Music Streamer HD owner's manual
draft dated 11-30-2014

Thank you for your purchase of the High Resolution Technologies (HRT) Music Streamer HD, ultra high performance USB audio digital to analog converter (DAC).

The Music Streamer HD (MSHD) is designed to provide the very highest audio performance possible along with simple setup and operation. Please take a few minutes to read this manual before proceeding and if you have any questions about either the setup or operation of your MSHD, please contact either your HRT dealer or HRT directly.

Our Support staff can be reached by emailing: support@hirestech.com

We generally respond within 24 hours, often times sooner.

Getting Started

Included with the MSHD is a 1 meter USB A to USB B cable that can be used to connect your MSHD to your computer, tablet, or other appropriate platform (host). The MSHD draws its power requirements from the USB host, other than the audio output cables (either unbalanced or balanced), no other connections are required. If you wish to use a different USB cable, please keep in mind that the cable length should be as short as practical for your installation as this will improve the USB performance.

Front Panel – LED indicators

The front panel of the MSHD has number of features that you should become familiar with. On the far left is the USB B socket. This is the connection point where the cable between your host (computer, tablet, laptop, etc) connects to the MHSD. Next are a series of LED (light emitting diodes) indicators that will provide you with information on the state of operation of the MSHD.

The LEDs (9 total) are grouped into two sets. The first set of six LEDs will indicate the sample rate that the host has instructed the MSHD to operate at. As the MSHD is a USB device (as opposed to a USB host) it, like all USB audio devices, have their parameters (such as sample rate) set by the host. The sample rates LEDs are 44k1, 48k, 88k2, 96k, 176k4, and 192k; these correspond to 44,100 Hz, 48,000 Hz, 88,200 Hz, 96,000 Hz, 176,400 Hz and 192,000 Hz sample rates. If set by the host, one of the six sample rate LEDs on the MSHD will be illuminated. If none of the sample rate LEDs are illuminated, then either the host has not yet set the sample rate, or the host has instructed the MSHD to enter suspend (a low power consumption sleep state).

The last last three of the nine LEDs are grouped to the right side of the MSHD. These three LEDs are labeled 16 bit, 24 bit, and mute. Like the sample rate LEDs, it is the host that determines the state of these indicators and the underlying behavior of the MSHD itself. The bit depth LEDs, 16 bit and 24 bit are mutually exclusive, only one or the other will be illuminated. The host will either select the 16 bit mode or the 24 bit mode depending upon how you have set it up or the type of audio file being played (media player and setup dependent). The mute LED is illuminated when the host has instructed the MSHD to activate its mute circuit. When the mute LED is illuminated, there will be no analog audio output from the MSHD.

Front Panel – Audio Class Mode select switch

To the far right side of the MSHD front panel is a small switch. This switch is used to set the USB Audio Class mode of the MSHD to either the 1.0 (switch in the down position) or the 2.0 (switch in the up position) mode. Please note, the position of the switch is only read when power is first applied to the MSHD. If the MSHD is already running, moving the switch will not change the mode of operation. To change the mode, reapply power to the MSHD. This is accomplished by simply unpluging the USB cable connected to its USB socket, place the mode switch in the mode that you wish to use, and then reconnect the USB cable to the socket.

USB Audio Class 1.0 and 2.0

Class 1.0 mode is supported by nearly all host operating systems including all modern versions of Microsoft Windows, Apple OS X, and most verities of Linux.   Class 2.0 mode is supported natively by all modern versions of Apple OS X and Linux, but not by Microsoft Windows. In order to use the 2.0 mode with Windows, you will need to install a driver (available from HRT) and follow a few setup steps.

Remember, moving the switch will not change the mode of operation until the USB cable is detached and then reattached.

