Regulatory Compliance

The ADSP-21262 EZ-KIT Lite evaluation system has been certified to comply with the essential requirements of the European EMC directive 89/336/EEC (inclusive 93/68/EEC) and, therefore, carries the “CE” mark.

The ADSP-21262 EZ-KIT Lite evaluation system had been appended to the Technical Construction File referenced “DSPTOOLS1” dated December 21, 1997 and was awarded CE Certification by an appointed European Competent Body as listed below.

Technical Certificate No: Z600ANA1.013

Issued by: Technology International (Europe) Limited
41 Shrivenham Hundred Business Park
Shrivenham, Swindon, SN6 8TZ, UK

The EZ-KIT Lite evaluation system contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused EZ-KIT Lite boards in the protective shipping package.
CONTENTS

PREFACE

Purpose of This Manual ................................................................. xiv
Intended Audience ......................................................................... xiv
Manual Contents ............................................................................ xv
What's New in This Manual ............................................................ xv
Technical or Customer Support ...................................................... xvi
Supported Processors ...................................................................... xvi
Product Information ....................................................................... xvi
   MyAnalog.com ........................................................................ xvii
   DSP Product Information ........................................................ xvii
   Related Documents ................................................................... xviii
   Online Documentation ........................................................... xix
   Printed Manuals ....................................................................... xix
   VisualDSP++ Documentation Set ............................................. xix
   Hardware Manuals ................................................................ xx
   Data Sheets ........................................................................... xx
   Contacting DSP Publications .................................................. xx
   Notation Conventions ............................................................. xxi
CONTENTS

GETTING STARTED

Contents of EZ-KIT Lite Package ................................................. 1-1
PC Configuration ......................................................................... 1-3
Installation Tasks .......................................................................... 1-3
   Installing VisualDSP++ and EZ-KIT Lite Software .................. 1-4
   Installing and Registering VisualDSP++ License ....................... 1-4
Setting Up EZ-KIT Lite Hardware ........................................... 1-5
Installing EZ-KIT Lite USB Driver ......................................... 1-7
   Windows 98 USB Driver .................................................... 1-8
   Windows 2000 USB Driver .............................................. 1-12
   Windows XP USB Driver ................................................. 1-13
   Verifying Driver Installation .............................................. 1-15
Starting VisualDSP++ .................................................................. 1-16

USING EZ-KIT LITE

EZ-KIT Lite License Restrictions ............................................... 2-2
Using External Memory .......................................................... 2-2
Using Analog Audio .............................................................. 2-3
Using Digital Audio .............................................................. 2-5
Using LEDs and Push Buttons .................................................. 2-6
Example Programs .................................................................... 2-7
Background Telemetry Channel .................................................. 2-8
Using EZ-KIT Lite VisualDSP++ Interface ............................... 2-8
   Boot Load .............................................................................. 2-8
CONTENTS

Target Options .............................................................. 2-9
While Target is Halted and On Emulator Exit Options ...... 2-9
Other Options ............................................................... 2-10
Core Hang Conditions .................................................... 2-11
Hardware Breakpoints .................................................... 2-12
Common Hardware Breakpoint Attributes ................. 2-13
Global Hardware Breakpoint Options ............................. 2-14
Data Hardware Breakpoints ........................................... 2-14
Instruction Hardware Breakpoints ................................. 2-15
Other Breakpoints ........................................................ 2-17
Tips and Tricks Using Hardware Breakpoints ................. 2-18
Latency ......................................................................... 2-18
Restrictions ................................................................... 2-18
Setting a Breakpoint on a Single Address ................. 2-18

EZ-KIT LITE HARDWARE REFERENCE

System Architecture ....................................................... 3-2
Parallel Port ................................................................. 3-3
DAI Interface ................................................................. 3-4
SPI Interface ................................................................. 3-6
FLAG Pins ....................................................................... 3-6
Expansion Interface ....................................................... 3-7
JTAG Emulation Port ..................................................... 3-7
DIP Switch Settings ........................................................ 3-8
Electret Microphone Select Switch (SW6) ......................... 3-9

ADSP-21262 EZ-KIT Lite Evaluation System Manual
Codec Setup Switch (SW7) ................................................................. 3-9
SPDIF Signal Enable Switch (SW8) .................................................. 3-10
Push Button Enable Switch (SW9) .................................................. 3-10
Boot Mode and Clock Ratio Select Switch (SW10) ....................... 3-11
Loop-Back Test Switch (SW11) ......................................................... 3-12

LEDs and Push Buttons .................................................................. 3-12
General Purpose LEDs (LED8–1) .................................................. 3-13
Reset LEDs (LED9, LED12) .......................................................... 3-14
Power LED (LED10) ..................................................................... 3-14
SPDIF GPO1 LED (LED11) .............................................................. 3-14
USB Monitor LED (LED13) .......................................................... 3-14
Push Buttons (SW4–1) ................................................................. 3-14
Board Reset Push Button (SW5) .................................................... 3-15

Connectors ..................................................................................... 3-15
Expansion Interface (J1, J2, J3) ....................................................... 3-15
Audio In RCA Connector (J4) .......................................................... 3-17
Audio Out RCA Connector (J5) ....................................................... 3-17
Headphone Out Jack (J6) ............................................................... 3-17
Power Jack (J7) ............................................................................. 3-17
SPDIF In Coax Connector (P1) ......................................................... 3-18
SPI Header (P2) ............................................................................ 3-18
DAI Header (P3) ........................................................................... 3-18
USB Connector (P4) ..................................................................... 3-19
JTAG Header (P5) ......................................................................... 3-19
CONTENTS

BILL OF MATERIALS

INDEX
Thank you for purchasing the ADSP-21262 EZ-KIT Lite®, Analog Devices (ADI) evaluation system for SHARC® processors.

The SHARC processors are based on a 32-bit super Harvard architecture that includes a unique memory architecture comprised of two large on-chip, dual-ported SRAM blocks coupled with a sophisticated IO processor, which gives SHARC the bandwidth for sustained high-speed computations. SHARC represents today’s de facto standard for floating-point DSP targeted for premium audio applications.

The evaluation system is designed to be used in conjunction with the VisualDSP++® development environment to test the capabilities of the ADSP-21262 SHARC processors. The VisualDSP++ development environment gives you the ability to perform advanced application code development and debug, such as:

- Create, compile, assemble, and link application programs written in C++, C, and ADSP-21262 assembly
- Load, run, step, halt, and set breakpoints in application program
- Read and write data and program memory
- Read and write core and peripheral registers
- Plot memory

Access to the ADSP-21262 processor from a personal computer (PC) is achieved through a USB port or an optional JTAG emulator. The USB interface gives unrestricted access to the ADSP-21262 processor and the
evaluation board peripherals. Analog Devices JTAG emulators offer faster communication between the host PC and target hardware. Analog Devices carries a wide range of in-circuit emulation products. To learn more about Analog Devices emulators and DSP development tools, go to http://www.analog.com/dsp/tools/.

ADSP-21262 EZ-KIT Lite provides example programs to demonstrate the capabilities of the evaluation board.

The VisualDSP++ license provided with this EZ-KIT Lite evaluation system limits the size of a user program’s code to 10922 words of program memory.

The board features:

- Analog Devices ADSP-21262 processor
  - 136-pin BGA package
  - 300 MHz Core Clock Speed
- Synchronous Read Access Memory (SRAM)
  - 512 Kbit x 8-bit
- Flash Memory
  - 1M x 8-bit
- Serial Peripheral Interconnect (SPI) Flash Memory
  - 512 Kbit
- Analog Audio Interface
  - AD1835A codec
  - 4x2 RCA phono jack for 4 channels of stereo output
  - 2x1 RCA phono jack for 1 channel of stereo input
  - Headphone jack for 1 channel stereo output
Preface

- Digital Audio Interface
  - CS8416 SPDIF receiver
  - RCA phono jack input

- LEDs
  - 12 LEDs: 1 power (green), 1 board reset (red), 1 USB reset (red), 1 USB monitor (amber), and 8 general purpose (amber)

- Push Buttons
  - 5 push buttons: 1 reset, 2 connected to DAI, 2 connected to DSP FLAG pins

- Expansion Interface (Type A)
  - Parallel Port, FLAGs, DAI, SPI

- Other Features
  - JTAG ICE 14-pin header
  - 0-ohm resistors for DSP current measurement
  - SPI header
  - DAI header

The EZ-KIT Lite board has a total of 1 MB of parallel Flash memory and 512 Kbit of SPI Flash memory. The Flash memories can store user-specific boot code, allowing the board to run as a stand-alone unit. For more information, see “Using External Memory” on page 2-2 and “Boot Mode and Clock Ratio Select Switch (SW10)” on page 3-11. The board also has 512 KB of SRAM, which can be used at runtime.

The DAI of the DSP connects to the AD1835A audio codec and the CS8416 SPDIF receiver. These devices allow you to create digital and analog audio signal processing applications. See “Using Analog Audio” on page 2-3 and “Using Digital Audio” on page 2-5 for more information.
Purpose of This Manual

Additionally, the EZ-KIT Lite board provides access to all of the processor’s peripheral ports. Access is provided in the form of a three-connector expansion interface. See “Expansion Interface” on page 3-7 for details.

Purpose of This Manual

The *ADSP-21262 EZ-KIT Lite Evaluation System Manual* provides instructions for using the hardware and installing the software on your PC. The text includes guidelines for running your own code on the ADSP-21262 EZ-KIT Lite. The manual also describes the board’s configuration and components. Finally, a schematic and a bill of materials are provided as a reference for future ADSP-21262 board designs.

Intended Audience

This manual is a user’s guide and reference to the ADSP-21262 EZ-KIT Lite evaluation system. Programmers who are familiar with the Analog Devices SHARC processor architecture, operation, and programming are the primary audience for this manual.

Programmers who are unfamiliar with Analog Devices SHARC processors can use this manual in conjunction with the *ADSP-2126x SHARC Core Reference* and *ADSP-21262/21266 Peripherals Manual* and the *ADSP-21160 SHARC DSP Instruction Set Reference*, which describe the DSP’s architecture and instruction set. Programmers who are unfamiliar with VisualDSP++ should refer to the VisualDSP++ online Help and the VisualDSP++ user’s or getting started guides. For the locations of these documents, see “Related Documents” on page -xviii.
Manual Contents

The manual consists of:

- Chapter 2, “Getting Started” on page 1-1
  Provides software and hardware installation procedures, PC system requirements, and basic board information.

