

User's Guide



MADI Bridge

The MADI Patchbay

8 x 64 Channel MADI Switcher / Router

6 coaxial Inputs and Outputs
2 optical Inputs and Outputs
MIDI Remote Control
Preset Memory
64 Dot Matrix Display

Firmware 1.1 or up

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Important Safety Instructions



ATTENTION! Do not open chassis – risk of electric shock

The unit has non-isolated live parts inside. No user serviceable parts inside. Refer service to qualified service personnel.



Mains

- The device must be earthed – never use it without proper grounding
- Do not use defective power cords
- Operation of the device is limited to the manual
- Use same type of fuse only



To reduce the risk of fire or electric shock do not expose this device to rain or moisture. Prevent moisture and water from entering the device. Never leave a pot with liquid on top of the device. Do not use this product near water, i. e. swimming pool, bathtub or wet basement. Danger of condensation inside – don't turn on before the device has reached room temperature.



Installation

Surface may become hot during operation – ensure sufficient ventilation. Avoid direct sun light and do not place it near other sources of heat, like radiators or stoves. When mounting in a rack, leave some space between this device and others for ventilation.



Unauthorized servicing/repair voids warranty. Only use accessories specified by the manufacturer.



Read the manual completely. It includes all information necessary to use and operate this device.

1. Introduction

The MADi Bridge provides you with a versatile and powerful 8 x 8 patchbay for MADi signals. As a useful addition to RME's world-wide successful MADi series, the MADi Bridge also contains elaborate technology and the latest integrated circuits. In a few words: The MADi Bridge is a uniquely powerful and high-quality device, which will excite you even after many years of operation.

2. Package Contents

Please check that your MADi Bridge package contains each of the following:

- MADi Bridge
- Manual
- Power chord

3. Brief Description and Characteristics

Developed as the optimal missing link between MADi devices of any manufacturer, RME's MADi Bridge serves as patchbay, distributor, signal buffer and input selector - and is thus mandatory for every MADi user. Up to 16 devices can be freely connected with each other by 6 coaxial (BNC) and 2 optical in- and output pairs. Thanks to an intuitive and easy to navigate user surface, the device is easy to understand and to operate – even without a manual. Additionally the MADi Bridge can be remote controlled via MIDI.

All input signals are routed unaltered to the desired outputs. Like this, the MADi Bridge supports any format, no matter if it is 56 or 64 channels or includes special invisible control commands, any sample rates and even out-of-spec data rates, or violations of the MADi protocol. Thanks to a highly sensitive input stage, coaxial cable lengths of 100 m can be used - even between several devices.

4. Firmware

The MADi Bridge's main part has been realized using programmable logic. By exchanging a little component called EPROM, both function and behaviour of the unit can be changed at any time.

At the time of writing this manual, the unit is shipped with firmware 1.2. The firmware version is displayed after power on by the channel LEDs for about one second.

V 1.1: First release

V 1.2: Inverted optical output signal for full compatibility to Digidesign's Snake format.

5. Technical Specifications

- Power supply: Internal, 100-240 V AC, 15 Watts
- Dimensions including rack ears (WxHxD): 483 x 44 x 242 mm (19" x 3.46" x 9.5")
- Dimensions without rack ears/handles (WxHxD): 436 x 44 x 235 mm (17.2" x 3.46" x 9.3")
- Temperature range: +5° up to +50° Celsius (41° F up to 122°F)
- Relative humidity: < 75%, non condensing
- Weight: 2 kg

5.1 Inputs

MADI

- Coaxial via BNC, 75 Ohm, according to AES10-1991
- High-sensitivity input stage (< 0.2 Vpp)

- Optical via FDDI duplex SC connector
- 62.5/125 and 50/125 compatible

- Accepts any MADI signal

MIDI

- 16 channels MIDI
- 5-pin DIN jack
- Optocoupled, ground-free input
- Fixed MIDI Thru functionality

5.2 Outputs

MADI

- Coaxial via BNC, 75 Ohm, according to AES10-1991
- Output voltage 600 mVpp
- Cable length: up to 100 m

- Optical via FDDI duplex SC connector
- 62.5/125 and 50/125 compatible
- Fiber length: up to 2,000 m

MIDI

- 16 channels MIDI
- 5-pin DIN jack
- Fixed MIDI Thru functionality

6. First Usage

6.1 Quick Start

The user interface of the MADi Bridge is characterized by a clearly structured architecture and an unambiguous labelling of the front and rear sides. The device can thus be used easily without a manual, because numerous displays show the state of the device in a strictly logical way. However, we don't want to hold you back from reading this manual, as it includes a lot of important and useful information.

