

1 Introduction

Thank you for your interest in the PE0302-865A Evaluation Board.

This quick start guide will help you get started with your PE0302-865A evaluation. The respective datasheet and user manual provide full details on the board, but this “quick start” guide consolidates information from multiple sources to accelerate your testing.

This guide walks the user through the following steps:

- Downloading necessary files
- Connecting the PE0302-865A and PE0003
- Installing PE0003 USB driver
- Using PE0003 graphical user interface (GUI) to configure CMX865A for programmed tone detection

2 History

Version	Changes	Date
1	Initial release	15-xx-yy

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3 Preparation for Operation

3.1 Download of Documents and Software

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

- CMX865A Datasheet
- PE0302-865A User Manual
- PE0302-865A Schematic
- “PTD_1400Hz_2300Hz.pes” script file from the CML website
- PE0003 Driver
- PE0003 User Manual

3.2 Test Equipment

The following test equipment will be needed:

- PC with Windows 8 or earlier.
- +5V supply (rated for 500mA).
- Oscilloscope (for generic signal viewing if desired)

3.3 Basic Connections

- Connect PE0302-865A to “C-BUS1” port of PE0003.
- Connect +5V to PE0003 J11 connector.
 - The PE0003 supplies +5V to PE0302-865A through right-angle connector J4.

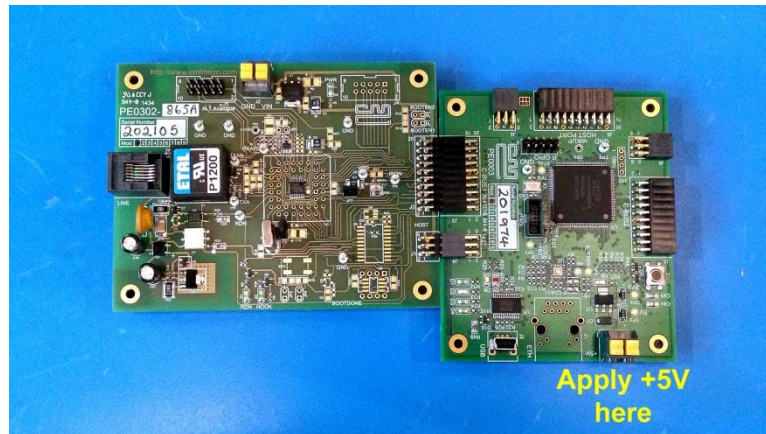


Figure 1: PE0302-865A Connected to PE0003

3.4 PE0003 Installation

The following steps will install the PE0003 on your PC:

- Connect PE0003 to PC with 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 Programmed Tone Detection

The following steps will configure the CMX865A for detection of 1400Hz and 2300Hz tones:

- Locate the PE0003 graphical user interface (GUI), named “ES0003xx.exe” (xx=version number), in the unzipped PE0003 Evaluation Software package. Double-click the executable file to launch the GUI.
- Ensure “C-BUS Control” tab is selected. Locate and click “Options” button in bottom-right corner of GUI.

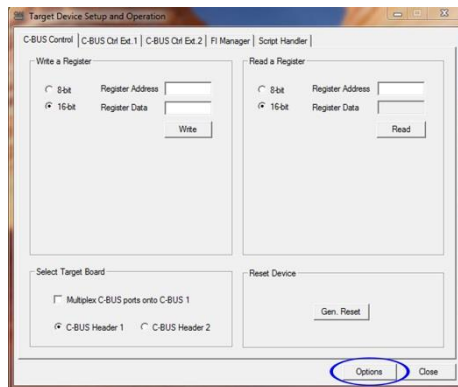


Figure 2: Location of "Options" Button

- Select the desired C-BUS SCLK frequency using the “C-BUS Frequency” pull-down box.
 - CMX865A maximum SCLK frequency is 5MHz, so ensure the selection is ≤ 5 MHz.

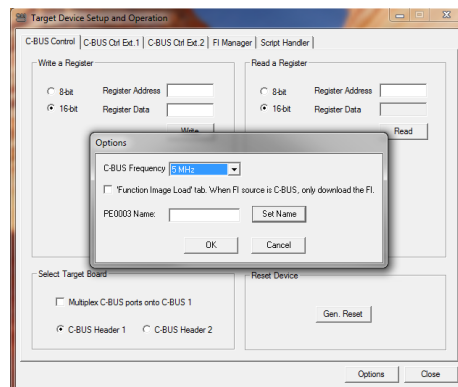


Figure 3: C-BUS Frequency Selection

- Select the “Script Handler” tab. Click “Select Script” and locate the “PTD_1400Hz_2300Hz.pes” script you downloaded earlier. Click “Run”.

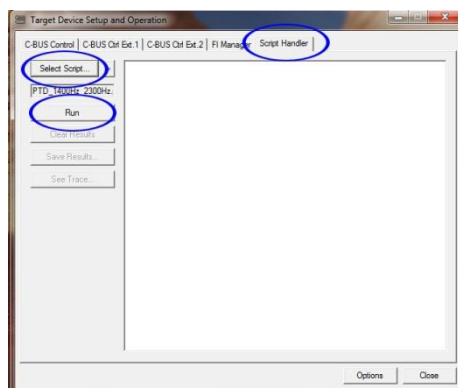


Figure 4: Important Buttons for PE0003 Script Execution

- The “PTD_1400Hz_2300Hz.pes” script does the following:
 - Checks that SCLK $\leq$ 5MHz.
 - Performs General Reset.
 - Programs CMX865A to detect 1400Hz and 2300Hz tones.
 - Enters an “infinite loop” with programmed tone detect mode, and provides GUI indication if a programmed tone is detected.
- Apply a 1400Hz signal with amplitude 100mVrms to PE0302-865A J5:2 (Rx input).

