

Note No.	SVC-FSB-0043
Release Date	12/05/2016
Contact	ngceoservice@ngc.com

eDrive AC Input and SFX Checkout Guide

Summary

This technical note describes how to troubleshoot common faults in the eDrive.

Scope

This technical note applies to the eDrive.

Materials and Equipment

- eDrive
- Voltage Meter

Contact Northrop Grumman for assistance in obtaining any of these items.

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AC Power Entry

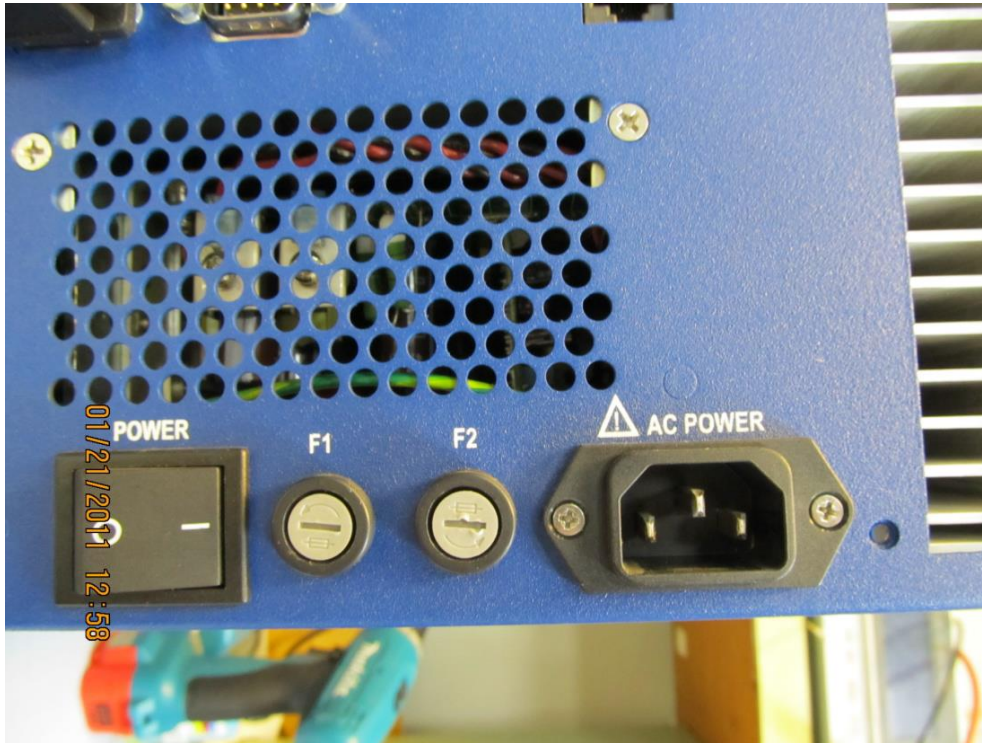


Figure 1: AC Power Switch

On the rear on the eDrive, the AC power cord connects at the IEC AC POWER input connector. From this input connector the power routes to the two fuses, **F1** and **F2**, and then to the **POWER** rocker switch. In normal operation, the **POWER** rocker switch is turned ON (I), and the eDrive soft on/off is controlled through the **Front Panel Power** switch.

Power is routed from the power cord to the power switch and to the fuses.

