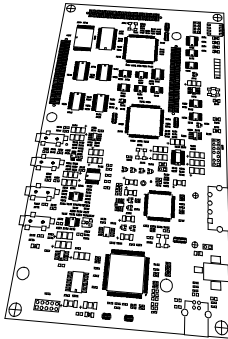


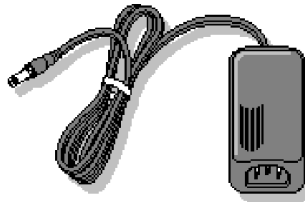
DSP Starter Kit (DSK) for the TMS320C6416 (720 MHz)

Quick Start Installation Guide

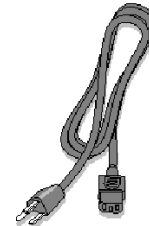
The TMS320C6416 DSK contains:



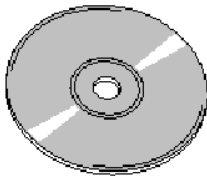
C6416 DSK Board



+5V Universal Power Supply



AC Power Cord



C6416 DSK Code Composer Studio CD ROM



TMS320C6416 DSK Technical Reference



USB Cable

System Hardware and Software Requirements

These operating platform requirements are necessary to install the Code Composer Studio (CCS) Integrated Development Environment and support the USB port. The requirements for the operating platform are:

Minimum Hardware Configuration

- 233 Mhz. or faster Pentium or compatible
- 600MB of free hard disk space
- Microsoft Windows 98SE, 2000(SP1 or higher) or XP
- 64MB of RAM
- SVGA (640x480) color display
- Local CD-ROM Drive

Recommended Hardware Configuration

- 128MB of RAM
- SVGA(1024 x 768) color display
- 500 Mhz. or faster Pentium or compatible

The 720 MHz DSK is an upgraded version of the original 600 MHz DSK which includes both hardware and software modifications. Please see the **DSK Version History** section of the DSK Help file for a list of differences and potential implications for your code.

Installing the DSK Code Composer Studio for Windows 98SE/2000/XP

Before you install the DSK software, make sure the PC has a USB port and an operating system (Windows 98SE/2000/XP) that supports USB.

Note: For Windows 2000 and XP you must install Code Composer Studio using Administrator privileges. To run CCS on these systems requires write permission on the registry. If installing hardware, follow the instructions provided with the hardware.

Also prior to installing the DSK Code Composer Studio make sure the Virus checker on your system is turned off or disabled. It may be turned on or enabled when running CCS.

1. Insert the Code Composer Studio installation CD into the CD-ROM Drive. An install screen should appear; if not, go to Windows Explorer and run setup.exe from the CD-ROM.
2. Choose one of the following install options:
 - **Code Composer Studio.** Full install of CCStudio for the C6416DSK.
 - **C6416DSK Patch to CCStudio v2.20.** Patch install to your existing version of CCStudio v2.20. Requires CCStudio v2.20. If you select this option then you must run **Setup CCS 2 (C6000)** and import the **"TMS320C6416DSK -0x540"** configuration.
3. Respond to the dialog boxes as the installation program runs.
4. Leave your Code Composer CD ROM in the CD-ROM drive as it will be needed during USB Hardware install. Restart your computer if prompted to by the CCS Install.

The DSK CCS v2.2 will automatically configure your system with a preset configuration for the C6416 DSK USB device.

The installation procedures will create two icons on your desktop:

C6416 DSK Startup – C6416 DSK CCS
C6416 DSK Diagnostics – 6416 DSK Diagnostic Utility

Connecting the C6416 DSK to your PC

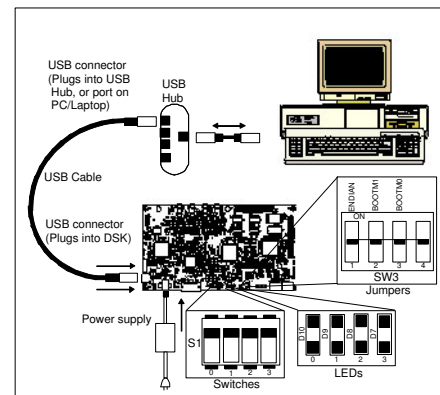
1. Connect the supplied USB cable to your PC or laptop. If you connect the USB cable to a USB Hub, be sure the hub is connected to the PC or laptop and power is applied to the hub.

Note: Connecting through a USB Hub is a highly recommended procedure during development to protect your computer's USB Port from damage.

2. If you plan to install a microphone, speaker, or expansion card these must be plugged in properly before you connect power to the DSK board.
3. Plug the AC power cord into the power supply and AC Source.

Warning: Power Cable Must be plugged into AC Source Prior to Plugging the 5 Volt DC output Connector into the DSK.

4. Plug the power cable into the board.
5. When power is applied to the board the Power On Self Test (POST) will run. LEDs 0-3 will flash. When the POST is complete all LEDs blink on and off then stay on. At this point your DSK is functional and you



can now finish the USB install.

6. Make sure your CCS CD ROM is installed in your CD-ROM drive. Now connect the USB cable into the DSK. After few moments Windows will detect new hardware and prompt you with New Hardware Found screens. Follow the instructions on the screens and let Windows find the USB driver files "sdusbemu.inf" and "sdusbemu.sys" on your Code Composer CD-ROM. On XP systems Windows will find the drivers automatically.

Testing Your Connection

If you want to test your DSK and USB connection you can launch the C6416 DSK Diagnostic Utility from the icon on your desktop.



