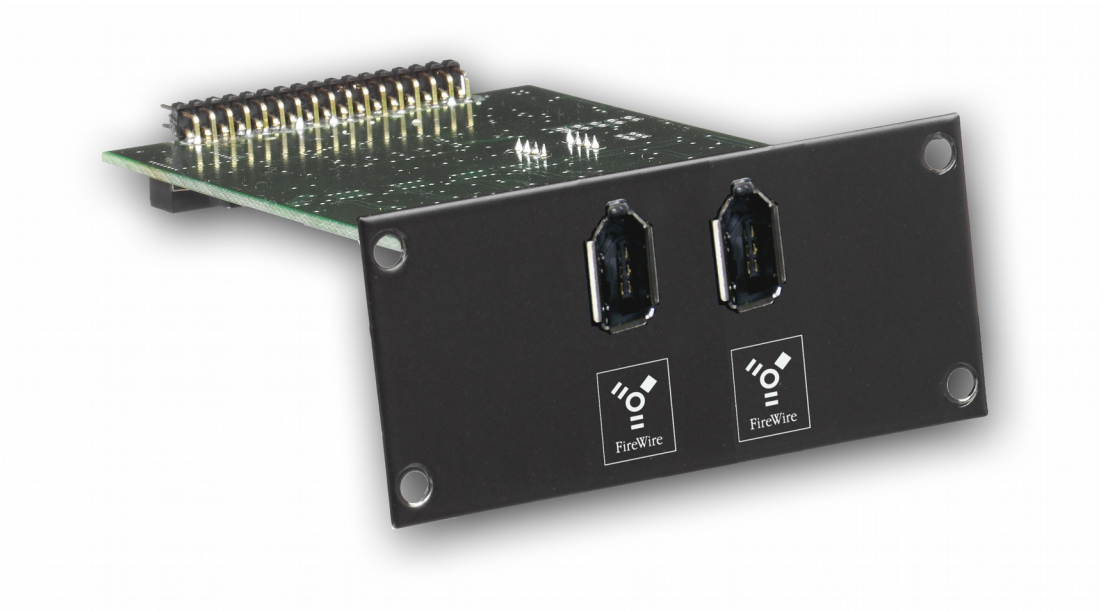

Mytek FW DIO Card

User Manual

ver. 1.4 / June 2015

This manual may be updated

Download the newest version at:

http://www.mytekdigital.com/download_library/

For technical support, technical tips and support check:

http://www.mytekdigital.com

or contact Mytek tech support at:

highend@mytekdigital.com

or at:

tel. (646)-613 1822
fax.(212)-202 5331

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211 Centre Street
New York NY 10013
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Introduction

The Mytek FW DIO Card is an optional card that is installed into the rear expansion slots of the Mytek 8X192 ADDA converter. With this card installed the Mytek 8X192 ADDA can be directly connected to a MAC OS or Windows computer via FireWire. The card may be installed by the user as described further in the manual.

Before You Begin

Before connecting the DIO-FW card please check if the most current firmware (version 6.0 or later) is installed in the 8X192 converter. To verify the version, locate the firmware chip (8 pin DIP chip in a socket near the aluminum heat sink) on the main converter board or contact Mytek should you require assistance.

In the support section of the Mytek website at:

http://www.mytekdigital.com/download_library/

you will find current detailed information about firmware versions and most current firmware and driver update instructions. (If necessary contact Mytek and request that appropriate firmware be sent to you.)

Quick Start

1. **Installation of DIO-FW card**
   Remove the top cover from the converter, unscrew the *DIOCARD1* or *DIOCARD2* slot plate and install the DIO-FW card using the existing screws in either slot. If there is a Protools DIO card installed it will work in slot 1 only. All other DIO cards including Firewire will work in either slot. The card must be installed with the components facing down. Double check that all connector pins match up with the pins of the connector on the main converter board properly. Pin mismatch may damage the card or converter. Follow detailed installation instructions further below.

   Remember to turn off and disconnect power and to disconnect signal cables while working with the top cover removed.

2. **Driver Installation**
   Drivers and the Control Panel should be installed before the first connection of the converter to the computer. Most current drivers are available in the download library at www.mytekdigital.com. Reboot the computer after installation.

3. **Connecting the card to the computer**
   Turn off the ADDA 8x192 converter before plugging in the Firewire 400 cable. The computer can be left turned on. Several converters can be chained together with Firewire cables. The maximum number of converters in a chain depends on the sampling frequency. Frequency 176–192 kHz allows for up to two converters, 88–96 kHz for up to four converters and 44–48 kHz for up to eight converters. After making the connections, the converter's can be powered on.

3. **Connecting the clock signal**
   A single or the first converter in the Firewire chain provides clock source for the card. Typically it will be set to internal clock, although if necessary, can be set to receive an external wordclock source. If there are two or more converters in a Firewire chain, they must be connected with a Firewire cable where the first converter is a clock master (on internal clock) and the rest are slaves (EXT. Clock Source set to DIOCARD1 or 2 depending on FW card.)

4. Configuration

On first power up of the converters, each converter should be recognized by the computer and have the driver installed automatically. Further configuration of inputs and outputs is done in your DAW software.

In the Mytek Firewire Control Panel (Mac: in System Preferences) check if the desired sampling frequency is displayed and if the ADDA 8x192 converter is set as the clock source. If more than one converter is attached, each one will have unique name.

Card Installation

The DIO-FW card can be installed in either the DIOCARD1 or DIOCARD2 slot. The card can be installed together with any other card available for the 8x192 converter. If Protools DIO card is installed it will work in slot 1 only. All other DIO cards including Firewire will work in either slot.

Before installing the card, check if the converter's firmware supports DIO-FW card (version 4.5.3 or later). If not, contact Mytek and request current version.

8x192 ADDA converter rear panel

WARNING!

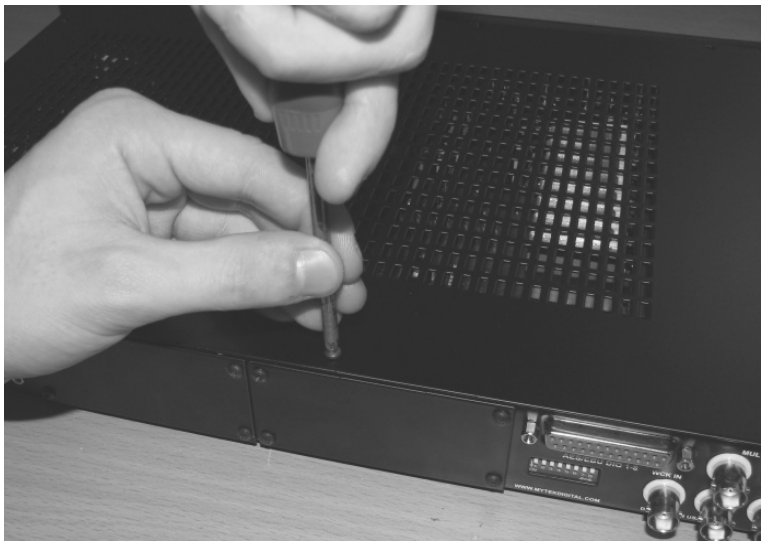
Remember to follow basic safety rules on electronic device handling while opening the converter:

- ✔ Keep your hands dry,
- ✔ If floor is carpeted ground spray surroundings with water mist and ground your wrist to the chassis before unpacking and handling the DIO card.
- ✔ **Turn off power and detach power and signal cables while working with the top cover removed.**

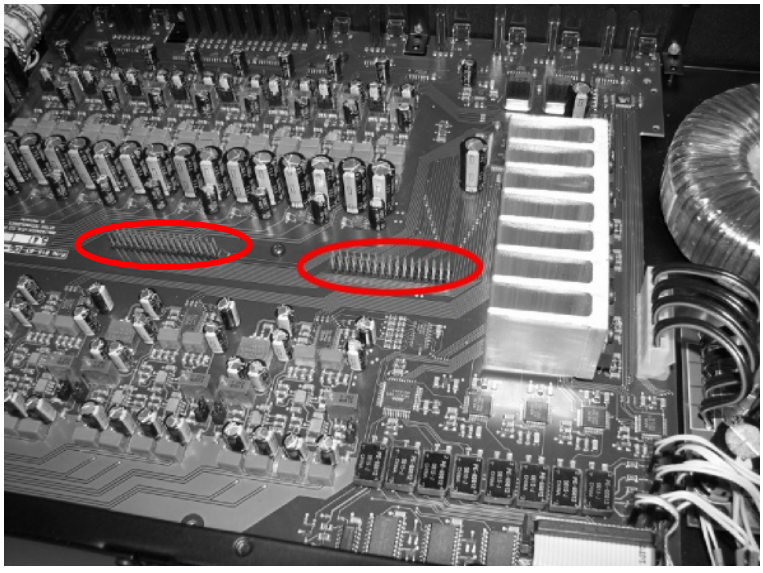
To install the DIO-FW card:

1. Check if the power cord and all signal and clock lines are disconnected.

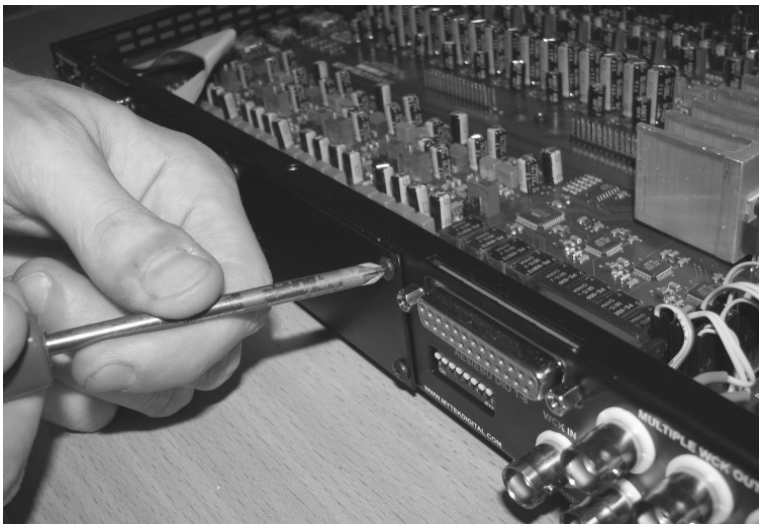
2. Remove the top cover.



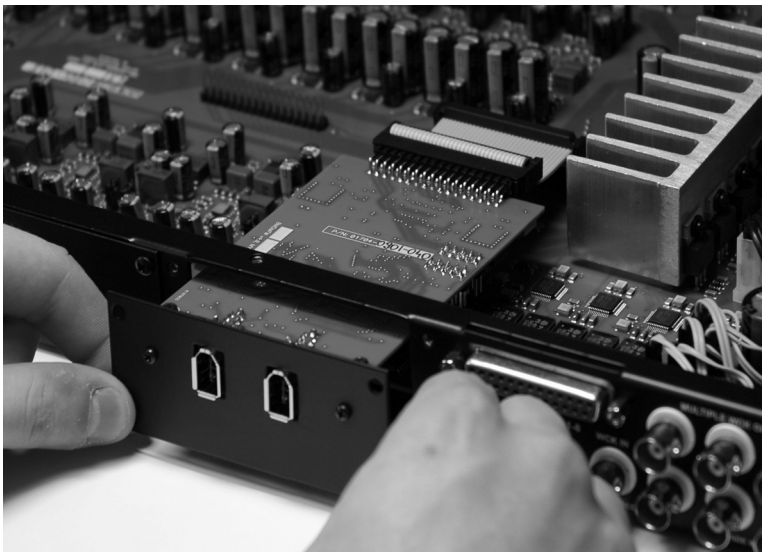
3. Locate the DIOCARD1 or DIOCARD2 expansion slot on the mainboard.



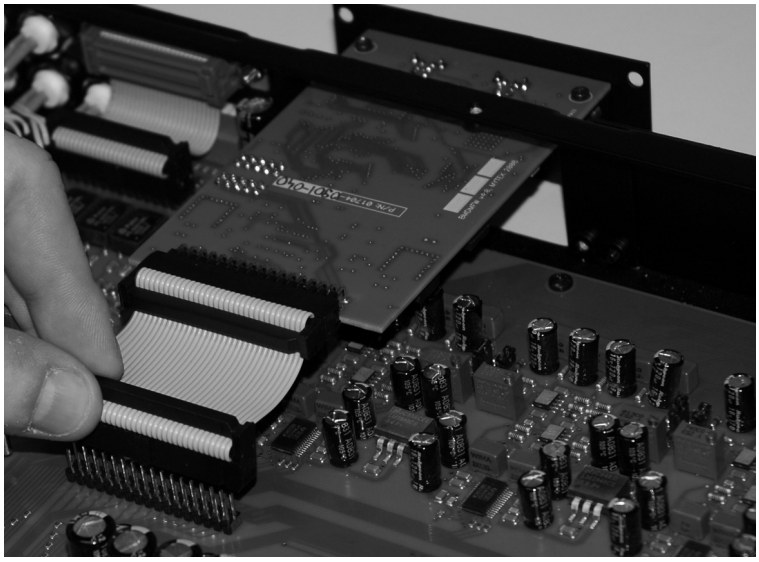
4. Unscrew the cover plate of the selected slot on the rear panel.



5. Partially insert the card from the back of converter.



6. Connect the card ribbon cable to the DIOCARD1 connector on the mainboard. Double check all pin alignment.



7. Gently push the card inside and secure it with four screws

8. Attach converter top cover.

9. Connect power and signal lines.
10. Turn the converter on.

After boot up (which takes approx 20 sec) the converter will switch to regular mode, and FW DIO Card (DIOCARD1 or DIOCARD2) can now be selected as signal source for DAC. Typically "analog" would be selected as ADC source (see converter manual).

