



CML Microcircuits

COMMUNICATION SEMICONDUCTORS

Evaluation Board Quick Start

PE0601-7261 FI-2.x

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1 Contents

1	Contents	2
2	Introduction	2
3	History	2
4	Preparation for Operation	3
4.1	Download of Documents and Software	3
4.2	PE0003 Installation	3
4.3	Hardware Connections	3
4.4	EC0003 Graphical User Interface	4
5	G.723.1 Encoder Test	6
6	G.723.1 Decoder Test	9
7	Helpful Hints	10

2 Introduction

This quick start guide will help you get started with your CMX7261 FI-2.x evaluation. The respective datasheets and user manuals provide full details on the boards, but this guide consolidates information from multiple sources to accelerate your testing.

This guide walks the user through the following steps:

- Downloading necessary files
- Connecting the PE0601-7261 and PE0003
- Installing PE0003 USB driver
- Using EC0003 graphical user interface to:
 - Apply PC sound card output to CMX7261 for G.723.1 encoding.
 - Save encoded G.723.1 data to file on PC.
 - Retrieve encoded G.723.1 data and write to CMX7261 for decoding.
 - Apply G.723.1 decoded audio to attached speakers.

3 History

Version	Changes	Date
1	Initial release	February 2016
2	Added PSU current limit advice	May 2016

4 Preparation for Operation

4.1 Download of Documents and Software

Please visit the CML website (www.cmlmicro.com) and download the following files:

- PE0601-7261 User Manual
- PE0601-7261 Schematic
- PE0003 User Manual
- PE0003 Driver
- EC0003 Graphical User Interface
- PR7261 Project Package
- PR7261 FI-2.x Software Reference

Please visit the CML Technical Portal (CMX7261 link) to download:

- CMX7261 Datasheet/User Manual
- CMX7261 Function Image™ FI-2.x

4.2 PE0003 Installation

- Connect PE0003 “C-BUS1” port to PE0601-7261 J10 “PE0002 C-BUS” header.
- Connect +5V to PE0003 J11.
 - PE0003 right-angle connector J4 provides +5V to PE0601-7261.
- Set the power supply current limit to at least 800mA.
- Connect PE0003 to your PC with a USB cable.
 - The PC will ask for a USB driver the first time a PE0003 is connected. When prompted, load the USB driver from the unzipped PE0003 Driver package.
 - Your PC may attempt to use "Windows Update" to find the PE0003 USB driver. Cancel the "Windows Update" search. On your PC click "Start" button, right click on "Computer" and select "Properties". Select "Device Manager". Right click "PE0003 Evaluation Kit" and choose "Update driver software". Choose "Browse my computer" and locate the PE0003 driver you downloaded earlier. Click "Install anyway" if you get a driver warning message.

4.3 Hardware Connections

- Connect PC sound card output to PE0601-7261 “IP1” 3.5mm jack (J1).
- Connect powered speakers to PE0601-7261 “SPKR2” 3.5mm jack (J4).

The test setup should look like that shown in Figure 1:

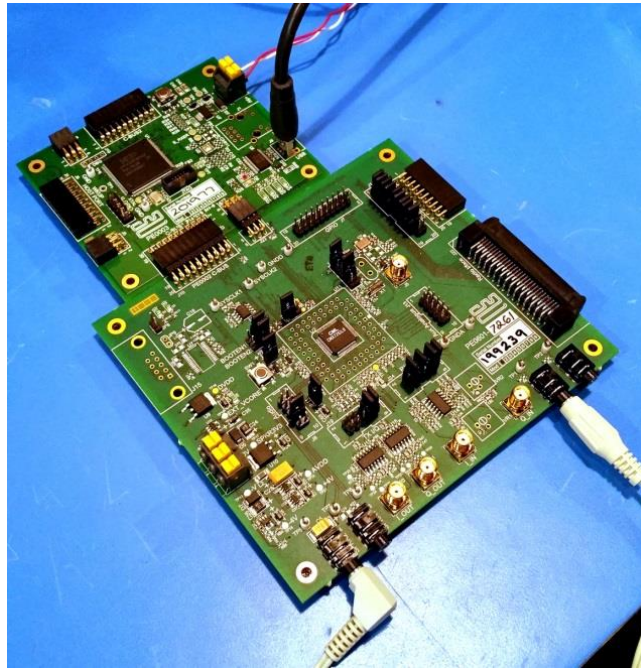


Figure 1: CMX7261 Evaluation Setup

4.4 EC0003 Graphical User Interface

Create a folder in an area where access is not protected. For example, in My Documents.

Unzip the PR7261 package to this folder .

Download CMX7261 FI, 7261-2.x from the CML Portal and copy to the same folder as the PR7261 contents; this will aid program usability in subsequent steps.

