



Updating Firmware in an enCoRe II Based Device

Programming Overview

The enCoRe II low-speed USB peripheral controller supports in-system re-programmability. The re-programmability feature is especially convenient since the programming signals are all exposed in the USB cable. These instructions will help the customer update or re-program the flash memory on an enCoRe II based device, provided that device has a USB cable.

Figure 1 shows the hardware components necessary to re-program an enCoRe II based keyboard. The hardware is assembled and ready to be connected to a PC that has the PSoC Programmer software installed in it. To re-program a different enCoRe II based device such as a mouse, the keyboard would have to be replaced by a mouse that has an enCoRe II chip. The components necessary for re-programming include the following:

- PSoC MiniProg programmer
- 5-Pin to USB interface adapter
- USB cable (Type A to mini-B)
- Keyboard, mouse, or other device using the enCoRe II chip
- PSoC Programmer software
- PC with PSoC Programmer software installed



Figure 1. CY4621 Reference Design Kit



Programming Hardware

The following figures show close up pictures of the hardware components required for programming. A USB cable is connected from the PC to the PSoC MiniProg, the PSoC MiniProg is connected to a 5-pin to USB adapter, and the adapter is connected to the device to be programmed.



Figure 2. Components Use for Re-programming an enCoRe II Based Device

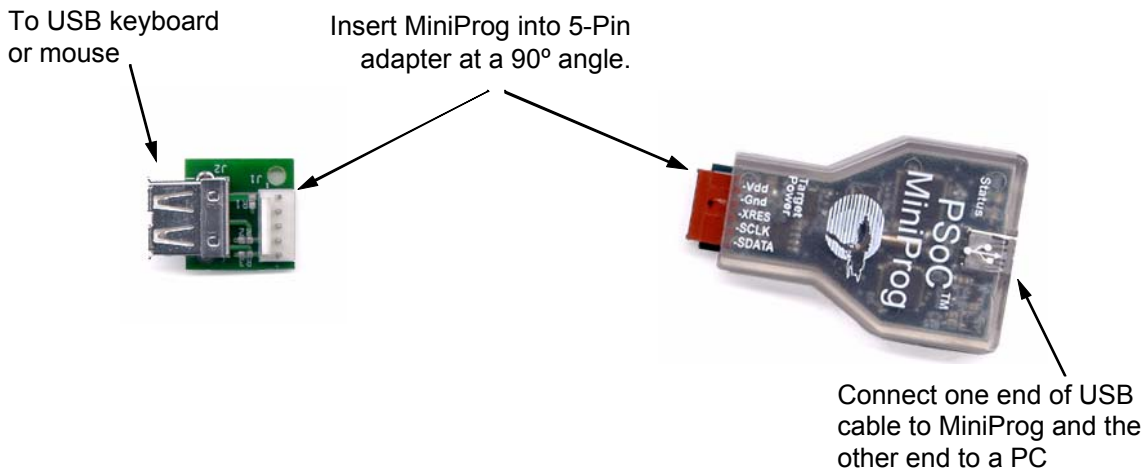


Figure 3. Connecting the Components



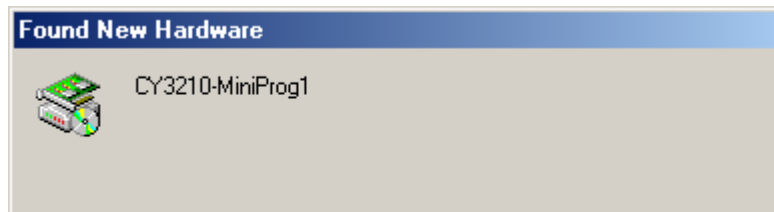
Programming Software

The PSoC Programmer software is required and must be installed on the PC that will be used to re-program the enCoRe II based device. The software may be included on an enCoRe II development or reference design kit CD, or it can be downloaded on-line at www.Cypress.com. Click on the "Software and Drivers" link. The filename is "PSoC Programmer ver x.xx", where the x will be changed based on the most recent version.

Re-programming Procedure

The following procedures describe how to re-program an enCoRe II device using the Cypress CY3210-MiniProg1 (also called the PSoC MiniProg). The Cypress CY4621 enCoRe II Keyboard Reference Design is used for this tutorial, but the same basic programming procedures apply for all enCoRe II devices.