- Chapter 2, “Using EZ-KIT Lite” on page 2-1
  Provides information on the EZ-KIT Lite from a programmer’s perspective and provides an easy-to-access memory map.

- Chapter 3, “EZ-KIT Lite Hardware Reference” on page 3-1
  Provides information on the hardware aspects of the evaluation system.

- Appendix A, “Bill Of Materials” on page A-1
  Provides a list of components used to manufacture the EZ-KIT Lite board.

- Appendix B, “Schematics” on page B-1
  Provides the resources to allow modifications to the EZ-KIT Lite or to use as a reference design. This appendix is not part of the online Help. The online Help viewers should go to the PDF version of the ADSP-21262 EZ-KIT Lite Evaluation System Manual located in the Docs\EZ-KIT Lite Manuals folder on the installation CD to see the schematics.

What’s New in This Manual

This edition of the ADSP-21262 EZ-KIT Lite Evaluation System Manual includes the updated installation and license registration procedures.
Technical or Customer Support

You can reach DSP Tools Support in the following ways.

- Visit the DSP Development Tools website at
- Email questions to
dsptools.support@analog.com
- Phone questions to 1-800-ANALOGD
- Contact your ADI local sales office or authorized distributor
- Send questions by mail to
  Analog Devices, Inc.
  One Technology Way
  P.O. Box 9106
  Norwood, MA 02062-9106
  USA

Supported Processors

The ADSP-21262 EZ-KIT Lite evaluation system supports Analog Devices ADSP-21262 SHARC DSPs.

Product Information

You can obtain product information from the Analog Devices website, from the product CD-ROM, or from the printed publications (manuals).
Analog Devices is online at www.analog.com. Our website provides information about a broad range of products—analog integrated circuits, amplifiers, converters, and digital signal processors.

MyAnalog.com

MyAnalog.com is a free feature of the Analog Devices website that allows customization of a webpage to display only the latest information on products you are interested in. You can also choose to receive weekly email notification containing updates to the webpages that meet your interests. MyAnalog.com provides access to books, application notes, data sheets, code examples, and more.

Registration:

Visit www.myanalog.com to sign up. Click Register to use MyAnalog.com. Registration takes about five minutes and serves as means for you to select the information you want to receive.

If you are already a registered user, just log on. Your user name is your email address.

DSP Product Information

For information on digital signal processors, visit our website at www.analog.com/dsp, which provides access to technical publications, data sheets, application notes, product overviews, and product announcements.

You may also obtain additional information about Analog Devices and its products in any of the following ways.

- Email questions or requests for information to dsp.support@analog.com

- Fax questions or requests for information to 1-781-461-3010 (North America) or +49 (0) 89 76903-157 (Europe)
Product Information

Related Documents

For information on product related development software, see the following publications.

Table 1. Related DSP Publications

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSP-21262 SHARC Microprocessor Datasheet</td>
<td>General functional description, pinout, and timing</td>
</tr>
<tr>
<td>ADSP-2126x SHARC DSP Core Manual</td>
<td>Description of internal processor architecture,</td>
</tr>
<tr>
<td>ADSP-2126x SHARC DSP Peripherals Manual</td>
<td>registers, and all peripheral functions</td>
</tr>
<tr>
<td>ADSP-21160 SHARC DSP Instruction Set Reference</td>
<td>Description of all allowed processor assembly</td>
</tr>
<tr>
<td></td>
<td>instructions</td>
</tr>
</tbody>
</table>

Table 2. Related VisualDSP++ Publications

| VisualDSP++ 3.5 User’s Guide for 32-Bit Processors | Detailed description of VisualDSP++ 3.5 features and usage |
| VisualDSP++ 3.5 Assembler and Preprocessor Manual for SHARC Processors | Description of the assembler function and commands for SHARC processors |
| VisualDSP++ 3.5 C/C++ Compiler and Library Manual for SHARC Processors | Description of the compiler function and commands for SHARC processors |
| VisualDSP++ 3.5 Linker and Utilities Manual for 32-Bit Processors | Description of the linker function and commands for the 32-bit processors |
| VisualDSP++ 3.5 Loader Manual for 32-Bit Processors | Description of the loader function and commands for the 32-bit processors |
| VisualDSP++ 3.5 User’s Guide for 32-Bit Processors | Detailed description of VisualDSP++ 3.5 features and usage |
Preface

The listed documents can be found through online Help or in the Docs folder of your VisualDSP++ installation. Most documents are available in printed form.

If you plan to use the EZ-KIT Lite board in conjunction with a JTAG emulator, refer to the documentation that accompanies the emulator.

Online Documentation

Your software installation kit includes online Help as part of the Windows® interface. These help files provide information about VisualDSP++ and the ADSP-21262 EZ-KIT Lite evaluation system.

To view VisualDSP++ Help, click on the Help menu item or go to the Windows task bar and select Start -> Programs -> Analog Devices -> VisualDSP++ for 32-bit Processors -> VisualDSP++ Documentation.

To view ADSP-21262 EZ-KIT Lite Help, which now is a part of the VisualDSP++ Help system, go to the Contents tab of the Help window and select Manuals -> Hardware Tools -> EZ-KIT Lite Evaluation Systems.

For more documentation, please go to http://www.analog.com/technology/dsp/library.html.

Printed Manuals

For general questions regarding literature ordering, call the Literature Center at 1-800-ANALOGD (1-800-262-5643) and follow the prompts.

VisualDSP++ Documentation Set

Printed copies of VisualDSP++ manuals may be purchased through Analog Devices Customer Service at 1-781-329-4700; ask for a Customer Service representative. The manuals can be purchased only as a kit. For additional information, call 1-603-883-2430.
Product Information

If you do not have an account with Analog Devices, you will be referred to Analog Devices distributors. To get information on our distributors, log onto www.analog.com/salesdir/continent.asp.

Hardware Manuals

Printed copies of hardware reference and instruction set reference manuals can be ordered through the Literature Center or downloaded from the Analog Devices website. The phone number is 1-800-ANALOGD (1-800-262-5643). The manuals can be ordered by a title or by product number located on the back cover of each manual.

Data Sheets

All data sheets can be downloaded from the Analog Devices website. As a general rule, printed copies of data sheets with a letter suffix (L, M, N, S) can be obtained from the Literature Center at 1-800-ANALOGD (1-800-262-5643) or downloaded from the website. Data sheets without the suffix can be downloaded from the website only—no hard copies are available. You can ask for the data sheet by part name or by product number.

If you want to have a data sheet faxed to you, the phone number for that service is 1-800-446-6212. Follow the prompts and a list of data sheet code numbers will be faxed to you. Call the Literature Center first to find out if requested data sheets are available.

Contacting DSP Publications

Please send your comments and recommendations on how to improve our manuals and online Help. You can contact us at dsp.techpubs@analog.com.
## Notation Conventions

The following table identifies and describes text conventions used in this manual.

Additional conventions, which apply only to specific chapters, may appear throughout this document.

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close command (File menu) or OK</td>
<td>Text in <strong>bold</strong> style indicates the location of an item within the VisualDSP++ environment's and boards’ menu system and user interface items.</td>
</tr>
<tr>
<td>{this</td>
<td>that}</td>
</tr>
<tr>
<td>[this</td>
<td>that]</td>
</tr>
<tr>
<td>[this,…]</td>
<td>Optional item lists in syntax descriptions appear within brackets delimited by commas and terminated with an ellipsis; read the example as an optional comma-separated list of <strong>this</strong>.</td>
</tr>
<tr>
<td>PF9–0</td>
<td>Registers, connectors, pins, commands, directives, keywords, code examples, and feature names are in text with <em>letter gothic</em> font.</td>
</tr>
<tr>
<td><em>filename</em></td>
<td>Non-keyword placeholders appear in text with italic style format.</td>
</tr>
<tr>
<td>![Note icon]</td>
<td>A note providing information of special interest or identifying a related topic. In the online version of this book, the word <strong>Note</strong> appears instead of this symbol.</td>
</tr>
<tr>
<td>![Caution icon]</td>
<td>A caution providing information about critical design or programming issues that influence operation of a product. In the online version of this book, the word <strong>Caution</strong> appears instead of this symbol.</td>
</tr>
</tbody>
</table>
Notation Conventions
1 GETTING STARTED

This chapter provides the information you need to begin using ADSP-21262 EZ-KIT Lite evaluation system. For correct operation, install the software and hardware in the order presented in “Installation Tasks” on page 1-3.

The chapter includes the following sections.

- “Contents of EZ-KIT Lite Package” on page 1-1
  Provides a list of the components shipped with this EZ-KIT Lite evaluation system.

- “PC Configuration” on page 1-3
  Describes the minimum requirements for the PC to work with the EZ-KIT Lite evaluation system.

- “Installation Tasks” on page 1-3
  Describes the step-by-step procedures for setting up the hardware and software.

Contents of EZ-KIT Lite Package

Your ADSP-21262 EZ-KIT Lite evaluation system package contains the following items.

- ADSP-21262 EZ-KIT Lite board

- EZ-KIT Lite Installation Procedure
Contents of EZ-KIT Lite Package

• CD containing:
  ✓ VisualDSP++ 3.5 for 32-bit processors with a limited license
  ✓ ADSP-21262 EZ-KIT Lite debug software
  ✓ USB driver files
  ✓ Example programs
  ✓ ADSP-21262 EZ-KIT Lite Evaluation System Manual (this document)

• VisualDSP++ 3.5 Installation Quick Reference Card

• Universal 7.5V DC power supply

• USB 2.0 type cable

• Registration card (please fill out and return)

If any item is missing, contact the vendor where you purchased your EZ-KIT Lite or contact Analog Devices, Inc.

The EZ-KIT Lite evaluation system contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused EZ-KIT Lite boards in the protective shipping package.
PC Configuration

For correct operation of the VisualDSP++ software and the EZ-KIT Lite, your computer must have the minimum configuration:

| Windows 98, Windows 2000, Windows XP |
| Intel (or comparable) 166MHz processor |
| VGA Monitor and color video card |
| 2-button mouse |
| 50 MB free on hard drive |
| 32 MB RAM |
| Full-speed USB port |
| CD-ROM Drive |

EZ-KIT Lite does not run under Windows 95 or Windows NT.

