FlashPro Express RISCV Guide v1.0

Guide

15th February 2017

Rev 1.0

Revision History

Revision	Date	Description
1.0	15th February 2017	Initial Draft

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1 Introduction

This document is written to demonstrate how to use FlashPro Express with RISCV. It will show a user the steps involved in downloading a FlashPro Express project to board. For this guide the M2S090 Security Evaluation Kit and the FlashPro Express project found on the M2S090 Github page linked below.

1.1 Abbreviation and Acronym

Following table contains basic acronyms which will be used in all documents related to the FlashPro Express guide.

Acronym	Details
FPExpress	FlashPro Express

1.2 Reference Documents

This section contains the reference documents mentioned in the document.

Document ID	Document Name	Document Location
[R0]	Microsemi SmartFusion2 Security Development Kit	https://www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2/sf2-evaluation-kit
[R1]	M2S090-Security-Eval-Kit Github SF2_CoreRISCV_AXI4_BaseDesign	https://github.com/RISCV-on-Microsemi-FPGA/M2S090-Security-Eval-Kit

2 Design Requirements

Table 1 shows the design requirements.

Design Requirements	Description
Hardware Requirements	
SmartFusion2 SoC FPGA M2S090 Security Evaluation Kit	Rev D or later
FlashPro5 Programmer or later	-
Power Adapter	12V
USB A to mini-B USB Cable	-
Operating System	RHEL 6 64-bit CentOS 6 64-bit Windows 8 64-bit Windows 7 Professional
Software Requirements	
Microsemi FlashPro Express	Version 11.7 SP2

3 Demo Design

The demo design is available for downloading from the following path on the RISCV-on - Microsemi-FPGA Github page:

https://github.com/RISCV-on-Microsemi-FPGA/M2S090-Security-Eval-Kit

Download the files as a .zip file by selecting "Clone or Download" then by selecting "Download ZIP". Extract the ZIP to a local directory such as:

C:\Users\user\Desktop\RISCV_FPEXPRESS_DEMO\

4 Board Setup

The M2S090 Security Development Kit should be set up as follows.

- Check if On/Off switch is in the Off position

- Plug in power cable to wall outlet and to the DC jack on the board

- Attach the ribbon cable supplied with the FlashPro5, to the FlashPro5 and to the JTAG Programming Header

- Attach the USB A to mini-B to the FlashPro5 and to the PC

- Power on the board using the ON/OFF switch

If the setup has been completed correctly it should look as follows:

Figure 1

5   FlashPro Express

With the board connected and powered on open FlashPro Express Start -> All Programs -> Microsemi -> Libero 11.7 -> Program Debug -> FPExpress. The following screen should now be open on your monitor.
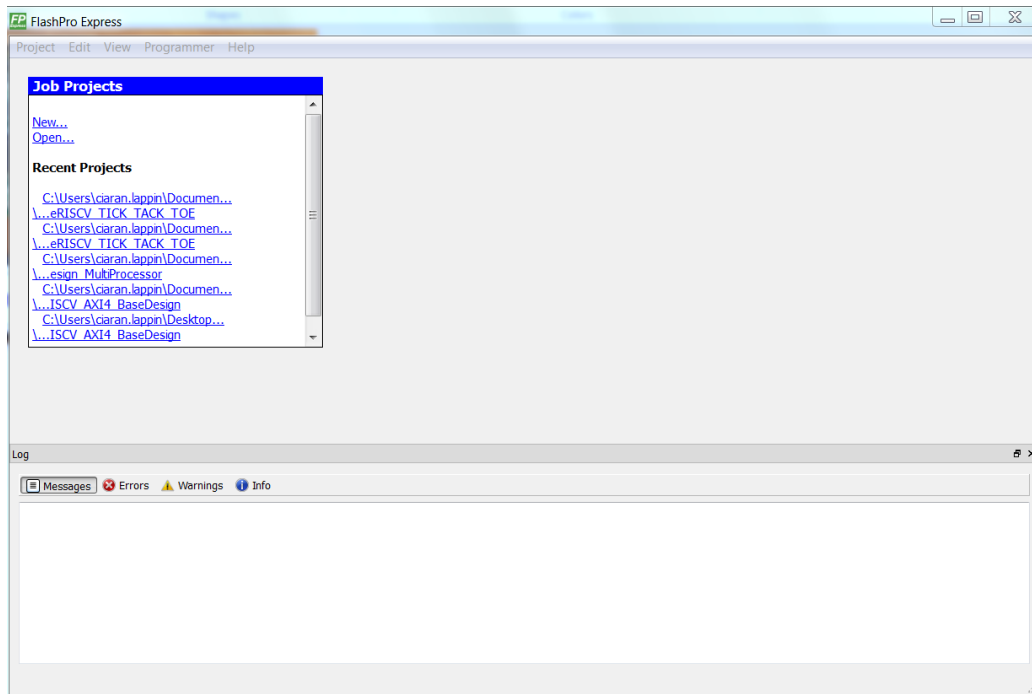

