

# 1 INTRODUCTION

Thank you for purchasing Analog Devices' development software for Analog Devices Digital Signal Processors (DSP). The linker and utilities in the development software aids your DSP software development efforts by providing you with the following:

- A linker for arranging object files, producing an executable program
- An archiver for creating libraries of partially linked objects, speeding linking of often used routines
- A loader for converting executable programs into boot loadable formats (EPROM, link, or host)
- A splitter for converting executable programs into EPROM storable formats (to be run from external memory)
- A set of file conversion utilities for porting legacy code generated using previous tool releases

This book contains information on the linker and utilities programs for the SHARC™ DSPs that are able to process 32-bit fixed-point or 32-bit floating-point data types on a single chip.

VisualDSP++™ 2.0 is Analog Devices development tools suite for Analog Devices DSP. If you develop within the VisualDSP++ environment, you also get the following tools:

- An integrated development and debugging environment (IDDE) for editing programs, managing projects, and controlling build tools, as well as providing a source level, object oriented debugger with support for DSP simulation and emulation
- Context-sensitive help for the development environment
- Online access to all documentation for this product, in PDF format

## For More Information About Analog Products

Analog Devices is online on Internet at <http://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](http://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 Processing 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 Technical or Customer Support

You can reach our DSP Tools Customer Support in the following ways:

- E-mail development tools questions to [dsptools.support@analog.com](mailto:dsptools.support@analog.com)
- E-mail processor questions to [dsp.support@analog.com](mailto:dsp.support@analog.com)
- Phone questions to 1800-ANALOGD
- Visit our World Wide web site at [www.analog.com/dsp](http://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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## Purpose of This Manual

The *VisualDSP++ 2.0 Linker and Utilities Manual for ADSP-21xxx DSPs* provides information on the linking process and describes the syntax for the linker's command language—a scripting language that the linker reads from the linker description file. This manual leads you through using the linker, archiver, and loader to produce DSP programs and provides reference information on the file utility 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.

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

Chapters in this manual may contain guide and reference sections. Guide sections provide software functional descriptions, usage procedures, typical usage examples, and error message information. Reference sections provide comprehensive information on commands and usage syntax. The manual contains the following chapters:

- [Chapter 2, Linker](#)

Provides an overview of the linker software and command-line switches; shows how to use the linker description file to define your target DSP system for linking

- [Chapter 3, Archiver](#)

Provides an overview of the archiver software and command-line switches

- [Chapter 4, ADSP-2106x/21160 Loader](#)

Provides an overview of the loader software and command-line switches; shows how to use the different boot-kernels for booting various ADSP-21xxx DSP systems

- [Chapter 5, ADSP-21161N Loader](#)

Provides an overview of the ADSP-21161N loader software and command-line switches; shows how to use the different boot kernels for booting this DSP

- [Chapter 6, Splitter](#)

Provides an overview of the splitter software and command-line switches; describes the different EPROM formats

- [Appendix A, File Formats](#)

Lists and describes the file formats that the development tools use as inputs or produce as outputs

- [Appendix B, Utilities](#)

Describes the file utilities that provide legacy and file conversion support

- [Appendix C, Linker Legacy Support](#)

Provides an overview of legacy support issues for developers porting software developed with older releases of the development tools

## What's New in This Manual

This edition of the *VisualDSP++ 2.0 Linker and Utilities Manual for ADSP-21xxx DSPs* documents new features as related to the VisualDSP++ 2.0 release of DSP development and debugging environment. Major additions are new linker and loader command-line switches, the `Packing` format information, and ADSP-21161N DSP loader information. The ADSP-2106x/21160 loader chapter was significantly updated as well.

## Related Documents

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

- *VisualDSP++ 2.0 User's Guide for ADSP-21xxx DSPs*
- *VisualDSP++ 2.0 C/C++ Compiler and Library Manual for ADSP-21xxx DSPs*
- *VisualDSP++ 2.0 Assembler and Preprocessor Manual for ADSP-21xxx DSPs*
- *VisualDSP++ Kernel (VDK) User's Guide*
- The ADSP-21060/60L, ADSP-21061/61L, ADSP-21062/62L, ADSP-21065L, ADSP-21160 (preliminary), or ADSP-21161N (preliminary) 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](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, 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 “SHARC DSP” refers to the following Analog Devices’ processors for floating-point and fixed-point computing:

- ADSP-21060/60L, ADSP-21061/61L, ADSP-21062/62L, ADSP-21065L, ADSP-21160, and ADSP-21161N DSPs