The following information is important to know for a successful usage of the unit:

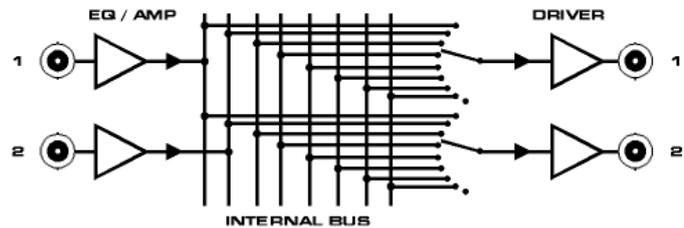
- The alpha numerical input displays of the eight outputs always show the real state. Selecting a different input via the Up/Down keys, both display and routing change immediately.
- The 64 dot matrix shows the configuration of the selected preset. So when stepping through the presets the matrix display serves as preview.
- Directly after loading a preset (Recall) both matrix and alpha numerical displays show the REAL state. Changing the routing via the Up/Down keys does not cause a change in the matrix display. The changed channel displays get marked with a dot, to indicate a setting different from the formerly loaded preset (and with this from the matrix display).
- The preset 0 can not be edited. It interrupts (disconnects) all connections, thus operates like a MUTE functionality.
- The preset NONE (no number displayed) is no preset, therefore does not react on Save and Recall. In this setting the matrix shows the current routing instead of the currently selected preset. Changes via the Up/Down keys can then be monitored in real-time in the matrix display.
- To prevent accidental operating errors, the keys STORE and RECALL react delayed. For the specific function to be executed, the keys have to be pressed at least for a second.

The MADi Bridge remembers all settings before switching off and sets them automatically when switching on the next time.

6.2 Operation

The **Lock** section allows both locking the keys on the device and locking the MIDI remote. This way the device can be secured against accidental operating errors.

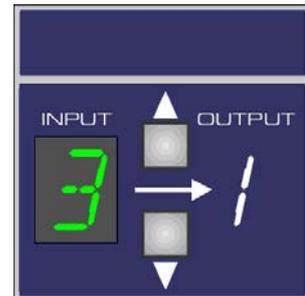
The front panel has **eight output fields**. This clarifies the way the MADI Bridge operates. An output can be fed by any input, multiple outputs can be fed even from the same input. This way the device can be used as distributor.



But it's not possible to route more than one input to one output. This would equal the functionality of a digital mixing desk, requiring the ability of mixing digital signals.

Eight alphanumerical LED displays separately show the current **signal source** for each output. Using two keys, the Up/Down keys, the input source can be changed quickly. Besides input 1 to 8, input 0 (no input) can be chosen as well.

Above each configuration field, an **empty label area** allows to attach a tape to each output, with the name of the connected device. With this, the routing stays clear and easy to understand, even when all I/Os are in use.



The device stores the last settings when being switched off. The current setting can also be stored as **Preset**. The section Presets offers 9 free memories. Memory 0 is pre-configured as **panic button**, it cancels all connection points.

A preset is pre-selected first. The matrix field shows the configuration of the pre-selected preset. The desired preset is then loaded with the **Recall** key. As soon as one of the routings is being changed, both the changed output and the preset number show a dot in the display.



The 64 LED **matrix field** displays all routings in classical matrix view, a configuration can be viewed and understood in a glance. The matrix field is especially valuable for pre-selection of the presets, because the preset's routing is displayed in the matrix before recall. The preset NONE (no number displayed) switches the matrix into **real-time display**, showing the current routing.



The crosspoints of identical inputs/outputs are marked by red warning LEDs. A routing of an output to the same input causes a feedback when connecting external devices. Therefore, in most cases this kind of connection makes no sense. As such a connection might be desired in specific cases (see chapter 9.1), it is still available in the MADI Bridge.

7. Inputs and Outputs

7.1 MAD I Inputs

The rear of the MAD I Bridge has six coaxial MAD I inputs, available as BNC sockets. The sockets are ground-free and separated from ground by capacitive coupling. This method prevents ground loops and other distortions by potential differences between the connected units. Note that the transmission at the receiver still operates unbalanced.

The BNC input's ground-free design is built according to AES10-1991. The input's impedance is 75 Ohm. It will operate error-free from about 180 mVpp.

