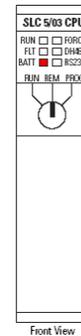


Technical Service Bulletin 041114 PLC Battery Replacement

The transmitter system controller in Comark IOX, DCX, DCX Millennium, and DCX Paragon transmitters employs a PLC controller manufactured by Allen Bradley. During AC power interruptions, three different mechanisms provide back-up for the logical program executed by the controller CPU:

1. An on-board 3V lithium battery provides backup power to the CPU during AC interruptions lasting several hours or days.
2. A charged capacitor provides backup power to the CPU for at least thirty minutes should the 3V battery be removed or dead.
3. An on-board EEPROM provides a hard-coded backup of the logical program. Upon boot-up from a completely “cold-start” (CPU is empty), the logical program is reloaded to the CPU from the EEPROM. This function is supported only in transmitters containing a CPU module of revision level SER C or higher (produced after approximately the year 2000).



The on-board battery in the CPU module must be periodically replaced. The PLC will provide a warning via a red BATT LED on the CPU module when this is the case (See illustration at left). This bulletin provides a procedure to check and replace the PLC battery.

Procedure 041114: PLC Battery Replacement: IOX, DCX, DCX Millennium, DCX Paragon	
Applicability	All IOX, DCX, DCX Millennium, and DCX Paragon transmitters.
Prerequisites	None.
Equipment Required	Soldering iron. 50/50 solder. Isopropyl Alcohol. Cotton swab. Wire strippers. Diagonal cutters. Needle-nose pliers. Replacement 3V lithium battery Comark P/N 606237-01, Radio Shack 23-026, Allen Bradley 1747-BA, Sanyo CR14250SE, or equivalent.
Comments	PLC CPU provides warning light when battery should be replaced. This procedure must be performed with transmitter off-air, unless PLC has been bypassed according to Service Bulletin 040503.

Check battery status

NOTE: Disregard steps 1 and 2 for DCX Millennium and DCX Paragon transmitters. The system controller PLC is mounted on the sidewall of the exciter cabinet in these transmitters.

1. Pull system controller drawer out from exciter rack.

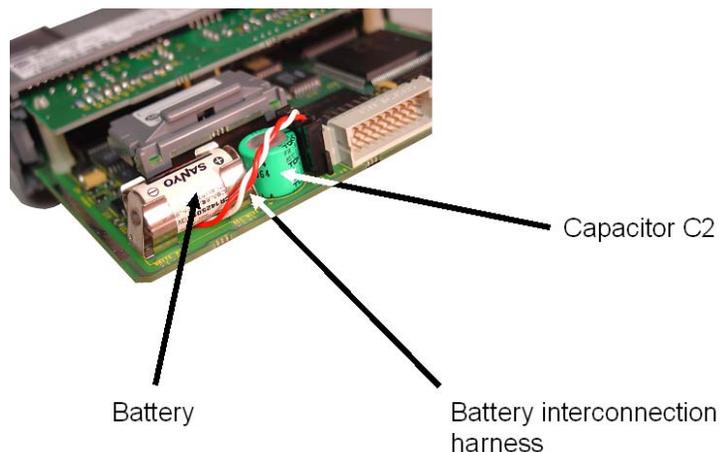
2. Remove cover to system controller drawer to expose PLC controller.
3. Check PLC controller from presence of red BATT alarm on CPU module. See illustration at start of bulletin.
4. If BATT alarm LED is active, proceed to replace PLC battery.

Modify PCB to accept standard battery.

NOTE: This procedure converts the CPU PCB to permit the use of a standard battery (without pre-wired harness). Standard, unmodified, batteries are considerably less expensive than the pre-wired replacement batteries available from the PLC manufacturer. The modification procedure given here should ideally be completed in less than thirty minutes to eliminate the need to for an EEPROM program reload. Avoid shorting the terminals of back-up capacitor C2 while performing this procedure; this will clear the CPU memory.

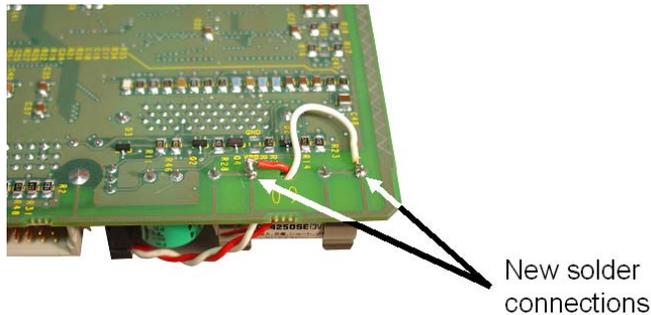
An alternative would be to fabricate a new wiring harness and solder it to the replacement battery in advance. Both connections to the replacement battery would need to be insulated with electrical tape with this approach.

1. Pre-heat soldering iron.
2. Place transmitter in OFF state via system control XMTR OFF button or bypass system controller via Service Bulletin 040503.
3. Remove AC power to system controller by pulling front panel circuit breaker (IOX, DCX) or fused disconnect F2 at right rear of exciter cabinet (DCX Millennium, DCX Paragon).
4. Remove CPU module from PLC chassis.
5. Locate 3V battery on CPU module.



6. Remove 3V battery and interconnect harness from CPU module.

7. Cut away protective plastic covering over soldered connections to battery (where applicable).
8. Heat soldered connections to battery with soldering iron and carefully lift wires from battery with needle-nose pliers.
9. Use wire strippers to strip back ends of interconnect wires approximate 1/8 of an inch.
10. Pre-tin ends of interconnect wires with soldering iron.
11. Plug the interconnect harness back into PC board.
12. Feed ends of interconnect wires through to reverse side of PC board via small hole directly beneath area normally occupied by battery.
13. Solder interconnect wires to solder pads on board, as shown in photograph below. Be sure to observe correct color-coding / polarity: red (+), white (-).



14. Mechanically bend battery connection springs inward at approximately 30-degree angle to accommodate reduced physical size of replacement battery.
15. Plug replacement battery into battery holder while observing correct polarity.
16. Re-install CPU module in PLC chassis and return equipment to original condition.
17. Procedure complete.

At Comark, we are constantly striving to improve the satisfaction of both our new and existing customers. Please do not hesitate to contact Comark Customer Service with any questions you may have concerning the contents of this service bulletin.

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