Installation Tasks

The following task list is provided for the safe and effective use of the ADSP-21262 EZ-KIT Lite. Follow the instructions in the presented order to ensure correct operation of your software and hardware.

1. VisualDSP++ and EZ-KIT Lite software installation
2. VisualDSP++ license installation and registration
3. EZ-KIT Lite hardware setup
4. EZ-KIT Lite USB driver installation
5. USB driver installation verification
6. VisualDSP++ startup
Installation Tasks

Installing VisualDSP++ and EZ-KIT Lite Software

This EZ-KIT Lite comes with the latest version of VisualDSP++ 3.5 for 32-bit processors. VisualDSP++ installation includes EZ-KIT Lite installations.

To install VisualDSP++ and EZ-KIT Lite software:

1. Insert the VisualDSP++ installation CD into the CD-ROM drive.

2. If Autoplay is enabled on your PC, you see the Install Shield Wizard Welcome screen. Otherwise, choose Run from the Start menu, and enter D:\ADI_Setup.exe in the Open field, where D is the name of your local CD-ROM drive.

3. Follow the on-screen instructions to continue installing the software.

4. At the Custom Setup screen, select your EZ-KIT Lite from the list of available systems and choose the installation directory. Click an icon in the Feature Description field to see the selected system’s description. When you have finished, click Next.

5. At the Ready to Install screen, click Back to change your install options, click Install to install the software, or click Cancel to exit the install.

6. When the EZ-KIT Lite installs, the Wizard Completed screen appears. Click Finish.

Installing and Registering VisualDSP++ License

VisualDSP++ and EZ-KIT Lites are licensed products. You may run only one copy of the software for each license purchased. Once a new copy of the VisualDSP++ or EZ-KIT Lite software is installed on your PC, you must install, register, and validate your licence.
The VisualDSP++ 3.5 Installation Quick Reference Card included in your package will guide you through the license installation and registration process (refer to Tasks 1, 2, and 3).

**Setting Up EZ-KIT Lite Hardware**

The EZ-KIT Lite evaluation system contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused EZ-KIT Lite boards in the protective shipping package.

The ADSP-21262 EZ-KIT Lite board is designed to run outside your personal computer as a stand-alone unit. You do not have to open your computer case.

To connect the EZ-KIT Lite board:

1. Remove the EZ-KIT Lite board from the package. Be careful when handling the board to avoid the discharge of static electricity, which may damage some components.

2. Figure 1-1 shows the default jumper settings, DIP switch, connector locations, and LEDs used in installation. Confirm that your board is set up in the default configuration before continuing.
Installation Tasks

Figure 1-1. EZ-KIT Lite Hardware Setup

3. Plug the provided power supply into J7 on the EZ-KIT Lite board. Visually verify that the green power LED (LED10) is on. Also verify that the two red reset LEDs (LED9 and LED12) go on for a moment and then go off, and, finally, LED8–1 are continually blinking.

4. Connect one end of the USB cable to an available full speed USB port on your PC and the other end to P4 on the ADSP-21262 EZ-KIT Lite board.
Installing EZ-KIT Lite USB Driver

The EZ-KIT Lite evaluation system installed on the following platforms requires one full-speed USB port.

- “Windows 98 USB Driver” on page 1-8 describes the installation on Windows 98.
- “Windows XP USB Driver” on page 1-13 describes the installation on Windows XP.

The USB driver used by the debug agent is not Microsoft certified because it is intended for a development or laboratory environment, not a commercial environment.
Installation Tasks

Windows 98 USB Driver

Before using the ADSP-21262 EZ-KIT Lite for the first time, the Windows 98 USB driver must first be installed.

To install the USB driver:

1. Insert the CD into the CD-ROM drive. The connection of the device to the USB port activates the Windows 98 Add New Hardware Wizard shown in Figure 1-2.

   Figure 1-2. Windows 98 – Add New Hardware Wizard

   2. Click Next.
3. Select **Search for the best driver for your device**, as shown in **Figure 1-3**.

![Figure 1-3. Windows 98 – Searching for Driver](image)

4. Click **Next**.

5. Select **CD-ROM drive**, as shown in **Figure 1-4**.

![Figure 1-4. Windows 98 – Searching for CD-ROM](image)
Installation Tasks

6. Click Next.
   Windows 98 locates the WmUSBEz.inf file on the installation CD, as shown in Figure 1-5.

![Image: Windows 98 – Locating Driver](image)

Figure 1-5. Windows 98 – Locating Driver

7. Click Next.
   The Coping Files dialog box appears (Figure 1-6).

![Image: Windows 98 – Searching for .SYS File](image)

Figure 1-6. Windows 98 – Searching for .SYS File
8. Click Browse.
   The Open dialog box, shown in Figure 1-7, appears on the screen.

![Figure 1-7. Windows 98 – Opening .SYS File](image)


10. Click OK. The Copying Files dialog box (Figure 1-8) appears.

![Figure 1-8. Windows 98 – Copying .SYS File](image)
11. Click **OK**.
   The driver installation is now complete, as shown in Figure 1-9.

![Add New Hardware Wizard](image)

Figure 1-9. Windows 98 – Completing Software Installation

12. Click **Finish** to exit the wizard.

   Verify the installation by following the instructions in “Verifying Driver Installation” on page 1-15.

**Windows 2000 USB Driver**

VisualDSP++ 3.5 installation software pre-installs the necessary drivers for the selected EZ-KIT Lite. The install also upgrades an older driver if such is detected in the system.

Prior to running the VisualDSP++ 3.5 installer, ensure there are no other Hardware Wizard windows running in the background. If there are any wizard windows running, close them before starting the installer.
Getting Started

To install the USB driver:

1. If VisualDSP++ 3.5 is already installed on your system, go to step 2. Otherwise, run VisualDSP++ 3.5 installation. Refer to the VisualDSP++ 3.5 Installation Quick Reference Card for a detailed installation description. When installing VisualDSP++ 3.5 on Windows 2000, make sure the appropriate EZ-KIT Lite component is selected for the installation.

2. Connect the EZ-KIT Lite device to your PC’s USB port. Windows 2000 automatically detects an EZ-KIT device and automatically installs the appropriate driver for the selected device (see step 1).

3. Verify the installation by following the instructions in “Verifying Driver Installation” on page 1-15.

Windows XP USB Driver

VisualDSP++ 3.5 installation software pre-installs the necessary drivers for the selected EZ-KIT Lite. The install also upgrades an older driver if such is detected in the system.

Prior to running the VisualDSP++ 3.5 installer, ensure there are no other Hardware Wizard windows running in the background. If there are any wizard windows running, close them before starting the installer.

To install the USB driver:

1. If VisualDSP++ 3.5 is already installed on your system, go to step 2. Otherwise, run VisualDSP++ 3.5 installation. Refer to the VisualDSP++ 3.5 Installation Quick Reference Card for a detailed
Installation Tasks

installation description. When installing VisualDSP++ 3.5 on Windows XP, make sure the appropriate EZ-KIT Lite component is selected for the installation.

2. Connect the EZ-KIT Lite device to your PC’s USB port. By connecting the device to the USB port you activate the Windows XP Found New Hardware Wizard, shown in Figure 1-10.

![Found New Hardware Wizard](image)

Figure 1-10. Windows XP – Found New Hardware Wizard

3. Select Install the software automatically (Recommended) and click Next.
Getting Started

When Windows XP completes the driver installation for the selected device (see step 1), a window shown in Figure 1-11 appears on the screen.

Figure 1-11. Windows XP – Completing Driver Installation

4. Verify the installation by following the instructions in “Verifying Driver Installation”.

Verifying Driver Installation

Before launching the EZ-KIT Lite evaluation system, verify that the USB driver software is installed properly:

1. Ensure that the USB cable connects to the evaluation board and the PC.

2. Verify that the yellow USB monitor LED (LED11) is lit. This signifies that the board is communicating properly with the host PC and is ready to run VisualDSP++.
Installation Tasks

3. Verify that the USB driver software is installed properly.

Open Windows Device Manager and verify that ADSP-21262 EZ-KIT Lite shows under DSP Emulators with no exclamation point, as in Figure 1-12.

![Device Manager Window](image)

If using an EZ-KIT Lite on Windows 98, disconnect the USB cable from the board before booting the PC. When Windows 98 is booted and you are logged on, re-connect the USB cable to the board. The operation should continue normally from this point.

Starting VisualDSP++

To set up a session in VisualDSP++:

1. Verify that the yellow USB monitor LED (LED11, located near the USB connector) is lit. This signifies that the board is communicating properly with the host PC and is ready to run VisualDSP++.

2. Press and hold down the keyboard Control (CTRL) key.
Getting Started

If you are running VisualDSP++ for the first time, go to step 5. If you already have existing sessions, the Session List dialog box appears on the screen.

4. Click New Session.

5. The New Session dialog box, shown in Figure 1-13, appears on the screen.

![Figure 1-13. New Session Dialog Box](image)

6. In Debug Target, choose EZ-KIT Lite (ADSP-21262).

7. In Processor, choose the appropriate processor, ADSP-21262.

8. Type a new target name in Session Name or accept the default name.

9. Click OK to return to the Session List. Highlight the new session and click Activate.
Installation Tasks
This chapter provides specific information to assist you with developing programs for the ADSP-21262 EZ-KIT Lite evaluation system. This information appears in the following sections.

- “EZ-KIT Lite License Restrictions” on page 2-2
  Describes the restrictions of the VisualDSP++ license shipped with the EZ-KIT Lite.

- “Using External Memory” on page 2-2
  Describes how to access external memory and defines the memory map of the EZ-KIT Lite.

- “Using Analog Audio” on page 2-3
  Describes how to set up and communicate with the on-board audio codec.

- “Using Digital Audio” on page 2-5
  Describes how to use the on-board SPDIF receiver.

- “Example Programs” on page 2-7
  Provides information about the example programs included in the ADSP-21262 EZ-KIT Lite evaluation system.