The two optical inputs use a FDDI (ISO/IEC 9413-3) compatible optical module each, according to AES10-1991. More information can be found in chapter 10.1, MAD I Basics.

7.2 MAD I Outputs

The rear of the MAD I Bridge has six coaxial MAD I outputs, available as BNC sockets.

The BNC outputs are built according to AES10-1991. The output impedance is 75 Ohm. The output voltage will be 600 mVpp when terminated with 75 Ohm.

The two optical outputs use a FDDI (ISO/IEC 9413-3) compatible optical module each, according to AES10-1991. More information can be found in chapter 10.1, MAD I Basics.

7.3 MIDI Input and Output

The rear of the MAD I Bridge offers one MIDI input and output via two 5-pin DIN jacks. The MIDI input can be used to remote control the MAD I Bridge. The MAD I Bridge sends out status information via the MIDI output. All MIDI data at the MIDI input are passed on to the output, a method known as MIDI Thru function. This way the MAD I Bridge can be easily integrated (inserted) into existing cablings and setups.

8. Software MIDI Remote

8.1 MIDI Control of the MADi Bridge

The MADi Bridge can be completely remote controlled via MIDI. It reacts on commands directed to the specific unit. Furthermore, on request the complete status is send back, which includes all front panel displays and key states. Each MADi Bridge can be programmed with its own ID. This allows to remote control multiple units, even via the same MIDI channel. A detailed description of the MIDI commands can be found in chapter 13.

The key LOCK MIDI turns off MIDI remote. This safety function prevents the current setup from unintended changes by MIDI commands. All input data are still passed through to the MIDI output.

Especially recommended is the combination of HDSP MADi and ADI-648. They transmit MIDI directly embedded in MADi, thus allow controlling a MADi Bridge which is located far away from the computer.

Note: The MADi bridge is the only unit in RME's MADi line that can not extract the MIDI control information directly from MADi. It must be fed to the MIDI DIN input port.

8.2 General Notes on Operation

RME's free Windows and Mac software **MIDI Remote** is an extraordinary MIDI remote control program. MIDI Remote allows for configuration and status request of different RME devices by a simple mouse click. Besides the MADi Bridge ADI-648, ADI-642, ADI-6432, ADI-8 QS, Micstasy, DMC-842 and the M-series are fully supported. The communication uses any free MIDI port available in the system.

The software can be found on the RME Website, section Downloads, MIDI Remote.

After connecting the MADi Bridge to a MIDI port present in the system (both input and output), start the software **MIDI Remote**. In the menu **Function** (or via F4) select the entry **MADi Bridge Matrix**. Next select the used MIDI port in the menu **Options, MIDI I/O Setup** (or use F3).

In the upper part of the window the current status of the communication is shown. It starts Offline. Via the menu **Options, Start / Stop MIDI I/O**, or by a click on the **Power** icon in the Toolbar (third icon from the left) the MIDI communication is started. Now the **State** field changes to **Online**.

In case the display changes to **No Response** the program does not receive any reply from the MADi Bridge. Most probably this is caused by the usage of a wrong ID. The MADi Bridge has been programmed to ID 00 in the factory. When the device ID **00** or **All** are selected in the program, the communication must work. The device ID can be changed by a double click on the black field **Device ID**.



8.3 Brief description of the menu entries, Function MADi Bridge Matrix

File – New MIDI Remote Window

The program MIDI Remote is capable of multi-client operation. There is no limit in opening windows and thus controlling as many units at the same time as desired.

File – Open and Save Setup

All settings can be stored in and loaded from a file. This is especially useful to quickly load different routings, or to access different units with different IDs.

File – Load and Save Workspace

The settings and the position of multiple opened windows can be saved and loaded from a workspace file. In contrary to the settings file, the used MIDI ports are also stored and loaded.

Function

At this time, the MIDI Remote includes eleven operation windows.

Options – Start / Stop MIDI I/O

Start / Stop of the MIDI communication. In the upper part of the window the current state is shown, like selected ID, Online / No Response / Offline.

Options – Send Single Set of Data

In Offline mode the program can be used to just send a single set of commands. With this, a change of the configuration can be performed at a specific moment. Additionally the load on the MIDI line is reduced, as no ongoing communication is taking place.

Options – Select Device (F2)

Opens a dialog box to select a device ID. Choosing 'All', the current device ID of the unit is ignored. The setting 'All' is not allowed when using more than one MADi Bridge.

