USBSTREAMER

MULTI-CHANNEL USB AUDIO INTERFACE

TOSLINK/ADAT

BOX VERSION

TOSLINK/ADAT/I2S/TDM

KIT VERSION

User Manual

ASIO COMPATIBLE

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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
1.6	Add TDM16 support	24 May 2018
1.6a	Added 3rd party logos	8 July 2019
1.7	Updated firmware procedure; added new firmware; improved firmware description and diagrams	8 December 2019
1.8	Minor corrections	10 December 2019
1.9	Updated support links	6 July 2020

miniDSP

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IMPORTANT INFORMATION

Please read the following information before use. In case of any questions, please contact miniDSP via the support portal at support.minidsp.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
- OS X 10.8 (Mountain Lion) or later, macOS 10.12 (Sierra) or later

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 ADAT (optical). This is the default when the USBStreamer B box version is shipped from miniDSP.
- Two channels (stereo) input/output via TOSLINK (optical).

The kit version can be used in several modes by loading different firmware:

- Eight channels of I2S via header pins plus two channels via TOSLINK (optical). This is the default when the USBStreamer kit board is shipped from miniDSP.
- Eight channels of input/output via ADAT (optical).
- Two channels (stereo) input/output via TOSLINK (optical).
- Eight channels of I2S via header pins, with support for sample rates as low as 8 kHz.
- TDM input and output up to 96 kHz, 8 or 16 channels.

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.

Most firmware versions include 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

Connect as shown for either box or kit version. The USB port provides power and computer connectivity.
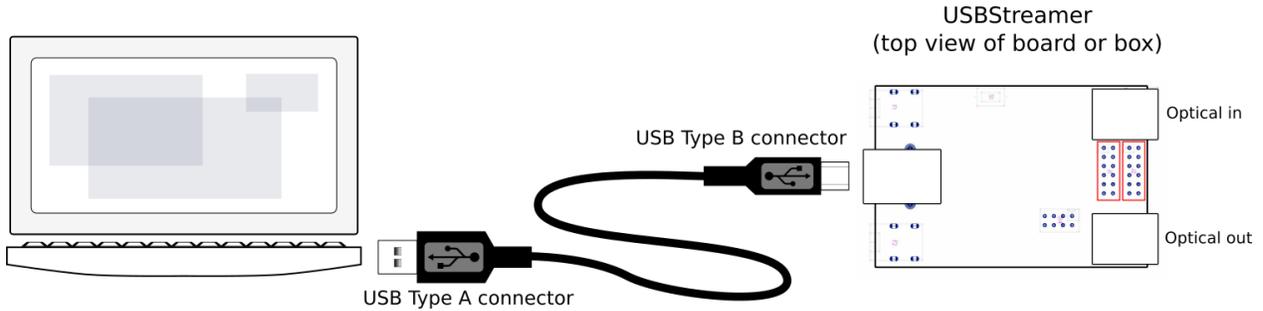

2.2 OPTICAL

The optical ports support TOSLINK or ADAT, depending on the firmware loaded.
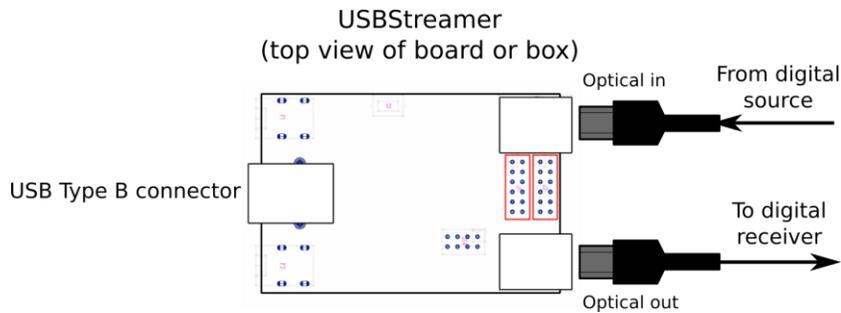
2.3 EXTERNAL POWER (KIT VERSION)

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. The USBStreamer consumes about 200 mA from this pin.
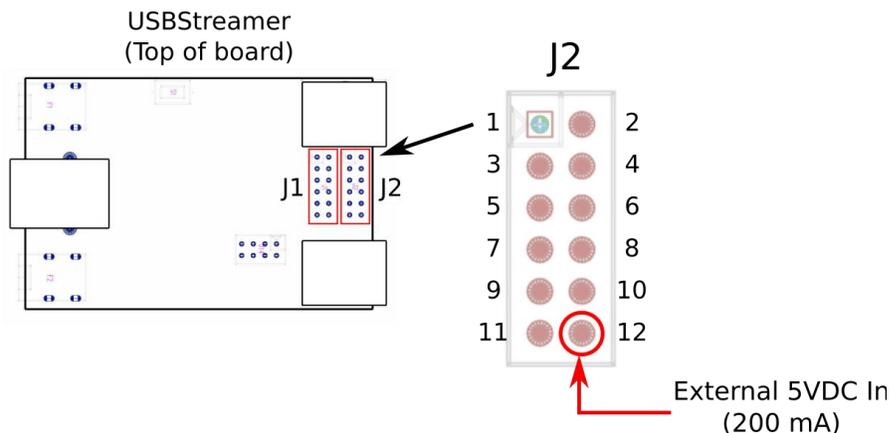
2.4 LOGIC-LEVEL I/O (KIT VERSION)

2.4.1 Overview

In addition to the optical interface, the USBStreamer provides additional data formats as logic-level signals:

- I2S, or Inter-IC Sound, is used to carry PCM digital audio between digital chips (ICs) and circuit boards. The USBStreamer circuit board provides up to 8 channels of I2S input and 8 channels of I2S output.
- TDM, or Time domain multiplexing, is a format used by some ADC and DAC chips to carry multiple channels on a single data line. This can reduce layout complexity and/or allow a greater number of channels.

Please note that logic-level connectivity is intended for professional engineers or **advanced** DIY users 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 frequencies and ratios as listed on later pages 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).

2.4.2 Headers and pinouts

The USBStreamer circuit board has two 12-pin headers located between the optical ports. Logic-level data and clocks are on J1, while J2 carries auxiliary signaling and GPIO lines reserved for future enhancement.

Table 1 lists the default pinouts. Note that these vary with the specific firmware loaded. See Section 3 for full details.

Note that all I2S lines are 3.3V logic levels. Connected circuits must use a compatible logic level.
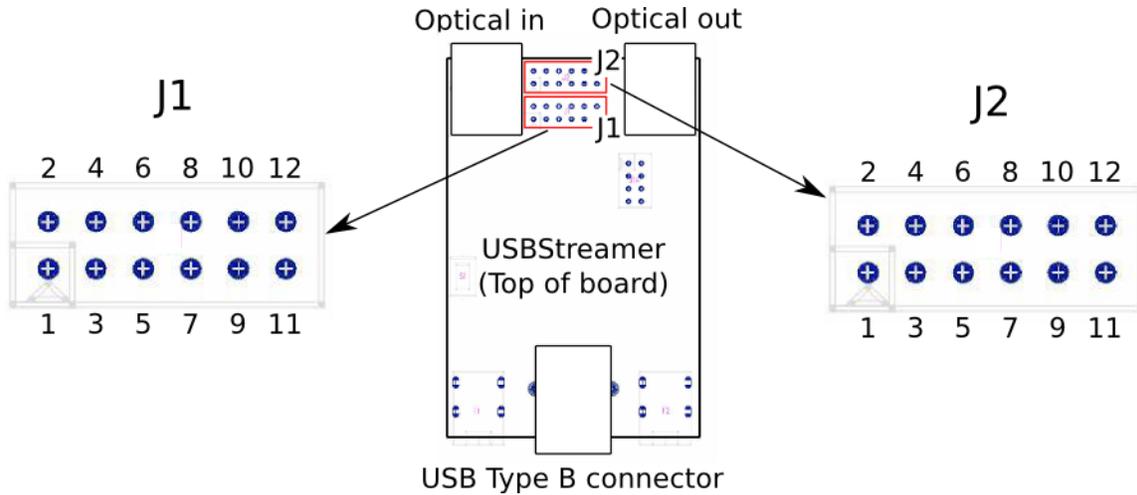
Figure 1. USBStreamer board layout

Table 1. Sample pinouts (See Section 3 for details)

J1 (I2S mode)	
Pin	Description
1	I2S data OUT Ch 1&2
2	I2S data IN Ch 1&2
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)

J2	
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

2.4.3 I2S

2.4.3.1 Clocks

I2S has 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.

