MadiXtreme / Alpha-Link

XLogic I/O system for PC and Mac

Setup Guide

V1.0

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Solid State Logic
S O U N D || V I S I O N

Contents

Introduction

About this Setup Guide

Detailed installation and operational instructions for the SSL MadiXtreme 64 and MadiXtreme 128 audio cards and Alpha-Link interfaces are available in their respective documentation.

The aim of this setup Guide is to provide hands-on, step by step instructions to get a MadiXtreme and Alpha-Link working together, while getting familiar with some of the more advanced, "hidden" functions of these devices.

While it would be impossible to provide instructions for every possible hardware, clock synchronization, sample rate and audio format configuration, the Quick Start section of this Setup Guide will focus on a typical configuration that includes one MadiXtreme audio card and one Alpha-link MADI-SX interface.

Prerequisites

For the purpose of this Setup Guide, it is assumed that:

- The MadiXtreme has been physically installed in the computer according to the instructions in the MadiXtreme documentation.

- The MadiXtreme drivers have been installed according to the instructions in the MadiXtreme documentation.

- The computer and Alpha-Link are connected to the mains. However, do not switch on the Alpha-Link yet as we are going to start it in Diagnostics mode.

Connecting the Alpha-Link to the MadiXtreme

Use 50/125 µm or 62.5/125 µm multimode fibre cable with SC connectors to connect the Alpha-Link to MADI Port A of the MadiXtreme.

If you are using a MadiXtreme 128 you will have noticed that there are no markings to identify the MADI A and MADI B heads. MADI A is the one farthest from the BNC connector, and for each MADI head, the transmitter side (MADI output) is farthest from the BNC connector.

MADI cables are normally paired (duplex cables), and the input and output connectors at each end are keyed and linked, so that it is almost impossible to insert them the wrong way around into the MADI head. The connectors may also be marked or colour-coded to distinguish cable 1 from cable 2. However, if the connectors are not linked, it is possible to insert them the wrong way around! Please be especially careful if you use non-paired (simplex) cables.

Warning: In normal use the Alpha-Link outputs will be connected to your console and/or monitoring system. You are advised to keep the the monitoring system powered off, at least until appropriate clock settings have been selected for the MadiXtreme and Alpha-Link.

Quick Start

In this section we'll explain how to set up the MadiXtreme and Alpha-Link to provide a computer-based DAW with 24 Analogue inputs and outputs and 8 AES/EBU inputs and outputs at 96kHz, with the Analogue inputs and outputs routed to/from MADI channels 1 to 24, and the AES/EBU inputs and outputs routed to/from MADI channels 25 to 32. The MadiXtreme will be used as clock master and the Alpha-Link will be synchronized to the embedded MADI clock signal from the MadiXtreme.

32 is the maximum number of MADI channels available at 96kHz, and in order to use this many channels we'll need to switch the MadiXtreme and Alpha-Link to "MADI 64/32 channel mode" (instead of the default "MADI 56/28 channel mode").

We'll also need to change the Alpha-Link's "connection mode". By default, the connection mode is set to "AES lowest", in which 24 AES/EBU channels would be routed to/from MADI channels 1 to 24, leaving channels 25-32 available for 8 Analogue inputs and outputs. We want to set the connection mode to "ANA lowest" to have the opposite.

Since both the MadiXtreme and Alpha-Link are capable of handling high-frequency clock signals, we'll set them to use high-speed (non-SMUX) MADI. Doing this is not necessary for 96 kHz operation, but it has the advantage that if you set the MadiXtreme to a low sample rate later on, the Alpha-Link will correctly interpret the sample rate of the MADI-embedded clock signal received from the MadiXtreme. In other words, if you set the MadiXtreme to 44.1 kHz, the Alpha-Link will switch itself to 44.1 kHz, and not 88.2 kHz!

Finally, we'll need to change the EXT clock selection so that when it is set to lock to an external clock signal, the Alpha-Link will lock to the MADI-embedded clock signal, rather than expect a signal at its WordClock input.

After that we'll show how the MadiXtreme should be set up, on PC or Mac, to match the planned Alpha-Link configuration. In particular, we'll ensure the MadiXtreme is set as clock master, before we return to the Alpha-Link to set it as clock slave.

Finally, we'll suggest how to test the system, and add a word about using headphones.

Starting the Alpha-Link in Diagnostics mode

Press and hold down the SAMPLE RATE and CLOCK buttons before powering up the Alpha-Link to start in Diagnostics mode. Do not release them until the XS LED starts flashing.
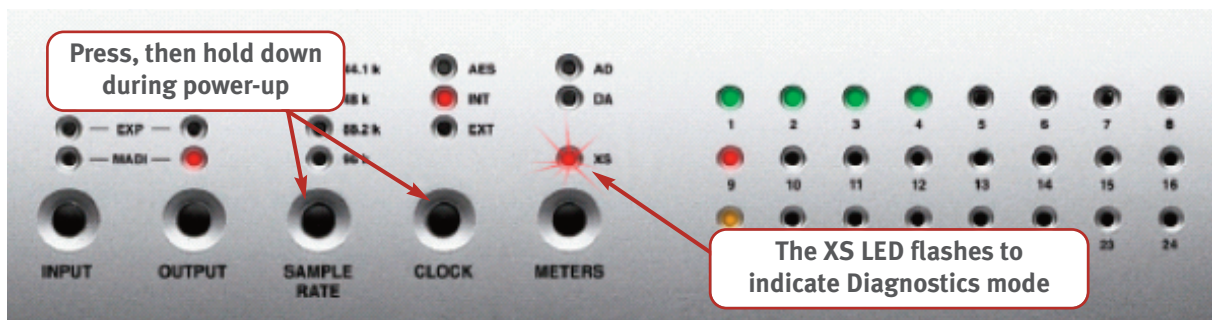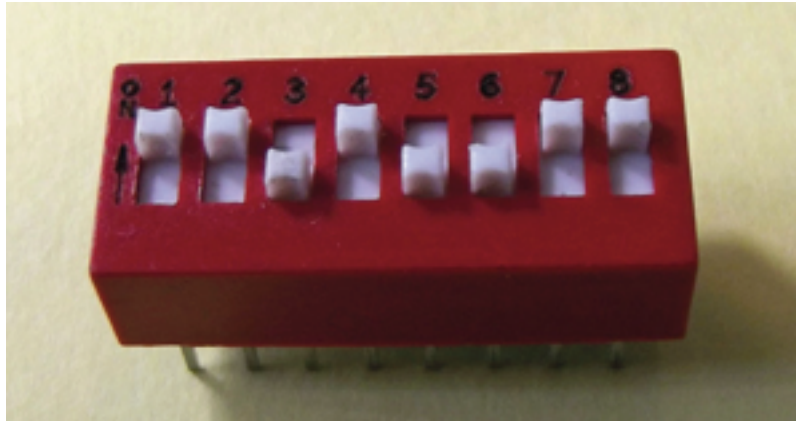
About "virtual switches"