Download and copy the EC0003 Application from the PE0003 Knowledge Base tab on the CML website and copy it to the same folder as the PR7261 contents.

The following image illustrates a typical setup:

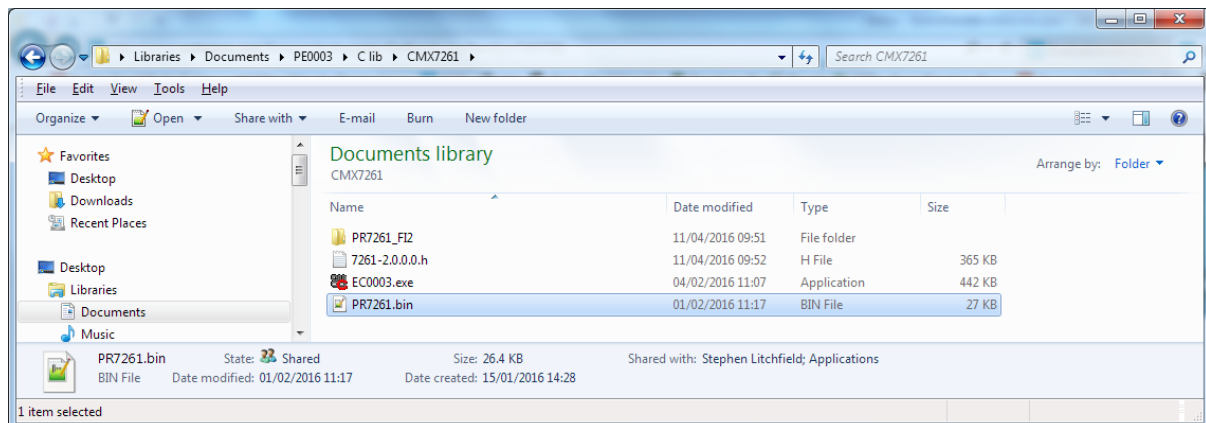


Figure 2: PR7261 Folder Structure

Folder contents include:

- PR7261_FI2 folder contains the C source and header files needed to build a project in LPCXpresso, a free open-source integrated development environment for LPC microcontrollers (produced by NXP Semiconductors).
 - Modification of the C source/header files can be performed to create customized tests. Please contact CML Technical Support for more information.
- 7261-2.x.x.x.h is the Function Image file downloaded from the CML Technical Portal.
- EC0003.exe is the graphical user interface that will be used in this document.

- PR7261.bin is the binary file that will be loaded into the EC0003 GUI. This file has been created by building and compiling the project files in “PR7261_FI2” folder.

Apply power to PE0003. Launch the EC0003 GUI and follow these steps:

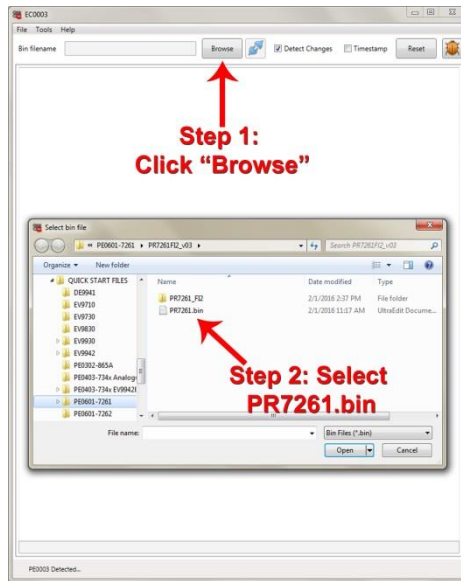


Figure 3: Location of PR7261.bin File

A dialog box appears that asks for a Function Image. Follow these steps:



Figure 4: FI Load Procedure

After the FI has been loaded into CMX7261, the GUI will look like this:

