

# M2TECH

## HIFACE EVO

192KHZ/24BIT DIGITAL AUDIO INTERFACE

USER MANUAL



REV. 1.0 – 7/2010

## Warning!

**Changes or modifications not authorized by the manufacturer can invalidate the compliance to CE regulations and cause the unit to be no more suitable to use. The manufacturer refuses every responsibility regarding damages to people or things due to the use of a unit which has been subject to unauthorized modifications or to misuse or to malfunction of a unit which has been subject to unauthorized modifications.**



This unit is compliant with the following CE regulations when a USB cable less than 3m is used: CEI EN 55022:2009 Class B (Radiated Emissions), CEI EN 55024:1999, CEI EN 55024:A2/2003, CEI EN 55024:IS1/2008 (Radio Frequency Electromagnetic Fields, 50Hz Magnetic Field Immunity Test and Electrostatic Discharges – ESD).

## Recycling



The label above, printed on the product case, indicates that the product, when no more usable, can't be treated as generic garbage, but must be disposed of at a collection point for recycling of electrical and electronic equipment, in compliance with the WEEE regulation (Waste of Electrical and Electronic Equipment).

By making sure that this unit is correctly recycled, you will help preventing potential damages to environment and human health, which could be caused by a wrong treatment of this product as generic garbage. Materials recycling helps saving natural resources. For more in-depth information about recycling this product, please contact M2Tech Snc di Manunta & Marino.

**WARNING: the information contained in this manual are considered to be reliable and accurate. M2Tech reserves the right to change or modify the information any time, without prior advice. It's up to the customer to ensure that the manual being consulted is the latest version.**

Dear customer,

thank you for purchasing HIFACE EVO. What you have is a first-rate USB-to-S/PDIF converter with many unique features conceived to obtain the best audio performance out of a music file.

Even if getting digital music out of a PC or a Mac is nowadays quite simple, much harder is to obtain the best sonic performance from it, due to intrinsic limits in USB 1.1 audio standard and the implementation of digital audio interfaces in computers. Please visit M2TECH website ([www.m2tech.biz](http://www.m2tech.biz)) to find extensive literature about this topic.

HIFACE EVO overcomes all the limits of usual USB-to-audio interfaces by implementing proprietary drivers and by using asynchronous data transfer, along with a sophisticated electronic design.

HIFACE EVO features a comprehensive set of output connections which suit virtually all DAC's and A/V receivers around.

We feel that your expectations will be fulfilled by HIFACE EVO: you'll hear your DAC and your music files in a way like never before, prepare for a whole new experience!

Nadia Marino, CEO

Please annotate here your hiFace Evo serial number for future reference:

S/N: \_\_\_\_\_

Date of purchase: \_\_\_\_\_

## INDEX

1. Front Panel .....	5
2. Back Panel.....	6
3. Connection to the host.....	7
4.1. Obtaining the driver .....	8
4.2. Installing the driver on a Windows-based PC.....	8
4.2.1. Automatic (guided) installation.....	8
4.2.2. Manual installation.....	10
4.3. Installing the driver on a Mac .....	11
4.4. Uninstalling the driver.....	13
4.4.1. Uninstalling the driver on a Windows-based PC after installation with setup32.exe or setup64.exe .....	13
4.4.2. Manually uninstalling the driver on a Windows-based PC .....	13
4.4.3. Uninstalling the driver on a Mac.....	14
5. Configuring the computer to use hiFace Evo .....	15
5.1. Configuring a PC with Windows XP .....	15
5.1.1. Configuring for Direct Sound with Windows XP .....	15
5.1.2. Configuring for Kernel Streaming with Windows XP .....	16
5.1.3. Using hiFace Evo in both Kernel Streaming and Direct Sound mode.....	16
5.2. Configuring a PC with Windows Vista or Windows 7.....	17
5.2.1. Configuring for Direct Sound with Windows Vista or Windows 7 .....	17
5.2.2. Configuring for Kernel Streaming with Windows Vista or Windows 7 .....	18
5.2.3. Configuring for WASAPI with Windows Vista or Windows 7 .....	18
5.3. Configuring a Mac .....	18
6.1. FooBar .....	19
6.2. Winamp and MediaMonkey.....	19
7.1. FooBar .....	21
9. AES/EBU output: consumer and professional mode .....	22
10. I <sup>2</sup> S output.....	22

## 1. Front Panel

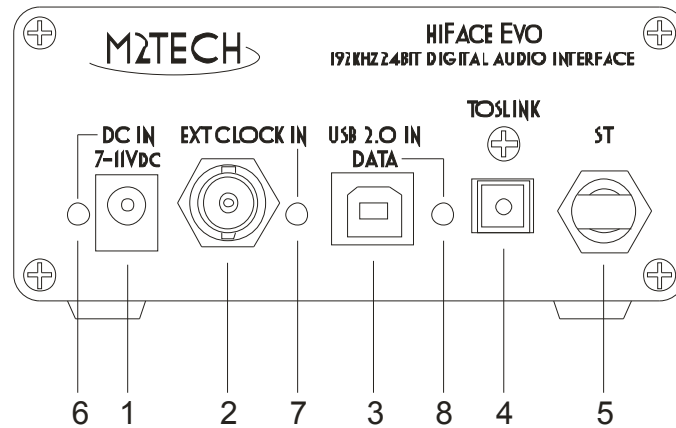


Figure 1

**1) Supply input.** Apply a voltage in the range 7V to 11V. Tip is positive, ring is negative. This input is protected against polarity inversion. 2mm tip jack supply connector

**2) External clock in.** Apply a clock source if you need higher precision and stability than provided by the internal oscillators. Please remember that a suitable clock (22.5792MHz or 24.576MHz) must be provided depending on the sampling frequency of files to be played back. Please see the specifications section for absolute maximum ratings. This input is galvanically isolated by a pulse transformer. 75 Ohm female BNC connector.

**3) USB input.** Connect to host with a suitable 2.0 USB cable. Female B USB connector

**4) Optical Toslink™ output.** Connect to DAC or receiver with a Toslink™ optical fiber. Toslink™ connector.

**5) Optical AT&T ST output.** Connect to DAC with a 62.5/125um multicore glass optical fiber. This output is compliant with Avago AV02-0723AN application note. ST connector.

**6) Power indicator LED.** Turns on in green when power is applied to hiFace Evo.

**7) External clock indicator.** Turns on in green when an external clock is applied to the related input.

**8) Data indicator.** Turns on in green whenever the host is sending data to the hiFace Evo

## 2. Back Panel

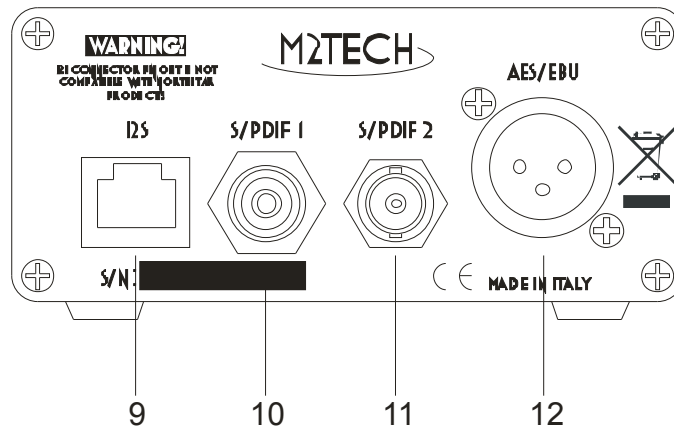


Figure 2

**9) I<sup>2</sup>S output.** Direct I<sup>2</sup>S output for connection to a board or DAC provided with I<sup>2</sup>S input. This input is not galvanically decoupled, so an external solution or a galvanically isolated input must be used if galvanic isolation is required.