History

This section aims to clarify the Alpha-Link's "virtual switches' system, by telling the story behind it, and describing how it works. An example of changing settings is provided, with pictures.

The "option switch" system was originally inspired by electronic components like this one (they are usually called "DIP switches"):

This component allows 8 parameters to be set, using its 8 built-in "individual" switches.

Some confusion is possible, because the component itself is called a "DIP switch", while it carries 8 individual "switches".

The general idea is that, by using the Alpha-Link front panel buttons and metering LEDs, we can have the equivalent of 8 of these "DIP switch" components, providing up to 64 "individual" switches (although we don't use that many).

In the current version of the Alpha-Link manual we talk about option "pages", where each page includes 8 individual "virtual switches".
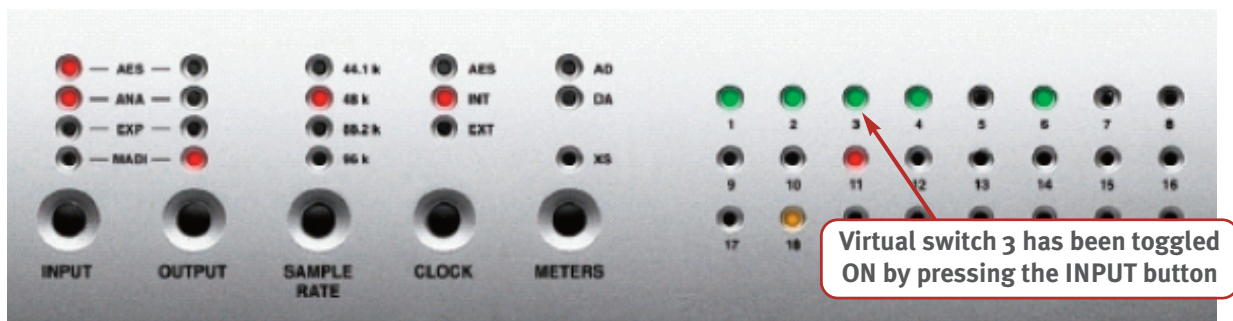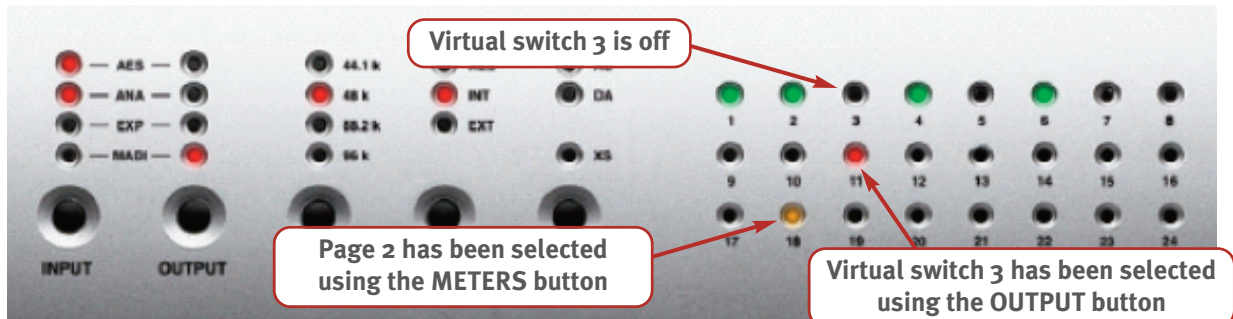
How it works

When the Alpha-Link is in Diagnostics mode, pressing the METERS button selects one of the available virtual switch **pages**. The current page selection is indicated by the bottom row LEDs: if **LED number 1 of the bottom row** is lit (LED 17), **page 1** is selected. If **LED number 2 of the bottom row** is lit (LED 18), **page 2** is selected, and so on... pressing the METERS button repeatedly cycles through the possible choices. At the time of writing, only two pages are available on ADAT compatible Alpha-Links, while three pages are available on AES/EBU compatible models.

Within the currently selected page, pressing the OUTPUT button selects one of the 8 individual virtual switches. The current switch selection is indicated by the middle row LEDs: if **LED number 1 of the middle row** (LED 9) is lit, **switch 1** is selected. If **LED number 2 of the middle row** (LED 10) is lit, **switch 2** is selected, and so on... pressing the OUTPUT button repeatedly cycles through the 8 possible choices.

Finally, each individual switch can be toggled ON or OFF by pressing the INPUT button while it is selected. The top row LEDs indicate the ON/OFF status of the switches. So for instance, with switch 3 selected (indicated by LED 11, number 3 of the middle row, being lit), pressing the INPUT button will toggle LED 3 (on the top row just above LED 11) ON or OFF.

