

User's Guide



AEB4/8-I

Analog Expansion Board
for DIGI96/8 Series, Hammerfall Series
and HDSP 9652
4/8 Channels, 24 Bit

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1. Introduction

Thank you for choosing the RME AEB technology. The Analog Expansion Boards add 4 or 8 analog inputs in professional quality to RME's digital audio cards. Level adjustment +4 dBu/-10 dBV, 107 dBA SNR and highest suppression of PC-noise guarantee perfect sound quality.

2. Package Contents

Please ensure that all the following parts are included in the AEB's packaging box:

- Analog Expansion Board
- 1 Clock cable 3-core
- 1 Data cable 2-core
- 1 Cable adapter 5 ¼" to 2 x 3,5"
- 1 Set of nuts
- Manual, drill template

3. Hardware Requirements

AEBs can only be used with RME cards.

DIGI96 Series

AEBs use the internal ADAT interface of the DIGI cards. Therefore they do not work with the DIGI96 (which did not support ADAT). To operate the AEB4-I and AEB8-I the used DIGIs must have the connectors ST6/7 on board (for the Word Clock Module). These were not present on the very first cards of the DIGI96 series (1998 to beginning of 1999). DIGI96/8 revision 1.2 or lower have no connector ST7 (introduced with rev. 1.3, the blue board).

One AEBx-I and one AEBx-O can be connected and operated simultaneously, in all possible combinations.

Hammerfall Series

An operation with the Hammerfall or Hammerfall Light requires board revision 1.5 or higher, because the internal connectors ADAT1Out, ADAT2Out and ST7 were not implemented in earlier versions.

One AEBx-I and two AEBx-O can be connected and operated simultaneously, in all possible combinations.

HDSP 9652

Two AEBx-I and two AEBx-O can be connected and operated simultaneously, in all possible combinations.

Hammerfall DSP Multiface / Digiface

Multiface and Digiface use the Hammerfall DSP PCI card. This card has no internal inputs or outputs. Therefore no Expansion Boards can be used.

4. Technical Specifications

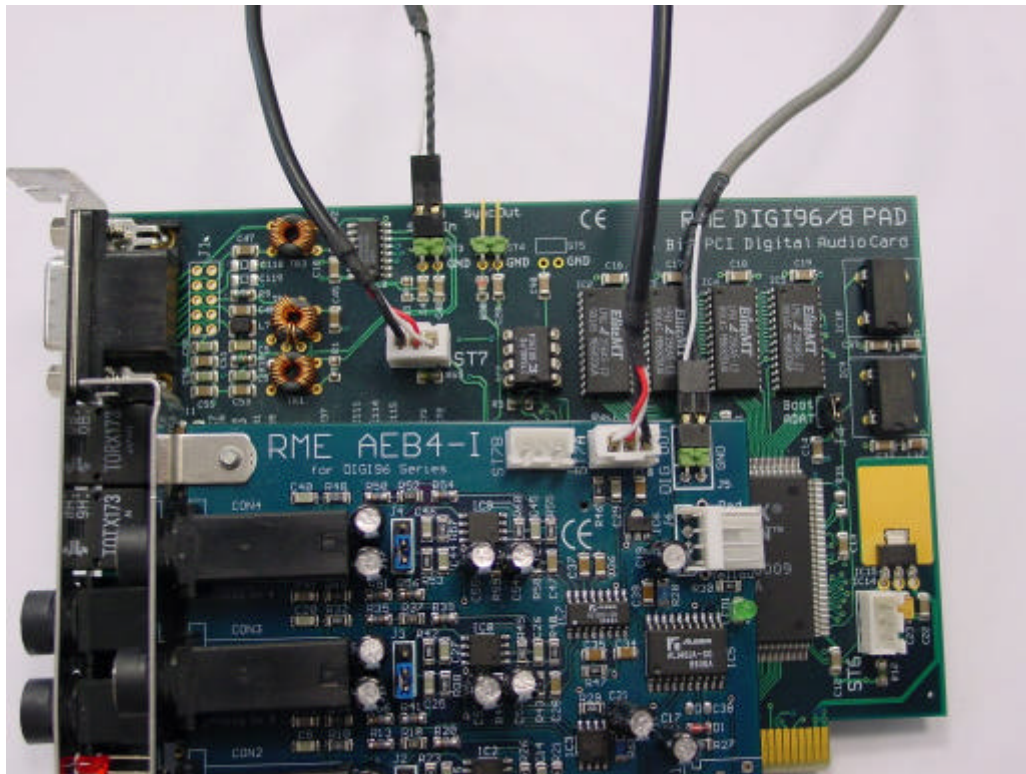
- Input AEB4-I: 4 x 1/4" TRS jack, servo balanced
- Input AEB8-I: 4 x 1/4" TRS jack, unbalanced
- Dynamic ratio: 104 dB (RMS unweighted), 107 dBA
- THD+N: -95 dB (0.0017 %)
- Frequency response -0.1 dB: 10 Hz - 21 kHz
- Input level for 0 dBFS @ +4 dBu: +12 dBu
- Input level for 0 dBFS @ -10 dBV: +2 dBV
- Crosstalk: > 110 dB
- Supported sample rates: 32 kHz - 48 kHz
- Input impedance: 10 kOhm
- Power supply uses 3.5" floppy connector, 12 V/5 V DC, 190 mA
- Standard bracket, board dimensions AEB4: 85 x 95 mm, AEB8: 120 x 95 mm

