

1 INTRODUCTION

Thank you for purchasing Analog Devices development software for Analog Devices Digital Signal Processors (DSPs). This software provides you with the following:

- An assembler for processing source files in ASCII format, producing object files, machine-level versions of the source code
- Object files in ELF/DWARF-2 binary formats for providing relocatable code and debugging information
- Relocatable memory sections for placing by a linker in a processor's memory
- A preprocessor for including header files, defining macros, and conditional assembly
- Online access to all manuals for this product via PDF files

This book contains information about the assembler program for the TigerSHARC family of digital signal processors for computing, communications, and consumer applications. The TigerSHARC sets a new standard of performance for digital signal processors, combining multiple computation units for floating-point and fixed-point processing as well as wide word widths.

For Additional Information About Analog Products

Analog Devices is online on the internet at www.analog.com. Our web pages provide information about our broad range of products: analog integrated circuits, amplifiers, converters, and digital signal processors. For information on our digital signal processors, visit our website at www.analog.com/dsp. Our web pages provide access to technical information and documentation, product overviews, and product announcements. You may also obtain additional information about Analog Devices and its products in any of the following ways:

- FAX questions or requests for information to 1(781)461-3010 (North America) or 089/76 903-557 (Europe Headquarters)
- Access the Digital Signal Processor Division File Transfer Protocol (FTP) site at [ftp ftp.analog.com](ftp://ftp.analog.com) or [ftp 137.71.23.21](ftp://137.71.23.21) or <ftp://ftp.analog.com>

For DSP Technical or Customer Support

You can reach our Customer Support in the following ways:

- E-mail questions to dsp.support@analog.com (North American customer support) or to dsp.europe@analog.com (European customer support)
- Visit our World Wide Web site at www.analog.com/dsp
- Telex questions to 924491, TWX: 710/394-6577
- Cable questions to ANALOG NORWOODMASS
- Contact your local ADI sales office or an authorized ADI distributor

- Send questions by mail to:

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DSP Division
One Technology Way
P.O. Box 9106
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Purpose of this Manual

The *VisualDSP 2.0 Assembler Manual for TigerSHARC DSPs* provides information on the assembler and preprocessor development software, including new and legacy syntax for command lines, switches, directives, and comments. This manual provides information on how to write assembly programs for the TigerSHARC DSPs and reference information about related development software.

Intended Audience

Programmers who are familiar with Analog Devices DSPs are the primary audience for this manual. This manual assumes that the audience has a working knowledge of Analog Devices DSP architecture and DSP instruction set.

DSP programmers who are unfamiliar with Analog Devices DSPs can use this manual, but should supplement this manual with other texts (such as a chip user's manual) describing the Analog Devices DSP architecture and DSP instruction set.

Manual Contents Description

This manual contains the following chapters. Chapter 2 and Chapter 3 contain guide and reference sections. Guide sections provide software overview and usage procedures. Reference sections provide comprehensive information about command-line syntax and usage examples.

For information about the assembler and preprocessor software, see the following chapters:

Chapter 2 — “[Assembler](#)”

The guide section provides an overview of the process of writing and building your assembly programs. The reference section provides information on the assembler’s switches, expressions, keywords, and directives.

Chapter 3 — “[Preprocessor](#)”

The guide section covers procedures for using preprocessor commands within your source files. The reference covers the preprocessor’s command-line interface, option and command set.

What’s New in this Manual

This edition of the *Assembler Manual for TigerSHARC DSPs* documents support for the ADSP-TS001 and ADSP-TS101 processors.

In addition to documenting all existing assembler and preprocessor features, this manual describes new directives, switches, and commands, including syntax and code examples. The manual also covers binary object file formats and debugging capabilities of the assembler.

Related Documents

For information on development software and Analog Devices DSPs, see the following publications:

- *VisualDSP++ 2.0 User's Guide for TigerSHARC DSPs*
- *VisualDSP++ 2.0 C/C++ Compiler & Library Manual for TigerSHARC DSPs*
- *VisualDSP++ 2.0 Linker & Utilities Manual for TigerSHARC DSPs*
- *VisualDSP++ Kernel (VDK) User's Guide*
- *ADSP-TS001 and ADSP-TS101 data sheets*

Your VisualDSP++ software distribution CD-ROM includes this and all of the listed publications. To access these documents within the VisualDSP++ environment, use the `Help Topics` command on the VisualDSP++ `Help` menu, click the `Reference` book icon, and select the `Online Manuals` topic. From this `Help` topic, you can open any of the manuals, which are in Adobe Acrobat PDF format. If you are not using VisualDSP++, you can manually access these PDF files from the CD-ROM using Adobe Acrobat.

Other related to your design DSP publications, such as hardware and instruction set reference manuals, are available for download from http://www.analog.com/industry/dsp/tech_doc/gen_purpose.html.

Conventions

The following are conventions that apply to all chapters. Note that additional conventions, which apply only to specific chapters, may appear throughout this document.

Table 1-1. Notation Conventions

Example	Description
<code>Close Command</code> (<code>File Menu</code>)	Titles in reference sections indicate the location of an item within the VisualDSP++ environment's menu system (for example, the <code>Close</code> command appears on the <code>File</code> menu)
<code>[this that]</code>	Optional items in syntax descriptions appear within brackets and separated by vertical bars; read the example as <i>this</i> or <i>that</i> .
<code>[this, that, ...]</code>	Optional item lists in syntax descriptions appear within brackets delimited by commas and terminated with an ellipse; read the example as <i>this</i> and <i>that</i> .
<code>[this,...]</code>	Optional item lists in syntax descriptions appear within brackets delimited by commas and terminated with an ellipse; read the example as an optional comma-separated list of <i>this</i> .
<code>.SECTION</code>	Commands, directives, keywords, and feature names are in text with letter gothic font.
<i>filename</i>	Non-keyword placeholders appear in text with <i>italic</i> style format.
	A note, providing information of special interest or identifying a related DSP topic.

The name TigerSHARC DSP refers to the Analog Devices processors for floating-point and fixed-point computing:

- ADSP-TS001
- ADSP-TS101