

Note No.	SVC-FSB-0049
Release Date	2/14/2018
Contact	ngceoservice@ngc.com

## eDrive RAM Battery Alternate Replacement Procedure

### Summary

This technical note describes the process for replacing the TINI RAM battery with a higher capacity battery. With the eDrive turned on, the external battery can be changed without losing the eDrive settings.

### Scope

This technical note applies to all 2U and 4U eDrives.

### Materials Needed (CR123A Battery Installation)

- BH-CR123A Battery Holder with Leads (1 each)
- 6 inches Red and Black 22 AWG Teflon coated wire (1 each)
- CR123A Battery (1 each)
- Medium-Sized Cable Ties (1-2 each)

### Materials Needed (CR2477 Battery Installation)

- 81-214-10 Remote Battery Holder For TINI Card Circuit Assembly
- CR2477 3 V Battery (1 each)
- 85-174-40-24, 2 Pin Connector with 24" lead (1 each)
- SHCS #6 x 1/4" (2 each)
- #6 Flat Washer (2 each)
- #6 Lock Washer (2 each)

### Tools and Equipment Needed

- 7/64" Hex Ball Driver
- Phillips® Head Screwdriver
- Diagonal Cutter
- Soldering Iron and Solder
- Wire Strippers
- Safety Glasses

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## Safety Warnings



**CAUTION.** Electrical shock hazard. Before servicing the eDrive, make sure that the AC power cord and external power supplies are disconnected. Damage to personnel may result, including death. Damage to equipment may result.



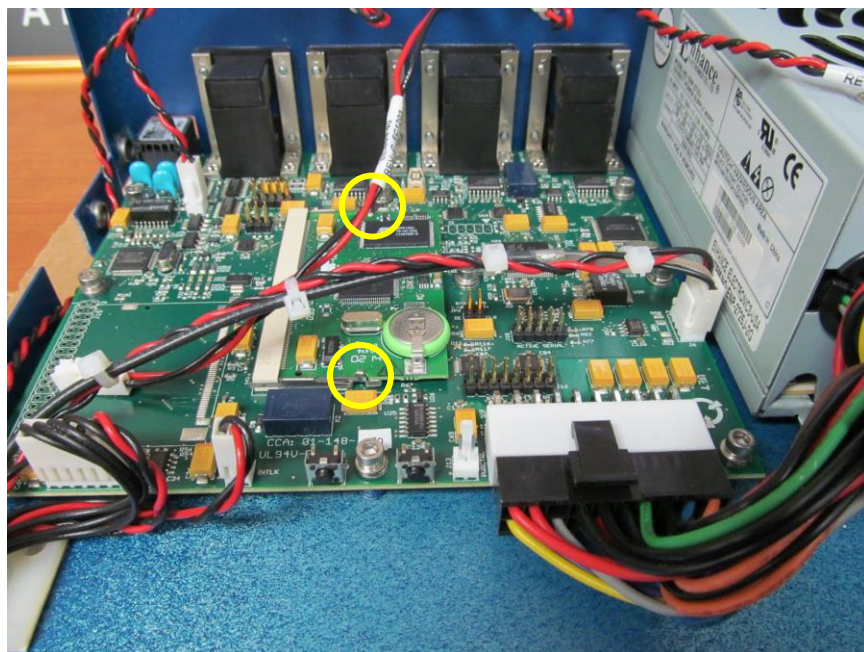
**ESD: HANDLE APPROPRIATELY.**



**CAUTION:** Safety glasses should be worn at all times when soldering.

## 2U eDrive TINI Battery Replacement Instructions

1. All eDrive settings will be lost when the RAM battery is removed. Contact CEO for assistance recording all eDrive settings prior to removing the RAM battery.
2. Remove the top cover from the eDrive by removing the 22 Phillips®-head attachment screws.
3. Remove the TINI circuit board from the main control board. The board is secured in the socket using two retaining clips. Gently press outward on the clips to release the board.