Options – MIDI I/O Setup (F3)

Opens a settings dialog to configure the MIDI input and output port. This setting can be different for different windows (views).

Options – Function Select (F4)

Opens a settings dialog to select the current function. At this time, the MIDI Remote includes three functions: a front panel view of the ADI-648, a matrix view of the ADI-648, and a matrix view of the MADi Bridge.

Options – Edit Device Names

Opens a settings dialog to assign a name to each device ID.

Options – Set I/O names to default

Double click on the name fields in the matrix to type in any desired name. This option sets all fields back to the factory names.

Options – Ignore Position on Setup Load

With this option active, the window position stored in a setup file is not used when loading the setup. So the current window position will not change.

Options – Program Device ID

Opens a settings dialog to program a device ID into the MADi Bridge. Note: programming is fast and not confirmed. Attention: Programming is only possible when not more than one MADi Bridge is connected via MIDI!

9. Configuration Examples

9.1 Distribution 1 to 8

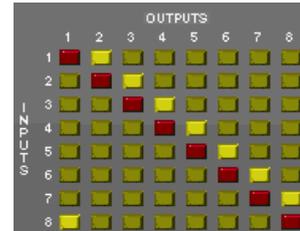
Use the Up/Down keys to select 'INPUT 1' on all channels. The matrix displays a horizontal line in the most upper line.

The input signal from input 1 is now sent to all eight outputs of the MADI Bridge at the same time (in parallel).



9.2 Passing on the signal

Use the Up/Down keys to set all inputs one below the current output channel. Output 1 is set to input 8, output 2 to 1, output 3 to 2 and so on. The matrix shows a 45° line from upper left to lower right, shifted one LED to the right of the red LEDs. In this configuration the input signal 1 is sent to the output 2, input 2 to output 3 and so on. With this, all MADI devices are connected in a serial way.

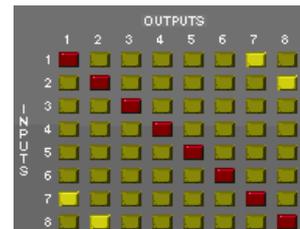


9.3 Conversion Optical to Coaxial and vice versa

Of course, the MADI Bridge can also serve as format converter from coaxial to optical, and at the same time from optical to coaxial. Thanks to its two optical I/Os, both functions are even available two times.

Coaxial to optical: Configure output 7 and/or 8 to use one of the six coaxial inputs.

Optical to coaxial: Configure output 1 to 6 to use the optical input 7 and/or 8.



10. Technical Background

10.1 MADl Basics

MADl, the serial **M**ultichannel **A**udio **D**igital **I**nterface, has been defined already in 1989 as an extension of the existing AES3 standard following several manufacturers' wish. The format also known as AES/EBU, a balanced bi-phase signal, is limited to two channels. Simply put, MADl contains 28 of those AES/EBU signals in serial, i. e. after one another, and the sample rate can still even vary by +/-12.5%. The limit which cannot be exceeded is a data rate of 100Mbit/s.

Because an exact sampling frequency is used in most cases, the 64 channel mode was introduced officially in 2001. It allows for a maximum sample rate of 48 kHz + ca. 1%, corresponding to 32 channels at 96 kHz, without exceeding the maximum data rate of 100 Mbit/s. The effective data rate of the port is 125 Mbit/s due to additional coding.

Older devices understand and generate only the 56 channel format. Newer devices often work in the 64 channel format, but offer still no more than 56 audio channels. The rest is being eaten up by control commands for mixer settings etc.. The ADI-648 and the HDSP MADl show that this can be done in a much better way, with an invisible transmission of 16 MIDI channels and the MADl signal still being 100% compatible.

For the transmission of the MADl signal, proved methods known from network technology were applied. Most people know unbalanced (coaxial) cables with 75 Ohms BNC plugs, they are not expensive and easy to get. The optical interface is much more interesting due to its complete galvanic separation, but for many users it is a mystery, because very few have ever dealt with huge cabinets full of professional network technology. Therefore here are some explanations regarding 'MADl optical'.

