jünger

b40

b40

4 ch digital audio toolbox

Manual

release 2.3.0 / 2008-01-04

FOREWORD

0

Thank you for buying and for using the 4-channel Digital Audio Toolbox b40.

Not only you have aquired the latest generation of digital dynamic range processing, but also a piece of equipment which is unique in its design and specification.

Please read this manual carefully to ensure you have all the information you need to use the 4-channel Digital Audio Toolbox b40.

The unit was manufactured to the highest industrial standards and went through extensive quality control checks before it was supplied.

If you have any comments or questions about installing, setting-up or using the b40, please do not hesitate to contact us.

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CONTENTS

FUNCTION DESCRIPTION

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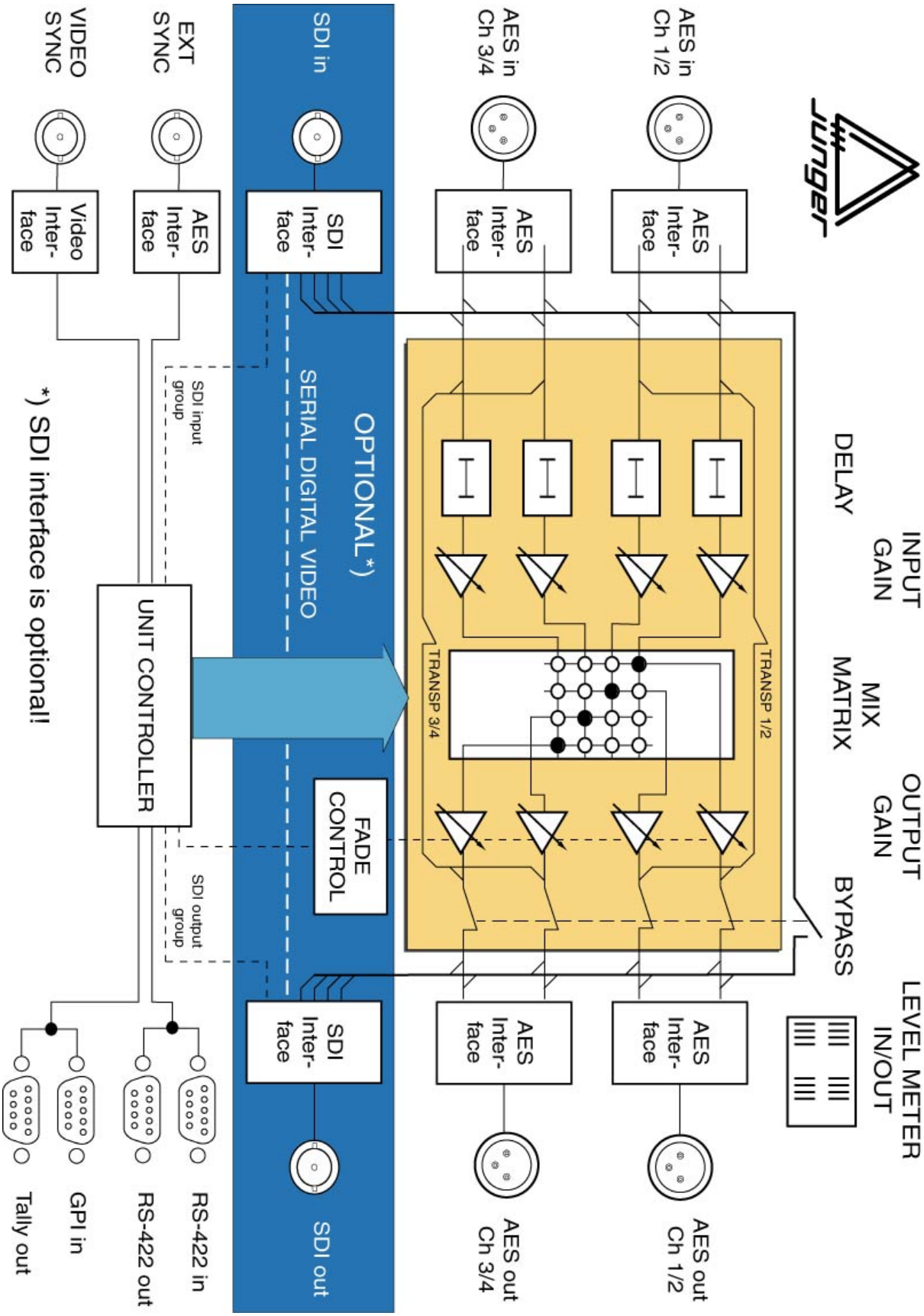
2.1 BASIC DESCRIPTION

The programmable digital audio toolbox b40 is a professional studio device for simple processing of 4 digital audio channels.

It is easy to change, to process and to rearrange up to 4 signals with the audio toolbox b40. Level corrections for stereo or quad mixes, channel swapping, fades - efficient and fast done with the toolbox b40. It is not necessary to use a production mixer for duplication, dubbing or simple editing - b40 has the functionality. The four channel configuration matches the audio capability of Digital VTR's. B40 can be used as remotable and programmable audio breakout box in digital video systems.
The unit is easy to operate and requires only a limited number of settings for fast and efficient audio production.

- 4 channel programmable digital audio toolbox
- user friendly preset and recall system
- 4 x 4 mix-matrix
- input and output gain control, automated fader function
- audio delay, level/overload display
- pairwise bit transparent mode input to output
- extern sync mode, AES/EBU or VIDEO (or SDI if optional SDI-interface is present)
- RS-422 interface for serial remote
- GPI interface for parallel remote control, tally output

2.2
BLOCK DIAGRAM



2.3 AUDIO SIGNAL PROCESSING

All signal processing is done in the digital domain by Texas Instruments floating point signal processors. The use of 32 bit word length for calculation ensures that there is no deterioration in signal quality, even if an audio signal with a maximum word length of 24 bit is input into the processing of the unit.

2.3.1 GAIN

GAIN means linear amplification of input or output signals. The input or output gain can be changed in steps of 0.1 dB , within a range from -15...+15 dB.
Adjustment of GAIN is channel independent.

2.3.2 SETTING THE MATRIX

Setting the matrix means to set or to reset the crosspoints of the 4x4 mix-matrix. Because this matrix is a mix-matrix each output line can be the sum of up to all four input lines. Amplifying and mixing the input signals can make OVERLOAD! If an Overload appears, the output level display shows the corresponding „OVER“-message.

2.3.3 FADER FUNCTION

A fade is started automatically every time, if a matrix point is modified. This fade is a linear change of input gain from current value to infinity (or the other way) at a specific time (FADE TIME).

fader function *each recall of preset is starting fade in or fade out depending on matrix setting*

set of matrix point	>	*fade in*
reset of matrix point	>	*fade out,*

If at an output line the input crosspoints of different channels become set and reset at the same time a linear crossfade is made between these input signals.

