

CDSVAN *Digital Conference Management System* ***B8 – AD/DA Interface***



Operating instructions

Rev 3.80

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Operating instructions B8 BGE-B8 (3.x).DOC

Safety instruction

! CAUTION !

**DANGER OF ELECTRIC SHOCK
DO NOT OPEN DEVICES**

Do not open housing with mains cable connected.

Maintenance operations may only be done by
qualified personnel.

Our equipment and installations have been built and tested according to the latest state of the art. Under normal conditions, they do not require any special maintenance.

However, please be aware of the following:

- secure and stable position of the installation
- sufficient ventilation - never operate equipment near heat sources such as heating radiators etc.
- power connection - install all power cables to avoid damaging
- connecting cables - avoid trip-traps
- liquids - avoid penetration of liquids into the housing
- exclusively operate equipment via wall sockets that are connected to ground according to the relevant specifications and regulations

Warning: Never expose equipment to rain or humidity.

Please be also aware of the fact that rough handling of the equipment, such as strong bumps or vibrations, may result in damages. Inappropriate handling and storage, i.e. handling and storage not in conformity with the operating instructions, may as well lead to equipment damages.

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About this manual

Symbols

The meanings of the symbols and fonts used in this manual are as follows:



Indicates an important note, if not minded, the functionality of the unit, the security of your data, or your health are put at risk.



Supplementary information, remarks, and tips follow this symbol.



Text which follows this symbol describes activities that must be performed in the order shown.

Texts in bolded letters require your special attention.

Important remarks

For customers in the EU and in the USA

The equipment has been tested and found to comply with the limits of the CE test. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the user manual it may cause harmful interference to radio communications. You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For customers in the United Kingdom

The wires in the main lead are coloured in accordance with the following codes:

Green-and-yellow:	Earth
Blue:	Neutral
Brown	Live

The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, so please proceed as follows:

The green-and-yellow wire must be connected to the terminal in the plug marked with the letter E or with the safety earth symbol or marked with green-and-yellow colour. The blue wire must be connected to the terminal marked with the letter N or marked with black colour. The brown wire must be connected to the terminal marked with the letter L or marked with red colour.

The equipment must be connected to earth!

Safety

Check that the operating voltage of the unit is identical with the voltage of your local power supply. If a voltage conversion is required, consult your BRÄHLER ICS dealer or qualified personnel.

Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further. Unplug the unit from the wall outlet or set the Main Power switch to OFF if it's not used for several days. To disconnect the cord, pull it out holding the plug. Never pull the cord itself.

Installation

Allow adequate air circulation to prevent internal heat built-up. Do not place the unit on a surface (rugs, blankets, etc.) that may block the ventilation holes.

Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place exposed to direct sunlight, excessive dust or humidity, mechanical vibration or shock.

To avoid moisture condensations do not install the unit where the temperature may rise rapidly.

Cleaning

To keep the cabinet in its original condition, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use organic solvents such as thinners or abrasive cleaners since these will damage the cabinet.

Repacking

Save the original shipping carton and packing material; they will become handy if you ever have to ship the unit.

For maximum protection, re-pack the unit as originally packed from the factory.

If not supplied with the equipment, a complete transportation and storage box system is available from BRÄHLERICS. We recommend you to use this system for long-term protection and care.

General

Please keep this manual together with the B8. If you pass on the units to other parties, please include this manual.



Please read the manual carefully, taking special care when you see this symbol as indicates important information!



This product conforms to the rules of the following European regulations:
2004/108/EG

Council directive to the alignment of the rules, of rights of all member states about the electromagnetic compatibility, adapted through RL 91/263/EWG, 92/31/EWG and 93/68/EWG of the council. Further information is available on request.



The warranty invalidates, if you cause (generate, precipitate) inappropriate use or handling of the unit.

The B8 AD/DA Interface

Thank you for choosing the B8 AD/DA interface.

The B8 is your interface to the digital world and of course, vice versa.

The B8 AD/DA interface offers you a high quality audio conversion from analogue to digital (AD) and digital to analogue (DA) in one single 2HU housing.

Almost all digital sound processing systems offer a large amount of digital channels, but due to space restrictions the AD/DA conversion has to be outsourced, if more channels are required.

At this point the B8 starts its work.

Feed in the analogue signals, using the analogue input sockets at the rear side of the B8. Depending on the available patch cable, either XLR or ¼ inch jacks can be used.

All inputs are electrically balanced to avoid electromagnetic interference (transformer balanced version available on request).

The B8 operates line **and** microphone level signals. The 8 inputs are individually adjustable to the level of the incoming signal. Even phantom power is provided by the B8 and switch able to all microphone inputs. High quality microphones (e.g. condenser microphones) can be connected directly to the B8 without any additional power supply.

All input channels are equipped with individual level adjustment of +/- 9dB.

To deliver you the best audio performance the analogue-to-digital conversion works with a 24 Bit resolution and selectable sample rates of 32, 44.1 or 48 kHz.

The B8 offers the common digital multichannel interfaces ADAT® and of course an interface to the CDSVAN system – EDAT.

With the EDAT (RJ45) connectors the number of in- and outputs can be extended to 16, linking a second B8 to the first one.

The B8 can also be used as a digital 32 channel (16 channels in and 16 channels out) audio distributor with the specifications shown above independently of the CDSVAN system.