- The cables used are standard in computer network technology. They are thus not at all expensive, but unfortunately not available in every computer store.
- The cables have an internal fibre of only 50 or 62.5 µm diameter and a coating of 125 µm. They are called network cables 62.5/125 or 50/125, the former mostly being blue and the latter mostly being orange. Although in many cases not clearly labelled, these are always (!) glass fibre cables. Plastic fibre cables (POF, plastic optical fibre) can not be manufactured in such small diameters.
- The plugs used are also an industry standard and called SC. Please don't mix them up with ST connectors, which look similar to BNC connectors and are being screwed. Plugs used in the past (MIC/R) were unnecessarily big and are not being used any longer.
- The cables are available as a duplex variant (2 cables being glued together) or as a simplex variant (1 cable). The ADI-648's optomodule supports both variants.
- The transmission uses the multimode technique which supports cable lengths of up to almost 2 km. Single mode allows for much longer distances, but it uses a completely different fibre (8 µm). By the way, due to the wave-length of the light being used (1300 nm), the optical signal is invisible to the human eye.

10.2 MADl Bridge Technology

A MADl patchbay basically can be realized in two ways: using a complete signal regeneration (including reclocking), or by a buffered distribution of the un-processed input signal.

Complete Signal Regeneration: This method requires a complete MADl receiver per input, and a complete MADl transmitter per output. The signal must be processed and reclocked. The costs are extreme, as the special MADl chip (required 8 times!) is already very expensive. Additionally another very powerful FPGA is necessary. Operation gets cumbersome, as the unit has to provide full clock support and control. The advantage is that the MADl signal at the output is completely independent from the quality of the input signal, as it is fully newly generated.

Buffered Distribution: This method uses a sensitive receiver to amplify the input signal to a standard level, then puts out this signal with an active driver stage. The signal is not processed nor reclocked. The different combinations (routings) of the input and output signals as well as the MIDl control can be performed by a fast FPGA. The component costs are dramatically lower compared to the Signal Regeneration method. The operation is very easy, as the current clock situation is completely ignored. The disadvantage is that the quality of the output signal depends on that of the input signal, as the signal is passed on nearly unchanged. Additionally the maximum coaxial cable length is reduced, as a signal to/from the MADl Bridge travels double the distance.

RME's MADl Bridge uses *adapted termination* and a *special equalizing*, to reach higher cable lengths despite its simpler design. The MADl Bridge can even serve as cable buffer for the limited outputs of some manufacturers (90 meter coaxial instead of 30 meter...).

Real world tests with MADl devices of various manufacturers confirmed the outstanding performance of the MADl Bridge. There exists only one exception: The output signal of the Sony 3348 (digital tape machine of the first MADl generation) becomes unreadable when passed through the MADl Bridge. Fortunately this problem was easy to be fixed. The inputs 5 and 6 of the MADl Bridge can be made compatible to the 3348 by internal jumpers.

10.3 Setting Inputs 5/6 into Compatibility Mode (Sony 3348)

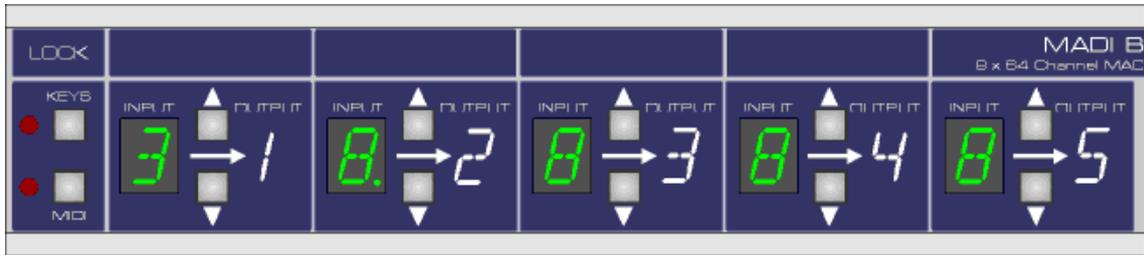


The changes described below must be performed by trained technicians only, following the usual safety instructions and regulations. Risk of electric shock by high voltage inside the unit!

1. Disconnect the power cord and all other cables from the MADl Bridge.
2. Remove the rack ears using a screwdriver (Phillips 1, two screws per ear).
3. Remove the screws of the cover (7 screws).
4. Slide the cover to the back and remove it.
5. Jumper JP1 and JP2 are placed near the BNC jacks of input 5 and 6. The jumper position is printed to the left on the PCB. The factory default is the setting 'Standard'. Changing the jumpers to the other position activates the Sony 3348 mode.
6. Put the cover back on and slide it into the front panel's frame, so that all 7 screws can be re-fit and tightened.
7. Mount the rack ears.
8. Connect power and other cables.