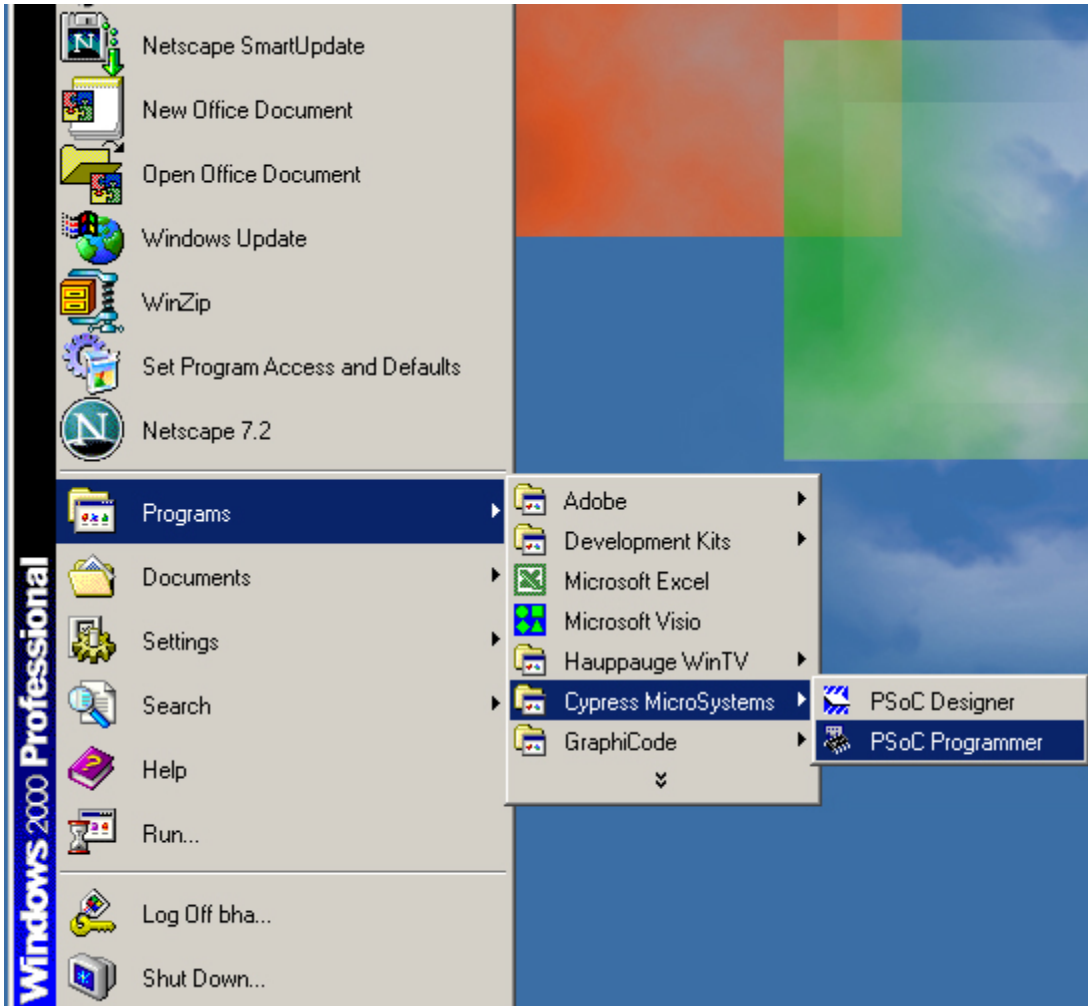
1. Before connecting the PSoC MiniProg, ensure you have installed the PSoC Programmer software on your PC. The PSoC Programmer will install the needed drivers and add the PSoC Programmer to the Windows Programs list. Windows 2000 or Windows XP are required to use the PSoC Programmer.
2. Attach the PSoC MiniProg to the host system. If not previously installed, the Found New Hardware Wizard will be displayed and the driver will install with no user intervention required.





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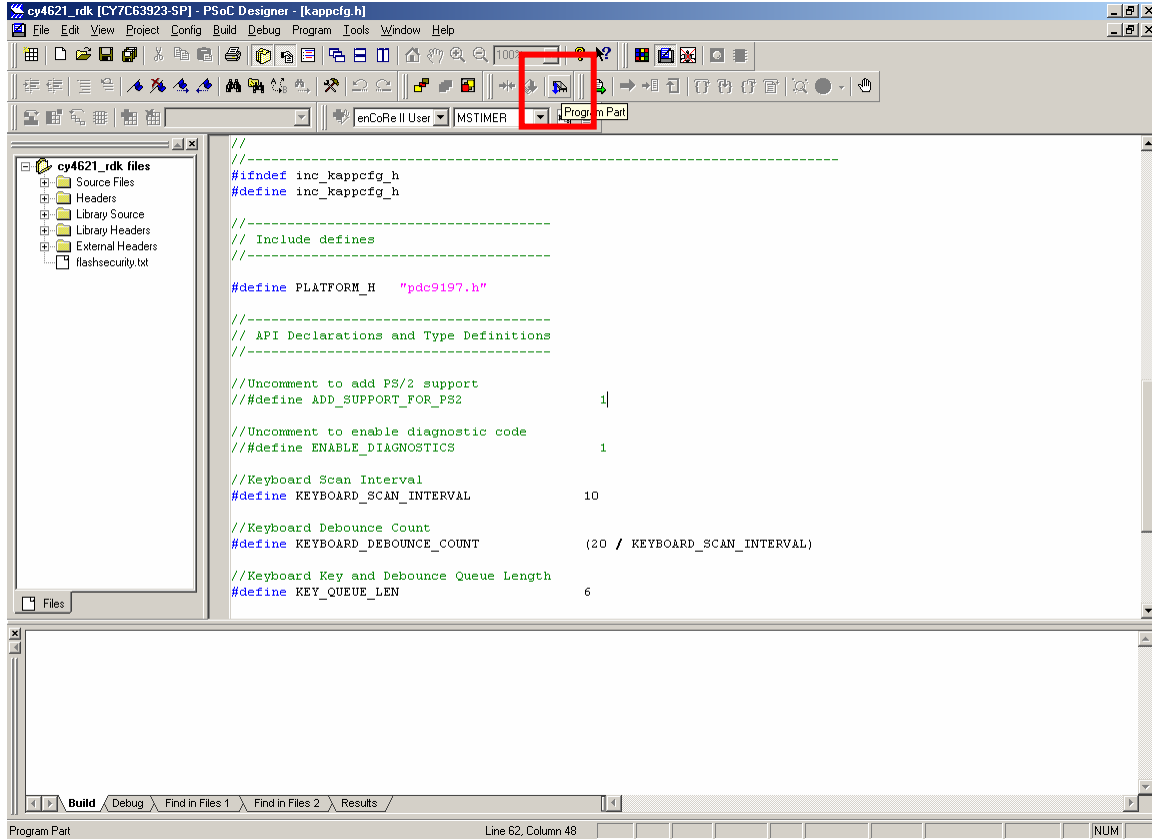
3. Launch the PSoC Programmer application. PSoC Programmer can be opened from the Start > Programs > Cypress Microsystems > PSoC Programmer menu.