- “Background Telemetry Channel” on page 2-8
  Highlights the advantages of the Background Telemetry Channel feature of VisualDSP++.
EZ-KIT Lite License Restrictions

- “Using EZ-KIT Lite VisualDSP++ Interface” on page 2-8
  Describes the trace, performance monitoring, boot loading, context switching, and target options facilities of the EZ-KIT Lite system.

For detailed information on how to program the ADSP-21262 SHARC processor, refer to the documents referenced in “Related Documents”.

EZ-KIT Lite License Restrictions

The license shipped with the EZ-KIT Lite imposes the following restrictions.

- The size of a user program’s code is limited to 10922 words of the ADSP-21262 processor’s program memory.
- No connections to Simulator or Emulator sessions are allowed.
- The EZ-KIT Lite hardware must be connected and powered up in order to use VisualDSP++ with a kit license.

Using External Memory

The EZ-KIT Lite contains three types of memory: parallel Flash (1 MB), SPI Flash (512 Kbit) and SRAM (512 Kbit). The Flash memories can store user-specific boot code, letting the board run as a stand-alone unit. For more information about setting the boot device for the DSP, see “Boot Mode and Clock Ratio Select Switch (SW10)” on page 3-11.

Table 2-1 provides a map of the board’s external memory.

The parallel Flash memory and the SRAM connect to the parallel port of the DSP. The parallel port is a multiplexed address and data port. The port can connect to 8-bit and 16-bit memory devices. When configuring the parallel port, keep in mind that the memory devices on the board are 8 bits wide.
Using EZ-KIT Lite

To access the SRAM and Flash memories, set up a Parallel Port DMA. For more information on how to connect the SRAM and Flash memories, see “Parallel Port” on page 3-3.

The SPI Flash memory connects to the DSP’s SPI port and uses Flag0 as a chip select. In order for Flag0 to behave as a chip select, clear the PPFLG bit in the SYSCLT register.

An example program is included in the EZ-KIT installation directory to demonstrate how the parallel port and SPI port can be configured to access the memories.

Using Analog Audio

The AD1835A is a high-performance, single-chip codec featuring four stereo digital-to-analog converters (DAC) for audio output and one stereo analog-to-digital converters (ADC) for audio input. The codec can input and output data with a sample rate of up to 96 kHz on all channels. A 192 kHz sample rate can be used with the one of the DAC channels.

The DSP is interfaced with the AD1835A via the DAI port. The DAI interface pins can be configured to transfer serial data from the AD1835A codec in either time-division multiplexed (TDM) or I2S mode. For more information on how the AD1835A connects to the DAI, see “DAI Interface” on page 3-4.

Table 2-1. EZ-KIT Lite Evaluation Board External Memory

<table>
<thead>
<tr>
<th>Start Address</th>
<th>End Address</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0100 0000</td>
<td>0x010F FFFF</td>
<td>Flash memory</td>
</tr>
<tr>
<td>0x0120 0000</td>
<td>0x012F FFFF</td>
<td>SRAM memory</td>
</tr>
<tr>
<td>0x0140 0000</td>
<td>0x0140 FFFF</td>
<td>LEDs (see “LEDs and Push Buttons” on page 3-12)</td>
</tr>
<tr>
<td>0x0160 0000</td>
<td>0x017F FFFF</td>
<td>Unused chip select 1</td>
</tr>
<tr>
<td>0x0180 0000</td>
<td>0x019F FFFF</td>
<td>Unused chip select 2</td>
</tr>
</tbody>
</table>
The master input clock (MCLK) for the AD1835A can be generated by the on-board 12.288 MHz oscillator or can be supplied by one of the DAI pins of the DSP. Using one if the pins to generate the MCLK, as opposed to the on-board oscillator, allows synchronization of multiple devices in the system. This is done on the EZ-KIT Lite when data is coming from the SPDIF receiver and being output through the audio codec. The SPDIF MCLK is routed to the AD1835A MCLK in the DSP's SRU. It is also necessary to disable the on-board audio oscillator from driving the audio codec and the DSP’s input pin. For instructions on how to configure the clock, refer to “Codec Setup Switch (SW7)” on page 3-9.

The AD1835A codec can be configured as a master or as a slave, depending on DIP switch settings. In master mode, the AD1835A drives the serial port clock and frame sync signals to the DSP. In slave mode, the DSP must generate and drive all of the serial port clock and frame sync signals. For information on how to set the mode, refer to “Codec Setup Switch (SW7)” on page 3-9.

The AD1835A audio codec’s internal configuration registers are configured using the DSP’s SPI port. The FLAG3 register is used as the select for the device. For information on how to configure the multichannel codec, refer to the codec datasheet, which can be found at www.analog.com.

The RCA connector (J4) is used to input analog audio. When using an electret microphone on this connector, configure the SW6 switch according the instructions in “Electret Microphone Select Switch (SW6)” on page 3-9. The four output channels connect to the RCA connector J5. Channel 4 of the codec connects to the headphone jack J6. For more information about the connectors see “Connectors” on page 3-15.

Example programs are included in the EZ-KIT installation directory to demonstrate how to configure and use the board’s analog audio interface.
Using Digital Audio

The CS8416 is a monolithic CMOS device which receives and decodes one of eight channels of audio data according to the IEC60958, S/PDIF, EIAJ CP1201, or AES3 interface standards. The CS8416 receives data from a transmission line, recovers the clock and synchronization signals, and de-multiplexes the audio and digital data.

The CS8416 is attached to the DAI port of the processor. The configuration registers of the SPDIF receiver are programmed via an SPI, which is connected to the processor’s SPI. The SPDIF receiver is capable of transmitting a variety of data formats, which are set up via the SPI interface. For more information about the CS8416 and DAI connection, see “DAI Interface” on page 3-4.

The SPDIF input signal is input on P1 via a coax connector.

To output the audio received by the CS8416 via the AD1835A audio codec, the master clock of both chips must be synchronized to prevent the loss of samples. Put the AD1835A in slave mode and disconnect the 12.288 MHz oscillator from the master clock (MCLK) input (see “Codec Setup Switch (SW7)” on page 3-9 for how to).

The CS8416 general purpose output 1 (GPO1) is connected to LED11, and can be configured, via the SPI, to indicate a variety of conditions within the SPDIF receiver.

Shipped with the kit example programs demonstrate how to configure and use the board’s digital audio interface.
Using LEDs and Push Buttons

The EZ-KIT Lite has eight general-purpose user LEDs and four general-purpose push buttons.

Two of the general-purpose push buttons are attached to the DSP’s FLAG pins, while the other two are attached to the DAI pins. All of the push buttons connect to the DSP through a DIP switch. The DIP switch allows DSP pins, which connect to the push buttons, to be disconnected. See “Push Button Enable Switch (SW9)” on page 3-10 for instructions on how to disable the push buttons from driving the corresponding DSP pin.

The value of the push buttons connected to the FLAG pins can be determined by reading the FLAG register. The push buttons connected to the DAI pins must be configured as interrupts. It is necessary to set up an interrupt routine to determine each pin’s state. Table 2-2 shows how each push button connects to the DSP. Refer to the related example program shipped with the EZ-KIT Lite for more information.

Table 2-2. Push Button Connections

<table>
<thead>
<tr>
<th>Push Button Reference Designator</th>
<th>DSP Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1</td>
<td>FLAG1</td>
</tr>
<tr>
<td>SW2</td>
<td>FLAG2</td>
</tr>
<tr>
<td>SW3</td>
<td>DAI19</td>
</tr>
<tr>
<td>SW4</td>
<td>DAI20</td>
</tr>
</tbody>
</table>

The LEDs are connected to the parallel port pins, AD7-0, via a latch. The parallel port of the DSP can be set up as a memory bus or as general-purpose FLAG pins. The latch allows the LEDs to be written to in both cases. Information about setting up the latch can be found in “SPDIF Signal Enable Switch (SW8)” on page 3-10.
When the LEDs are accessed as \texttt{FLAG} pins, the latch must be set up to pass through the data on the DSP’s pins \texttt{AD7-0}. In this mode, it is also necessary to set up the parallel port to be \texttt{FLAG} pins. To set up the parallel port as \texttt{FLAG} pins, set the \texttt{PPFLGS} bit in the \texttt{SYSCTL} register. Table 2-3 summarizes the LED and \texttt{FLAG} connections.

Table 2-3. LED Connections

<table>
<thead>
<tr>
<th>LED Reference Designator</th>
<th>DSP Pin</th>
<th>Mapped as FLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED1</td>
<td>AD0</td>
<td>FLAG8</td>
</tr>
<tr>
<td>LED2</td>
<td>AD1</td>
<td>FLAG9</td>
</tr>
<tr>
<td>LED3</td>
<td>AD2</td>
<td>FLAG10</td>
</tr>
<tr>
<td>LED4</td>
<td>AD3</td>
<td>FLAG11</td>
</tr>
<tr>
<td>LED5</td>
<td>AD4</td>
<td>FLAG12</td>
</tr>
<tr>
<td>LED6</td>
<td>AD5</td>
<td>FLAG13</td>
</tr>
<tr>
<td>LED7</td>
<td>AD6</td>
<td>FLAG14</td>
</tr>
<tr>
<td>LED8</td>
<td>AD7</td>
<td>FLAG15</td>
</tr>
</tbody>
</table>

An example program is included in the EZ-KIT installation directory to demonstrate the functionality of the LEDs and push buttons.

Example Programs

Example programs are provided with the ADSP-21262 EZ-KIT Lite to demonstrate various capabilities of the evaluation board. These programs are installed with the EZ-KIT Lite software and can be found in `\...\VisualDSP 3.5 32-Bit\212xx\EZ-KITs\ADSP-21262\Examples`. Please refer to the readme file provided with each example for more information.
Background Telemetry Channel

Some USB debug agents support the Background Telemetry Channel (BTC), which facilitates data exchange between VisualDSP++ and the processor without interrupting DSP execution.

This revision of the ADSP-21262 EZ-KIT Lite does not support the Background Telemetry.

