

## Ezairo® 7111 Hybrid Demo Board User Manual



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### INTRODUCTION

#### Purpose

This manual provides information on the configuration and use of the Ezairo7111 Hybrid Demonstrator Board.

#### Conventions

Component and pin names are marked by the use of Monospace Font.

#### Intended Audience

This manual is for engineers, developers, and anyone else who requires technical information about the Ezairo 7111 Hybrid Demo Board.

### EVAL BOARD USER'S MANUAL

#### Further Reading

For any technical information not covered in this manual, refer to the following documents:

- Promira™ Serial Platform Quick Start Guide (available at totalphase.com)
- Communication Accelerator Adaptor Manual
- Ezairo 7111 Datasheet
- Ezairo Sound Designer Software User Manual

### Board Design

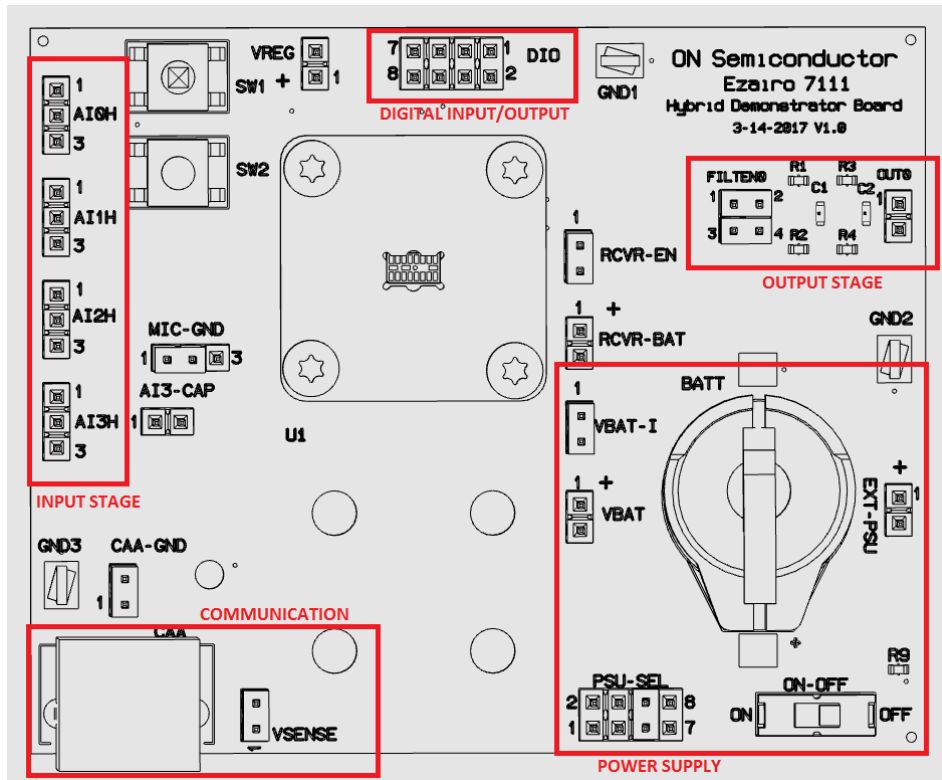


Figure 1. Ezairo 7111 Hybrid Demonstrator Board Overview

## GETTING STARTED

### Introduction

This chapter is about setting up the hybrid demonstrator board for use. You have to provide it with power and connect it to your computer. You will also need to manually insert the Ezairo 7111 hybrid into the designated socket. This chapter also describes how to connect the board to your computer using a programming box, and first steps for using the Ezairo Sound Designer software.

To get started, you will need the following:

- Ezairo 7111 Hybrid Demonstrator Board and Ezairo 7111 hybrid sample
- A supported programming box and respective driver installed

NOTE: (For a full list of supported programmers, see Chapter 2.3.1)

- Ezairo Sound Designer Software  
(available on request from your Account Manager)

### Ezairo 7111 Hybrid Socket

The socket used on the Ezairo 7111 Hybrid Demonstrator Board is designed for easy, tool-free, use. The following are the steps required to ensure the socket is functioning properly.

