LYRTECH
LYRTECH SIGNAL PROCESSING

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Quick start guide

This document presents important information about your new professional audio development kit (or PADK). Read it thoroughly before going any further.

Introduction

Congratulations on the purchase of your professional audio development kit (or PADK). The PADK is completely compatible and integrated with Code Composer Studio and eXpressDSP from Texas Instruments. The PADK also comes equipped with drivers for all the peripheral elements of the board, as well as application examples and an Audio Streaming and Wavetable Solution demonstration that truly showcases the potential of the PADK and its TMS320C6727 digital signal processor.

Outstanding features

The PADK boasts of the following outstanding features:

High-quality BURR-BROWN 24-bit resolution analog-to-digital and digital-to-analog converters

The PADK comprises two ADC and two DAC, each with four channels. The converters are capable of sampling rates of up to 192 kHz and they are used in multichannel coding, processing, and sound generation.

S/PDIF coaxial and optical digital audio input and output connectors

Also capable of sampling rates of up to 192 kHz, they are ideal for direct digital professional audio application development. The digital audio input incorporates a high-resolution sampling rate converter that allows you to simultaneously operate at different input and output sampling rates, as well as to lock onto various audio and word clock input sources.

Hi-speed USB port

Perfect for high-speed communications to host computers, it allows you to stream audio in real time, to download large sound banks, and to handle any other high-bandwidth applications.

MIDI connector

This type of connector is used to directly interface with external musical instruments and controllers.

Analog input connectors

These connectors are used to connect external control inputs, such as pedals and switches.

Supported file types

The PADK supports the following types of files.

Mp3Reverb

MP3, 44.1 kHz Stereo

Audio Streaming and Wavetable Solution

- WAV up to 44.1 kHz (monophonic, Stereo)
- MP3 up to 44.1 kHz (monophonic, Stereo)
- MIDI (*.mid*)
- Soundfont (*.sf2*)

Verifying the package contents

Verify that your PADK package contains the following items:

- PADK board
- +5 V DC external universal power supply (110 V/220 V, 50 Hz/60 Hz)
- Power cable
- Hi-speed USB cable (A plug/B plug)
- Software and documentation CD-ROM
- Quick start guide document (an electronic version can also be found in the root directory of the software and documentation CD-ROM)

Should any of the items above be damaged or missing, immediately contact your dealer or Lyrtech.

System requirements

The following system requirements must be met to use the PADK.

Operating system

- Windows XP Professional service pack 2 or later

Tools

- Code Composer Studio 3.3 with the latest product updates.
- Latest C672x Chip Support Libraries (CSL)
- XDS510 or XDS560 emulator for DSP (sold separately, not by Lyrtech).

Recommended optional hardware

We recommend that you have the following hardware available, depending on your type of application. This hardware is sold separately, but not by Lyrtech.

- Standard RS-232 interface connector (DB9M/DB9F)
- Analog audio source (RCA) or digital audio source (optical or coaxial)
- Amplified speakers
- BNC cables for the word clock

Installing the PADK

This section explains how to prepare to install the PADK, how to physically install the PADK, and how to install the software necessary to use the PADK.

Note
You can download software updates for the PADK. Contact Lyrtech at **support@lyrtech.com** for details.

Preparing for installation

Hardware

Because the PADK is a ready-to-use, stand-alone system, there is no need to perform any preliminary hardware preparation. Jumper settings may influence how you use the PADK, but the initial jumper positions allow the PADK to start. Refer to the *PADK - Technical reference guide* for details about jumper configurations.

Software

To use the PADK in parallel with Code Composer Studio and eXpressDSP, you must first install the software. Refer to the relevant software documentation for details.

Note
You must install Code Composer Studio 3.3 with the latest product updates before using the PADK. For the examples available with the PADK software to compile properly, you will also need to install the latest C672x Chip Support Libraries.

Copying the supplied software to your computer

Before connecting the PADK to your computer, you must first copy the necessary device drivers and programs on your computer. This software is located on the supplied CD-ROM. Proceed as follows to install the software on the CD-ROM to your computer.

1. Insert the supplied CD-ROM into the CD-ROM drive of your computer.
2. Access the CD-ROM drive with, for example, Windows Explorer.
3. Double-click *Lyrtech_PADK_Software_Tools_SR_{VERSION NUMBER}_{BUILD NUMBER}.exe* file in the root of the CD-ROM.

