

USBSTREAMER

10-CHANNEL USB AUDIO INTERFACE

TOSLINK/ADAT
BOX VERSION



I2S/TOSLINK/ADAT
KIT VERSION



User Manual



Revision history

Revision	Description	Date
1.0	User manual – Initial version	20-06-2012
1.1	Mac OSX configuration	09-08-2012
1.2	Adding USBStreamer B information + Win8 setup	26-05-2014
1.3	Updated installation procedure, Mac firmware update	22 March 2016
1.4	More detailed I2S information	25 March 2016
1.5	TDM firmware details	28 Aug 2017



TABLE OF CONTENTS

- Important Information4
 - System Requirements – Windows.....4
 - System Requirements – Mac OS X.....4
 - Disclaimer/Warning.....4
 - Warranty Terms.....4
 - FCC Class B Statement4
 - CE Mark Statement.....5
 - A Note on this Manual.....5
- 1 Product Overview6
 - 1.1 Firmware versions6
- 2 Connectivity7
 - 2.1 USB and optical (box and kit versions)7
 - 2.2 I2S/TDM connectivity (kit version only)7
 - 2.2.1 I2S/TDM Pinouts.....8
 - 2.2.2 I2S Clock lines9
 - 2.2.3 TDM Clock lines9
 - 2.2.4 I2S Data lines9
 - 2.2.5 External power 10
- 3 Installation and Configuration – Windows 11
 - 3.1 Download 11
 - 3.2 USB driver installation 11
 - 3.3 Loading firmware..... 12
 - 3.4 USBStreamer Control Panel..... 14
 - 3.4.1 Status 14
 - 3.4.2 Format 14
 - 3.4.3 Clock source..... 15
 - 3.4.4 Buffer settings 15
 - 3.4.5 Volume..... 16
 - 3.4.6 Info..... 17
- 4 Installation and Configuration – Mac OS X 18
 - 4.1 Loading firmware..... 18
 - 4.2 Configuration in Audio MIDI Setup 21
 - 4.2.1 I2S_TOSLINK firmware..... 21
 - 4.2.2 ADAT_I2S firmware 23
 - 4.2.3 LowSampleRate firmware 24
- 5 Additional Information 25
 - 5.1 Specifications..... 25
 - 5.2 Obtaining support..... 25



IMPORTANT INFORMATION

Please read the following information before use. In case of any questions, please contact miniDSP via the support portal at minidsp.desk.com.

SYSTEM REQUIREMENTS – WINDOWS

- 1GHz or higher processor clock speed recommended / Intel® Pentium®/Celeron® family, or AMD K6®/AMD Athlon®/AMD Duron® family, or compatible processor recommended.
- 512 megabytes (MB) of RAM or higher recommended
- One free USB 2.0 port
- Microsoft® Windows® XP SP2/Vista/Win7/Win8/Win10

SYSTEM REQUIREMENTS – MAC OS X

- Intel Core Duo processor or greater
- 256 megabytes (MB) of RAM or higher recommended
- One free USB 2.0 port
- Mac OS X 10.8 or greater

DISCLAIMER/WARNING

miniDSP cannot be held responsible for any damage that may result from the improper use or incorrect configuration of this product. Please read this manual carefully to ensure that you fully understand how to operate and use this product, as incorrect use or use beyond the parameters and ways recommended in this manual have the potential to cause damage to your audio system.

Please also note that many of the questions we receive at the technical support department are already answered in this User Manual and in the online [application notes](#) on the miniDSP.com website. So please take the time to carefully read this user manual and the online technical documentation. Thank you for your understanding!

WARRANTY TERMS

miniDSP Ltd warrants this product to be free from defects in materials and workmanship for a period of one year from the invoice date. Our warranty does not cover failure of the product due to incorrect connection or installation, improper or undocumented use, unauthorized servicing, modification or alteration of the unit in any way, or any usage outside of that recommended in this manual. If in doubt, contact miniDSP prior to use.

FCC CLASS B STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.



Warning: 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. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause 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.

Notice: Shielded interface cable must be used in order to comply with emission limits.

Notice: Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE MARK STATEMENT

The USBSTREAMER has passed the test performed according to European Standard EN 55022 Class B.

A NOTE ON THIS MANUAL

This User Manual is designed for reading in both print and on the computer. If printing the manual, please print double-sided. The embedded page size is 8 ½" x 11". Printing on A4 paper will result in a slightly reduced size.

For reading on the computer, we have included hyperlinked cross-references throughout the manual. In addition, a table of contents is embedded in the PDF file. Displaying this table of contents will make navigation much easier:

- In Adobe Reader on Windows, click on the "bookmarks" icon at the left. The table of contents will appear on the left and can be unfolded at each level by clicking on the "+" icons.
- In Preview on the Mac, click on the **View** menu and select **Table of Contents**. The table of contents will appear on the left and can be unfolded at each level by clicking on the triangle icons.

1 PRODUCT OVERVIEW

Thank you for purchasing a miniDSP *USBStreamer* USB audio interface. The USBStreamer comes in two versions. The box version can be used in two modes by loading different firmware:

- Eight channels of input/output via optical (ADAT) connectors (this is the default when the USBStreamer B box version is shipped from miniDSP), or
- Two channels (stereo) input/output via optical (TOSLINK) connectors

The kit version can be used in three modes:

- Eight channels of input/output via I2S header pins, and two channels of input/output via optical (TOSLINK) connectors (this is the default when the USBStreamer kit board is shipped from miniDSP), or
- Eight channels of input/output via optical (ADAT) connectors, or
- Eight channels of input/output via I2S header pins, with support for sample rates as low as 8 kHz

Typical applications for the USBStreamer include hi-fi systems and recording studios. The kit version can be built into multichannel DACs, ADCs and digital audio interfaces, with connection to the USBStreamer via the I2S headers.

1.1 FIRMWARE VERSIONS

The function of the USBStreamer depends on the specific firmware version loaded into it. There are three firmware versions in the software download zip file. Please confirm that your USBStreamer has the correct firmware for your application prior to use.

ADAT

These versions of the firmware will receive and transmit eight channels of audio in ADAT format via the input and output optical connectors. The sample rate can be 44.1 or 48 kHz. This is the firmware loaded into the USBStreamer B (box version) when it is shipped from miniDSP.

I2S/TOSLINK

These versions of the firmware will receive and transmit eight channels of audio over the I2S headers and two channels over the optical connectors. The sample rate can be 44.1, 48, 88.2, 96, 176.4, or 192 kHz. (All channels must run at the same sample rate.) This is the firmware loaded into the USBStreamer circuit board (kit version) when it is shipped from miniDSP.

Low Sample Rate

These versions of the firmware will receive and transmit eight channels of audio over the I2S headers. (The optical connectors are not active.) They will support low sample rates, down to 8 kHz, as well as all standard sample rates up to 192 kHz.