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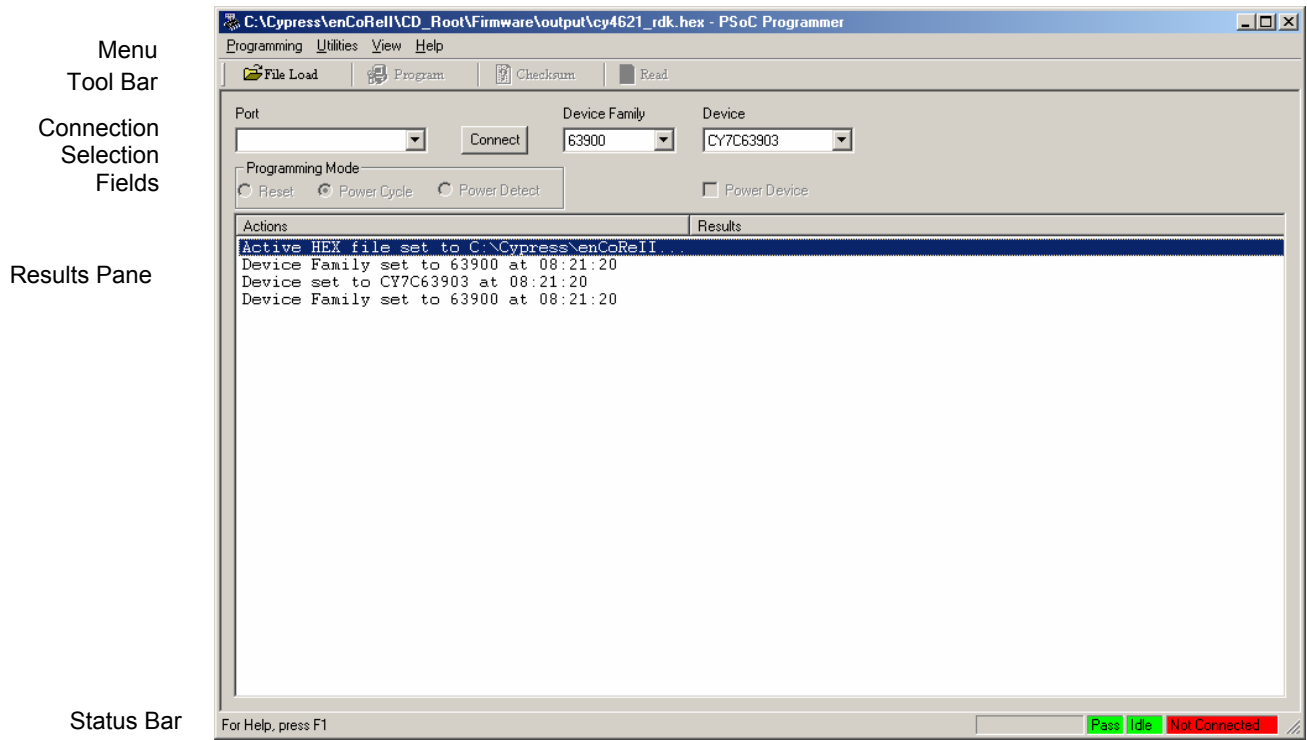
You can also launch the PSoC Programmer application from inside of the PSoC Designer by clicking on the Program Part icon.





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- 4. The PSoC Programmer provides the interface to enable developers to program their enCoRe II family device.