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Figure 2: Fuses View 1

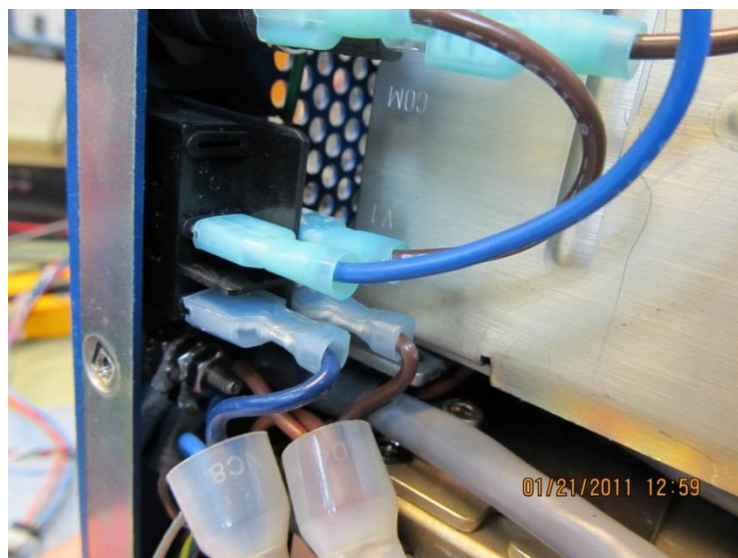


Figure 3: Fuses View 2

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SFX Supply

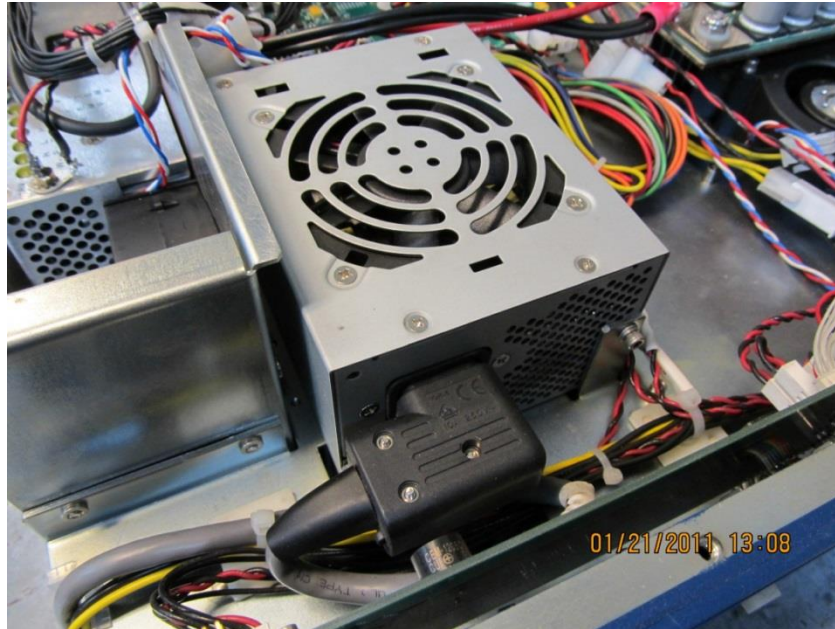


Figure 4: Internal Power Supply

Turning the rear panel **POWER** switch **ON** powers the internal SFX power supply. The SFX supply powers up in standby mode to allow for the soft on/off feature. In standby mode, only 5V standby voltage is enabled and the fan does not run so there is no visual indication that it is on. The standby 5V (5V SB) routes from the SFX **P1** main power connector (pin9) to the eDrive System Controller board at connector **J14**.

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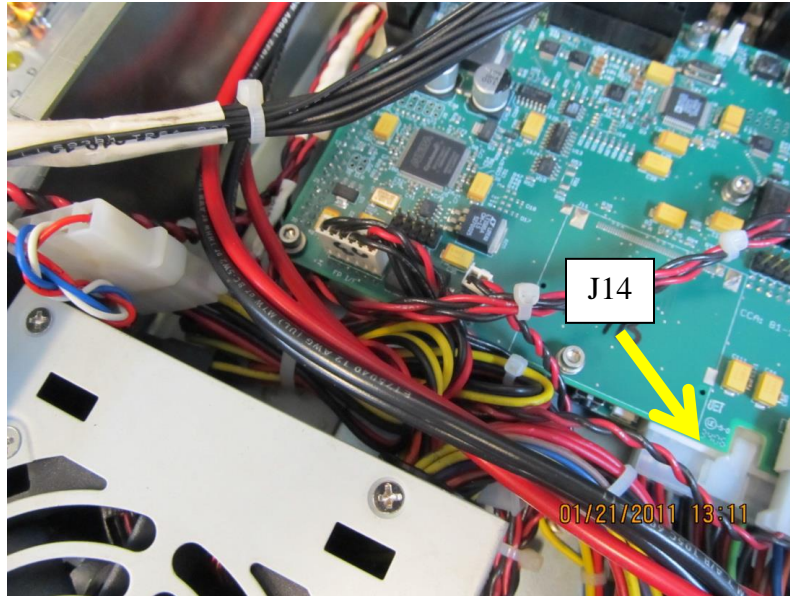