**Figure 1:** TINI Circuit Board Clip Locations

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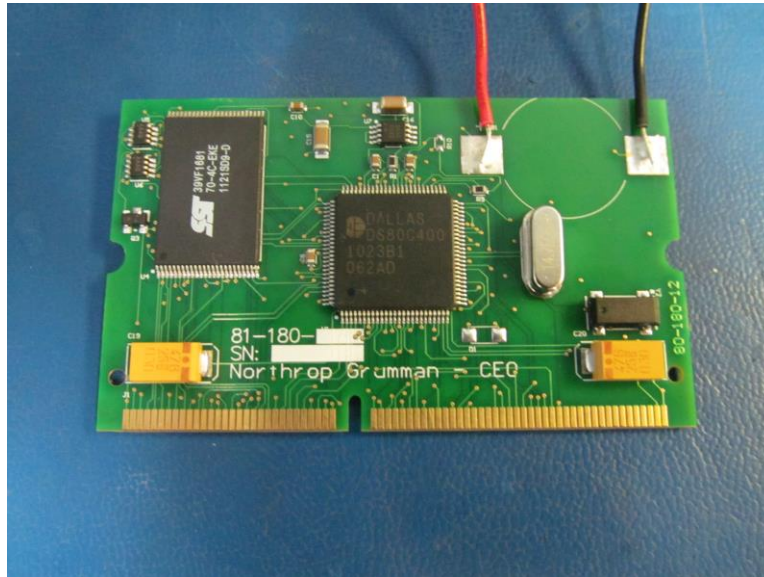
- Using proper ESD precautions, carefully de-solder the TINI card battery (**Figure 2**).



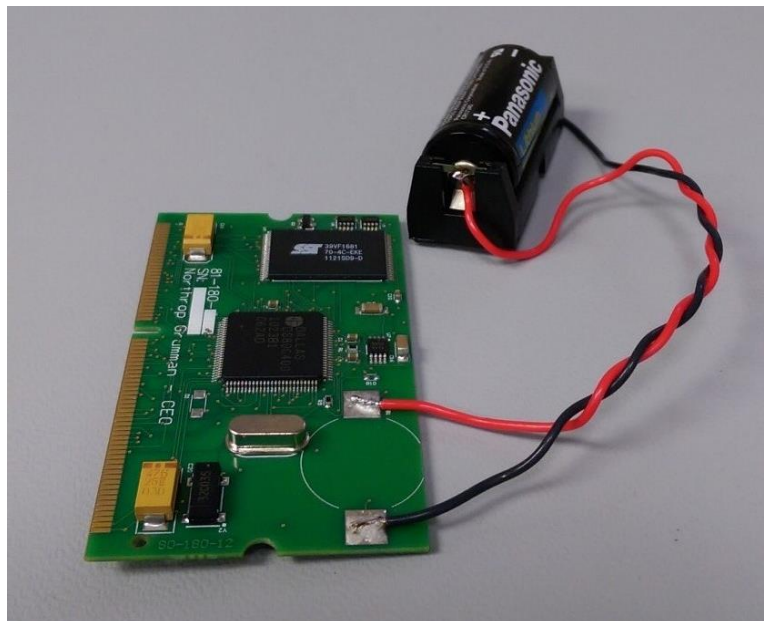
**Figure 2:** TINI Circuit Board Battery Location

- Replacing the wires on the battery holder with approximately 6 inches of 22-gauge Teflon-coated wire is recommended. The battery holder is supplied with 26-gauge wire that breaks easily.
- Strip and tin the wires the battery holder wires.
- Carefully solder the battery holder leads to the positive and negative pads on the TINI circuit board. Red to positive (+), black to negative (-).

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**Figure 3:** Battery Holder Leads Soldered to TINI Circuit Board



**Figure 4:** Final Soldered Assembly

8. Reinstall the TINI circuit board. Place the grooved golden edge of the board into the socket at an angle. Once seated into the socket, press down on the opposite edge to engage the retaining clips.
9. Place the battery holder on the bundle of wiring connected to the circuit board and secure with cable ties. Use the diagonal cutter to remove the excess end of the cable ties.

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Figure 5: Battery Holder Placement

10. Replace the top cover of the eDrive.
11. The eDrive settings recorded in step 1 must be verified after changing the RAM battery.

## 4U eDrive TINI Battery Replacement Instructions

In order to access the TINI circuit board and replace the battery, the Expansion Module CCA must be removed.