MCLK   The master clock for both playback and recording. This pin is always an output. Connected circuitry can choose whether or not to use it.

LRCLK   The frame synchronization clock, also known as the word clock. This clock is equal to the sampling frequency (Fs) of the audio signal. This pin is always an output.

BCLK   The bit clock (also known as shift clock or system clock). This is always equal to 64 x Fs. This pin is always an output.

Table 2 summarizes the relation between the clocks. Be sure to double-check that connected circuitry will accept the clocks at the frequencies and ratios listed.

Table 2. I2S clocks

Sample rate (LRCLK)	Master clock (MCLK)	Bit clock (BCLK)	MCLK/LRCLK	BCLK/LRCLK
8 kHz	24.576 MHz	512 kHz	3072	64
11.025 kHz	22.5792 MHz	705.6 kHz	2048	64
12 kHz	24.576 MHz	768 kHz	2048	64
16 kHz	24.576 MHz	1024 kHz	1536	64
32 kHz	24.576 MHz	2.048 MHz	768	64
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

2.4.3.2 Timing

Each I2S data line carries two audio channels. The USBStreamer uses up to four lines for input data and four lines for output data, depending on the firmware loaded. Input lines are always treated as 24-bit, while output lines can be 16- or 24-bit. The I2S data format and timing is shown in Figure 2 (only channels 1-4 shown).
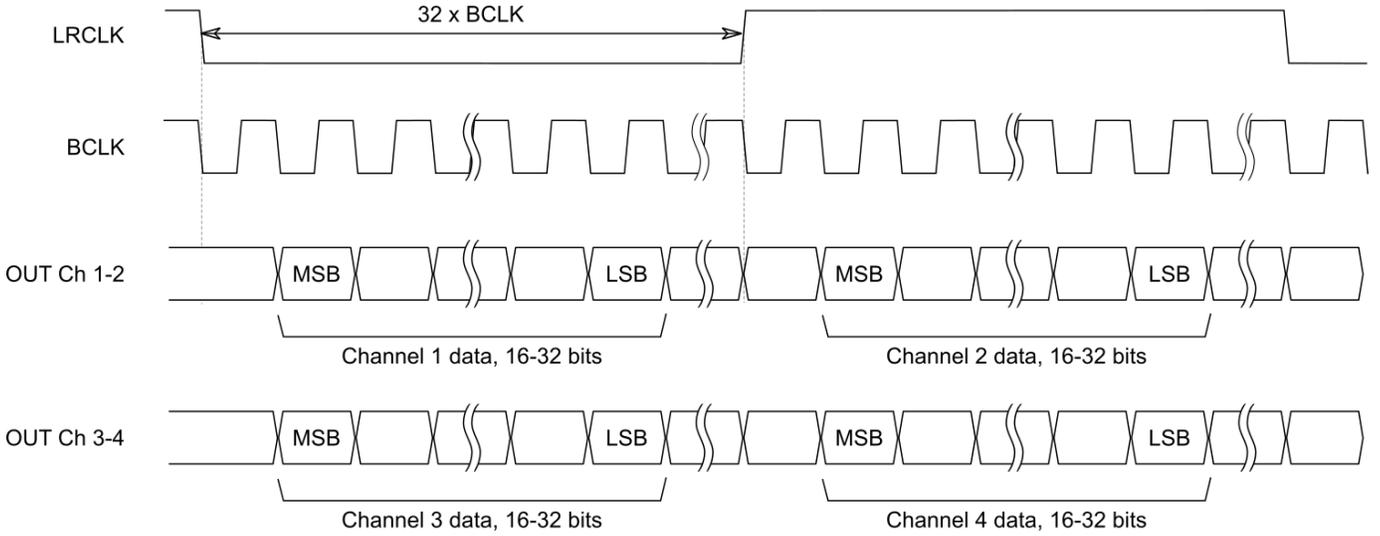

Figure 2. I2S timing

2.4.4   TDM

2.4.4.1   Clocks

TDM has 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.

MCLK   The master clock for both playback and recording. This pin is an output only.

FSYNC   The frame synchronization clock. This clock is equal to the sample rate and corresponds to eight 32-bit words. This pin is an output only.

BCLK   The bit clock (also known as shift clock or system clock). This is always equal to 256 x Fs. This pin is an output only.

Table 3 summarizes the relation between the clocks. Be sure to double-check that connected circuitry will accept the clocks at the frequencies listed.

Table 3. TDM clocks

Sample rate	Frame Sync (FSYNC)	Master clock (MCLK)	Bit clock (BCLK)
44.1 kHz	44.1 kHz (one short)	22.5792 MHz	11.2896 MHz
48 kHz	48 kHz (one short)	24.576 MHz	12.288 MHz
88.2 kHz	88.2 kHz (one short)	22.5792 MHz	22.5792 MHz
96 kHz	96 kHz (one short)	24.576 MHz	24.576 MHz

2.4.4.2 Timing

Each TDM data line carries eight audio channels. The USBStreamer uses one or two lines for input data and one or two lines for output data, depending on the firmware loaded. Input lines are always treated as 24-bit, while output lines can be 16- or 24-bit. The TDM data format and timing is shown in Figure 3.
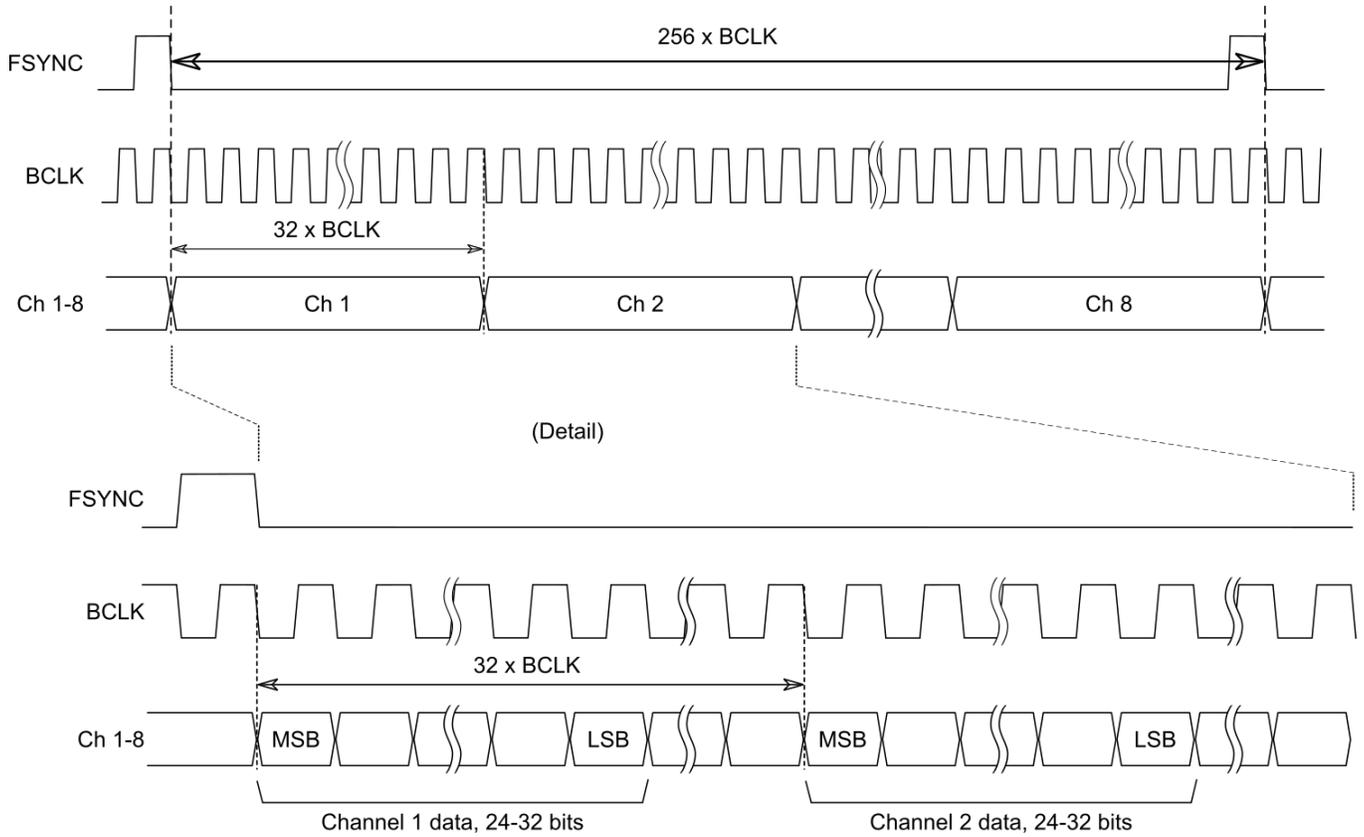

