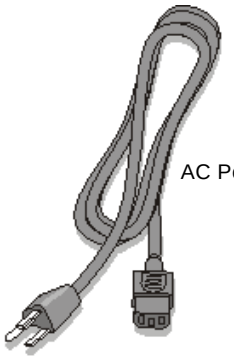
DSP Starter Kit (DSK)

Quick Start Guide

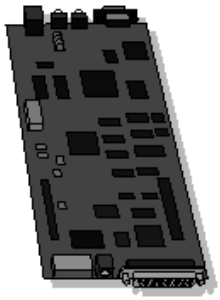
The TMS320C5402 DSK contains:

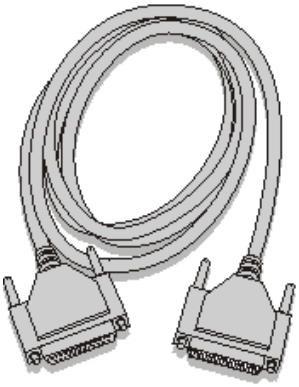


AC Power Cord*

CE-Compliant 5V Universal Power Supply (UPS)

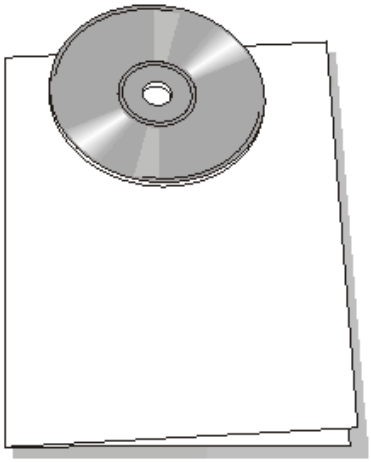
C5402 DSK Board





Parallel Port Cable

C5402 DSK CD-ROM

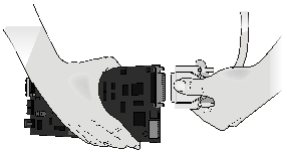


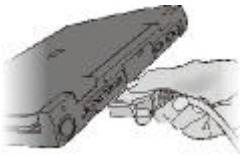
Code Composer Studio™ Getting Started Guide

* **Note:** TMDS320005402E kits contain both UK and European power cords.

Connecting the 5402 DSK to Your PC

1. Shut down and power off the PC.
2. Connect the supplied parallel (printer) port cable to the board.
3. Connect the other end of the cable to the parallel (printer) port of your PC.

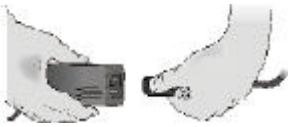




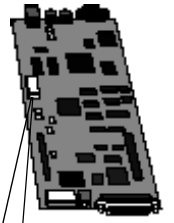
If you plan to install a microphone, speaker, and/or daughter card, these must be plugged in properly before you connect power to the DSK board.

4. Plug the power cable into the board.

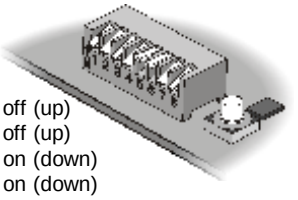
5. Plug AC power cord into power supply. Plug other end of AC power cord into power outlet.



6. Power up the PC.



Make sure the DIP switch settings are as shown below (default configuration); for other settings, consult the online help.



1. on (down)	5. off (up)
2. on (down)	6. off (up)
3. on (down)	7. on (down)
4. on (down)	8. on (down)