Menu
Tool Bar
Connection
Selection
Fields

Results Pane

Status Bar

PSoC Programmer Menu Bar



- Help: Select – Help Topics, About PSoC Programmer
- View: Select – Toolbar, Status Bar
- Utilities: Select – Verify, Upgrade Firmware
- Programming: Select - File Load, Program, Checksum, Read or Exit

PSoC Programmer Toolbar



- Read – Initiates a read of the device contents for display on the Results pane.
- Checksum – Initiates the operation to read the checksum of the device and compare it against the checksum of the selected hex file.
- Program – When pressed will program the selected hex file to the enCoRe II.
- File Load – Allows user to select hex file to be programmed into the enCoRe II.

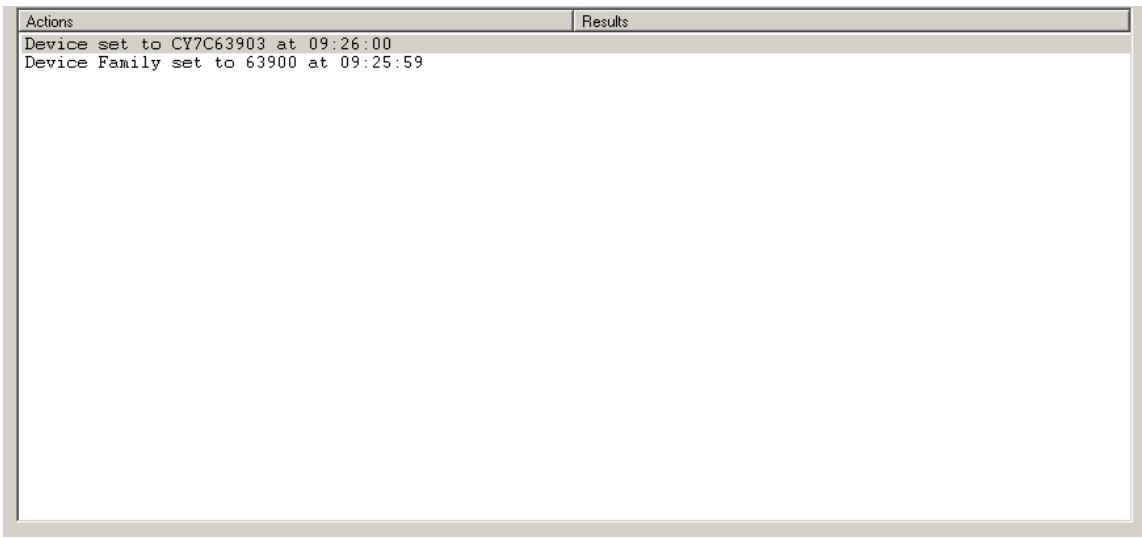


PSoC Programmer Connection



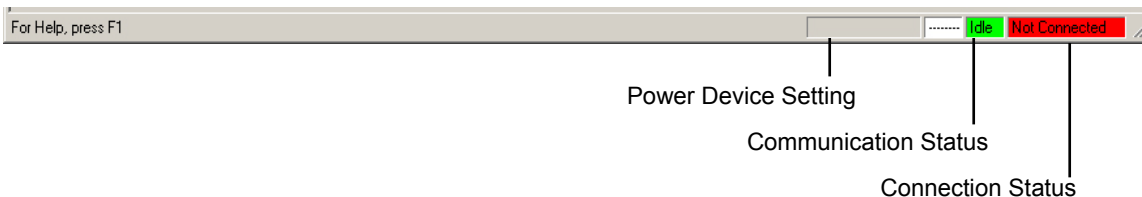
- Port – Drop down menu to select the MiniProg1.
- Connect – Press this button to connect the MiniProg1, if not already connected.
- Programming Mode – Power Cycle should be selected when connected.
- Device Family – Drop down menu allows user to select Device family.
- Device – Drop down menu allows user to select device to be programmed.
- Power Device – This is currently not used with the enCoRe II family. Selecting this box may cause synchronization problems.

PSoC Programmer Result Pane



The Results Pane has two columns – Actions and Results. The Actions column displays User Actions, such as the active Hex file to load when selected by the user. The Results column displays the Results such as programming activity and any error messages.