11. Controls and Connectors

Front Left Part

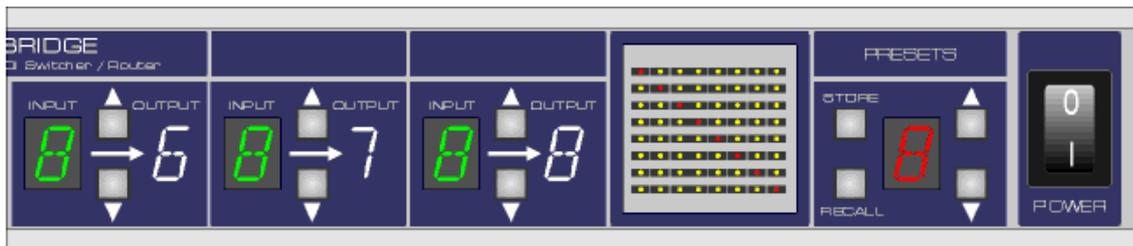


Locking of
Keys
MIDI

Input selection
for Output 2

Input selection
for Output 4

Front Right Part



Input selection
for Output 6

Input selection
for Output 8

Matrix display

Preset section
Store
Recall
Select

Power switch

Rear



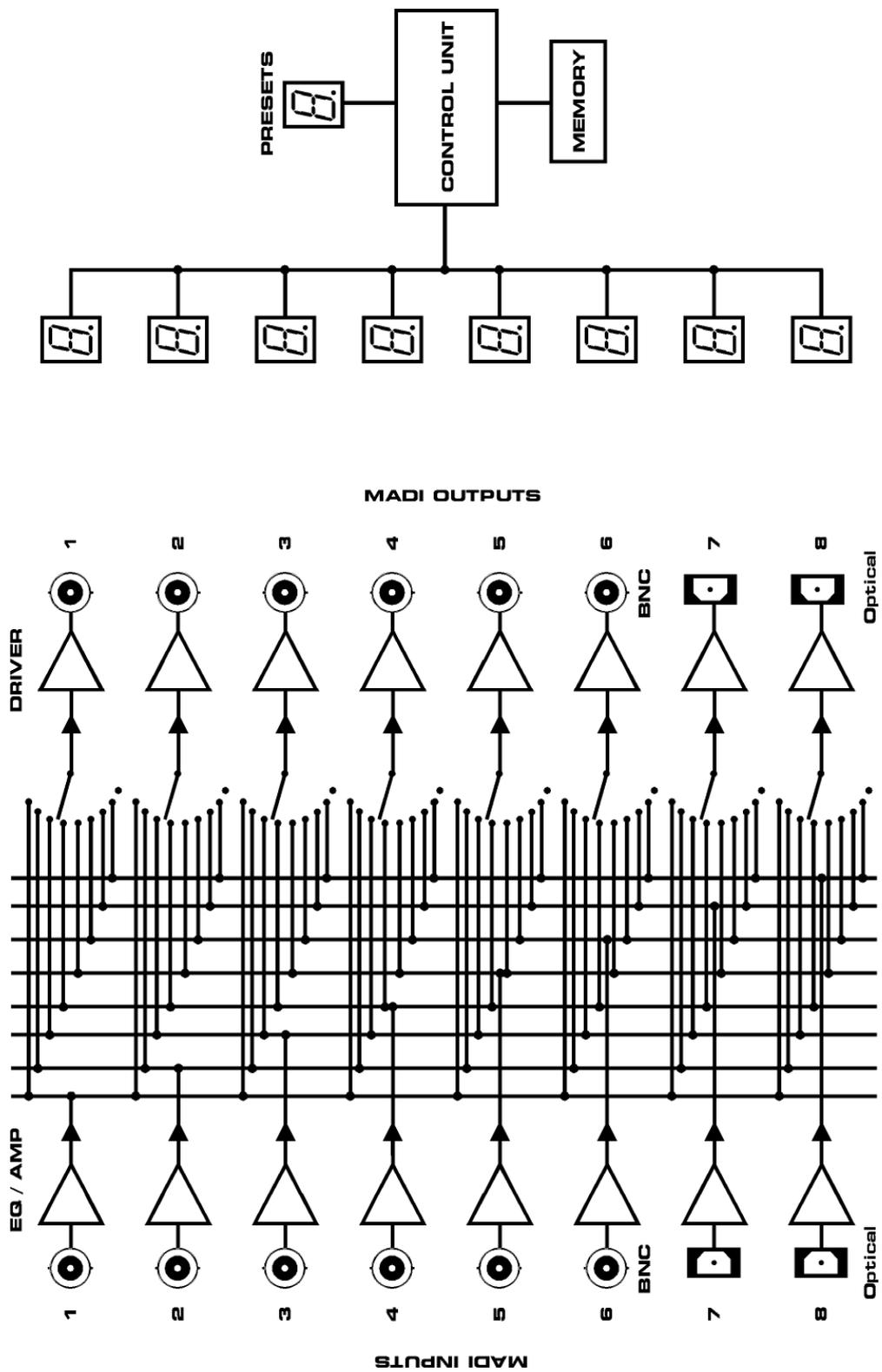
Power connector

MADI Optical
Inputs
Outputs

MADI coaxial
Inputs
Outputs

MIDI
Input
Output

12. Block Diagram



13. MIDI Implementation Chart

13.1 Basic SysEx Format

<u>Value</u>	<u>Name</u>
F0h	SysEx header
00h 20h 0Dh	MIDITEMP manufacturer ID
65h	Model ID (MADI Bridge)
00h..7Eh, 7Fh	Device ID. 7Fh = broadcast (all IDs)
mm	Message type
nn	Parameter number (see table 1)
oo	Databyte
F7h	EOX

13.2 Message Types

<u>Value</u>	<u>Name</u>
10h	Request value
20h	Set value
30h	Value response

Request Value

Format: F0 00 20 0D 65 (dev ID) 10 F7

This string triggers a complete dump of all value response data bytes.

Value Response

After being triggered by receiving a request value command, device sends a string of all value response data bytes. Message type is set to 30h.

Set Value

Sets any number of parameters.
nn / oo can be repeated freely.

13.3 Total Reset

Sending the following SysEx string to the MADI Bridge will perform a complete reset (factory default state). Device ID is set to 00, all presets are set to 0 (no connection active in any preset), and preset NONE is selected.