In pictures

- **Page 2** is selected (indicated by lit LED 18, number **2** of the bottom row).
- Within the selected page, **switch 3** is selected (indicated by lit LED 11, number **3** of the middle row).
- In the top picture, virtual switches 1, 2, 4 and 6 are ON, the others are OFF (indicated by the top row LEDs).
- In the bottom picture, switch 3 (selected, as indicated by lit LED 11) has been toggled ON by pressing the INPUT button. LED 3 is now lit to indicate the change.

Virtual switch 3 is off

Page 2 has been selected using the METERS button

Virtual switch 3 has been selected using the OUTPUT button

Virtual switch 3 has been toggled ON by pressing the INPUT button

Changing the 64/56 channel MADI mode

We have set out to provide a computer-based DAW with 24 Analogue inputs and outputs and 8 AES/EBU inputs and outputs at 96kHz. By default, the Alpha-Link is set to provide only 56 MADI I/O channels at 48 kHz (and 28 channels at 96 kHz). So we need to change it to 64 channel MADI mode (for 32 channels at 96 kHz).

The 56/64 channel MADI mode selection is switch 1 of page 1, so you will only need one button-press to switch to 64 channels.

As you have already started the Alpha-Link in Diagnostics mode, follow the steps below:

1) By default, page 1 will be selected (indicated by LED 17 being lit in the Metering section). Keep that selection.

2) By default, switch 1 will be selected (indicated by LED 9 being lit in the Metering section). Keep that selection.

3) Press the OUTPUT button. LED 1 will go OFF, indicating that the Alpha-Link is now in 64 channel MADI mode.
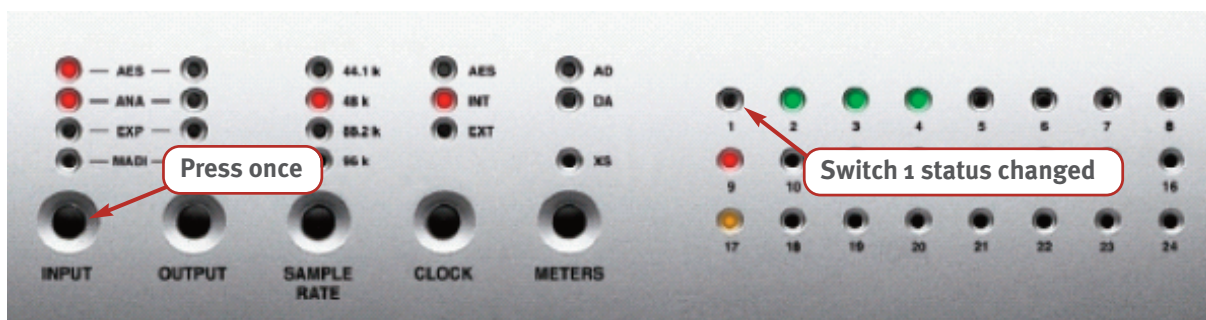
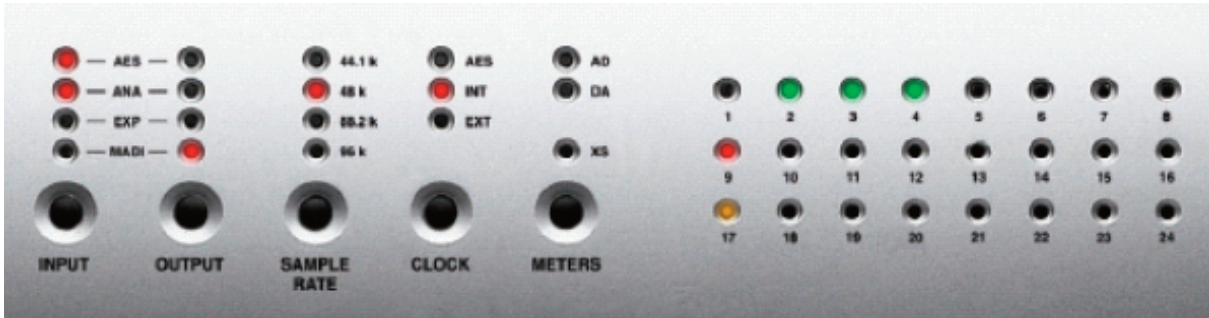## Changing the connection mode

Our plan is to provide our DAW with 24 Analogue inputs and outputs and 8 AES/EBU inputs and outputs at 96 kHz, for a total of 32 I/O, which is the maximum MADI can provide at that sample rate.

However, if we route both the Analogue and AES/EBU I/O to/from MADI, by default the AES/EBU I/O will be linked to MADI channels 1 to 24, leaving only 8 channels (numbers 25 to 32) for the Analogue I/O. This is exactly the opposite of what we want.

We can reverse this by changing the "connection mode", which is controlled by switch 4 of page 1.

While the Alpha-Link is still in Diagnostics mode, follow the steps below:

   1) Page 1 should already be selected (LED 17 lit). Keep that selection.

   2) Press the OUTPUT button repeatedly to select switch 4 (indicated by LED 12 being lit in the Metering section).