PSoC Programmer Status Bar

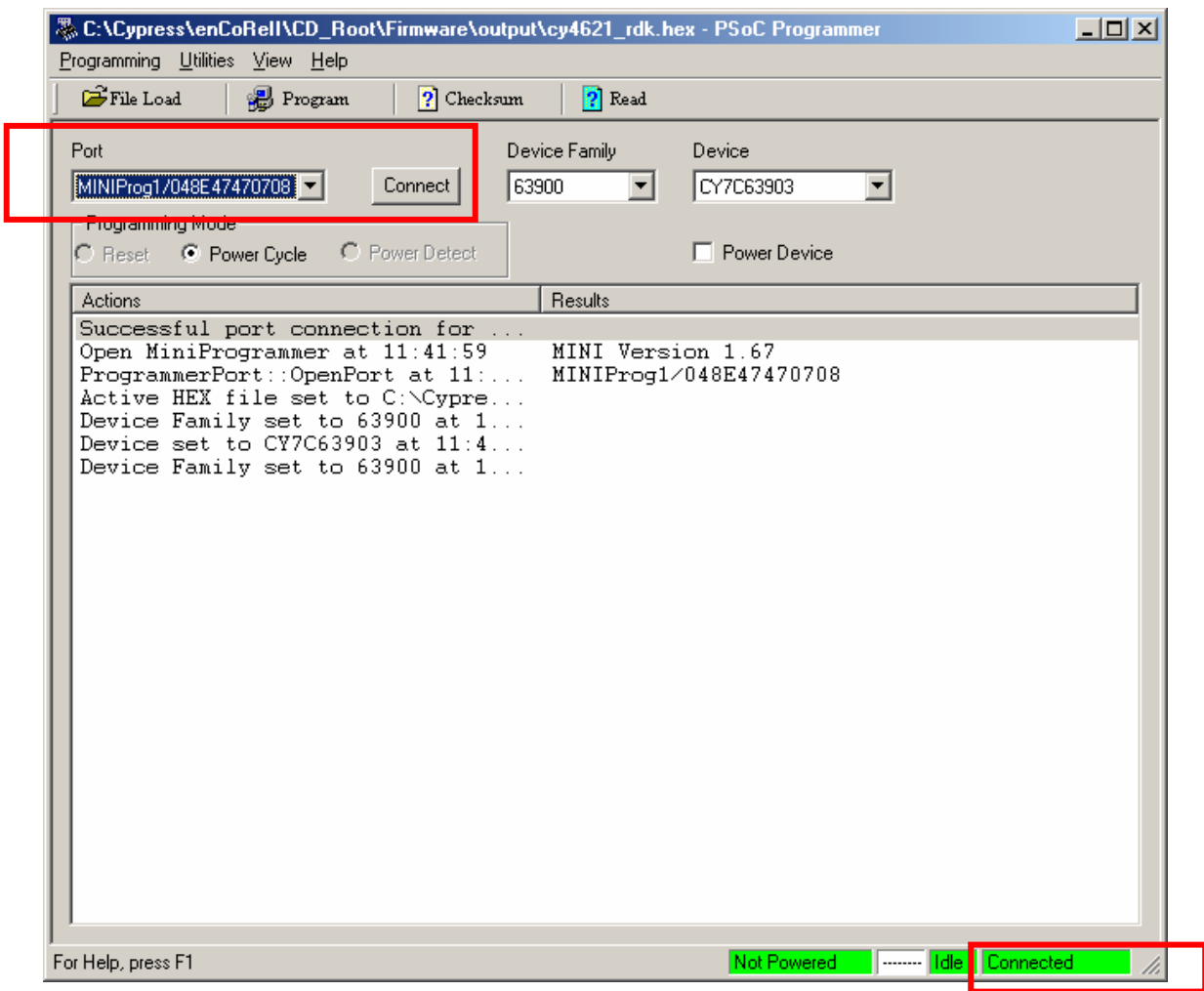




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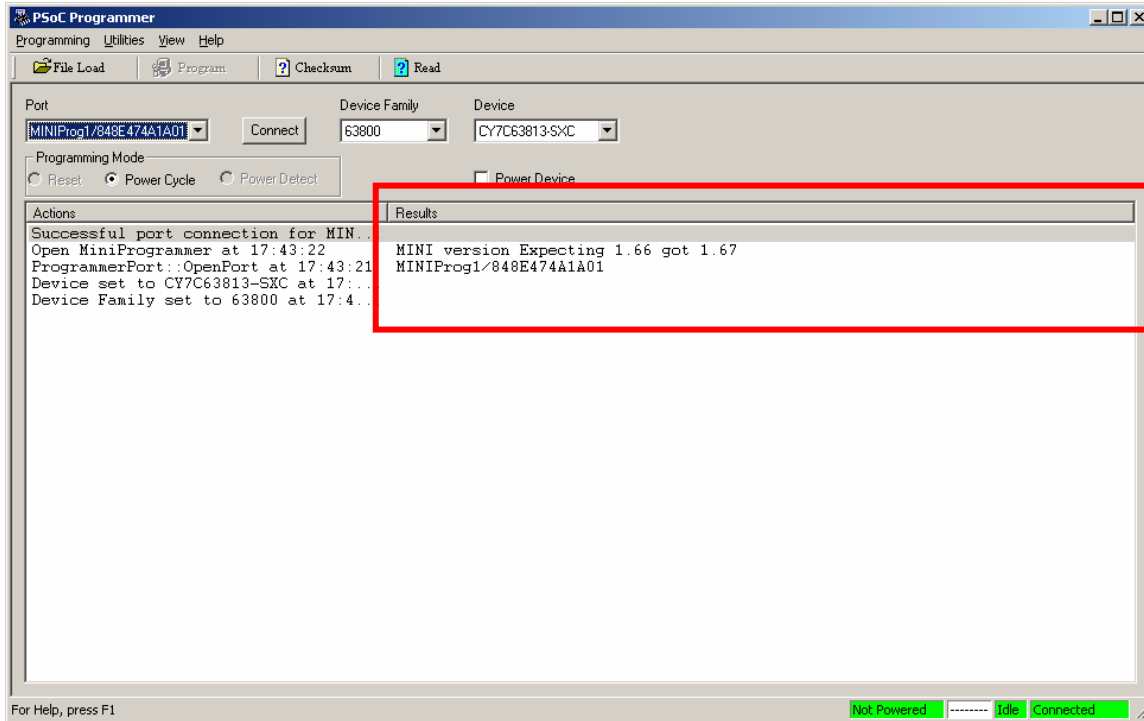
- Power Device Setting Not currently used with the enCoRe II family.
- Communication Status Indicates whether or not there is active communication between the application and the enCoRe II.
- Connection Status Indicates if the MiniProg is connected to the application.