Figure 3. TDM timing

3 FIRMWARE VERSIONS

This section provides the signal flow and pinouts for all firmware versions. See Sections 4.3 and 5.2 for information on loading firmware. The pinout tables are color-coded to aid in identifying the type of signal:

Unused pin
Output data
Input data
Clock or logic signal (output only)
Power or ground
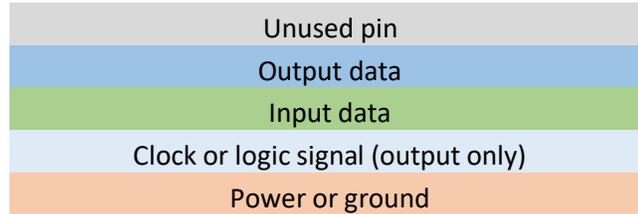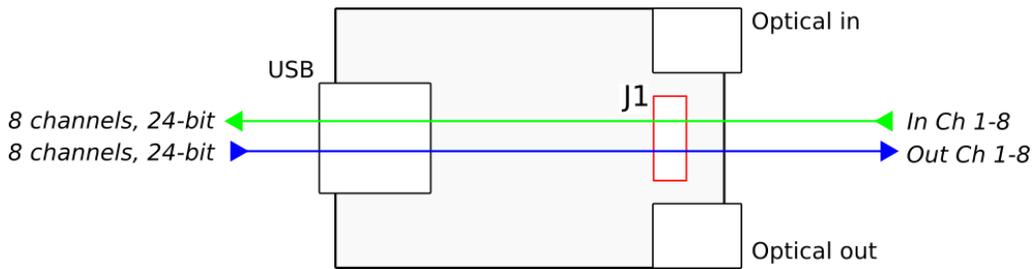
3.1 LOWSAMPLERATE

Figure 4. LowSampleRate firmware signal flow

The **LowSampleRate** firmware supports 8 channels of input and output over I2S. All possible sample rates are supported, from 8 to 192 kHz (see page 19). The optical ports are not used.

Table 4. firmware pinouts

| J1 pin	
1	Out Ch 1-2
2	In Ch 1-2
3	Out Ch 3-4
4	In Ch 3-4
5	Out Ch 5-6
6	In Ch 5-6
7	Out Ch 7-8
8	In Ch 7-8
9	MCLK
10	BCLK
11	GND
12	LRCLK

3.2 STEREO
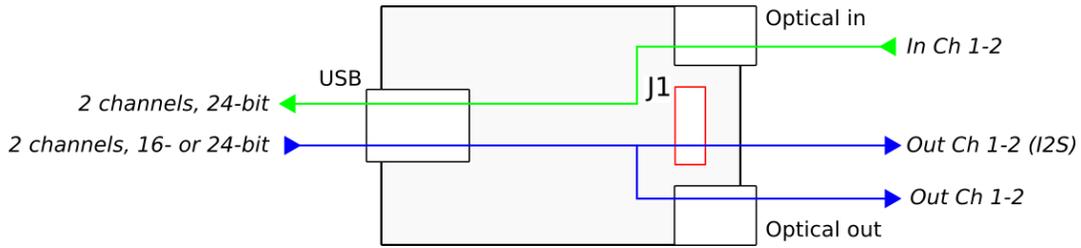
*Figure 5. **Stereo** firmware signal flow*

The **Stereo** firmware supports two input channels and two output channels at 44.1, 48, 88.2, 96, 176.4 and 192 kHz. The input channels are received on the optical input as TOSLINK and made available to the computer over USB. The two output channels from the computer are sent to J1 as I2S and the optical output.

By default, the USBStreamer uses its internal clock source. If a TOSLINK input is provided, UAC2 Control Panel (Windows) or Audio MIDI Setup (Mac) can select that input as the clock source. In that case, the I2S clocks will be synthesized from the received clock.

*Table 5. **Stereo** firmware pinouts*

| J1 pin	
1	Out Ch 1-2
2	—
3	—
4	—
5	—
6	—
7	—
8	—
9	MCLK
10	BCLK
11	GND
12	LRCLK

3.3 I2S_TOSLINK
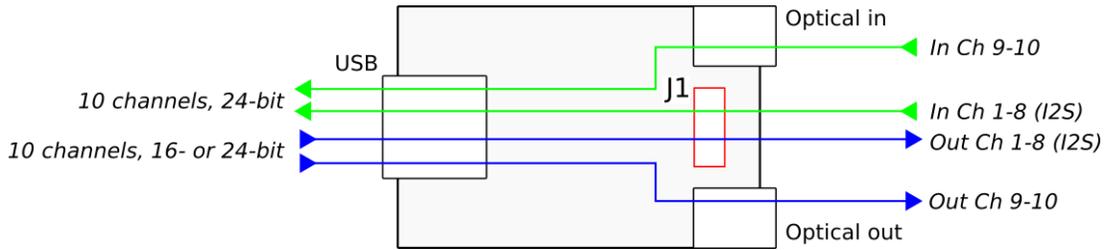
Figure 6. I2S_TOSLINK firmware pinouts

The **I2S_TOSLINK** firmware supports ten input channels and ten output channels at 44.1, 48, 88.2, 96, 176.4 and 192 kHz. Input channels 1-8 are received on J1 as I2S and input channels 9-10 are received on the optical input as TOSLINK. All ten channels are made available to the computer over USB. Output channels 1-8 from the computer are send to J1 as I2S while output channels 9-10 are sent to the optical output.

By default, the USBStreamer uses its internal clock source. If a TOSLINK input is provided, UAC2 Control Panel (Windows) or Audio MIDI Setup (Mac) can select that input as the clock source. In that case, the I2S clocks will be synthesized from the received clock.

*Table 6. **I2S_TOSLINK** firmware pinouts*

| J1 pin	
1	Out Ch 1-2
2	In Ch 1-2
3	Out Ch 3-4
4	In Ch 3-4
5	Out Ch 5-6
6	In Ch 5-6
7	Out Ch 7-8
8	In Ch 7-8
9	MCLK
10	BCLK
11	GND
12	LRCLK

![miniDSP logo]
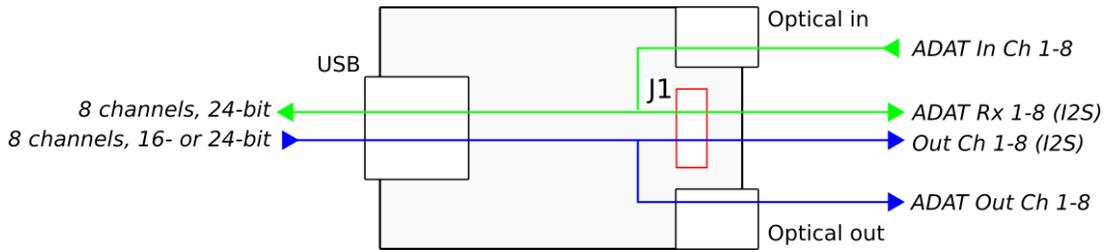
3.4 ADAT_I2S

Figure 7. ADAT_I2S firmware signal flow

At 44.1 and 48 kHz, the **ADAT_I2S** firmware receives 8 channels on the optical input and mirrors these in I2S format on J1. The inputs are available to the computer over USB. Eight output channels from the computer are transmitted as ADAT on the optical output and as I2S on J1.

At 88.2 and 96 kHz, only 4 channels are received and transmitted. (Although the USB interface will state 8 channels, only the first four can be used.)

By default, the USBStreamer uses its internal clock source. If an ADAT input is provided, UAC2 Control Panel (Windows) or Audio MIDI Setup (Mac) can select that input as the clock source. In that case, the I2S clocks will be synthesized from the received clock.

*Table 7. **ADAT_I2S** firmware pinouts*

J1 pin	
1	ADAT Rx 1-2
2	Out 1-2
3	ADAT Rx 3-4
4	Out 3-4
5	ADAT Rx 5-6[*]
6	Out 5-6[*]
7	ADAT Rx 7-8[*]
8	Out 7-8[*]
9	MCLK
10	BCLK
11	GND
12	LRCLK

[*] Channels 5 to 8 are active only at 44.1 and 48 kHz.