```
F0 00 20 0D 65 7F 20 0A 00 05 00 07 01 05 01 06 01 05 02 06 01 05 03 06 01 05 04 06 01 05  
05 06 01 05 06 06 01 05 07 06 01 05 08 06 01 05 09 06 01 05 0A 07 01 F7
```

13.4 Table

No.	Name	Request Value	Set Value	Value Response	Data bytes
05h	Preset number	x	x	x	1 Byte, value 0..10 (0..9 = Preset number, 0A = Matrix real-time display)
06h	Store		x		1 = set
07h	Recall		x		1 = recall
08h	Key Lock	x		x	
09h	MIDI Lock	x		x	
0Ah	Device ID	x	x	x	1 Byte (00h..7Eh, 7Fh = broadcast)
10h	Preset 1 Out 1	x		x	1 Byte, value 0..8 (0 = no input, 1..8 = input number)
11h	Preset 1 Out 2	x		x	Same
12h	Preset 1 Out 3	x		x	Same
13h	Preset 1 Out 4	x		x	Same
14h	Preset 1 Out 5	x		x	Same
15h	Preset 1 Out 6	x		x	Same
16h	Preset 1 Out 7	x		x	Same
17h	Preset 1 Out 8	x		x	Same
18h	Preset 2 Out 1	x		x	Same
19h	Preset 2 Out 2	x		x	Same
1Ah	Preset 2 Out 3	x		x	Same
1Bh	Preset 2 Out 4	x		x	Same
1Ch	Preset 2 Out 5	x		x	Same
1Dh	Preset 2 Out 6	x		x	Same
1Eh	Preset 2 Out 7	x		x	Same
1Fh	Preset 2 Out 8	x		x	Same
20h	Preset 3 Out 1	x		x	Same
21h	Preset 3 Out 2	x		x	Same
22h	Preset 3 Out 3	x		x	Same
23h	Preset 3 Out 4	x		x	Same
24h	Preset 3 Out 5	x		x	Same
25h	Preset 3 Out 6	x		x	Same
26h	Preset 3 Out 7	x		x	Same
27h	Preset 3 Out 8	x		x	Same
28h	Preset 4 Out 1	x		x	Same
29h	Preset 4 Out 2	x		x	Same
2Ah	Preset 4 Out 3	x		x	Same
2Bh	Preset 4 Out 4	x		x	Same
2Ch	Preset 4 Out 5	x		x	Same