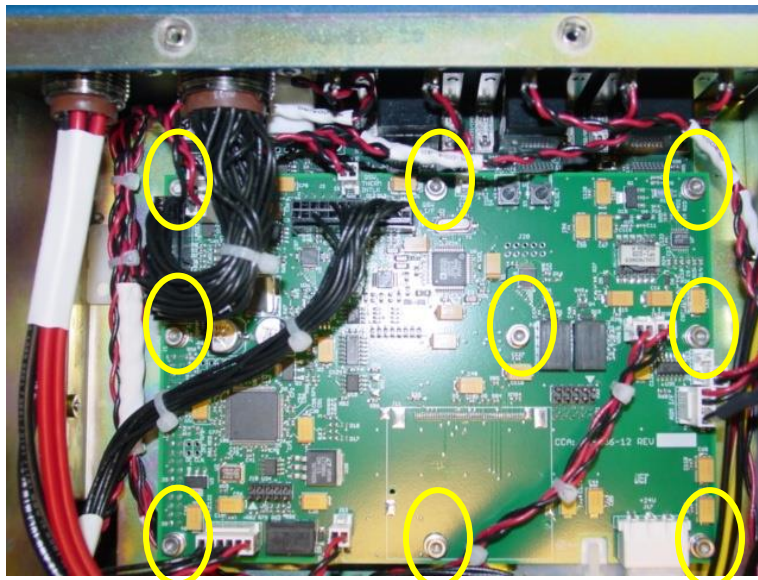
**CAUTION.** Removing and replacing the expansion module CCA is straightforward. However, when replacing the unit, care must be taken to insure that connectors do not slide down beside the pins instead of engaging them.

1. All eDrive settings will be lost when the RAM battery is removed. Contact CEO for assistance recording all eDrive settings prior to removing the RAM battery.
2. Remove top cover of eDrive by removing the 22 Phillips®-head attachment screws.
3. Ensure ESD procedures are followed while handling the circuit card assembly. Remove the cables from expansion module that are labeled with the “J” (jack) number on the circuit card.

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Marking each cable ensures proper placement during re-assembly. If not currently identified each cable should be marked with a unique identifier (A fine tip marker can be used to mark each of the two pin connectors).

4. Use a 7/64" hex driver to remove the nine (9) 6-32x1/4" screws, lock washers and NAS flat washers attaching the Expansion Module CCA (EM CCA) shown in **Figure 6** below. Take care that parts are not dropped into the controller as this may lead to electrical shorting of components.



**Figure 6:** Location of Expansion Module CCA Attachment Hardware

5. Lift the EM CCA levelly from both front and back to avoid bending any of the pins on the System Controller, which is located beneath the EM CCA.
6. Follow Steps 2-7 in the 2U eDrive TINI Battery Replacement section above.
7. Route the battery holder wiring so that it remains clear of any board interconnects or mounting hardware for the EM CCA (see **Figure 7**).

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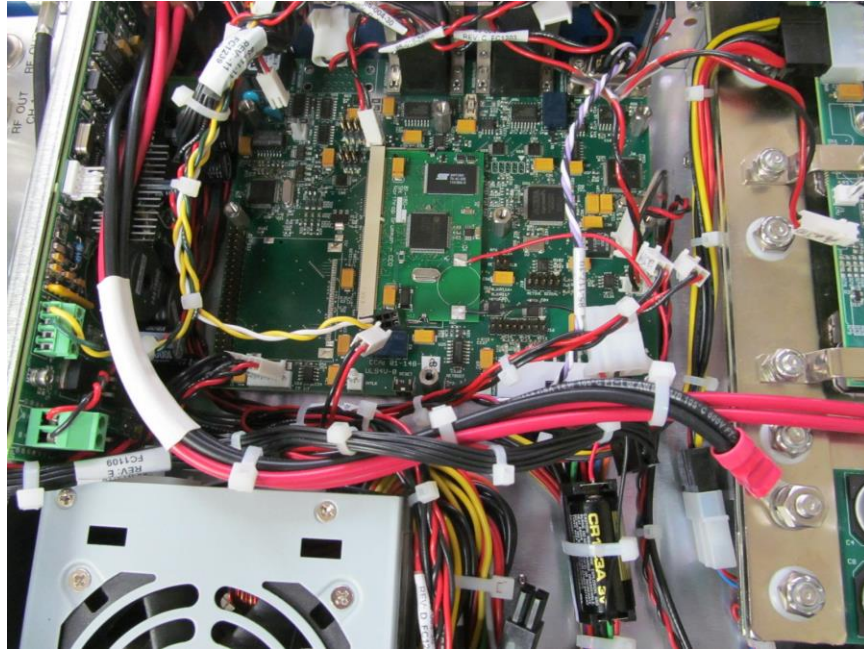