Initial Setup

To begin the setup process, first determine where to best position the MSHD in relationship to your host and audio system. When considering the location, cable lengths will often be one of the factors used to make a decision. When the total cable length (USB and audio cables combined) is a concern, it is generally better to use longer audio cables than a longer USB cable if performance is the goal. The output impedance of the MSHD's analog audio connections is very low, and as such, will drive virtually any length of cable without affecting the high frequency response. USB is limited to a maximum of 5 meters (about 16 feet) for any single segment, but this limit is best not approached, particularly when running in USB Audio Class 2.0 mode as the 2.0 mode uses HS (High Speed) USB protocol which is much more sensitive to cable lengths.

The second aspect to consider is which of the two audio outputs you will be using to make a connection to your audio system. The MSHD offers two sets of outputs, each with different characteristics. The rear panel (see photo) contains both audio output connections:

On the left side of the rear panel of the MSHD are two "balanced" XLR connectors, one labeled "R" and one labeled "L". These correspond to the audio channels where "L" is for the Left channel and "R" is for the Right channel. The XLR connectors have a full scale output of 4.5 Volts RMS in level, so if you choose to use the balanced outputs, please make certain that your audio system is capable of properly handling the maximum level that the MSHD can output.

On the right hand side of the rear panel is a pair of RCA sockets. These two sockets are labeled "unbalanced", with the upper of the two sockets labeled "L" for the Left audio output channel and the lower of the two labeled "R" for Right audio output channel. The "unbalanced" audio outputs have a full scale output of 2.25 Volts RMS.

The choice between either the "balanced" or "unbalanced" audio outputs will depend upon the capabilities of your audio system's inputs. If the audio system that the MSHD is connected to can accommodate a balanced (XLR) signal, then that will generally give you the best performance. You will need an appropriate length pair of audio cables (either XLR type for a balanced connection path, or a RCA type for an unbalanced connection path).

It is possible to use both output types at the same time if you have the need, but generally, most systems will only use one or the other.

Host Setup

The next steps in the setup will be specific to the operating system of the host that the MSHD is paired with. Follow the instructions for your computer's OS and then you are ready to use your MSHD. For the preliminary setup of any the MSHD on any supported version of Windows, we recommend that you begin in the USB Audio Class 1.0 (switch down) mode. After you have the system and host configured and running, then you should consider switching to the Audio Class 2.0 mode (covered later in this manual).

Windows XP

XP being an older operating system has a fairly simple set of steps and the SP3 version of XP is the oldest version of Windows which will support an asynchronous transfer protocol device like a Music Streamer HD. Any version of Windows prior to this is not compatible with the HSHD or any other asynchronous USB audio device.

The primary task will be to inform the OS that the MSHD is your destination for audio. Making the OS aware of this choice for XP is done using the Control Panel.
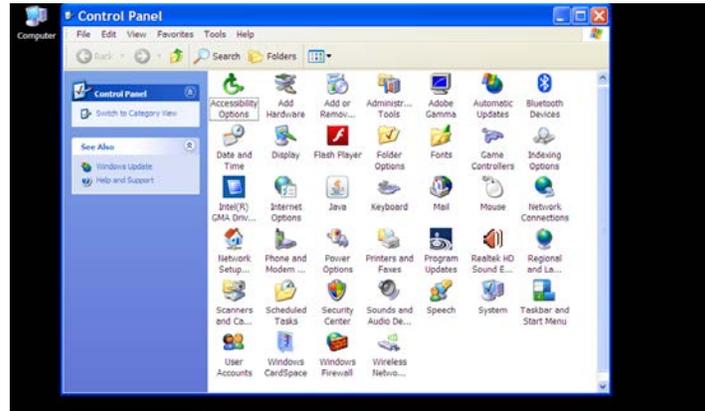
Open 'Control Panel' on your computer and then select the 'Sounds and Audio Devices' option; under 'Sound Playback' in the 'Audio' tab, make certain that MSHD is selected as the audio destination.


