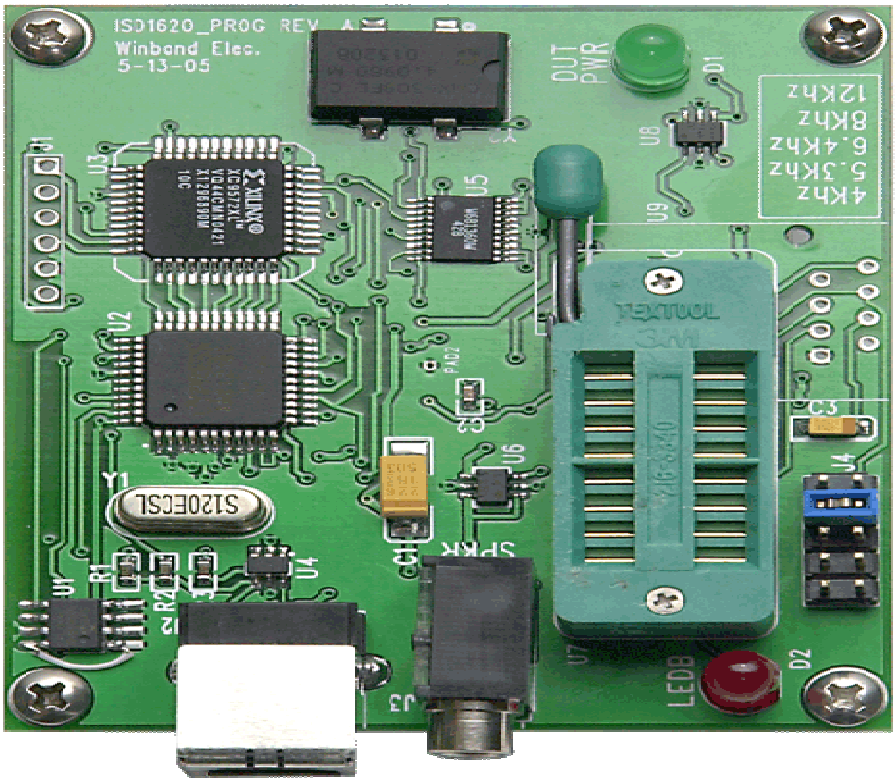
Nuvoton ChipCorder® 16xx Family Programmer Demo Board User Guide

ISD-ES1600B-Prog

Rev 2.0



Instructions

The ISD-ES1600B-Prog board allows the programming of PCM audio files to the Nuvoton I1600B (ISD1600b/12B/16B/20B) ChipCorder® IC controlled through the USB port of a PC. The record and playback functions of the chip may be selected in real time to demonstrate different sampling rates and playback quality of this chip for an end application. The PC connects to the demo board using a standard USB cable. (Not included in the package)

Hardware / Software Requirements

The ISD-ES1600B-Prog board must be connected to a USB port on a PC running Windows 2000 or higher that supports Microsoft's .NET framework v1.1 or higher.

Software Installation

If necessary, install .NET frameworks, which is included on the CD. Insert the CD. The installation should start automatically. If it does not, run setup.msi from the CD. It is recommended to use the default installation options during setup. After the installation is completed, the "ISD-ES1600B-Prog" application program can be started from the Start Menu. The demo board should be connected to the USB port prior to running the application.

Hardware Installation

The first time the I16xx-Prog board is plugged into the USB port, Windows will begin a search for an appropriate driver for: "ISD-ES1600B-Prog". Let the wizard search for compatible drivers automatically. If the wizard finds multiple compatible drivers, use "ttsbench.inf" found in the "..\windows\system32\drivers" directory.

