

SERVICE BULLETIN	
Note No.	SVC-FSB-0024 A
Release Date	9/3/2019
Contact	ngceoservice@ngc.com

eDrive System Controller FPGA Programming Guide

Summary

This technical note describes the programming procedure for the eDrive System Controller (SC) Field Programmable Gate Array (FPGA).

Scope

This technical note applies to both the eDrive 2U and 4U configurations.

The modification requires the following part 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. For 4U Configuration:
 - a. Connect the USB Blaster to Expansion Module connector **J22**. Pin 1 on the Flex Circuit Cable of the USB Blaster should be aligned to Pin 1 marked on the circuit board shown in **Figure 1**.
 - b. Proceed to **Step 8**.

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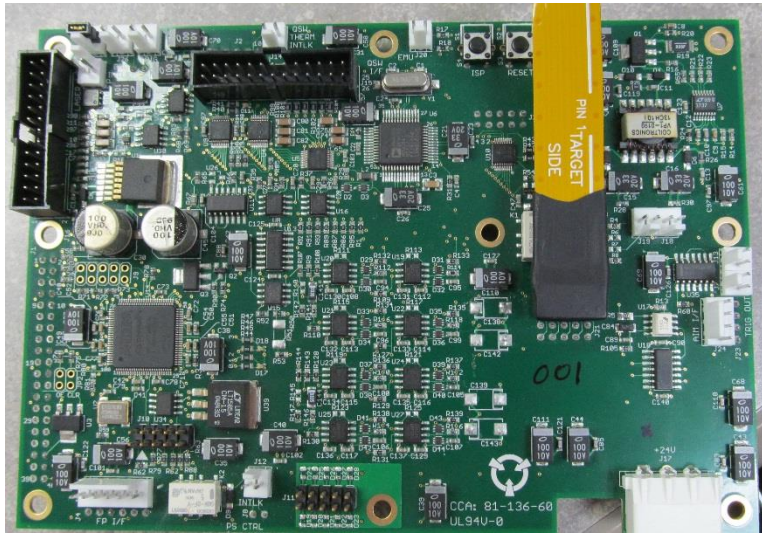


Figure 1. Expansion Module J22 Connector with Pin 1 Marker and USB Blaster Flex Circuit Cable

8. For 2U Configuration:

- a. Connect the USB Blaster to System Controller **J10** connector. Pin 1 on the Flex Circuit Cable of the USB Blaster should be aligned to Pin 1 marked on the circuit board shown in **Figure 2**.
- b. Proceed to **Step 8**.

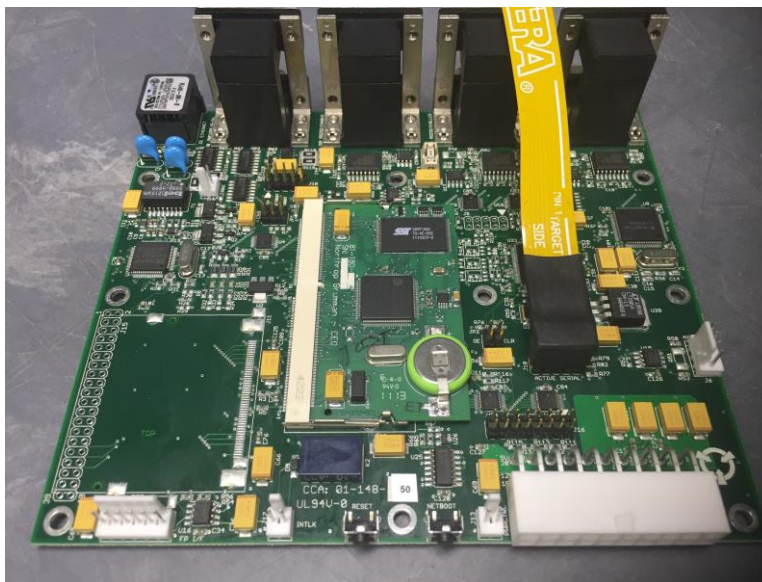


Figure 2. System Controller J10 Connector with Pin 1 Marker and USB Blaster Flex Circuit Cable

9. Run the Altera Quartus II software.

10. Select **Tools | Programmer**.

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11. A new programming window will appear. Select the **Hardware Setup...** button in the upper left corner.