Figure 2

Next, click Project -> Open Job Project (.pro) and open the FPExpress Project located in:

C:\Users\user\Desktop\RISCV_FPEXPRESS_DEMO\M2S090-Security-Eval-Kit-master\
M2S090-Security-Eval-Kit-master\FlashProExpress\SF2_CoreRISCV_AXI4_BaseDesign

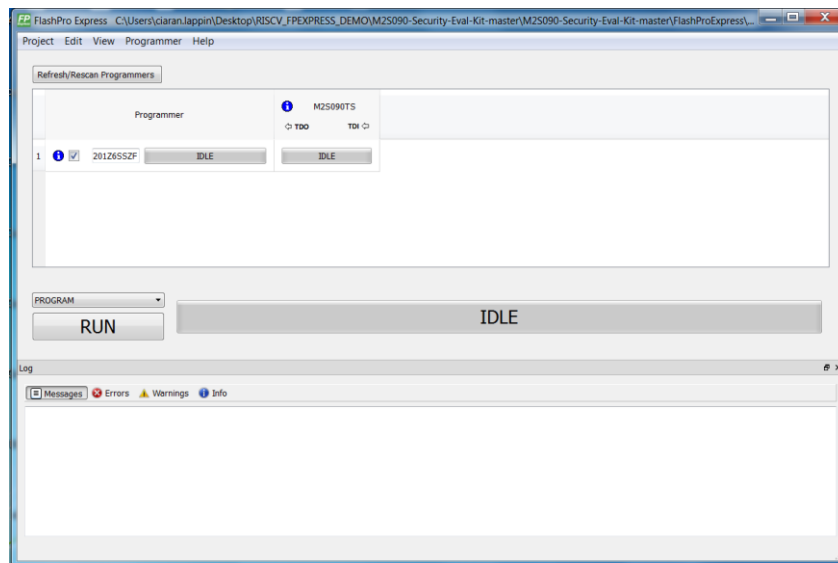If the project opened successfully the following should be seen on the monitor.

Figure 3

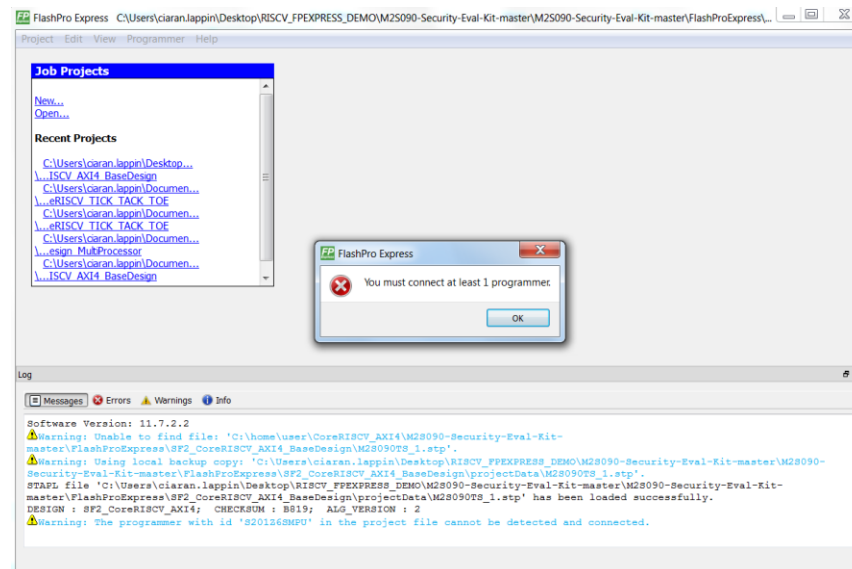If the project doesn't open successfully, the following may be seen on the monitor

Figure 4

Check that the cable going into the FlashPro5 is connected properly, if it is slightly sticking out of the port it will not connect relieably.

Next, click "RUN". Once complete you should see "1 PROGRAMMERS(s) PASSED" written instead of "IDLE" on the bar next to the "RUN" button.

Once successfully downloaded the board should looks as follows.

Figure 5

Some of the LEDs should be illuminated, as there is a program in the ENVM of the design.

Now that this is complete, firmware can be created using SoftConsole v5.0. This is available to download from:

https://www.microsemi.com/products/fpga-soc/soc-processors/risc-v

Sample applications for SoftConsole v5.0 can be found on the Github link below. The projects will be in the examples folder.

https://github.com/RISCV-on-Microsemi-FPGA/riscv-junk-drawer