   VERSION NUMBER is the version number of the release and *BUILD NUMBER* is the date of said release. An installation wizard starts.
4. Follow the instructions displayed on the screen to proceed.
5. When the installation is finished, click **Finish**.

   The wizard closes.
6. Take a moment to read the *POST_INSTALLSHIELD_CONFIGURATION.txt* file that opens at the end of the installation.

   It will guide you through important configuration steps.

The installation wizard copies files to the following folders by default in *C:\Lyrtech\PADK*

demos\

- Audio Streaming and Wavetable Solution examples
- MP3 examples

doc\

- PADK quick start guide
- PADK user's guide (this document)
- PADK technical reference guide

dsp_bios_app\

Application examples using the DSP Bios environment

dsp\

- Application examples
- DSP API
- PADK GEL file
- PADK libraries

usb\

- USB drivers
- USB API
- USB loader program

bootload

- DSP flash utility
- PADK SPI EEPROM programming utility
- PADK I^2C EEPROM programming utility

patchdsprom

- *applypatch.obj*
- *c672xSystemPatchV2_00_00.lib*

Connecting the PADK

Three avenues are open to you when you connect the PADK to your computer.

- Establishing a connection through the Hi-speed USB port with the supplied USB cable.
- Establishing a connection through the serial interface with a standard RS-232 interface connector (DB9M/DB9F).
- Establishing a connection through the JTAG interface with a XDS510 or XDS560 emulator for DSP.

Connecting the PADK through Hi-speed USB

To communicate with the PADK through the USB interface of your computer, connect the USB port of the PADK board to the one on your computer with the supplied A plug/B plug USB cable.

1. Make sure that the PADK is either disconnected from the power source or the power switch is in the off position.
2. Connect the A plug of the supplied USB cable to the A receptacle of your computer.
3. Connect the B plug of the supplied USB cable to the B receptacle on the PADK.

   Proceed to *Installing USB device drivers*.

Connecting the PADK through a serial interface

To communicate with the PADK through the RS-232 interface of your computer, connect the RS-232 port of the PADK board to the one on your computer with a standard DB9M/DB9M cable.

Connecting the PADK through the JTAG interface

The PADK is equipped with two JTAG interfaces. To communicate with the PADK through a JTAG interface, connect the female connector of your emulator pod to the desired male connector of the PADK board. When you have done so, connect the emulator pod to your computer.

Note
Depending on your type of emulator pod, the connection procedure may be slightly different. Refer the documentation of your emulator pod for connection details.

Installing USB device drivers

1. Connect the PADK to your computer as outlined in *Connecting the PADK through Hi-speed USB*, above.
2. Turn on the PADK.

   The PADK is detected by your computer and the Windows new hardware wizard starts.
3. Select the **No, not this time** option, and then click **Next**.
4. Select the **Install from a list or specific location** option, and then click **Next**.
5. Select the **Don't search. I will choose the driver to install** option.
6. In the peripheral type list, select the USB bus controller, and then click **Next**.
7. Click **Have Disk,** browse to <*PADK_DIR*>*usb**drivers**bin*\, select the *ltpadk_usb.inf* file, click **Open**, and then click **OK**.

   Note

   By default, *PADK_DIR* corresponds to *C:\Lyrtech\PADK*.
8. Click **Next**.
9. If a Windows compatibility testing dialog box appears, click **Continue Anyway**.
10. When the installation is complete, click **Finish**.

    Because of a known installation issue, the installation wizard appears again.
11. Repeat the above procedure a second time.

Supported development software

The following development software is supported by the PADK.

Note

Only the third-party software versions presented here are supported by the PADK.

DSP development software

Texas Instruments Code Composer Studio 3.3 with the latest C672x Chip Support Libraries.

Host development software

Microsoft Visual Studio 2005.

Release notes about the PADK version 3.0.0

New features

- Software support for 350-MHz version of TMS320C6727 DSP.
- New section in documentation summarizing different software settings necessary to support specific sampling frequencies.
- New example illustrating how to use external interrupts.
- DSP/BIOS project examples support DSP/BIOS 5.31.08.
- Updated to latest C672x CSL. We suggest that you update to this version of CSL.

Resolved issues

- Corrected problem happening when writing to NOR flash memory that prevented writes from occurring on odd byte boundaries.

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The ™ and ® marks have been omitted from the text.

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