TDM

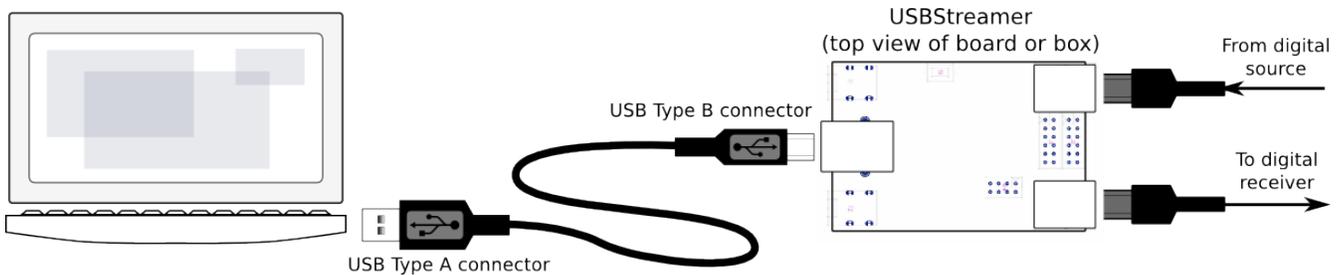
The Time Division Multiplexing (TDM) format packetizes multiple channels of audio in one frame. It's similar to I2S but in multichannel. The TDM format is for 8ch audio in/out at 44.1/48k.

Each firmware version includes files with two different IDs. If two USBStreamers are to be connected to the same computer, make sure that each has firmware with a different ID.

2 CONNECTIVITY

2.1 USB AND OPTICAL (BOX AND KIT VERSIONS)

Connect as shown (for either box or kit version). The optical input and output will receive and transmit either stereo SPDIF or 8-channel ADAT, depending on the loaded firmware.



2.2 I2S/TDM CONNECTIVITY (KIT VERSION ONLY)

I2S, or Inter-IC Sound, is a simple protocol used to carry digital audio information between digital chips (ICs) and circuit boards. The USBStreamer circuit board provides 8 channels of I2S input and 8 channels of I2S output via a 12-pin header. All channels can operate simultaneously at sample rates of up to 192 kHz. I2S pinouts are shown on the next page.

Please note that I2S connectivity is intended for **advanced** DIY use only. You will need the knowledge to understand digital clocking and wiring, and have access to the equipment necessary to be able to debug any issues you may run into. (While miniDSP always tries to help its customers, it is infeasible for us to debug your circuit and wiring for you.)

Be sure to take the following precautions when designing your I2S interface and wiring:

General I2S usage notes

- Unbuffered I2S lines must be kept short to ensure clock and data integrity.
- If driving longer lines, buffers may be required for the clock signals (MCLK, LRCLK, and BLCK).
- Observe correct grounding and shielding, and keep analog and digital grounds separated.
- Ensure that the clock ratios (as listed on the next page) are compatible with connected circuits.

Clock master

The USBStreamer always operates as clock master – that is, the clock lines are always outputs. The connected circuitry must therefore use the clocks provided by the USBStreamer.

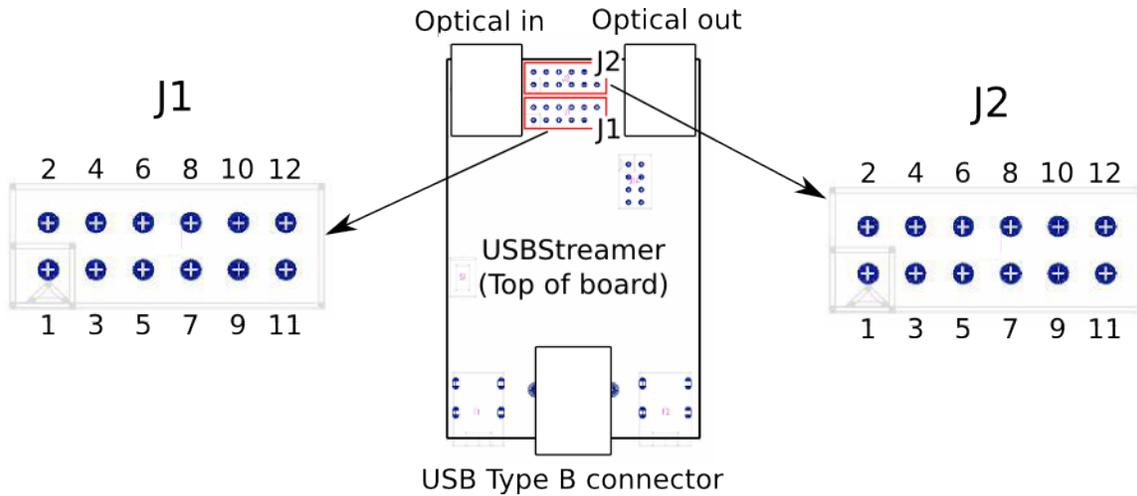
3.3V logic level

All lines use a 3.3V logic level. Ensure that connected circuits use a compatible level (1.8V, for example, will not work).

2.2.1 I2S/TDM Pinouts

The USBStreamer circuit board has two 12-pin headers located between the optical ports. All I2S lines are on J1, while J2 carries auxiliary signaling and GPIO lines reserved for future enhancement. The I2S lines are explained in detail on the next page.

Note that all I2S lines are 3.3V logic levels. Connected circuits must use a compatible logic level.



Pin	Description
1	I2S data OUT Ch 1&2 / TDM Out
2	I2S data IN Ch 1&2 / TDM In
3	I2S data OUT Ch 3&4
4	I2S data IN Ch 3&4
5	I2S data OUT Ch 5&6
6	I2S data IN Ch 5&6
7	I2S data OUT Ch 7&8
8	I2S data IN Ch 7&8
9	Master clock (MCLK OUT)
10	Bit clock out (BCLK)
11	Ground (GND)
12	I2S frame sync (LRCLK)

Pin	Description
1	Ground (GND)
2	NC
3	Ground (GND)
4	NC
5	NC
6	GPIO (future)
7	GPIO (future)
8	RST (negative low)
9	GPIO (future)
10	GPIO (future)
11	Ground (GND)
12	5V external power

2.2.2 I2S Clock lines

There are three clock lines. These clocks are always **outputs**. The connected circuitry must therefore be set to run in slave mode and accept its clocks from the USBStreamer. (The USBStreamer always runs as clock master; it cannot be set to run as a slave.)

- MCLK** The master clock for both playback and recording. This pin is an output only.
- LRCLK** The frame synchronization clock, also known as the word clock. This clock is equal to the sampling frequency (F_s) of the audio signal. This pin is an output only.
- BCLK** The bit clock (also known as shift clock or system clock). This is always equal to $64 \times F_s$. This pin is an output only.

The following table summarizes the relation between the clocks. Be sure to double-check that connected circuitry will accept the clocks at the frequencies and ratios listed here:

Sample rate (LRCLK)	Master clock (MCLK)	Bit clock (BCLK)	MCLK/LRCLK	BCLK/LRCLK
44.1 kHz	22.5792 MHz	2.822 MHz	512	64
48 kHz	24.576 MHz	3.072 MHz	512	64
88.2 kHz	22.5792 MHz	5.6448 MHz	256	64
96 kHz	24.576 MHz	6.144 MHz	256	64
176.4 kHz	22.5792 MHz	11.2896 MHz	128	64
192 kHz	24.576 MHz	12.288 MHz	128	64

2.2.3 TDM Clock lines

The clock lines are the same as per I2S above. Just a different clock rate.