5. Hardware Installation

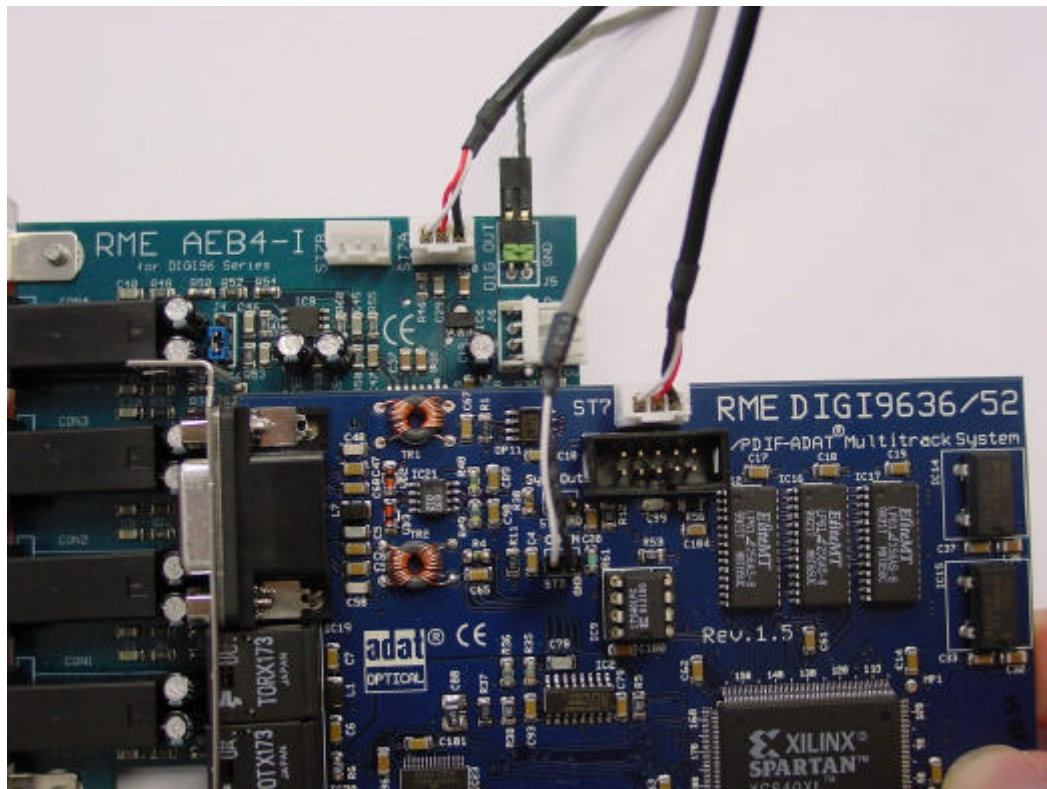


Important: Switch off the computer and remove the power cable from the power supply before fitting the AEB.