**WARNING: this output CANNOT be directly connected to a North Star Design DAC such as Model 192 or Extremo! An adapting circuit must be used.**

**10) RCA S/PDIF output.** Connect to DAC or receiver with a 75 Ohms digital cable terminated with RCA male plugs. This output is galvanically isolated by a pulse transformer. Gold plated RCA female connector

**11) 75 Ohms BNC S/PDIF output.** Connect to DAC or receiver with a 75 Ohms digital cable terminated with BNC male plugs. This output is galvanically isolated by a pulse transformer. 75 Ohms BNC female connector.

**12 AES/EBU output.** Connect to DAC or receiver with a 110 Ohms balanced digital cable terminated with XLR connectors. This output can set to consumer or professional mode by means of an internal jumper. Instructions about setting the jumper are printed on the PCB. This output is galvanically isolated by a pulse transformer. XLR male connector.

### 3. Connection to the host

Please refer to section 2, “Front Panel Description”.

Connect the “B” plug of a 2.0 USB A-B cable to the USB connector (Figure 1, 3) of hiFace Evo.

Connect the “A” plug of the cable to a 2.0 USB port of your computer.

Connect a 9V power supply or a 7.2V/10.8V lithium battery, or a 9V alkaline battery to the supply connector (Figure 1, 1) of hiFace Evo. The power indicator (Figure 1, 6) will lit.

If a driver hasn't been installed on your computer, an automatic driver installation wizard may appear.

**Note: If you want to avoid the automatic driver installation, please connect hiFace Evo to the computer after manually installing the driver (see section 4).**

## 4. Driver installation

### 4.1. Obtaining the driver

The drivers for hiFace Evo are available on the M2Tech website, in the download page ([www.m2tech.biz/download.html](http://www.m2tech.biz/download.html)). Download the driver you need for your computer and operating system. Windows drivers are contained in zip files, Mac drivers are contained in dmg files.

### 4.2. Installing the driver on a Windows-based PC

Create a temporary folder in the hard disk of your computer (you can even create it on the desktop). Then, double-click on the zip file to open it. Select and drag all files in the temporary folder: this automatically unzips all files.

#### 4.2.1. Automatic (guided) installation

Apply power to hiFace Evo and connect it to the PC. Following the negotiation process, the driver installation wizard is automatically launched. Select the option “Not now”, as in Figure 3.

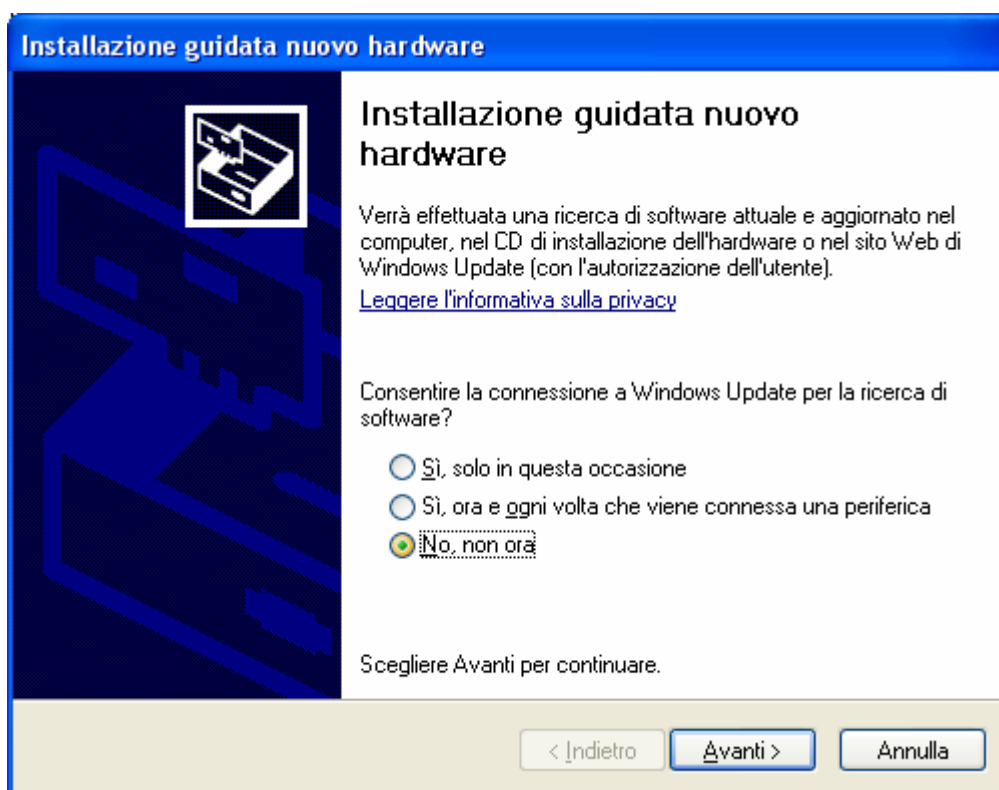


Figure 3

Click on the button to proceed. A window appears as shown in figure 4:

