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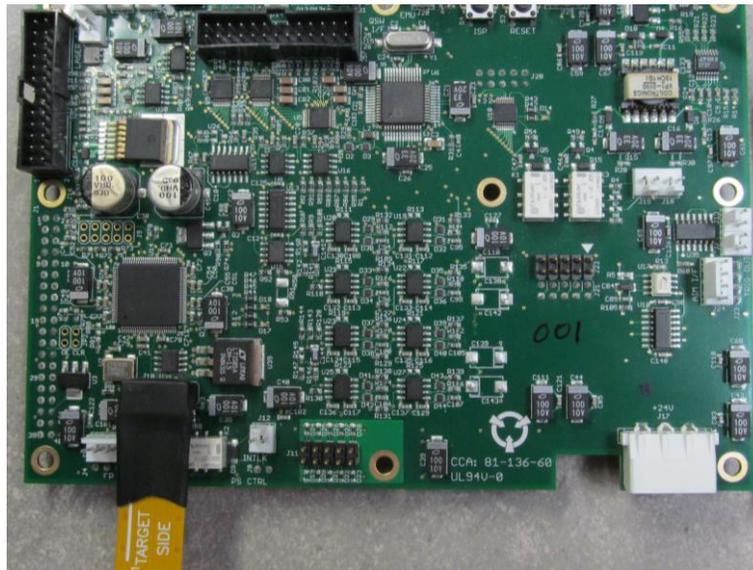
Figure 1-1: J10 Module with Pin 1 Marker
and USB Blaster Flex Circuit Cable

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.
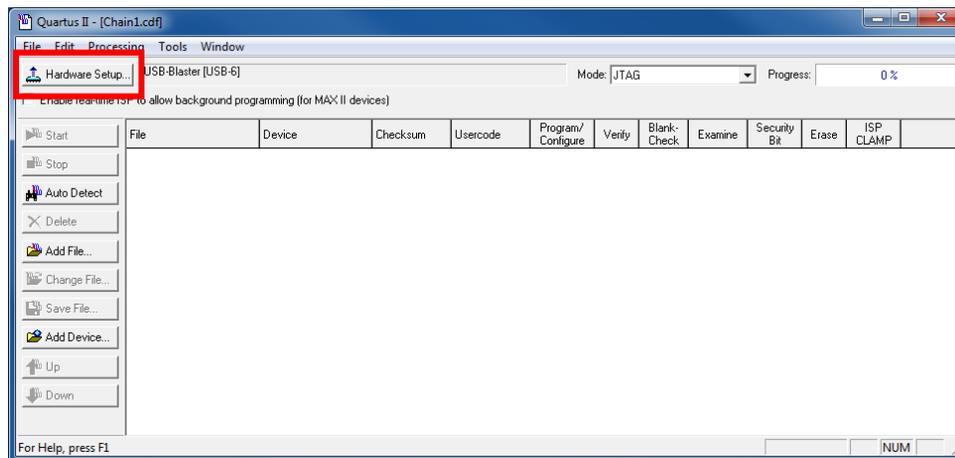

Figure 1-2: Programming Window

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.

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

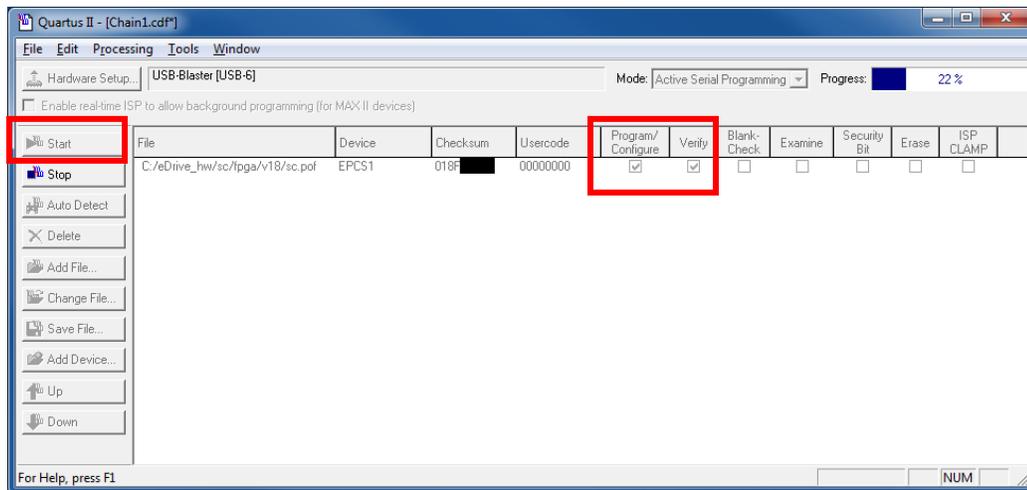16. Select **Start**. A progress bar will appear in the upper right corner.

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 → System Status → EM → -More- → -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.