Connecting Clock Signal Line

In a system with multiple units, double check that the configuration of clock signal lines, synchronization sources and sampling frequencies of all converters in the system are correct.

Single converter

If a single converter is used in the system, using it's internal clock will provide the best performance (regardless of what a clock dealer will tell you.) If external clock is used for systemic reasons *SAMPLE RATE* must be set to *EXT*. by pressing and holding *EXT CLOCK SOURCE* switch.

Master 8x192 ADDA converter front panel

Correct clock configuration is necessary for the proper operation of the converters and for the best sound quality. Make the 1st Mytek in the chain the clock master for the whole studio. There is no benefit of using a dedicated clock. Clocking off the Mytek's internal clock generator produces superior results because the clock and the clock line current drivers are the best in the industry.

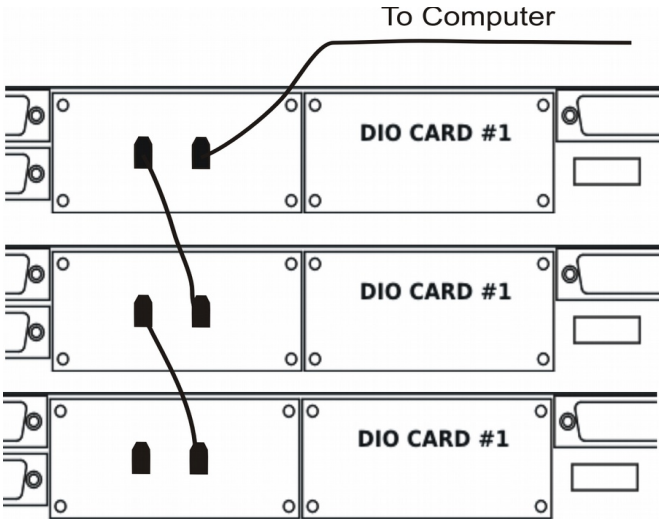
Check if the selected sampling frequency of the converter (FS) matches the sampling frequency in FW Control Panel.

Multiple converters / digital devices

The 8X192 ADDA converter has 6 clock outputs. Clock signal originates from the very precise CX797 module. Because of that, the 8X192 ADDA converter is the best clock signal source in the majority of multiple device configurations. There is no reason to attempt clocking 8X192 ADDA externally from a dedicated clock generator. That clock, no matter how good, will always be more jittery due to long cable run and thus cannot compete with built in internal clock.

Changing external synchronization source while the program is running may result in improper operation of converters and loud cracks in the analog section.

Our recommended setup when using the 8x192 ADDA with additional 8x192's utilizing the FW DIO is to have the master unit on Internal clock and the slave units (connected with Firewire cable) set to Ext. Clock Source DIOCARD1 or DIOCARD2 depending on location of the FW DIO card. All other digital devices can receive wordclock from the 8x192's multiple clock outputs.

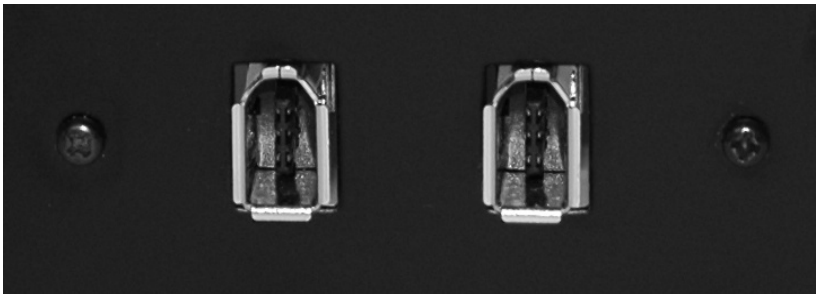


It is recommended to connext all units with word clock signal in order to achive best performance

FireWire Chain

Input Connection

There are two FireWire ports on DIO-FW card. Either one can be used for computer connection. The second port can be used to daisy chain a second converter.



Firewire connectors on the back of FW-DIO card.

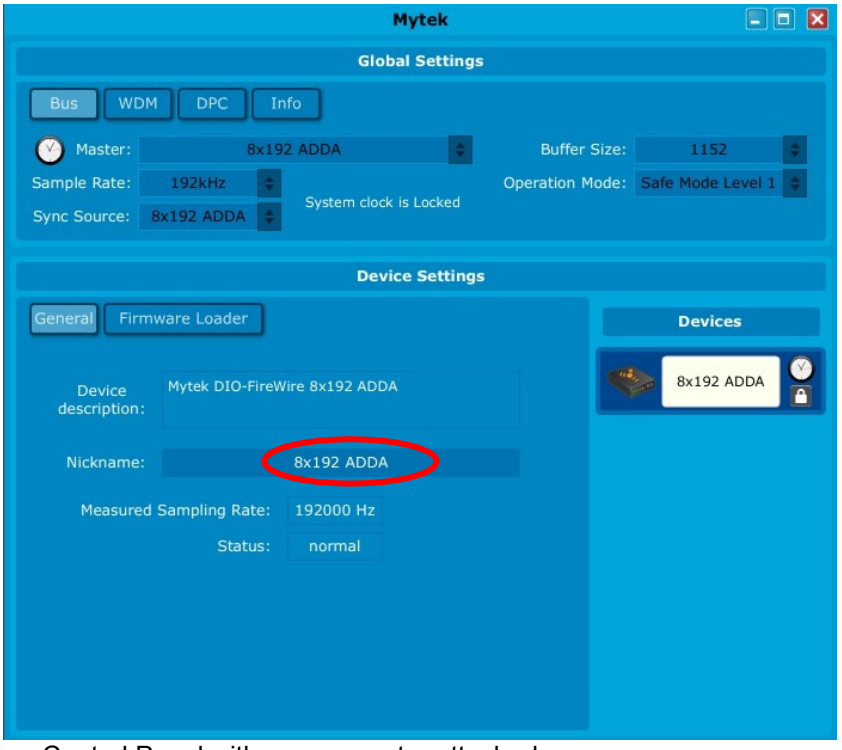
If several converters are connected, each must have a unique name. When the converter is turned on for the first time, it receives a name "8x192 ADDA". In the case of multiple units the name can then be changed in the driver control

Signal Routing

Every connected ADDA8x192 converter provides the system with 8 input and 8 output channels. All channels are detected as a single Mytek interface. If more than two channels are used, audio software which understands multichannel I/O must be used. Channel routing is typically assigned in a dedicated hardware control panel of the audio software application.

Mytek Driver Control Panel

The Control Panel controls the converter's operating parameters. It will display all active devices in a chain connected to a particular FireWire computer connector.