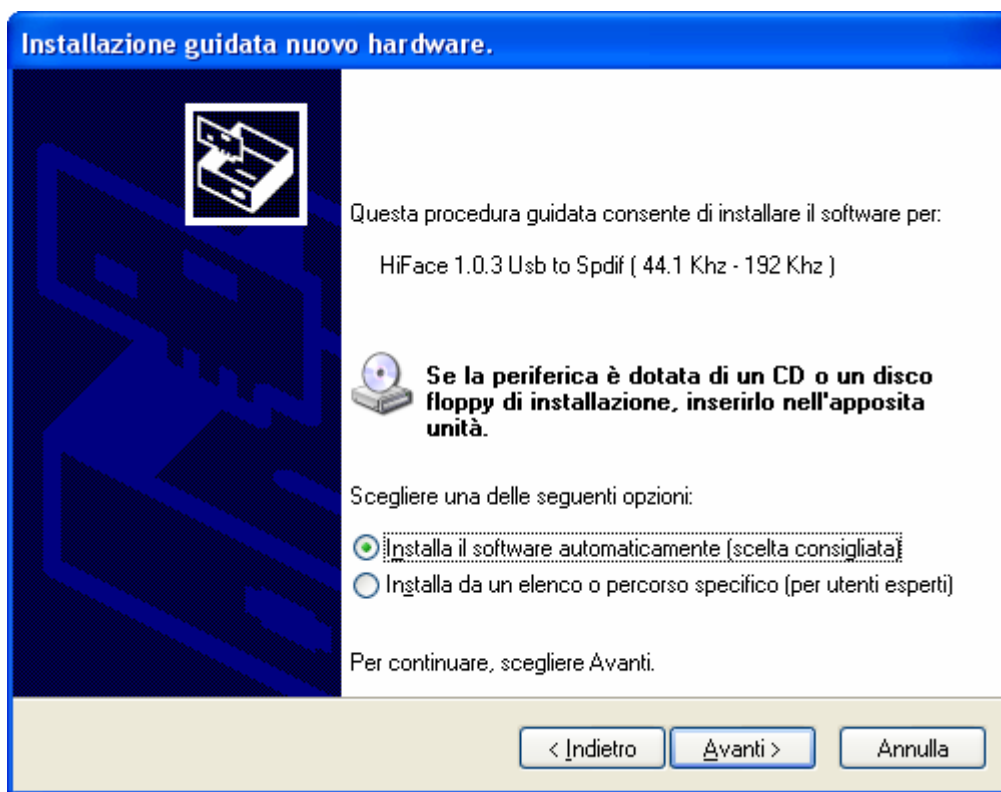


Figure 4

Choose automatic installation (as recommended) and proceed to next step. Indicate the folder where you have previously unzipped the driver and proceed to installation. The window shown in figure 5 will appear:

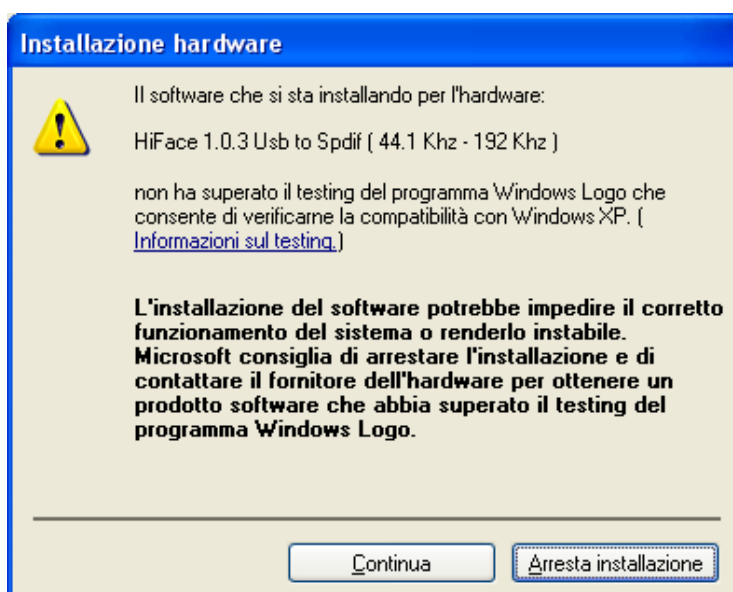


Figure 5

Click on Continue. The installation will proceed to the end. The window shown in figure 6 will appear. Click on Finish to complete the driver installation.

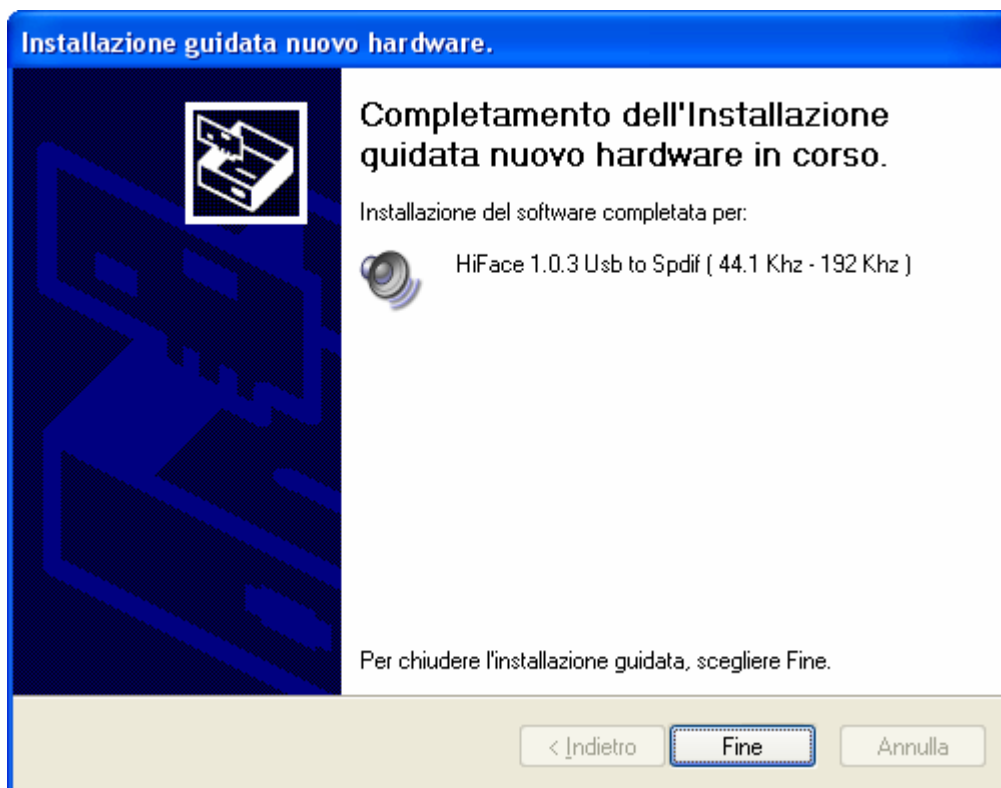


Figure 6

**Note:** the wizard appearance and the guided installation procedure may slightly vary from XP to Vista to Windows 7.

#### 4.2.2. Manual installation

Sometimes it's necessary or advisable to install the driver manually. The installation package offers two installation utilities, "setup32.exe" and "setup64.exe". The former is for 32 bits operating systems, while the latter is for 64 bits operating systems. Without connecting hiFace Evo to the PC, double-click on either "setup64.exe" or "setup32.exe", depending on your operating system: the driver will be installed in your PC.

### 4.3. Installing the driver on a Mac

Double-click on the zip file to open it. It contains a single dmg file. Extract it from the zip and double-click on it to open it. It only contains a pkg file. Double click on it to start driver installation. The window shown in figure 7 will appear.



Figure 7

Click on the Continue button. The installation process will go on and the window in figure 8 will appear.