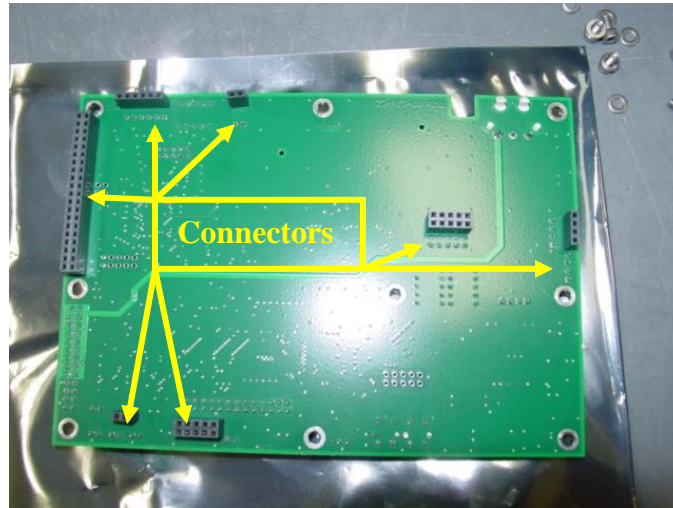
Figure 7: Wiring Routed and Battery Secured

8. Verify that all of the connector pins on the System Controller board (under the EM CCA) are unbent. Any pins bent while removing the EM CCA will need to be straightened before installing the EM CCA.
9. Align the EM CCA screw holes and stand-offs over the System Controller card. Each of the electrical connectors on bottom of the EM CCA must align with the pins on system controller board. See **Figures 8** and **9**, below.

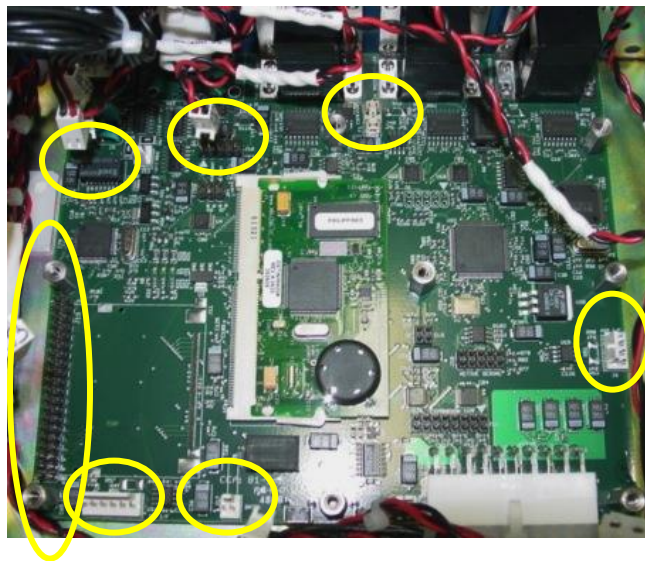


**CAUTION.** This step is critical. If misaligned, the connectors can slide down beside the pins instead of engaging them and the eDrive will not work.

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**Figure 8:** Electrical Connectors on the Back-side of the Expansion Module CCA



**Figure 9:** Electrical Connections on System Controller CCA

- Carefully press the EM CCA down until connectors are fully seated and the circuit card rests on the stand-offs per **Figure 10** below.