No.	Name	Request Value	Set Value	Value Response	Data bytes
2Dh	Preset 4 Out 6	x		x	1 Byte, value 0..8 (0 = no input, 1..8 = input number)
2Eh	Preset 4 Out 7	x		x	Same
2Fh	Preset 4 Out 8	x		x	Same
30h	Preset 5 Out 1	x		x	Same
31h	Preset 5 Out 2	x		x	Same
32h	Preset 5 Out 3	x		x	Same
33h	Preset 5 Out 4	x		x	Same
34h	Preset 5 Out 5	x		x	Same
35h	Preset 5 Out 6	x		x	Same
36h	Preset 5 Out 7	x		x	Same
37h	Preset 5 Out 8	x		x	Same
38h	Preset 6 Out 1	x		x	Same
39h	Preset 6 Out 2	x		x	Same
3Ah	Preset 6 Out 3	x		x	Same
3Bh	Preset 6 Out 4	x		x	Same
3Ch	Preset 6 Out 5	x		x	Same
3Dh	Preset 6 Out 6	x		x	Same
3Eh	Preset 6 Out 7	x		x	Same
3Fh	Preset 6 Out 8	x		x	Same
40h	Preset 7 Out 1	x		x	Same
41h	Preset 7 Out 2	x		x	Same
42h	Preset 7 Out 3	x		x	Same
43h	Preset 7 Out 4	x		x	Same
44h	Preset 7 Out 5	x		x	Same
45h	Preset 7 Out 6	x		x	Same
46h	Preset 7 Out 7	x		x	Same
47h	Preset 7 Out 8	x		x	Same
48h	Preset 8 Out 1	x		x	Same
49h	Preset 8 Out 2	x		x	Same
4Ah	Preset 8 Out 3	x		x	Same
4Bh	Preset 8 Out 4	x		x	Same
4Ch	Preset 8 Out 5	x		x	Same
4Dh	Preset 8 Out 6	x		x	Same
4Eh	Preset 8 Out 7	x		x	Same
4Fh	Preset 8 Out 8	x		x	Same

No.	Name	Request Value	Set Value	Value Response	Data bytes
50h	Preset 9 Out 1	x		x	1 Byte, value 0..8 (0 = no input, 1..8 = input number)
51h	Preset 9 Out 2	x		x	Same
52h	Preset 9 Out 3	x		x	Same
53h	Preset 9 Out 4	x		x	Same
54h	Preset 9 Out 5	x		x	Same
55h	Preset 9 Out 6	x		x	Same
56h	Preset 9 Out 7	x		x	Same
57h	Preset 9 Out 8	x		x	Same
58h	Current Out 1	x	x	x	Same
59h	Current Out 2	x	x	x	Same
5Ah	Current Out 3	x	x	x	Same
5Bh	Current Out 4	x	x	x	Same
5Ch	Current Out 5	x	x	x	Same
5Dh	Current Out 6	x	x	x	Same
5Eh	Current Out 7	x	x	x	Same
5Fh	Current Out 8	x	x	x	Same

14. Warranty

Each individual MADi Bridge undergoes comprehensive quality control and a complete test at IMM before shipping. The usage of high grade components allow us to offer a full two year warranty. We accept a copy of the sales receipt as valid warranty legitimation.

If you suspect that your product 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 MADi Bridge. The general terms of business drawn up by Audio AG apply at all times.

15. Appendix

RME news, driver updates and further product information are available on our website:

<http://www.rme-audio.com>

Manufacturer:

IMM Elektronik GmbH, Leipziger Strasse 32, D-09648 Mittweida

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CE / FCC Compliance

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 according to RL2004/108/EG, and European Low Voltage Directive RL2006/95/EG.

FCC

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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. 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.

RoHS

This product has been soldered lead-free and fulfils the requirements of the RoHS directive.

ISO 9001

This product has been manufactured under ISO 9001 quality management. The manufacturer, IMM Elektronik GmbH, is also certified for ISO 14001 (Environment) and ISO 13485 (medical devices).

Note on Disposal

According to the guide line RL2002/96/EG (WEEE – Directive on Waste Electrical and Electronic Equipment), valid for all european countries, this product has to be recycled at the end of its lifetime.

In case a disposal of electronic waste is not possible, the recycling can also be done by IMM Elektronik GmbH, the manufacturer of the M-32 AD / M-16 AD.

For this the device has to be sent **free to the door** to:

IMM Elektronik GmbH
Leipziger Straße 32
D-09648 Mittweida
Germany



Shipments not prepaid will be rejected and returned on the original sender's costs.