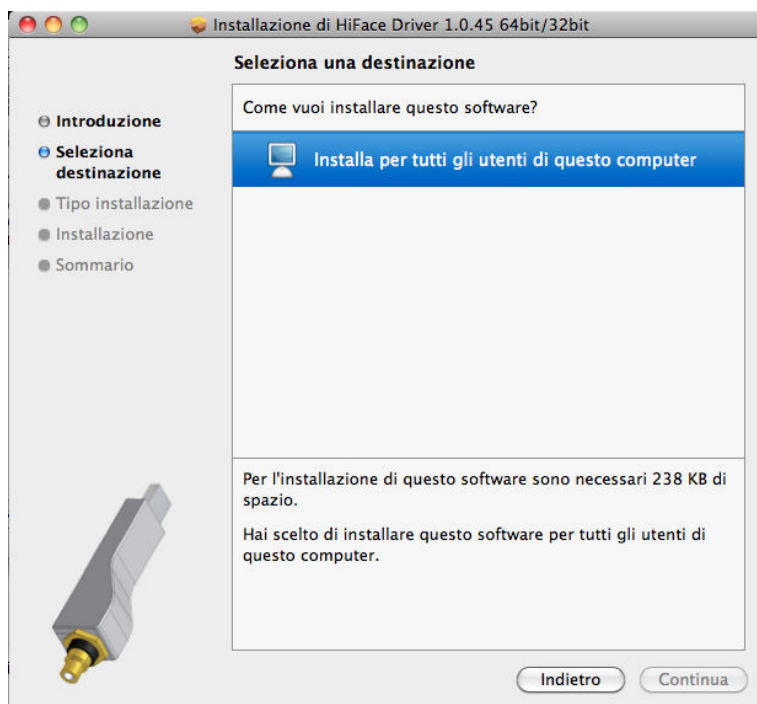


Figure 8

Select “Install for all users”, then click on Continue button. Another window will appear as in figure 9 and you’ll be asked to type in the administrator password. After doing that, the installation process will continue and you’ll be asked for a confirmation to continue the process up to the computer restart. Click on Continue Installation button. The installation will continue until the final window will appear, announcing the successful installation of the driver.

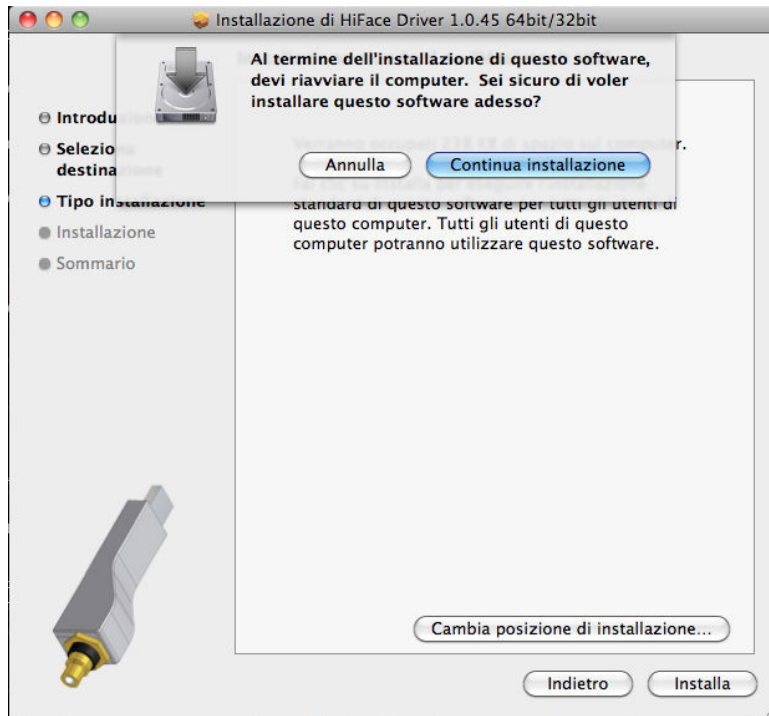


Figure 9

Click on Restart button to complete the installation process as indicated in figure 10.

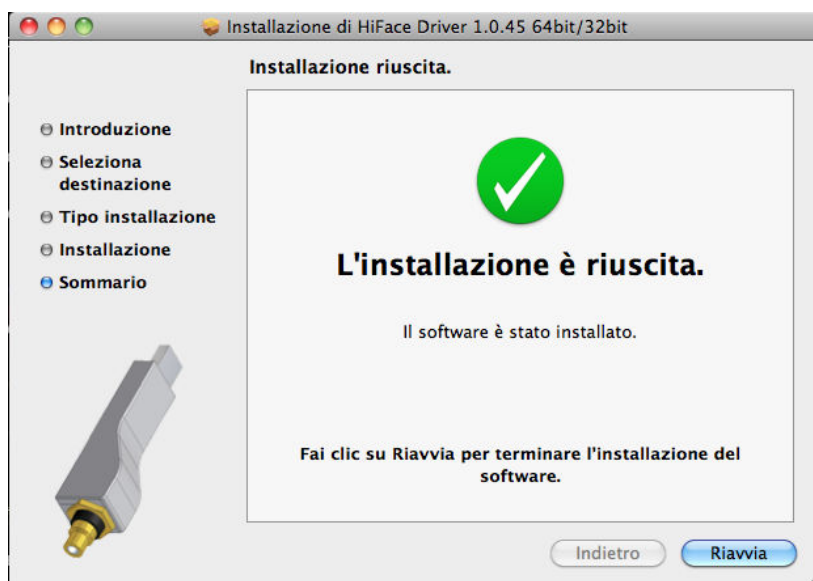


Figure 10

## **4.4. Uninstalling the driver**

Sometimes it is necessary to uninstall the driver to roll back to a previous version. Uninstall is a quite simple procedure which depends on the operating system and the way the driver was installed.

### **4.4.1. Uninstalling the driver on a Windows-based PC after installation with setup32.exe or setup64.exe**

Go to the control panel and launch the “Application Installation” utility.  
Look for the hiFace driver item in the list.  
Double-click on it to launch uninstalling.

### **4.4.2. Manually uninstalling the driver on a Windows-based PC**

Connect hiFace Evo to the PC.  
Go to the control panel and launch the “System” utility, then select Hardware tab. Open the Peripheral Management window (see figure 11).  
You’ll find hiFace listed under Audio, Video and Game controllers.