FADE TIME adjustable fade in/out time (0 .. 5 sec)

2.3.4 DELAY

For each input channel there is an audio delay available. The delay is adlustable between 0 and 160 ms in steps of 1 ms.
The delay can be used to give a correction if the audio signals are in the right timing.

2.3.5 TRANSPARENT MODE

In case that the input signal (audio pair 1/2 or/and 3/4) is not audio (but AC-3, Dolby E, MPEG..) the input can be feeded directly to the related output bit transparent (no bit changes). The unit is switching to *transparent* automatically if *“non audio”* flag in the Channel Status Bit of the AES signal is set. Otherwise transparent mode can be set manually by the user.

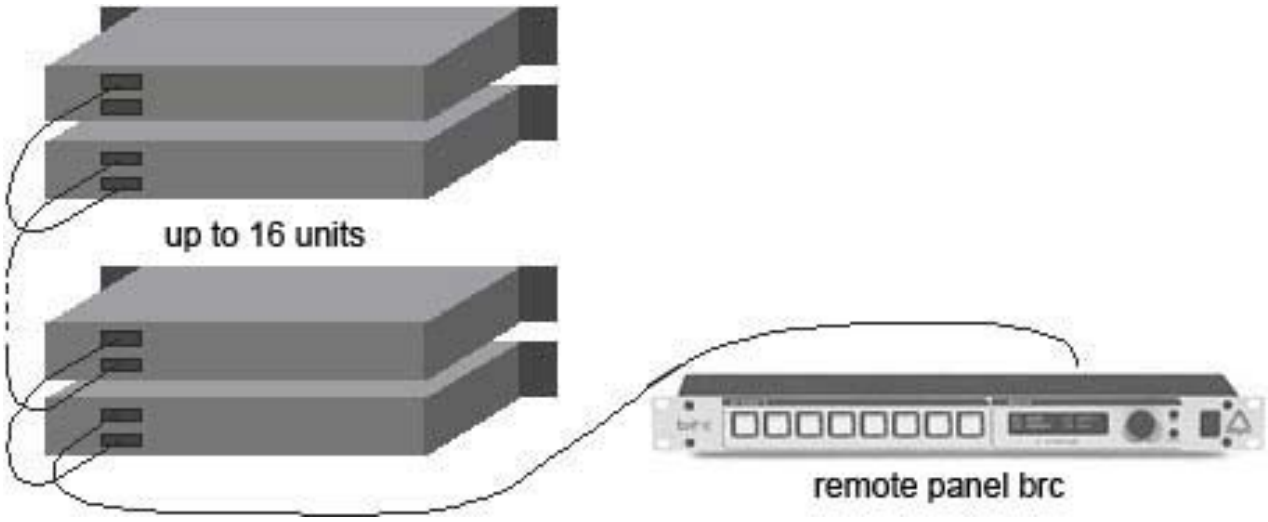
2.4 REMOTE SYSTEM

The digital audio toolbox b43 is fitted with an serial remote interface in RS-422 format.

Every device needs a device address to be registered in a remote system. The address can be selected with the ADDR switch on the rear panel. 16 addresses are selectable (0..F).
The changed address is valid with next power-on reset.

Up to 16 toolboxes b43 can be controlled from one remote panel.

Device model name and device address are to recognize using the remote protocol of serial remote interface by an automation system or by PC. With it various boxes can be combined in one remote system or remote chain. However a maximum of 16 devices per model can be controlled in one chain.



INSTALLATION

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3.1 UNPACK THE UNIT

The digital audio toolbox b40 was carefully packed in the factory and the packaging was designed to protect the equipment from rough handling. Please examine carefully the packaging and its contents for any signs of physical damage, which may have occured in transit.

3.2 POWER SUPPLY

The digital audio toolbox b40 is a device under the safety category *Schutzklasse 1* in keeping with the VDE 0804 standards and may only used with power supply installations built according to regulations.
Check the voltage details printed at the rear panel are the same as your local mains electricity supply.

3.3 CONNECTIONS

The digital audio toolbox b40 is equipped with standard connectors (see also chapter 3).
Before connecting the digital audio toolbox b40 switch the power off at all connected units.

3.4 RACK MOUNTING

The digital audio toolbox b40 is made as standard 19“ unit (EIA format). It occupies 1 RU (44 mm height) space in a rack.
Please allow at least addititonal 3“ depth for the connectors on the rear panel.
When installing the unit in a 19“ rack the rear side of the unit needs some support, especially for mounting in flight cases.

3.5 OPERATION SAFETY

The digital audio toolbox b40 should not be installed near units which produce strong magnetic fields or extreme heat. Do not install the filter processor directly above or below power amplifiers.
If, during operation, the sound is interrupted or displays no longer illuminate, or if abnormal odor or smoke is detected immediately disconnect the power cord plug and contact your dealer or Jünger Audio.

3.6 SYNCHRONIZATION OF DIGITAL OUTPUT

The digital audio toolbox b40 has a digital signal output only. To the problem-free combination of following digital devices, the digital signal processing can be locked to an external clock reference. The selection of the corresponding input is made in the SYNC MODE menu. If the chosen sync input is connected with the sync signal, this signal is used for synchronization automatically. The digital output signal can be clocked with the following clock frequencies:

CH 1/2 locks with the clock frequency of the input signal at digital input CH 1/2 (AES/EBU, 48 kHz)
EXT SYNC locks with the clock frequency at the external sync input (AES/EBU, 48 kHz)
VIDEO locks with the clock at the Video sync input (internal 48 kHz)
SDI VIDEO locks with the clock at the SDI input (internal 48 kHz)

Both digital outputs CH 1/2 and CH 3/4 are locked with same clock frequency.

Note: SDI sync is available only if SDI interface is installed!

3.7 REMOTE CONTROL

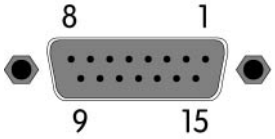
3.7.1 GPI REMOTE CONTROL (PARALLEL REMOTE)

The digital audio toolbox b40 can be remote-controlled by means of parallel GPI contacts.

use : remote-controlled changeover of presets

connector: D-SUB 15pin, female

Pin assignments



Pin	Signal name	Logic	I/O	Functions
1	PRESET1	L	I	recall preset1
2	PRESET2	L	I	recall preset2
3	PRESET3	L	I	recall preset3
4	PRESET4	L	I	recall preset4
5	PRESET5	L	I	recall preset5
6	PRESET6	L	I	recall preset6
7	PRESET7	L	I	recall preset7
8	PRESET8	L	I	recall preset8
9	MUTE	L	I	Muting outputs
10	BYPASS	L	I	bypass on
11	not used			
12	Phase rev ch1/2	L	I	
13	Phase rev ch3/4	L	I	
14	Common pin			External voltage feed
15	+5V		O	Test power source

Ground on shield of the connector only!