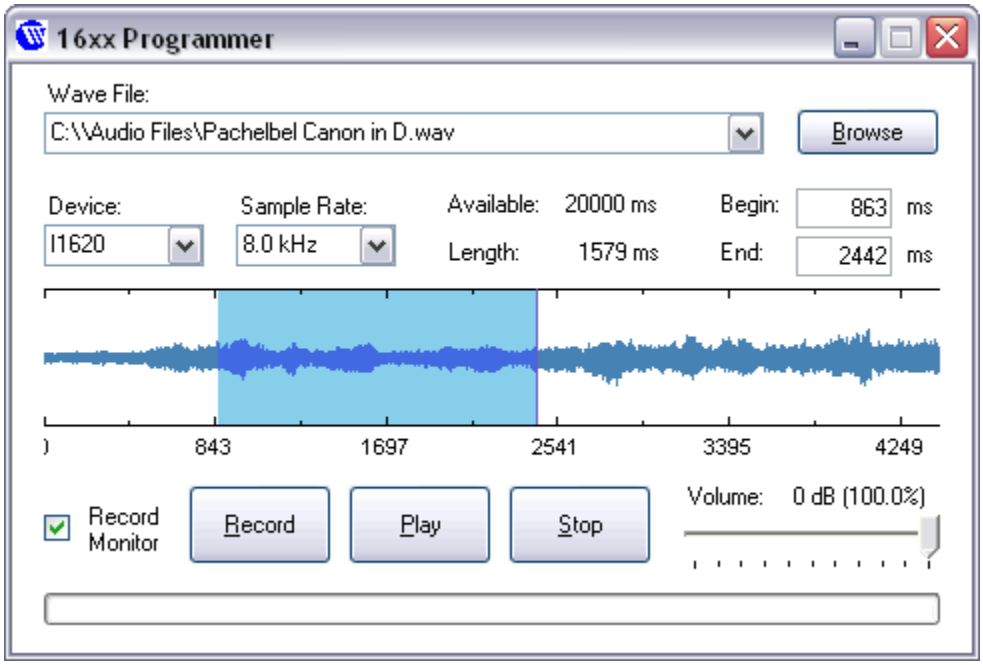
Jumper Settings

J4: Sample rate selector
Connect pins 1-2 for 12 kHz
Connect pins 3-4 for 8.0 kHz
Connect pins 5-6 for 6.4 kHz
Connect pins 7-8 for 5.3 kHz
Connect pins 9-10 for 4.0 kHz

ChipCorder® ISD-ES1600B-Prog Software Operation

Before starting the ISD-ES1600B-Prog software application, make sure that the demo board is plugged into one of the PC's USB ports and properly installed. Once the software starts, it will attempt to locate the demo board, but if no board is detected, an error message will be displayed. If so, it will be necessary to restart the software.

If detection of the board is successful, the main control panel will be displayed. The controls allow selection of the chip device, sample rate, volume decimation, and audio file to be recorded. However, the input audio file must be 8 kHz, 16-bit mono PCM.



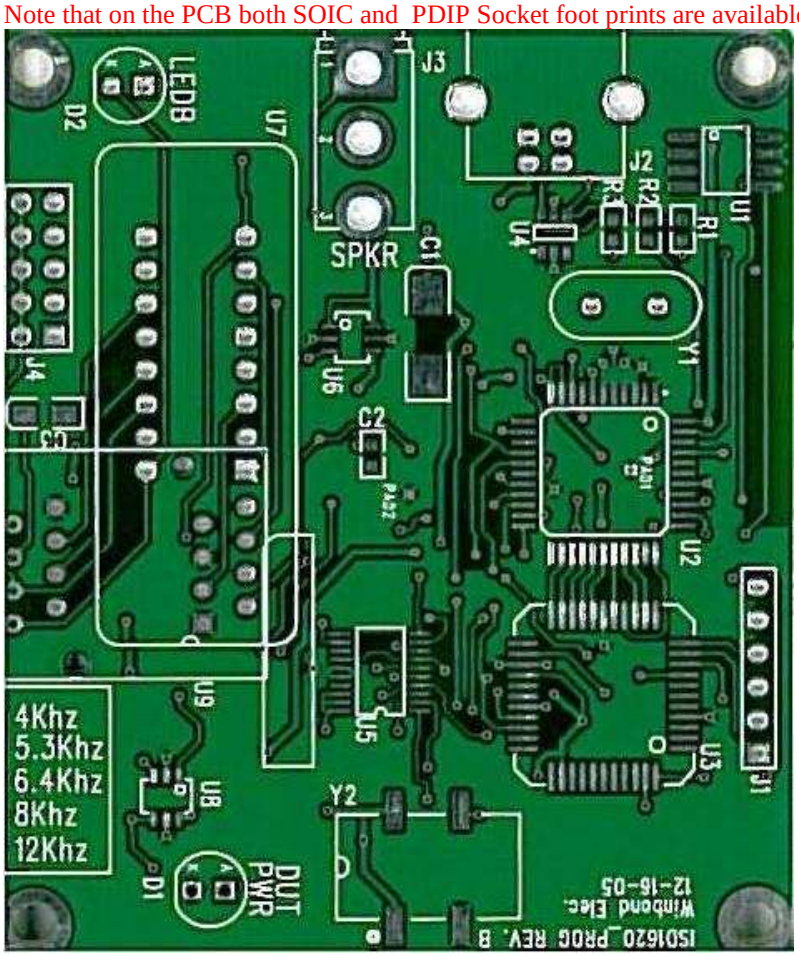
To program the chip with an audio file, first select an audio file with the "browse" button or scroll through the "wave file" combo box for previously selected files. Recording will begin once the "Record" button is pressed, which will disable the "Record" and "Playback" buttons until the entire audio file is streamed to the board in real time. If the "Record Monitor" checkbox is checked, the audio file will be played through the PC's speakers while the audio file is being streamed. Volume decimation is also possible by choosing the desired recording level on the volume slider. Note that high decimation levels will decrease audio quality. To decrease volume and maintain quality, create a new PCM audio file at the appropriate volume level.