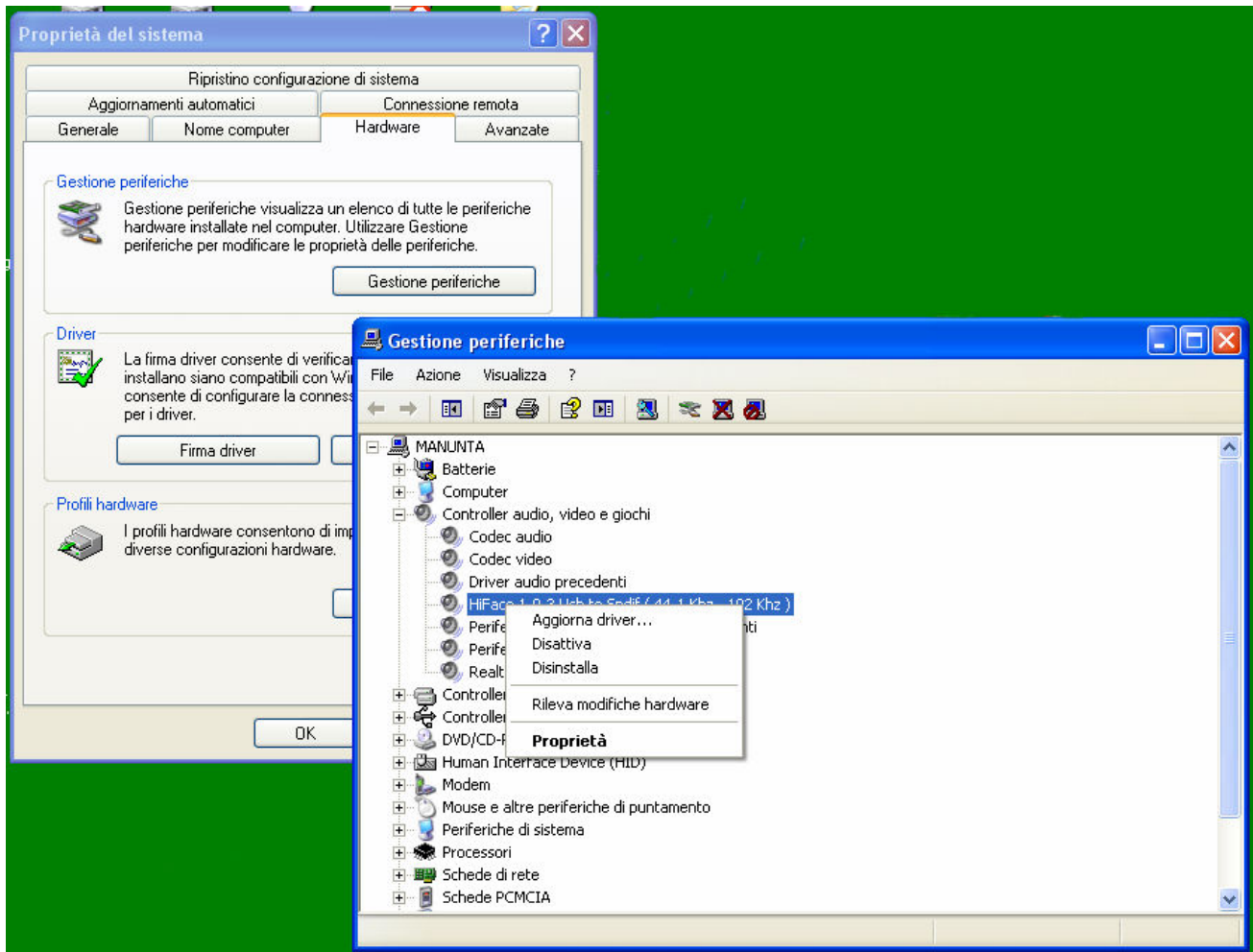


Figure 11

Right-click to access the available actions.  
Select "Uninstall".

#### 4.4.3. Uninstalling the driver on a Mac

Open a console, then type the following commands:

```
sudo mv /System/Library/Extensions/Hiface.kext /tmp  
sudo touch /System/Library/Extensions  
sudo pkgutil --forget com.m2tech.driver
```

Then, restart the Mac.

## 5. Configuring the computer to use hiFace Evo

### 5.1. Configuring a PC with Windows XP

A PC with Windows XP can use hiFace in two different ways: Direct Sound (DS) and Kernel Streaming (KS). The former is suitable for players which can't operate in Kernel Streaming mode (such as Windows Media Player and iTunes) or for Internet streaming, while the latter can be chosen (for better performance) with players which can operate in Kernel Streaming mode (such as FooBar, Winamp, Monkey Media, JRiver).

#### 5.1.1. Configuring for Direct Sound with Windows XP

Connect hiFace Evo to your PC. Then, go to the Control Panel and launch the Sound and Audio Peripherals utility.

Select the Audio tab. In the Predefined Peripheral drop-down menu of the Playback area, select "KS hiFace" (see figure 12).



Figure 12

Then, select the "Voice" Tab. Again, select "hiFace Kernel Streaming" in the drop-down menu of the Playback area. Click on OK button. Please be advised that even if the

peripheral is listed as “kernel streaming”, it will operate in Direct Sound mode when listed here.

From now on, unless hiFace Evo is disconnected or settings are changed again, hiFace is the audio peripheral all audio programs will use when operating in direct sound mode.

### **5.1.2. Configuring for Kernel Streaming with Windows XP**

Kernel Streaming has no standard setting in Windows XP. KS must be selected in the specific player you choose to use.

For example, when using FooBar, with hiFace Evo connected to the PC, go to the File/Preferences/Playback /Output tab and select “KS: hiFace” as output device.

Other players will require different settings (see section 6).

### **5.1.3. Using hiFace Evo in both Kernel Streaming and Direct Sound mode.**

When hiFace Evo is selected as predefined audio peripheral, it's possible to use it in Kernel Streaming mode, too, with a caveat. When using it in KS mode, it is necessary that no other application accesses hiFace Evo in DS mode. If this happens, Windows XP's Kernel Mixer takes control of hiFace Evo's driver and from then on, no KS application can access hiFace Evo unless the PC is restarted or hiFace Evo connection to the PC is cycled.

## 5.2. Configuring a PC with Windows Vista or Windows 7

A PC with Windows Vista or Windows 7 can use hiFace in three different ways: Direct Sound (DS), Kernel Streaming (KS) and WASAPI. DS is suitable for players which can't operate in Kernel Streaming mode nor with WASAPI or for Internet streaming; KS can be chosen (for better performance) with players which can operate in Kernel Streaming mode (such as FooBar, Winamp, Monkey Media, JRiver). WASAPI (Windows Audio Standard API) is a standard interface for audio players which allows to get the same performance of KS with applications which can't operate in KS mode, at the cost of higher CPU load.

### 5.2.1. Configuring for Direct Sound with Windows Vista or Windows 7

Open control Panel and select Hardware and Sounds. Under Audio, click on Manage Audio Devices. The following windows will appear, in which hiFace is listed. Set hiFace as predefined device. Then, click on OK.