Included in delivery

Mains power cable - 2 metres, black

Accessories

19" rack mounting set - silver anodised (no. 60.KIT.2)
 Terminator - TERM216 (no. 06.6161)
 Data cable - CAT5 several cable lengths available *) → see below
 Adapter CCAT5 - crossed cable adapter to connect two B8 IN/OUT (PC) sockets

System Components

CDSVAN pro	Audio processing software
DSP6/15 RJ45	DSP Card with 6 or 15 digital sound processors and EDAT I/O plate
DOLV	Interpreter Console for 32 channels
DV9	Delegates Unit
PV9	Chairman Unit
EDV9	Delegate Unit, build-in version
EPV9	Chairman Unit, build-in version
PSU04	Power Supply Unit, up to 4 branches for interpreter consoles/ delegate units
PSU01MA/SL	Additional Power Supply for interpreter consoles/ delegate units
B8	AD/DA Interface 8 channels
MotorMixer	Remote Mixer with 8 motorised faders
MSI8V	INFRACOM® Infrared Transmitter
IRad	INFRACOM® Infrared Radiator
IRX	INFRACOM® Infrared Receiver
Cables	CAT5 *) → see below

CAT5 Cable usage



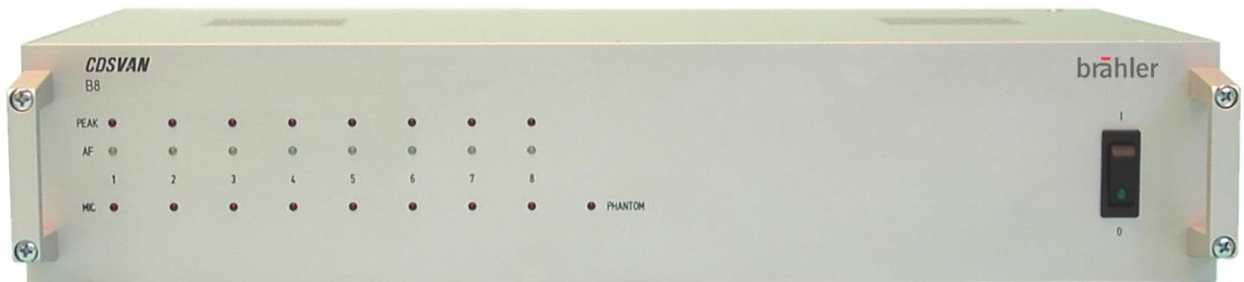
*) The system warranty is only valid with the intended use of the CDSVAN system cables specified below. The usage of any other cable type will void the warranty.

Specified patch cable: Brähler CAT5 System Cable (Art.-No. 13.5331)

Specified installation cable: Brähler CAT5 Installation Cable (Art.-No. 13.5330.H)

Operating Controls

Front view



The front side of the B8 is equipped with 3 LED's per channel to indicate the following items:

- MIC or LINE level selected (MIC if red)
- AF –(Green LED) audio signal available at analogue input
- PEAK (Red LED) indication for maximum audio level

If your input audio signal often forces the red peak LED to illuminate, please reduce the sensitivity either of the input (see below) or the output of the connected device. Otherwise you risk to overdrive the AD converters.

- Phantom power for all microphone level inputs.
- A Power switch with “power-ON” LED is dedicated on the right hand side of the front panel.

Rear view



The rear side is equipped with:

- 8 analogue inputs XLR/ ¼"
- 8 analogue outputs XLR
- Main power connector
- Ground connector
- 2 EDAT (RJ45) sockets for VAN I/O and LINK
- 3 ADAT® sockets for ADAT IN, OUT and TRU
- Wordclock connector (BNC)
- MIDI IN and OUT
- 12 DIP switches for B8 set-up

All components are described on the following pages.

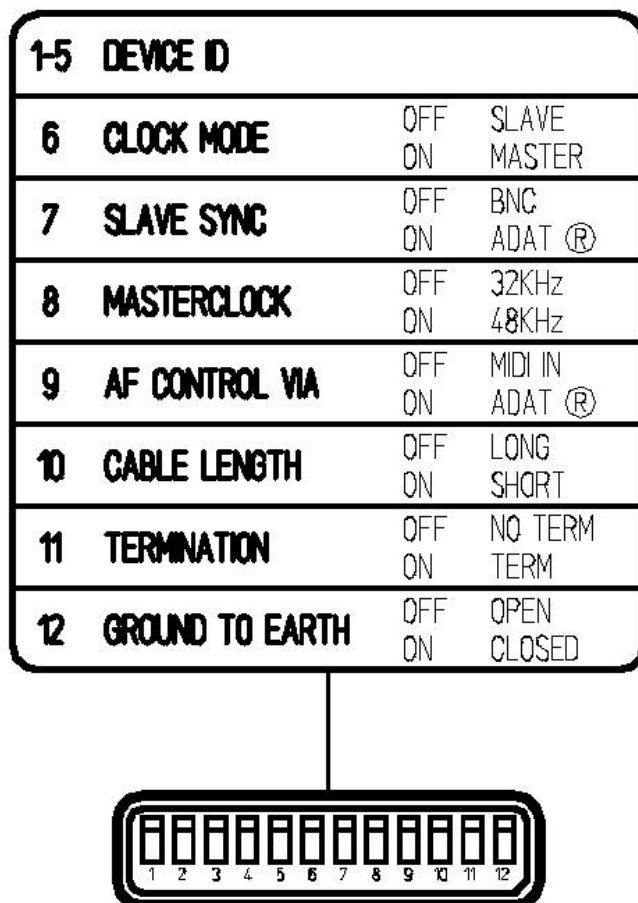
DIP Switch Settings

Some basic settings have to be done at the rear side of each B8 unit within the system. Besides the cabling of each audio patch cable to the desired in- and outputs, you can choose some working modes the B8 offers to match the system requirements:

Each DIP switch has two positions:

OFF - switched to the upper position

ON – switched to the lower position



DIP Switches:

Device ID

(Word) Clock mode

Slave sync(hronisation)

Masterclock

AF control via

Cable Length

Termination

Ground to Earth

Device ID

Switches 1 – 5.

The B8 needs to have a unique ID number to be identified by the CDSVAN system.

This ID is used by the B8 Control Module to identify the corresponding B8. Double numbers force the units to behave the same, when connected to the control device (see below).

The ID can range between 0 and 31.

Please make the corresponding settings to the first 5 switches in binary format.

Example:

B8 No. 0 - switches 1 – 5 OFF

B8 No. 1 - switches 1 ON and 2 – 5 OFF

B8 No. 2 - switches 1 OFF and 2 ON and 3 – 5 OFF

B8 No. 3 - switches 1 and 2 ON and 3 – 5 OFF

B8 No. 4 - switches 1 and 2 OFF and 3 ON and 4 – 5 OFF ...

