

SERVICE BULLETIN

NORTHROP GRUMMAN

Note No.	SVC-FSB-0057-
Release Date	12/18/2018
Contact	ngceoservice@ngc.com

eDrive Startup Screen Troubleshooting Guide

Purpose

This bulletin details troubleshooting procedures for an eDrive stalled in displaying the startup screen. It includes steps to clear the System Controller (SC) memory. It also details how to remove the Expansion Module (EM) and reinsert the TINI module in order to progress the startup screen to a fault screen.

Scope

This bulletin applies to the 4U eDrive Nitro.

Safety Requirements



ESD CAUTION Handle appropriately.

Tools and Equipment

- A PC running Windows XP or later with COM port or USB port
- A standard 9-pin M-F serial cable such as Assmann AK131-2-R available from Digikey (<http://assmann.us/specs/ak131-2-r.pdf>)
-or-
A USB-to-serial cable: CEO part number 58-188-10-200, or a commercial equivalent like Unitek Y-105 cable.
- pyTINI loading software from Northrop Grumman
- #2 Phillips® Screwdriver
- 7/64" Hex Driver

Troubleshooting Procedure

Clear the SC Memory

1. Refer to SVC-FSB-0014 (*eDrive System Controller Firmware Programming Instructions*) and follow the steps listed in the *Clearing the Memory* section. This bulletin is available through the Knowledge Center.
2. If this is unsuccessful, proceed to the next section.

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Remove the EM to Access the TINI Card

1. Power down the eDrive.
2. Remove the ten screws from top of cover using a Phillips® screwdriver.
3. Remove twelve (six on each side) screws from the side of the top cover.
4. Gently lift the cover off of the top of the driver and set aside.
5. Locate the EM and take photos of the wiring for reference to use during replacement.
6. Following ESD safety procedures, remove the cables from the EM labeled with the “J” (jack) number on the circuit card. Verify that all connectors are correctly labeled. If not, use a permanent marker to label each connector.
7. Use a 7/64" hex driver to remove the nine (9) 6-32x1/4" screws, lock washers and flat washers shown in **Figure 1** below. Take care that parts are not dropped into the controller as this may lead to electrical shorting of components.

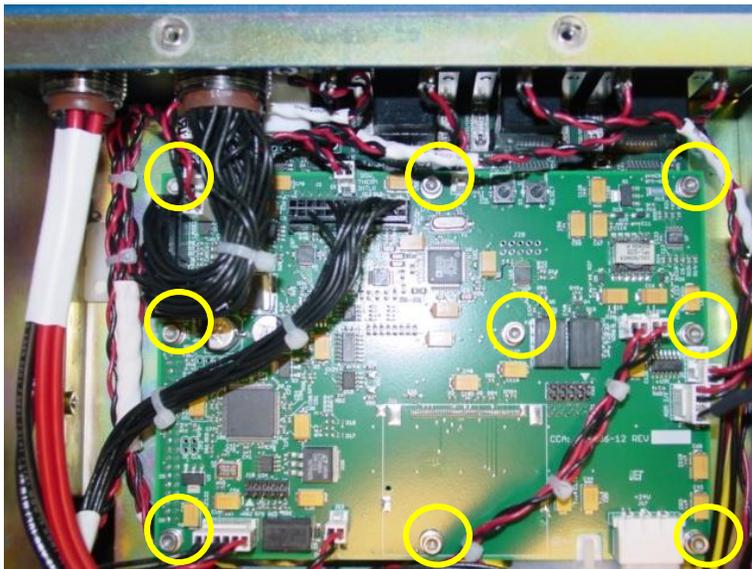


Figure 1: Location of the EM CCA Attachment Hardware

8. Lift the EM evenly from both front and back to avoid bending any of the pins on the System Controller located beneath the EM.
9. Plug the FP I/F and INTLK connectors into the SC as shown in **Figure 2**.

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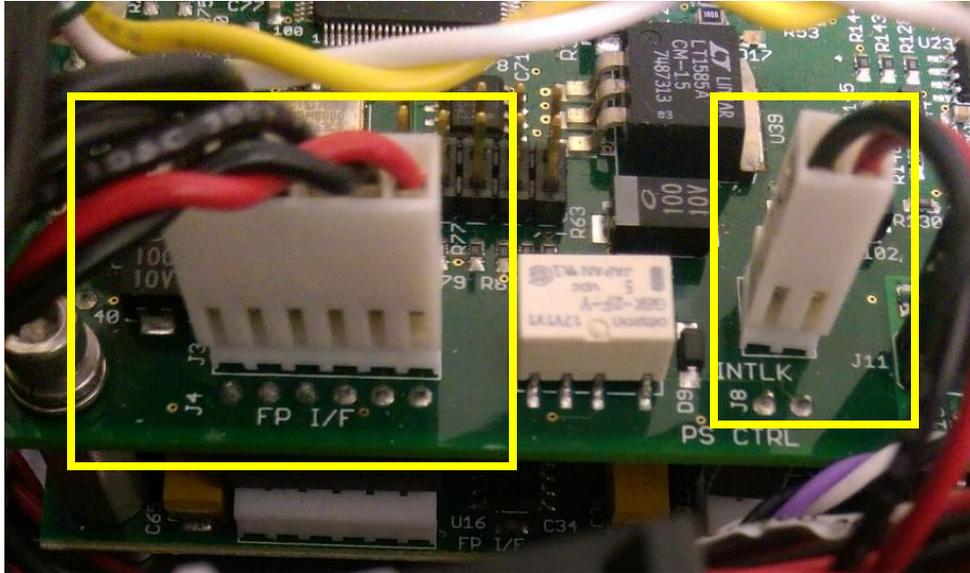