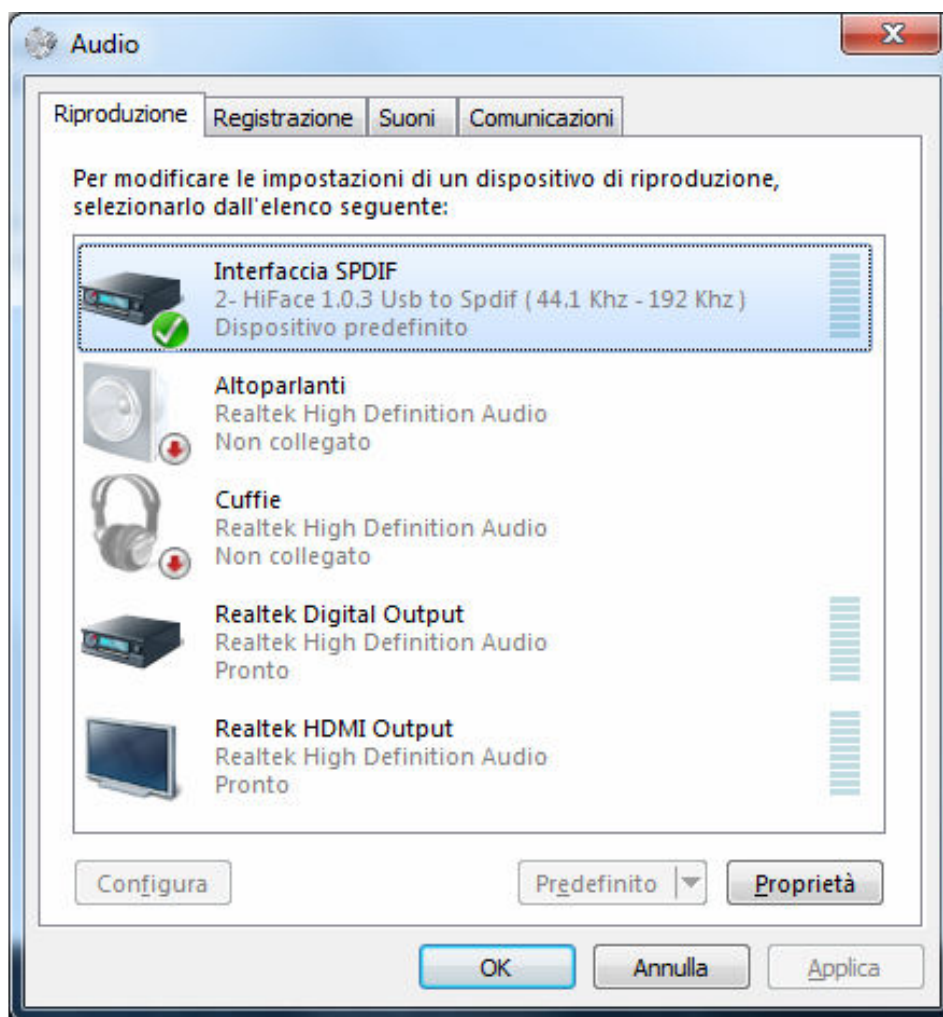


Figure 13

### 5.2.2. Configuring for Kernel Streaming with Windows Vista or Windows 7

As for Windows XP, Kernel Streaming has no standard setting in Windows Vista and Windows 7. KS must be selected in the specific player you choose to use. For example, when using FooBar, with hiFace Evo connected to the PC, go to the File/Preferences/Playback /Output tab and select “KS: hiFace” as output device. Other players will require different settings (see section 6).

### 5.2.3. Configuring for WASAPI with Windows Vista or Windows 7

As happens with Kernel Streaming, WASAPI cannot be directly accessed. WASAPI must be selected in the specific player you choose to use. For example, when using FooBar, with hiFace Evo connected to the PC, go to the File/Preferences/Playback /Output tab and select “WASAPI: hiFace” as output device. Other players will require different settings (see section 6).

## 5.3. Configuring a Mac

Go to System Preferences and select Sounds. The following windows will appear. Select hiFace for output as indicated in Figure 14.

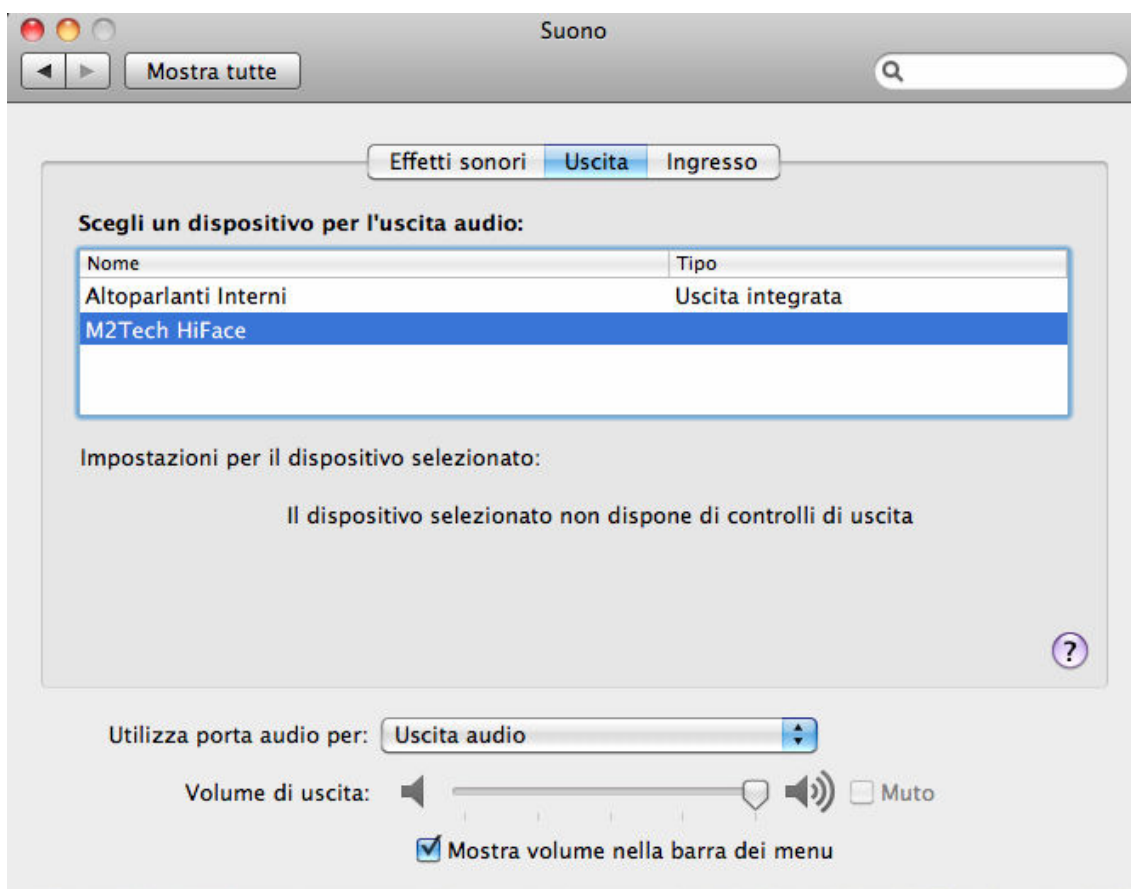


Figure 14

## 6. Configuring the player for Kernel Streaming: some examples

### 6.1. FooBar

To use FooBar in KS mode it is necessary to download the DLL for Kernel Streaming from the FooBar2000 website and install it in the Components sub-folder inside FooBar2000 main folder in your hard disk. The DLL can be found at [http://www.foobar2000.org/components/view/foo\\_out\\_ks](http://www.foobar2000.org/components/view/foo_out_ks) (click on Download). It is a zip folder which contains the DLL. Extract it from the zip and copy to the Components folder. Then, restart FooBar, go to the File/Preferences/Playback/Output window and set parameters as in figure 15.