B8 No. 31 - switches 1 – 5 ON



If no B8 control is connected, it will work with its default settings: Line level on all channels. The ID's are independent of the positioning in the system of the B8 units.

WordClock Mode

Switch 6

Only ONE wordclock Master is allowed in a digital audio environment. Each digital device's internal clock operates with a slightly different sample frequency from the other. Even if all connected devices are set to the same sample rate. Audible pops and clicks may occur when unsynchronised digital sources are mixed. The wordclock can be generated by the B8 or delivered by the DSPx card or an external wordclock generator.

We recommend to use the B8 as wordclock slave, when connected to a digital system (e.g. CDSVAN). The B8 will get all necessary sync information from the DSPx card.

Turn the DIP switch to OFF to make the B8 wordclock slave.

In this case switch no. 8 is not activated, please select the master source with switch 7.

Turn the DIP switch to ON to make the B8 wordclock master.

In this case switch no. 7(Slave Sync) is not activated. Please select the desired sample rate with switch 8.

Slave Sync

Switch 7

With this switch the synchronisation source has to be defined (Only if switch 6 is OFF).

Choose between BNC for an external clock generator or ADAT[®] for digital systems connected via ADAT[®] or EDAT (e.g. CDSVAN).



To connect the B8 to an external wordclock generator use the BNC socket "WORDCLOCK".

Master Clock

Switch 8

With this switch the sample rate has to be defined (only if switch 6 is ON).

Choose OFF for 32 kHz.

Choose ON for 48 kHz.

AF Control

Switch 9

The B8 can be controlled from a remote device. If you don't want to use the B8 control module within CDSVAN, you can connect any standard MIDI device to the MIDI in- and output to control the input channels.

Choose OFF for MIDI

Choose ON for ADAT[®] or EDAT (RJ45 @ DSPx card)

Cable Length

Switch 10

The digital audio driver of the converter should be adjusted to the cable length connected to the "PC" socket.

Choose OFF for LONG for cables between 20 and 100 metres

Choose ON for SHORT for cables between 1 and 30 metres.

Termination

Switch 11

Electrical digital data lines have to be terminated, to avoid data transmission errors.

So please take a closer look to the instructions below, if you use the B8 in combination with a DSPx RJ45 card.

Using **one** B8 for 8 channel AD/DA conversion via EDAT on one DSPx RJ45 socket:

The terminator switch must be set on ON, to terminate the connected line (8 in and 8 out on one CAT5 cable).

Using **two** B8 for 16 channel AD/DA conversion via EDAT on one DSPx RJ45 socket:

The internal terminator (DIP 11) on the first B8 (connected directly to the DSPx card) has to set to OFF.

The whole digital audio line will be terminated at the LINK socket of the second B8 with the terminator plug (Term VAN16 - grey cap 06.6133)

Ground-to-Earth

Switch 12

DIP switch 12 disconnects B8's internal ground from housing:

To avoid any power stroke metal housing of the B8 must be connected to earth.

For most applications best audio quality is expected, if ground is internally connected to earth as well.

However, more than one earth connection in the audio system may cause hum or noise.

If there is any hum or distortion, disconnecting of B8's electronic circuitry from earth may deliver the solution.

Choose OFF for open - B8's ground is floating

Choose ON for closed - B8's ground is connected to earth (default)

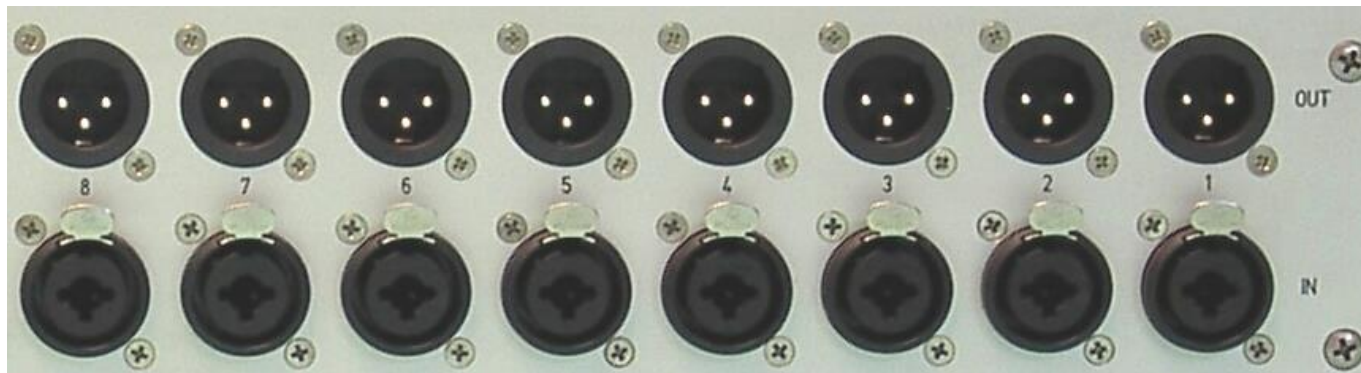
For low impedance grounding B8's housing can be connected via extra ground at the rear side.



Ground connector and main power socket

Analogue Audio Connections

Analogue In- and Outputs:

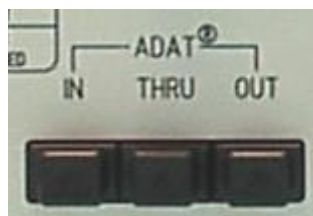


OUT: 8 times XLR output, balanced.

IN: 8 times XLR or 1/4" input for either line or microphone level.