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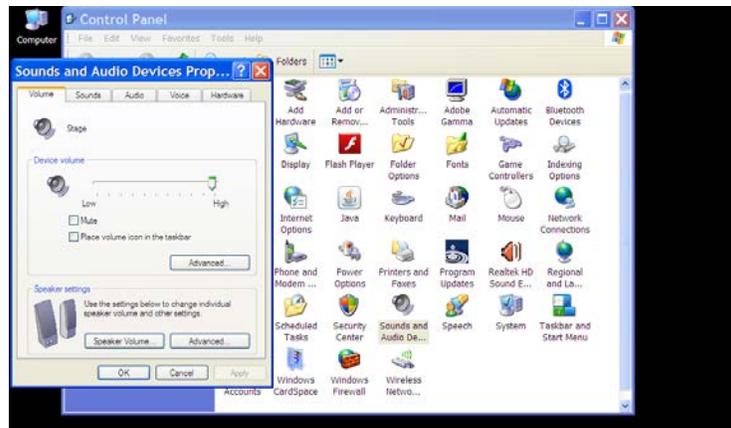
You may now use whatever media player you prefer, but be aware that some may require to select the MSHD, as not all players honor the preferences choice that you made using the Sound and Audio Devices Properties selection.
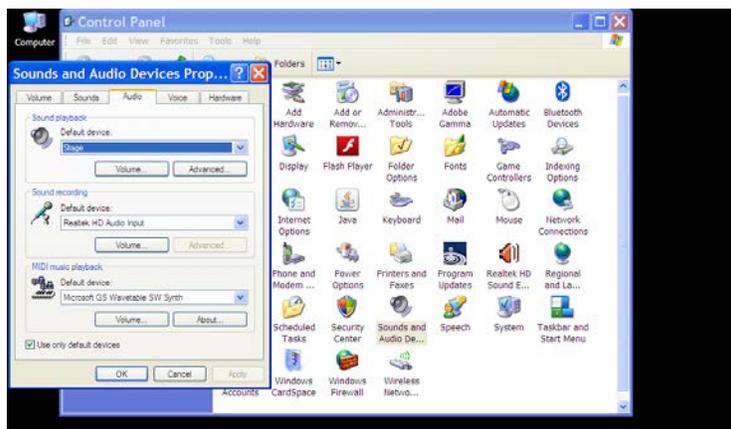
The mute state (either playing or muted) can be controlled by the mixer of XP. A change made on the host will change the mute LED from off (playing) to on (muted).

Windows Vista, 7, or 8

For a Windows Vista, Windows 7, or Windows 8 host, the choice for the audio destination of any computer based material is made from the 'Playback devices' option of the audio icon located on the task bar at the bottom of the desktop. For Windows 8 or 8.1, you must be on the desktop tile in order to access this icon.
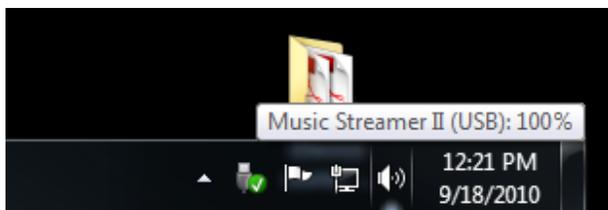

Right click on the speaker icon on the task bar this will expose a series of options. Select (using a left mouse click) the 'Playback devices' option from the list.

