

MNT ZZ9000AX R-1 Quickstart Manual

Dear MNT Customer,

Thank you for purchasing the MNT ZZ9000AX Audio Expansion for the MNT ZZ9000 multifunction graphics card for Commodore Amiga computers.

Package Contents

- MNT ZZ9000AX Card
- Stainless steel slot bracket
- Bag containing 2× M2 mounting screws and 2× M2 nuts
- Data Cable (complicated cable for connecting ZZ9000AX to ZZ9000)
- Internal Audio Cable (3 leads)
- This manual

Warranty

MNT Research covers the warranty to the extent required by law for the unmodified product. Warranty does not cover user supplied firmware or any modifications made to the card, nor does it cover any damage by inserting it into a computer or other user supplied device. Use at your own risk!

Declaration of Conformity

MNT ZZ9000AX may only be operated in a shielding steel enclosure. MNT Research assures that the included product complies with the requirements of the following European Directives and DIN standards:



- EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU
- RoHS Directive 2011/65/EU
- DIN EN 55022:2011-12
- DIN EN 55024:2016-05
- DIN EN 61000-6-1:2007
- DIN EN 61000-6-3:2007/A1:2011/AC:2012
- DIN EN 61000-3-2:2014
- DIN EN 61000-3-3:2013

Get updates and source code at:
<https://mntre.com/zz9000>

Need help? Write to
support@mntre.com

Join our IRC channel **#mnt-amiga** on
irc.libera.chat

Lukas F. Hartmann, Managing Director
 MNT Research GmbH
 March 16th, 2022

Hardware Installation

1. Remove the protective tape from the steel slot bracket. Use a cloth to wipe away any residue from the bracket.

2. Mount the slot bracket to ZZ9000AX with 2× supplied M2 screws and nuts. The nuts go on the bottom side as pictured.



3. Connect ZZ9000AX to ZZ9000 using the Data and Internal Audio Cables as described in the "Hardware Installation: Cables" section of this manual.

4. Mount ZZ9000AX above ZZ9000 in your Amiga 2000/3000/4000.

Software Installation

1. Install the AHI system version 4.18. We recommend not to use AHI version 6, as it has significantly higher CPU usage and can cause audio stuttering.

• AHI on Aminet: http://aminet.net/package/driver/audio/ahiusr_4.18

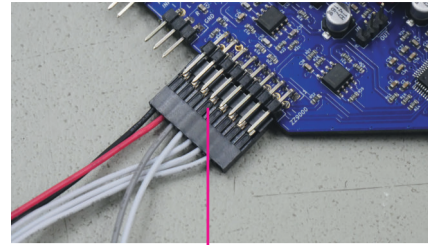
2. Download and install the ZZ9000AX drivers that are included in the ZZ9000 driver package. Power cycle your Amiga. Then, configure ZZ9000AX in AHI Preferences.

• ZZ9000AX drivers and tools: <https://mntre.com/zz9000>

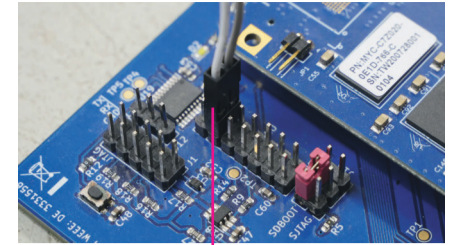
SigmaDSP

The audio chip on ZZ9000AX—Analog Devices ADAU1701—features a 28-/56-bit, 50 MIPS SigmaDSP (digital audio processor). The DSP program determines the signal flow to and from ZZ9000AX, including digital mixing and optional effects. The default program (which mixes AHI and Amiga Paula sound) is included in the ZZ9000 firmware, but can be changed with the free SigmaStudio software from Analog Devices and an upcoming tool from MNT Research. Visit the ZZ9000 website for tools and updates.

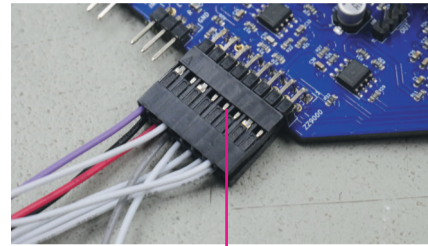
Hardware Installation: Cables



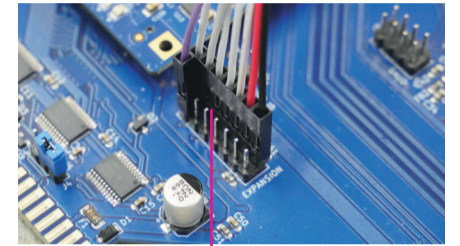
Connect the **first half (8 pins, black/red/gray/white)** of the Data Cable to the **bottom row** of ZZ9000 header on ZZ9000AX as pictured.



