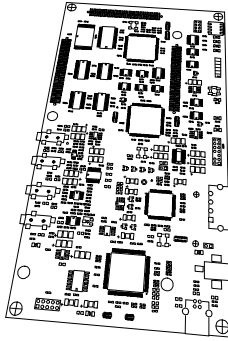


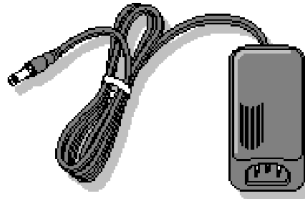
DSP Starter Kit (DSK) for the TMS320VC5509A

Quick Start Guide Overview

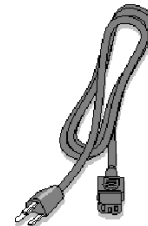
Kit Contents



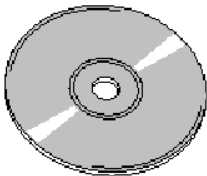
C5509A DSK



+5V Universal Power Supply



AC Power Cord



CD ROM 1: C5509A DSK Code Composer Studio
CD ROM 2: C55xx Power Optimization



Mini-USB Cable



USB Cable Qty2

System Requirements

- 1.2GB of free hard disk space
- Microsoft Windows™ 2000/XP
- 128MB of RAM
- 16-bit color display
- CD-ROM Drive

Service and Support

Web	http://support.spectrumdigital.com
E-Mail	support@spectrumdigital.com

Description

The 5509A DSP Starter Kit (DSK) is an all-in-one evaluation platform for the TMS320C5509A Digital Signal Processor from Texas Instruments. It includes a target board that can be used as a reference design for interfacing the DSP to common devices such as SDRAM, Flash and a codec as well as a special introductory version of TI's flagship Code Composer Studio development tools. An on-board JTAG emulator allows debug from Code Composer Studio through your PC's USB port.

This kit contains everything you need to get started with TI DSPs. It can also be used with the full version of Code Composer Studio and an external JTAG emulator.

Installation

The C5509A DSK software installation is divided into 3 major steps and will require approximately 30 minutes to install and run through the basic demo. The installation steps to be performed:

1. Installing Code Composer Studio and C5509A Emulation/Target Content.
2. Installing National Instruments C55xx Power Optimization tools.
3. Running simple demo with both Code Composer Studio and C55xx Power Optimization tools.

Installing Code Composer Studio

1. Locate the "Code Composer Studio Quick Start Guide", part # 508596-4001A and the "Code Composer Studio DSK" CD, part # 508597-6001A.
2. Follow the instructions on the *Code Composer Studio Quick Start Guide* to fully install and test out your DSK CCStudio and emulation connection.

Installing C55xx Power Optimization Tool

1. Locate the "C55xx Power Optimization Quick Start Guide", part # 580598-4001A and the "C55xx Power Optimization DSK" CD, part #508599-6001A.
2. Follow the instructions on the *C55xx Power Optimization Quick Start Guide* to fully install and test out your DSK Power Optimization connection.

When you get to this point you should have installed all the necessary software and verified the *Emulation USB* and *NI USB* connections.

C55xx Power Optimization Demo - Basic

A simple power optimization demo is included which ramps the PLL frequency from 12MHz to 192MHz in steps of 12MHz. As the PLL frequency is increased or decreased you will see a corresponding current measurement change on the C55xx Power Optimization Tool. To run the demo perform the following steps:

1. Connect up both USB cables and apply power to the C5509A DSK if you have not already done so.
2. Start the C55xx Power Optimization tool: From the Windows Start menu select "All Programs->TI C55xx Power Optimization".
3. Start CCStudio: From your desktop select the "5509A DSK CCStudio v3.1" icon.

4. From CCStudio make a target connection with "Debug->Connect" or *ALT C*. At this point CCS should be active and connected to the C5509A DSP and ready to run the demo application.
5. From CCStudio load the *nitest* demo project located at <CCS_Install_Dir>\boards\dsk5509a_v1\example\s\nitest.
6. From CCStudio load the *nitest* output file located in the Debug directory of the *nitest* project.
7. From CCStudio run the application: "Debug->Run". The default demo will step the DSP frequency and flash the LEDs DS1-DS4 indicating the current frequency setting.
8. From the C55xx Power Optimization tool select "Start". At this point you should see all three current measurement reading increase and decrease along with the DSP Frequency measurement.

C55xx Power Optimization Demo – Advanced

The default operation of the *nitest* is to automatically walk the DSP PLL frequency from 12MHz to 192MHz with the core voltage set at 1.6V. There are two variables in the application which can be used to change the operation of the application:

1. *UseDipSwitches*: When set to 1 the application will set the DSP core frequency based on the dipswitches (S2-large switches). A dipswitch in the up position is read as a 1 when in the down position it is read as a 0. The frequency is equal to (dip-switch+1)*12.
2. *SetCoreVoltage*: When set to 1 the application will set the DSP core voltage based on the selected frequency. In this mode the application sets the PLL to bypass, sets the core voltage based on the new frequency, and then sets the frequency.

To run the demo in the advanced mode you should perform the following steps:

1. Restart the demo program: "File->Reload".
2. Run the demo program to main: "Debug->Go Main".
3. Add one or both of the variables to the watch window and change their value as desired or do a quick watch and change their value.
4. Run the application "Debug->Run". If you set *UseDipSwitches* to 1 then you can toggle the dipswitches (S2) and should see the DSP frequency and power measurements move to a steady state for each switch setting. With all the switches in the up position you will be at the max frequency and power setting. With all the switches in the down position you will be in the minimal frequency and power setting for the demo.

What About BIOS

The default installation of CCStudio tools includes BIOS 4.91, which is standard for a CCStudio 3.1 install. BIOS 5.2 is also installed but must be manually enabled in CCStudio. Before upgrading to BIOS 5.2 you should read the BIOS SetupGuide which is located in your bios install directory, normally "c:\ccstudio_v3.1\bios_5_20_03" if you choose the install defaults.

The C5509A Board Support Library and examples have been supplied for both versions of BIOS to make the user transition from BIOS 4.91 to 5.2 a little smoother.

Both versions of BIOS include examples for the EVM5509A which can also be run on the DSK5509A. The DSK5509A is functionally equivalent to the EVM5509A with respect to BIOS and its configurations.

BIOS 5.2 includes the C55xx "Power Scaling Library" which incorporates a rich set of functionality for C55xx power optimization along with examples.