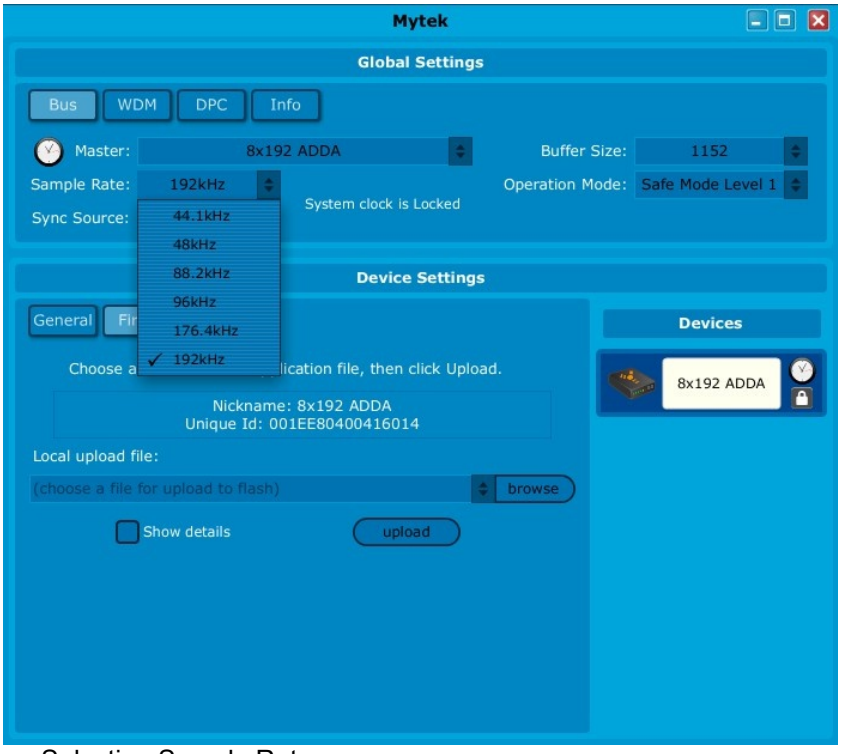


Control Panel with one converter attached

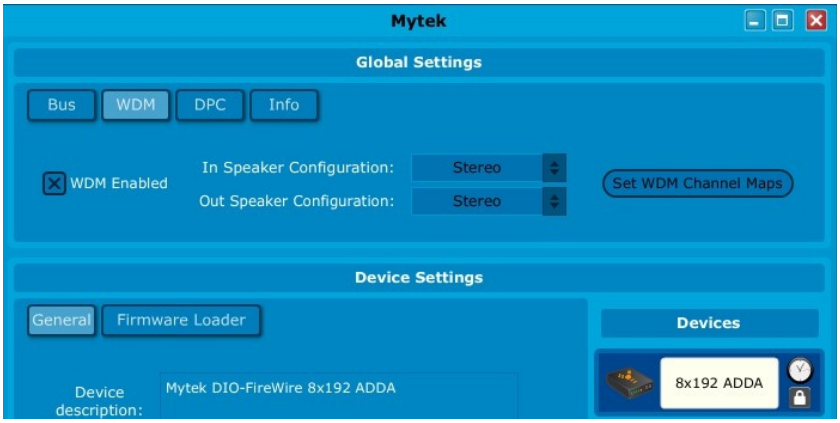
Device (converter) nickname is displayed and can be changed in the Control Panel. In the case of multiple converters, each should be given a unique name manually.

Select 8x192 ADDA as the sync source, set the sample rate in the driver control panel to that currently used by audio software. Changing sample rate in the control panel will force the change on the converters front panel.

Selecting 8X192 ADDA as sync source



Selecting Sample Rate

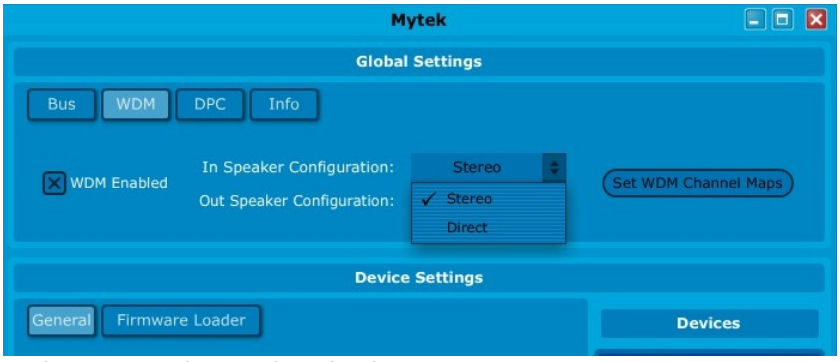


Windows version of the Control Panel allows user to choose ASIO or WDM mode of operation. Generally start with WDM, and experiment with ASIO later.

Mode selection screen

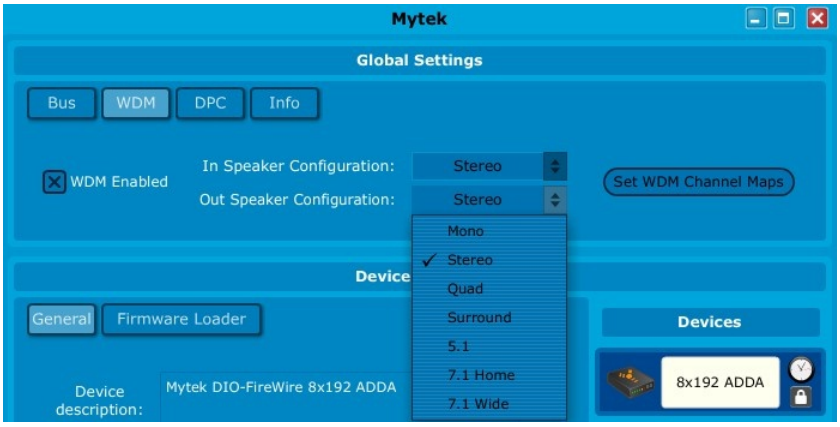
In the WDM mode operating channels can be mapped to physical channels of the device.

Input channels offer two options: Stereo or Direct.



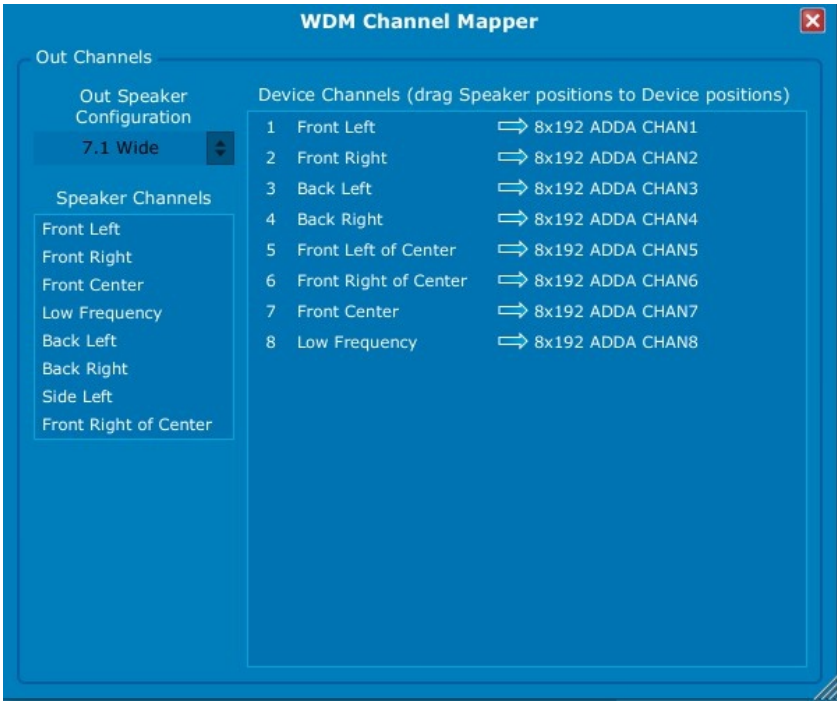
Input operating mode selection

In the output channel selection more options are available. They include standard settings for the multichannel audio.