Figure 5: J14 Connector

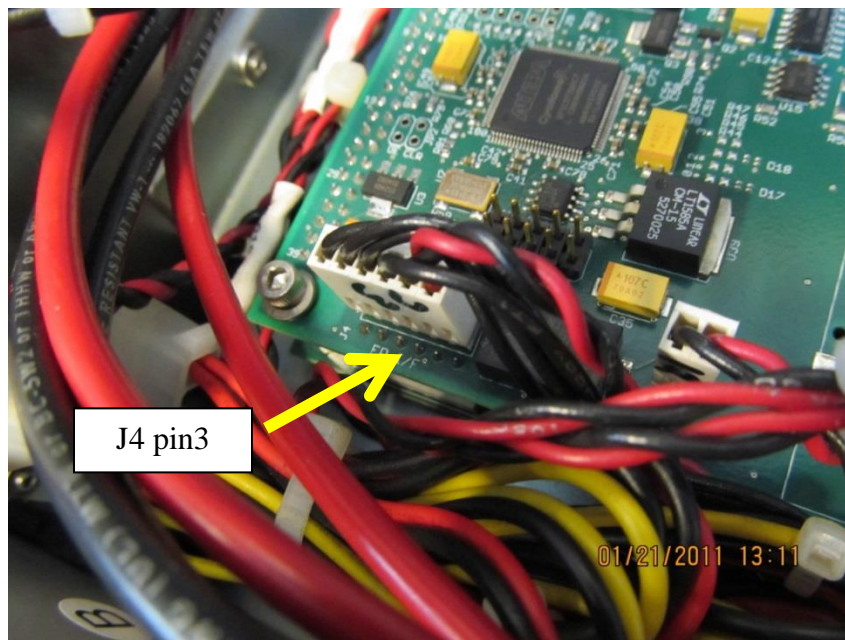


Figure 6: J4 Pin3

From the SC board, 5V SB routes from intra-board connector **J7** on the SC and to the EM board at **J4**. The 5V SB can be measured at pin 3 of the **J4** FP I/F connector on the EM. GND is on pin 4. **J4** is the Front Panel Interface connector and connects wires from Expansion Module **J4** to Front Panel **J7**. 5V SB can be measured at Front Panel connector **J7** pin3.

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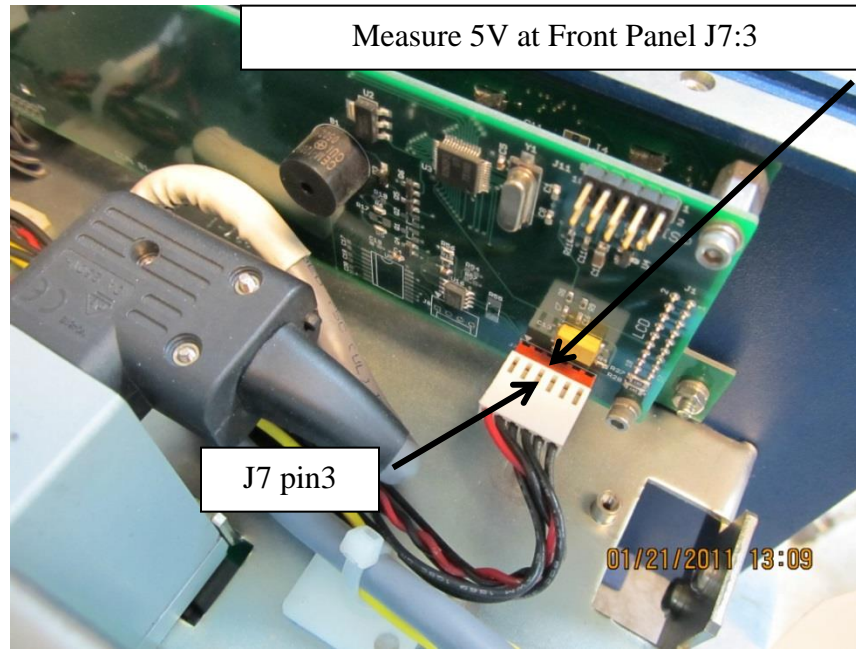


Figure 7: J7 Pin3

Front Panel

The 5V standby voltage powers the microcontroller circuitry on the front panel. When the Front Panel **POWER** button is pressed, the microcontroller pulls the PWR-CTRL line low. This signal can be measured at connector **J7** pin5. When the eDrive is OFF, the PWR-CTRL voltage on **J7:5** should be approx. 2.4V. When the **POWER** button is pressed, the PWR-CTRL voltage at **J7:5** should drop to 0V.