Sample rate (LRCLK)	Master clock (MCLK)	Bit clock (BCLK)	MCLK/LRCLK	BCLK/LRCLK
44.1 kHz	22.5792 MHz	11.2896 MHz	512	64
48 kHz	24.576 MHz	12.288 MHz	512	64

2.2.4 I2S Data lines

There are four lines for input data, and four line for output data (as indicated in the pinout on the previous page). Each line carries two audio channels, in either 16-bit or 24-bit format. The expected I2S data format and timing is shown in this diagram:

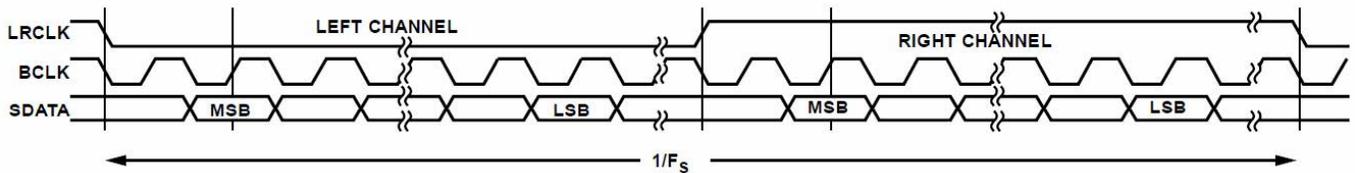


Figure 31. I²S Mode—16 Bits to 24 Bits per Channel



2.2.5 External power

External 5V DC power can be connected to the USBStreamer via pin 12 of J2. This pin is connected with a “diode-or” connection to the power line from the USB port. Supplying 5V DC to this pin will therefore ensure that the USBStreamer remains powered on even when no USB device is connected.

3 INSTALLATION AND CONFIGURATION – WINDOWS

Please read and follow all steps in this section carefully.

3.1 DOWNLOAD

The USBSTREAMER is a USB Audio Class 2.0 device. For use with Microsoft Windows, driver installation is required. When you receive notification that your order has shipped, your installation software download will be available at the *User Downloads* section of the miniDSP website:

<http://www.minidsp.com/userdownloads>

(If you are unable to access this section of the website, please log in first.)

Download the installation zip file under the **USB Streamer Driver** heading and unzip the folder on your PC.

3.2 USB DRIVER INSTALLATION

The USB driver enables Windows to stream audio to the USBStreamer. In addition, it installs a control panel to help manage the USBStreamer, and the firmware updater necessary to load the most suitable firmware version.

To install the driver, the USBStreamer **must** be connected to the computer by USB. Go to the **WinDrivers** folder of the installation download and double-click on the appropriate installer:

- miniDSP_UAC2_v2.29.0_ForWinXP_Vista.exe for Windows XP and Vista
- miniDSP_UAC2_v3.34.0_ForWin7_8_10.exe for Windows 7, 8, and 10

(The version number embedded in the filename may be different.)

We recommend accepting the default installation location. Once the driver installation completes, click the **Finish** button.



The Windows PC will not be able to communicate properly with the USBStreamer if you did not have the USBStreamer connected by USB when you ran the installer. If that is the case, you will need to uninstall the driver, connect the USBStreamer, and run the installer again.

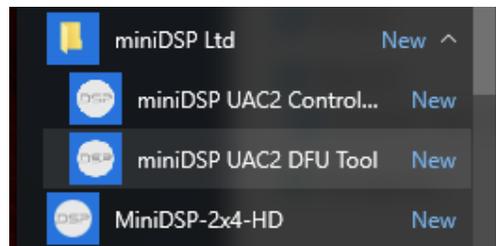
3.3 LOADING FIRMWARE

If the default firmware loaded into your USBStreamer as shipped is not suited for your application, you will need to load a different firmware version. (You do not need to load firmware if the default firmware is suitable for your application.)

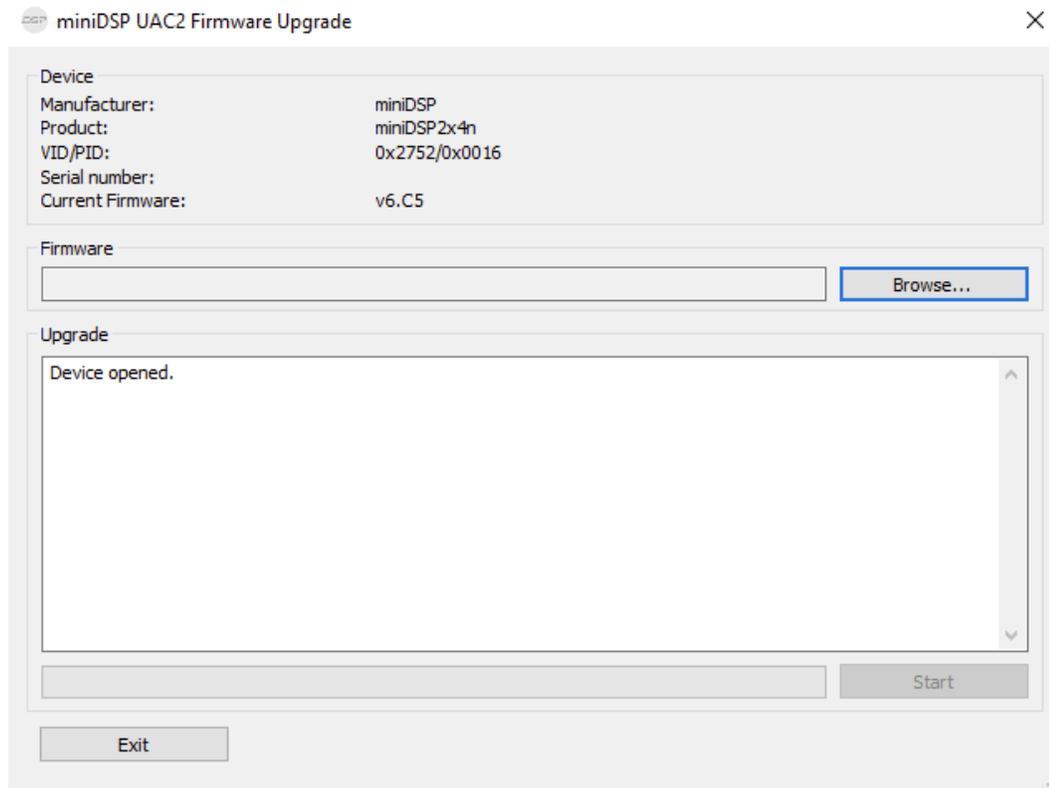
- USBStreamer B (box) has ADAT firmware loaded when shipped.
- USBStreamer kit has TOSLINK/I2S firmware loaded when shipped.

To load a different firmware version:

1. Connect the USBStreamer to your computer via USB (if not already connected).
2. Browse to the Firmware\miniDSP_UAC2_DFU\ under the driver zip file. Start the **miniDSPUAC2Dfu.exe**



3. The firmware update program will start:



- Click on the **Browse** button and navigate to the plugin download folder and then the **Firmware** folder. Select the most suitable firmware file according to your application. Below are the folder names. Each folder has two different files, identical except for ID number, so that two USBStreamers can be connected to the one computer:

ADAT_I2S

These files will receive and transmit eight channels of audio in ADAT format via the input and output optical connectors. The sample rate can be 44.1 or 48 kHz.

I2S_TOSLINK

These files will receive and transmit eight channels of audio over the I2S headers, and two channels over the optical connectors. The sample rate can be 44.1, 48, 88.2, 96, 176.4, or 192 kHz. (All channels must run at the same sample rate.)