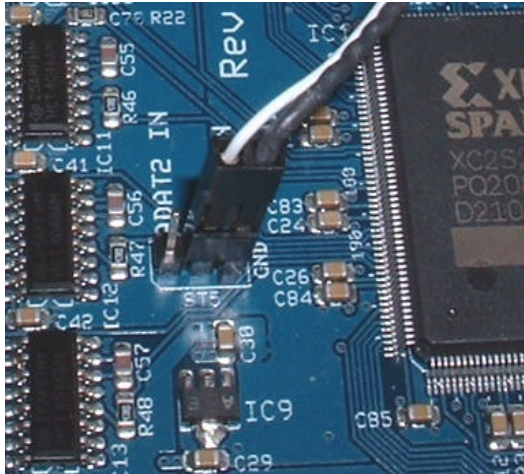
1. Disconnect the power cable and all other cables from the computer.
2. Remove the PC housing; further information on how to do this can be obtained from your computer's instruction manual.
3. Neutralize the static build up by touching the PC metal-chassis before unpacking the AEB from the protective bag.
4. Connect AEB and PCI-card using the supplied 3-wire cable. Plug one end into the connector **ST7** on the PCI-card, the other end into **ST7A** on the AEB.
5. Connect the AEB's **DIG OUT** and the PCI-card's **CD-IN/Sync-In** using the supplied 2-wire cable. Watch out for correct polarity: The shield wire is black, and must be connected to the pin marked **GND** on the PCI-card (the right one).
6. Connect power supply: The AEB uses a floppy power connector (3,5"). In case no such connector is available use the supplied adapter cable to connect the AEB to any free 5 1/4" power connector.
7. Insert the AEB into a free slot, press and fasten the screw. The AEB needs no slot on the motherboard, but includes a stabilizing edge, which fits in both PCI and ISA slots.
8. Re-insert the PCI-card in a PCI slot and fasten the screw.
9. Re-place the PC housing and tighten the screws.
10. Re-connect the power cable and all other cables/connections.



Connecting an AEBx-I to a DIGI96/8 PAD

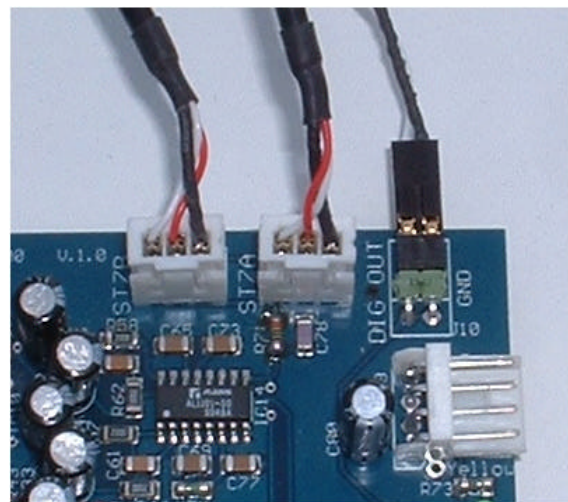


Connecting an AEBx-I to a Hammerfall



Connecting an AEBx-I to the second ADAT In of a HDSP 9652. Remove the jumper ST5, plug DIGOUT of the AEBx-I on both right and middle pin of ST5.

When using two AEBx-I, the PCI card's word clock signal will be daisy chained through the AEBs. For this to work, connect ST7 of the HDSP 9652 with ST7A of the first AEB. Then connect ST7B of the first AEB with ST7A of the second AEB.



6. Alternative Installation

Installation is done comfortably as described using the attached bracket. Alternatively it is possible to mount the AEB at a different place inside the computer using the supplied nuts. This requires to drill 4 holes into the housing.



RME does not accept claims for damages of any kind when installing the AEB in this way! Modifications to the housing should be done by qualified technicians only, and only after having removed all components from the housing (danger of short circuit by metal splinter etc).

1. Remove the bracket from the AEB (2 screws).
2. Carefully check that the desired location offers a flat plane, is free from any voltage carrying devices or cables, and that the AEB does not get in contact with other devices even when the housing is closed.
3. Please note that the length of the supplied cables does not allow any distance to the DIGI card.
4. Drill 4 holes, diameter 0.5" (13 mm), distance of 0.75" (19.05 mm) each, at the desired place (see drill template).
5. Fit the AEB into the holes and fix it with the supplied nuts.