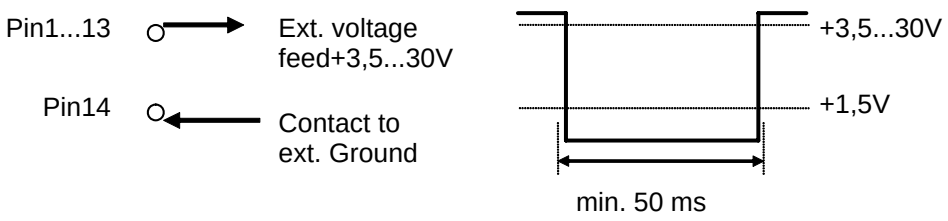
Electrical specification:

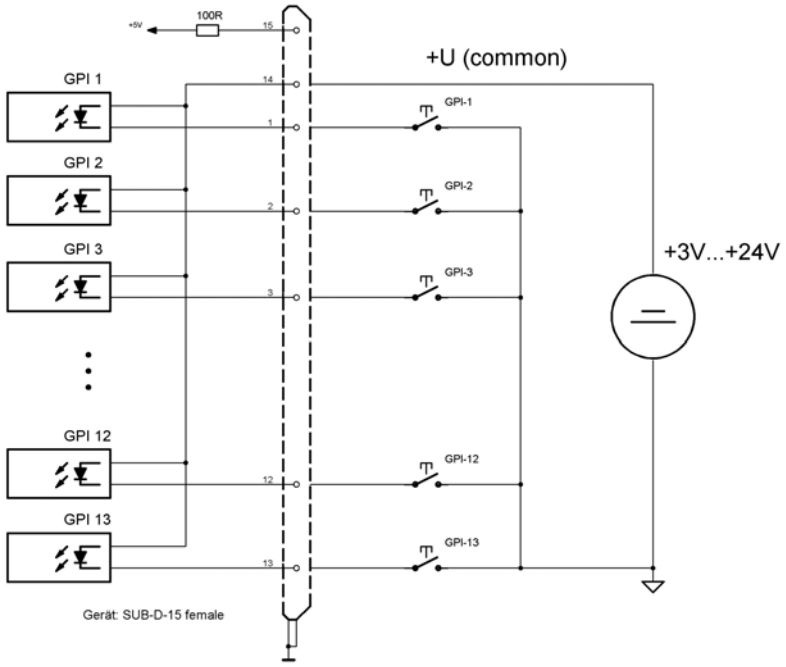
GPI input potential free by opto-coupler, **low active**

OFF: +3.5…+30V between GPI input and pin14

ON: less then 1.5V min 50ms

Note: If using an external voltage feed it has to be connected to pin 14! External Ground is switching the GPI on any of the inputs.
An internal voltage feed is available on pin 15. Ground is available from the shield of the connector only! By using the internal voltage feed there is no electrical isolation given anymore.





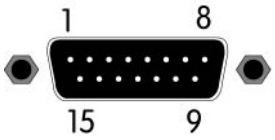
3.7.2 TALLY OUT

The digital audio toolbox b40 can transmit specific device statuses via parallel Tally lines.

use: Control of the remote-controlled changeover of presets

connector: D-SUB 15pin, male

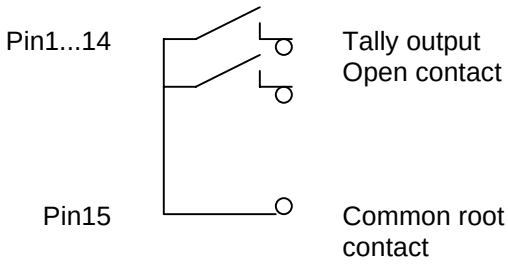
Pin assignments

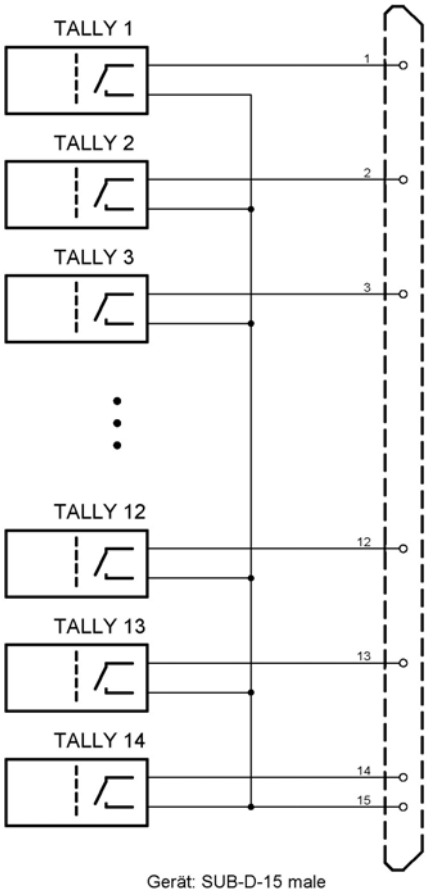


Pin	Signal name	I/O	Functions
1	T1 open contact	O	preset1 recalled
2	T2 open contact	O	preset2 recalled
3	T3 open contact	O	preset3 recalled
4	T4 open contact	O	preset4 recalled
5	T5 open contact	O	preset4 recalled
6	T6 open contact	O	preset4 recalled
7	T7 open contact	O	preset4 recalled
8	T8 open contact	O	preset4 recalled
9	T9 open contact	O	mute
10	T10 open contact	O	bypass
11	T11 open contact	O	Not used
12	T12 open contact	O	Not used
13	T13 open contact	O	Not used
14	T14 open contact	O	Not used
15	root		Common root contact

Electrical specification:

Tally output	type:	normally open relais contacts
	Contact rating:	1A 24 VDC, 0,5 A 125 VAC max. 30 W 62,5 VA max. 60 VDC, 125 VAC





3.7.3 SERIAL REMOTE CONTROL (RS-422)

The digital audio toolbox b40 can be remote-controlled by means of serial remote RS-422.

use : remote-controlled changeover of presets

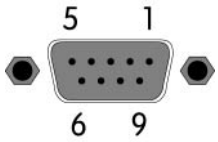
protocol: available on request

connector: D-SUB 9pin, input - female
output - male

Pin assignments

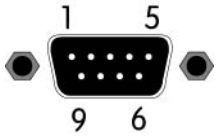
The cable is wired 1:1 completely, the shield of the cable must be connected on both ends!