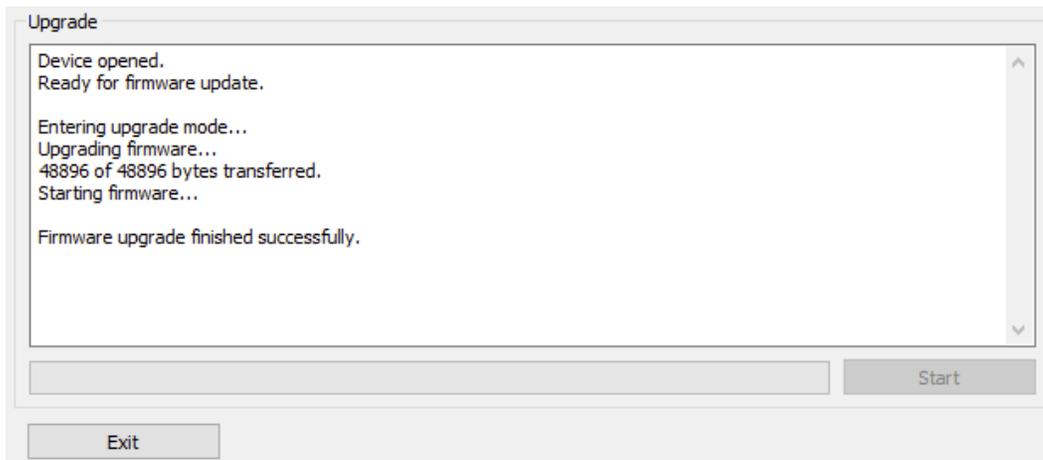
LowSampleRate

These files are will receive and transmit eight channels of audio over the I2S headers. (The optical connectors are not active.) They will support low sample rates, down to 8 kHz.

TDM

These files are will receive and transmit eight channels of audio over the TDM headers. (The optical connectors are not active.) They will support of 48/44.1kHz

- Click on the **Start** button.
- You will get a progress bar as upgrade proceeds. When it completes, you will see a message that the upgrade completed successfully:



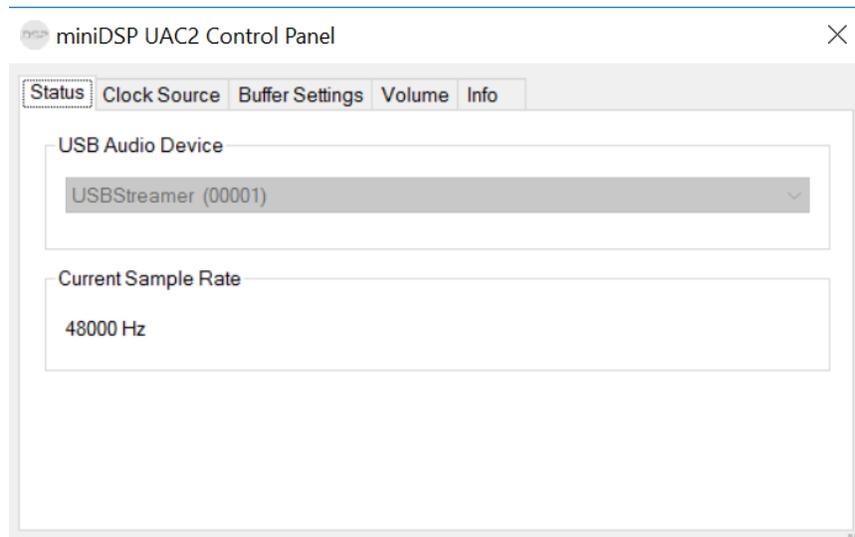
- Click on **Exit**.
- That's it! You're done. You can now use your USBStreamer.

3.4 USBSTREAMER CONTROL PANEL

To configure the USBStreamer, open the **miniDSP UAC2 Control Panel** (from Start Menu -> miniDSP Ltd). It has several panes, described below.

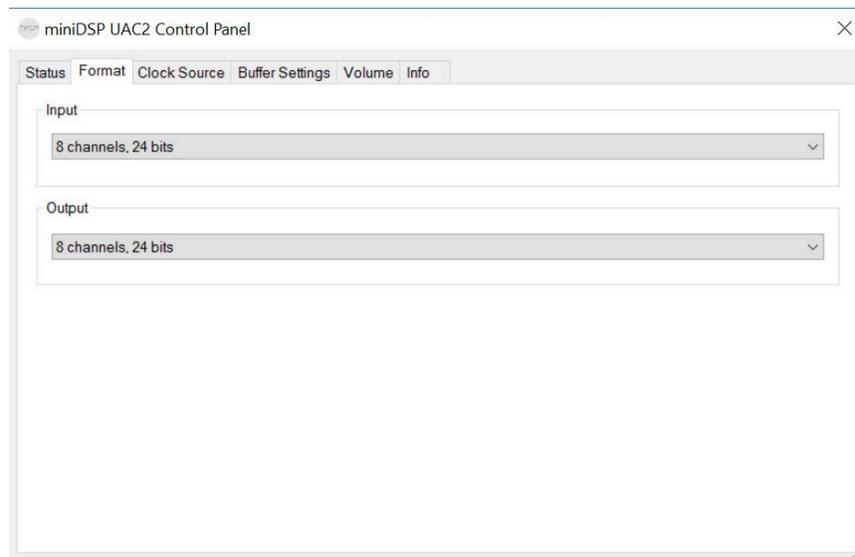
3.4.1 Status

This panel shows the current sample rate of the USBStreamer. This setting cannot be changed in the Control panel, but simply reflects the current sample rate of the USBStreamer.



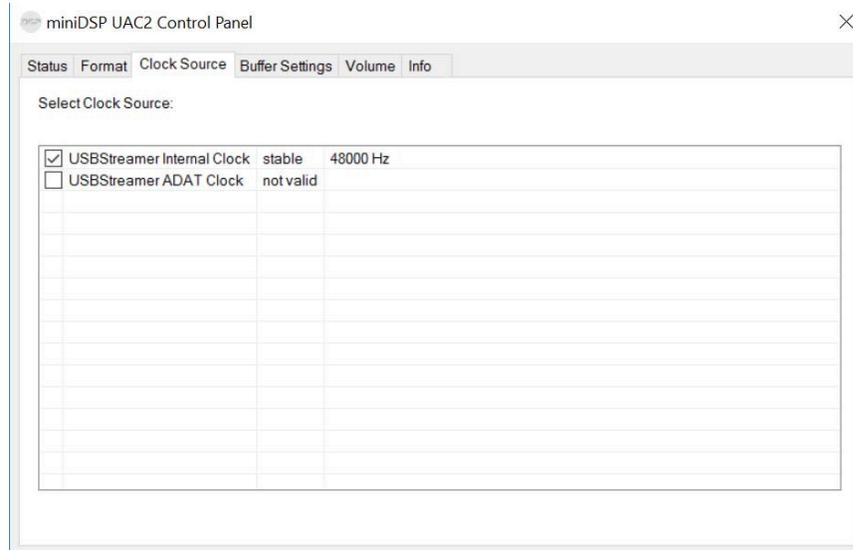
3.4.2 Format

This panel is present only if the ADAT firmware is loaded. Be sure to always have 8-channel input and output selected here.