This will open up a separate window titled 'Sound'.
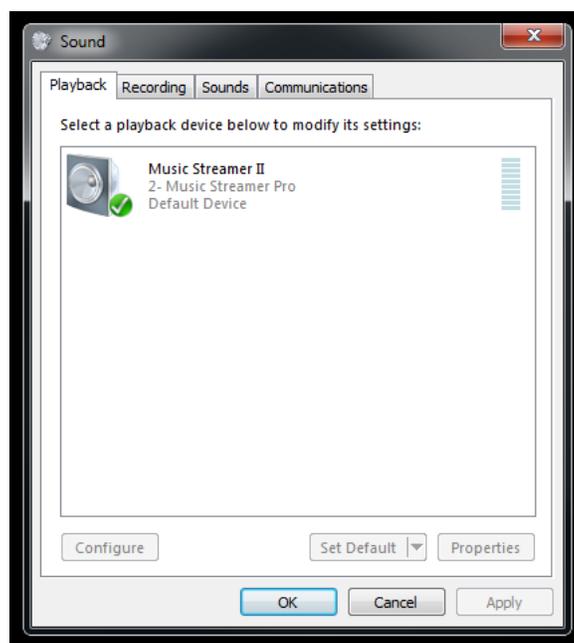
The 'Sound' window has a number of tabs - the first one to the left is the 'Playback' tab. Here, you will have one or more devices listed. The MSHD will be one of these devices. Select the MSHD by left clicking the entry to highlight it, and if you have more than one, you may wish to make this your default so that MSHD remains as the primary audio destination. You can override the default name and enter any that you wish to use, MSHD being one option. At a minimum, you will need to configure the entry to inform the OS that the MSHD is a full range (as opposed to limited range) audio device. This is accomplished by left clicking on the 'Configure' button.
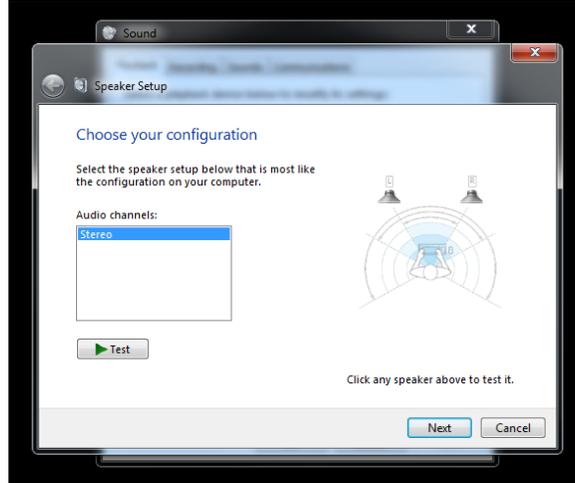
After pressing 'Configure', you will open up another window titled 'Speaker Setup'. You can click on the 'Test' button and Windows will send a series of tones to the left and right speakers. If the MSHD is connected and not muted, it will play these tones on the appropriate Speakers. This is a good time to confirm that you have not interchanged the left and right channels. Once the 'Test' has been performed, click on the 'Next' button to proceed. This will expose another option, titled 'Full-range speakers'.
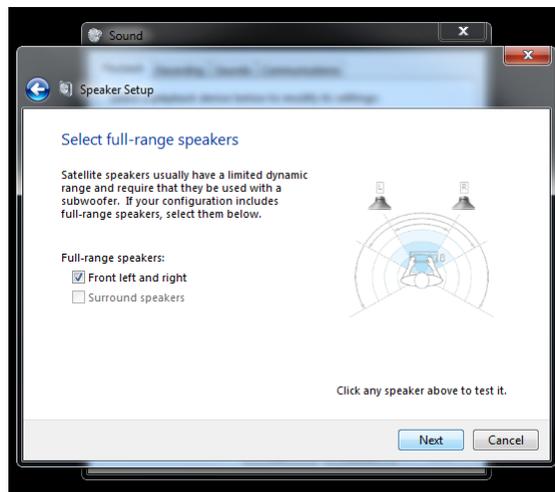
There will be an option box next to 'Front left and right', tick this option using a left click of the mouse. Once done, you can either retest the Speakers, or when you are ready to proceed, click the 'Next' button.
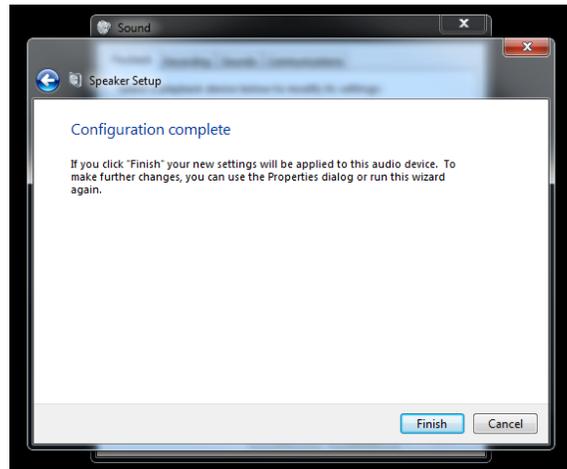
The final required step is to click on 'Finish'. This will return you to the 'Sound' window. Here, you may go deeper into the setup options by selecting Properties or you may exit by pressing 'OK'.
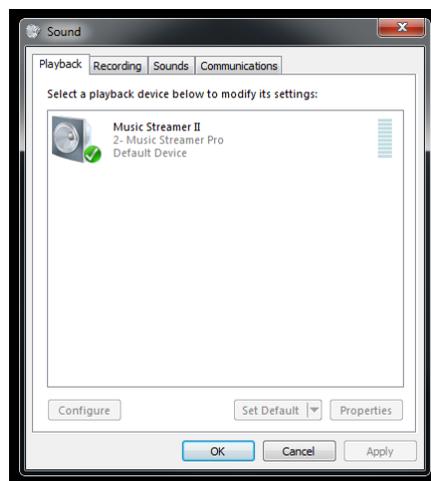
Should you elect to go deeper and select options to rename, change the level indication (either percentage or dB), enable or disable any enhancements or change the sample rate and/or bit depth of the Windows mixer and SRC, this can be accomplished using the various tabs.