Figure 2: INTLK and FP I/F Connector Locations

10. Power up the eDrive and verify that the eDrive display has remained on the startup screen.
11. Power down the eDrive.
12. Reseat the TINI circuit board by gently pressing the outward on the retaining clips to release the board (**Figure 3**) and then reinstalling.

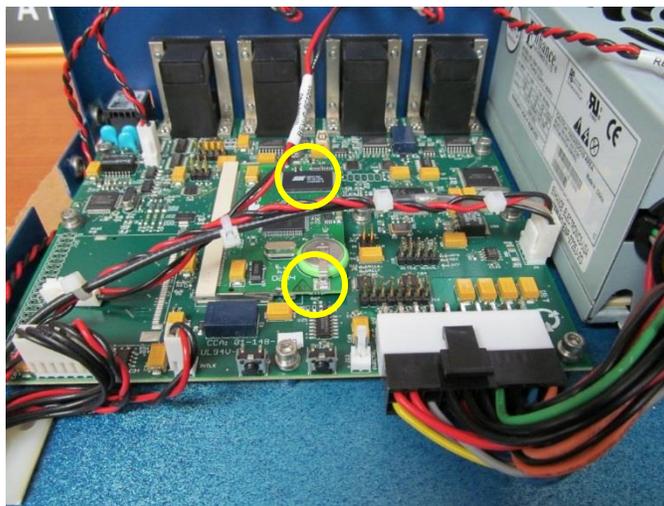


Figure 3: TINI Card Clip Locations

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13. Power up the eDrive and verify if the eDrive display has moved past the startup screen.
14. Repeat **Steps 11-12** until the eDrive moves past the first screen or displays some other fault.
15. If the eDrive will not move past the first screen, the TINI circuit board will need to be replaced.
16. Reinstall the EM and replace the top cover.
17. Use the eDrive Menu Table section below to reset all of the operating parameters. **The highlighted values should come from the ATP Data Summary Report.**

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eDrive Menu Table

Menu 1	Menu 2	Menu 3	Parameter	Setting or Value		
Channel Setup			Internal Trigger	Enabled or Disabled		
			External Trigger	Enabled or Disabled		
			External Gate	Enabled or Disabled		
			Marking Mode	Enabled or Disabled		
Channel Setup	Q-Switch	-More- Set FPS Settings	Q Switch (QS)	Enabled or Disabled		
			Set Frequency	See Test Report (10.00kHz)		
			Set Window Width	5 μ s		
			Set Q-Switch Power	100%		
			FPS	Enabled or Disabled		
			Set FPS Mode	Standard or pre pulse kill		
			Set FPS Delay	See test report (1100us)		
			Start Power	See test report (35%)		
			Set Window Length	See test report (1121us)		
			Set Modulation Type	Exponential		
			PPK Open Offset	0 μ s		
			PPK Closed Offset	+00 ns		
			-More-	RF Calib	Run Calib.	DO NOT USE
Channel Setup	Channel 1	-More- Fault Setup	Channel 1	Enabled or Disabled		
			Enable Pulse Mode	Pulsed driver only		
			Set Current	See test report (32.5A)		
			Set Standby Current	See test report (10.0 A)		
			Set Slew Rate	See test report (2.0 A/S)		
			Slew Control	Enabled		
			Set Current Limit	35 A		
			Set Voltage Dropout	20 V		
			Set Current Tolerance	Enabled or Disabled		
			Set Current Tolerance	4 to 6 A		
Channel Setup	Comm 0		TEC (Enable Last, Disable to change parameter)	Enabled or Disabled		
			Set Temp.	See test report (+33.0C)		
			Set Tolerance Range	+1.5C		

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Menu 1	Menu 2	Menu 3	Parameter	Setting or Value
		-More-	Set Output Voltage	5.2V
			Set Min. Temp.	+22.0C
			Set Max. Temp.	+45.0C
		-More-	Set P Const.	+5.0C
			Set I Const.	2.00 rep/min
			Set D Const.	2.00 cycles/min
		-More-	Set Control Function	H-BRIDGE
			Set Heat Mult.	1.000
			Set Cool Mult.	1.000
		-More-	Set Sensor Type	TS67
			Set Sensor Offset	0.00C
			TEC (Enable Last, Disable to change parameter)	Enabled or Disabled