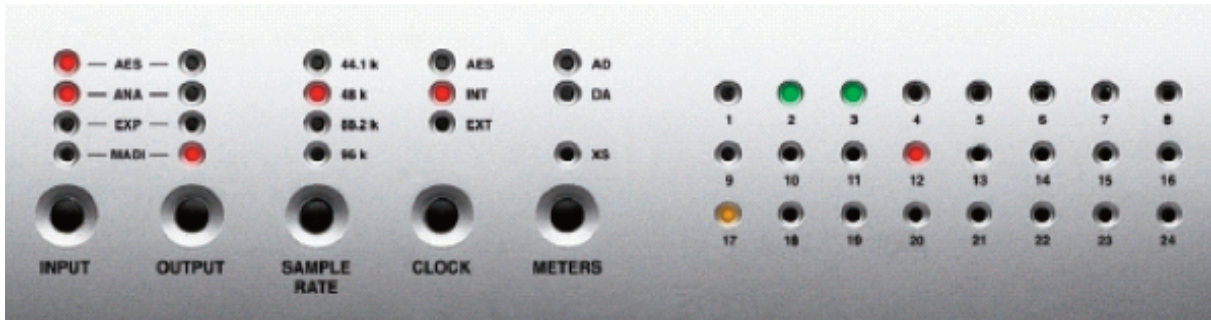   3) Press the INPUT button to change the connection mode (LED 4 will be turned off).

Selecting MADI High Speed/Non-SMUX² mode

Whether to use SMUX² mode or High Speed (a.k.a non- SMUX²) mode when working at high sample rates is not critical, as long as both devices have the same setting. For our example configuration we could leave the MadiXtreme and Alpha-Link set to their default, which is SMUX².

However, setting both of them to High Speed is preferable, as it will allow the Alpha-Link to correctly interpret changes in the Sample Rate made from the DAW computer, in the TRack software (PC) or in the MadiXtreme Preferences (Mac), when a low sample rate is selected.

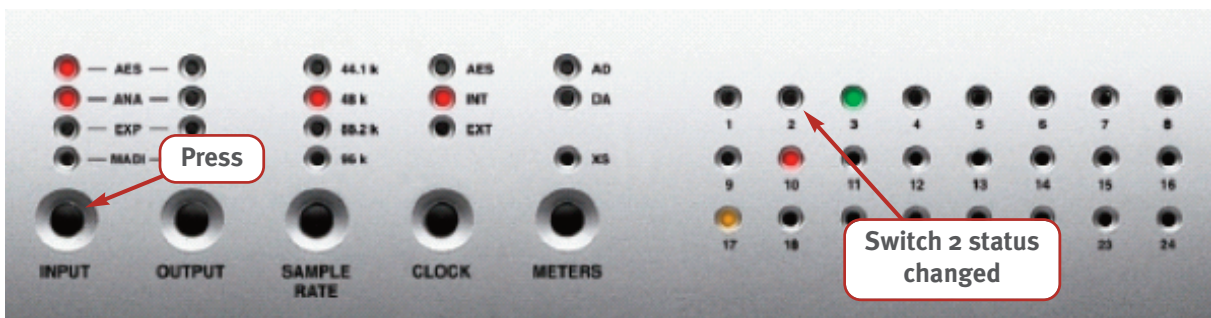While the Alpha-Link is still in Diagnostics mode, follow the steps below:

1) Page 1 should already be selected (LED 17 lit). Keep that selection.

2) Press the OUTPUT button repeatedly to select switch 2 (indicated by LED 10 being lit in the Metering section).

3) Press the INPUT button to change the connection mode (LED 2 will be turned off).
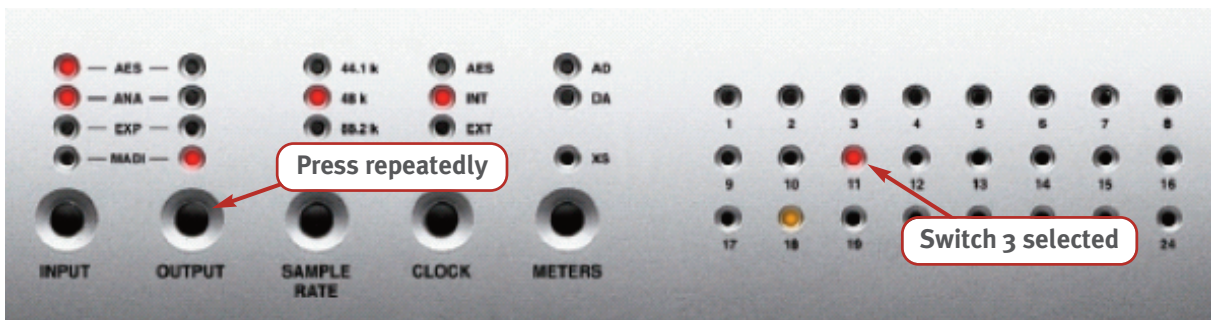
Selecting MADI as the EXT clock source

We have decided that the MadiXtreme would be used as clock master, with the Alpha-Link being synchronized to the embedded MADI clock signal from the MadiXtreme. By default, the external clock source selection (active when the EXT LED is lit on the front panel) is set to WordClock. We must change this to MADI.

With the Alpha-Link still in Diagnostics mode, follow the steps below:

