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Flasher-C2000

# Installation Instructions

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# Installing the Software

This document describes the Flasher-C2000 installation procedure. This software supports programming of the on-chip flash in the TMS320F240x, TMS320F28xx and TMS320F24x devices using JTAGjet emulators that have been enabled to work with the Flasher-C2000. You can obtain a license for using the Flasher-C2000 by contacting sales@signum.com.

## Flasher-C2000 Installation

1. Insert the Flasher-C2000 disk into the CD-ROM drive. The installation process should start automatically.
2. Follow the on-screen instructions to complete the installation process.

## JTAGjet USB Device Driver Installation

**Time Saver:** If you have installed the JTAGjet drivers for Code Composer Studio earlier, the USB drivers are already installed on your PC. Proceed to the next section.

**Note:** To get the best performance from your JTAGjet, make sure that your PC has at least one USB 2.0 port.

Working with USB 1.1 will be an order of magnitude slower. USB 2.0 PCI or PCMCIA card is strongly recommended as an inexpensive upgrade option if your PC or laptop does not have the USB 2.0 port.

1. Connect your JTAGjet emulator to the computer's USB port.

2. Once the JTAGjet is recognized by the Windows, you will be asked for the location of the USB device driver. If the Signum CD-ROM is in the drive, simply select the CD-ROM's root directory. Otherwise, point to the installation folder of the Flasher-C2000 and select the **SigUSB.inf** file. For instance, if C:\Signum\Flasher-C2000 was the Flasher-C2000 main folder, the Signum driver information file would be located in the subfolder:


C:\Signum\Flasher-C2000\Drivers\USB Drivers\


In case there are any difficulties, please refer to the *USB 2.0 Driver for JTAGjet Installation Instructions* document (available at [www.signum.com/tecdoc.htm](http://www.signum.com/tecdoc.htm)), which describes the USB driver installation process in greater detail.

## Running Flasher-C2000

To start the Flasher-C2000 go to the **Start** menu, select **Signum Systems Flasher-C2000** entry and click on the **Flash2800Win** or **Flash2400Win** applications depending on the device family you are working with.


After the Flasher GUI appears, select the proper DSP device and a board configuration file. For most boards with only one DSP device on the JTAG chain, the supplied **Single\_28xx.dat** or **Single\_24xx.dat** board configuration files will work just fine. For boards with more complex JTAG chains please refer to the Help button for more information.

After selecting the proper board configuration file click on the **Connect** button. When the connection dialog box appears, select **Connect to Emulator Automatically** and skip the next dialog box by clicking **OK**. If needed, you can adjust the JTAG parameters at any time by starting the SignumCCS.exe utility or directly from the Flasher GUI by clicking on the left corner of the title bar [  ] and selecting **Adjust JTAG Settings**.

If the emulator and target board are properly installed and connected, you will see a green connect icon  in the GUI. This indicates that the system is ready to begin flash operations.

## Adjusting JTAGjet Settings

Use the **SignumCCS.exe** utility to diagnose the system or to change the JTAGjet parameters, such as JTAG clock speed. The utility can be run before Flasher-C2000 starts or concurrently with it. In the latter case, the functionality of SignumCCS is limited.

To run SignumCCS, select **Signum Systems Flasher-C2000** from Programs in the Windows Start menu, and click on SignumCCS. You can also start this utility directly from the Flasher-C2000 GUI by clicking on the left corner of the title bar [  ] and selecting **Adjust JTAG Parameters** option .

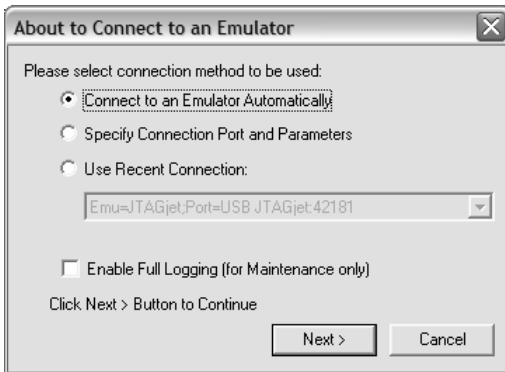


FIGURE 1 Connecting to the emulator

When the connection dialog box appears, the **Connect to Emulator Automatically** option is the recommended choice if you have only one JTAGjet attached to your PC (Figure 1). With multiple JTAGjet emulators,

you can manage communication details by selecting the Specify Connection Port and Parameters option, which allows you to select the emulator to be used with your CCStudio environment.

Click Next to configure the JTAG header and the clock.