REMOTE IN



Pin	Signal name	Functions
1	DSR + out	Data set ready
2	DSR - out	
3	SENSE in	Interrogation Remote
4	RXD + out	Receive data
5	RXD - out	
6	DTR + in	Data terminal ready
7	DTR - in	
8	TXD + in	Transmit data
9	TXD - in	

REMOTE OUT



Pin	Signal name	Functions
1	DSR + in	Data set ready
2	DSR - in	
3	GND	GND
4	RXD + in	Receive data
5	RXD - in	
6	DTR + out	Data terminal ready
7	DTR - out	
8	TXD + out	Transmit data
9	TXD - out	

Electrical specification:

signal in-/outputs TTL-level

LOCATION OF PARTS AND CONTROLS

4

All control elements gives direct access.
In menu modes the alphanumeric display above the related button or rotary knob is showing the specific function.

4.1. FRONT PANEL

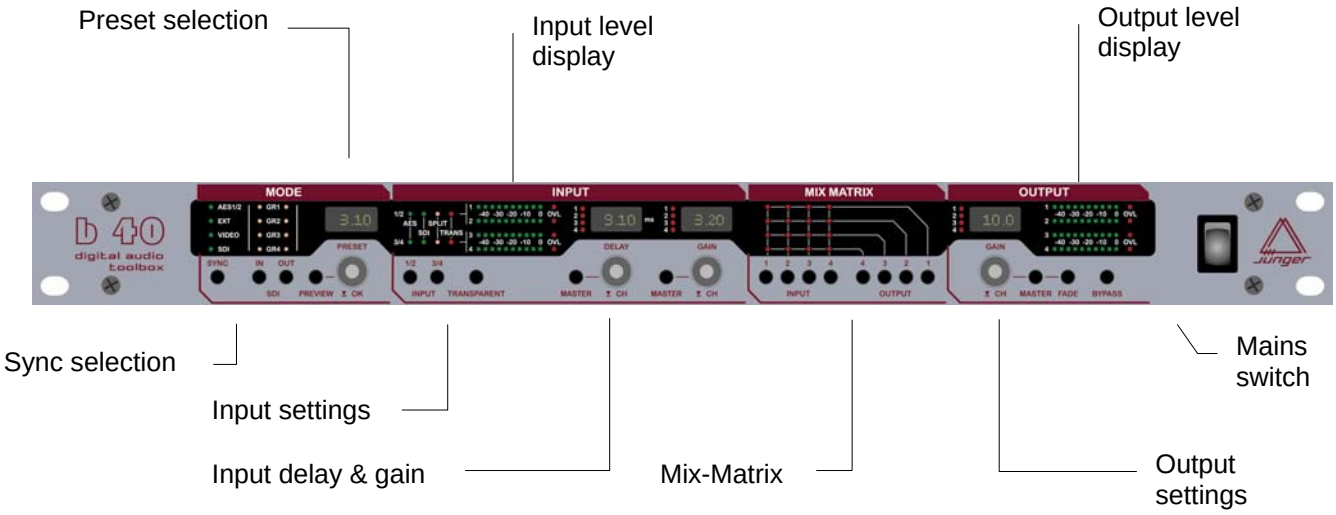


fig. 1: front panel b40

CONTROL ELEMENTS

mode

SYNC	selection of sync input
IN / OUT	group selection for SDI input/output
PREVIEW	offline editing of presets
PRESET	preset selection and administration

input

1/2 and 3/4	input selection AES / SDI
TRANSPARENT	bit transparent mode for ch1/2 or ¾

4. LOCATION OF PARTS AND CONTROLS

input	MASTER	ganging control knob for ch1…4
	DELAY	selection (push) and adjustment (turn) of audio delay (0…160ms)
	GAIN	selection (push) and adjustment (turn) of output gain
mix matrix	INPUT 1...4	selection of input channel
	and then	
	OUTPUT 1...4	selection of output channel
	to set or reset connecting points of the matrix	
output	GAIN	selection (push) and adjustment (turn) of output gain
	MASTER	ganging control knob for ch1…4
	FADE	selection of fade time adjustment (I: fade in, O: fade out)
	BYPASS	switches bypass on and off

4.2. REAR PANEL

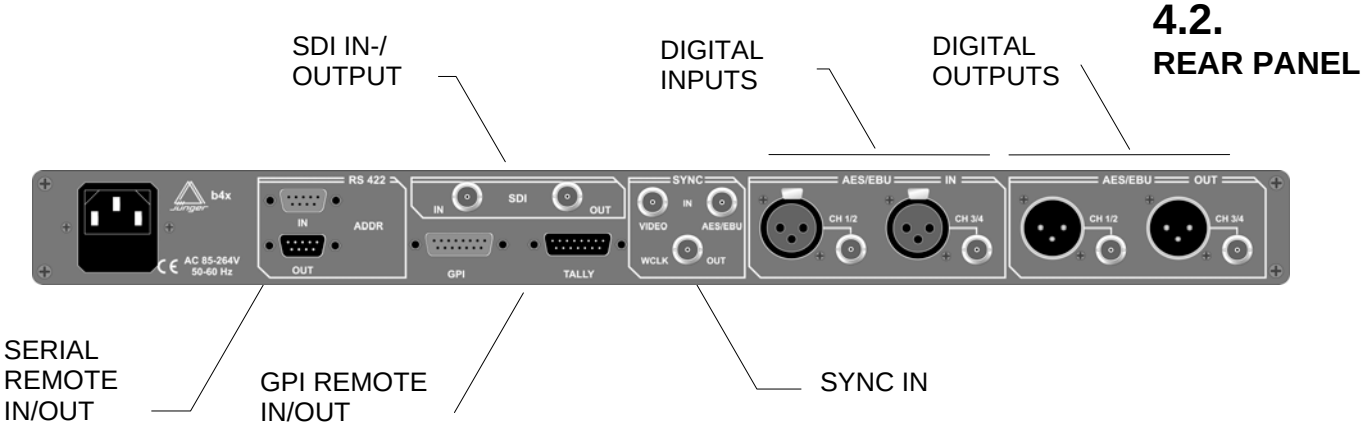


fig. 2: rear panel b40

POWER INPUT
IEC mains input connector 100-240V, 50/60 Hz with integrated fuse

REMOTE
serial remote interface RS-422
connector: 9pin SUB-D, input - female, output - male

GPI
paralle remote interface
TALLY-out open relais contact
connector: 15pin SUB-D, male
GPI-in +3,5…+30V potential-free
connector: 15pin SUB-D, female