1) The External Clock Source Selection is Option 3 of Option Switch 2. Therefore, press the METERS button to select page 2 (indicated by LED 18 being lit in the Metering section, instead of LED 17).
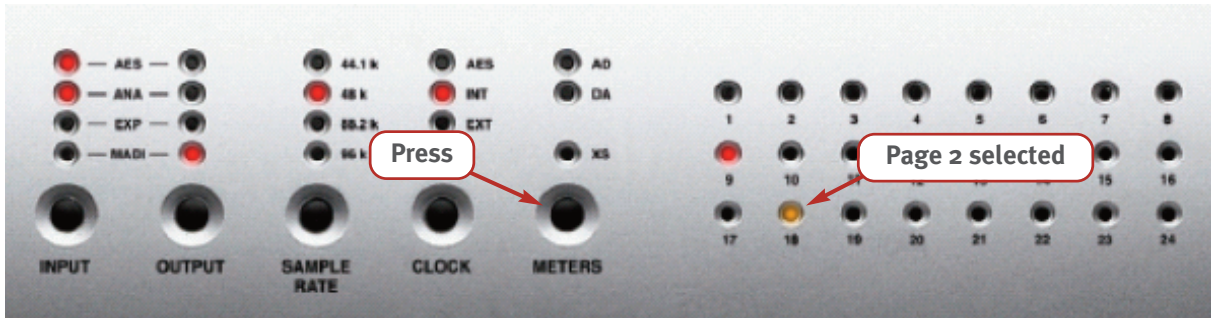
2) Press the OUTPUT button repeatedly to select switch 3 (indicated by LED 11 being lit in the Metering section).
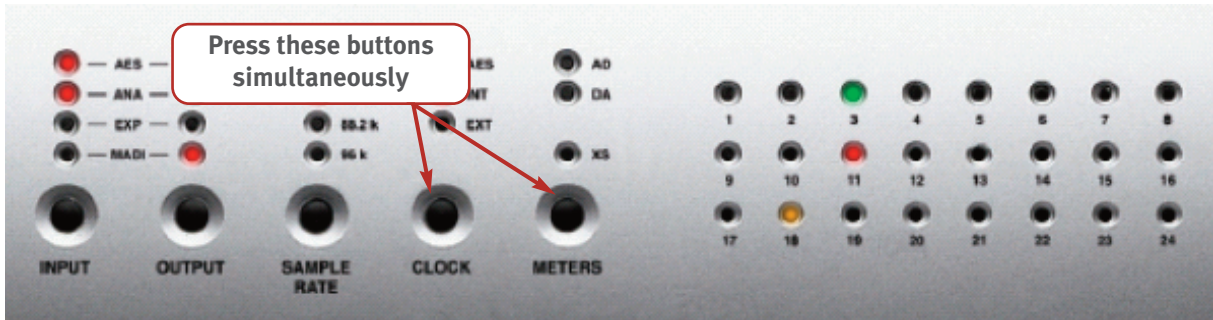

3) Press the INPUT button to change the external clock source selection from WordClock (default) to MADI (LED 3 will be turned ON).
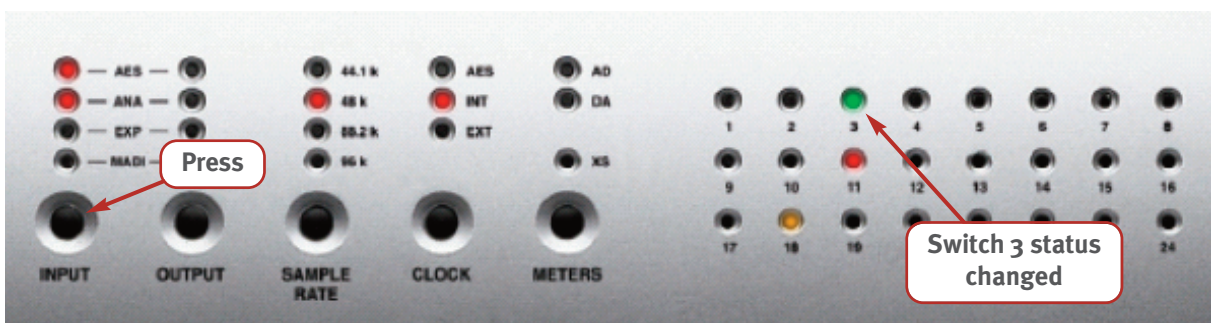
Leaving Diagnostics mode and saving the settings

Press the SAMPLE RATE and CLOCK buttons again to return to normal operation. This will also save the settings you have just selected.

The unit should not be powered off while in Diagnostics mode, otherwise the new settings will not be stored.
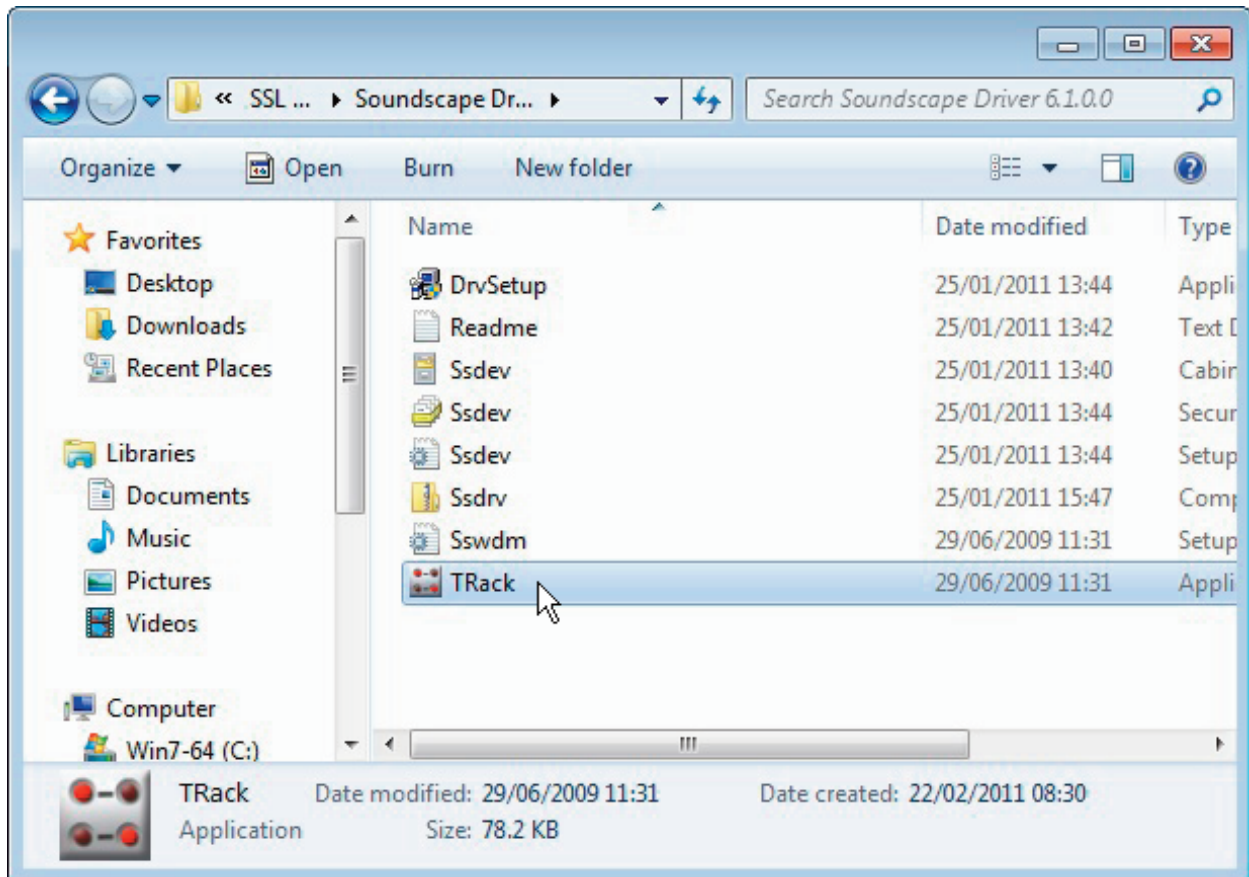
Setting up the MadiXtreme on PC