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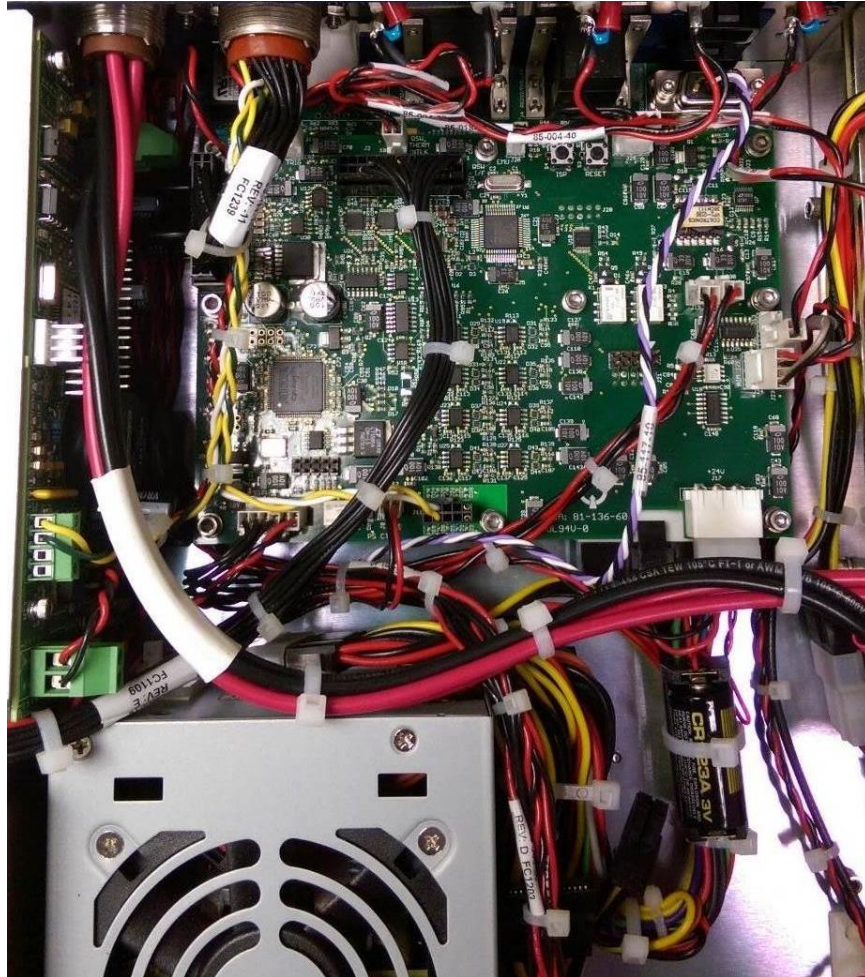


Figure 10: Newly Installed Expansion Module CCA

11. Reinstall the screws and washers to hold board in place. Torque each of the screws to 8 in-lbs. (see **Figure 6** above).



**CAUTION.** Be especially careful with the screw that goes in the upper left hand corner of this photo. One way to install this screw is to slide the washers onto the shaft of the hex driver and then put the end of the hex driver in the screw hole and allow the washers to slide into place. Once the washers are in place, masking tape or sticky-tac can be used to attach the screw to end of hex driver and install.



**CAUTION.** Take care that parts are not dropped into the controller as this may lead to electrical shorting of components.

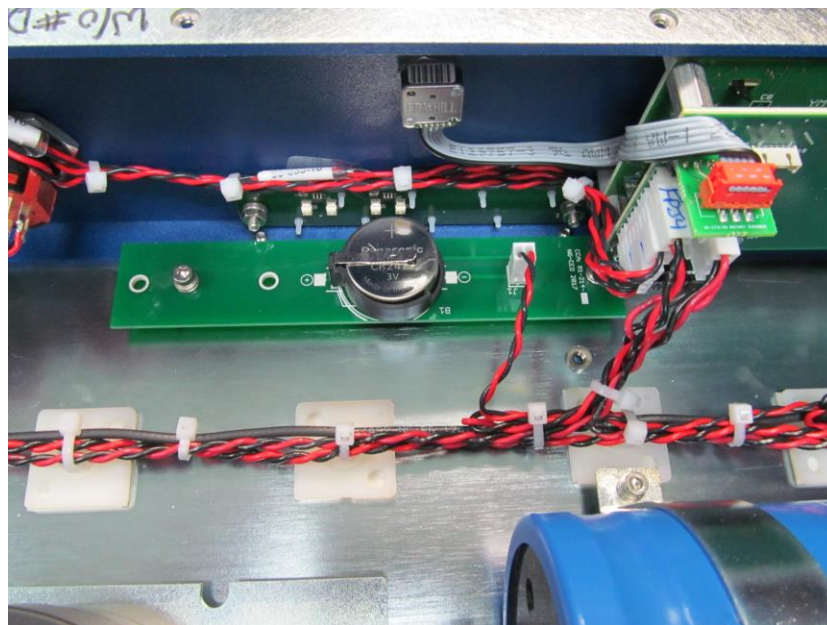
12. Reattach each of the connector cables. (see Figure 10 above)
13. Reinstall the cover to the eDrive.
14. The eDrive settings recorded in Step 1 must be verified after changing the RAM battery.