Digital Audio Connections

The B8 is equipped with ADAT[®] interface:



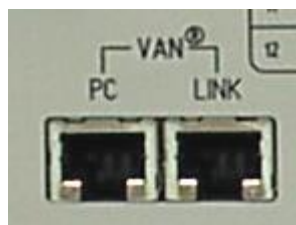
ADAT[®]

IN: 8 channel digital in

OUT: 8 channel digital out

THRU: all 8 channels fed into ADAT[®] IN can be looped to another destination

The B8 is equipped with EDAT (RJ45) interface:



PC: VAN I/O direct connection (IN and OUT) to the DSPx RJ45 card (channel 1-16 / 1-8 at the first B8)

LINK: connection of channel 9-16 to/ from a second B8



Concerning the used CAT5 cables see page 10

The B8 is equipped with MIDI interface:



MIDI IN: connection from MIDI out of the connected MIDI device

MIDI OUT: connection from MIDI in of the connected MIDI device

Audio Control



Knowledge of CDSVAN system required (please refer to the CDSVAN manuals).

All audio settings concerning the sensitivity of the analogue inputs of the B8 are done via the CDSVAN software:

(Please refer to the DIP switches 1-5 and 7)

Using the B8 Control, all inputs at the B8 can be individually switched to microphone or line level. For a smooth adjustment to the signal source, the B8 Control is equipped with a rotary knob for each channel to in- or decrease the input level with +/- 9 dB.



Type in the ID number of the B8 unit you want to control. All settings will be stored automatically.



Different Set-ups for the connected B8s can be stored within the project file.

The B8 also provides phantom power to all microphone inputs.



Phantom power button (48V)

Saving settings

The B8 is equipped with a flash memory to store the current settings of the audio inputs (line, mic, phantom power).

These settings will automatically be recalled, when the B8 is switched on.

The memory will be updated with the current settings, whenever the "SAVE" button of the B8 Control module is being pressed.

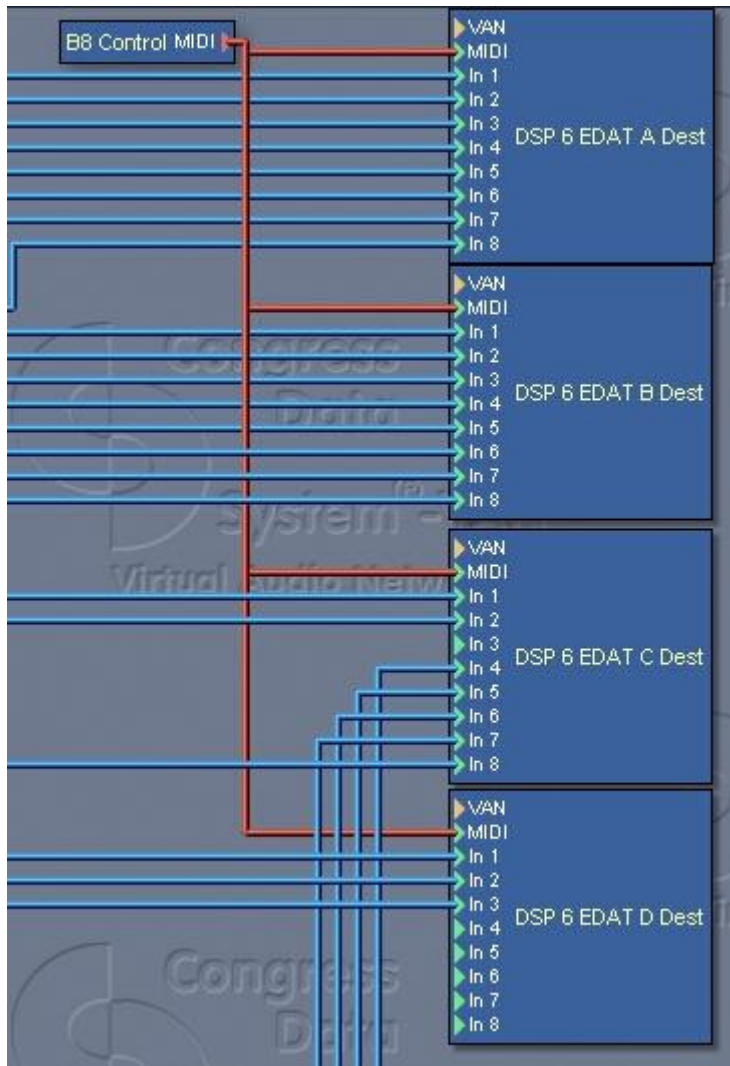
Audio Routing

Up to eight B8 can be connected to one DSPxRJ45 card, to provide up to 64 analogues in- and outputs (please refer to bloc diagram on page 24).

In combination with three DSP6EDAT cards and 24 B8 converters CDSVAN delivers a digital mixing, routing and effect device for up to 192 channels in studio audio quality.

One B8 control module can operate several B8, or drag a separate B8 control module for each connected B8 into your project window.

The MIDI (red cabling) output of each B8 control module has to be connected to the MIDI input of the EDAT Dest(ination) pad.



The audio connections (blue cables) are corresponding to the analogue output of the B8.

Example: DSP6 EDAT C Dest **In 1** is connected to the first output of the 1st B8.
 DSP6 EDAT C Dest **In 2** is connected to the second output of the 1st B8.
 DSP6 EDAT D Dest **In 1** is connected to the first output of the 2nd B8 (connected via LINK).
 DSP6 EDAT D Dest **In 2** is connected to the second output of the 2nd B8.

The last two channels (DSP6 EDAT D Dest **In 1**, DSP6 EDAT D Dest **In 2**) can be defined as channel 9 and 10 and so on.

The EDAT X Source pads can be used in the same way, but without any B8 control MIDI wiring.