From the diagnostic utility, press the start button to run the diagnostics. In approximately 20 seconds all the on-screen test indicators should turn green.

Starting Code Composer

To start Code Composer Studio, double click the C6416 DSK CCS icon on your desktop.



Running the Code Composer Tutorial

The on-line help included with the C6416 DSK contains in-depth information about the hardware and software that comes with the kit. It also contains a tutorial that will help you get started with your DSK and learn about its features. To access the on-line help and run the tutorial, follow these steps:

1. Start Code Composer Studio (ignore this if CCS is already running) by double-clicking on the C6416 DSK icon on your desktop.
2. Open the CCS general help by selecting **Help→Contents** in the CCS menu.
3. Expand the C6416 DSK specific help by expanding the help topic labeled **TMS320C6416 DSK**. It should be the last topic in the help topic list.
4. Look in the section entitled "**Welcome to Your 'C6416 DSK'**". You will find the tutorial and other introductory material there.

Code Composer Registration

Remember to register your product within 30 days of purchase. Texas Instruments may make available DSK specific patches, utilities or promotions to registered DSK users. You must register your DSK through the online web registration form to enable access through the new Internet enabled Update Advisor. You can register online during installation if you are connected to the Internet. To register online after installation or to register via fax or by e-mail you can access the registration forms from within Code Composer Studio TM IDE. From the menu bar select Help → CCS on the Web → Register On-line, select the appropriate registration link for your product and follow the instructions on the form.

You will need your Service Code to register the product. The Service Code is a 16 digit number starting with the letters CCS attached to the CD case.

Note: paid annual software subscription service is not available for DSK products.

6416 DSK Hardware Registration

The 6416 DSK hardware can be registered using the on-line registration process at www.spectrumdigital.com. Spectrum Digital, Inc. warrants the products it produces for ninety (90) days after the date of purchase. For a product to be considered "in warranty", Spectrum Digital must be notified of the defect within ninety (90) days after being purchased from Spectrum Digital or one of its authorized resellers. Spectrum Digital is not responsible for accidents, improper installation of connections, misuse, neglect or unauthorized modifications. If the product qualifies for warranty repair Spectrum Digital may repair or replace the product at its discretion.

Related Documentation

A complete list of related documentation is available in the on-line help. The path to this documentation is (assuming you choose c:\ti as the default path)

c:\ti\docs\pdf\manuals_ccs_full_c6000.html

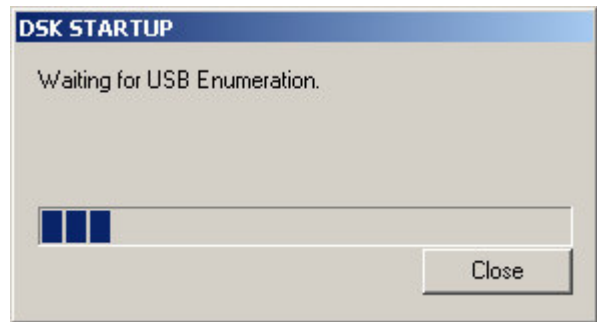
Debug Hints and Trouble Shooting

1. If installing on Windows XP and your PC is connected to the internet through a firewall the USB install may take up to 15 minutes if you let it complete normally. The work-around for this issue is to simply disconnect your network cable during the USB hardware install.
2. Make sure all of the Configuration Switches (SW3) are set in the off position. This configures the DSK for the factory default settings of little endian processor mode booting out of the on-board Flash memory.
3. Some of the Help Files are links to Adobe Acrobat PDF files. If you intended to access these files you must have Adobe Acrobat installed on your system or Install Adobe Acrobat during the Code Composer Install.
4. If you want to verify a successful USB driver install:
For Windows 98:
Right mouse click on
My Computer ->Properties->Device Manager.
For Win2000 and XP:
Right mouse click on
My Computer ->Properties->HW->Device Manager.

You should see a new class "SD USB Based Debug Tools" and one Spectrum Digital TMS320C6416 DSK installed.
5. On Windows 98 Code Composer Studio may take up to 40 Seconds to start up during the USB enumeration process.
6. The Busy LED above the USB connector illuminates when the DSK is powered on. Do not launch Code Composer until the led turns off.

Error Messages:

Many of the error messages below refer to USB enumeration issues. The following window will appear when launching CCS or the Diagnostic Utility indicating the enumeration status.



1. Message:
Failed: Requires Win98, Win2K or Win XP.
Problem: Your operating system does not support USB.
2. Message:
Failed: USB device is NOT enumerated or plugged in.
Problem: Windows cannot find the C6416 DSK.
Check power and USB Cable.
3. Message:
Failed: Load USB Application.
Problem: Loader could not download the C6416 DSK emulation application. The on-board emulation controller could be in a bad state. Cycle power on the DSK.
4. Message:
Failed: USB Channel in use by another app.
Problem: Another application is using the C6416 DSK USB communication channel. Only one application is allowed to communicate to the C6416 DSK over the USB channel at the same time. Check for active applications using the Windows Task Manager if open application is not obvious.
5. Message:
Waiting for USB Enumeration.
Status: This is a status message which indicates that the C6416 application has been loaded. The loader will maintain this message until the C6416 DSK re-enumerates.

On Windows 2000 and XP the above message will generally be active for less than 10 seconds. On Win98 the enumeration process may take as long as 40 seconds. Do NOT select the "OK" button unless you have let the specified time interval expire. If you select the "OK" button during this interval the application will terminate and return control back to CCS, which will fail and give a target error dialog box.