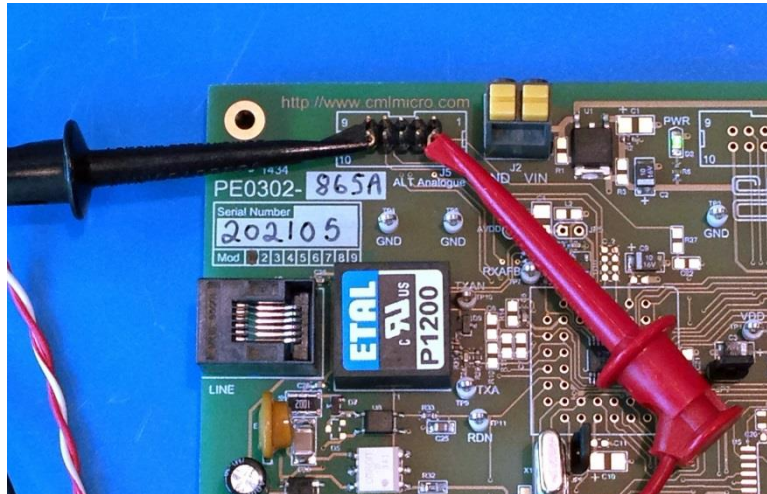


Figure 5: Rx Signal Injection Point

- The PE0003 GUI should indicate detection of the first programmed tone (1400Hz):

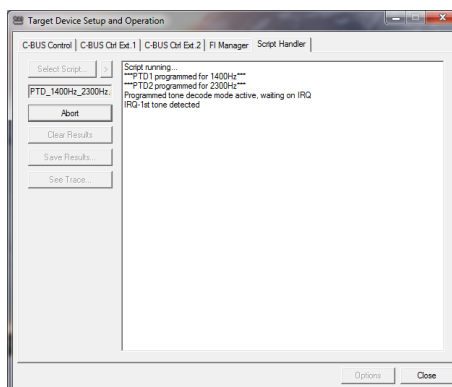


Figure 6: 1st Tone Detection

- Adjustment of tone frequency to 2300Hz will result in detection of the second programmed tone:

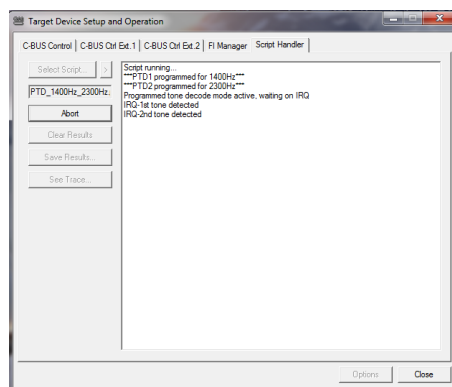


Figure 7: 2nd Tone Detection

5 Next Steps

The programmed tone detector script exercised in this document uses coefficients created by a spreadsheet named “CMX86x Tone Generator Calculator”, which is available on the CML website. An excellent guide on usage of this spreadsheet is available in “Security Industry Protocols with the CMX865A” application note, also from the CML website.

PE0003 scripts are text files that can be modified with any text editor. The scripting language is very “C-like” and a related application note, “Script Language Reference”, is available on the CML website. In addition to automating CMX865A evaluation, the scripts can serve as a starting point for firmware development.

The CML website offers scripts that exercise other CMX865A functions, but many of those scripts were originally designed for the PE0002. Those scripts should work with PE0003 but you will need to reduce C-BUS SCLK speed, in accordance with instructions provided previously in this document, to achieve successful PE0003 operation.

6 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.

If the hookswitch is enabled, signals can be connected directly from a sound card or test equipment via the line connector. The impedance is around 600 Ohms, which a sound card or test equipment should be able to drive. The transformer provides full galvanic isolation which:

1. Removes the need for ac coupling.
2. Eliminates the problem of ground loops.
3. Allows signals to be biased to any voltage, including 0V or negative voltages, that do not exceed the line interface rating of around 50Vdc.

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

CML does not assume any responsibility for the use of any algorithms, methods or circuitry described. No IPR or circuit patent licenses are implied. CML reserves the right at any time without notice to change the said algorithms, methods and circuitry and this product specification. CML has a policy of testing every product shipped using calibrated test equipment to ensure compliance with this product specification. Specific testing of all circuit parameters is not necessarily performed.

 CML Microcircuits (UK) Ltd COMMUNICATION SEMICONDUCTORS	 CML Microcircuits (USA) Inc. COMMUNICATION SEMICONDUCTORS	 CML Microcircuits (Singapore) Pte Ltd COMMUNICATION SEMICONDUCTORS
Tel: +44 (0)1621 875500 Fax: +44 (0)1621 875600 Sales: sales@cmlmicro.com Tech Support: techsupport@cmlmicro.com	Tel: +1 336 744 5050 800 638 5577 Fax: +1 336 744 5054 Sales: us.sales@cmlmicro.com Tech Support: us.techsupport@cmlmicro.com	Tel: +65 62 888129 Fax: +65 62 888230 Sales: sg.sales@cmlmicro.com Tech Support: sg.techsupport@cmlmicro.com
- www.cmlmicro.com -		