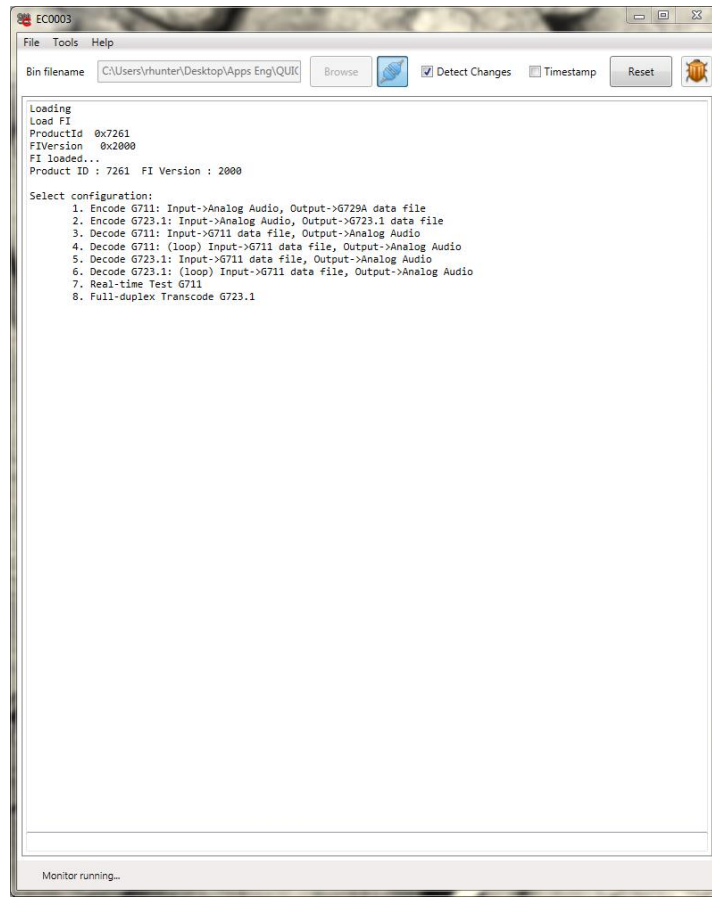


Figure 5:EC0003 GUI after FI Load

5 G.723.1 Encoder Test

Test 2, "Encode G723.1..." results in the following operation:

- The audio input is routed from IP1 to CMX7261 ANAIN2 single-ended input.
- CMX7261 encodes the audio (G.723.1) and makes the data available via C-BUS.
- PE0003 reads out the encoded data and writes the data to a PC file.

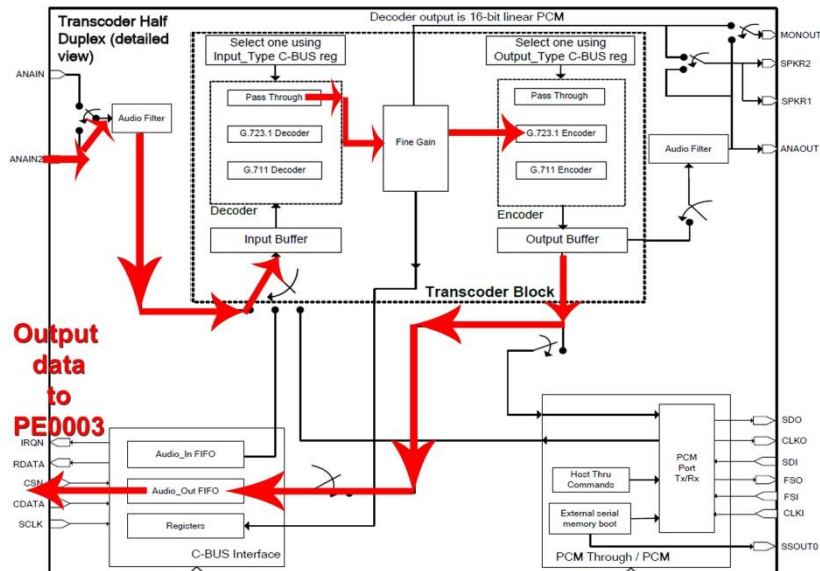


Figure 6: Test 2 Signal Flow Path

Play an audio file on the PC (“loop play” is helpful). Use an oscilloscope to monitor CMX7261 input amplitude. The following figure shows an easily accessible point on PE0601-7261 that corresponds to CMX7261 ANAIN2FB (feedback pin of single-ended input amplifier):

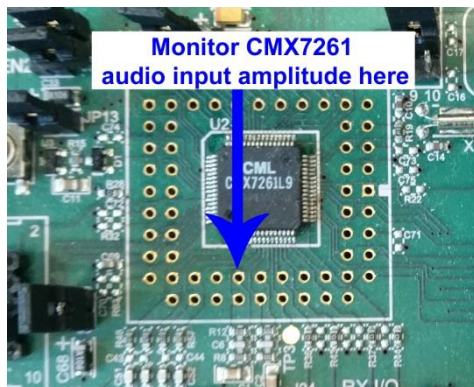


Figure 7:CMX7261 Audio Input Monitoring Point

Adjust PC speaker amplitude to obtain the desired audio input amplitude. **The audio amplitude at this point should not exceed 20%-80% AVDD, peak-to-peak.**

Once the CMX7261 audio input amplitude is appropriate, enter “2” (without quotation marks) in the entry field at the bottom of the GUI to start Test 2. Enter the desired number of samples (e.g. 5000). When prompted, give the encoder output data file a name with a .dat file extension.