Using EZ-KIT Lite VisualDSP++ Interface

This section provides information about the following parts of the VisualDSP++ graphical user interface:

- “Boot Load” on page 2-8
- “Target Options” on page 2-9
- “Core Hang Conditions” on page 2-11
- “Hardware Breakpoints” on page 2-12

Boot Load

Choosing Boot Load from the Settings menu runs the processor and performs a hard reset on the board. This command saves you from having to shut down VisualDSP++, reset the EZ-KIT Lite board, and bring up VisualDSP++ again when you want to perform a hard reset.

Use this feature when loading debug boot code from an external part or when you want to put the device into a known state.
Target Options

Choosing Target Options from the Settings menu opens the Target Options dialog box (Figure 2-1). Use target options to control certain aspects of the processor on the ADSP-21262 EZ-KIT Lite evaluation system.

![Target Options Dialog Box](image)

Figure 2-1. Target Options Dialog Box

While Target is Halted and On Emulator Exit Options

This target option controls the processor’s behavior when VisualDSP++ relinquishes DSP control (for example, when exiting VisualDSP++). The options are detailed in Table 2-4 and Table 2-5.

Table 2-4. While Target is Halted Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop I/O DMA</td>
<td>Stops IO DMAs in emulator space. This option disables DMA requests when the emulator has control of the DSP. Data in the EP, LINK, or SPORT DMA buffers are held there unless the internal DMA request was already granted. This option holds off incoming data and ceases outgoing data. Because SPORT-receive data cannot be held off, it is lost, and the overrun bit is set. The direct write buffer (internal memory write) and the EP pad buffer are allowed to flush any remaining data to internal memory.</td>
</tr>
</tbody>
</table>
Using EZ-KIT Lite VisualDSP++ Interface

Table 2-5. On Emulator Exit Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| On Emulator Exit     | Determines the state the DSP is left in when the emulator relinquishes control of the DSP:  
                        | Reset DSP and Run causes the DSP to reset and begin execution from its reset vector location.  
                        | Run from current PC causes the DSP to begin running from its current location.                                                             |

Other Options

Table 2-6 describes other available target options.

Table 2-6. Other Target Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset before loading executable</td>
<td>Resets registers before loading a DSP executable. Clear this option when DSP registers must not change to their reset values when a file load occurs.</td>
</tr>
</tbody>
</table>
| Verify all writes to target memory | Validates all memory writes to the DSP. After each write, a read is performed and the values are checked for a matching condition.  
                                        | Enable this option during initial program development to locate and fix initial build problems (such as attempting to load data into non-existent memory).  
                                        | Clear this option to increase performance while loading executable files since VisualDSP++ does not perform the extra reads that are required to verify each write. |
| Reset cycle counters on run     | Resets the cycle count registers to zero before a Run command is issued. Select this option to count the number of cycles executed between breakpoints in a program. |
Core Hang Conditions

Certain peripheral devices, such as host ports, DMA, and link ports, can hold off the execution of processor instructions. This is known as a hung condition and commonly occurs when reading from an empty port or writing to a full port. If an attempt to halt the processor is made during one of these conditions, the EZ-KIT Lite may encounter a core hang.

Normally, a core hang can be cleared by the board using a special clear/abort bit. However, there are cases in which it is desirable or possible not to clear the core hang. Sometimes it is desirable to wait for the core hang to clear itself, such as when waiting for a host processor to read or write data. In other cases, it is not possible to clear the core hang, and a DSP reset must occur to continue the debugging session.

Table 2-7 describes the EZ-KIT Lite’s core hang operations.

Table 2-7. Core Hang Operations

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort</td>
<td>Abort the hung operation. This causes the offending instruction to be aborted in the pipeline.</td>
</tr>
<tr>
<td>Retry</td>
<td>Allows you to remedy the hung operation. For example, if a host processor is holding off the DSP, you can cause the host to clear the hung condition.</td>
</tr>
<tr>
<td>Ignore</td>
<td>Performs a software reset on the target board.</td>
</tr>
<tr>
<td>Clear</td>
<td>Aborts the hung operation. This causes the offending instruction to be aborted in the pipeline.</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>Allows you to remedy the hung operation. For example, if a host processor is holding off the DSP, you can cause the host to clear the hung condition.</td>
</tr>
<tr>
<td>Reset</td>
<td>Performs a software reset on the target board.</td>
</tr>
</tbody>
</table>
Hardware Breakpoints

Hardware breakpoints work similarly to watchpoints. Set hardware breakpoints on:

- Data transfers within a user-defined memory range
- Instructions
- Register reads and writes

To enable hardware breakpoints for ADSP-21262 DSPs:

1. From the Settings menu, choose Hardware Breakpoints.
2. The Hardware Breakpoints dialog box appears. The dialog box has three tabbed pages: Data, Instruction, and Other (Figure 2-2).

Figure 2-2. Hardware Breakpoints Dialog Box

Refer to the following sections for information about hardware breakpoints.

- “Common Hardware Breakpoint Attributes” on page 2-13
- “Global Hardware Breakpoint Options” on page 2-14
- “Data Hardware Breakpoints” on page 2-14
- “Instruction Hardware Breakpoints” on page 2-15
- “Other Breakpoints” on page 2-17
- “Tips and Tricks Using Hardware Breakpoints” on page 2-18
Common Hardware Breakpoint Attributes

Each of the three tabs in the Hardware Breakpoints dialog box has common attributes. The common attributes are described in Table 2-8.

Table 2-8. Common Hardware Breakpoint Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>Enables each individual breakpoint.</td>
</tr>
<tr>
<td>Start Address</td>
<td>Specify inclusive start and end addresses. Each pair of addresses sets up an address range for the particular breakpoint.</td>
</tr>
<tr>
<td>End Address</td>
<td></td>
</tr>
<tr>
<td>Exclusive</td>
<td>Enables breaks outside of the specified (inclusive) address range.</td>
</tr>
<tr>
<td>Mode</td>
<td>Data page and Other page only. This option specifies the modes that trigger hardware breakpoints. The available choices are: Disabled—disables the breakpoint On Write—triggers the breakpoint on any write operation to the specified address range On Read—triggers the breakpoint on any read operation from the specified address range Any Access—triggers the breakpoint on any read or write access to the specified address range.</td>
</tr>
</tbody>
</table>
Global Hardware Breakpoint Options

For ADSP-21262 DSPs, the options listed in Table 2-9 apply to all hardware breakpoints, regardless of their type.

Table 2-9. Global Hardware Breakpoint Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skip N Breakpoint Events</td>
<td>Specifies the number of breakpoint events to be ignored before stopping the processor. Each time a hardware breakpoint condition occurs, the count decrements. When the count reaches zero (0), the DSP processes the hardware break. Use this option to count the number of times a break operation occurs. Breakpoints within the group are ORed together to create this condition.</td>
</tr>
<tr>
<td>Restore Skip Count on Break</td>
<td>Enables skip-count decrement as specified in Skip N Breakpoint Events.</td>
</tr>
<tr>
<td>Restore Skip Count on Break</td>
<td>Causes the emulator to restore the Skip Count to the value at program RESTART. Otherwise, the Skip Count remains at its current value.</td>
</tr>
<tr>
<td>AND All Breakpoints</td>
<td>ANDs the interrupts to form the composite interrupt. Normally, the group interrupts are ORed to create a composite interrupt.</td>
</tr>
</tbody>
</table>

Data Hardware Breakpoints

For ADSP-21262 DSPs, use data breakpoints to break on accesses to internal memory, IOP registers, the external port (EP), and multiprocessor memory space (MMS).

The following actions trigger a data breakpoint:

- DAG1 access
- DM() modifier access

The two data breakpoints are ORed to generate a single data breakpoint condition.

The Data page of the Hardware Breakpoints dialog box, which permits the specification of two data breakpoints, is shown in Figure 2-3.
Using EZ-KIT Lite

Instruction Hardware Breakpoints

For ADSP-21262 DSPs, an instruction breakpoint occurs when an instruction is executed within one of the specified address ranges. The four individual instruction breakpoints are ORed to generate a single instruction breakpoint condition.

Shown below is the Instruction page of the Hardware Breakpoints dialog box, which permits the specification of four individual instruction breakpoints.

Figure 2-3. Data Page of Hardware Breakpoints Dialog Box
Using EZ-KIT Lite VisualDSP++ Interface

Figure 2-4. Instruction Page of Hardware Breakpoints Dialog Box
Other Breakpoints

For SHARC DSPs, the Other page of the Data Breakpoints dialog box permits the specification of hardware breakpoints triggered by access to PM data, IO, or the external port.

Figure 2-5. Other Page of Hardware Breakpoints Dialog Box

Table 2-10. Other Hardware Breakpoint Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM DataEvents</td>
<td>Enables PM data breakpoints. PM data breakpoints are similar to data breakpoints (Data page), except accesses that trigger a PM breakpoint are made by DAG2 or the PM() modifier. Like data breakpoints, PM data breakpoints cause a break on accesses to internal memory, IOP registers, the external port (EP), and multiprocessor memory space (MMS).</td>
</tr>
<tr>
<td>I/O</td>
<td>Enables IO breakpoints. IO breakpoints are triggered by accesses made on the IO Address Bus. Use an IO breakpoint to break on accesses made during DMA transfers, MMS accesses, and Host accesses.</td>
</tr>
</tbody>
</table>
Using EZ-KIT Lite VisualDSP++ Interface

Table 2-10. Other Hardware Breakpoint Options (Cont’d)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Port</td>
<td>Enables external port breakpoints. External port (EP) breakpoints are trig-</td>
</tr>
<tr>
<td></td>
<td>gered by accesses made through the External Port. Use an EP breakpoint to</td>
</tr>
<tr>
<td></td>
<td>break on accesses made to any external device that may be tied to the EP,</td>
</tr>
<tr>
<td></td>
<td>such as external memory.</td>
</tr>
<tr>
<td>AND All Break-points</td>
<td>ANDs the interrupts to form the composite interrupt. Normally, the group</td>
</tr>
<tr>
<td></td>
<td>interrupts are ORed to create a composite interrupt.</td>
</tr>
</tbody>
</table>

Tips and Tricks Using Hardware Breakpoints

Be aware of the following tips and tricks when using hardware breakpoints on ADSP-21262 processors.

Latency

For SHARC processors, hardware breakpoints do not assert until two (2) instruction cycles after the actual break condition occurs.