3.5 TDM
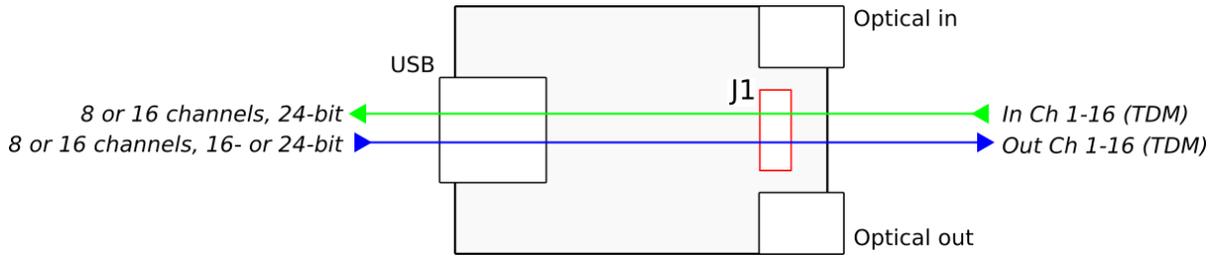
Figure 8. TDM firmware signal flow

The TDM firmware supports 8 or 16 input and output channels at 44.1, 48, 88.1 and 96 kHz. See page 12 for waveforms and clock timing. Each active data line on J1 carries 8 channels. Separate firmware files are provided for 8- and 16-channel I/O.

Table 8. TDM firmware pinouts

J1 pin	TDM8	TDM16
1	Out Ch 1-8	Out Ch 1-8
2	In Ch 1-8	In Ch 1-8
3	—	Out Ch 9-16
4	—	In Ch 9-16
5	—	—
6	—	—
7	—	—
8	—	—
9	MCLK	MCLK
10	BCLK	BCLK
11	GND	GND
12	FSYNC	FSYNC

3.6 SAMPLE RATE SUMMARY

Table 9. Summary of sample rates for each firmware version

Sample Rate	LowSampleRate	Stereo	I2S_TOSLINK	ADAT_I2S	TDM
8000	Y				
11025	Y				
12000	Y				
16000	Y				
22050	Y				
24000	Y				
32000	Y				
44100	Y	Y	Y	Y	Y
48000	Y	Y	Y	Y	Y
88200	Y	Y	Y	Y	Y
96000	Y	Y	Y	Y	Y
176400	Y	Y	Y		
192000	Y	Y	Y		

4 INSTALLATION AND CONFIGURATION – WINDOWS

For use with Windows, the miniDSP driver must be installed. In addition, depending on your application, you may need to load different firmware into the USBStreamer.

4.1 DOWNLOAD

If you purchased your product directly from miniDSP, your software will be available from the User Downloads section of the miniDSP website when your order ships. You will need to be logged into the website with the account you created when purchasing to access the download.

If you purchased your product from a miniDSP dealer, you will receive a coupon together with the product. Redeem this coupon and select the Plugin Group "USBStreamer… Drivers" at the link below:

- https://www.minidsp.com/support/redeem-coupon

The User Downloads link is visible from the dropdown menu at the top right of the website page:

Navigate to the **USB Audio Drivers** section and download the zip file under the heading **USBStreamer drivers**. Unzip the downloaded file by right-clicking on it and selecting "Extract All…".

4.2 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.

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_v2.29.3_ForWinXP_Vista.exe** for Windows XP and Vista
- **miniDSP_UAC2_v4.67.0_2019-08-15_setup.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.

4.3 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.

- 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\Firmware_Upgrade_Tools\Windows\miniDSPUAC2DFU** folder of the software download.
3. Double-click on the **miniDSPUAC2Dfu.exe** program to run it:
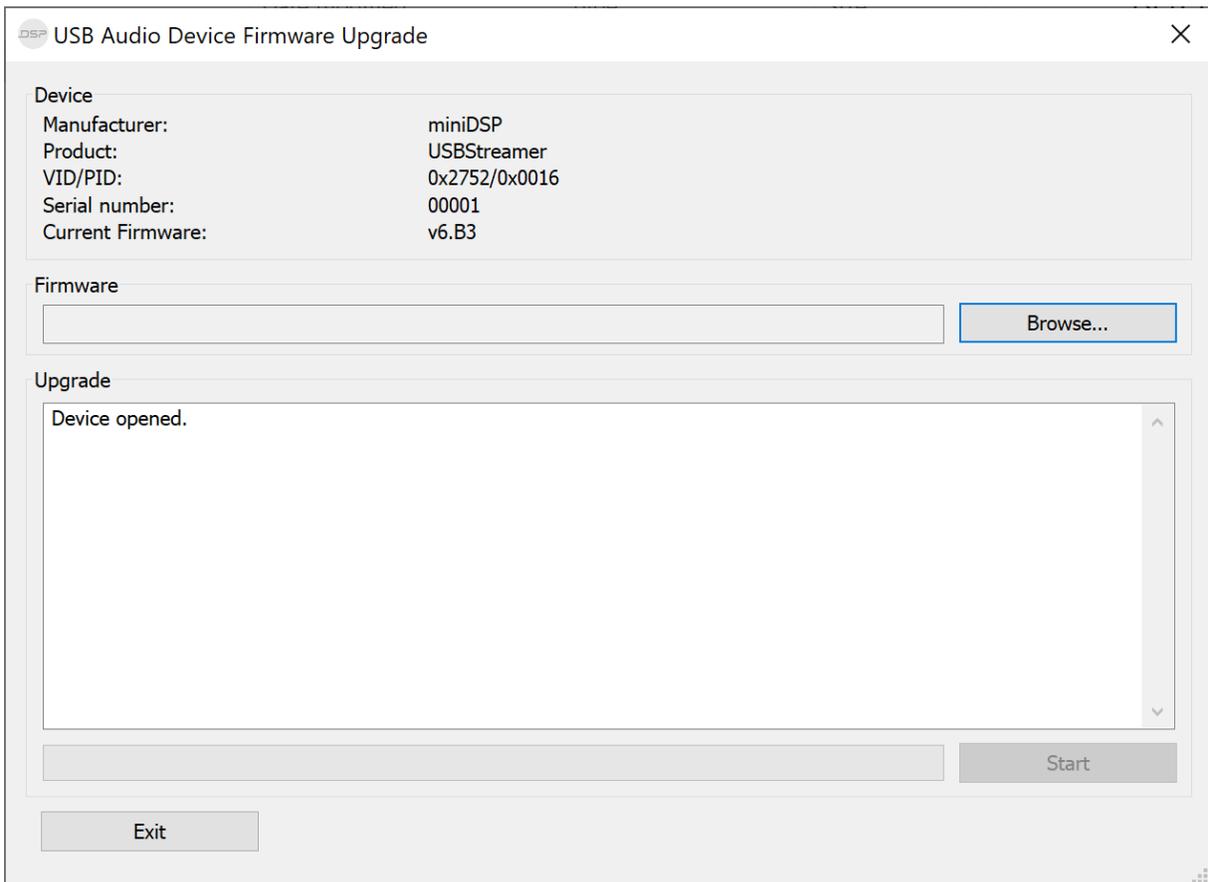
4. Click on the **Browse** button and navigate to the plugin download folder and then the **Firmware** folder. Select the most suitable firmware file according to your application. See Section 3.