Additionally, the media player you choose may have other options for you to choose. Depending upon your media player and if you elected to make your MSHD the default audio destination, you may also need to inform any application that produces audio output that the MSHD is your chosen destination for that material.

Apple OS X

Any modern version of OS X will support the MSHD and its asynchronous audio transfer mode. Modern versions of OS X will natively support either USB Audio Class 1.0 or 2.0. For this OS, we recommend that you use the 2.0 mode (switch in the Up position).

The minimum requirement is to inform OSX that the MSHD is your choice destination for audio content. This is accomplished by using the Sound portion of Preferences.
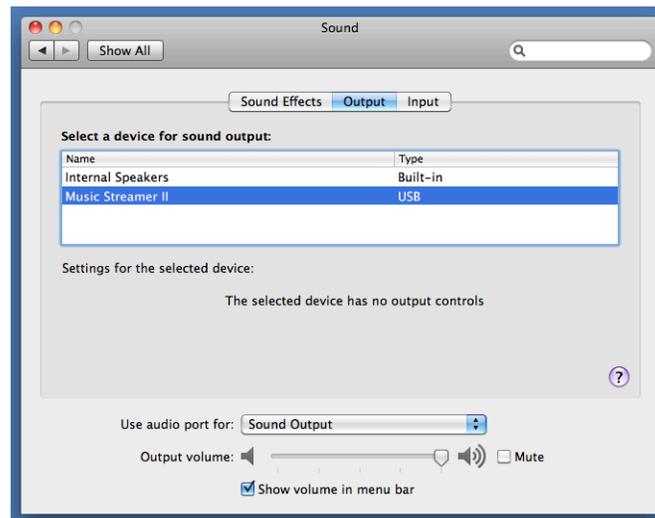

You may also want to redirect the Sound Effects (system sounds) away from the MSHD and have those sounds produced by the internal speakers. To inform the OS of your preference for Sound Effects, open the Sound Effects tab.

Select the internal speakers for these types of sounds.