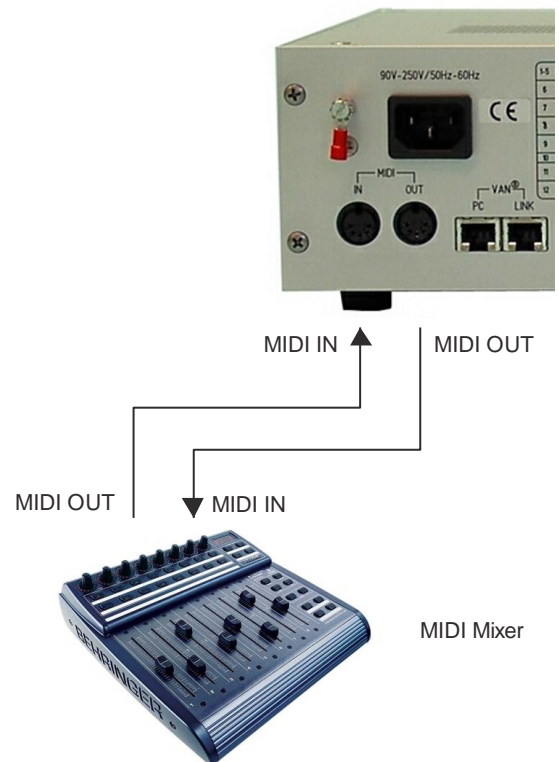
MotorMixer connection

Hardware connection

It's also possible to connect a remote mixing console to the MIDI interface, such as the MotorMixer in CDSVAN.

No additional cabling (of course the CAT5) is necessary. Please make the corresponding wiring in the CDSVAN software with the corresponding software mixing consoles.

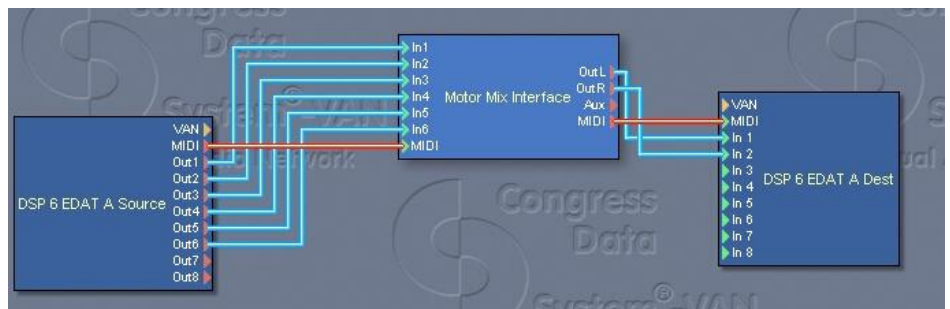
Please connect the "MIDI IN" from the MotorMixer to the "MIDI OUT" of the B8 and vice versa.



Software connection

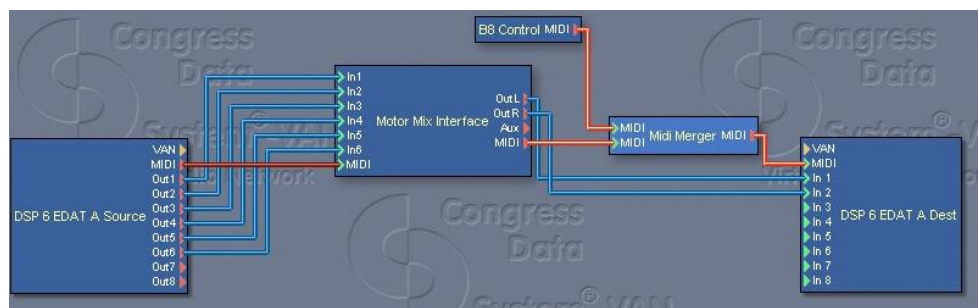
SW cabling MOTORMixer:

The MotorMixInterface is connected (red cables) to the MIDI source (MIDI OUT @ the B8) and the MIDI destination (MIDI IN @ the B8).



SW cabling MotorMixer & B8 control:

If you want to use the MotorMixer in combination with the B8 control, the two different MIDI signals need to be merged for the transmission on the CAT5 data cable to the B8. The MIDI merger is located under the folder "Special devices".



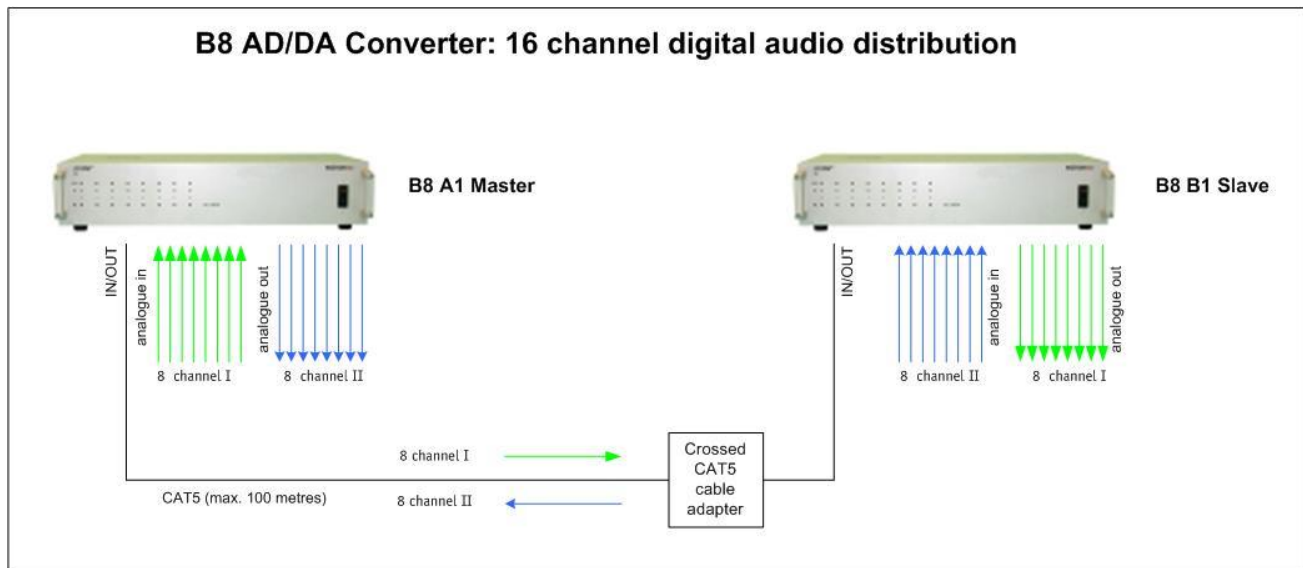
16/32 Channel Audio Distribution

The B8 (AD/DA converter) is also designed for digital multichannel audio transmission in full duplex without any additional computer hardware (stand-alone).