5. Click on the **Start** button.

6. You will get a progress bar as upgrade proceeds:
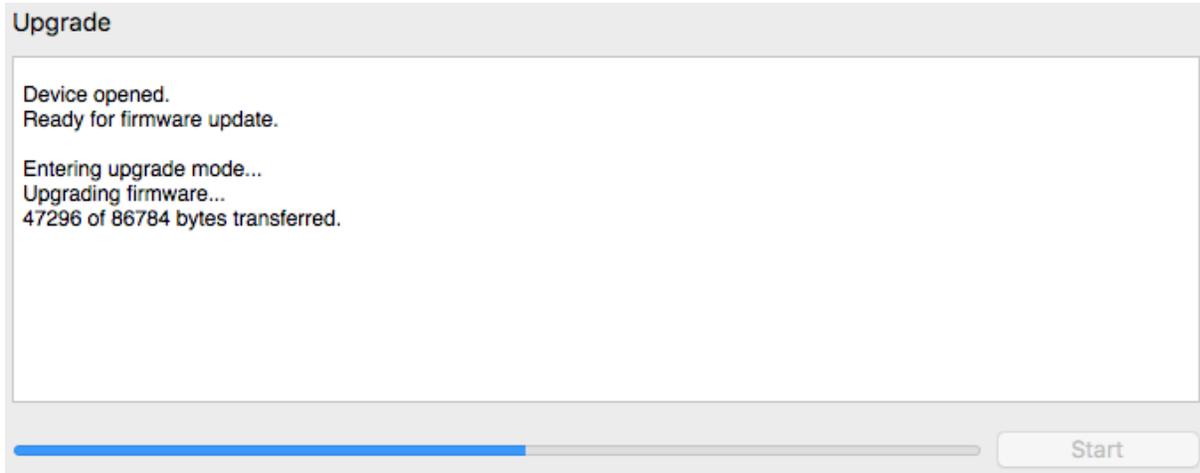
7. When it completes, you will see a message that the upgrade completed successfully:
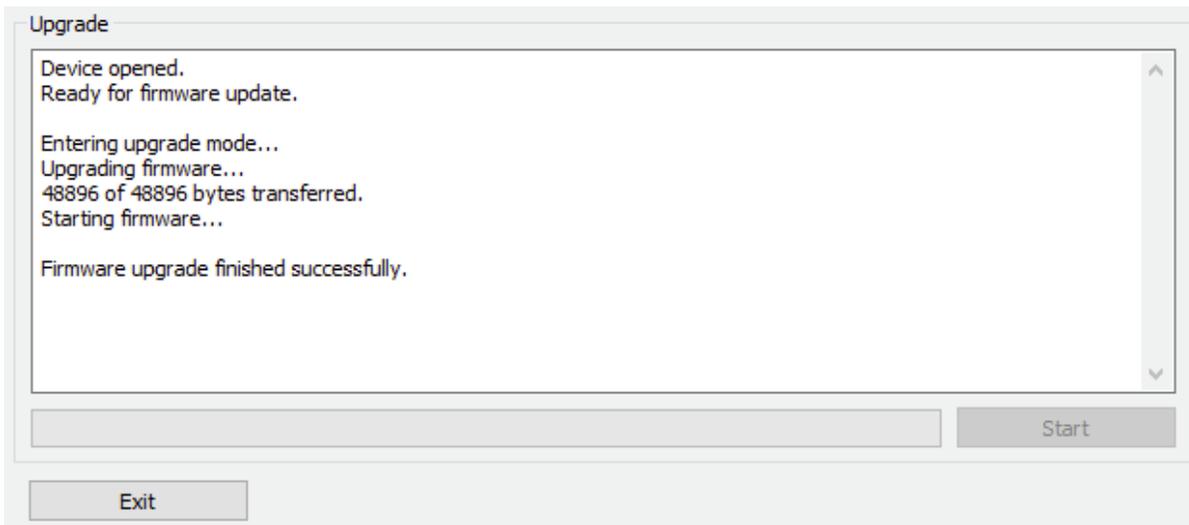
8. Click on **Exit**.

9. That's it! You're done. You can now use your USBStreamer with the new firmware.

4.4 UAC2 Control Panel

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

4.4.1 Status

This tab 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.
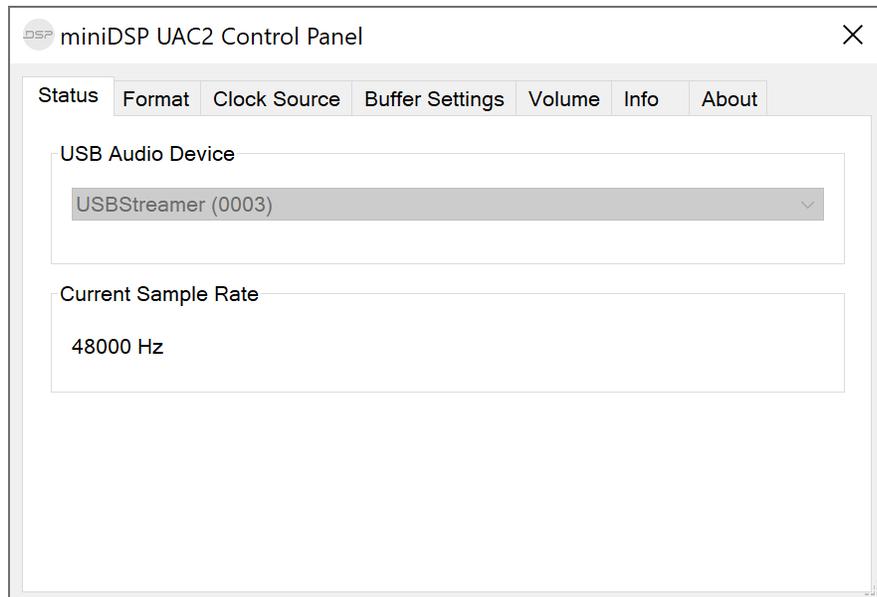
4.4.2 Format

This tab is present in firmware versions that allow a choice of different formats (for example, 16- or 24-bit output).
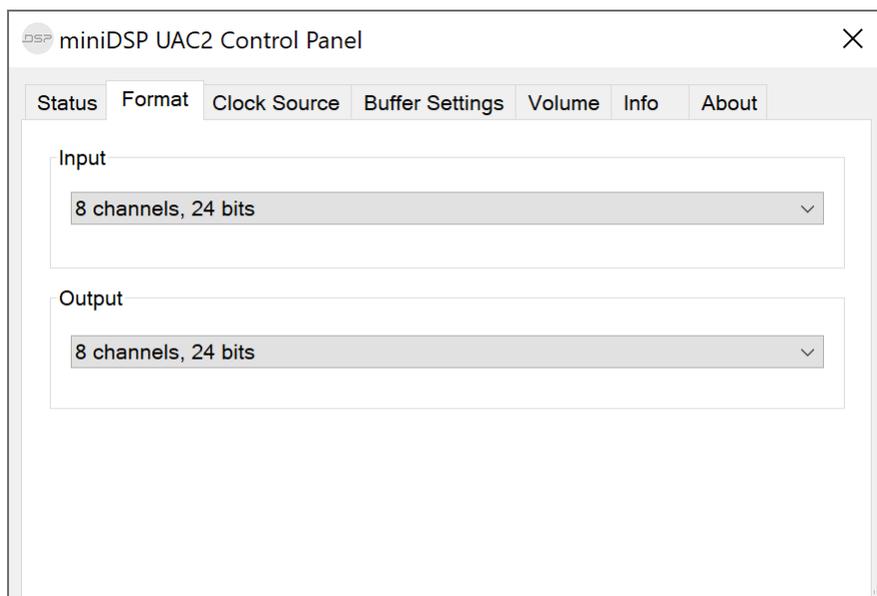
4.4.3 Clock source

This tab 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.
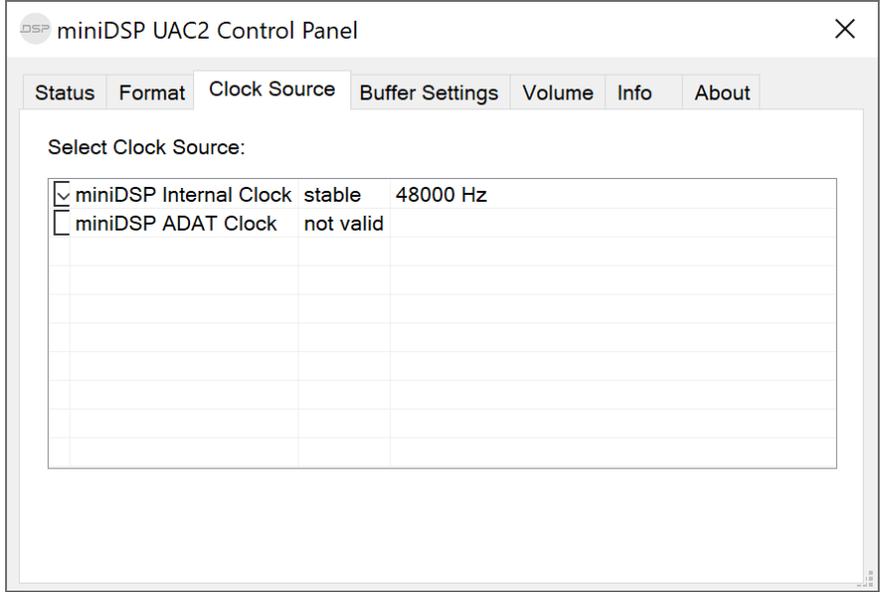
4.4.4 Buffer settings