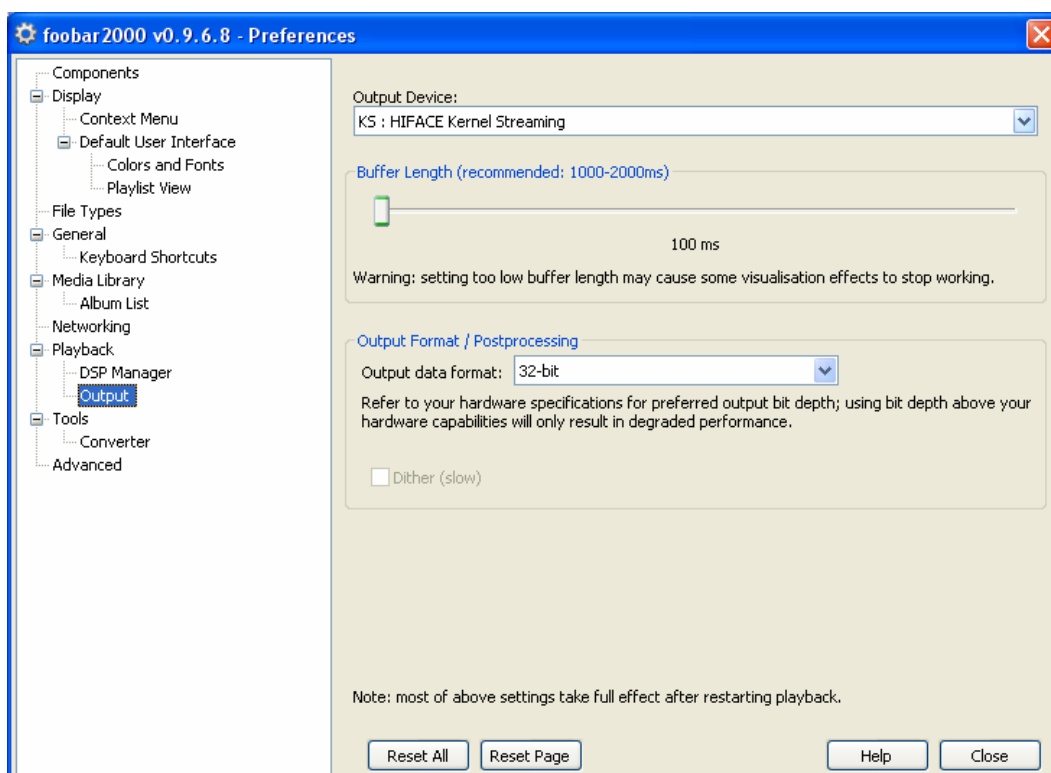


Figure 15

### 6.2. Winamp and MediaMonkey

These two players are actually the same player with different skins, so they can share the same plug-ins. A freeware plug-in for Kernel Streaming by Steve Monks is available on the Internet (<http://www.stevemonks.com/ksplugin/>) that can be used to enable Kernel Streaming operation with these players.

Download the zip file, extract the dll file and copy it into the Plugins folder inside Winamp main folder.

With hiFace Evo connected, right-click on Winamp and select Display/Select Plug-ins. The Preferences window of Winamp will open (see figure 16).

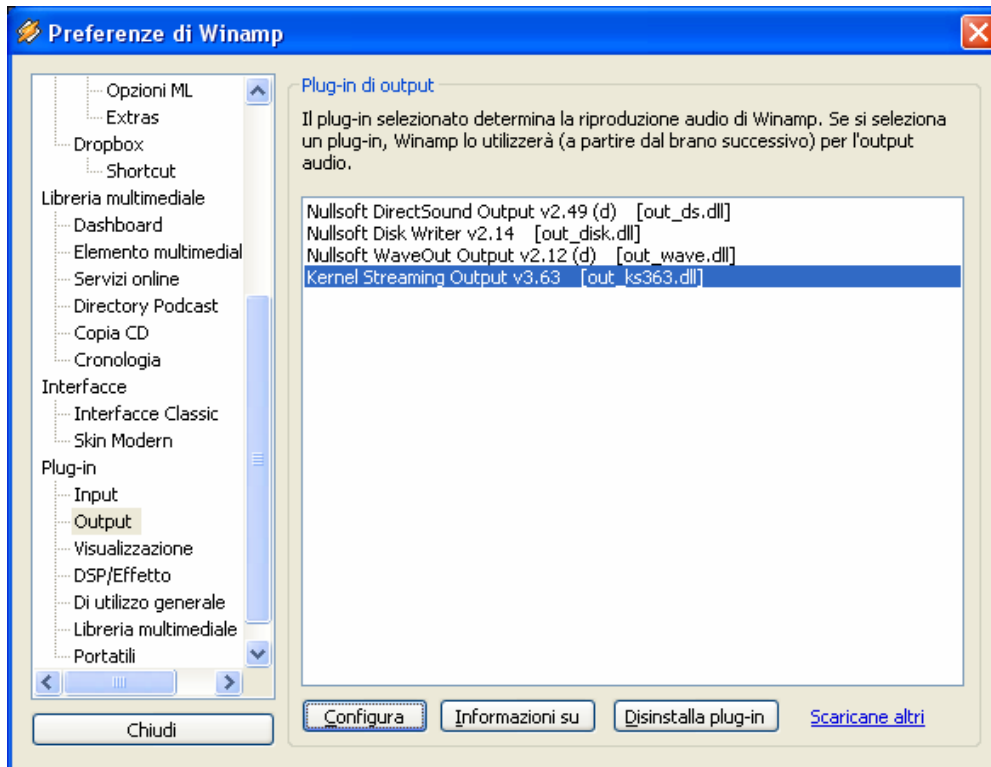


Figure 16

Go to Plug-in/Output and select “Kernel Streaming Output”. Then click on Configure button. Choose HIFACE Kernel Streaming in the output device list (Figure 17).

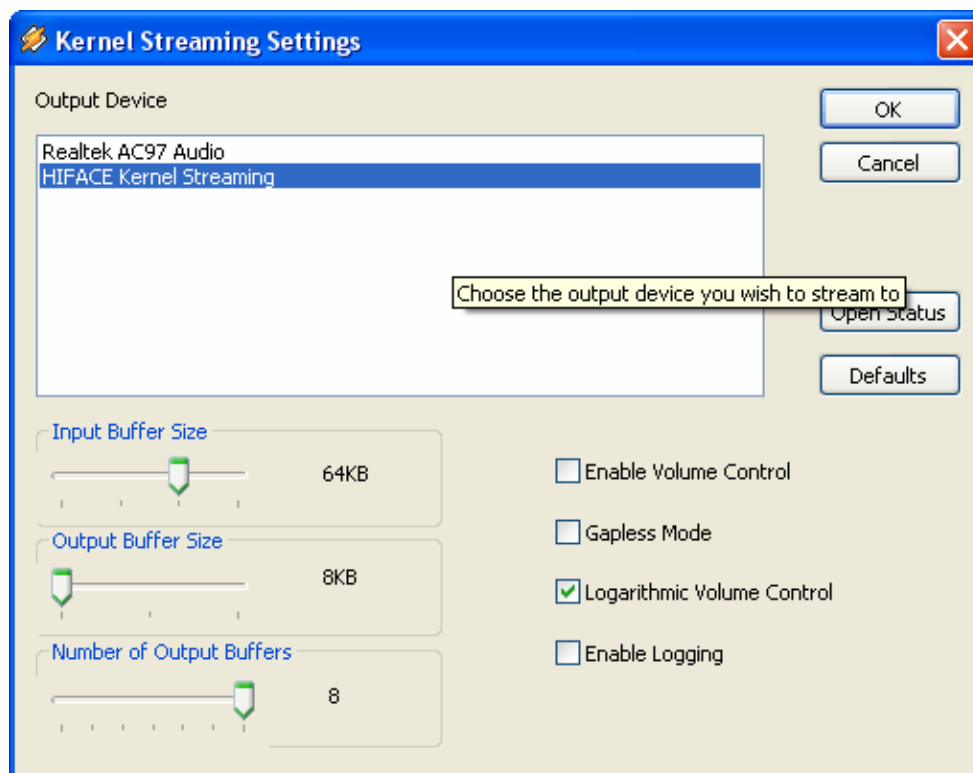


Figure 17

## 7. Configuring the player for WASAPI: an example

### 7.1. FooBar

To use FooBar with WASAPI under Windows 7 it is necessary to download the DLL for WASAPI from the FooBar2000 website and install it in the Components sub-folder inside FooBar2000 main folder in your hard disk. The DLL can be found at [http://www.foobar2000.org/components/view/foo\\_out\\_wasapi](http://www.foobar2000.org/components/view/foo_out_wasapi) (click on Download). It is a zip folder which contains the DLL. Extract it from the zip and copy to the Components folder.

