RELEASE NOTES

LabVIEW™ DSP Module

Version 1.0

Contents

Introduction

The LabVIEW DSP Module supports the design, implementation, and analysis of digital signal processor-based algorithms and systems. You can apply the concepts of digital signal processing techniques, such as spectral analysis or filtering, with the DSP Module and one of the following evaluation boards:

- National Instruments SPEEDY-33
- Texas Instruments 6711 DSK
- Spectrum Digital 6713 DSK

The DSP Module adds features and VIs to LabVIEW that focus on creating signal processing applications that run on embedded digital signal processors (DSPs). You can focus on concepts and results rather than on tedious implementation details.

NATIONAL INSTRUMENTS™

For the Classroom

The DSP Module provides students with a positive hands-on DSP experience that increases their enthusiasm for the subject matter. Students use graphical programming methods to learn DSP fundamentals and to develop applications for DSP hardware without having to write any C, assembly, or script source. Students benefit from the simplicity and usability of the DSP Module while still being exposed to leading-edge industry DSP design tools.

For Industry Applications

By using a graphical programming environment for DSP applications, you can greatly reduce the design and development time while creating more maintainable and reusable code. Graphical programming for DSPs is more intuitive than C or assembly so the learning curve is smaller, which allows you to expand into new application areas.

Application Areas and Analysis

The DSP Module addresses engineering-related challenges in which DSPs are widely used. In addition to using the DSP Module to teach fundamental DSP concepts running in real-time on DSP hardware, you also can use the DSP Module to build communication systems, music and speech applications, and to design complex motor control applications. Additional application areas include the following:

- Communication
- Modulation and demodulation
- FIR (finite impulse response) and IIR (infinite impulse response) filtering
- Digital LMS (least-mean-square) filtering
- Speech processing and analysis
- Noise analysis
- Cross correlation
- Information processing

LabVIEW Embedded Edition

The DSP Module uses LabVIEW 7.1 Embedded Edition, which is a special edition of LabVIEW 7.1 that installs in a separate directory and does not interfere with LabVIEW 7.1 Base, Full, or Professional development systems.

System Requirements

The DSP Module has the following requirements:

- A desktop computer with Windows 2000/XP
- LabVIEW 7.1 Embedded Edition (included)
- One of the following evaluation boards:
  - National Instruments SPEEDY-33
  - Texas Instruments 6711 DSK
  - Spectrum Digital 6713 DSK

Refer to the *LabVIEW Release Notes*, available by selecting **Start»Programs»National Instruments»LabVIEW 7.1 Embedded Edition»LabVIEW Manuals** and opening `relnote.pdf`, for standard LabVIEW development system requirements.

Installation

Complete the following steps to install the DSP Module. After you install the DSP Module, you must install the driver(s) for your DSP target.

1. Log on as an administrator or as a user with administrator privileges.
2. Insert the LabVIEW DSP Module CD and follow the instructions that appear on the screen.

Installing the Drivers

You must install the appropriate driver for the DSP target. You can find the drivers in the following locations:

- SPEEDY-33—`labview embedded\resource\LabVIEW Targets\EmbeddedDSP\SPEEDY33\USB driver`
- Texas Instruments 6711 DSK—Refer to the *Setting Up the Texas Instruments 6711 DSK Target* document, available by selecting **Start»Programs»National Instruments»LabVIEW 7.1 Embedded Edition»LabVIEW Manuals** and opening `DSP_6711dsk_setup.pdf`, for information about setting up the 6711 DSK target.
- Spectrum Digital 6713 DSK—Refer to the 6713 DSK documentation from Spectrum Digital for information about installing the drivers.

Setting Up the Hardware

Refer to the documentation that came with your DSP hardware for information about setting up and configuring the hardware. You can use the default configuration for the DSP Module.

(6711 DSK Only) Refer to the *Setting Up the Texas Instruments 6711 DSK Target* document, available by selecting **Start»Programs» National Instruments»LabVIEW 7.1 Embedded Edition»LabVIEW Manuals** and opening `DSP_6711dsk_setup.pdf`, for information about setting up the 6711 DSK target.

DSP Module Documentation

The DSP Module includes the following documentation in addition to this document:

- VI reference for the VIs the DSP Module adds to LabVIEW is available in the *LabVIEW Help*, available by selecting **Help»VI, Function, & How-To Help**. In the **Contents** tab of the *LabVIEW Help*, expand the **VI and Function Reference** book. The DSP Module VI reference is in the **DSP Module VIs** book.
- Information about how creating, building, and downloading a DSP VI to a DSP target differs from creating VIs for desktop Windows is available in the *LabVIEW Help*. In the **Contents** tab of the LabVIEW Help, expand the **DSP Module** book.
- The *Getting Started with the LabVIEW DSP Module* manual, available by selecting **Start»Programs»National Instruments»LabVIEW 7.1 Embedded Edition»LabVIEW Manuals** and opening `DSP_Getting_Started.pdf`, contains a tutorial that walks you through creating, building, downloading, and running DSP VIs.
- The readme file, available by selecting **Start»Programs»National Instruments»LabVIEW 7.1 Embedded Edition»Readme** and opening `readme_DSP.html`, contains known issues.
- Examples are available in `labview embedded\examples\EmbeddedDSP` and can help you get started creating DSP VIs.
- The *Getting Started with LabVIEW* manual, available by selecting **Start»Programs»National Instruments»LabVIEW 7.1 Embedded Edition»LabVIEW Manuals** and opening `gtstrtlv.pdf`, contains exercises to teach you basic LabVIEW concepts.

Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At `ni.com/support` you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at `ni.com/support` and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 0 662 45 79 90 0,
Belgium 32 0 2 757 00 20, Brazil 55 11 3262 3599,
Canada 800 433 3488, China 86 21 6555 7838,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 385 0 9 725 725 11, France 33 0 1 48 14 24 24,
Germany 49 0 89 741 31 30, India 91 80 51190000,
Israel 972 0 3 6393737, Italy 39 02 413091, Japan 81 3 5472 2970,
Korea 82 02 3451 3400, Lebanon 961 0 1 33 28 28,
Malaysia 1800 887710, Mexico 01 800 010 0793,
Netherlands 31 0 348 433 466, New Zealand 0800 553 322,
Norway 47 0 66 90 76 60, Poland 48 22 3390150,
Portugal 351 210 311 210, Russia 7 095 783 68 51,
Singapore 1800 226 5886, Slovenia 386 3 425 4200,
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