USB MATCHBOX II™

USB<>XLR MULTIMODE DIGITAL AUDIO CODEC

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DESCRIPTION

The USB Matchbox II is a high-performance professional audio codec. Used in place of a computer "sound card", it provides stereo analog inputs and outputs at professional studio levels, an AES/EBU output, and a Headphone output for critical monitoring. The USB Matchbox II yields superb "audiophile" performance with the convenience of USB interface to any Windows, Mac, or Linux based computer. The USB Matchbox II is compatible with virtually any audio recording/editing software that supports a USB sound device. No special software or driver is needed. A USB 1.1 (or higher) connection to the PC is required. The USB Matchbox II 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 HEADPHONE output can be used to monitor the "play" output of the system. Use contemporary headphones with an impedance of 24 ohms or greater. Do NOT use older "8 ohm" headphones. The VOLUME control adjusts the headphone level. **Warning!** Excessive listening levels can cause permanent hearing damage.

DIGITAL OUTPUT: Connect to the AES/EBU digital output XLR connector as follows:

Pin 1 = GND, Pin 2 = HI, Pin 3 = LOW. (The AES/EBU output is transformer isolated.)

COMPUTER CONNECTION:
First, close any audio-related programs. Use a USB cable to connect the USB Matchbox II to any USB port on the PC. The computer should recognize the USB Matchbox II 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 II</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.
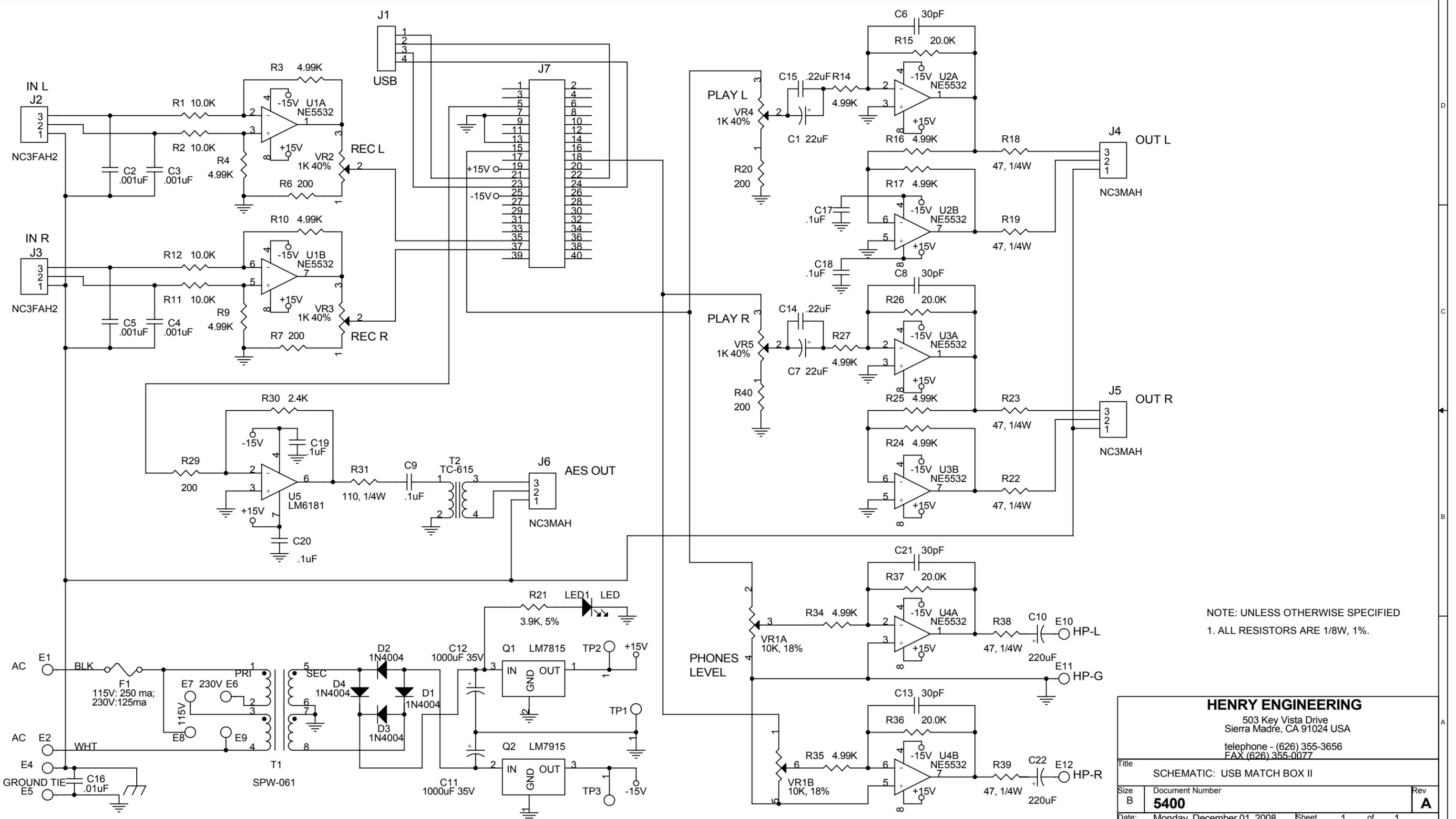
OUTPUT LEVEL CALIBRATION