This option allows to transport audio signals e.g. from the stage to your control room and vice versa in CDSVAN (studio) quality. Up to 32 channels can be transmitted with one single CAT5 cable.

16 channel audio distribution

The following diagram gives an overview of the audio flow for 16 channels:



This example shows you the transmission of 16 channels (8 to and 8 from).

Audio signals fed in at the B8 A1 can be taken out at the second B8 B1.

Example: B8 A1 input channel 1 is available at B8 B1 output channel 1 (green cables)

B8 B1 input channel 1 is available at B8 A1 output channel 1 (blue cables)

...



Only one wordclock master is allowed, so please set the corresponding DIP switches accordingly.

DIP switch setting to the example above concerning the wordclock and sample rates:

DIP Switch	B8 A1	B8 B1	
6	ON	OFF	Clock mode
7	ON	ON	Slave sync source
8	ON/OFF	ON/OFF	Sample rate setting

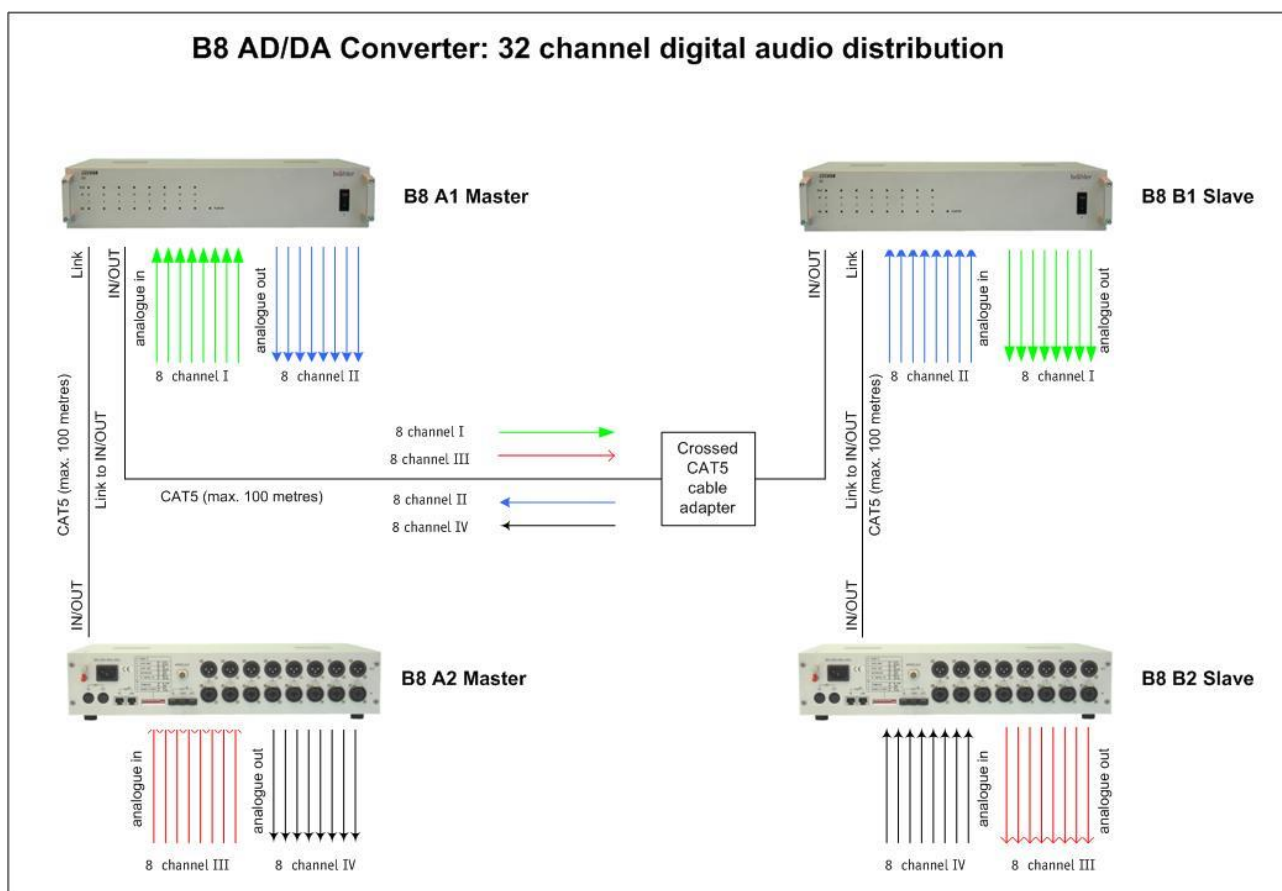
DIP switch 8: the Master generates the wordclock, which can be 32 or 48 kHz. The slave gets the wordclock via the CAT5 connection, so the DIP switch setting there (B8 B1) is not important.

An external wordclock generator can also be integrated using the BNC connector. In this operation the DIP switch setting is like this:

DIP Switch	B8 A1	B8 B1	
6	OFF	OFF	Clock mode
7	OFF	OFF	Slave sync source

32 channel audio distribution

The following diagram gives an overview of the audio flow for 32 channels:



This example shows you the transmission of 32 channels (16 to and 16 from).

Audio signals fed in at the B8 A1 can be taken out at the second B8 B1.

Example:

- B8 A1 input channel 1 is available at B8 B1 output channel 1 (green cables)
- B8 B1 input channel 1 is available at B8 A1 output channel 1 (blue cables)
- B8 A2 input channel 5 is available at B8 B2 output channel 5 (red cables)
- B8 B2 input channel 8 is available at B8 A2 output channel 8 (black cables)



Only one wordclock master is allowed, so please set the corresponding DIP switches accordingly.