Restrictions

When using hardware breakpoints, do not place breaks at any address where a JUMP, CALL, or IDLE instruction would be illegal.

Do not place breaks in the last few instructions of a DO LOOP or in the delay slots of a delayed branch. For more information on these illegal locations, refer to your DSP’s Hardware Reference.

Setting a Breakpoint on a Single Address

To set a breakpoint on a single address, set the Start Address equal to the End Address.
3 EZ-KIT LITE HARDWARE REFERENCE

This chapter describes the hardware design of the ADSP-21262 EZ-KIT Lite board. The following topics are covered.

- “System Architecture” on page 3-2
  Describes the configuration of the ADSP-21262 board and explains how the board components interface with the DSP.

- “DIP Switch Settings” on page 3-8
  Shows the location and describes the function of the DIP switches.

- “LEDs and Push Buttons” on page 3-12
  Shows the location and describes the function of the LEDs and push buttons.

- “Connectors” on page 3-15
  Shows the location and gives the part number for all of the connectors on the board. Also, the manufacturer and part number information is given for the mating parts.
System Architecture

This section describes the processor’s configuration on the EZ-KIT Lite board.

![System Architecture Block Diagram](image)

Figure 3-1. System Architecture Block Diagram

The EZ-KIT Lite has been designed to demonstrate the capabilities of the ADSP-21262 DSP. The DSP core is powered at 1.2V, and the IO is powered at 3.3V. Two 0-ohm resistors give access to the DSP’s power planes and allow to measure the power consumption of the processor. The R79 resistor provides access to the IO voltage of the processor, and the R80 resistor provides access to the core voltage plane of the processor.
The **CLKIN** pin of the DSP connects to a 25 MHz oscillator. The core frequency of the DSP is derived by multiplying the frequency at the **CLKIN** pin by a value determined by the state of the DSP pins, **CLKCFG1** and **CLKCFG0**. The value at these pins is determined by the state of the **SW10** switch (see “Boot Mode and Clock Ratio Select Switch (SW10)” on page 3-11). By default, the EZ-KIT Lite gives a core frequency of 200 MHz.

The **SW10** switch also configures the boot mode of the DSP. The EZ-KIT Lite is capable of Parallel Port boot and SPI Master Boot. By default, the EZ-KIT Lite boots from the parallel port. For information about configuring the boot modes, see “Boot Mode and Clock Ratio Select Switch (SW10)” on page 3-11.

**Parallel Port**

The parallel port (PP) of the ADSP-21262 DSP consists of a 16-bit multiplex address/data memory bus (**AD15–0**) and an address latch-enable pin (**ALE**). The interface does not have any memory select pins; these signals must be generated by decoding the address.

The PP connections to the EZ-KIT Lite are shown in Figure 3-2. The PP is connected to an 8-bit parallel Flash memory, an 8-bit SRAM memory, and eight general-purpose LEDs. The upper three address bits are connected to a 3-to-8 decoder, providing eight memory select pins. See “Using External Memory” on page 2-2 for more information about accessing the Flash and SDRAM memories.

Because the PP is a multiplexed address/data memory bus, two 8-bit latches are used to latch the upper address bits. Additional latch is used to drive the LEDs. The latter allows the LED values to be written to as if they were at a memory location. For more information about using the LEDs, refer to the “Using LEDs and Push Buttons” on page 2-6.

All of the PP signals are available externally via the expansion interface connectors (**J3–1**). The pinout of the connectors can be found in “Schematics” on page B-1.
DAI Interface

The pins of the Digital Application Interface (DAI) connect to the signal routing unit (SRU). The SRU is a flexible routing system, providing a large system of signal flows within the DSP. In general, the SRU allows to route the DAI pins to different internal peripherals in various combinations.
The DAI pins are connected to the AD1835A audio codec, the CS8414 SPDIF receiver, the audio oscillator output, and two push buttons. Figure 3-3 illustrates the EZ-KIT Lite’s connections to the DAI.

Refer to “Using Analog Audio” on page 2-3 and “Using Digital Audio” on page 2-5 for more information about setting up the DSP to communicate with these devices.

To use the DAI for a different purpose, disable any signal, which is driving the DAI pins, with a switch. See “Codec Setup Switch (SW7)” on page 3-9 and “SPDIF Signal Enable Switch (SW8)” on page 3-10 for how to. In addition, the codec setup switch allows flexible routing of the 12.288 MHz audio oscillator’s output signal. By default, this signal is used as the master clock (MCLK) for the AD1835A codec.
System Architecture

SPI Interface

The DSP’s serial peripheral interconnect (SPI) interface is connected to an SPI Flash memory, the CS8416 SPdif receiver, and the AD1835A audio codec. The FLAG0 pin is used as a memory select for accessing the SPI Flash memory, and the FLAG3 pin is used for accessing the AD1835A’s configuration registers.

All of the SPI signals are available externally via the expansion interface connectors (J3–1), as well as the 0.1’ spaced header P2. The pinout of these connectors can be found in “Schematics” on page B-1.

FLAG Pins

The DSP has four general-purpose IO FLAG pins. Table 3-1 describes the connection of each flag.

Table 3-1. IO FLAG Pins

<table>
<thead>
<tr>
<th>FLAG Pin</th>
<th>EZ-KIT Lite Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG0</td>
<td>SPI Flash chip select</td>
</tr>
<tr>
<td>FLAG1</td>
<td>Push button (SW1) input</td>
</tr>
<tr>
<td>FLAG2</td>
<td>Push button (SW2) input</td>
</tr>
<tr>
<td>FLAG3</td>
<td>AD1835A SPI interface chip select</td>
</tr>
</tbody>
</table>

For information on how to disable the push buttons from driving the corresponding DSP flag pin, see section “Push Button Enable Switch (SW9)” on page 3-10.

The FLAG signals are available externally via the expansion interface connectors (J3–1). The pinout of these connectors can be found in “Schematics” on page B-1.
Expansion Interface

The expansion interface consists of the three 90-pin connectors. Table 3-2 shows the interfaces each connector provides. For the exact pinout of these connectors, refer to Appendix B, “Schematics” on page B-1. The mechanical dimensions of the connectors can be obtained from Technical or Customer Support.

Table 3-2. Expansion Interface Connectors

<table>
<thead>
<tr>
<th>Connector</th>
<th>Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>5V, AD15-0</td>
</tr>
<tr>
<td>J2</td>
<td>3.3V, FLAG3-0, DAI_P20-1, SPI</td>
</tr>
<tr>
<td>J3</td>
<td>5V, 3.3V, Reset, Parallel Port Control signals</td>
</tr>
</tbody>
</table>

Limits to the current and to the interface speed must be taken into consideration when using the expansion interface. The maximum current limit is dependent on the capabilities of the used regulator. Additional circuitry can also add extra loading to signals, decreasing their maximum effective speed.

⚠️ Analog Devices does not support and is not responsible for the effects of additional circuitry.

JTAG Emulation Port

The JTAG emulation port allows an emulator to access the DSP’s internal and external memory through a 6-pin interface. The JTAG emulation port of the processor is also connected to the USB debugging interface. When an emulator connects to the board at P8, the USB debugging interface is disabled. This is not the standard connection of the JTAG interface.
DIP Switch Settings

For information about the standard connection of the interface, see EE-68 published on the Analog Devices website. For more information about the JTAG connector, see “JTAG Header (P5)” on page 3-19. To learn more about available emulators, contact Analog Devices (see “Product Information”).

DIP Switch Settings

Figure 3-4 shows the location and default settings of the EZ-KIT Lite DIP switches.

Figure 3-4. DIP Switch Locations and Default Settings
Electret Microphone Select Switch (SW6)

To connect an electret microphone to the audio input, place all positions of the SW6 switch “ON”. The default position of this switch is all “OFF”. When all of the switches are in the “ON” position, a DC offset of 2.5V is added to the signal, and gain of the input amplifiers is changed from 1x to 10x.

Codec Setup Switch (SW7)

The codec setup switch (SW7) can be used to change the routing of some of the signals going to the AD1835A codec and to setup the communication protocol of the codec.

Positions 1 and 2 determine the clock routing for the audio oscillator to the codec and to the DSP. Figure 3-5 illustrates how the switch positions 1 and 2 are connected on the board. In the default position, route the DAI_P17 pin to DAI_P6 (in software) to clock the AD1835A.

Figure 3-5. Audio Clock Routing

Position 3 of the SW7 switch determines if the AD1835A device is a master or is a slave. If the AD1835A is a master, the device’s serial interface generates the frame sync and clock signals necessary to transfer data. When
DIP Switch Settings

the device is a slave, the DSP must generate the frame sync and clock signals. By default, position 3 is “ON”, and the AD1835A generates the control signals.

Position 4 of SW7 disconnects the AD1835A’s ADC_DATA pin from the DAI interface. This is useful when the DAI interface is to connect to another device.

SPDIF Signal Enable Switch (SW8)

The SPDIF signal enable switch (SW8) disconnects always driving signal of the CS8416 SPDIF receiver serial interface.

Table 3-3 shows which DSP signal is no longer being driven when the corresponding switch position is placed in the “OFF” position.

Table 3-3. SW8 Connections

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>DSP Pin</th>
<th>SPDIF RX Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAI_P2</td>
<td>MCK</td>
</tr>
<tr>
<td>2</td>
<td>DAI_P1</td>
<td>SDATA</td>
</tr>
<tr>
<td>3</td>
<td>DAI_P4</td>
<td>FSYNC</td>
</tr>
<tr>
<td>4</td>
<td>DAI_P3</td>
<td>SCK</td>
</tr>
<tr>
<td>5</td>
<td>DAI_P15</td>
<td>SPI_CS</td>
</tr>
<tr>
<td>6</td>
<td>DAI_P16</td>
<td>GPOD</td>
</tr>
</tbody>
</table>

Push Button Enable Switch (SW9)

The push button enable switch (SW9) disconnects the push buttons from the corresponding DSP pins. This allows the signals to be used for another purpose. Table 3-4 shows the signal and SW9 connections. By default, all of the position of the SW9 switch are “ON”, allowing the push buttons to function as designed.
Table 3-4. Push Button Enable Switch (SW9) Connections

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Push Button Reference Designator</th>
<th>DSP Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SW1</td>
<td>FLAG1</td>
</tr>
<tr>
<td>2</td>
<td>SW2</td>
<td>FLAG2</td>
</tr>
<tr>
<td>3</td>
<td>SW3</td>
<td>DAI119</td>
</tr>
<tr>
<td>4</td>
<td>SW4</td>
<td>DAI120</td>
</tr>
</tbody>
</table>

Position 6 of SW9 connects or disconnects the latch-enable pin of the LED to the logical “OR” of the ~WE and ~LED_CS signals. When position is “OFF”, the latch-enable pin of the LED latch (U24) is always pulled “HIGH”, making the latch transparent. In this position, the value of the LEDs is directly connected to AD7–0. When position 6 is “ON”, the values of the LEDs are set by writing to a memory location. The lower 8 bits of the data written to the address 0x1400 0000 set the values of the LEDs. By default, position 6 is “ON”, allowing the LEDs to be written by writing to a memory address. For more information refer to “Using LEDs and Push Buttons” on page 2-6.