#### Aligning the Clamp

1. Ensure that the rubber plunger sits flush with the top of the grey adapter plate near the end of the range of motion of the clamp
2. With minimal pressure, the clamp should lock into place
3. Ensure that the rubber plunger lines up with the cutout in the grey adapter plate
4. Tighten all nuts fully if adjustment was required.

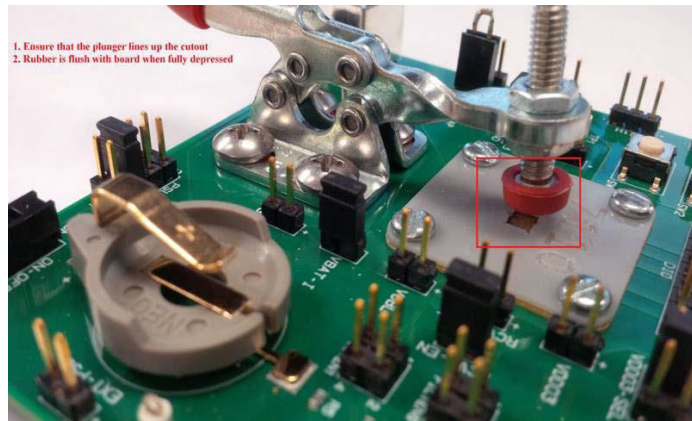


Figure 2. Aligning the Clamp with the Adaptor Plate

### Inserting the Hybrid

1. Open the clamp fully
2. Align the pin 1 marker on the Ezairo 7111 Hybrid with the marker on the adapter plate
3. Insert the hybrid into the socket  
(ensure the hybrid is fully inserted and level)
4. Fully close the clamp, ensuring it locks into place

NOTE: The clamp should not require more than 1 kg to fully close.

**Power Supply**

The Ezairo 7111 Hybrid Demonstrator Board can be powered on using the ON-OFF switch. Power can be

supplied to the VBAT pin in one of four ways, as outlined in Table 1 below:

**Table 1. POWER SUPPLY SELECTION**

| PSU_SEL          | Power Supply Source                      |
|------------------|--|
| Short pin 1 to 2 | CS44 Connector (Pads on bottom of board) |
| Short pin 3 to 4 | 6-Pin DIN (CAA Connector)                |
| Short pin 5 to 6 | External Bench Supply (EXT_PSU header)   |
| Short pin 7 to 8 | Battery (On board battery holder)        |

**Table 2. VBAT SUPPLY**

| Pin Name | Min    | Nom    | Max   |
|----------|--------|--------|-------|
| VBAT     | 1.05 V | 1.25 V | 2.0 V |

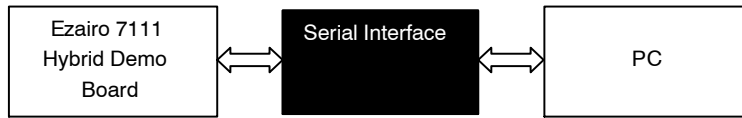
*Communication*

Communication between your computer and the Ezairo 7111 hybrid can be achieved through a programming interface. The following programmers are supported:

- Promira Serial Interface from Total Phase, Inc., driver version 1.3.6
- Communication Accelerator Adaptor (CAA), driver version 1.3
- HI-PRO, driver version 2.0.0.4

- NOAHlink
- DSP programmer version 3

The serial interface can be connected to Ezairo through the 6-pin DIN connector. Alternately, the pads required for communication (SCL, SDA, PSU, GND) are available on the bottom of the board for custom I<sup>2</sup>C connectors such as the CS44 connector typically used on hearing aids.