5. PSoC Programmer configuration. Make sure that MiniProg1 is selected in the Port field. Select an enCoRe II family part and device. The user should ensure the correct family and device are selected for the part they are programming. The CY7C63903 from the 63900 family is used here for demonstration purposes. The PSoC Programmer should also display “Connected” in the Status bar. The Results column should not indicate any errors or warnings.





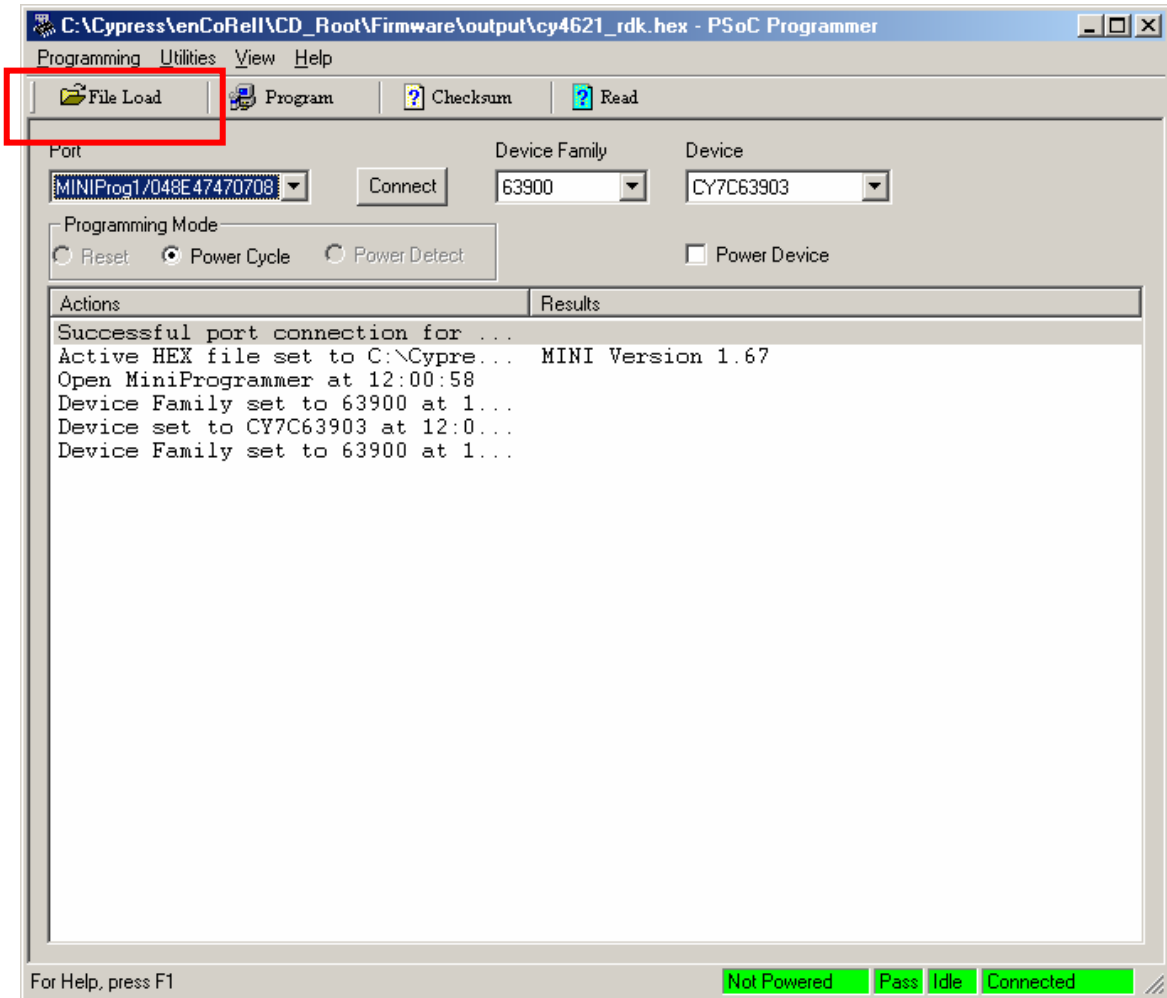
If any error or warning messages are displayed in the Results column, they should be addressed prior to continuing to prevent the system from hanging up. For example, the warning message below indicates that a firmware upgrade is needed. Select Upgrade Firmware from the Utilities menu before proceeding.



