

Processor Calibrations

General:

This document outlines check in, general checkout and testing for ALL EF Technologies processors processed by the Repair Center.

Unpacking and Preparation

1. Carefully unpack the processor and all accompanying items/paperwork. Note any possible shipping damage.
2. In the repair center RMA log, check the Arrived box on the RMAs worksheet (if an RMA number was issued for the processor). On the RC LOG worksheet, officially log in the processor. The Serial Number, Date In, Company (if the processor has been sent in by a dealer with no company information, put "secret"), State, Rep (if any) and RMA fields must ALL be filled out. Check the Yes box on the Processor Repair Sheet to indicate that the processor has been logged in on the repair center RMA log.
3. On the Processor Repair Sheet, the following items should be filled in at this time: Serial Number (on both sides of sheet), Customer, Contact Name, Phone Number, Return To Address (put ALL shipping address information here), Date, RMA (put "none" if no RMA was issued), Reported Problem, Technician (initials), 10% Discount Yes/No, and Customer Purchase Order Number.

Processor Check-In

1. On the Processor Repair Sheet note all items received with the unit including charging cords, AC adapters, fitting adapters, bags, manuals, etc., in the appropriate areas.
2. Visually inspect every portion of the processor. Note in the appropriate spaces the condition of each of the main portions of the processor (output cable, input or charging cable, faceplate, bar-code wand (if equipped), connector tightness and if connectors are corroded or dirty etc.). In the Reported Problem section indicate any additional problems, damage, and/or conditions found with the unit.
3. Hook up the Temperature Probe Test Assembly to the processors temperature probe and the Serial Port Attachment Assembly to the processors serial port. Hook up the output cable of the unit to the appropriate load on the Calibration Cart.
4. Using HyperTerminal perform a capture of the incoming data/memory of the processor. Name and save the file according to the serial number of the unit (i.e. the captured data of processor 7000101 is saved as 7000101.txt).
5. Examine the captured data for errors and inconsistencies. Note any error codes that appear on the Processor Repair Sheet and check the OK box to indicate that the data was saved and examined.
6. Perform the appropriate manual test fusion indicated on the Processor Repair Sheet. Note the fusion

count and the voltage and current (if applicable) *as measured by the processor*. Check the OK box only if the test fusion completes without any errors. Note any errors or problems that occur during the fusion on the Processor Repair Sheet. Also note on the Processor Repair Sheet if the memory of the processor is full.

NOTE: Do NOT perform a test fusion if it can not be performed in a **completely safe manner** (i.e. if the unit has exposed wiring on the output cable etc.).

7. Fill out the Incoming column of the calibration portion of the Processor Repair Sheet. The data needed and it's locations are Processor specific:

DC Powered processors:

Software Version, Calibration Due, Temp Comp, Current Trip, Temp Units, Flags, AID Ver/Date and Charge Count information can be found in the captured and saved incoming processor data.

Resistance data can be determined by performing an Auto ID or a Central ID (depending on the processor model) on the appropriate decade box and with the noted resistances.

Both processor measured Ambient Temperature and External Temperature can be retrieved from the "Connect Fitting" processor screen (External Temperature is displayed when the external temperature probe portion of the Serial Port Attachment Assembly is attached to the Temperature Probe Test Assembly).

Current and Voltage measurements are determined by selecting the Voltage Ramp option of the Factory Menu and recording the appropriate meter and processor measurements.

AC Powered processors:

PRO (Build date), REV (Calibration date), Intensity, Mode, C or F, Temp Range, Compensation, RES and Operator Code Options can be found by powering up the processor while holding down the + and – buttons down.

Software Version, V ref, Temp, Offset, Frequency, ZD, Date/Time OK, Amps, 40 Volt, 24 Volt and 12 Volt measurements can be determined by powering up the processor while holding the Start and Stop buttons down.

8. Open up the processor (be certain to use SAFE practices when opening up processor enclosures! Check to be certain that the unit is NOT POWERED UP OR CONNECTED TO A POWER SOURCE.)

9. Visually inspect the internal parts of the processor for corrosion and/or damage. Note any damage, corrosion or anything out of the ordinary on the Processor Repair Sheet.

10. Physically check ALL internal connections for tightness. Physically check to be certain all internal components are seated/positioned correctly.

11. Refer to the Upgrades section of the Processor Repair Report to be sure that all needed upgrades and updates for the specific model processor being calibrated have been done. Check the box next to each upgrade to verify that it has been performed. Perform ALL updates and/or upgrades that have not been done.

Calibration

1. Follow the appropriate calibration procedure for the specific model processor being calibrated. (Refer to the appropriate documentation).

2. List all operational parameters that were calibrated in the Calibration Comments section of the Processor Repair Sheet.
3. DC units should be charged at this time. When the batteries are fully charged the processor should undergo the Battery Discharge Test with all data from the test being captured and graphed (refer to the Battery Discharge Test documentation). After the test is complete the processor must be recharged.
4. AC units must have the 36 Fusion Robotic Generator Waveform Test performed with all data from the test being captured (refer to the 36 Fusion Test documentation). No AC unit may be okayed for service until it passes this test!

Processor Final Testing and Check-Out

1. Close and secure the processor enclosure. Make certain that all case, faceplate and/or back plate screws are tight and the unit has been sealed with RTV if necessary.
2. Visually check the processor to be certain that the unit is correctly closed and no screws are missing.
3. Perform the appropriate outgoing 3 fusion test indicated on the Processor Repair Sheet. AC processors are to have this data captured during testing, DC units are to have a final outgoing data capture performed to record the test data and the final charge count. **NO PROCESSOR MAY BE OKAYED FOR SERVICE UNTIL IT PASSES THIS TEST!**
4. Set and verify the new calibration date on the processor (this only applies to AC processors, DC processors calibration dates are set and verified during the calibration procedure).
5. Record the new calibration date on the Processor repair sheet and on the RC log worksheet of the repair center RMA log.
6. Record all work performed, parts used and repairs done on the Processor Repair Sheet in the appropriate sections.
7. Write up the final repair report. In the repair center RMA log, fill in the Repairs Done and Date Out fields of the RC log worksheet.
8. Prepare the unit for return shipping. Be certain to include all items sent with the unit.