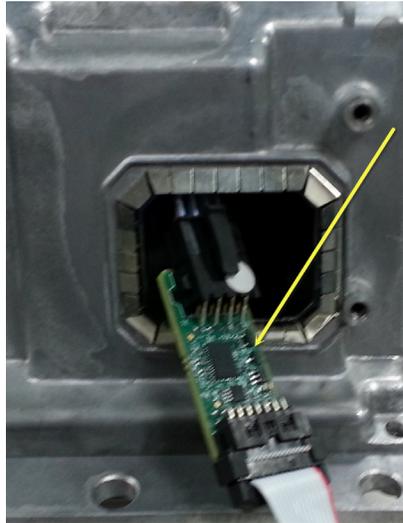
4. Connect the Smart Cable to the ribbon cable coming from the stamp card. Make sure the connector is securely seated.



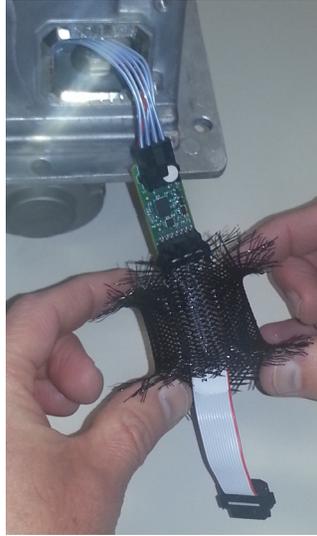
5. Upon removal of the board, you may find 2 conditions that need to be corrected.
 - a. The EMI shield may be loose. This must be repositioned and snapped into place. Improper or incomplete installation of the gasket may result in shorting of components on the board, causing invalid readings for any or all DP, SP, and RTD values. This could also result in the permanent failure of this board.



- b. The Stamp Card may have come loose from its internal retaining clip. If this is the case then follow step 6; otherwise, proceed to step 7. If the half round clip is still attached to the loose board it may be very carefully removed so as not to damage the board or its components and may be discarded prior to step 7.



6. If this board is found free from its internal clip, the board may short against the case which could cause continuous restarts, with the LCD displaying a variety of messages including "Totalflow 32 bit XSeries NAND Boot Loader", "Totalflow Launching Windows CE", "Totalflow G4FC OS Part Number <part number>", "Totalflow EXE Startup EXE Part Number <part number>", and sometimes Station ID.
 - a. Make sure the connectors are securely seated. Loose connectors may cause similar symptoms. Apply the protective sleeve supplied with the cable.



- b. Position the protective sleeve over the stamp card.



- c. Apply the cable ties two places and trim excess. Take care when applying the tie wraps that you do not damage or curl the cable underneath. Be sure to hand-tighten the ties – do not use a tie wrap gun.



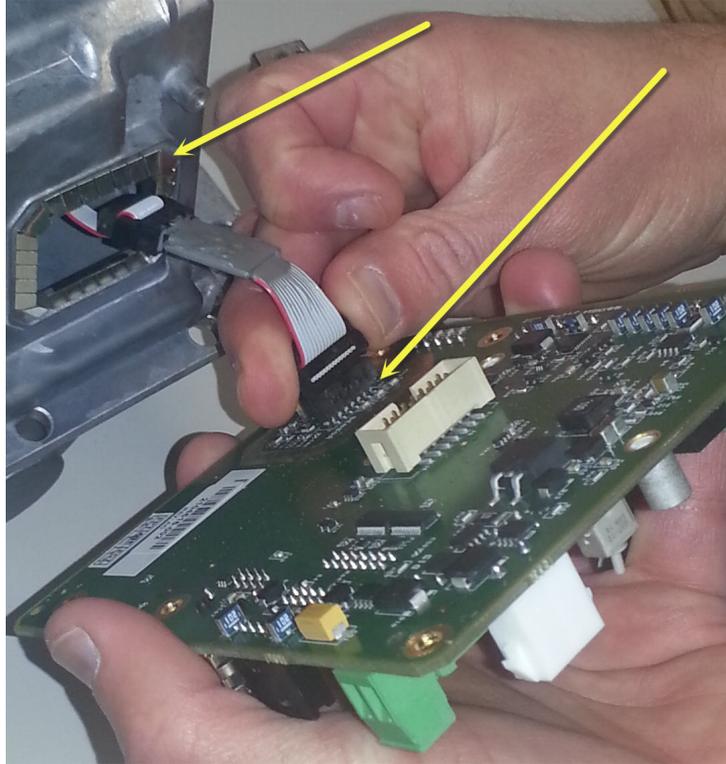
- d. Insert the card and cable back into the housing.



7. Connect the smart cable to the ribbon cable coming from the stamp card. Make sure the connector is securely seated.



8. Ensure that the connector is fully seated and that the EMI gasket is aligned and attached properly so it will not cause shorts on the circuit board when repositioned and attached.