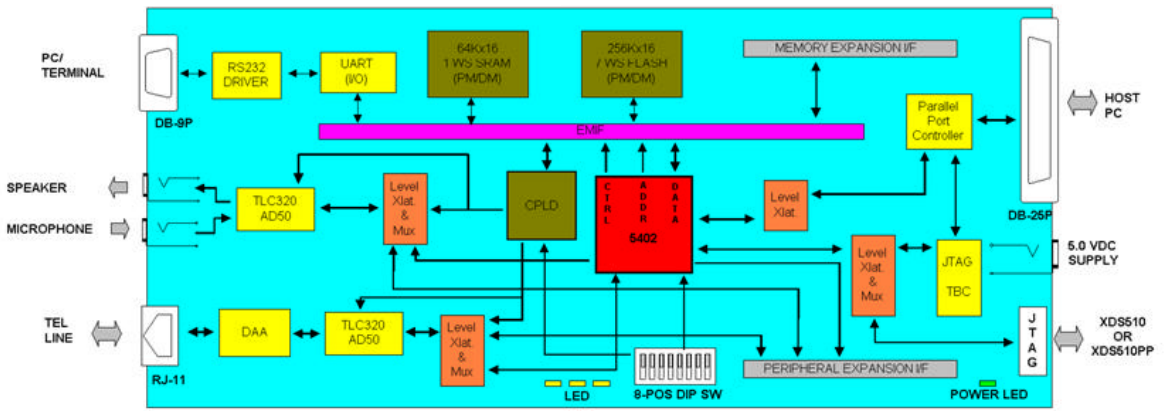
Before you install the DSK software, make sure the PC parallel (printer) port is configured for ECP and EPP mode of operation.

To check parallel (printer) port configuration, use the path Start menu → Settings → Control Panel.

Display the window associated with the System icon. Choose Device Manager tab and expand the Ports listing to see all the configured ports.

If ECP or EPP are displayed, your parallel (printer) port is configured correctly.If ECP or EPP are not displayed, you must restart your PC and follow the manufacturer's instructions for BIOS setup. Most commonly, you will need to access peripherals to change printer mode to ECP or EPP.

Functional Block Diagram



These operating platform requirements are necessary to install the Code Composer Studio (CCS) Integrated Development Environment (IDE):

Minimum

- 233MHz or higher Pentium™-compatible CPU
- 600MB of free hard disk space
- 64MB of RAM
- SVGA (800 x 600) display
- Internet Explorer™ (4.0 or later) or Netscape Navigator™ (4.7 or later)
- Local CD-ROM drive

Recommended

- 128MB of RAM
- 16-bit color
- 500MHz or higher Pentium™-compatible CPU

Supported Operating Systems

- Windows™ 98
- Windows NT™ 4.0 Service Pack 4 or higher
- Windows 2000™ Service Pack 1

Installing DSK Code Composer Studio IDE

Note: *For Windows NT and Windows 2000, 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.*

1. Insert the installation CD into the CD-ROM drive. An install screen should appear after a few seconds; if not, go to Windows Explorer and run setup.exe from your CD-ROM.
2. Choose the option to install Code Composer Studio.
3. Respond to the dialog boxes as the installation program runs. After the installation has completed, a welcome panel appears and describes the program icons that will appear on your desktop. The panel contains links to product demonstrations, and the TI DSP Developers' Village.

DSK CCS v2 will automatically configure your system with a preset configuration for the C5402 DSK parallel port.

Unless you want to reconfigure your system, the installation is complete and CCS is ready to run.

Before Running Code Composer Studio

Before you run Code Composer Studio, it is a good idea to perform a software-controlled reset. Use Start → Programs → Texas Instruments → Code Composer Studio DSK Tools 2 ('C5000) → Hardware Resets → Reset TMS320C5402 Parallel Port

To start Code Composer Studio, double-click the CCS-DSK2 icon on your desktop.

To Run a Precompiled Program on the 5402 DSK

1. From the Code Composer Studio menus, select File → Load Program. Go to the directory where you installed Code Composer Studio. The default location is C:\ti\... Open the folder ...\ti\examples\dsk5402\ dsp\blink and double-click the file blink.out.
2. After Code Composer Studio has completed loading the program and the Loading Program dialog box disappears, select the Debug menu and choose Run. The LEDs on the DSK5402 board will sequentially blink.
3. The blink program will run continuously. The program can be terminated by selecting the Debug menu and choosing Halt.

Running the Code Composer Studio Tutorial

The interactive CCS tutorial as well as the CCS Getting Started Guide, provides an effective method to learn about the new and existing features of this tool.

1. CCS should now be running. If it is not already running, double-click on the CCS 2 icon on your desktop.
2. From the Code Composer Studio Help menu, select Tutorial.