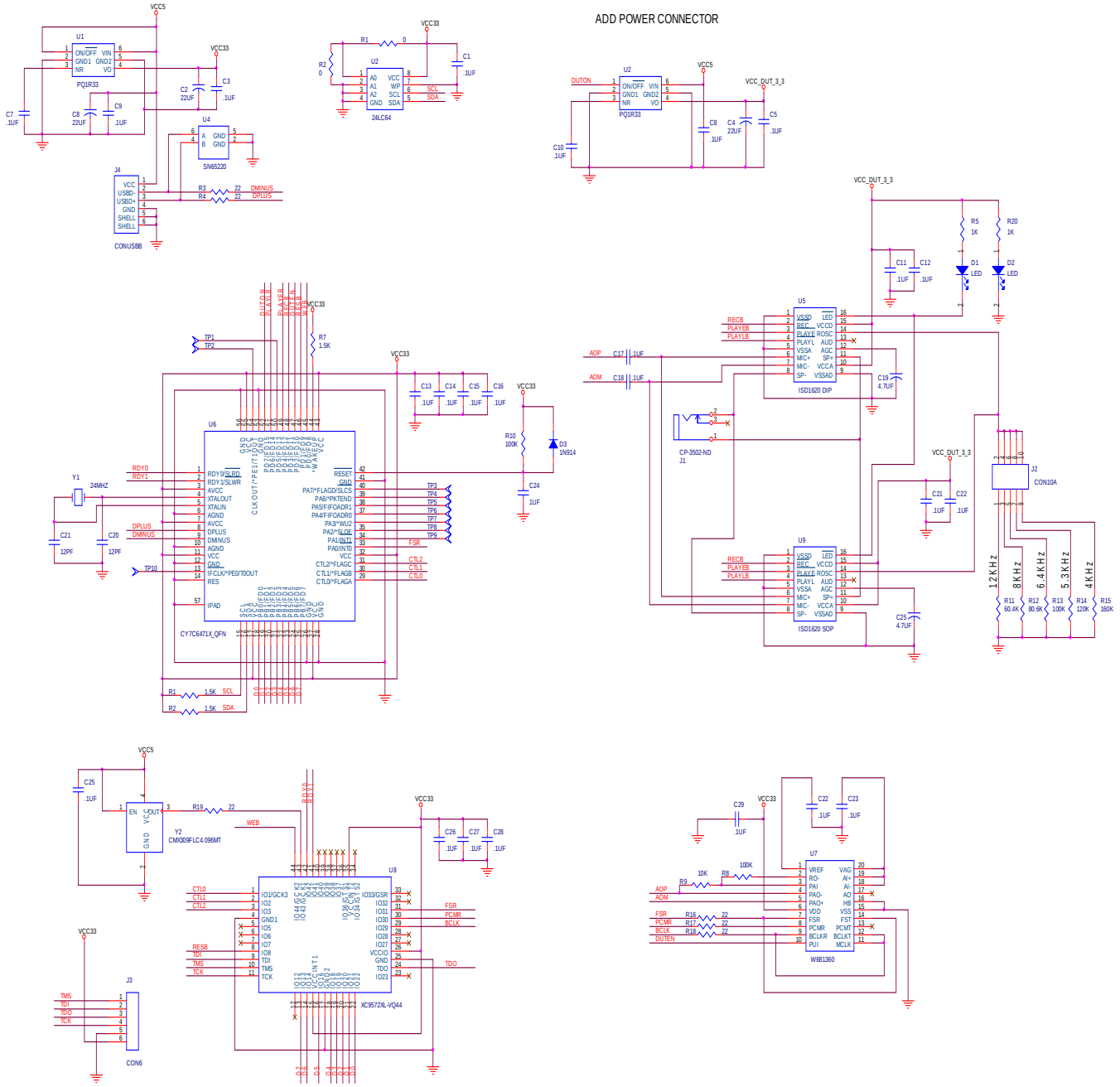
Playback of the ChipCorder® is available via the "Play" button, while the "Stop" button will stop both record and playback operations and set the ChipCorder® back to the idle state. Be aware that the ChipCorder® will only record up to its duration, and if the length of the audio file is greater than the available duration, the extra length at the end of the audio file will be omitted when playback is initiated.

It is also possible to record a particular region within the audio file, by either specifying the beginning and ending time points, or dragging the selection tool on the waveform display graph.

ChipCorder® ISD-ES1600B-Prog Board Schematics

Note that on the PCB both SOIC and PDIP Socket foot prints are available only the PDIP is populated. In




ADD POWER CONNECTOR
VCC5
VCC33
VCC_DUT_3_3
U1
PQ1R33
U2
24LC64
U4
SN65220
J4
CONUSBB
U6
CY7C6471X_QFN
U5
ISD1620 DIP
U9
ISD1620 SOP
J2
CON10A
12KHz
8KHz
6.4KHz
5.3KHz
4KHz
Y1
24MHZ
Y2
CMX009FLC4.096MT
U8
XC9572XL-VQ44
J3
CON6
U7
W681360