## Configuring the JTAG Header and Clock

The dialog box that appears allows you to define the type of the JTAG header used by the target board and the JTAG clock (TCK) frequency to be used for that board.

It is recommended that the default 10MHz setting not be changed until the board is working at 10MHz first. OMAP161x and OMAP171x devices should be set to the Adaptive Clock setting.

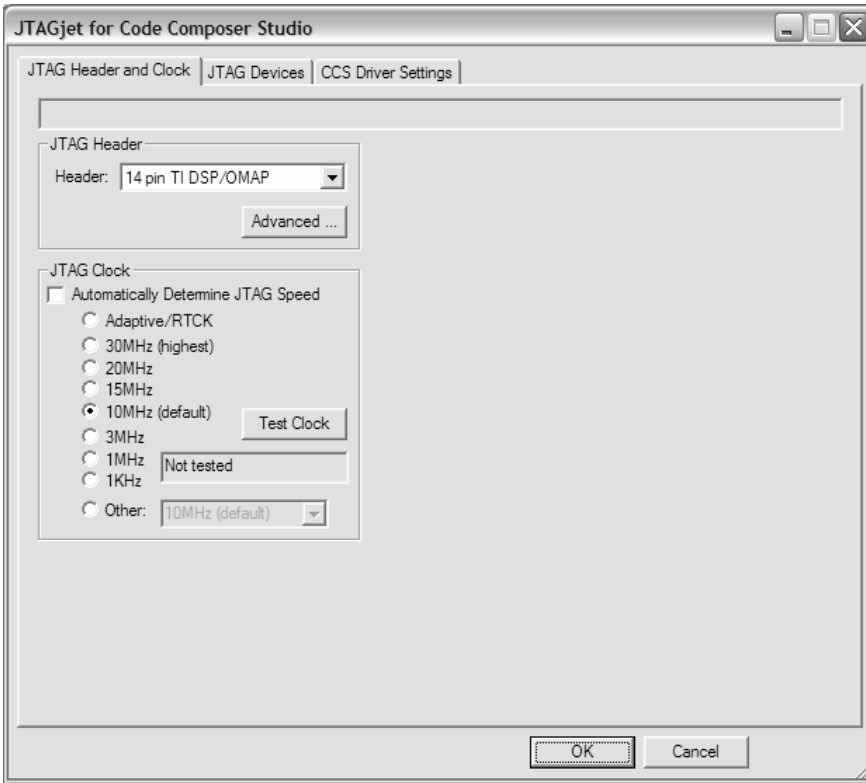


FIGURE 2 Configuring the JTAG header and setting the clock speed.

The settings must match the JTAG connector in use. The default is a 14 pin TI DSP/OMAP connector available on all of the target boards manufactured by TI and Spectrum Digital.

The JTAG Clock section of the dialog box allows you to modify the JTAG clock (TCK) speed setting. The default is 10 MHz. However, some DSP devices may require a lower setting and some will run at 30 MHz. General guidelines for setting the JTAG clock for your board are as follows:

- Select the fastest JTAG clock supported by your board. The rule of thumb is that the JTAG clock must not be faster than 1/3 of the CPU



clock.. Higher than 10 MHz clock frequencies may be used, but make sure the Code Composer Studio is running without any problems at 10 MHz first. Remember that SignumCCS.exe can change the JTAG clock speed while CCStudio is running, so it is easy to experiment with different JTAG clocks.

- The Adaptive/RTCK option is designed solely for ARM and OMAP devices that synchronize the JTAG clock with the CPU clock and return the RTCK clock signal back to the emulator. This holds for any ARM core with the -S suffix in its name, such as ARM 926EJ-S found in the OMAP16xx, OMAP17xx and other ARM devices. The Adaptive/RTCK option makes the JTAG channel functional at a broad range of CPU speed that may be varied at will by the running application.

**Caution:** Do not use the Adaptive/RTCK option for plain DSP devices.

- The Automatically Determine JTAG Speed option is designed solely for ARM cores. Even though the software will try to determine the correct clock setting, you should verify that the setting matches your board capabilities before continuing.

It is recommended to test the selected JTAG clock speed setting by clicking the Test Clock button. The program will communicate with the target board at the new clock frequency and report errors, if any. Passing this test does not mean the entire board will work at the tested speed, as some memories may not be fast enough above the 10 MHz default setting.

The Advanced button allows you to customize the pins on the JTAG cable, which should not be modified for most of the boards. See *Appendix* for more details.