Using Code Composer Studio IDE to Build a Program

To create a new project:

1. Select Project → New from the menu. This opens the Project Creation dialog box. In the Project Name field, type the new project name.
2. In the Location field you can either type the name of the project directory where you want the project to reside or browse to that folder. A default directory has been created for your convenience in the ti folder named myprojects.
3. In the Project Type field, select library or executable, depending on the type of output you are creating.
4. The Target field has already been configured properly for the DSK to TMS320C54XX. Next, click Finish.

To open an existing project:

5. Select Project → Open from the menu. The Project Open dialog box appears. Navigate to the project directory you wish to open. Highlight the project you want and choose Open.

Existing projects created with CCS v1.2 will be migrated to the latest format when they are opened with CCS v2.00.

To add files to a project:

6 From the Code Composer Studio menu, select Project → Add Files to Project. Next, navigate to the appropriate location in the Add Files to Project dialog box, select the file, and click Open.

Note: *Code Generation Tools include runtime library files (e.g., rts.lib). The runtime libraries contain the Standard C Library of functions. If you are going to be using Standard C Library functions, you must add the target-specific runtime libraries to your project.*
Do not try to specify include or header files directly. These files are automatically added to the project by scanning the source files for dependencies.

Building and running the program:

7 **To set tool options:** Select Project → Build Options from the menu. You can change options for the compiler and linker.

8 **To build the program:** Choose Project → Rebuild All to recompile, reassemble, and relink all the files in the project. Messages about this process are shown in a frame at the bottom of the window.

9 **To load the program:** Select File → Load Program to load the executable file (*.out). Select the program you just rebuilt and click Open.

10 **To run the program:** Select Debug → Run.

11 **To debug the program:** Select Debug from the menu bar to access the available debugging commands.

Using the Online Help

- To obtain help for any aspect of CCS, select Help → Contents from the menu. Browse or search the CCS Contents and Index to obtain information on any tool, feature, or functionality of the CCS product.
- To get help specifically regarding the DSK, select Help → Contents from the menu. Select TMS320C5402 DSK from the contents list. Once you select a DSK topic, the DSK-specific help displays.

Related Documentation

- *TMS320C54x Assembly Language Tools User's Guide* (SPRU102) - provides information about the assembly language tools (assembler, linker, and other tools used to develop assembly language code), assembler directives, macros, common object file format, and symbolic debugging directives for the TMS320C54x DSP.
- *TMS320C54x Optimizing C Compiler User's Guide* (SPRU103) - provides information on the C54x C compiler. The C compiler accepts ANSI standard C source code and produces TMS320 assembly language source code for the TMS320C54x DSP.
- *TMS320C54x DSP Reference Set, Vol. 1: CPU and Peripherals* (SPRU131) - documents the 16-bit, fixed-point, general-purpose TMS320C54x DSP. This volume covers its architecture, instruction pipeline, internal register structure, DMS, data and program addressing, and on-chip peripherals.
- *TMS320C54x DSP Reference Set, Vol. 2: Mnemonic Instruction Set* (SPRU172) - documents the TMS320C54x DSP individual mnemonic instructions. Includes a summary of instruction-set classes and cycles.
- *TMS320C54x DSP Reference Set, Vol. 3: Algebraic Instruction Set* (SPRU179) - documents the TMS320C54x DSP individual algebraic instructions. Includes a summary of instruction-set classes and cycles.
- *TMS320C54x DSP Reference Set, Vol. 4: Applications Guide* (SPRU173) - documents the software and hardware applications for the TMS320C54x DSP.
- *TMS320C54x DSP Reference Set, Vol. 5: Enhanced Peripherals* (SPRU302) - documents the enhanced peripherals available on the TMS320C54x DSP.
- *Code Composer Studio Getting Started Guide* (SPRU509) - provides information on setting up the CCS IDE, accessing documentation, and basic functionality of the CCS IDE.
- *TMS320C5000 DSP/BIOS Application Programming Interface (API) Reference Guide* (SPRU404) - provides information for developers of mainstream applications on TMS320C5000 DSPs.
- *TMS320C54x DSP Library Programmer's Reference* (SPRU518) - the optimized DSP Function Library for C programmers on the TMS320C54x DSP.
- *TMS320 DSP/BIOS User's Guide* (SPRU423) - provides information for developers of mainstream applications on TMS320 DSPs to develop embedded real-time software using DSP/BIOS.

Printed in U.S.A., June 2001

SPRU368D