Then, restart FooBar, go to the File/Preferences/Playback/Output window and set parameters as in figure 18.

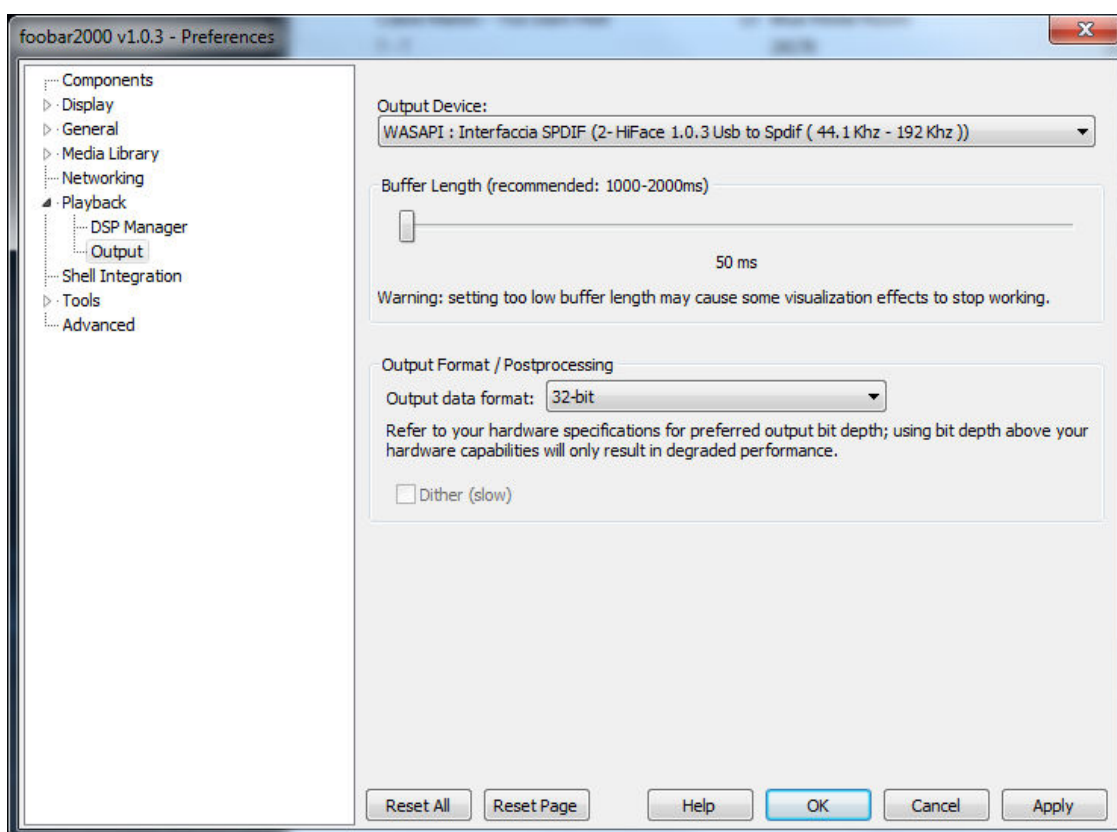


Figure 18

## 8. Using the external clock

When a very high precision and stability clock source is available, an external clock can be applied to hiFace Evo on the related BNC input (Figure 1, 2). Whenever the clock is present with the right voltage, the LED indicator (Figure 1, 7) will lit in green and the hiFace Evo will automatically revert to the external clock.

Of course, the automatic clock switching to accommodate both 44.1kHz-based and 48kHz-based sampling frequencies will be disabled, as the interface will be clocked with the external clock. So, clock switching must be performed at the clock source. Otherwise, only one base sampling frequency files should be chosen for playback.

For example, if a 24.576MHz external clock is applied, 48kHz, 96kHz and 192kHz files will be played back with the right pitch, while 44.1kHz, 88.2kHz and 176.4kHz files will have a higher pitch than normal and will sound hurried-up.

Conversely, when using a 22.5792MHz external clock, 44.1kHz, 88.2kHz and 176.4kHz files will be played back with the right pitch, while 48kHz, 96kHz and 192kHz files will have a lower pitch than normal and will sound slowed down.

The external clock can also be used to play files with a base frequency different than those available internally. For example, a 32kHz file can be correctly played back using a 16.384MHz external clock.

## 9. AES/EBU output: consumer and professional mode

The AES/EBU output can be set to either consumer (default) or professional mode. The difference is in the channel status bits content and meaning. The mode can be set by a jumper inside the unit. **M2Tech recommends users who want to change the mode of the AES/EBU output to contact their dealer: opening the case will void the warranty.** The AES/EBU output setting doesn't affect other outputs.

## 10. I<sup>2</sup>S output

The I<sup>2</sup>S output provides raw I<sup>2</sup>S data out of the hiFace Evo on an RJ-45 socket. It has no galvanic isolation so its ground connection is same as the USB one. Pinout is as follows (pins are listed from left to right):

- 2,4,6,8) Ground
- 1) SDATA
- 3) LRCK
- 5) SCLK
- 7) MCLK

Lines are driven by high-speed, high-current buffers capable of 25mA current drive on each line.

## 11. Technical Specifications

Sampling frequencies: .....	44.1, 48, 88.2, 96, 176.4*, 192kHz*
Resolution:.....	16 to 24 bits
USB: .....	2.0 high speed
External clock voltage:.....	3Vpp to 3.6Vpp
External clock frequency:.....	10 to 25MHz
External clock input impedance: .....	75 Ohms
Internal clock precision: .....	+/-10ppm 0 to 60°C, 2ppm typical @ 25°C
S/PDIF output voltage:.....	0.5Vpp +/-0.1V @ 75 Ohms
AES/EBU output voltage:.....	2Vpp +/- 0.2V @ 110 Ohms
Toslink™ output bitrate:.....	up to 15Mbps (up to 96kHz sampling frequency)
ST output fiber length:.....	up to 1.6km (complies to Avago AV02-0723EN application note, page 5)
I <sup>2</sup> S output voltage:.....	3.3V (LVCMOS)
I <sup>2</sup> S current capability: .....	+/-25mA on each line
Minimal requirements:.....	1.3GHz CPU clock, 1GB RAM, 2.0 USB port
Supply voltage: .....	7 to 11V <sub>DC</sub> (15V <sub>DC</sub> max)
Power consumption: .....	140mA @ 9V (idle, no output loaded)
Size: .....	105x46x104mm (cabinet) 105x46x142mm (with connectors)
Weight:.....	320g

\* all outputs except Toslink™. Depending on the fiber used and the receiver's sensitivity, 176kHz and 192kHz may be achieved with Toslink™, too, but this feature is not guaranteed.