Output operating mode selection

You can now set how mode channels will be mapped to the converter's physical channels.

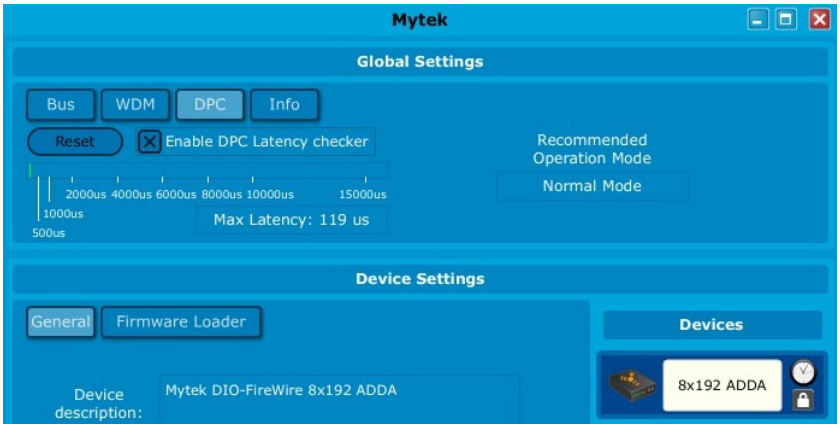


Channel mapper

Feasibility of driver's operation modes depends on the computing power at hand. If computer is too slow, dropouts will occur in the audio signal. Typically shortages of computing power are short and intermittent. Increasing data buffer size, and therefore the latency, would usually result in dropout reduction.

This function has been implemented in the driver under different modes of operation: one normal mode and several "safe modes". Use the DPC tab to check computer latency and suggested driver operation mode.

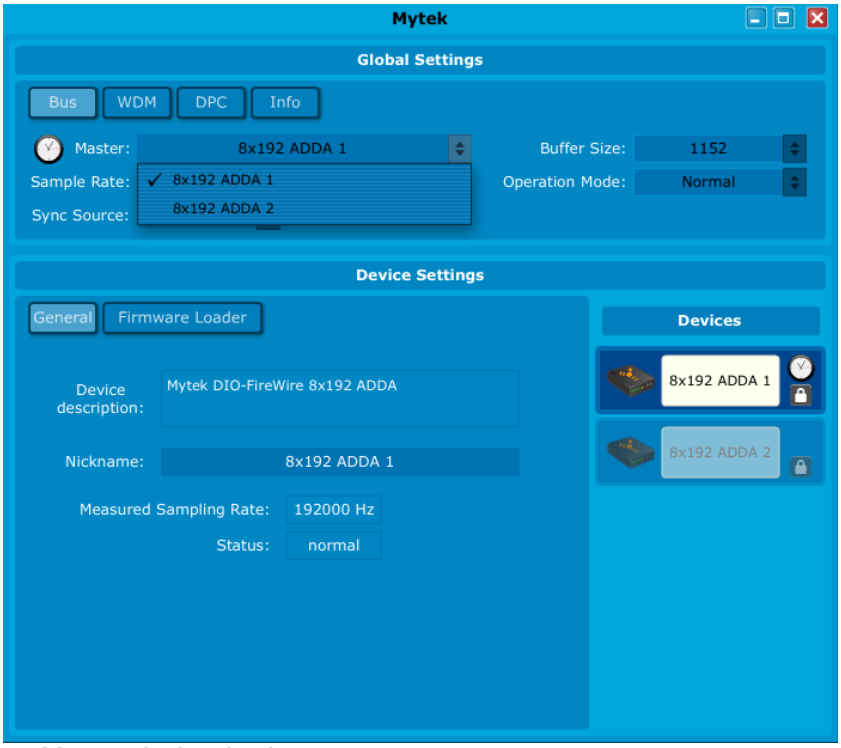
After measurements are completed and computer returns to its normal operation, suggested driver operation mode should appear.



Computer latency measurement.

If two or more converters are connected, each of them has to have a unique name.

On the right side of the Control Panel there is a box which lists converters and allows to choose the one which is about to be configured. The one providing master clock is marked by a clock icon.



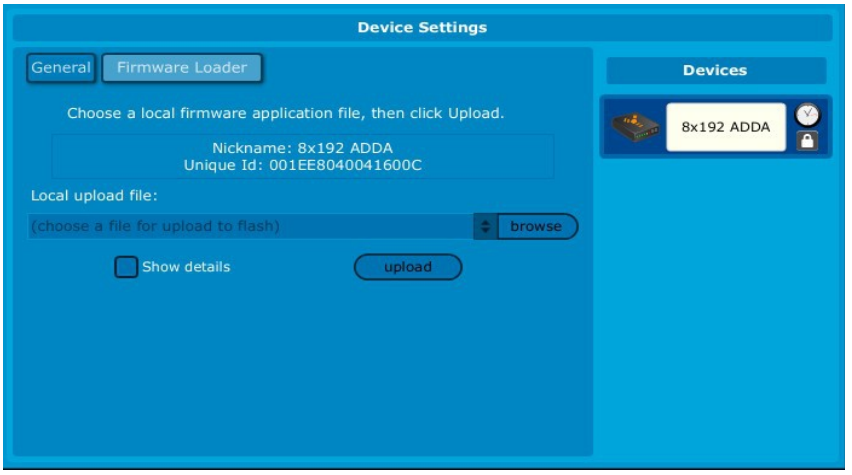
Master clock selection

Card firmware update

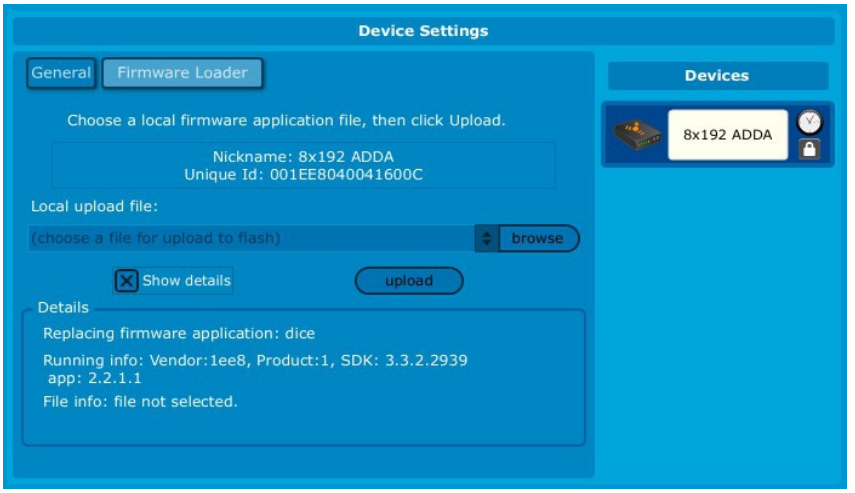
To perform firmware update of DIO FW interface card:

1. Connect 8x192 ADDA converter to computer via FireWire and turn it on.

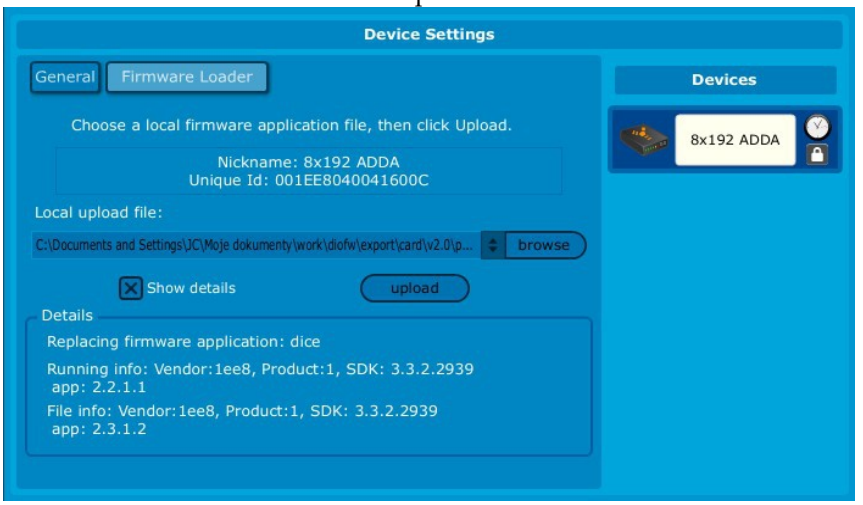
2. Start Mytek control panel and press "Firmware Loader" button.



3. Choose "Show details" box.

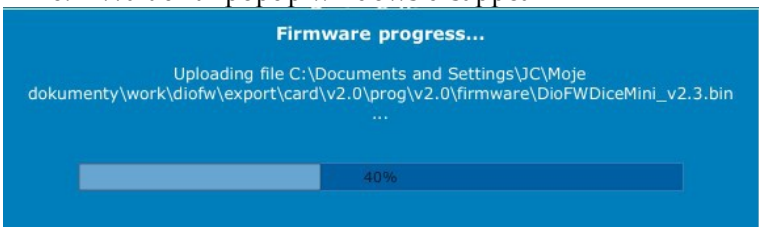


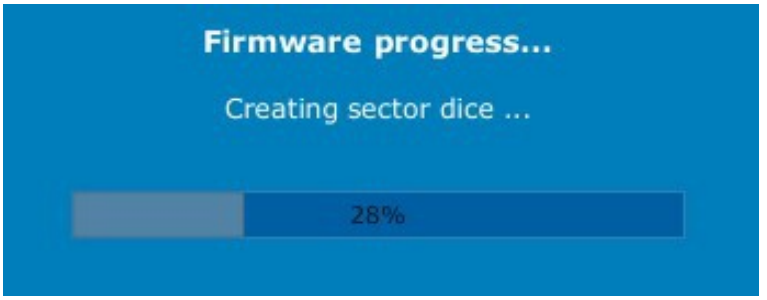
4. Browse for firmware update file.



5. Compare versions of firmwares. If browsed file version is newer press “upload button”.

6. Wait until popup windows disappear



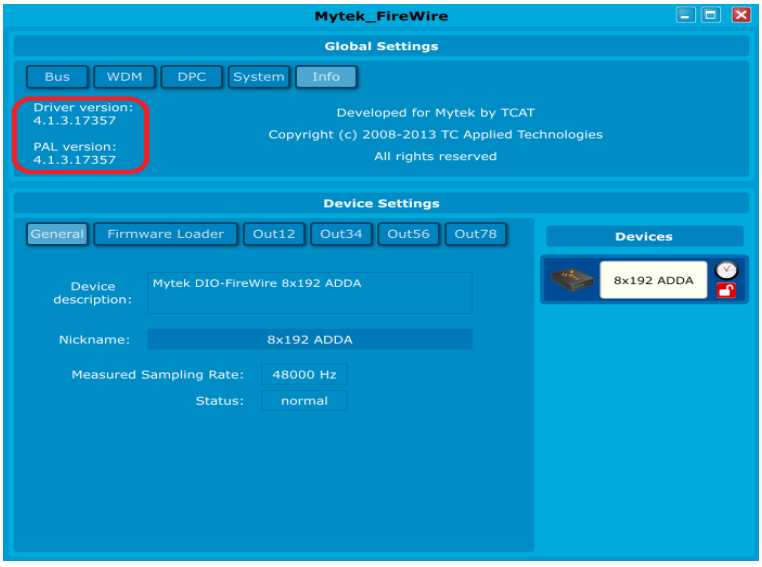


7. Restart 8x192 ADDA converter.

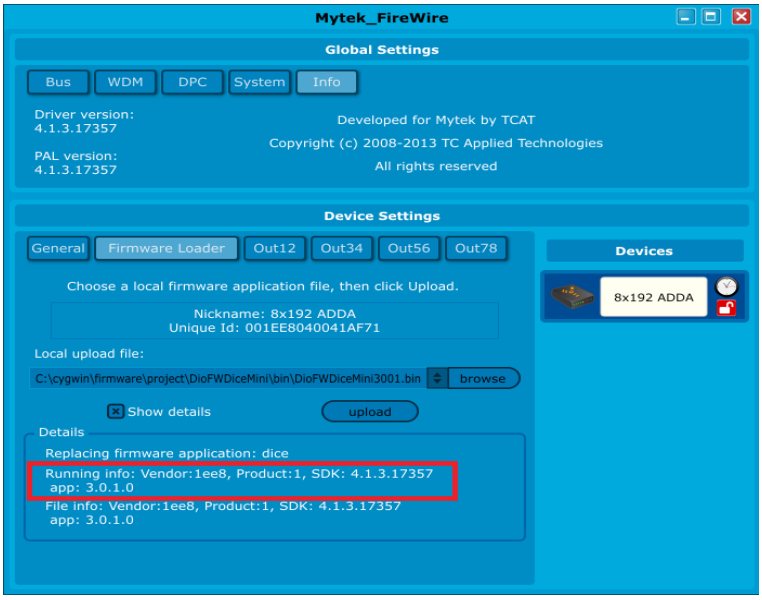
The firmware is now updated.