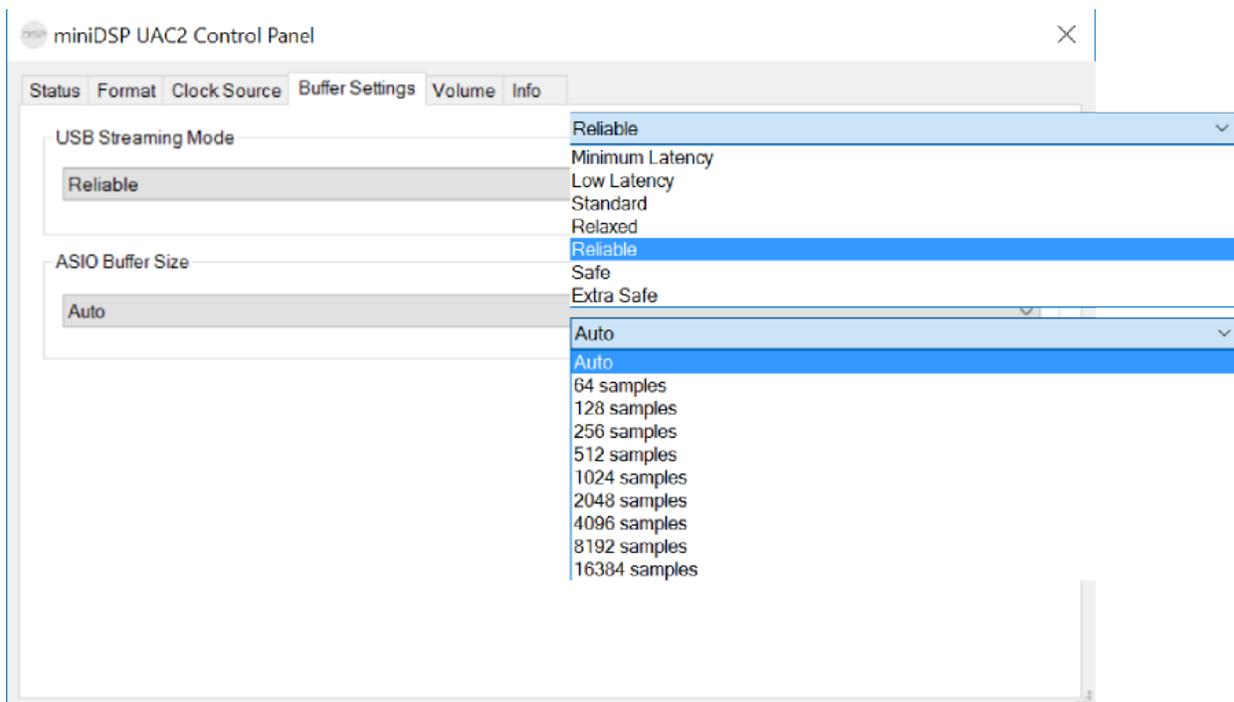
3.4.3 Clock source

This panel allows you to select the clock source: internally generated by the USBStreamer and selected by the computer, or generated from the TOSLINK (or ADAT) input.



3.4.4 Buffer settings

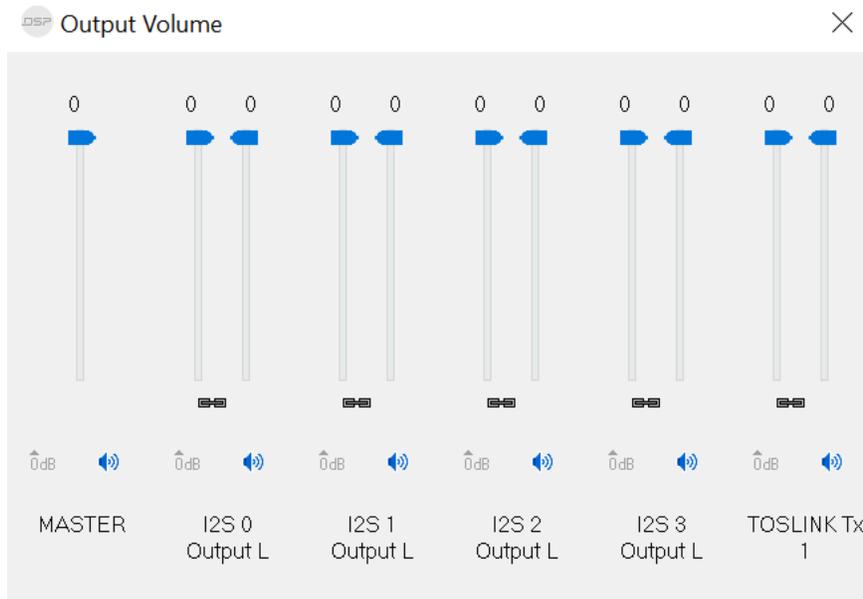
The buffer settings are for those looking to optimize the buffering and latency settings of the interface. Note that changing these settings may result in unstable operation since such changes are dependent on the resources of the PC. For example, the lowest latency settings require high amounts of CPU and memory, and may not work on some machines. If you do not require lowest latency, we recommend that you do not depart from the default safe settings.



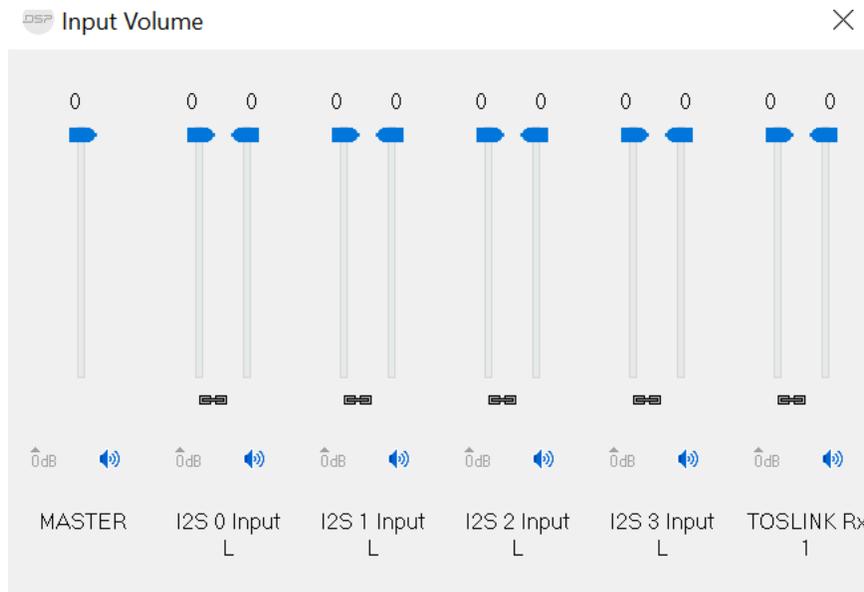
3.4.5 Volume

This panel contains a master volume control for all eight output channels, and individual level controls for each channel or pair of channels.

- To reset the master volume control or a pair of channels to 0 dB (no attenuation), click the **0dB** button.
- To mute all channels, click the speaker icon above “MASTER”.
- To mute a pair of channels, click the speaker icon above the label.
- To control volume separately for each channel, click on the “Link” icon to turn it off.