The buffer settings are for those looking to optimize the buffering and latency settings of the USBStreamer. 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 stay at the default safe settings.
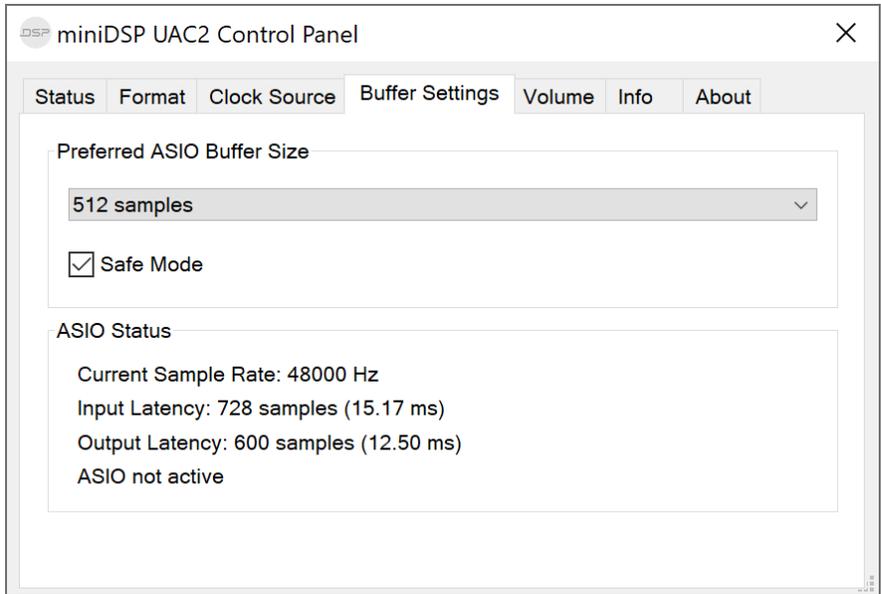
4.4.5 Volume

This tab contains a master volume control and individual level controls. There are two popup windows, for input and for output.

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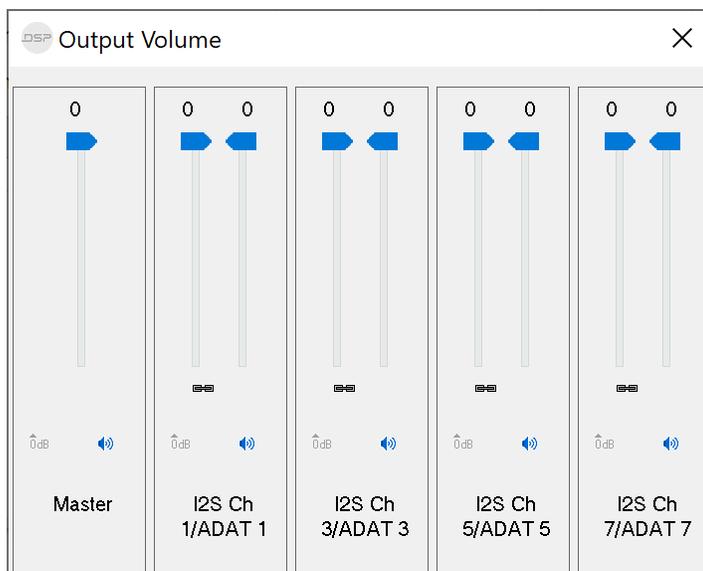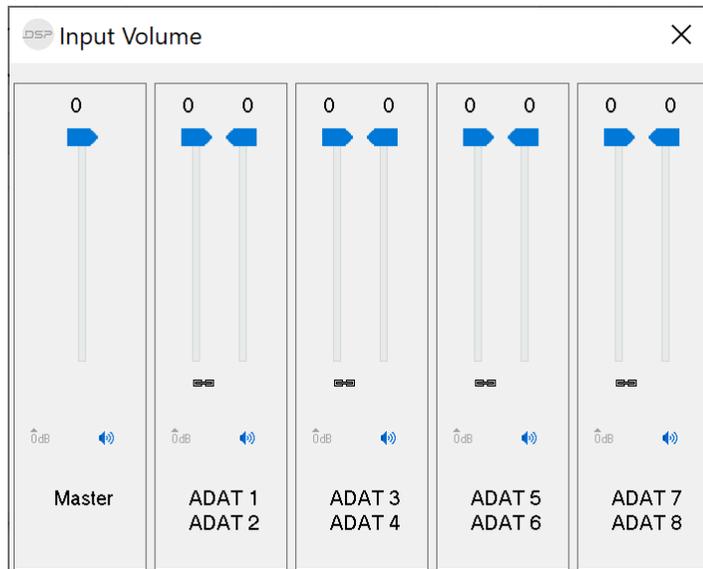
4.4.6 Info

This pane shows information about the USBStreamer.
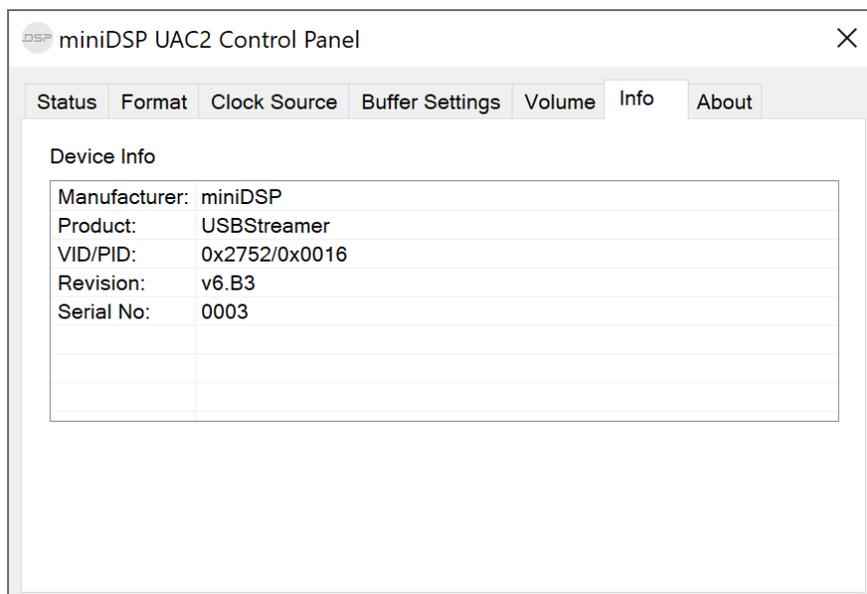
4.4.7 About
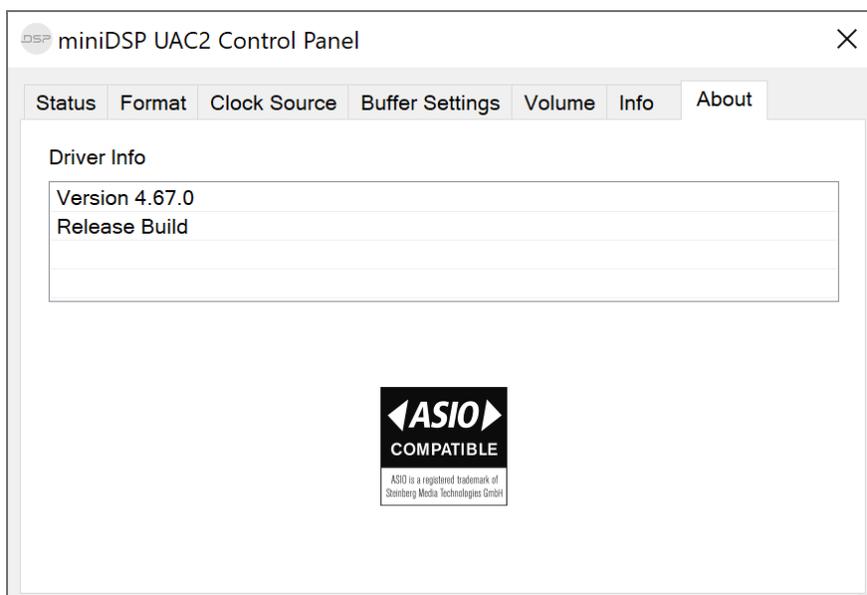
5 INSTALLATION AND CONFIGURATION – MAC OS X

Mac OS X / macOS has native support for USB Audio class 2.0 devices, so no driver installation is required. However, depending on your application, you may need to load different firmware into the USBStreamer.

5.1 DOWNLOAD

If you purchased your product directly from miniDSP, your software will be available from the User Downloads section of the miniDSP website when your order ships. You will need to be logged into the website with the account you created when purchasing to access the download.

If you purchased your product from a miniDSP dealer, you will receive a coupon together with the product. Redeem this coupon and select the Plugin Group "USBStreamer… Drivers" at the link below:

- https://www.minidsp.com/support/redeem-coupon

The User Downloads link is visible from the dropdown menu at the top right of the website page:

Navigate to the **USB Audio Drivers** section and download the zip file under the heading **USBStreamer drivers**. Unzip the downloaded file by double-clicking on it.