When done configuring the JTAG clock, press the JTAG Devices tab. A graphical representation of the JTAG chain will appear (Figure 3).

## Device List on the JTAG Chain

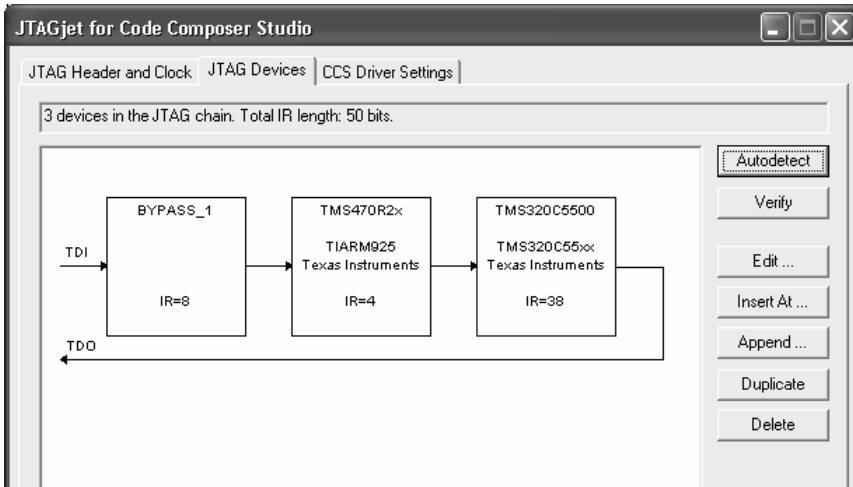


FIGURE 3. JTAG chain diagram. Depending on your particular system, you may see a different number of JTAG devices. Single-device systems will have only one link.

The list of the JTAG devices on the chain is either detected automatically or imported from the recently used CCStudio configuration, depending on the selection in the first step of the installation process.

Press the Verify button to make sure that the scan chain is correctly defined and works with the target currently connected to the JTAGjet.

Use the available buttons to Autodetect, Add, Remove or Edit the devices on the chain to eliminate any errors reported by the Verify button due to incompatibility of the configuration file with the currently connected target hardware.

Click the CCS Driver Settings tab to display the remaining set of configuration options (Figure 4).

## Code Composer Studio Driver Settings

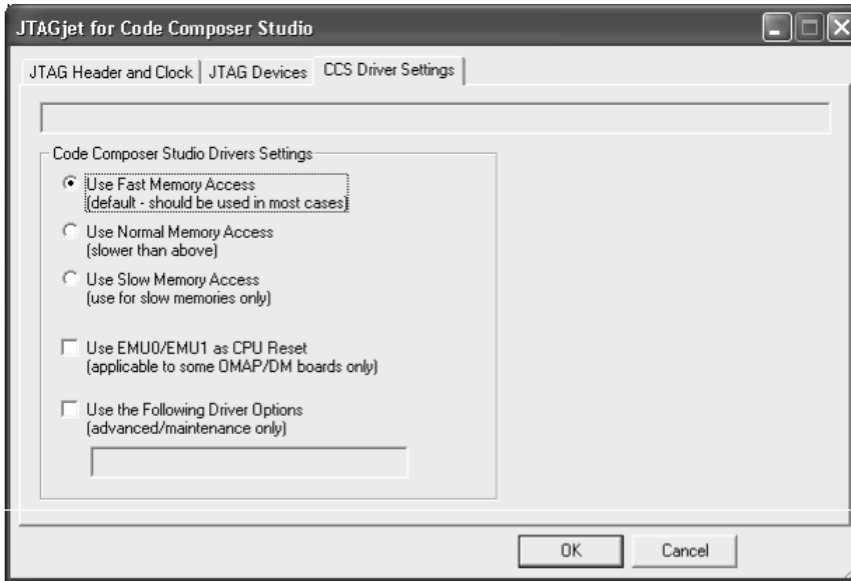


FIGURE 4. Selecting CCStudio driver settings.

The CCS Driver Settings tab controls the non-JTAG aspects of the Signum Code Composer drivers, such as the memory access speed or the CPU Reset option. For now, click OK to accept the default settings.

Since it is not possible to automatically set or modify the existing Code Composer Studio configuration, we will need the information displayed in the next box to set up CCStudio properly. Do not click OK yet. You will need the information in the dialog box during the next stages of the installation process.



FIGURE 5. The SignumCCS dialog box showing a multi-device JTAG configuration.

## Uninstalling Flasher-C2000

To uninstall the software, you must use the Windows **Add or Remove Programs** utility from the **Control Panel** and select the **Signum Systems Flasher-C2000** in the list of programs to be removed.