The best way to control MadiXtreme settings on PC is to use the TRack utility, which is included in the driver download files. TRack does not require an installation procedure. Just double-click its icon to run it directly from the folder it resides in. You may want to create a shortcut to TRack on your desktop or in your Start menu, as you are likely to use it often.

TRack refers to already installed driver files in order to run. If you have just installed or updated the driver, reboot the computer before using TRack.

In TRack, double-click the MadiXtreme's name to access its Properties window (or right-click its name and click "Properties").

To match the Alpha-Link, enter the following settings in the MadiXtreme Properties window.

In the Clock section:

- Click the "Master" radio button (note that this does not mean the MadiXtreme becomes the clock master, see the MadiXtreme manual for details).
- "Internal" must be selected in the Master menu (the menu at the top of the section).
- "96000 Hz" must be selected in the Sample Rate menu.
- The Slave menu in the middle of this section can be ignored.
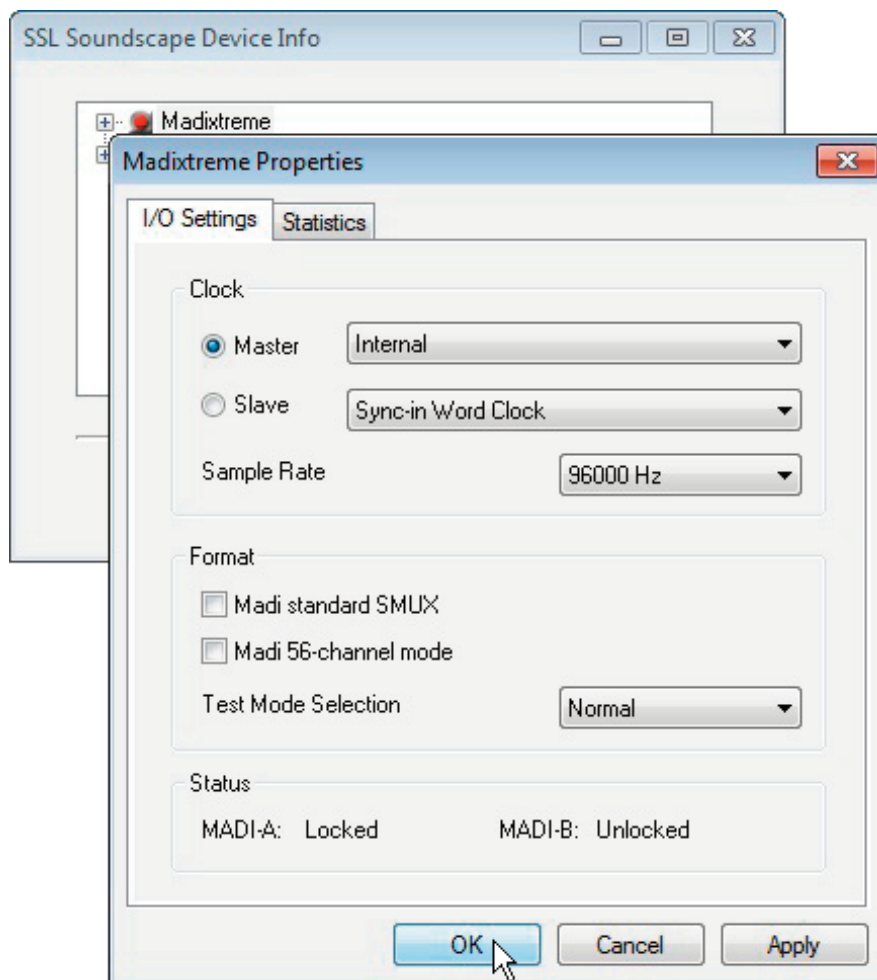
In the Format section:

- Ensure that Madi Standard SMUX is unticked.
- Ensure that Madi 56-channel mode is unticked.

If all settings are correct, the MADI A port should show as being "locked".

Click "OK" to close the MadiXtreme Properties window, then "Done" if you want to close TRack.