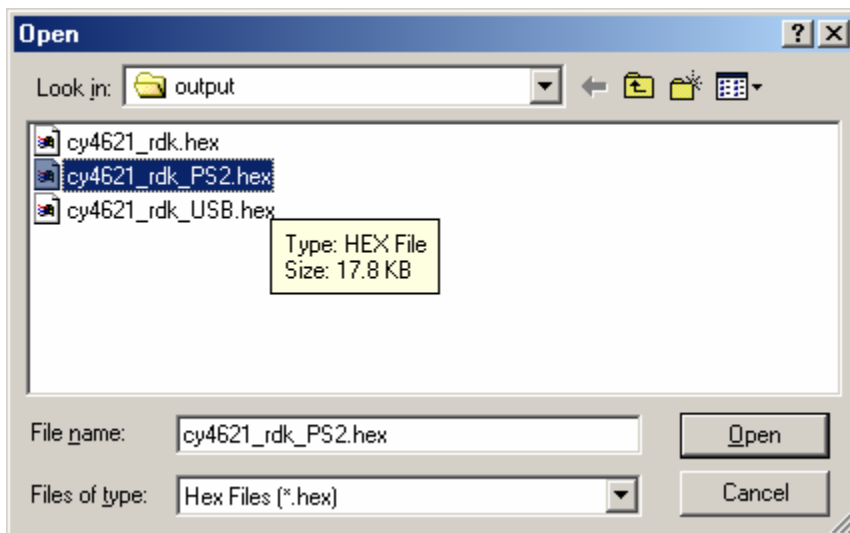


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6. Use the File Load button to select the Active Hex file.

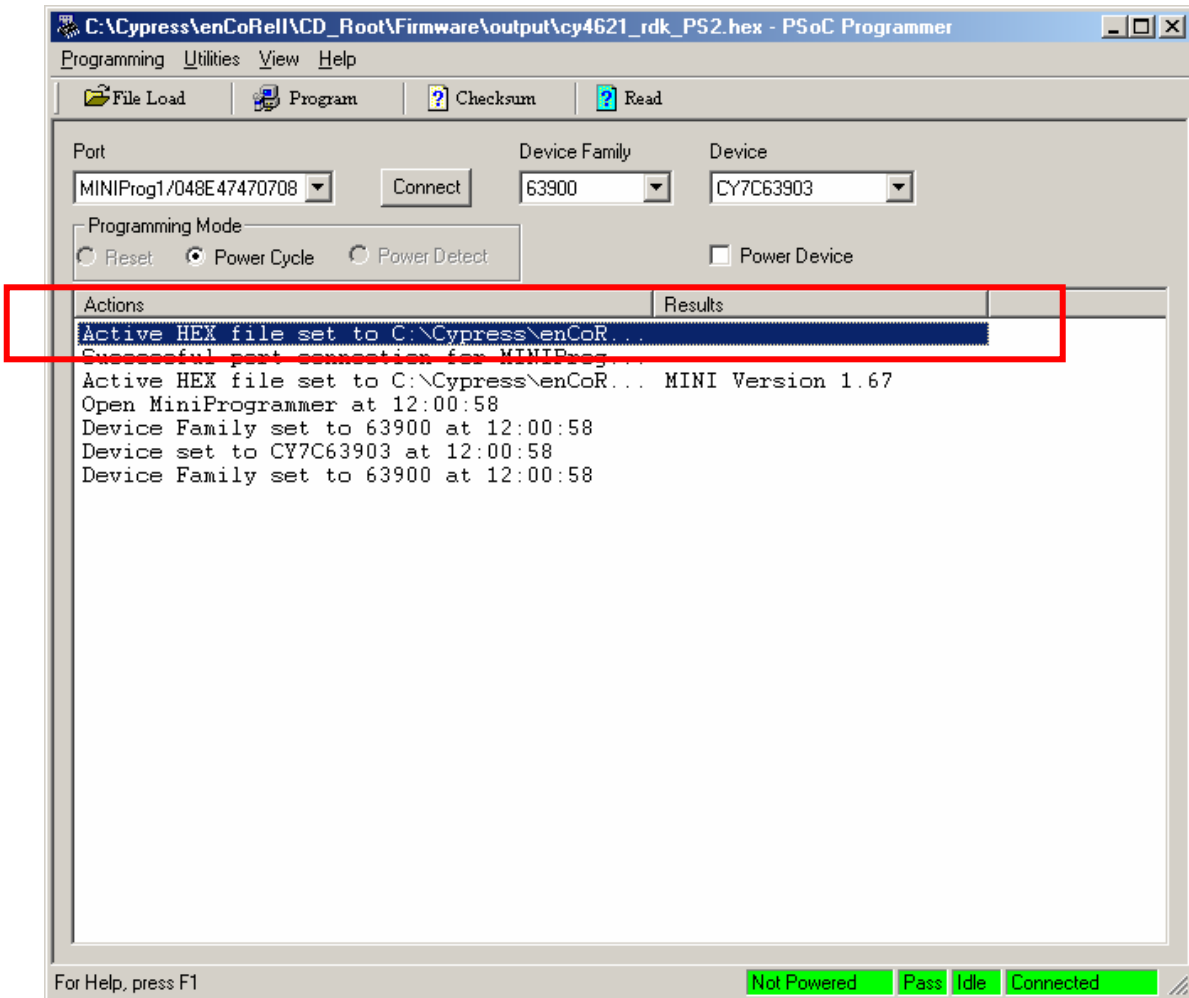


Navigate to the desired hex file.