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## Installation of RAM Battery Circuit Card

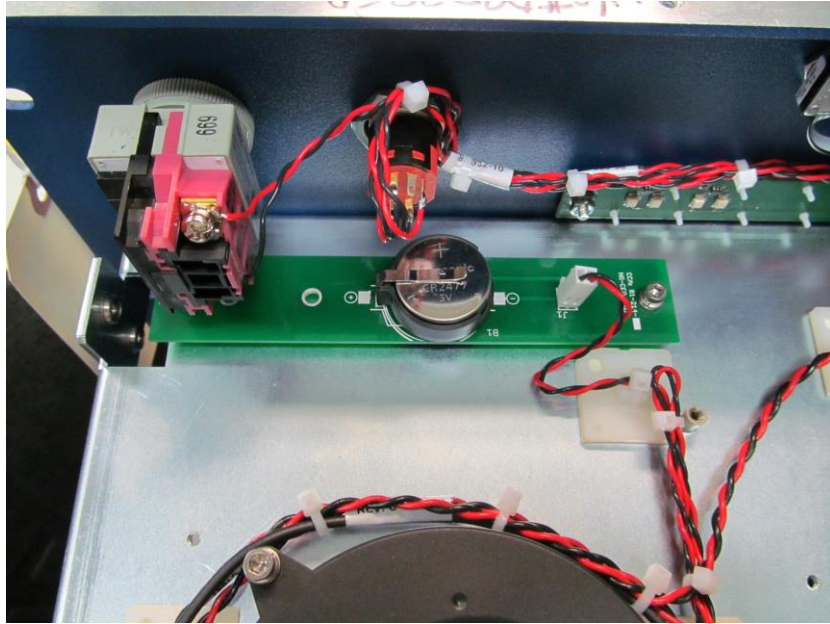
Beginning in November of 2017 replacement of the RAM battery in new eDrives was simplified, and the RAM battery has three times more capacity. The RAM was moved off of the TINI card. The RAM battery circuit card includes a battery holder for a CR2477 battery. It is now mounted to existing bosses on the eDrive frame, and secured with #6 socket head cap screws.

1. All eDrive settings will be lost when the RAM battery is removed. Contact CEO for assistance in recording all eDrive settings prior to removing the RAM battery.
2. Remove top cover of the eDrive by removing the 22 Phillips®-head attachment screws.
3. Ensure ESD procedures are followed while handling the circuit card assembly. Follow the 2U or 4U instructions above to remove the TINI card.
4. Use the soldering iron to remove the existing TINI card RAM battery.
5. Strip and tin the connector lead wires to prepare for soldering.
6. Carefully solder the 85-174-40-24 connector assembly leads to the positive and negative pads on the TINI circuit board. Red to positive (+), black to negative (-).
7. Reinstall the TINI circuit board. Place the grooved golden edge of the board into the socket at an angle. Once seated into the socket, press down on the opposite edge to engage the retaining clips.
8. Connect the 85-174-40-24 connector to the Battery Holder circuit card.
9. Locate the Remote Battery Holder circuit card assembly as shown in **Figure 11 (2U)** or **Figure 12 (4U)**.



**Figure 11:** 2U Remote Battery Holder Circuit Card Assembly Location

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**Figure 12:** 4U Remote Battery Holder Circuit Card Assembly Location

10. After installing the Remote Battery Holder circuit card assembly, use wire ties to secure the wires between the RAM battery circuit card and the TINI card.
11. Reinstall the top cover and power up the eDrive.
12. The eDrive settings recorded in Step 1 must be verified after changing the RAM battery.