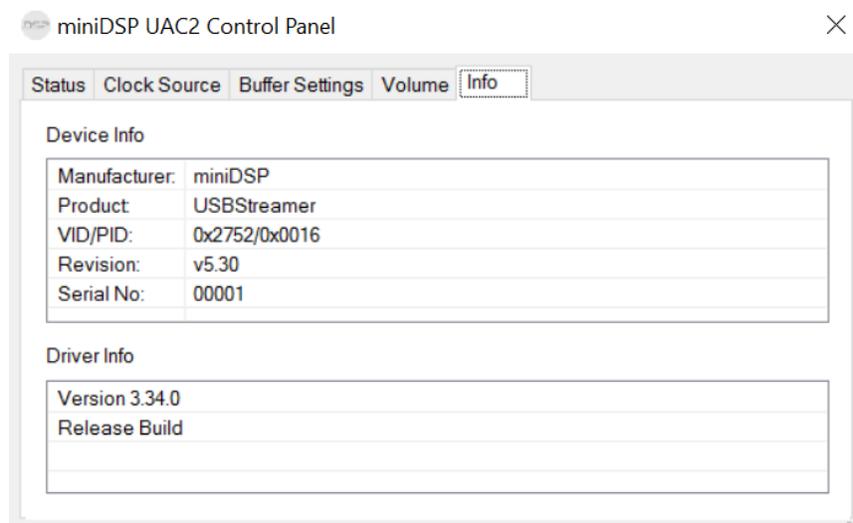


There is a similar set of controls for the input channels:



3.4.6 Info

This pane shows information about the USBStreamer.



4 INSTALLATION AND CONFIGURATION – MAC OS X

Mac OS X has native support for USB Audio class 2.0 devices, so no driver installation is required. The USBSTREAMER will automatically be detected by Mac OS X as a compliant multichannel USB audio interface. However, depending on your application, you may need to load different firmware.

4.1 LOADING FIRMWARE

If the default firmware loaded into your USBStreamer as shipped is not suited for your application, you will need to load a different firmware version. (You do not need to load firmware if the default firmware is suitable for your application.)

- USBStreamer B (box) has ADAT firmware loaded when shipped.
- USBStreamer Kit has TOSLINK/I2S firmware loaded when shipped.

To load firmware using Mac OS X requires that you use the Terminal program (located in the Applications/Utilities folder). In the examples that follow, black text is the “prompt” printed by Terminal, blue text is text typed in by you, and red text is the program output.



It is important that you type exactly as shown including characters like “.” and “/” where noted (the firmware version numbers may be different). Press the Tab key after typing the first two characters of any filename, to activate auto-completion.

Download the latest software for the USBStreamer from the User Downloads area of the minidsp.com website. Double-click on it to unzip it. Assuming you have placed it into the Downloads folder on your Mac, you will then type:

```
mymac:~ myname$ cd Downloads/USBStreamer_20160225/Firmware/
mymac:Firmware myname $ ls
ADAT_I2S          LowSampleRate    miniDSP_UAC2_DFU_OSX
I2S_TOSLINK      UDAC8            readme.txt
mycomputer:Firmware myname $
```

The firmware files are located in the folders **ADAT_I2S**, **LowSampleRate**, and **I2S_TOSLINK**. Here is a list of those files:

```
mymac:Firmware myname $ ls ADAT_I2S/ LowSampleRate/ I2S_TOSLINK/
ADAT_I2S/:
USBStreamer_Up_ADAT_v5_ID3.bin    USBStreamer_Up_ADAT_v5_ID4.bin
I2S_TOSLINK/:
USBStreamer_Up_TOSLINK_v5_ID1.bin  USBStreamer_Up_TOSLINK_v5_ID2.bin
LowSampleRate/:
USBStreamer_Up_LowRate_v4_ID5.bin  USBStreamer_Up_LowRate_v4_ID6.bin
mymac:Firmware myname $
```



The choice of firmware affects the operation of the USBStreamer, as follows. In each case, there are two different files, identical except for ID number, so that two USBStreamers can be connected to the one computer.

ADAT_I2S

These files will receive and transmit eight channels of audio in ADAT format via the input and output optical connectors. The sample rate can be 44.1 or 48 kHz.

I2S_TOSLINK

These files will receive and transmit eight channels of audio over the I2S headers, and two channels over the optical connectors. The sample rate can be 44.1, 48, 88.2, 96, 176.4, or 192 kHz. (All channels must run at the same sample rate.)

LowSampleRate

These files will receive and transmit eight channels of audio over the I2S headers. (The optical connectors are not active.) They will support low sample rates, down to 8 kHz.

TDM

These files will receive and transmit eight channels of audio over the TDM headers. (The optical connectors are not active.) They will support of 48/44.1kHz

Now you will need to copy your chosen firmware file into the miniDSP_UAC2_DFU_OSX folder, and then change to that folder, like this:

```
mymac:Firmware myname$ cp I2S_TOSLINK/USBStreamer_Up_TOSLINK_v5_ID1.bin miniDSP_UAC2_DFU_OSX/
mymac:Firmware myname$ cd miniDSP_UAC2_DFU_OSX/
mymac:miniDSP_UAC2_DFU_OSX myname $
```

Then run the firmware updater, like this:

```
mymac:miniDSP_UAC2_DFU_OSX myname $ source setup.sh
mymac:miniDSP_UAC2_DFU_OSX myname $ ./xmosdfu --download USBStreamer_Up_TOSLINK_v5_ID1.bin
VID = 0x5ac, PID = 0x8007, BCDDevice: 0x300
VID = 0x5ac, PID = 0x8007, BCDDevice: 0x300
...
VID = 0x5ac, PID = 0x259, BCDDevice: 0x224
VID = 0x2752, PID = 0x16, BCDDevice: 0x530
XMOS DFU application started - Interface 3 claimed
Detaching device from application mode.
Waiting for device to restart and enter DFU mode...
VID = 0x5ac, PID = 0x8007, BCDDevice: 0x300
VID = 0x5ac, PID = 0x8007, BCDDevice: 0x300
...
VID = 0x5ac, PID = 0x259, BCDDevice: 0x224
VID = 0x2752, PID = 0x16, BCDDevice: 0x530
... DFU firmware upgrade device opened
... Downloading image (USBStreamer_Up_TOSLINK_v5_ID1.bin) to device
... Download complete
... Returning device to application mode
mymac:miniDSP_UAC2_DFU_OSX myname $
```

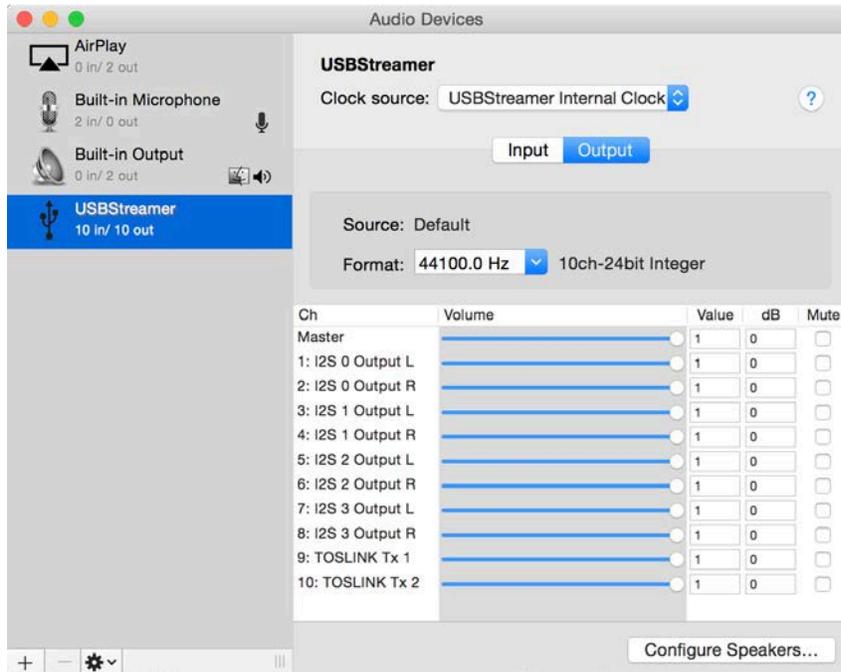


You can now proceed to check the configuration of the USBStreamer with Audio MIDI Setup, as described in the next section.