Setting up the MadiXtreme on Mac

On the Mac, click the Apple menu ┈┈┤ System Preferences ┈┈┤ MadiXtreme.
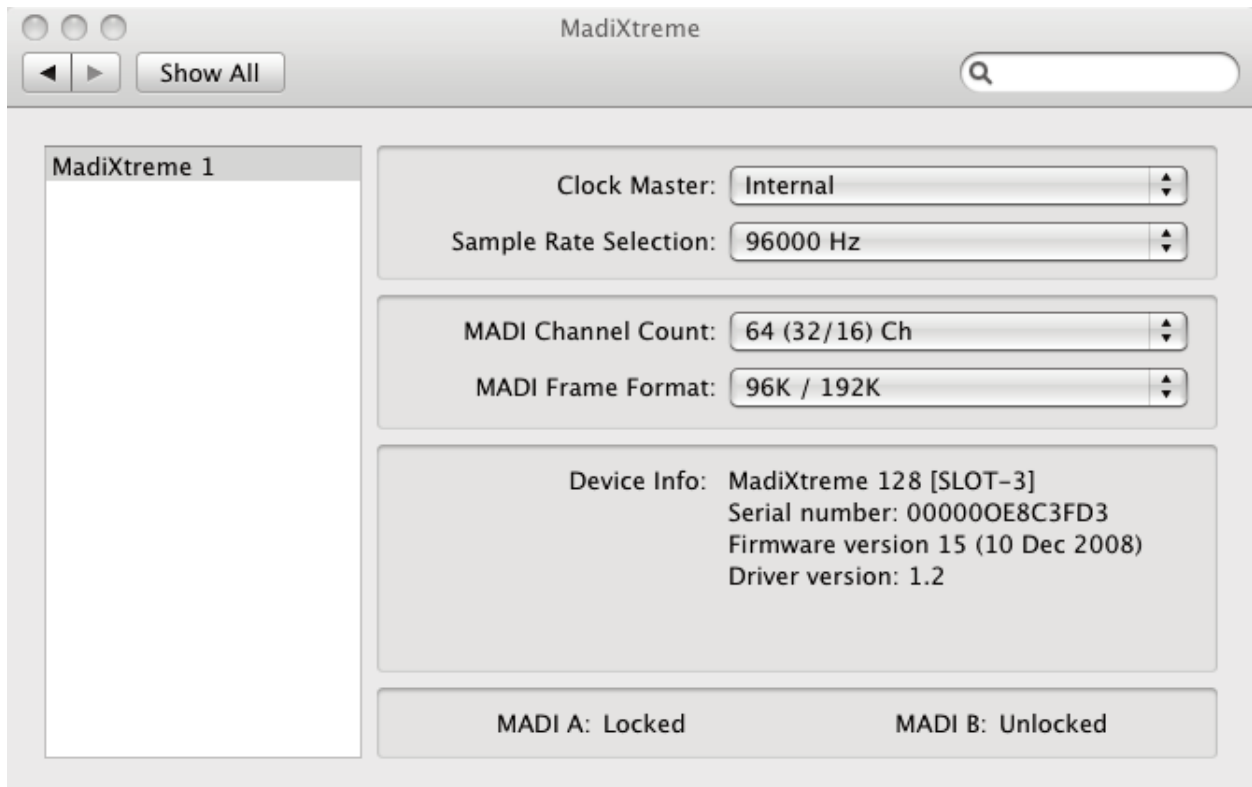
To match the Alpha-Link, make the following settings for the MadiXtreme using the selection menus:

- Clock Master: Internal
- Sample Rate Selection: 96000 Hz
- MADI Channel Count: 64 (32/16) Ch
- MADI Frame Format: 96K / 192K

If all settings are correct , the MADI A port should show as being "locked".

	MadiXtreme	
◀ ▶	Show All	🔍

MadiXtreme 1

Clock Master: Internal ⬍

Sample Rate Selection: 96000 Hz ⬍

MADI Channel Count: 64 (32/16) Ch ⬍

MADI Frame Format: 96K / 192K ⬍

Device Info: MadiXtreme 128 [SLOT-3]
Serial number: 00000OE8C3FD3
Firmware version 15 (10 Dec 2008)
Driver version: 1.2

MADI A: Locked   MADI B: Unlocked

Setting up the Alpha-Link as clock slave

Press the CLOCK button on the Alpha-Link's front panel, repeatedly if necessary, until the EXT LED is lit. The Alpha-Link will now lock itself to the MADI-embedded clock reference signal received from the MadiXtreme, and follow sample rate changes made in the TRack software (PC) or in the MadiXtreme Preferences (Mac).

The EXT LED should be lit

Press

The CLOCK LED should be lit solid to confirm lock. It may flash to indicate that the Alpha-Link is not receiving a valid clock reference, if the MadiXtreme is not yet correctly set as a clock master, or if incorrect settings have been selected in Diagnostics mode. If the LED flashes, try retracing your steps to identify and rectify the problem, and do not switch on your monitoring system before you have found the solution.
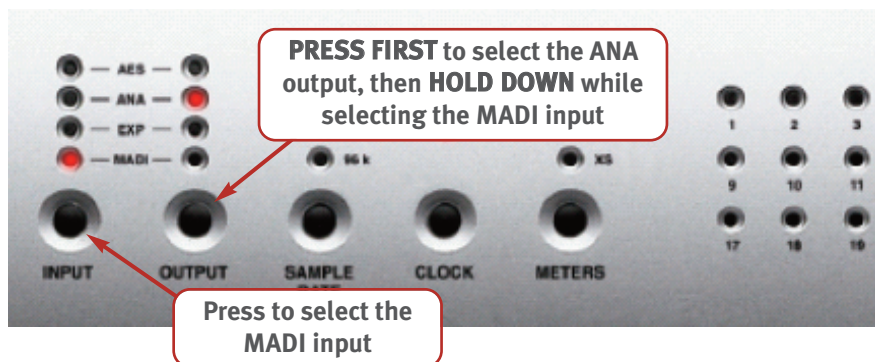
Setting up Alpha-Link routing

Our objective is to provide a computer-based DAW with 24 Analogue inputs and outputs and 8 AES/EBU inputs and outputs at 96kHz, with the Analogue inputs and outputs routed to/from MADI channels 1 to 24, and the AES/EBU inputs and outputs routed to/from MADI channels 25 to 32.