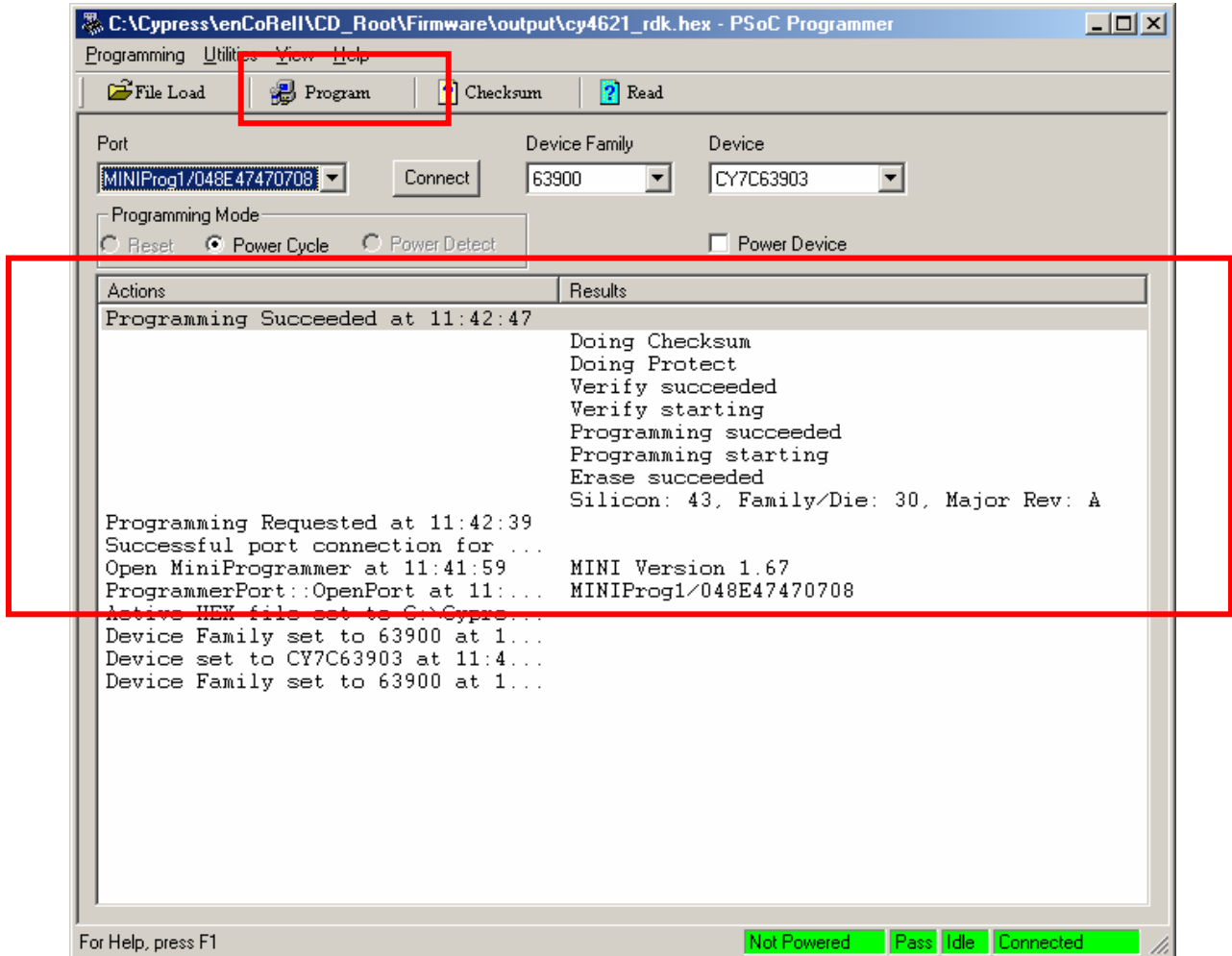


The Actions column will indicate the Active Hex file has been set.





- 7. Pressing the Program button will program the enCoRe II. The Results column will display the Programming results. An error in the results column may mean that the enCoRe II device is not connected correctly, or the wrong device is chosen in the drop-down list.



Detailed descriptions of the PSoc Programmer controls can be accessed by pressing F1 as indicated in the Status Bar or by selecting the Help Topics from the Help menu.