The uninstall process removes all of the installed components. Any temporary files, configuration files and log files (with names beginning with created while the software was in use, will not be erased. You should leave them if you are installing a new version of the Flasher-C2000 software or delete them manually if you no longer need them.

# Appendix

## Advanced JTAG Configuration

As mentioned in section *Configuring the JTAG Header and Clock* (p. 4), the Setup program allows you to customize the JTAG cable pin assignment and characteristics. To make changes in the pinout, in the JTAGjet for code Composer studio dialog box (Figure 2), click the Advanced button to bring up the Advanced JTAG Configuration dialog box shown in Figure 6.

Make pinout modifications only if there are problems connecting to the target board, or if a specific target board requirement must be met.

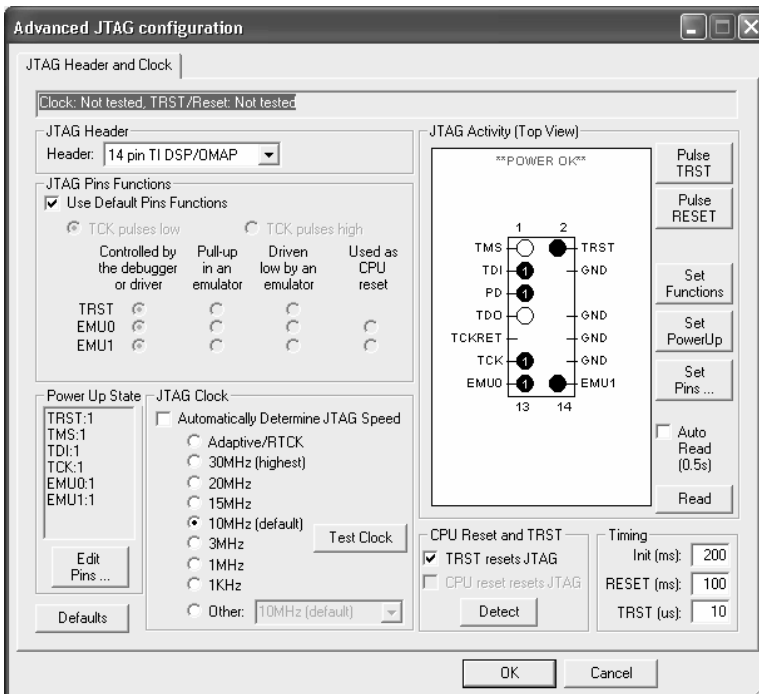


FIGURE 6 Advanced JTAG Configuration dialog box.

The Advanced part of the JTAG Header and Clock tab displays the status of the JTAG header along with controls determining how the JTAG pins are to be terminated or how they should be set during target power-up. The dialog box also allows you to change any JTAG pin, which may be useful when troubleshooting JTAG chains on new boards.

## Troubleshooting

1. Use the SignumCCS.exe program to customize and test the JTAG connection.
2. Make sure that the JTAG clock does not exceed the recommended value. Recall that the JTAG clock should not be faster than 1/3 of the current CPU frequency. As some CPUs start up at a very low CPU clock speed, verify the lowest CPU clock rate and set the JTAG clock to 1/3 of that rate.
3. Use AutoDetect in the SignumCCS program to test your scan chain. The device list in the CCStudio Setup may be incorrect due to modifications or mistakes.
4. Make sure that the CPU and the board is initialized. Do that by selecting the correct board and CCStudio GEL script file during the CCStudio setup process, or by running an initialization GEL script manually from within CCStudio.

## Technical Support

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	<a href="http://signum.com/support.htm">signum.com/support.htm</a>
	<a href="http://signum.com/sales.htm">signum.com/sales.htm</a>

**Contact Signum Systems** Technical Support by dialing (805) 523-9774, Monday through Friday between 9 A.M. and 5 P.M. Pacific Time. In order to enable our technical support engineers to process your request efficiently, we strongly recommend submitting the Technical Support Request form available at [signum.com/support.htm](http://signum.com/support.htm).

**A Friendly Reminder** We will be able to serve you better if, when contacting our Tech Support, you are at your computer, have your documentation at hand and are prepared to

provide:

1. The version of your Signum Systems software, hardware or firmware that you are using and the serial number of your emulator.
2. The exact wording of any messages and prompts that appear on your screen.
3. The environment, in which your software is running, including the type of hardware and operating system.
4. A description of what happened and what you were doing when the problem occurred.

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