SYNC
AES/EBU input for ext. sync signal (AES 3 format, 75 Ohm, unbal)
connector: BNC socket
VIDEO input for video sync signal (blackburst, 75 Ohm, unbal)
connector: BNC socket
W-CLOCK output for wordclock sync signal, TTL level, unbal.
connector: BNC socket

SDI IN / OUT (only if installed!)
Input/output for serial digital video (ITU-R BT.601, SMPTE 272M-A)
with embedded audio
Format: 270 Mb/s, 525/625 line rate, 75 Ohm,
connector: BNC socket

DIGITAL IN
input for AES/EBU standard format
connector: XLR female panel jack
1- ground, 2-3 signal, balanced
connector: BNC socket 75 Ohm, unbalanced

DIGITAL OUT
output for AES/EBU standard format
connector: XLR male panel jack
1- ground, 2-3 signal, balanced , 4 Vpp
connector: BNC socket 75 Ohm, unbalanced, 0.5V pp

4.3 SWITCHES AND JUMPERS FOR CONFIGURATION

Some basic settings are to select by switches on the rear panel or by switches and jumpers at the internal circuit boards of the unit. These settings can occur general changes for operation and should made by qualified engineering staff only.

Rear panel

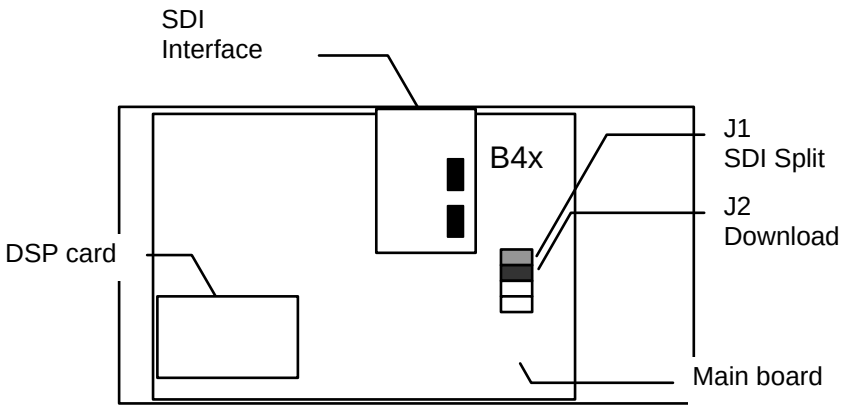
Selection of the device address for serial remote, 16 device addresses selectable
Note: Within a line of remote controlled units every device needs a different address! The selected address is valid after next power-on reset of the unit.

Internal

To set any internal jumper or switches it is necessary to open the unit.

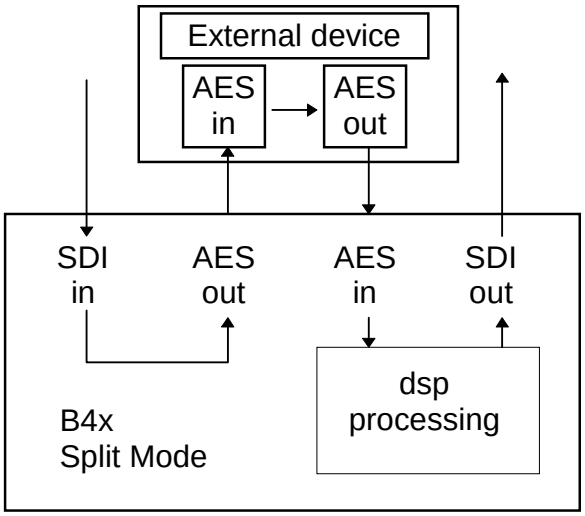
PLEASE DO NOT MAKE ANY ALTERATIONS WITH THE MAINS STILL CONNECTED TO THE UNIT!

Loosen the screws on the top cover and remove. Then you can see all jumper and switches as shown in the drawing below. After setting of jumper or switches reassemble the unit in opposite order.



4.4 SELECTION OF SDI SPLIT MODE

Units with SDI interface can be used in SDI split mode:
Audio in path SDI input > direct AES output
Audio out path AES input > dsp processing > SDI output
(see also 2.5)



The selection of split mode (SDI DIRECT) is made by setting jumper J1 on main board of the unit.

4.5 CONFIGURATION OF SDI INTERFACE

The 4-channel processors of b40 series fitted with SDI-interface are compatible with the standard SMPTE 272M-AB. They support 48 kHz synchronous audio sampling with 20 bit word length.
The standard allows up to four groups each of four mono audio channels. (Usually used by most of D-VTR's and other equipment is Group 1 with 48 kHz synchronous sampling.)

Group selection can be made for SDI-Input and SDI-Output independently.
If the input and output groups are not equal, it can happen that the outgoing embedded signal has errors. This is caused by some remaining data of embedded audio in this group, which are always present in the input signal.
To be sure that there is only the selected output group embedded, the unit can be set to CLEAN-Mode. In this mode all incoming embedded data for all groups are deleted.

CLEAN-Mode is set with SDI-Output-button.
Press the button for some seconds. The LED will start to flash. This indicates that the CLEAN mode is enabled.
Pressing the button again for some seconds will return to normal mode.

OPERATION

5

5.0 DESCRIPTION OF OPERATIONS

The use of the digital audio toolbox b40 is very easy.

The setup or the programming of the digital audio toolbox b40 is made by adjustment of various parameters and settings.

The description is made related to the functional blocks on the front panel.

5.1 mode
5.2 recalling, saving and editing of presets
5.3 input selection
5.4 transparent mode
5.5 delay
5.6 input gain
5.7 matrix
5.8 output gain
5.9 fade time
5.10 bypass

Following syntax is used:

SYMBOL	ACTIVITY
describes how to use button or rotary knob  push  turn  push + turn	describes action or function of button or rotary knob

5.1 MODE

Selection of sync signal input


push

SYNC	selection of sync-signal input
1/2	unit is synchronized with AES input channel 1/2 (AES 48kHz)
EXT	unit is synchronized with AES input signal at external sync input
VIDEO	unit is locked to video signal at video input (with 48kHz)
SDI	unit is locked to SDI signal at SDI input (with 48kHz)

Note: SDI sync is available only if SDI input is active! If SDI sync is selected only the SDI input LED lits. All LED's in sync display are switched off!

Selection of group of audio for SDI signal


push

IN — SDI audio group selection for deembedder

and independent to that


push

OUT — SDI audio group selection for embedder

5.2 RECALLING, SAVING AND EDITING OF PRESETS

All adjusted parameters of TRANSP, DELAY, INPUT GAIN, MATRIX, OUTPUT GAIN and FADE can be stored into presets.