Boot Mode and Clock Ratio Select Switch (SW10)

The SW10 switch sets the boot mode and clock multiplier rate. Table 3-5 shows how to set up the boot mode using positions 1 and 2. By default, the EZ-KIT Lite boots in SPI master mode and Parallel Port mode, and the DSP boots from Flash memory.

Table 3-5. Boot Mode Configuration

<table>
<thead>
<tr>
<th>BOOTCFG1 Pin (Position 2)</th>
<th>BOOTCFG0 Pin (Position 1)</th>
<th>Boot Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>SPI Slave Boot</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>SPI Master Boot</td>
</tr>
</tbody>
</table>
**LEDS and Push Buttons**

Table 3-6 shows how to set up the clock multiply ratio using positions 3 and 4. By default, the DSP increases the clock multiply ratio by 8, setting the core clock to 300 MHz.

Table 3-6. Core Clock Rate Configuration

<table>
<thead>
<tr>
<th>CLKCFG1 (Position 4)</th>
<th>CLKCFG0 (Position 3)</th>
<th>Core to CLKIN Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>3:1</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>16:1</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>8:1(^1)</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>NA</td>
</tr>
</tbody>
</table>

\(^1\) Bold typeface denotes the default ratio.

**Loop-Back Test Switch (SW11)**

The loop-back test switch (SW11) is connected to GP01 of the CS8416. The functionality of GP01 is programmable via SPI.

**LEDS and Push Buttons**

This section describes the functionality of the LEDs and push buttons. Figure 3-6 shows the locations of the LEDs and push buttons.
General Purpose LEDs (LED8–1)

Eight general-purpose LEDs are connected to the DSP through a latch on signals AD7–0. These LEDs can be accessed by writing to the FLAG registers or by writing to a memory address. Refer to “Using LEDs and Push Buttons” on page 2-6 for more information.
LEDs and Push Buttons

Reset LEDs (LED9, LED12)

When LED9 is lit (red), the master reset of all the major ICs is active. When LED12 is lit (red), the USB interface chip (U34) is being reset. The USB chip is reset only on power-up, or if USB communication has not been initialized.

Power LED (LED10)

When LED10 is lit (green), it indicates that power is being properly supplied to the board.

SPDIF GPO1 LED (LED11)

The SPDIF GPO1 LED (LED11) connects to GPO1 of the CS8416. The functionality of GPO1 is programmable via SPI.

USB Monitor LED (LED13)

The USB monitor LED (LED13) indicates that USB communication has been initialized successfully and you may connect to the processor using a VisualDSP++ EZ-KIT Lite session. Once the USB cable is plugged into the board, it takes approximately 15 seconds for the USM monitor LED to light. If the LED does not light, try cycling power on the board and/or reinstalling the USB driver (see “Installing EZ-KIT Lite USB Driver” on page 1-7).

Push Buttons (SW4–1)

Four push buttons (SW4–1) are provided for general-purpose user input. Two of the push buttons are connected to the DSP’s FLAG pins. The other two are connected to the DSP’s DAI. The push buttons are active “HIGH” and, when pressed, send a High (1) to the processor. Refer to “Using LEDs and Push Buttons” on page 2-6 for more information. The push
button enable switch (SW9) is capable of disconnecting the push buttons from the corresponding DSP pin (refer to “Push Button Enable Switch (SW9)” on page 3-10 for more information). The DSP signals and corresponding push buttons are summarized in Table 3-7.

Table 3-7. Push Button Connections

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG1</td>
<td>SW1</td>
<td>DA1_P19</td>
<td>SW3</td>
</tr>
<tr>
<td>FLAG2</td>
<td>SW2</td>
<td>DA1_P20</td>
<td>SW4</td>
</tr>
</tbody>
</table>

**Board Reset Push Button (SW5)**

The RESET push button (SW5) resets all of the ICs on the board. The only exception is the USB interface chip (U34). The chip is not being reset when the push button is pressed after the USB cable has been plugged in and communication correctly initialized with the PC. After USB communication has been initialized, the only way to reset the USB is by powering down the board.

**Connectors**

This section describes the connector functionality and provides information about mating connectors. Figure 3-7 shows the connector locations.

**Expansion Interface (J1, J2, J3)**

Three board-to-board connectors (J3-1) provide signals for most of the processor’s peripheral interfaces. The connectors are located at the bottom of the board. For more information about the expansion interface, see “Expansion Interface” on page 3-7. For the J3-1 connectors’ availability and pricing, contact Samtec.
## Connectors

![Diagram of connector locations](image)

**Figure 3-7. Connector Locations**

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Position 0.05&quot; Spacing, SMT (J1, J2, J3)</td>
<td>Samtec</td>
<td>SFC-145-T2-F-D-A</td>
</tr>
</tbody>
</table>

**Mating Connector**

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Position 0.05&quot; Spacing (Through Hole)</td>
<td>Samtec</td>
<td>TFM-145-x1 Series</td>
</tr>
<tr>
<td>90 Position 0.05&quot; Spacing (Surface Mount)</td>
<td>Samtec</td>
<td>TFM-145-x2 Series</td>
</tr>
<tr>
<td>90 Position 0.05&quot; Spacing (Low Cost)</td>
<td>Samtec</td>
<td>TFC-145 Series</td>
</tr>
</tbody>
</table>
Audio In RCA Connector (J4)

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two channel right angle RCA jack</td>
<td>SWITCHCRAFT</td>
<td>PJRAS1X2S02</td>
</tr>
<tr>
<td>Mating Cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two channel RCA interconnect cable</td>
<td>Monster Cable</td>
<td>BI100-1M</td>
</tr>
</tbody>
</table>

Audio Out RCA Connector (J5)

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six channel right angle RCA jack</td>
<td>SWITCHCRAFT</td>
<td>PJRAS2X2S01</td>
</tr>
<tr>
<td>Mating Cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two channel RCA interconnect cable</td>
<td>Monster Cable</td>
<td>BI100-1M</td>
</tr>
</tbody>
</table>

Headphone Out Jack (J6)

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5mm stereo jack (J6)</td>
<td>Shogyo</td>
<td>SJ-0359AM-5</td>
</tr>
</tbody>
</table>

Power Jack (J7)

The power connector (J7) provides all of the power necessary to operate the EZ-KIT Lite board.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 mm Power Jack (J7)</td>
<td>SWITCHCRAFT</td>
<td>RAPC712</td>
</tr>
<tr>
<td></td>
<td>Digi-Key</td>
<td>SC1152-ND</td>
</tr>
<tr>
<td>Mating Power Supply (shipped with EZ-KIT Lite)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5V Power Supply</td>
<td>GlobTek</td>
<td>TR9CC2000LCP-Y</td>
</tr>
</tbody>
</table>
Connectors

The power connector supplies DC power to the EZ-KIT Lite board. Table 3-8 shows the power supply specifications.

Table 3-8. Power Supply Specifications

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center pin</td>
<td>+7.5 VDC@2A</td>
</tr>
<tr>
<td>Outer Ring</td>
<td>GND</td>
</tr>
</tbody>
</table>

**SPDIF In Coax Connector (P1)**

The SPDIF In Coax Connector (P1) provides access to all of the SPDIF signals in the form of a .1” spacing header. For more information, see “Push Button Enable Switch (SW9)” on page 3-10.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaxial (P1)</td>
<td>SWITCHCRAFT</td>
<td>PJRAN1X1U01</td>
</tr>
</tbody>
</table>

**SPI Header (P2)**

The SPI connector (P2) provides access to all of the SPI signals in the form of a .1” spacing header. In addition, the FLAG1 signal can be used as a chip select. If you are using FLAG1 as a chip select, disable the push button associated with the flag. For more information, see “Push Button Enable Switch (SW9)” on page 3-10.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-pin IDC Header (P2)</td>
<td>Sullins</td>
<td>PTC04DAAN</td>
</tr>
</tbody>
</table>

**DAI Header (P3)**

The DAI header (P3) provides access to all of the DAI signals in the form of a .1” spacing header. When using the header to access the DSP’s DAI pins, ensure that signals, which normally drive the DSP’s DAI pins,
are disabled. Refer to “Codec Setup Switch (SW7)” on page 3-9 for more information on how to disable signals already being driven from elsewhere on the EZ-KIT Lite.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-pin IDC Header (P3)</td>
<td>Berg</td>
<td>54102-T08-13</td>
</tr>
</tbody>
</table>

**USB Connector (P4)**

The USB connector (P4) allows to configure and program the DSP.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type B USB receptacle (P4)</td>
<td>Mill-Max</td>
<td>897-30-004-90-000</td>
</tr>
<tr>
<td></td>
<td>Digi-Key</td>
<td>ED90003-ND</td>
</tr>
</tbody>
</table>

**JTAG Header (P5)**

The JTAG header (P5) is the connecting point for a JTAG in-circuit emulator pod. When an emulator is connected to the JTAG header, the USB debug interface is disabled.

ℹ️ Pin 3 is missing to provide keying. Pin 3 in the mating connector should have a plug.