Low latency mixer

With the latest version of both firmware(3.0.1) and driver (4.1.3) it is possible to use low latency mixer build into the card. This feature allows user to connect arbitrary chosen input (both analog and digital) of 8x192ADDA to arbitrary output with latency below 1ms. In order to use mixer first make sure you have latest driver installed:

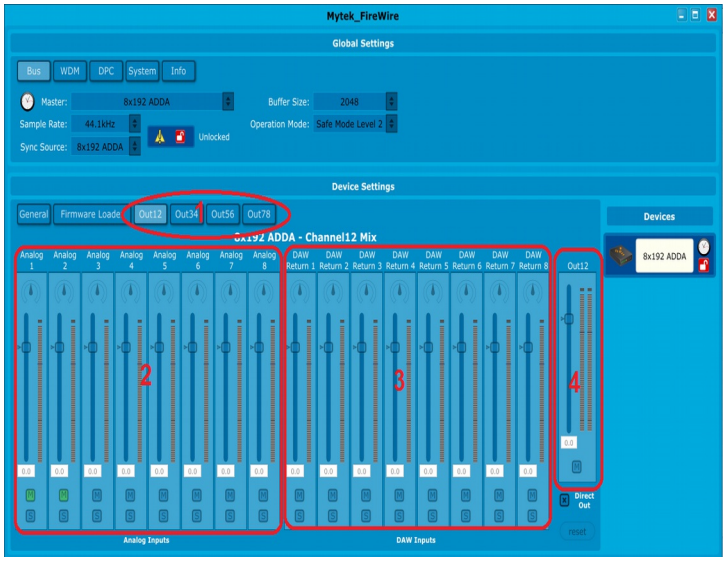


Another thing to confirm is that you are using latest firmware (3.0.1) for DIO FW card:



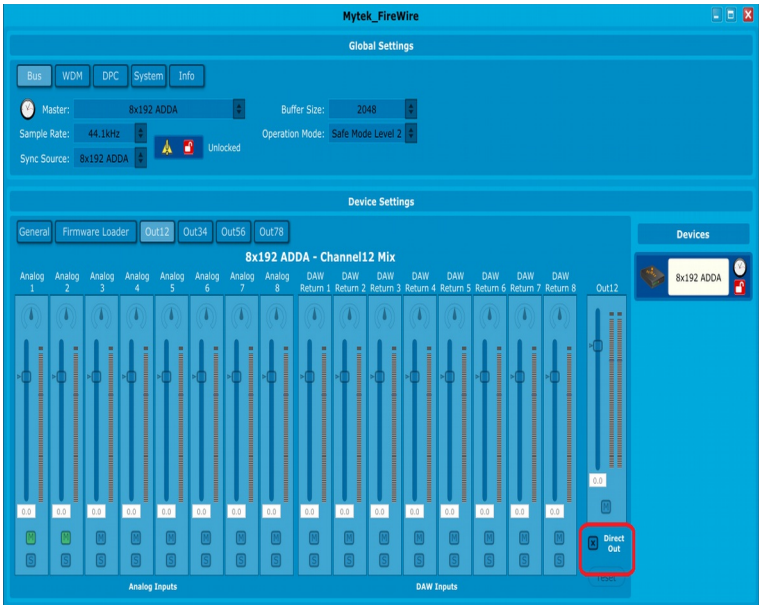
If above conditions are met

you should be able to see tabs corresponding to pairs of outputs from the device:



1. Tab selecting the output pair of the mixer
2. Inputs from 8x192ADDA analog section
3. Inputs from DAW
4. Selected output pair volume control

Each of 16 inputs ca be individually mixed into each of 8 outputs. If you don't want to use a mixer on particular output pair it is possible to use the direct out option, which disables the mixer on that output:



Mainboard firmware update

This update might be necessary to bring the converter's main board up to date to allow its operation with the firewire card.

Generally installed main board firmware should be of rev. 6.0 or greater. Contact Mytek via email to obtain current firmware chip.

WARNING!

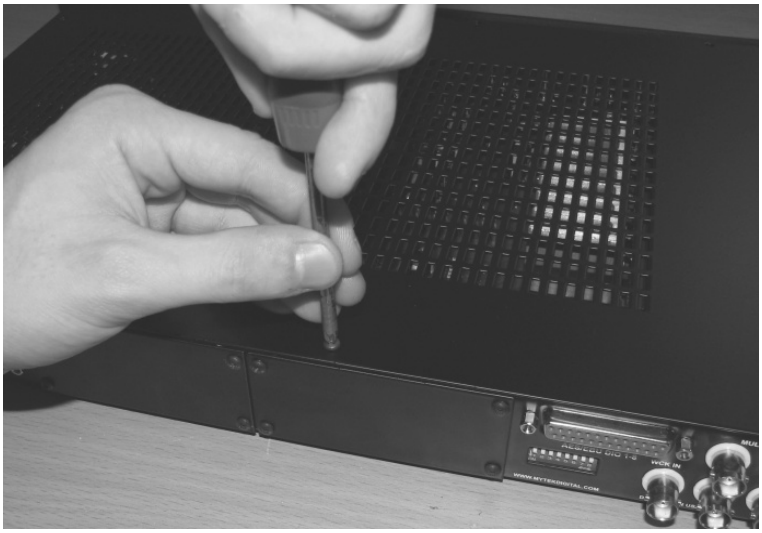
Remember to follow basic safety rules about handling of electronic device while opening the converter:

- ✔ keep your hands dry,
- ✔ **remember to turn off power and disconnect power and signal cables** while working with the top cover removed

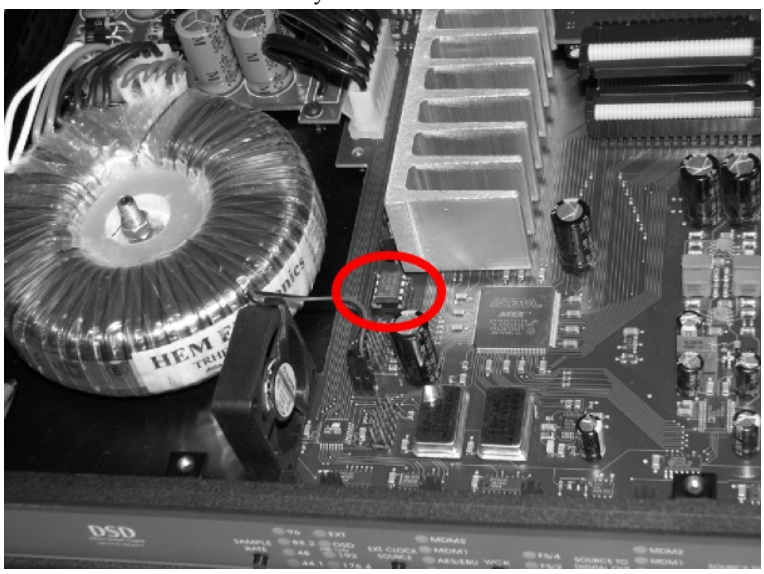
To perform firmware update of 8X192 ADDA converter:

1. Check if the power cord and signal and clock lines are disconnected.

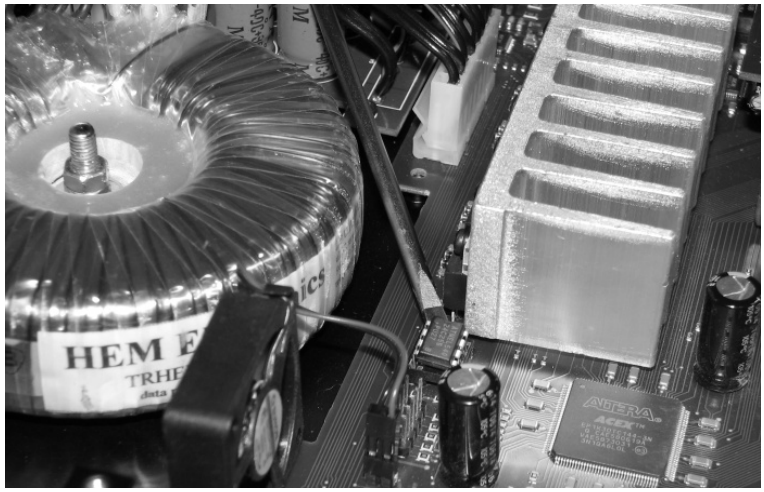
2. Remove the top cover.



3. Locate the memory socket on the converter main board.

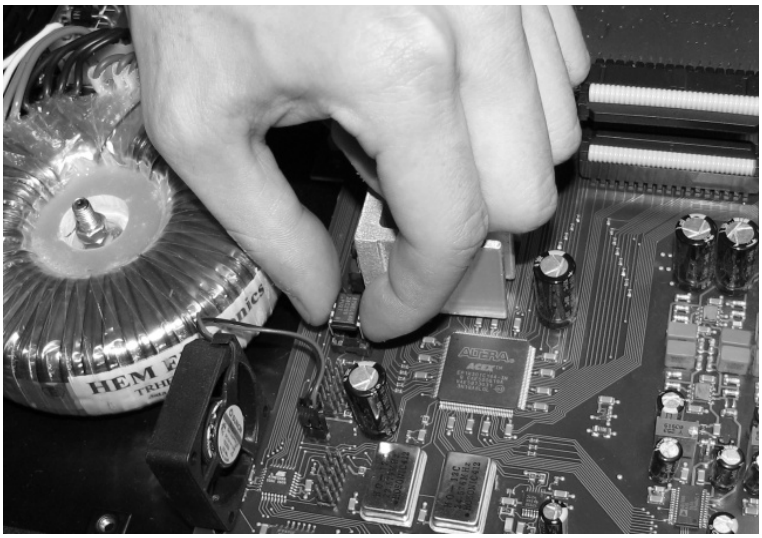


4. Gently remove old memory chip.



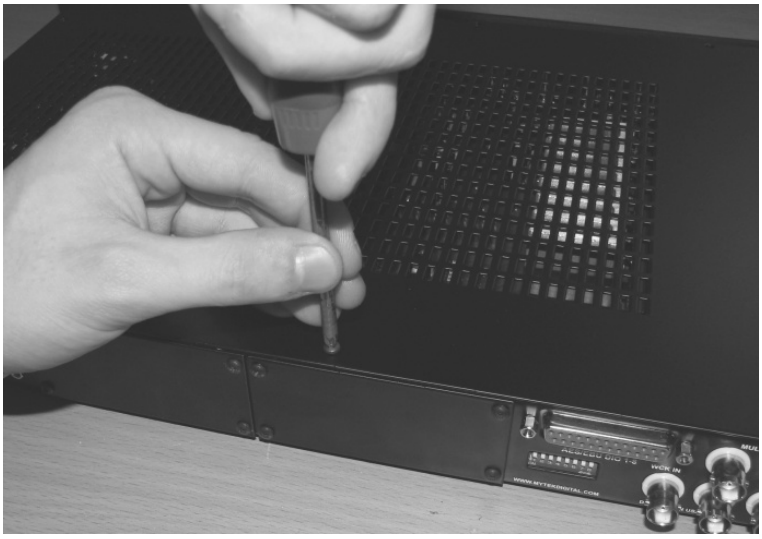
To avoid damaging memory pins, remove the chip vertically. Retain old memory chip.

5. Carefully insert new memory chip in the socket. The chip slot (pin1) should be matching the socket slot ie must be facing back of the unit. If necessary gently manually bend pins inward, to match the holes in the slot.



During installation check correct chip orientation.

6. Mount the top cover back.



7. Attach power cord and other cabling.

8. Turn on the converter.

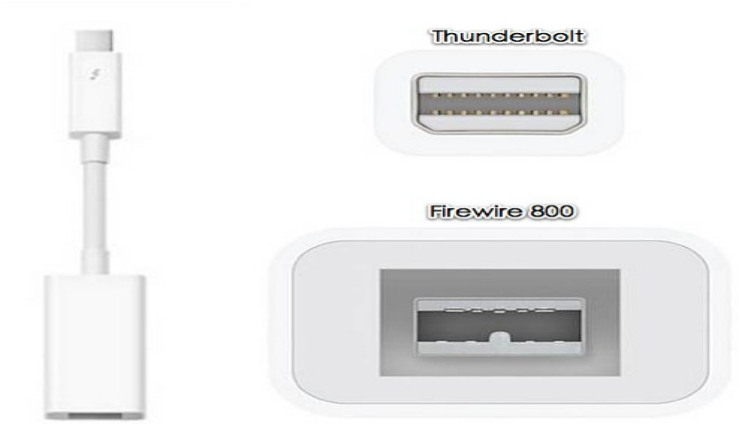
For about 2 seconds no LED should be lit on the converter's front panel, as new software is copied from memory to the main board chips. Then, all LEDs should turn on momentarily for about 10-20sec, and subsequently the unit should begin normal operation.

Check Mytek webpage for information on the latest firmware versions.

www.mytekdigital.com

Thunderbolt to FireWire adapter

The card has been tested under OSX 10.8 with Thunderbolt to FireWire adapter.

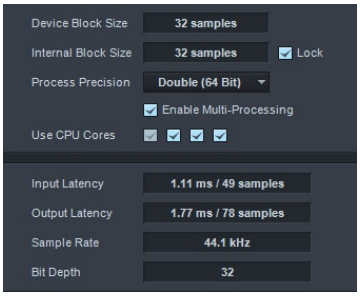


The adapter is transparent which means that it doesn't require any additional drivers to work. Card should be detected automatically if the FireWire driver is installed on the computer.

Specifications

Latency

12 buffer sizes available: 32, 48, 64, 96, 128, 192, 256, 384, 512, 768, 1024, 2048



A lower Sample Buffer will result in lower latency.

Drivers

Windows XP SP2 / 7 / 8 (32 & 64 bit) including ASIO2

Apple Mac OS X 10.5.8 Intel or up

Windows and Mac OSX drivers are identical in terms of functionality and features.

System Requirements

Computer with OHCI compatible FireWire 400, FireWire 800 port (via adapter cable) or Thunderbolt (via adapter) .