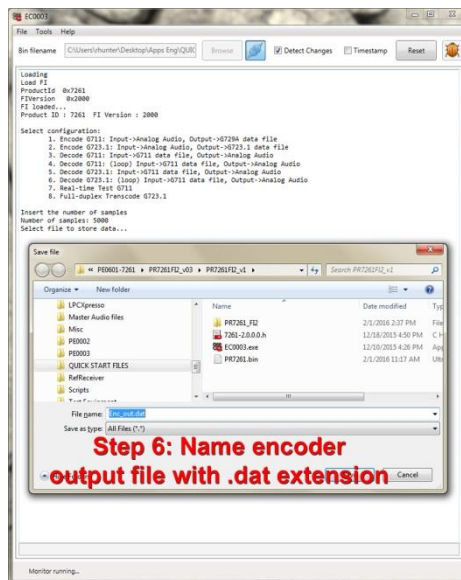


Figure 8: Creation of Encoder Output Data File

At the completion of the test, click “Reset” in upper right corner of GUI and reload the FI.

6 G.723.1 Decoder Test

Test 5, “Decode G723.1...” results in the following operation:

- G.723.1 encoded data file is read from PC and written to CMX7261 via C-BUS.
- CMX7261 decodes the G.723.1 data and supplies the audio to external speakers.

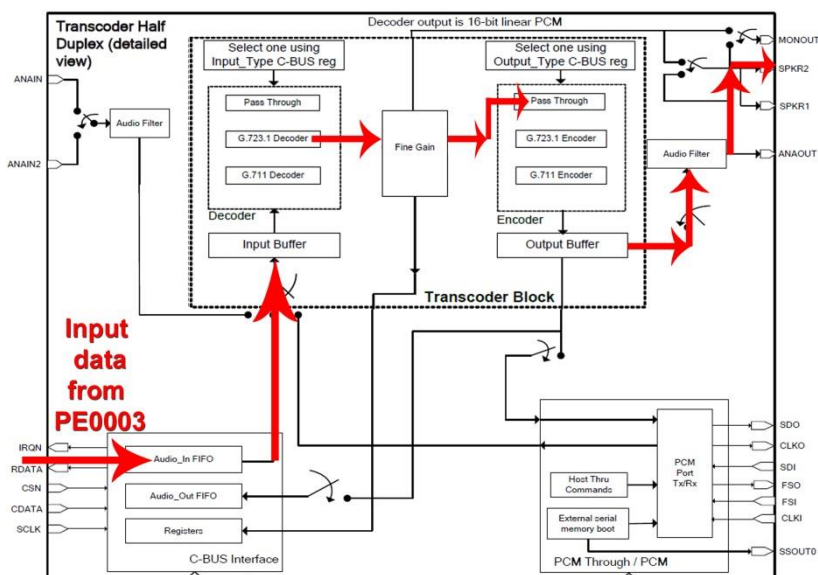


Figure 9: Test 5 Signal Flow Path

Enter “5” (without quotation marks) in the entry field at the bottom of the GUI to start Test 5. Enter the same number of samples you entered for the encode test (e.g. 5000). When prompted, locate the encoder output data file you created earlier:

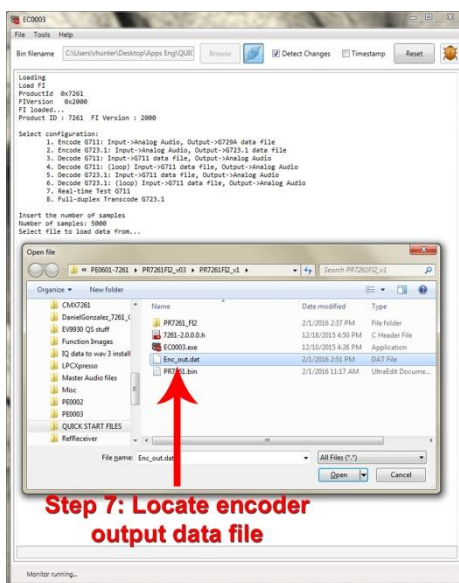


Figure 10: Selecting Input Data File for Decoder

Once the decoder input file has been selected, audio will be heard from the speakers. The initial CMX7261 test is complete, and the user is encouraged to experiment with the other tests shown in the EC0003 GUI.

7 Helpful Hints

Detailed PE0003 driver installation information can be found in the PE0003 User Manual. For Win7 and Win8 driver signing issues see the FAQ tab on the CML website's PE0003 Product page.

Ensure that current limit is set as recommended. The PE0003 current varies significantly between start-up and operating. If the GUI stops running a binary but shows the PE0003 as detected then it is likely a current limit has caused the PE0003 to reset. Current surges when operating may also cause a power supply to limit and reset the PE0003.

Please contact CML Technical Support if you have any questions or require further assistance.

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