While OSX offers many options for media players, the most common will be the preinstalled iTunes player. This player uses the audio subsystem of OS X and routes all its audio through the system mixer and SRC (sample rate converter). The output sample rate for any audio content will be determined by the settings of the SRC, not the source material itself. In order to have the best results, it is always best to avoid the SRC process. This can be accomplished by setting the output to match the sample rate of the source material you will be playing (most often 44.1 kHz). Setting the output sample rate is accomplished by using the Audio MIDI Setup utility.
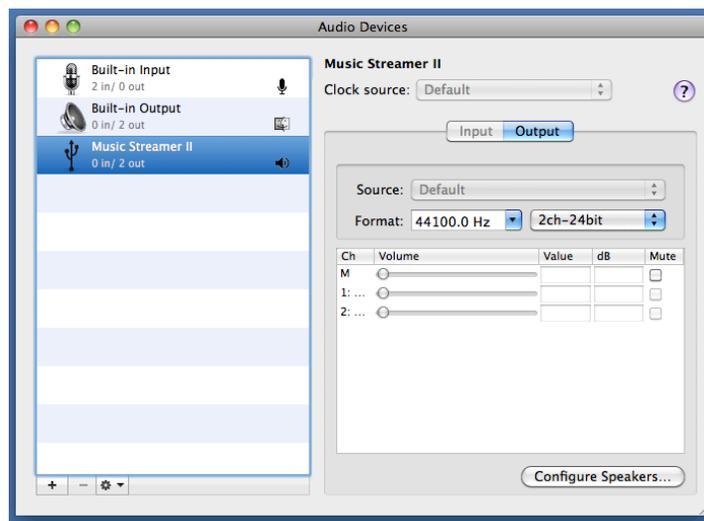
Open Audio MIDI and select the MSHD, next choose the output sample rate you will be playing using the Format: pull down menu. Note, it is unnecessary to match the bit depth, both 16 and 24 bit material can pass down a 24 bit path unaltered. The converse is however not the case. In most situations, select the 2ch-24bit option. Please note, for the best results, you should not make a change to the sample rate using the Audio MIDI utility while iTunes or any application which generates audio output is open in either the foreground or background. Always fully close iTunes or any other sound generating application before making any changes using Audio MIDI.

The last consideration for iTunes is the built in sound processing options, including equalization. Generally, you will get better results if you defeat this processing option.

This is accomplished from within the iTunes application. The Equalizer has an enable option labeled 'On'. It this option is unchecked, the equalizer is bypassed.

Firmware version

The firmware version that the MSHD is running can be checked using the appropriate utility for the operating system that your host is running.

Firmware version - Windows

On a Windows host, you will need to download and run a utility named USBView.exe. A copy of this utility is available from the Support page of the HRT website (www.hirestech.com).

To run USBView.exe we recommend that you save a copy on the desktop of your host. Left click the utility to launch it. A screen which is divided into two columns will appear. The left hand column will show all the USB devices (including internal and external hubs) that are currently attached. The MSHD will be listed as a Composite USB device (you may have more than one Composite USB device. Once you have located the MSHD from the listing, left click to expand that entry on the right hand side of the utility. The firmware date and version number will be listed in the expanded listing near the top of the entry. Firmware versions are generally a whole number, a decimal point, and another number. As of the date of the writing of this manual, the current version for the MSHD is 1.4 (1V4).

Firmware version - OS X

On a modern version of Apple OS X, there is a built in utility that can be used to determine the current firmware version that is installed on the MSHD. Depending upon which version of OS X you are running, the utility will be named either System Profiler, or System Information.

Locate and launch the version of the utility your host has installed. The left column of the utility will have a section for Hardware, under this section will be an entry for USB. Click on USB to expose a listing of all USB devices attached to the host (computer). The USB Device Tree will have an entry for the MSHD. Click on this entry to expand the listing on the lower portion of the right hand side of the utility. The firmware date and version number will be listed in this portion of the utility.

Questions?

This manual is intended to provide a basic overview of the setup and operation of the MSHD. Additional questions can be addressed to your HRT dealer, the HRT distributor for the country in which you are located, or HRT directly. Feel free to contact us at any time, we are always happy to help.