**Figure 3. Evaluation and Development Board Setup**

**Table 3. DIN CONNECTOR PIN-OUT**

| Pin Number | Serial Interface Pin Description         |
|------------|--|
| 1          | Supply Voltage from the Serial Interface |
| 2          | System Ground                            |
| 3          | SCL (I <sup>2</sup> C Clock)             |
| 4          | SDA (I <sup>2</sup> C Data)              |
| 5          | VBAT (Sense Voltage)                     |
| 6          | No Connect                               |

**Ezairo Sound Designer Software**

Here are the steps to setting up your product device for use with the Ezairo Sound Designer software:

**NOTE:** If you are programming the device with your own firmware, please refer to the documentation provided within the Ezairo 7100 Evaluation & Development Kit.

1. Connect the product to your programmer and to your computer, as follows:
  - ◆ Connect your input source to the negative and center pins of the 3-pin AI1H header
  - ◆ Connect your recording or listening equipment to the output, which is labelled OUT0. You might require an external amplifier to drive headphones from the output
  - ◆ You can use SW1 and SW2 (found on the evaluation board) to adjust the volume
  - ◆ The maximum input signal range is approximately 2 Vpp (volts peak-to-peak)
2. Power on the board by setting ON-OFF to ON
3. Next, start Sound Designer software by double-clicking on the SD/sounddesigner.exe shortcut, which you will find wherever you installed the Sound Designer software files
4. Choose a workspace. If you do not have a workspace directory available, click Browse and the software allows you to create one. If you click Browse and select a pre-existing directory for your workspace, make sure it is empty. For this example, check Import Sample Workspace, and select E7150SL from the drop-down list. Click OK
5. Open the console window by clicking the Show console icon. The console window displays error and status messages accumulated in this session. We recommend having the console viewable at all times while using Sound Designer software, to get immediate status information

6. Click on Control Panel and then, for this example, double-click the Ezairo7150SL.param sample parameter file to open the demo product library.
7. To connect to the device, go to the SETTINGS window. Select the correct Programmer, and Port if applicable. If you also select Verify NVM Writes, the software burns the settings to the device's Non-Volatile Memory and then immediately reads back the settings to confirm that the values burned to the device match what is being read out of the device. This option requires additional programming time. Next, click on Detect. A successful detection will populate the device information in the Device Info box
8. Use the back button—the arrow in the top left corner—to return to the Control Panel
9. To configure the device for the selected product, click Programmer > Connect. If the connection succeeds, the Connection status symbol appears to the right of the File Name. You can hover over this symbol to view the programmer name and the firmware ID of the device. The connected device must now be configured before you can read, burn or write parameters in Control Panel. Click Programmer > Configure to do this
10. Now you are ready to begin. See Chapter 3, “Modeler” on page 15 of the Ezairo Sound Designer Software User Manual for your next steps in the process of developing a product with Sound Designer software

**Input Stage**

The Ezairo 7111 Hybrid Demonstrator Board provides access to four analog audio inputs (AI0H, AI1H, AI2H, AI3H). The ground reference for the inputs can be adjusted using the MIC-GND header as follows:

**Table 4. INPUT GROUND REFERENCE SELECTION**

| MIC-GND          | Input Ground Reference |
|------------------|------------------------|
| Short pin 1 to 2 | GND_MIC (Note 1)       |
| Short pin 2 to 3 | AGND                   |

1. Use GND\_MIC reference when input is from a microphone. For other electrical test equipment use AGND.

**Output Stage**

There is one digital output (RCVRO) available on the board through standard 0.1” header. The direct digital outputs are available on header FILTEN0. Separate RC filter networks are provided to attenuate out-of band noise

from the direct digital outputs when connected to high impedance audio measurement equipment (OUT0). The on-board RC filters are enabled by the FILTEN0 headers as described in the following table.