5.2 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.

- USBStreamer B (box) has ADAT firmware loaded when shipped.

- USBStreamer Kit has TOSLINK_I2S firmware loaded when shipped.

To load firmware:

1. Connect the USBStreamer to your computer via USB (if not already connected).
2. Navigate to the **Firmware/Firmware_Upgrade_Tools/Mac** folder of the software download.
3. Double-click on the **miniDSP USB DFU.app** program to run it:
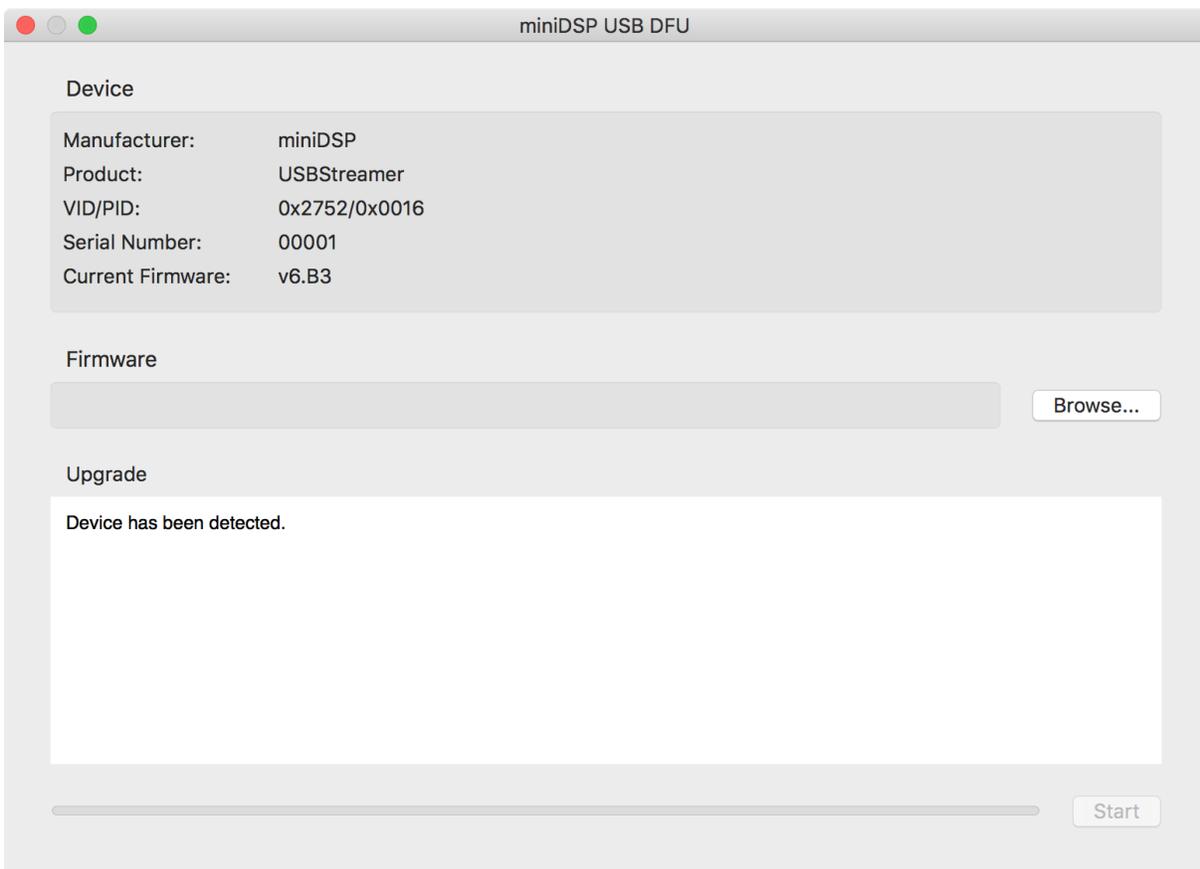
4. Click on the **Browse** button and navigate to the plugin download folder and then the **Firmware** folder. Select the most suitable firmware file according to your application. See Section 3.

5. Click on the **Start** button.

6. You will get a progress bar as the upgrade proceeds:
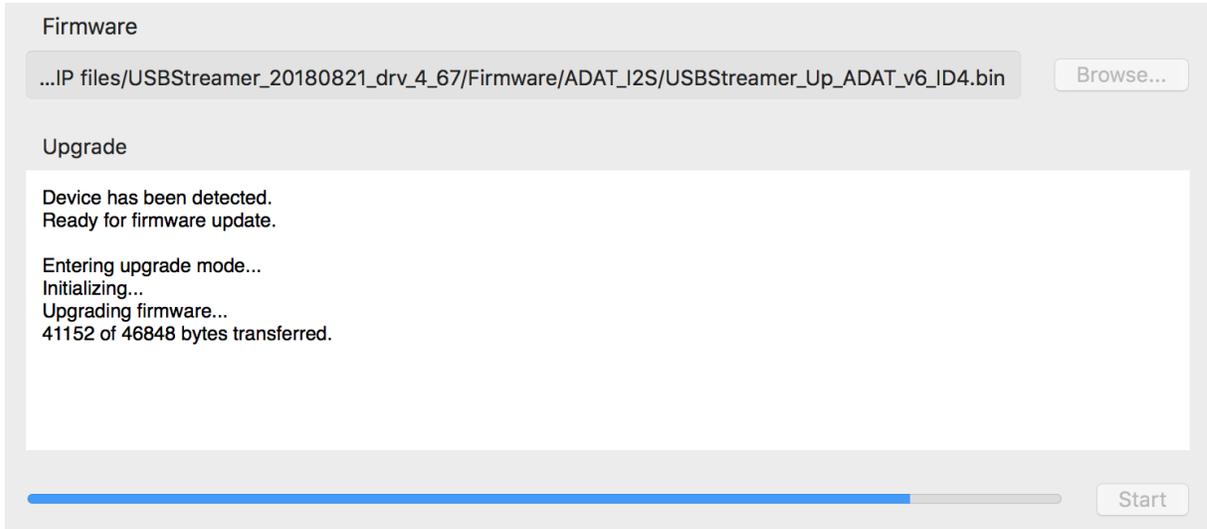
7. Once the firmware upgrade completes, you will see a message that the upgrade completed successfully:
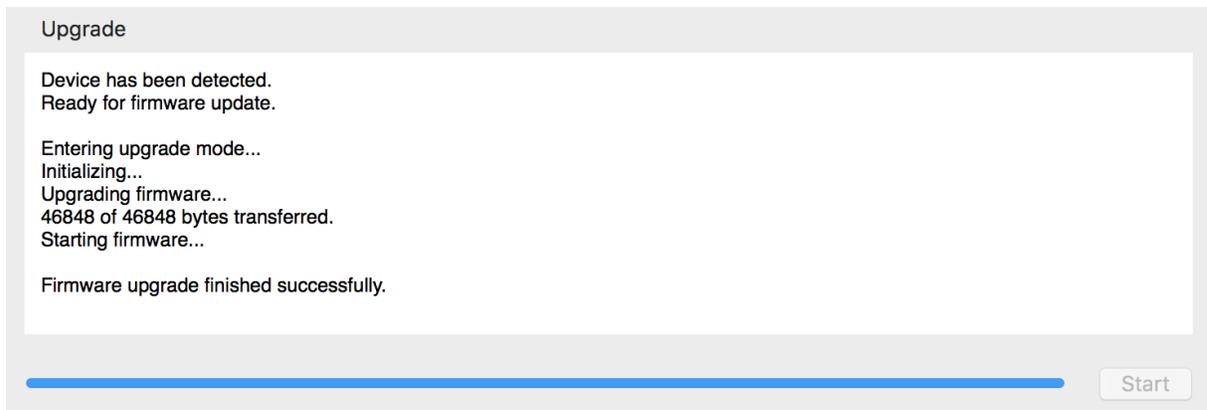

8. Quit the **miniDSP USB DFU** application.

9. That's it! You're done. You can now use your USBStreamer with the new firmware.

![miniDSP logo]