The USB Matchbox II is calibrated to operate with analog I/O levels of +4 dBu. Input and Output levels can be changed via the recessed 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

To record, feed audio into the unit. Set the INPUT LEVEL trimmers as necessary, as indicated by the software being used. To play a recording, simply play the file. Audio will be present on the XLR analog outputs, Headphone jack, and on the AES/EBU digital output. (The Headphone output monitors "playback" audio only.)

SPECIFICATIONS

Balanced analog inputs	Stereo, nom. +4 dBu @ -15 dBfs, 20K ohms input impedance, XLR X 2
Balanced analog outputs	Stereo, nom. +4 dBu @ -15 dBfs, +24 dBu max level, 600 ohms, XLR X 2
AES/EBU digital output	Transformer isolated, 110 ohms, XLR connector
Headphones output	For headphones, 24 ohms or higher; 3.5mm stereo jack
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
Power Input	115 or 230 VAC, 50-60 Hz, 2W, + USB power
Approval	City of Los Angeles Electrical Test Lab
Physical	5.75" w X 5.50"d X 1.60"h, 3 LBS
Construction	Steel enclosure

J1 USB

J2 IN L — NC3FAH2
J3 IN R — NC3FAH2

R1 10.0K
R2 10.0K
R3 4.99K
R4 4.99K
R6 200
C2 .001uF
C3 .001uF
U1A NE5532 -15V +15V
VR2 1K 40%
REC L

R12 10.0K
R11 10.0K
R10 4.99K
R9 4.99K
R7 200
C5 .001uF
C4 .001uF
U1B NE5532 -15V +15V
VR3 1K 40%
REC R

J7

R30 2.4K
R29 200
C19 .1uF
U5 LM6181 -15V +15V
R31 110, 1/4W
C9 .1uF
T2 TC-615
J6 AES OUT — NC3MAH
C20 .1uF

R21 3.9K, 5%
LED1 LED

AC E1 BLK
F1 115V: 250 ma; 230V:125ma
E7 230V E6
PRI
E8 115V E9
T1 SPW-061
AC E2 WHT
E4
GROUND TIE
E5
C16 .01uF

D2 1N4004
D4 1N4004
D1 1N4004
D3 1N4004
SEC

C12 1000uF 35V
C11 1000uF 35V

Q1 LM7815 IN GND OUT
TP2 +15V
Q2 LM7915 IN GND OUT
TP1
TP3 -15V

PLAY L
VR4 1K 40%
R20 200
C15 .22uF
C1 22uF
R14 4.99K
R15 20.0K
C6 30pF
U2A NE5532 -15V +15V

R16 4.99K
R17 4.99K
C17 .1uF
C18 .1uF
U2B NE5532 -15V +15V

R18 47, 1/4W
R19 47, 1/4W
J4 OUT L — NC3MAH

PLAY R
VR5 1K 40%
R40 200
C14 .22uF
C7 22uF
R27 4.99K
R26 20.0K
C8 30pF
U3A NE5532 -15V +15V

R25 4.99K
R24 4.99K
U3B NE5532 -15V +15V
R23 47, 1/4W
R22 47, 1/4W
J5 OUT R — NC3MAH

PHONES LEVEL

VR1A 10K, 18%
R34 4.99K
R37 20.0K
C21 30pF
U4A NE5532 -15V +15V
R38 47, 1/4W
C10 220uF
E10 HP-L
E11 HP-G

VR1B 10K, 18%
R35 4.99K
R36 20.0K
C13 30pF
U4B NE5532 -15V +15V
R39 47, 1/4W
C22 220uF
E12 HP-R

NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE 1/8W, 1%.

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Title
SCHEMATIC: USB MATCH BOX II
Size B
Document Number 5400
Rev A
Date: Monday, December 01, 2008
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