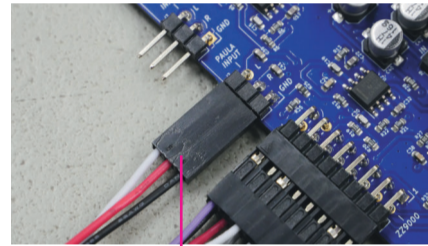
Connect **white and gray leads** to the **second column** of the MIO header on ZZ9000. Make sure to skip the first two pins of the header!



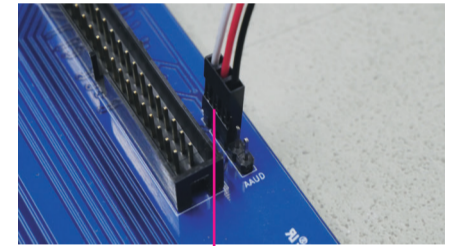
Connect the **second half (8 pins, only 1 purple and 2 white leads)** of Data Cable to the **top row** of ZZ9000 header on ZZ9000AX as pictured.



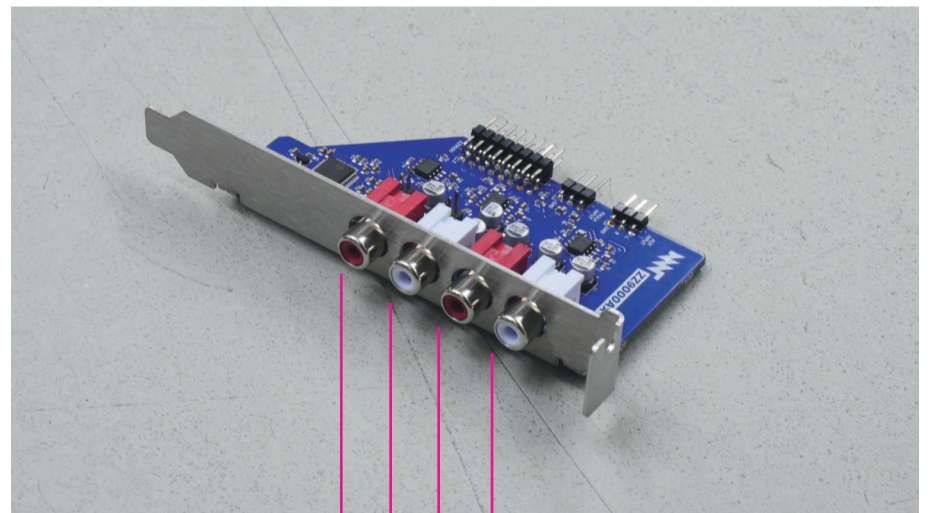
Connect the **second half (7 pins)** and the **single purple lead** of Data Cable to the EXPANSION header on ZZ9000 as pictured. Black and red go near the EXPANSION label.



Connect **one end** of the Internal Audio Cable to the PAULA INPUT header on ZZ9000AX as pictured.



Connect the **other end** of the Internal Audio Cable to the AAUD header on ZZ9000 as pictured. The 2 pins close to the AAUD label are left open.

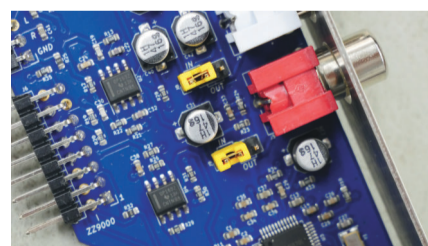


Aux input/output
 (Right channel)

Line output
 (Left channel)

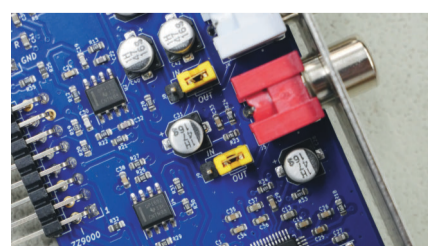
Aux input/output
 (Left channel)

Line output
 (Right channel)