DIP switch setting to the example above concerning the wordclock and sample rates:

DIP Switch	B8 A1	B8 B1	B8 A2	B8 B2	
6	ON	OFF	ON	OFF	Clock mode
7	ON	ON	ON	ON	Slave sync source
8	ON/OFF	ON/OFF	ON/OFF	ON/OFF	Sample rate setting

DIP switch 8: the Master generates the wordclock, which can be 32 or 48 kHz. The slaves get the wordclock via the CAT5 connection, so the DIP switch setting there (B8 B1, A2, B2) is not important.

An external wordclock generator can also be integrated using the BNC connector. In this operation the DIP switch setting is like this:

DIP Switch	B8 A1	B8 B1	B8 A2	B8 B2	
6	OFF	OFF	OFF	OFF	Clock mode
7	OFF	OFF	OFF	OFF	Slave sync source

Appendix

Technical Data

Inputs analogue

8 x balanced Mic or Line level (XLR / 1/4")

Input sensitivity

Line: -12 dBu ... + 6 dBu

Mic: -58 dBu ... + 40 dBu

Input impedance

Line: 5 kOhm

Mic: 1 kOhm

Phantom power for microphone level inputs

48 V

Outputs analogue

8 x balanced (XLR)

Output sensitivity

+ 6 dBu

Output impedance

50 Ohm

Digital interfaces

ADAT® Optical 8 channels:

IN / OUT / THRU

EDAT: 16 channels

IN / OUT socket (PC) channel 1-8

IN / OUT socket (Link) channel 9-16

MIDI interface

5 Pin DIN socket

IN / OUT

Sample rates

As Wordclock Master: 32 kHz / 48 kHz (optional)

As Wordclock Slave: 32, 44.1, 48 kHz

Resolution

24 BIT on all channels

Power supply

Mains power: 90 - 250VAC

Power consumption: < 25VA

Housing

Aluminium, silver anodized (19", 2HU)

W x H x D: (482 x 88 x 300) mm

Weight: 3.5 kg

Troubleshooting table

Error description	Error cause	Error solution
No remote control via B8 Control software module	<p>Device ID is not proper set.</p> <p>MIDI Data is not connected to the right I/O pad (EDAT/ADAT®).</p>	<p>Check the device ID of the B8 unit (Dip switches 1-5 at the backside).</p> <p>Make sure, you've set the corresponding ID 0-31 in the B8 control module.</p> <p>Make sure, you've connected the MIDI cable in the software to the right output pad.</p> <p>Make sure you've typed in the right ID number into the B8 control module.</p>
No audio or very low signal	Microphone level signal connected to line level input channel.	Check the input settings for this channel at the B8 control module (Mic/Line)
Cracks and distortion on the audio input signal.	Input signal too high.	Check the Peak LED at the front side of the B8. Lower the pre-amplification with the corresponding rotary knob on the B8 control module.
No audio signals on the (or one) output channel(s).	<p>B8 is not terminated correctly.</p> <p>Incorrect audio routing within the CDSVAN environment.</p>	<p>Check the DIP switch 11 or check the appropriate terminator at the LINK socket of the 2nd B8.</p> <p>Check the audio routing within the CDSVAN environment.</p>

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SERVICE FORM

Material return shipments for repair-, service-, or guaranty purposes please send to:
BRÄHLER ICS Konferenztechnik AG, Auf der Alten Burg 6, D-53639 Königswinter, Germany
Phone +49 (0)2244 930-0, Fax +49 (0)2244 930-450

Dear customer,

Please ask our sales staff for the **RMA number** (Return of Material Authorization).

Without RMA number a treatment is not possible!

Please always include this service form, fully completed, with any complaint or repair wish you may have. Please note that only returns with the proper and complete paperwork can be dealt within time.

A detailed fault description will reduce costs and period of repair.

Please contact us before you return equipment in order to find the most efficient way of sending.

RMA number: _____

Article description: _____ Serial no.: _____ Code: _____

Delivery note no.: _____ Invoice no.: _____

Reason for return/Fault description:

Company: _____

Contact person: _____

Phone: _____ Fax: _____

Notes/Comments:

Transport damages have to be reported immediately to the responsible forwarding agent.

Remarks for Non-EU customers:

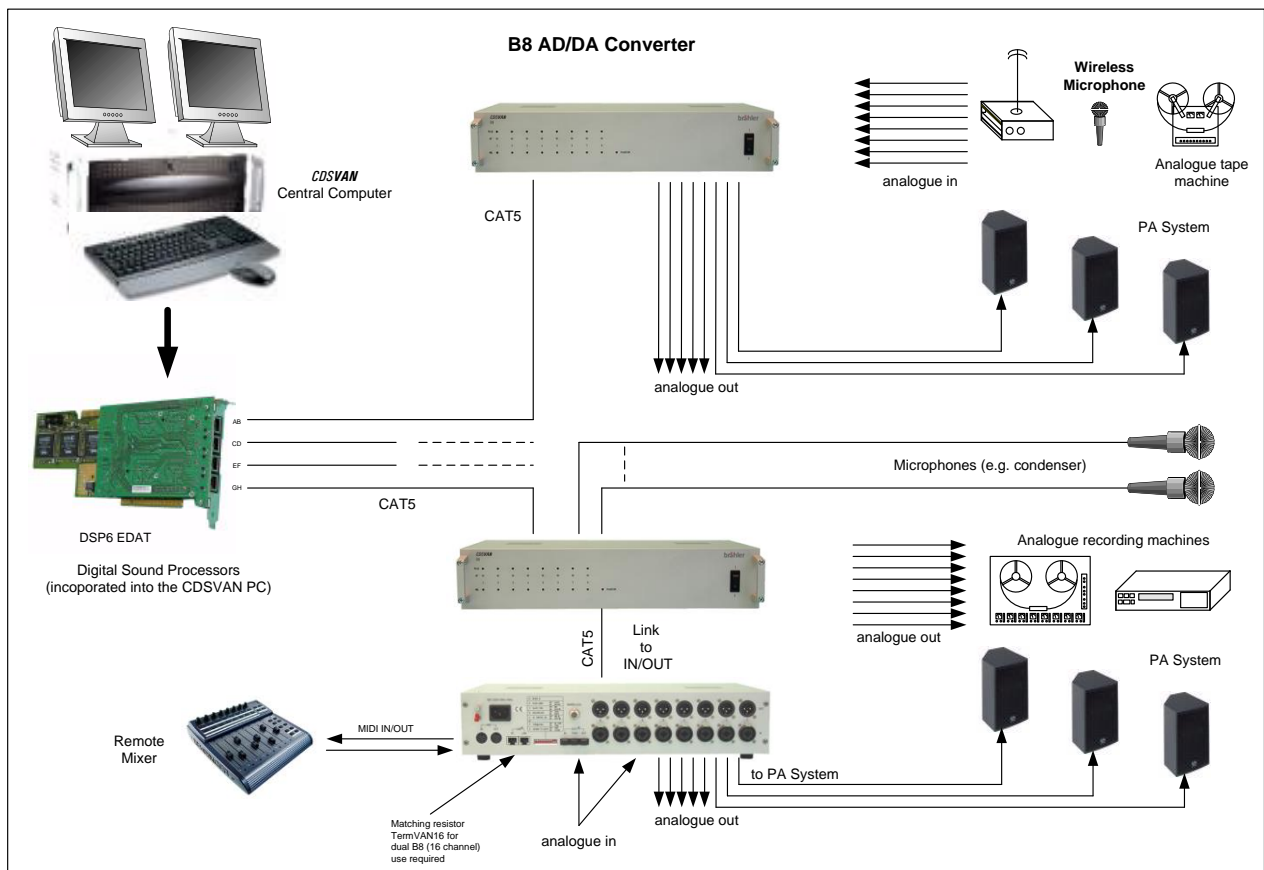
Please always contact our sales staff to clarify the return procedure and the most efficient way of sending. In any case kindly add a proforma invoice, addressed to Brähler ICS AG, Königswinter with the following statements:

- reason for return (repair or credit note)
- exact declaration of the goods, exact no. of pieces, article no. / model, serial no.

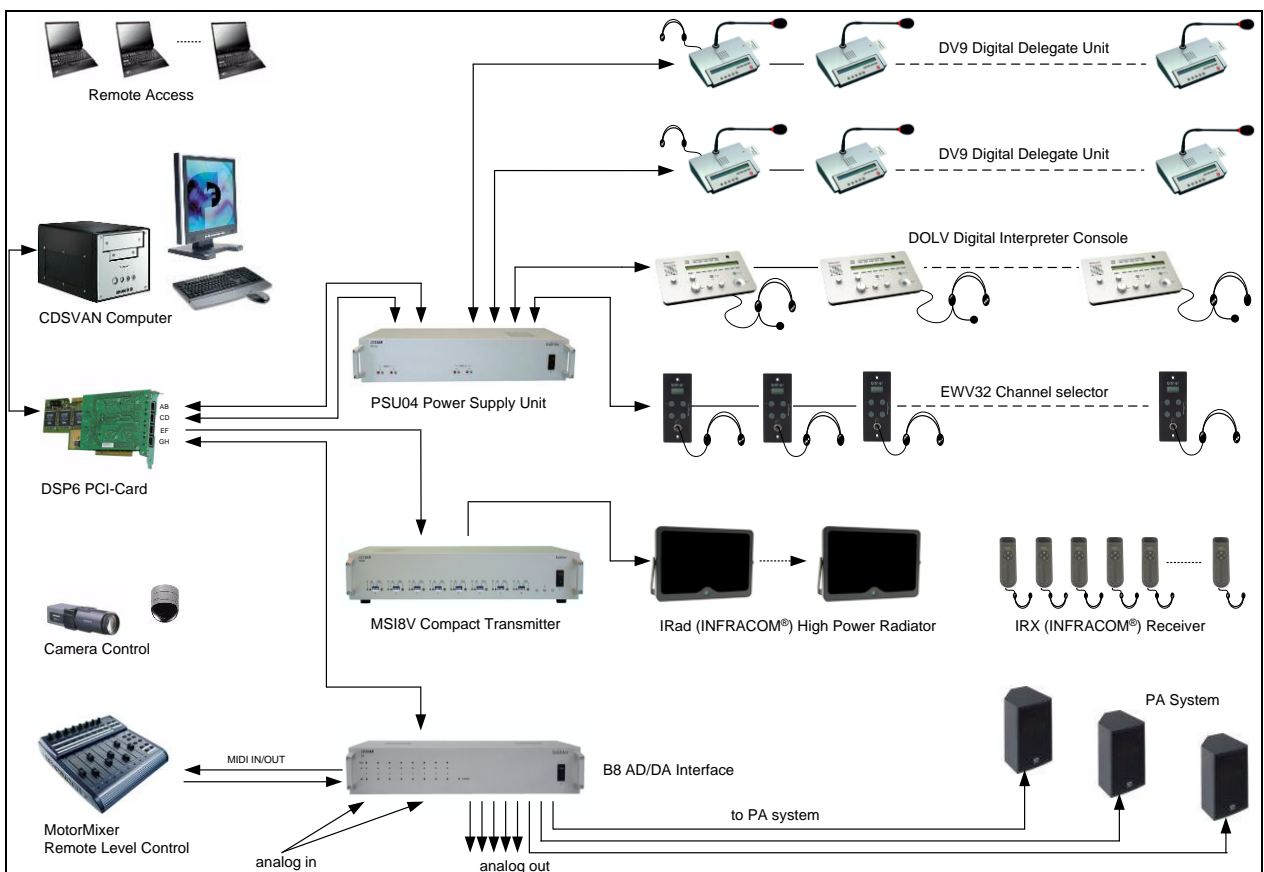
Please be informed that we will reject any return shipment not arranged with our sales staff

Block diagrams

Basic B8 configuration for audio processing, routing and distribution:



General overview of CDSVAN components:



Your current DIP switch settings:

B8 number	Location	DIP1	DIP2	DIP3	DIP4	DIP5	DIP6	DIP7	DIP8	DIP9	DIP10	DIP11	DIP12
0													
1													
2													
3													
4													
5													
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Notes:

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