**Table 5. ON-BOARD RC FILTER CONFIGURATION**

| Function | FILTENO                                |
|----------|--|
| Disabled | open pins 1 to 2<br>open pins 3 to 4   |
| Enabled  | short pins 1 to 2<br>short pins 3 to 4 |

2. To connect receivers or loud speakers (without the RC filter) use headers FILTEN0 pins 1 and 3.

**Digital Input/Output (DIO)**

The Ezairo 7111 Hybrid Demonstrator Board contains 5 digital I/O (DIO) signals available on DIO 2x4 header that

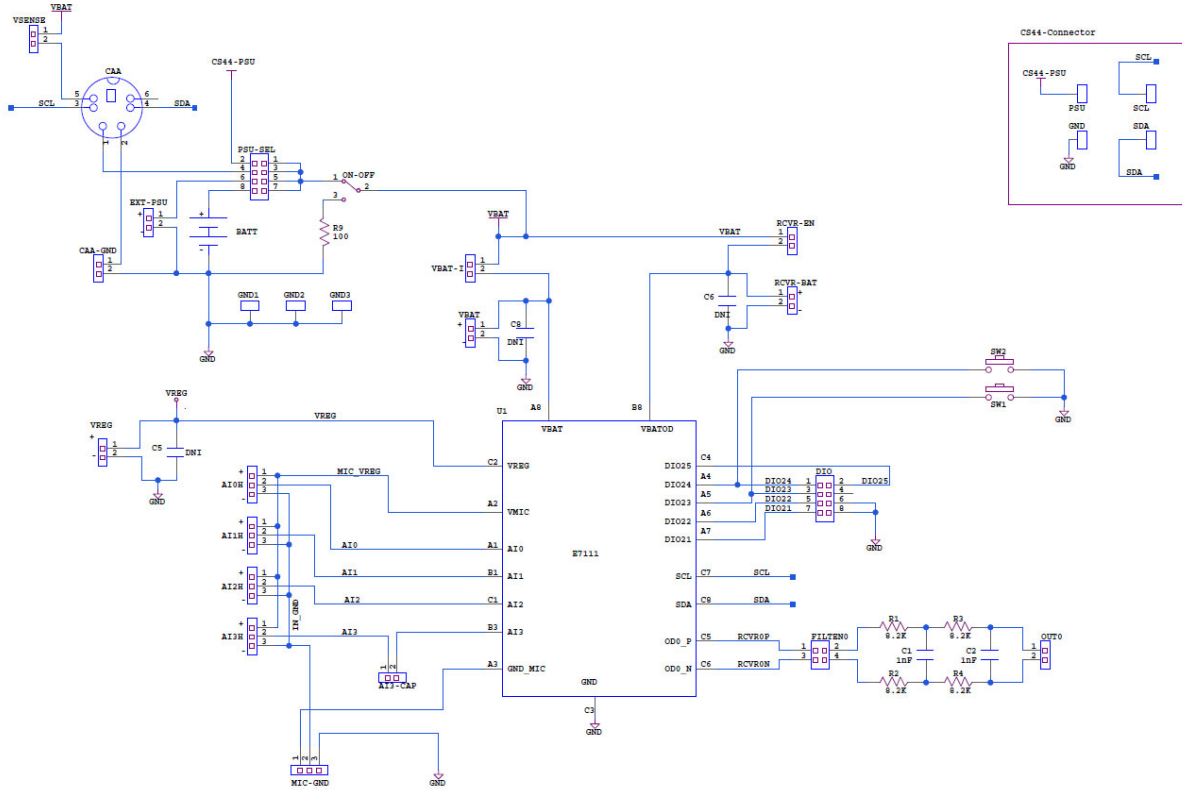
provide access to a wide variety of interfaces (GPIO, SPI, PCM, I<sup>2</sup>C, UART, LSAD, clocks). The DIOs are in the VBAT supply domain.

**Table 6. DIO REFERENCE DOMAINS**

| DIOs | DIO Header Pin | Reference Domain |
|------|----------------|------------------|
| 21   | 7              | VBAT             |
| 22   | 5              | VBAT             |
| 23   | 3              | VBAT             |
| 24   | 1              | VBAT             |
| 25   | 2              | VBAT             |

The Ezairo 7111 Hybrid Demonstrator Board also has two momentary switches that can be used as momentary hard pull-downs on DIO24 (SW2) and DIO23 (SW1).

Schematic



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