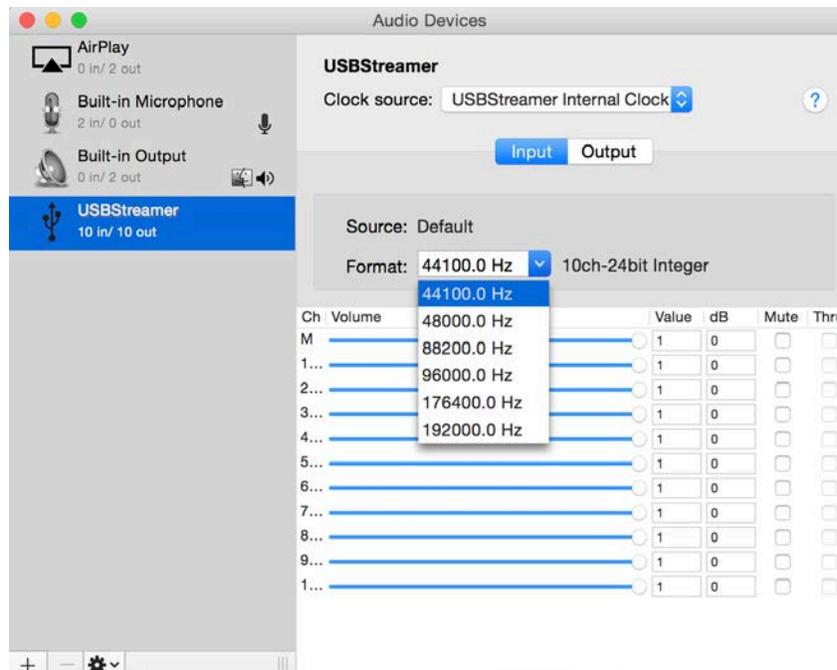
4.2 CONFIGURATION IN AUDIO MIDI SETUP

4.2.1 I2S_TOSLINK firmware

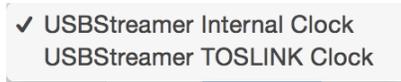
Open the program **Audio MIDI Setup** (in **Applications->Utilities**). Click on the device USBStreamer that appears in the list of devices on the left to show the eight I2S and two TOSLINK output channels:



Clicking the **Input** button will show the equivalent input channels. This example also shows the sample rates supported:

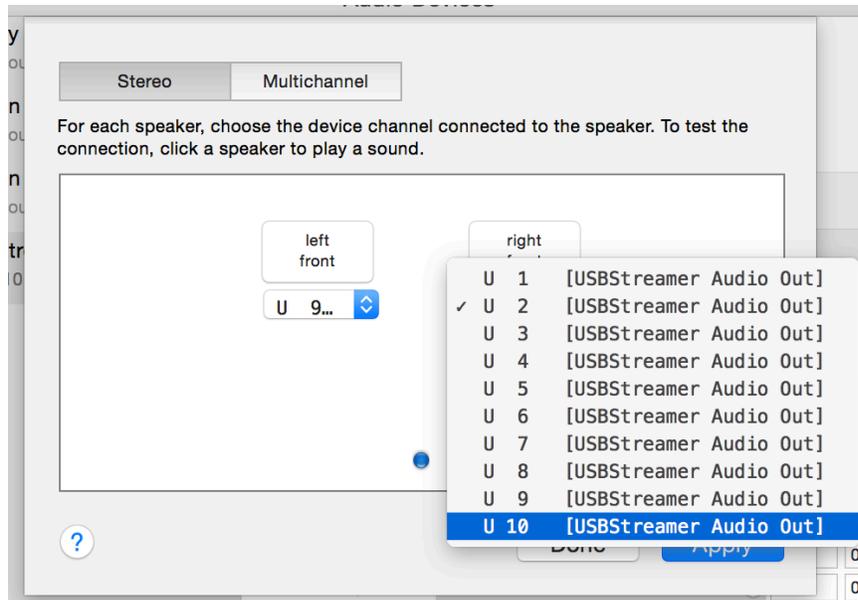


By default, the sample rate clock of the USBStreamer is internally derived, but it can also be derived from the TOSLINK input by using the **Clock Source** selector:

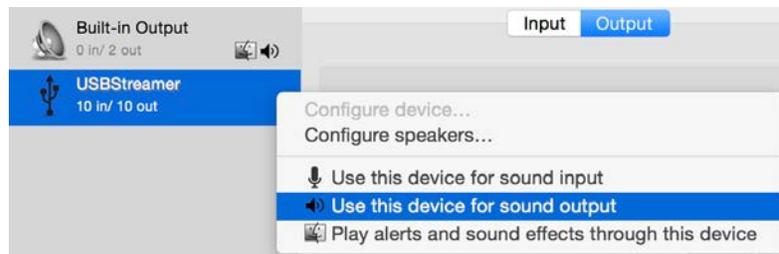


If you are using software that is able to route audio to ten different channels, no further configuration is needed. If, however, you would like the TOSLINK output to be the default stereo output for all applications, then:

1. Click on **USBSTREAMER** and then the **Output** button.
2. Click on the **Configure Speakers** button. Select the **Stereo** button. For the left channel, select Channel 9, and for the right channel, select Channel 10. Then click **Apply** and then click **Done**.

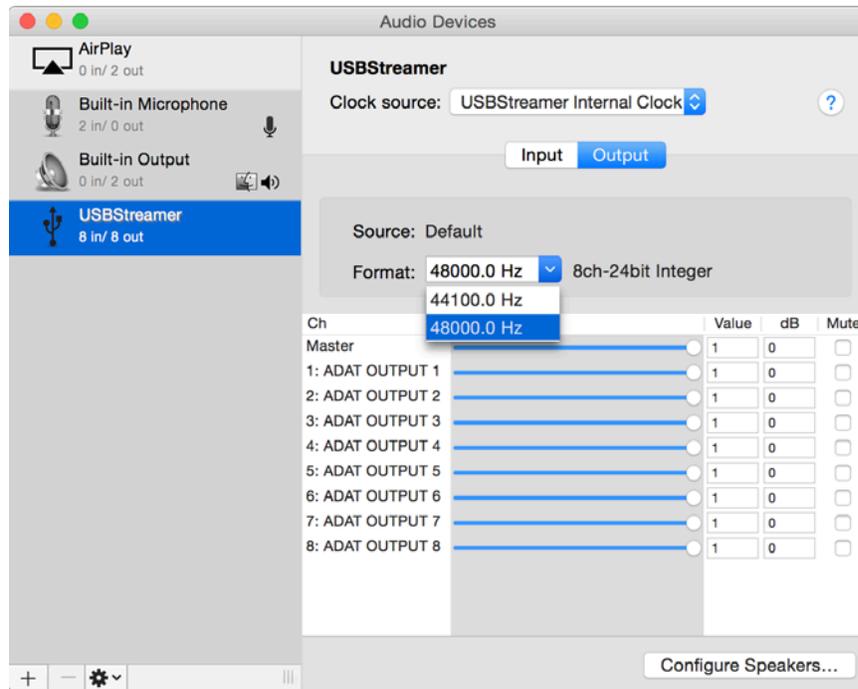


3. Select the output sample rate. Typically, 44.1 kHz is the best choice. Some audio players will automatically change this setting according to the media being played.
4. To set the USBSTREAMER to be the default audio output device, right-click and select “Use this device for sound output”.