On the Alpha-Link, we need to set up the following internal routing:

- For playback, the MADI Input (receiving audio from the MadiXtreme/DAW) needs to be routed to the Analogue and AES outputs (connected to the monitoring system, a console, external processors, etc).
- For recording, the Analogue inputs and AES inputs (connected to sound sources) need to be routed to the MADI Output (connected to the MadiXtreme/DAW computer).
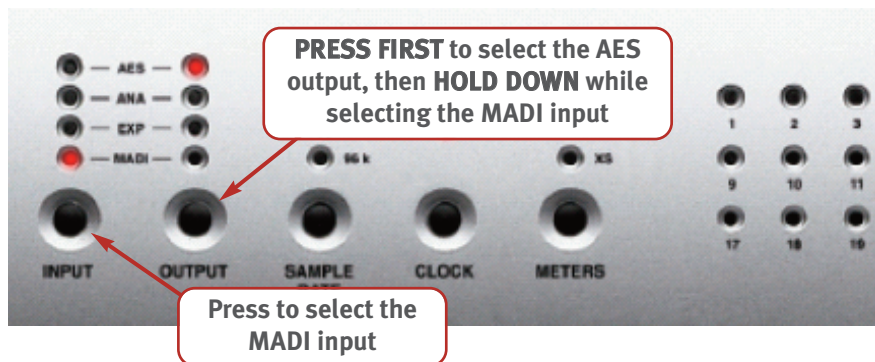
Routing MADI In to ANA Out (for playback)

1) Press the OUTPUT button, repeatedly if necessary, until the ANA Output LED is lit. Then hold down the OUTPUT button.

2) While holding down the OUTPUT button, press the INPUT button, repeatedly if necessary, until the MADI Input LED is lit.

3) Release the buttons. MADI In is now routed to ANA Out.

PRESS FIRST to select the ANA output, then **HOLD DOWN** while selecting the MADI input

Press to select the MADI input

Routing MADI In to AES Out (for playback)

1) Press the OUTPUT button, repeatedly if necessary, until the AES Output LED is lit. Then hold down the OUTPUT button.

2) While holding down the OUTPUT button, press the INPUT button, repeatedly if necessary, until the MADI Input LED is lit.
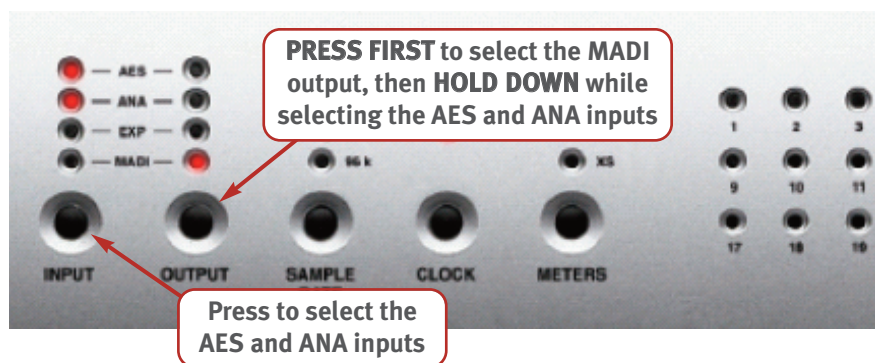
3) Release the buttons. MADI In is now routed to AES Out.

PRESS FIRST to select the AES output, then **HOLD DOWN** while selecting the MADI input

Press to select the MADI input

Routing ANA In and AES In to MADI Out (for recording)

1) Press the OUTPUT button, repeatedly if necessary, until the MADI Output LED is lit. Then hold down the OUTPUT button.

2) While holding down the OUTPUT button, press the INPUT button, repeatedly if necessary, until the ANA Input LED and the AES input LED are both lit.

3) Release the buttons. ANA In and AES In are now routed to MADI Out.

PRESS FIRST to select the MADI output, then **HOLD DOWN** while selecting the AES and ANA inputs

Press to select the AES and ANA inputs

The Alpha-Link needs up to 20 seconds to store new settings. Powering it off too quickly after selecting new settings would cause them to be lost. This does not apply to Diagnostics mode settings, which are stored instantly when leaving Diagnostics mode by pressing the SAMPLE RATE and CLOCK buttons.

Testing the system and a word about headphones

If you have followed all these instructions correctly, you should now be able to use 24 Analogue and 8 AES/EBU inputs and outputs to record and play back audio to/from your DAW.

If you open an existing project/session in your DAW software, ensure that the project/session sample rate is 96 kHz.

If needed, please refer to your DAW manual to learn how to select inputs and outputs.

Alternatively, chapter 21 of the the MadiXtreme Reference Guide includes short, step by step Nuendo, Sonar, Samplitude and Logic Pro recording setup examples.

In order to fully test the system, you will also need to connect the Alpha-Link to, at least, your external sound sources and monitoring system.

If you want to run a short, play back only test before you have connected all your external devices, set the Alpha-Link's Metering section to D/A by pressing the METERS button on its front panel. Then use an audio track of your DAW, or a test tone generator plug-in, to output a signal via a MadiXtreme output numbered between 1 and 24. Ensure the signal level is high enough and you should see activity on the metering LED with the same channel number (because the Alpha-Link's MADI inputs 1 to 24 are routed to the Analogue outputs with the same numbers).

If you wish to use the headphones output, please note that it duplicates the signals of Analogue outputs 23 and 24. If you select MadiXtreme outputs 23 and 24 to send signals from your DAW, you will be able to hear these signals in the headphones.

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