USB MATCHBOX™

USB<>XLR ULTRA-DEFINITION CODEC

HENRY ENGINEERING
503 Key Vista Drive
Sierra Madre, CA 91024
Tel: 626.355.3656
Fax: 626.355.0077
www.henryeng.com

DESCRIPTION
The USB Matchbox is a high-performance professional audio codec. Used in place of a computer "sound card", it provides audiophile-quality performance, XLR analog stereo inputs and outputs at professional studio levels, and the convenience of USB interface to any PC. The USB Matchbox is compatible with virtually any audio recording/editing software. No special software or driver is needed. A USB 1.1 (or higher) connection to the PC is required. The USB Matchbox is USB powered, and complies with the AES-48-2005 grounding standard.

INSTALLATION
ANALOG LINE INPUTS/OUTPUTS:

Connect balanced analog inputs and output to the XLR connectors as follows:

Pin 1 = GND, Pin 2 = HI, Pin 3 = LOW.

NOTE: Ground loops cause hum, buzz, and other noises that are created by the computer mouse, drives, fan, and keyboard. **Prevent noise by connecting ground wires at <u>one end only.</u>**

The unbalanced AUX IN jacks can also be used; connect them as usual. (White = LEFT; Red = RIGHT.)
NOTE: See important notes on reverse side regarding use of the unbalanced AUX IN jacks.

The SPEAKER outputs can be used to feed an <u>amplified</u> speaker system or "computer speakers". Use a 3.5mm TRS plug wired as follows: Tip = LEFT, Ring = RIGHT, Sleeve = GND. The Speaker output level is fixed. The Speaker audio can be muted via a contact closure at the MUTE jack. Use a 3.5mm TRS plug. Connect an external contact closure between the Tip and Sleeve.

COMPUTER CONNECTION: First, close any audio-related programs. Use a USB cable to connect the USB Matchbox to any USB port on the PC. **Warning! Do NOT use a "USB HUB"! Connect the cable from the USB Matchbox *directly* to the USB port on the computer.** The computer should recognize the USB Matchbox as "**USB Audio Codec".** No additional software or drivers are needed. When audio software is started, it may be necessary to change its Settings to select the **USB Audio Codec** as its default.

WINDOWS* VOLUME SETTING
<u>BEFORE USING USB MATCHBOX</u>, be sure to check the Windows "SPEAKER VOLUME" setting. The Speaker Volume can be accessed via the Windows Control Panel under "Sound and audio devices" or "Adjust the system volume". Select "Volume" or "Set system volume", then adjust the slider. **In most cases, the Speaker Volume should be set to <u>MAXIMUM.</u>** *Windows is a registered trademark of Microsoft Corporation.

OUTPUT LEVEL CALIBRATION
The USB Matchbox is calibrated to operate with balanced I/O levels of +4 dBu. Output levels can be changed via the recessed OUTPUT trimmers; use a small screwdriver to carefully adjust. NOTE: There is 15 dB of digital headroom above +4 dBu: a calibration tone recorded at 0 dBfs will produce an output level of about +19 dBu.

OPERATION
Feed program audio into the unit, and set the RECord LEVel control as indicated by the software being used for recording. The BAL trimmer can be used to fine-tune left/right channel balance. Use a small screwdriver to carefully adjust.

To play a recording, simply play the file. Audio will be present on the XLR output jacks.

SPECIFICATIONS

Balanced analog inputs/outputs	Stereo, nom. +4 dBu @ -15 dBfs, 20K input imp; CMRR = 90 db @60 Hz; Outputs +24 dBu, 600 ohms
Unbalanced analog input	Stereo, -10 dBv, 10K input impedance
Speaker output	Stereo, compatible with computer speaker systems
Mute control	Contact closure will mute Speaker output
Phones output	For headphones, 24 ohms or higher. (Do not use older "8-ohm" headphones.)
Sample rates supported	48, 44.1, or 32 kHz, software defined
Resolution, dynamic range	16 bit stereo or mono, software defined
USB supported	USB 1.1 or higher, USB powered

This product uses THAT Corporation's *InGenius high performance differential analog input circuitry.**

The *InGenius* balanced line receiver ICs used within provide exceptional common-mode noise rejection. The input circuitry will reject common-mode noise regardless of the symmetry or impedance balance of the source. This very high CMRR performance remains consistent over a wide range of input frequency, level, and source impedance. This product is suitable in installations where the balanced analog input cables are very long and/or are exposed to external noise sources, e.g., other electrical equipment or cabling.

*****_InGenius_ is a registered trademark of THAT Corporation.

THIS DEVICE COMPLIES WITH THE AES-48-2005 GROUNDING STANDARD.

Exceptional care has been taken to provide excellent RF rejection, especially in the VHF/UHF spectrum. Pin 1 of the XLR connectors is connected to the chassis through a direct path that represents a very low impedance at RF frequencies. The GND screw on the chassis may be used to connect the unit to system ground or RF ground.

USING THE UNBALANCED 'AUX IN' INPUTS

The AUX INputs (RCA jacks) are actually balanced inputs, and are intended for use with battery-operated devices that are isolated from the AC powerline. The reason for this design is to preserve compliance with the AES-48 grounding standard, which does not address "consumer" unbalanced source equipment. The AUX IN inputs CAN be used with ground-referenced (AC powered) equipment, however, hum may result due to ground loops. If this occurs, connecting a short wire from the shield (shell) of the RCA jack to the GND screw on the chassis will usually eliminate the hum.

FCC COMPLIANCE NOTICE

The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without Henry Engineering's written authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Henry Engineering equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

· Turn the television or radio antenna until the interference stops.

· Move the equipment to one side or the other of the television or radio.

· Move the equipment farther away from the television or radio.

· Plug the equipment into an outlet that is on a different circuit from the television or radio. (Make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Henry Engineering could void the FCC approval and negate your authority to operate the product.