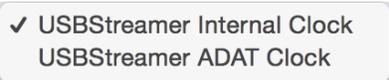
4.2.2 ADAT_I2S firmware

Open the program **Audio MIDI Setup** (in **Applications->Utilities**). Click on the device USBStreamer that appears in the list of devices on the left, to show the eight ADAT output channels. As shown in this example, the sample rate can be selected for 44.1 or 48 kHz:

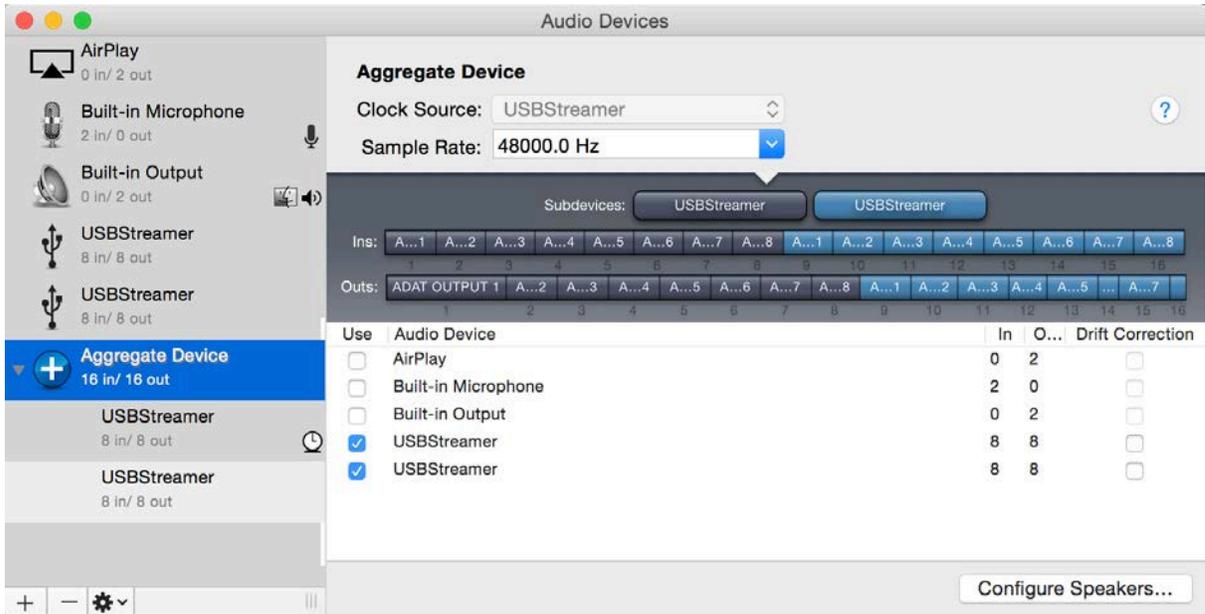


Clicking on the **Input** button will likewise show the eight ADAT input channels.

By default, the sample rate clock is generated internally by the USBStreamer. It can be set to use the incoming ADAT clock, by selecting the option from the **Clock source** dropdown:

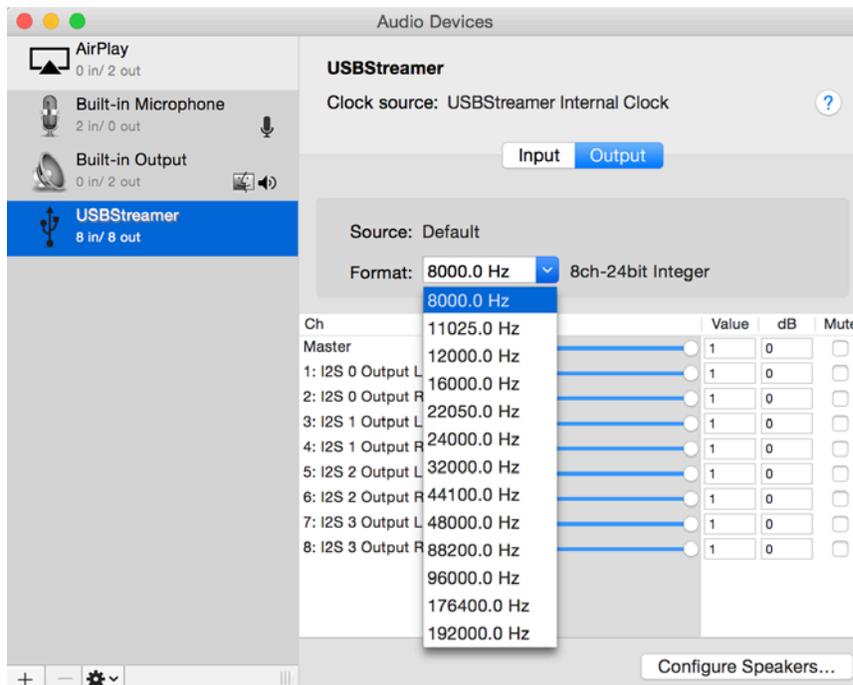


If more than eight ADAT channels are required, use two USBStreamers and load firmware with different IDs into each. (That is, load ID3 into one USBStreamer and ID4 into the other.) Depending on the specifics of your system setup (DAW, external hardware, etc.), you can create a 16-channel aggregate device in Audio MIDI Setup:



4.2.3 LowSampleRate firmware

Open the program **Audio MIDI Setup** (in **Applications->Utilities**). Click on the device USBStreamer that appears in the list of devices on the left, to show the eight I2S output and input channels. The **Format** dropdown provides selection of sample rates down to 8 kHz:



5 ADDITIONAL INFORMATION

5.1 SPECIFICATIONS

Computer connectivity	USB 2.0, USB Audio Class 2 compliant
Driver	Mac OS X: no driver required Windows: driver provided
Audio sample rate	IS2/TOSLINK mode: 44.1 to 192 kHz (10 channels) ADAT mode: 44.1 or 48 kHz (8 channels) Low sample rate mode: 8 to 192 kHz (8 channels)
Audio resolution	24-bit integer
Enclosure	Aluminum, sand blasted and anodized (USBStreamer B only)
Power supply	USB-powered
Dimensions (H x W x D)	13 x 40 x 62 mm (USBStreamer) 24 x 64 x 67.4 mm (USBStreamer B)

5.2 OBTAINING SUPPORT

1. Check the forums on minidsp.com to see if this issue has already been raised and a solution or solutions provided.
2. Contact miniDSP via the support portal at minidsp.desk.com with:
 - a. The product information including OS version and version of driver installed (for Windows).
 - b. A clear explanation of the symptoms you are seeing.
 - c. A description of the troubleshooting steps you performed and the results obtained.