9. Reassemble (do not replace the name plate until you have replaced the engine card).

4.3. Installing the Cable in a 6200/6201EX^{G4}

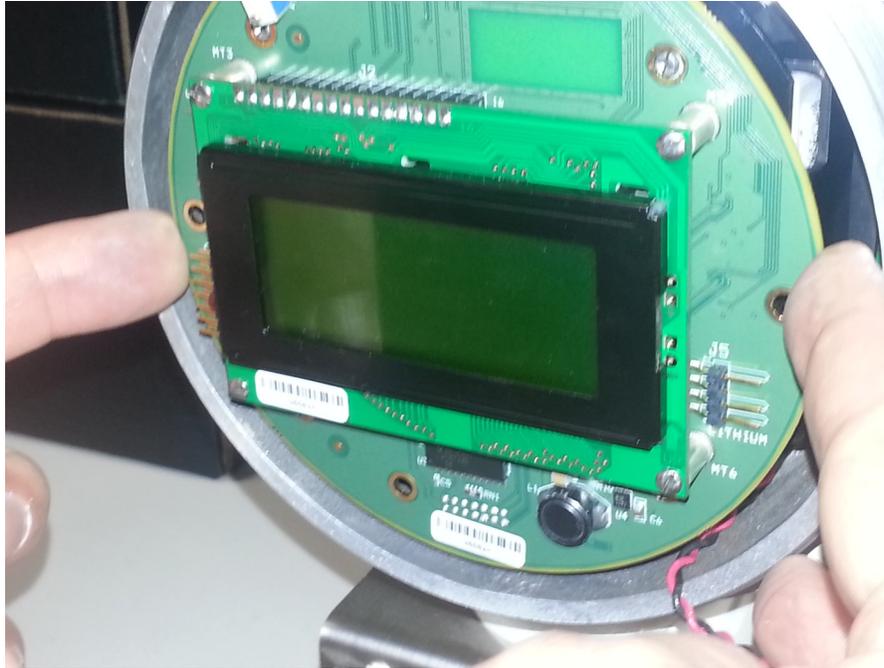
1. Unscrew the enclosure front cover.



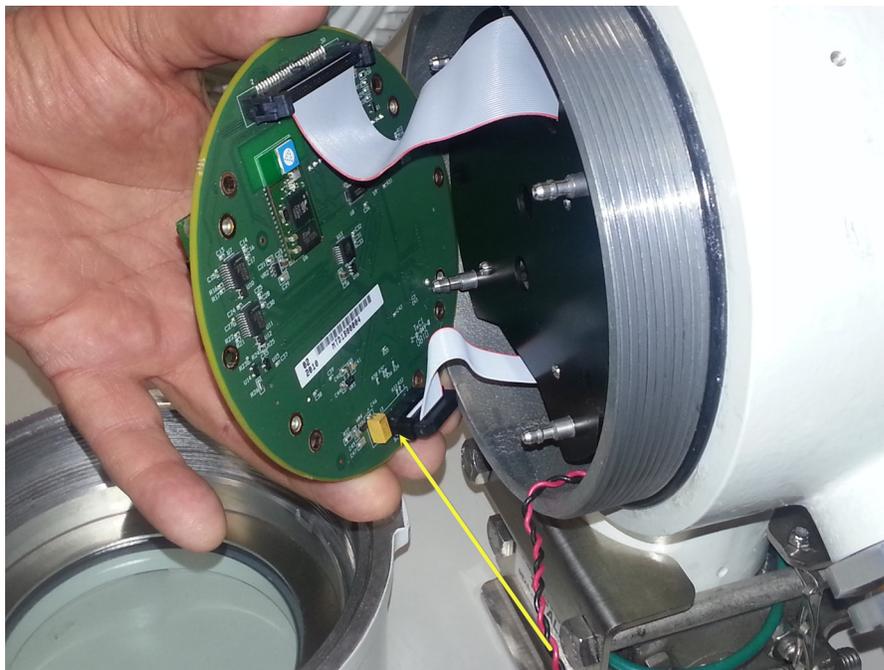
2. Gently pull the face plate off the board.



3. Gently pull the board forward.



4. Disconnect the sensor cable from the electronics board



5. Insert the new cable between the existing sensor cable and the electronics board.



6. Reassemble the unit.

5. Additional Information

Please notify Order Entry at 800-442-3097, option 1, to make scheduling arrangements for exchange of affected engine cards and for the RTD smart cable. Please provide the number of cards needed and the product they will be installed in (μ FLO^{G4} or EX^{G4}). This is important so that the correct engine cards can be shipped. The same RTD smart cable is used on both the μ FLO^{G4} and the EX^{G4}.

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