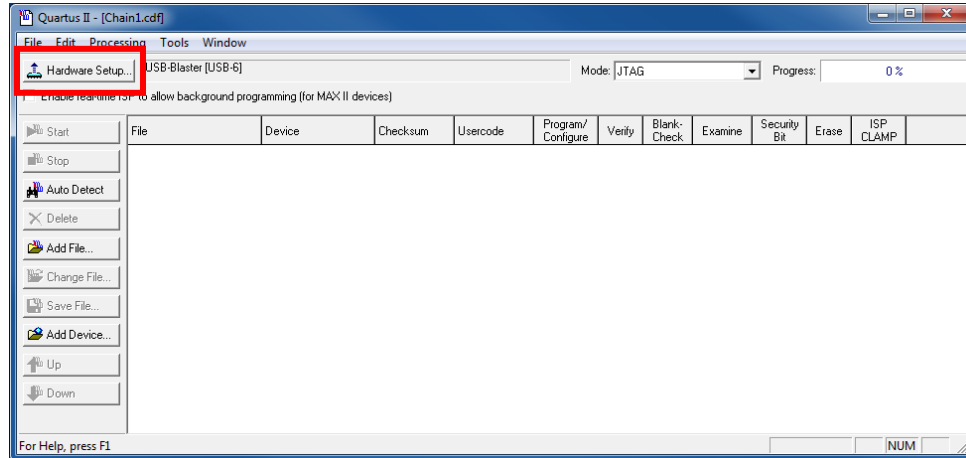


Figure 3. Programming Window

12. Select the USB Blaster from the **Available Hardware Items**. If the USB Blaster is connected to the computer but does not appear as a selection, you should disconnect other USB serial devices, exit the software tool, and return to Step 9.
13. In the **Mode** field, select **Active Serial Programming**. See Figure 1-3.
14. Select the **Add File** button from the menu on the left side of the screen.
15. Open the SC_v20.pof file provided for use by NGCEO.
16. Ensure that both the **Program/Configure** and **Verify** boxes are checked.
17. Select **Start**. A progress bar will appear in the upper right corner.

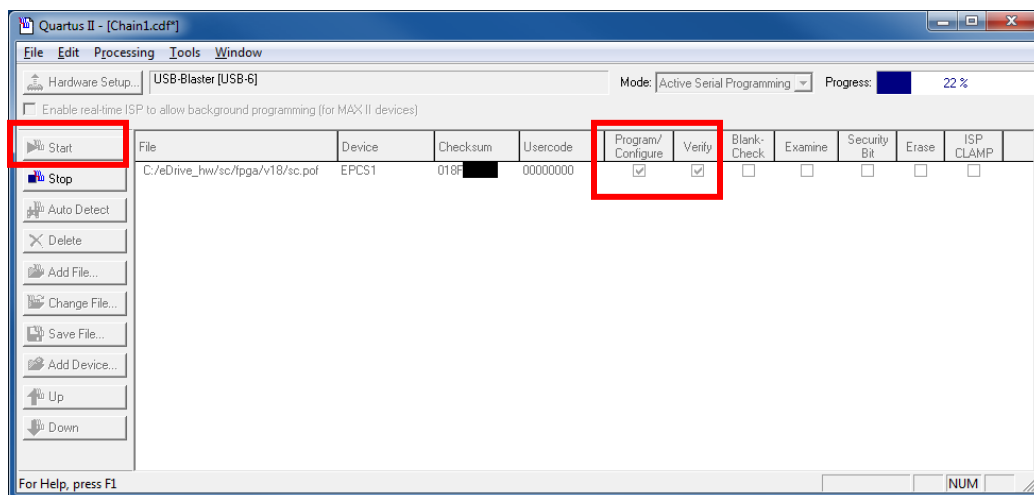


Figure 4. Programming Window with Progress Bar

18. When the process has completed, close the window. There is no need to save changes.
19. Remove the USB cable from the computer.

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20. Turn the eDrive off and on to initiate the reloading of the firmware.
21. To verify that the firmware has installed correctly, select the following functions on the eDrive user menu: **Utility Functions → Systems Status → Sys Ctrl → -More- → -More-**.
22. The **FPGA Version** screen will appear. The value listed should match the number specified in the Version Description Document provided by NGCEO.
23. Turn the eDrive off.
24. Disconnect the USB Blaster from the FPGA.
25. Remount the cover to the chassis.
26. Reinstall the 22 screws to secure the cover.