FP **J7** Pin5 routes back to the EM at **J4** pin5, and then through the intra-board connector to the System Control board, and back to the SFX supply on SFX **P1** main power connector pin 14. When the SFX supply gets a low (0V) signal on this line, it enables the full output of the supply and provides the main 5V and +/-12V to the rest of the eDrive circuitry.

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Voltage at J7:5 goes from 2.4V to 0V when front panel power button is pressed. 0V at J7:5 turns on the normal 5V in the SFX power supply. The SFX power supply fan comes on and the front panel turns on.

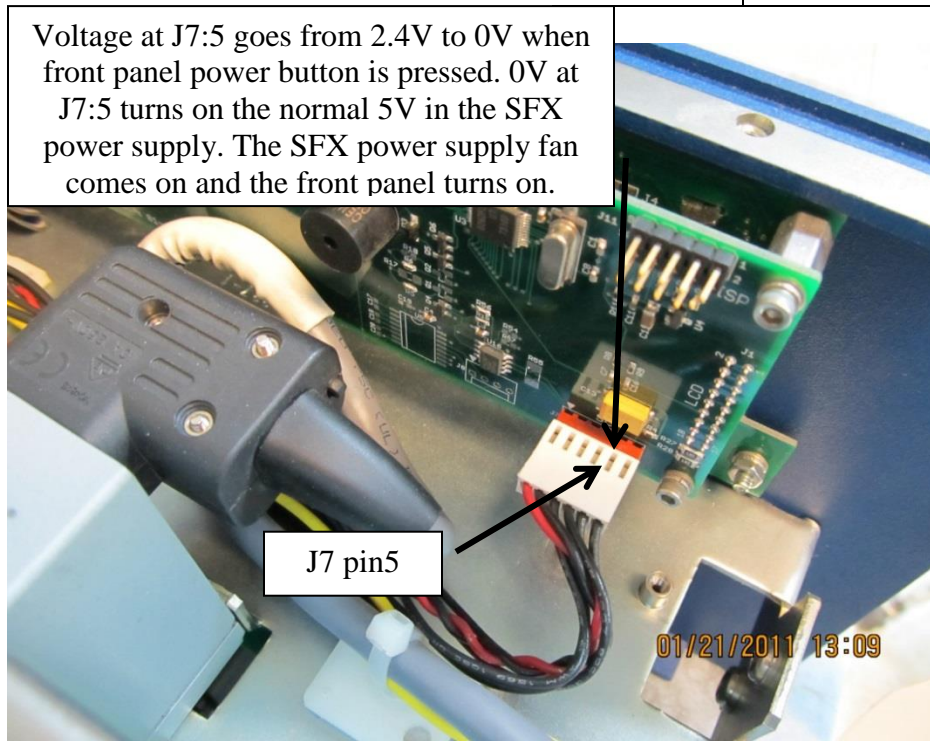


Figure 8: J7 Pin5

Summary

The 5V Standby Voltage and the PWR-CTRL signal travel between the SFX supply and the Front Panel, going through several connectors and wires. Measuring the voltage levels at several locations could help pinpoint an intermittent connection.

Examine the cable and connector wiring at **J7** on the front panel circuit board and at **J4** on the Expansion Module board. If you can monitor the 5V standby voltage while the system is operating and catch it going low at the pins of EM connector **J4** pin3, that would be an indication that the SFX supply is bad, or something to do with the AC power wiring leading up to the SFX supply is bad. If the **5V** standby voltage stays high when the eDrive shuts off randomly, then the **PWR-CTRL** signal should be monitored. If the **PWR-CTRL** signal is not staying at 0V, then something on the front panel circuit board could be working incorrectly.