ℹ️ When using an emulator with the EZ-KIT Lite board, follow the connection instructions provided with the emulator.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-pin IDC Header (P5)</td>
<td>Berg</td>
<td>54102-T08-07</td>
</tr>
</tbody>
</table>
Connectors
## A BILL OF MATERIALS

<table>
<thead>
<tr>
<th>Reference</th>
<th>Quantity</th>
<th>Description</th>
<th>Reference</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>AM29LV08IB-120EC TSOP40 1M-X-8-FLASH-3V</td>
<td>U19</td>
<td>AMD</td>
<td>AM29LV081-120E</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>74LVC14A SOIC14 HEX-INVER-SCHMITT-TRIGGER</td>
<td>U28,U33</td>
<td>TI</td>
<td>74LVC14AD</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CS8416 SOIC28 96KHZ-DIGITAL-AUDIO-RECVR</td>
<td>U3</td>
<td>CIRRUS LOGIC</td>
<td>CS8416</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>CY7C64603-128 PQFP128 USB-TX/RX MICROCONTROLLER</td>
<td>U34</td>
<td>CYPRESS</td>
<td>CY7C64603-128N</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>MMBT4401 SOT-23 NPN TRANSISTOR 200MA</td>
<td>Q1</td>
<td>FAIRCHILD</td>
<td>MMBT4401</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>74LVC00AD SOIC14</td>
<td>U13</td>
<td>PHILIPS</td>
<td>74LVC00AD</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>CY7C1019BV33-15VC SOJ32 128K X 8 SRAM</td>
<td>U29</td>
<td>CYPRESS</td>
<td>CY7C1019BV33-1</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>AD8532AR SOIC8 DUAL AMP 250MA</td>
<td>U10</td>
<td>ANALOG DEVICES</td>
<td>AD8532AR</td>
</tr>
<tr>
<td>Reference</td>
<td>Quantity</td>
<td>Description</td>
<td>Reference Design</td>
<td>Manufacturer</td>
<td>Part Number</td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
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## Bill Of Materials

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## Bill Of Materials

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## Bill Of Materials

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<td>SHOGYO</td>
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ADSP-21262 EZ-KIT Lite Schematic
These capacitors were placed on the board due to a DSP anomaly. Please refer to the DSP anomaly sheet for more information.
WHEN USING AN ELECTRET MICROPHONE PLACE ALL SWITCHES IN ON POSITION.
SW8: SPDIF SIGNAL DISABLE
(Defaults: ALL = ON)

Used to disconnect signals of the SPDIF interface from the corresponding DAI signals. Useful if using DAI signals for another purpose.
When designing your JTAG interface please refer to the Engineer to Engineer Note EE-68 which can be found at http://www.analog.com.

All USB interface circuitry is considered proprietary and has been omitted from this schematic.

NOTE: Must disable SW1 when using this pin as SPI select.

See page 9

DNP = Do Not Populate

Title: ADSP-21262 EZ-KIT LITE - CONNECTORS

Size Board No. Date 1-23-2004 Rev. 1.4
C A0174-2002 10 of 12
INDEX

Symbols
-LED_CS signal, 3-11
-WE signal, 3-11

A
abort, hang operations, 2-11
acknowledge, hang operation, 2-11
AD15-0 pins, 3-3
AD1835A audio codec, xiii, 2-3, 2-5, 3-6, 3-9
ADC_DATA pin, 3-10
configuration registers, 2-4
master mode, 2-4, 3-9
slave mode, 2-4, 2-5, 3-10
AD7-0 pins, 2-6, 3-11, 3-13
Add New Hardware Wizard, Windows 98, 1-8
ADSP-21262 processors
boot mode, 3-11
CLKCFG1, CLKCFG0 pins, 3-3
core frequency, 3-3
core voltage, 3-2
external memory map, 2-2
flash memory, 2-2
internal memory restrictions, 2-2
IO voltage, 3-2
parallel port, 2-2, 2-7
SPI port, 2-4
SRAM memory, 2-2
analog
audio interface, xii, 2-3
to-digital converters (ADCs), 2-3
audio
applications, xiii
in RCA connector (J4), 3-17
oscillator, 3-9
out RCA connector (J5), 3-17

B
background telemetry channel (BTC), 2-8
bill of materials, A-1
boot
code, 2-2
load, 2-8
mode, 3-3, 3-11
BOOTCFG pins, 3-11
breakpoints, 2-12

C
chip select, 2-3, 3-18
clear, hang operations, 2-11
CLKIN pin, 3-3
clock
multiplier ratio, 3-11
routing, 3-9
signals, 3-9
codec setup switch (SW7), 3-9
common attributes, hardware
breakpoints, 2-13
connecting, EZ-KIT Lite board, 1-5
connectors, 1-5, 3-15
J1 (expansion interface), 3-7
J2 (expansion interface), 3-7
J3 (expansion interface), 3-7
J4 (audio in RCA), 2-4, 3-17
J5 (audio out RCA), 2-4, 3-17
J6 (headphone out), 2-4, 3-17
J7 (power), 3-17
P1 (SPDIF In Coax), 3-18
P2 (SPI), 3-18
P3 (DAI), 3-18
P4 (USB), 1-6, 3-19
P5 (JTAG header), 3-19
P8 (JTAG), 3-7
contents, EZ-KIT Lite package, 1-1
conventions, manual, xxi
core hang conditions, 2-11
CS8416, xiii, 2-5, 3-6, 3-10, 3-12,
3-14
customer support, xvi

D
DAI
header (P3), xiii, 3-18
pins, 2-6, 3-11, 3-15
port, 2-3, 2-5
data

I-2 ADSP-21262 EZ-KIT Lite Evaluation System Manual
INDEX

I
I2S mode, 2-3
ignore, hang operations, 2-11
installation, summary, 1-3
installing
  EZ-KIT Lite USB driver, 1-7
  VisualDSP++ and EZ-KIT Lite
    license, 1-4
    software, 1-4
instruction hardware breakpoints, 2-15
interfaces
  see graphical user interface (GUI)
internal memory, 3-7
interrupts, 2-6
IO
  FLAG pins, 3-6
  voltage, 3-2

J
J3-1 connectors, 3-15
JTAG
  connector (P5), 3-19
  emulation port, 3-7
  emulator, 3-19
  ICE, xiii
jumper settings, 1-5

L
latch-enable pin (ALE), 2-6, 3-3, 3-11
latency, 2-18
LEDs, xiii, 1-5, 2-6, 3-11, 3-12
  LED10, 1-6, 3-14
  LED11, 1-15, 1-16, 2-5, 3-14

FLAG11, 2-7
FLAG12, 2-7
FLAG13, 2-7
FLAG14, 2-7
FLAG15, 2-7
FLAG3, 2-4
FLAG8, 2-7
FLAG9, 2-7
FLAG registers, 2-6, 3-13
flash memory, xiii, 2-3, 3-3, 3-6, 3-11
  see also external memory
Found New Hardware Wizard
  Windows 2000, 1-14
frame sync signals, 2-4, 2-5, 3-9

G
general-purpose IO
  FLAG pins, 3-6
  LEDs, 2-6, 3-3, 3-13
  push buttons
    see push buttons
global options, hardware breakpoints, 2-14
graphical user interface (GUI), 2-8

H
hard reset, 2-8
hardware breakpoint, 2-12, 2-17
  dialog box, 2-12
  restrictions, 2-18
headphone out jack (J6), 3-17
Help, online, xix
hung conditions, 2-11
INDEX

LED12, 1-6, 3-14
LED13, 3-14
LED8-1 (general purpose), 3-13
LED9, 1-6, 3-14
license restrictions, 2-2
loop-back test switch (SW11), 3-12

M
master input clock (MCLK), 2-4
memory
  bus (AD15-0), 3-3
  restrictions, 2-2
mode, attribute, 2-13

O
oscillator, 2-4, 3-3

P
package contents, 1-1
parallel
  flash memory, 2-2
  port, 2-2, 2-6, 3-3, 3-11
  port boot, 3-3
PC
  configuration, 1-3
  peripheral ports, xiv
  pins, 3-9
power
  connector (J7), 3-17
  LED (LED10), 3-14
  specifications, 3-18
  supply, 3-18
PPFLGS bit, 2-7
processor external memory, see
  ADSP-21262 processors
program memory, xii, 2-2
push buttons, xiii, 2-6, 3-12
see also SW
  SW1 (general input), 3-14, 3-15
  SW2 (general input), 3-14, 3-15
  SW3 (general input), 3-14, 3-15
  SW4 (general input), 3-14, 3-15
  SW5 (reset), 3-15
  SW9 (enable), 3-10

R
R79 resistor, 3-2
R80 resistor, 3-2
registering, this product, 1-2, 1-4
reset
  board, 2-8
  hang operation, 2-11
  processor, 3-14
  push button (SW5), 3-15
  retry, hang operation, 2-11

S
Serial Peripheral Interconnect (SPI),
  xii, 3-6
  serial port clock, 2-4
setting
  breakpoints, 2-18
  EZ-KIT Lite hardware, 1-5
  target options, 2-9
  spacing headers, 3-18
SPDIF
  GPO1 LED (LED11), 3-14
INDEX

receiver, 2-4, 3-10
setup, 3-10
SPI
  flash memory, 2-2
  header (P2), xiii, 3-18
  master boot, 3-3
  master mode, 3-11
SRAM memory, xiii, 2-2, 3-3
start address, attribute, 2-13
starting VisualDSP++, 1-16
SW10 switch, 3-3
SW11 switch, 3-12
SW6 switch, 3-9
SW7 switch, 3-9
SW8 switch, 3-10
SW9 switch, 3-15
system
  architecture, EZ-KIT Lite board, 3-2
  requirements, PC, 1-3
T
target options
  miscellaneous, 2-10
  on emulator exit, 2-9
  while target is halted, 2-9
  target options dialog box, 2-9
time-division multiplexed mode
  (TDM), 2-3
U
U24, LED latch, 3-11
USB
  cable, 1-2, 3-14, 3-15
  connector (P4), 3-19
  debug interface, 3-19
  driver installation, Windows 2000, 1-12
  driver installation, Windows 98, 1-8
  driver installation, Windows XP, 1-13
  interface, 3-7
  interface chip (U34), 3-14, 3-15
  monitor LED (LED13), 3-14
V
verifying USB driver installation, 1-15
VisualDSP++
  documentation, xix
  installation, 1-4
  license, 1-4
  online Help, xix
  requirements, 1-3
  starting, 1-16