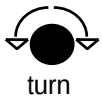
Recall of presets


push

PREVIEW — until LOAD appears in the window.


push

PRESET — to enter preset load mode, "L" and a blinking number 1..8 are to see


turn

PRESET — to select the requested preset 1….8


push

PRESET — to load selected preset. The preset number appears in the window.

or


push

PREVIEW — to exit without loading.

As soon as one of the in the preset stored parameter is changed by manually operation a star symbol appears beside the number in the window to show that the previously loaded preset is not more present.

Storage of presets

PREVIEW — until SAVE appears in the window.

PRESET — to enter preset save mode, “S” and a blinking number 1..8 are to see

PRESET — to select the preset 1….8 to save

PRESET — to save selected preset. The preset number appears in the window.

or

PREVIEW — to exit without saving.

Note: All former stored preset values are overwritten at the moment of new storage into this preset! Just as after initialization of the unit all presets are overwritten with factory presets.

Editing of presets (PREVIEW mode, viewing and changing preset content off-line without influencing running audio)

PREVIEW — until EDIT appears in the window.

PRESET — to enter preset edit mode, “E” and a blinking number 1..8 are to see

PRESET — to select the preset 1….8 to edit

PRESET — to enter selected preset in edit mode

PRESET — to save back selected preset. The running preset number appears in the window.

or

PREVIEW — to exit without saving.

Note: All former stored preset values are overwritten at the moment of new storage into this preset! Just as after initialization of the unit all presets are overwritten with factory presets.

5.3 INPUT SELECTION


push

1/2 or 3/4 — to switch for the input 1/2 or 3/4 between AES and SDI

5.4 TRANSPARENT MODE


push

TRANSPARENT — to establish bit transparent connection between input and output 1/2 or 3/4 or 1/2 and 3/4 (necessary to pass non-audio bit streams through without changing)

5.5 DELAY

DELAY means delaying of input signals. The delay can be changed in steps of 1ms, within a range from 0...160 ms.
Adjustment of DELAY is channel independent. GAIN adjustment is stored into the presets.


push

DELAY — selection of channel


turn

DELAY — adjustment of delay for selected channel


push

MASTER — to adjust all channels together with the same value

5.6 INPUT GAIN

INPUT GAIN means linear amplification of input signals. The input gain can be changed in steps of 0.1 dB , within a range from -15...+15 dB.
Adjustment of GAIN is channel independent. GAIN adjustment is stored into the presets.


push

GAIN — selection of channel


turn

GAIN — adjustment of gain for selected channel


push

MASTER — to adjust all channels together with the same value

5.7 MATRIX

The matrix is to configure with the INPUT buttons and the OUTPUT buttons.

1. selection of input channel by pushing related INPUT button
2. selection of requested output channel by pushing related OUTPUT button.

This procedure is to repeat up to all necessary connection are routed.
The configuration of the matrix is stored into the presets.

5.8 OUTPUT GAIN

After mixing together several input channels output level will be increased. If excessive level at the output occurs one has to reduce output level by reducing the OUTPUT GAIN (see also 4.8 Monitor). The output gain can be changed in steps of 0.1 dB , within a range from -15...+15 dB.
Adjustment of GAIN is channel independent. OUTPUT GAIN adjustment is stored into the presets.

GAIN — selection of channel

GAIN — adjustment of gain for selected channel

MASTER — to adjust all channels together with the same value

5.9 FADE TIME

B40 is offering a fader function. Each recall of preset is starting a fade in or a fade out of audio depending on matrix setting

set a matrix point > fade in
reset a matrix point > fade out,
therefore crossfades are possible.

FADE — selection of fade in or fade out

GAIN — adjustment of fade time 0…5s

5.10 BYPASS

BYPASS is bypassing the signal processing of the unit.
BYPASS is working for all configurations.

BYPASS — switching bypass on or off

display: BYP. in the window

BOOT DISPLAY AND TROUBLE SHOOTING

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6.1 BOOT DISPLAY

display	meaning / explanation
TOOLBOX	display of processor model
B40	display of type
ADR. x	display of unit address for serial remote control

6.2 ERROR MESSAGES AND TROUBLE SHOOTING

display	error / message	remedies
NO SYNC	no sync at sync input!	■ connect the sync input (selectable in SYNC field) with valid input signal ➢ CH 1/2: sync on DIGITAL IN CH 1/2 ➢ EXT: sync on SYNC AES/EBU ➢ VIDEO: sync on SYNC VIDEO ➢ SDI: sync on SDI input
NO SDI!	SDI input selected, no valid SDI signal received!	■ check the availability of SDI data stream or ■ select another input

6.3 INITIALIZATION THE UNIT

Should have remained the device no more operable and/or in the program execution stand, recommends itself an initialization the device.
During initialization, all storage areas important for the program and registers are loaded with the factory setup and the program is restarted.

Any button is to be held pressed in order to initialize the device during switch-on of the device until the program started. To the start of the program and at the completion of the displays (how described in 6.1), the device is ready for operation with the factory setup.

After an initialization of the device, all user presets and adjustments are erased and/or overwritten by the factory setup!

APPLICATION NOTES

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7.1
B40 SERIES WITH SDI-INTERFACE optional SD/HD

In digital video recording technology four digital audio channels are the standard configuration. This channel capacity is used increasingly in production and post-production for surround sound, providing mix options and for multi-lingual productions.

Quite often it is necessary to make corrections or changes to the audio which until now required the use of an expensive digital audio mixer. These tasks can now be easily solved with the Jünger Audio range of digital audio toolboxes. Simple processing for up to four digital audio signals may be carried out quickly and efficiently.

Using the SDI versions (SDI=Serial Digital Interface, digital component video format with 270Mb/s transmission) b40 series can process embedded audio.
The standard allows up to four groups each of four mono audio channels. Usually used by most of D-VTR's and other equipment is Group 1 with 48 kHz synchronous sampling. Synchronous means that the audio clock is genlocked to the associated video. Each channel can have up to 20 bits of resolution per audio sample.
The 4-channel processors of b40 series fitted with SDI-interface are compatibel with the standard SMPTE 272M-AB. They support 48 kHz synchronous audio sampling with 20 bit word length.

The Jünger Audio SDI interface provides for one group of four audio channels to be extracted from or inserted into the SDI data stream. To address a specific channel group the group selection is possible (see 4).

