



SERVICE BULLETIN

Note No. SVC-FSB-0029

 Release Date
 9/23/2015

 Contact
 ngceoservice@ngc.com

eDrive Expansion Module FPGA Programming Guide

Summary

This technical note describes the programming procedure for the eDrive Expansion Module (EM) Field Programmable Gate Array (FPGA).

Scope

This technical note is only for the eDrive Nitro(4U).

Materials and Equipment

- A #2 Phillips® screwdriver
- A PC running Windows XP or later with COM port or USB port
- An Altera USB Blaster programming adapter
- A standard USB cable
- Altera Quartus II software from NGCEO
- A Version Description Document and data package provided by NGCEO

Contact NGCEO for assistance in obtaining any of these items.

Programming Instructions

- 1. Remove all 22 screws around the perimeter of the eDrive top cover.
- 2. Remove the top cover by lifting it gently off the chassis.
- 3. Download the Version Description Document package and all files to your computer.
- 4. Connect the standard USB cable to your PC.
- 5. Connect the standard USB cable to the USB Blaster.
- 6. Be sure the PC and eDrive are both powered on and ready.
- 7. Connect the USB Blaster to expansion module connector **J10**. Pin 1 on the Flex Circuit Cable of the USB Blaster should be aligned to Pin1 marked on the circuit board.

NORTHROP GRUMMAN	SERVIC	SERVICE BULLETIN				
	Note No.	SVC-FSB-0029				

Note No.SVC-FSB-0029Release Date9/23/2015Contactngceoservice@ngc.com



Figure 1-1: J10 Module with Pin 1 Marker and USB Blaster Flex Circuit Cable

- 8. Run the Altera Quartus II software.
- 9. Select Tools | Programmer.
- 10. A new programming window will appear. Select the **Hardware Setup...** button in the upper left corner.

🖺 Quartus II - [Cha	iin1.cdf]										x	
File Edit Proces	sing Tools Window											
🔔 Hardware Setup	etup USB-Blaster [USB-6]				Mode: JTAG 💌			Progree	Progress: 0 %			
Enable reardmen	ar to allow background prog	amming (for MAX II devi	ices)									
🔎 Start	File	Device	Checksum	Usercode	Program/ Configure	Verify BI	ank- heck Examine	Security Bit	Erase	ISP CLAMP		
Stop												
Auto Detect												
🗙 Delete												
🍰 Add File												
🞬 Change File												
Save File												
Add Device												
🖞 Up												
붿 Down												
For Help, press F1]									NUM		

Figure 1-2: Programming Window

- 11. Select the USB Blaster from the Available Hardware Items.
- 12. In the Mode field, select Active Serial Programming. See Figure 1-3.
- 13. Select the Add File button from the menu on the left side of the screen.
- 14. Open the **.pof** file provided for use by NGCEO.

NORTHROP GRUMMAN	SERVICE BULLETIN					
	Note No.	SVC-FSB-0029				
	Release Date	9/23/2015				
	Contact	ngceoservice@ngc.com				

15. Ensure that both the **Program/Configure** and **Verify** boxes are checked.

16. Select **Start**. A progress bar will appear in the upper right corner.

💾 Quartus II - [Cha	ain1.cdf*]										x
Eile Edit Processing Tools Window											
Lardware Setup USB-Blaster [USB-6]				Mode: Active Serial Programming - Progress: 22 %							
Enable real-time ISP to allow background programming (for MAX II devices)											
🔊 Start	File	Device	Checksum	Usercode	Program/ Configure Verify	Blank- Check	Examine	Security Bit	Erase	ISP CLAMP	_
🛋 Stop	C:/eDrive_hw/sc/fpga/v18/sc.pof	EPCS1	018F	00000000							
Auto Detect											
🗙 Delete											
Add File											
🞬 Change File											
🔛 Save File											
Add Device											
🜓 Up											
🐌 Down											
											_
For Help, press F1										NUM	_//

Figure 1-3: Programming Window with Progress Bar

- 17. When the process has completed, close the window. DO NOT SAVE CHANGES.
- 18. Remove the USB cable from the computer.
- 19. Turn the eDrive off and on to initiate the reloading of the firmware.
- 20. To verify that the firmware has installed correctly, select the following functions on the eDrive user menu: Utility Functions \rightarrow System Status \rightarrow EM \rightarrow -More-.
- 21. The **FPGA Version** screen will appear. The value listed should match the number specified in the Version Description Document provided by NGCEO.
- 22. Turn the eDrive off.
- 23. Disconnect the USB Blaster from the FPGA.
- 24. Remount the cover to the chassis.
- 25. Reinstall the 22 screws to secure the cover.