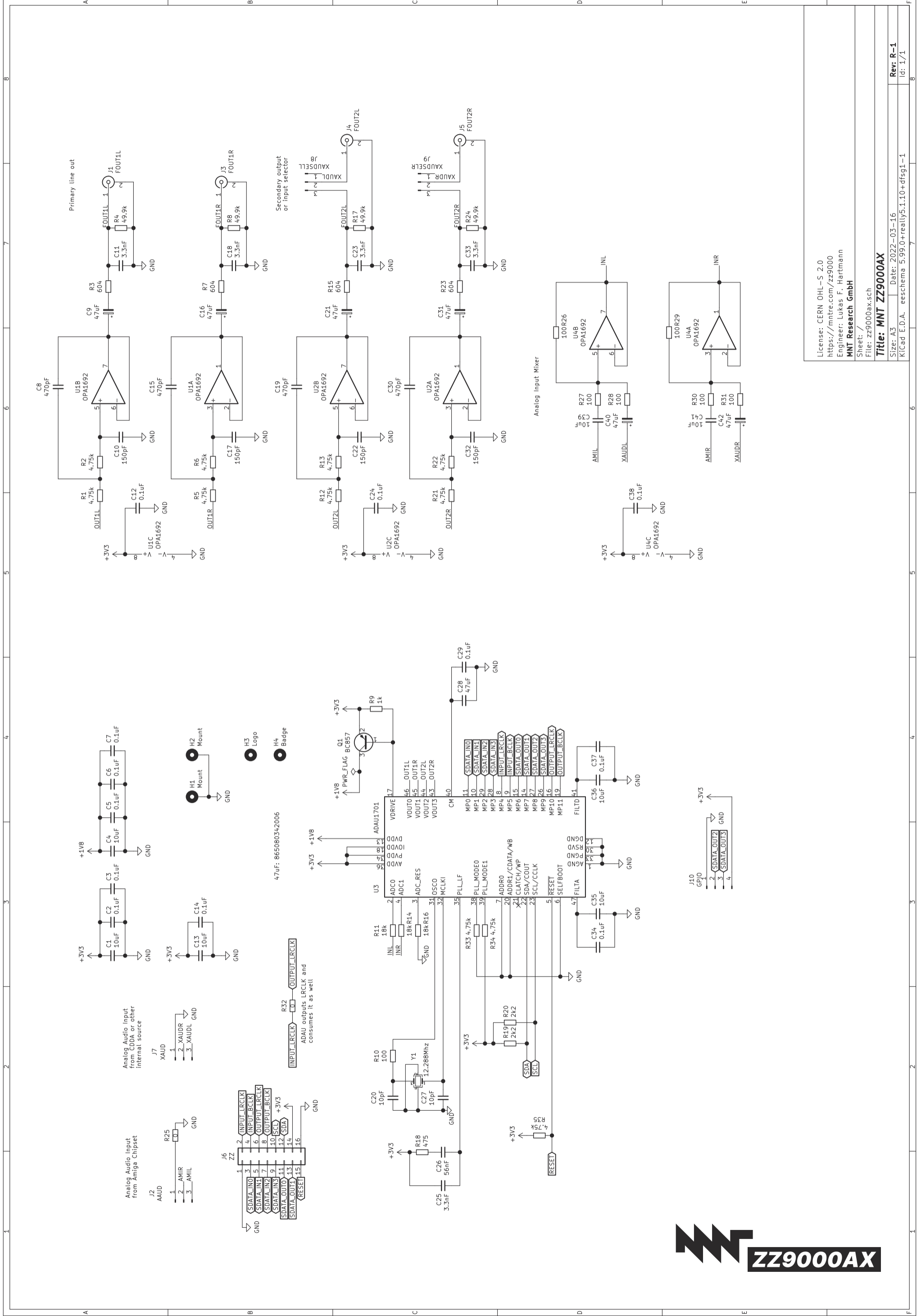


Jumpers and Headers

ZZ9000AX has two IN/OUT headers that you can use to set the direction of the two auxiliary audio channels. When the jumpers are in the IN position, you can input or sample stereo audio through these channels. In the OUT position, the channels can be used as additional outputs.



Please note that if you change the jumpers, you also need to set up the DSP program accordingly. By default, the DSP program is configured for audio input on the auxiliary channels.



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<https://mtr.com/zz9000>
 Engineer: Lukas F. Hartmann
MNT Research GmbH
 Sheet: /
 File: zz9000ax.sch
Title: MNT ZZ9000AX
 Size: A3 Date: 2022-03-16
 KiCad E.D.A. eeschema 5.99.0+really5.1.10+dfsg1-1