The b40 provides an optional SD- **or** HD-SDI board. When you switch on the device the plugged in interface will be indicated in the display

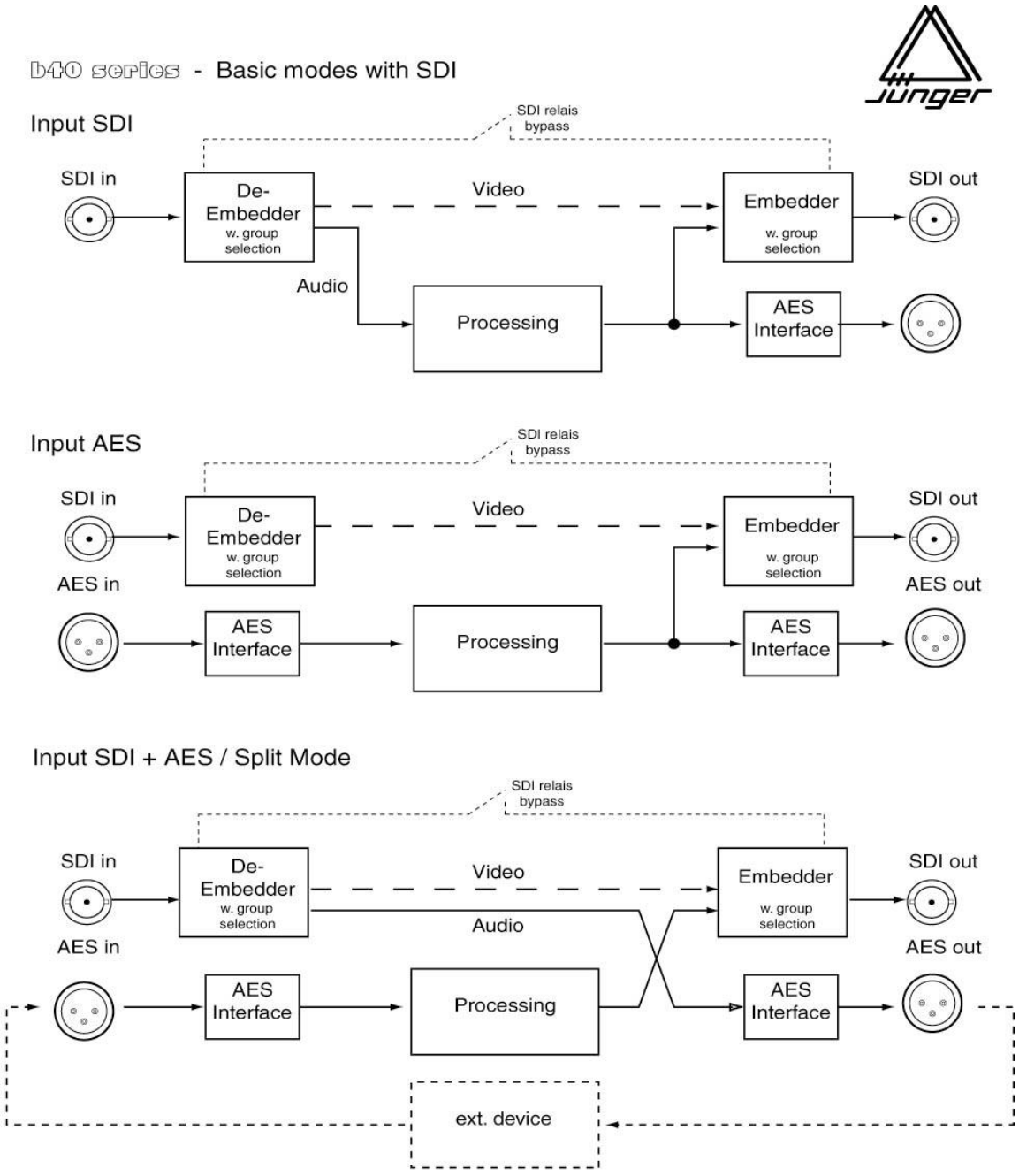
FEATURES

- Bypass relay for SDI IN >SDI OUT
- Bit transparent for coded data streams (e.g. DOLBYE/20bit)
- De-embedder: user selectable de-embedding of one group
- Embedder: user selectable embedding to one of 4 groups
- SDI-SYNC: SDI input can be the clock source of the device

- For HD-SDI: Multi-Format HD/SD operation with auto detection

7.2 BASIC WORKING MODES WITH SDI

For the basic working mode the input of the digital audio processing can be selected between AES/EBU or SDI (serial digital video with embedded audio). The processed signals are present at both outputs always - at AES/EBU and SDI.
There are two additional working modes using the SDI interface. SDI Bypass is bypassing the SDI data stream. In this case only extracted audio is processed and available at AES output. In Split Mode the audio path is splitted. Embedded audio can be processed with external equipment via AES interface.
Following illustration shows working modes:



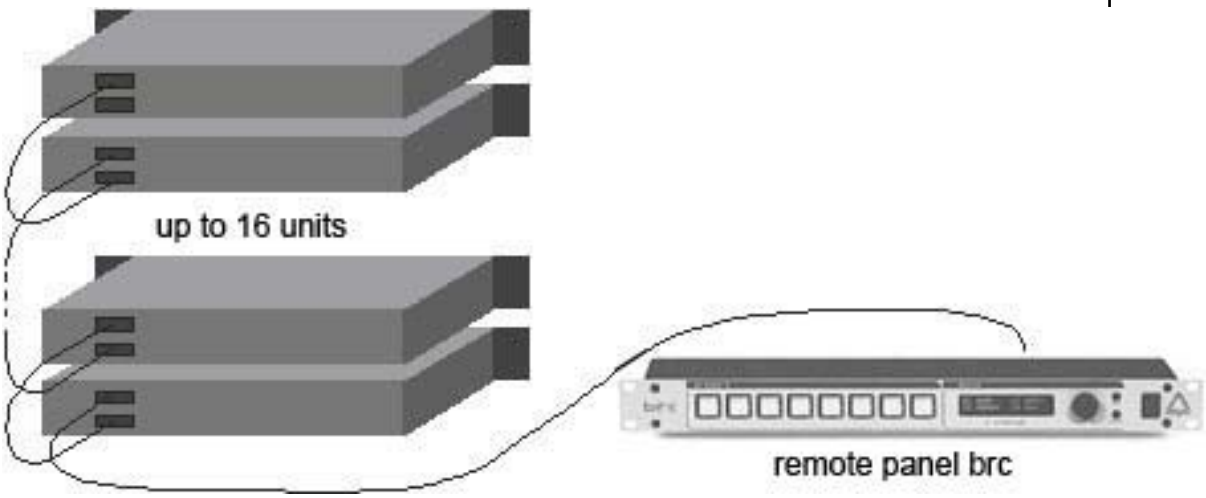
7.3 REMOTE CONTROL WITH BRC

The Digital Audio Toolbox b40 can be used remote controlled by the programmable remote control panel brc.