7. Operation and Usage

Switch on the computer and boot the OS. The green LED on the AEBx-I is lit when the power supply is present.

DIGI96 series

Start the Settings dialog of the DIGI96/8 series, select the internal input (Input 'Internal'), set Clock Mode to 'Master'. The Input Status must now show 'ADAT, 44.1 kHz, Internal' (or 48 kHz). In case 'No Lock' is shown either the sample rate at the card's output is below 44.1 kHz (see Output Status), or the AEB is not connected correctly.

Hammerfall series and HDSP 9652

Start the Settings dialog of the Hammerfall, select the internal input (AEB 'ADAT1 Internal'), set Clock Mode to 'Master'. The Input Status in the field SyncCheck must now show 'ADAT1 In SYNC'. In case 'Lock' or 'No Lock' is shown either the sample rate at the card's output is 32 kHz (see Sync Ref., Freq.), or the AEB is not connected correctly.

Note

The AEB gets its clock directly from the output of the DIGI card. To avoid a clock loop the card has to be set into 'Master' mode.

8. Channel Routing AEB4-I

The AEB4-I copies all 4 analog input signals to the corresponding channels 5-8. Therefore for example the first two channels can also be recorded using the wave device 5/6.

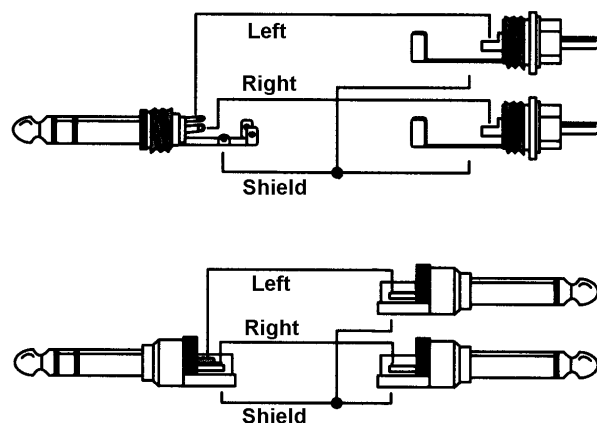
9. Pin assignment of the TRS jacks

The analog inputs are accessible through stereo ¼" TRS jacks.

The **AEB4-I** is fitted with electronically balanced, single channel inputs (+ = tip). The servo balanced input circuit allows to use monaural TS jacks (unbalanced) with no loss in level.

The **AEB8-I** is fitted with unbalanced stereo inputs. Use an adapter TRS plug to coaxial (phono) plugs, or TRS plug to TS plugs (see drawing to the right) for connection to external equipment. We recommend to use so called 'insert' cables.

The pin assignment follows international standards. The left channel is connected to the tip, the right channel to the ring of the TRS jack/plug.



10. Warranty

Each individual AEB undergoes comprehensive quality control and a complete test in a PC environment at RME before shipping. The usage of high grade components allows us to offer a full two year warranty. We accept a copy of the sales receipt as valid warranty legitimation.

RME's replacement service within this period is handled by the retailer. If you suspect that your card is faulty, please contact your local retailer. The warranty does not cover damage caused by improper installation or maltreatment - replacement or repair in such cases can only be carried out at the owner's expense.

RME does not accept claims for damages of any kind, especially consequential damage. Liability is limited to the value of the AEB. The general terms of business drawn up by Synthax Audio AG apply at all times.

11. Appendix

RME news, driver updates and further product information are available on our website:
<http://www.rme-audio.com>

If you prefer to read the information off-line, you can load a complete copy of the RME website from the RME Driver CD (in the **lrmeaudio.web** directory) into your browser.

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Current driver version: W98: 4.96, NT 3.85, W2k: 2.023 / 2.43

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CE

This device has been tested and found to comply with the limits of the European Council Directive on the approximation of the laws of the member states relating to electromagnetic compatibility (EMVG) according to EN 55022 class B and EN50082-1.

FCC Compliance Statement

Certified to comply with the limits for a Class B computing device according to subpart J or part 15 of FCC rules. See instructions if interference to radio reception is suspected.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables must be used for the connection of any devices external to this product.