5.3 CONFIGURATION IN AUDIO MIDI SETUP

Open the program **Audio MIDI Setup** (in **Applications**->**Utilities**). Click on the device USBStreamer that appears in the list on the left. This will display the input and output channels that the loaded firmware provides. The **Format** drop-down menu will show the supported bit depths and sample rates.
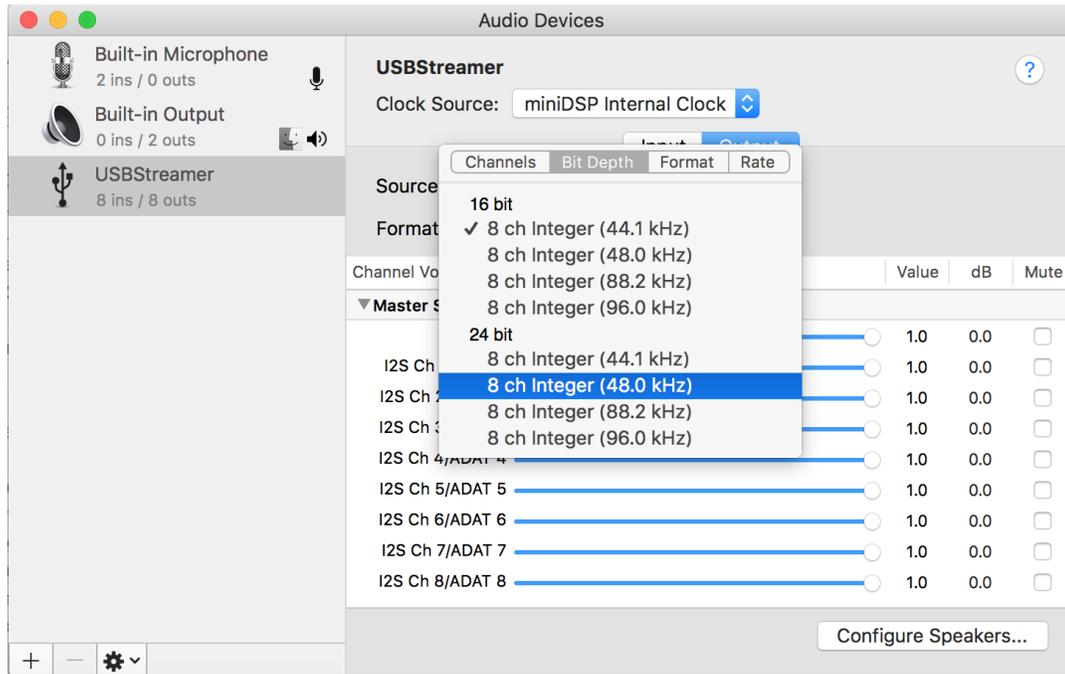

By default, the sample rate clock of the USBStreamer is internally derived. With firmware that supports ADAT or TOSLINK, it can also be derived from the optical input by using the **Clock Source** selector:

You may need to provide additional routing, depending on how the application that you are using supports multiple channels. For example, to set the TOSLINK output to be the default stereo output for all applications:

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**.
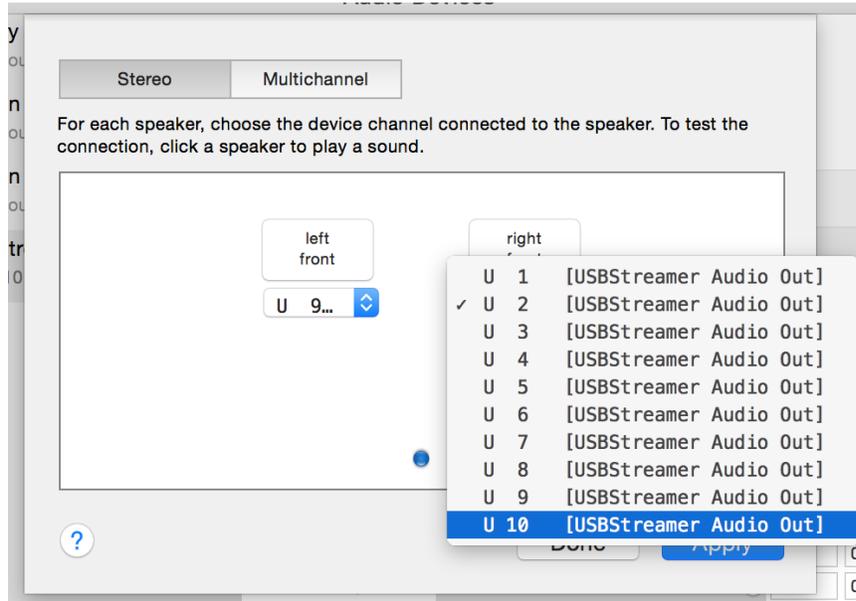

3. Select the output sample rate. Typically, 44.1 kHz is the best choice. Some audio players will automatically change this setting according to the media being played.

4. To set the USBSTREAMER to be the default audio output device, right-click and select "Use this device for sound output".
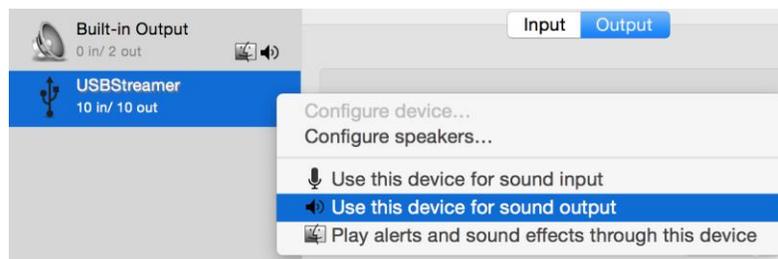
The ADAT_I2S, I2S_TOSLINK, LowSampleRate and 16-channel TDM firmware are provided in two separate firmware files, each of which has a different USB ID. This enables two USBStreamer devices to be connected at the same time.

For example, 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 then create a 16-channel aggregate device in Audio MIDI Setup:
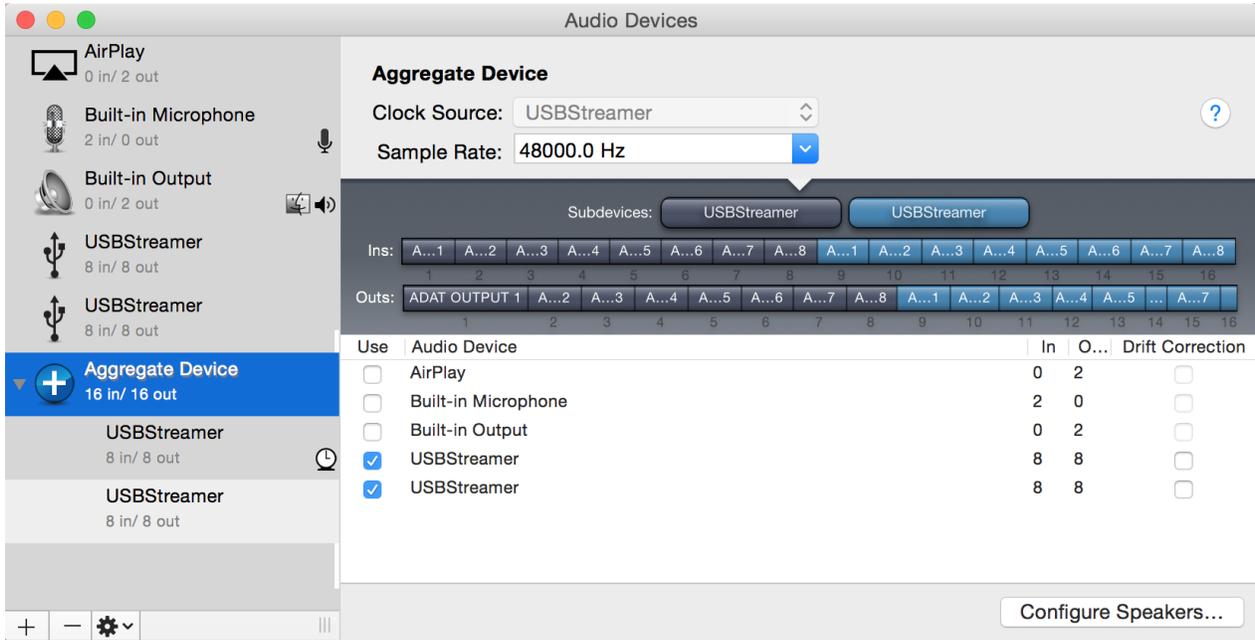
6 ADDITIONAL INFORMATION

6.1 SPECIFICATIONS

Computer connectivity   USB 2.0, USB Audio Class 2 compliant

Driver   Mac OS X: no driver required

Windows: driver provided

Audio sample rate   See Section 3 of this manual.

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)

6.2 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 support.minidsp.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.