Fig . 8.1: programmable remote control brc

All settings of the b40 toolbox can be made on the front panel of the box or via the edit menus of brc remote control.
Working with the brc remote control panel means rapid changes of preprogrammed presets by pushing one button only.

Fig . 8.2: installation with remote control brc



features of brc:
- universal remote control panel (RS-422)
- remote operation of several units (up to 16 devices from B40 series 2nd generation)
- remote panel is detecting connected units
- remote control panel brc as programmable control unit with "one touch" access of presets by hot keys
- 19" case, 1RU, only 75 mm depth!

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TECHNICAL SPECIFICATIONS

digital signal processing

sample rate : 48 kHz
audio data format : 24 bit (AES/EBU), 20 bit (SDI)

DIGITAL IN/OUT

digital in- / outputs

AES/EBU

connector : XLR,110 Ohm, balanced
BNC, 75 Ohm, coaxial
input format : AES professional, AES consumer
output format : same as input format

SDI ***(only for SDI version)***

SDI in- / outputs (optional)

SD-SDI

VIDEO :

standard:	SMPTE 272 M–A,	270 Mbit	SD-SDI
connection:	BNC, 75 Ohm, coaxial		
signal level:	800mV ±10%		
equalisation:	300m (Belden 8281 , 270 MHz)		
return loss:	>15 dB		

supported video standards:

SD 525/59.94	SMPTE 125M
SD 625/50	SMPTE 125M

AUDIO :

audio data format :	20 Bit, transparent for C-Bit and U-Bit according to AES3
audio sample rate :	48 kHz synchronous to video-carrier
latency :	(deembedder + embedder) SD : < 2,6 msec

GENERAL :

power supply :	+5V DC
consumption :	approx. 500 mA
dimension :	3RU, 4HP, 160mm depth (EUROPA size pcb)
temperature :	10°C to 40°C
humidity :	90%, non condensing

HD-SDI

technical specifications

VIDEO :

standard:	SMPTE 299M	1,485 Gbit	HD-SDI
	SMPTE 272M–A, C	270 Mbit	SD-SDI
connection:	BNC, 75 Ohm, coaxial		
signal level:	800mV ±10%		
equalisation:	130m (Belden 1694A, 1.485GHz)		
	300m (Belden 8281 , 270 MHz)		
return loss:	>15 dB (1.485 GHz)		

supported video standards:

HD 720/60	SMPTE 296M	HD 1080/25	SMPTE 274M
HD 720/50	SMPTE 296M	HD 1080/24	SMPTE 274M
HD 720/30	SMPTE 296M	HD 1080/50	SMPTE 295M
HD 720/25	SMPTE 296M	HD 1035/60	SMPTE 260M
HD 720/24	SMPTE 296M		
HD 1080/60	SMPTE 274M	SD 525/59.94	SMPTE 125M
HD 1080/50	SMPTE 274M	SD 625/50	SMPTE 125M
HD 1080/30	SMPTE 274M		

all HD-standards are supported also with their 1/1001-frame-rates

AUDIO :

audio data format :	24 Bit, transparent for C-Bit and U-Bit according to AES3
audio sample rate :	48 kHz synchronous to video-carrier (SD and HD) 32 kHz ... 48 kHz asynchronous to video-carrier (HD only)
latency :	(deembedder + embedder) HD : < 800µsec SD : < 2,6 msec

GENERAL :

power supply :	+5V DC
consumption :	approx. 1.000 mA
dimension :	3RU, 4HP, 160mm depth (EUROPA size pcb)
temperature :	10°C to 40°C
humidity:	90%, non condensing

SYNC IN

sync in- / outputs

AES/EBU

connector :	BNC, 75 Ohm, coaxial
level :	0,5 ... 5 Vpp
input format :	AES professional, AES consumer

VIDEO

connector :	BNC, 75 Ohm, coaxial
level :	0...1 Vpp
input format :	Blackburst or PAL/NTSC composite video

remote

REMOTE

serial remote interface RS-422 in/out
level : TTL
connector : 9 pin SUB-D male/female
GPI parallel remote
level : +3…+30V, H-active, optocoupler
connector : 15 pin SUB-D female
Tally Out level : normally closed relais contacts
Contact rating: 1A 24 VDC, 0,5 A 125 VAC
max. 30 W 62,5 VA
max. 60 VDC, 125 VAC
connector : 15 pin SUB-D male

GENERAL

power consumption : appr. 15 VA
dimensions : 19“, 1 RU, 250 mm depth
weight : appr. 5 kg
optional : programmable remote control brc

WARRANTY AND SERVICE INFORMATION

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JÜNGER AUDIO grants a two-year warranty on the

4-channel digital audio toolbox b40

If the unit has to be serviced, please send it, ideally in the original box, to:

JÜNGER AUDIO - Studiotechnik GmbH

Justus-von-Liebig-Str. 7

D - 12489 Berlin
GERMANY

Tel.: (*49) -30-677721-0
Fax.: (*49) -30-677721-46

KONFORMITÄTSERKLÄRUNG

DECLARATION OF CONFORMITY

Geräteart : **4ch digital toolbox**
Type of equipment : **4ch digital toolbox**

Produkt / Product : **b40**

Das bezeichnete Produkt stimmt mit den Vorschriften folgender EU-Richtlinie(n) überein:
The aforementioned product complies with the following Europaen Council Directive(s):

89/336/EWG (geändert durch 91/263/EWG und 92/31/EWG)
(changed by 91/263/EEC and 92/31/EEC)
Richtlinie der Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit
Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility

73/23/EWG (geändert durch 93/68/EWG)
(changed by 93/68/EEC)
Richtlinie des Rates vom 19. Februar 1973 betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen
Council Directive of February 19th 1973 concerning electircal equipment for operation within certain voltage limits

Zur vollständigen Einhaltung dieser Richtlinie(n) wurden folgende Normen herangezogen:
To fully comply with this(these) Directive(s), the following standards have been used:

EN 55022 : 1987
EN 50082-1 : 1993
EN 60065 : 2002

Dieser Erklärung liegen zugrunde : Prüfbericht(e) des EMV-Prüflabors
Interne Vorschriften zur Sicherheits-Prüfung
This certification is based on : Test report(s) generated by EMC-test laboratory
Internal regulations for safety check

MEB Messelektronik Berlin : Kalibrier- und Prüflabor
accredited EMC laboratory

Aussteller / Holder of certificate : Jünger Audio Studiotechnik GmbH
Justus-von-Liebig-Strasse 7
D - 12489 Berlin

Berlin, 18.03.2003 .....
(Ort/Place) (Datum/Date) (Herbert Jünger, Geschäftsführer/Managing Director)

jünger

b40

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