

emi|216

Hardware

Owner's Manual

>> Version 1.1, July 2001

>> English



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1 Introduction

Thank you and congratulations on your purchase of the Emagic EMI 2|6. You now own an innovative audio device that equips your Macintosh or Windows PC with high-quality analog and digital audio connectors.

The EMI 2|6 connects to any of your computer's USB ports. Its addition to your system doesn't require opening the computer, nor does it require an external power supply, as power is supplied by the Universal Serial Bus (USB) itself. These features make the EMI 2|6 an ideal audio interface for Windows laptops, Powerbooks or iBooks, and also very convenient when used with desktop computers.

As all electronic circuitry is physically placed outside the computer, the risk of undesirable electronic interference is drastically reduced. This ensures exceptionally clear and clean sound from the EMI 2|6 and maximizes the potential of its high-quality 24 bit converters.

In addition to its hardware design, we have taken great care with the EMI 2|6 driver software. This ensures that latency is minimal, making the EMI 2|6 an ideal audio interface for tasks such as the realtime monitoring of software synthesizers, for example.

This manual explains the set up procedure for the EMI 2|6 and offers some application examples. Please read it carefully in order to make the most of your EMI 2|6.

As this manual is cross-platform, much of the information applies equally to both Windows and Macintosh systems. Where information is Macintosh or Windows-specific, it will be indicated by the topic or section header, or by use of the icons shown to the right.

We wish you years of fun and productive work with the EMI 2|6.

Your **emagic** team

2 EMI 2I6 Feature Overview


- Compatible with USB 1.1 or higher
- 2 analog inputs with RCA connectors
- 6 analog outputs with RCA connectors
- 1 digital S/PDIF input with RCA connector
- 1 digital S/PDIF output with RCA connector
- Headphone output with discrete volume control and 3.5mm (1/8 inch) stereo jack
- A/D and D/A conversion at 24 and/or 16 bit resolution
- Supports sampling rates of 44.1 and 48kHz

System Requirements

Macintosh

- CPU: (Power)Mac 604/200 MHz (with USB PCI card***) or higher. Macintosh with integrated USB port—G3 or G4 processor recommended
- Memory: 64 MB RAM
- Drive: CD-ROM or DVD-ROM
- Interface: A free USB port**
- Operating System: Mac OS 9.0.4 or higher
- The EMI 2I6 is unsupported (as at the time of writing—June, 2001) in Mac OS X. Please refer to the readme documentation on the supplied CD-ROM and visit the Emagic web site www.emagic.de—for further information on Mac OS X support.



 Using the EMI 2I6 with Logic Audio requires version 4.7.3 (or higher) of Logic Audio. The necessary updates for version 4.x.x are located on the CD-ROM. Logic Audio users prior to version 4.x.x please contact your local Logic Audio distributor for further update information.

Windows



- CPU: Pentium or compatible—233 MHz or higher. (Pentium III, IV or Athlon/600MHz or faster recommended)
- Memory: 64 MB RAM.
- Drive: CD-ROM or DVD-ROM.
- Interface: A free USB port**
- Operating System: Windows Millennium (Me) Recommended, Windows 98 Second Edition (98 SE)*, Windows 2000*.


*Functionality of the digital input is limited when Windows 98 SE or Windows 2000 are used.


**Power is supplied via the USB port. The port used must supply enough current and bandwidth to make full use of the EMI 2I6. We recommend that the EMI 2I6 is directly connected to a USB port on the CPU housing, rather than via a hub. An optional Emagic power supply is available, if required.

***Check with the manufacturer of your PCI USB card to confirm that it supports the playback and recording of audio data.

Supported Audio Drivers

- *Mac OS*: SoundManager, ASIO
SoundManager supports 16 Bit stereo audio. ASIO does not have this limitation.
- *Windows*: MME, DirectSound, ASIO, EASI.

 Please note: When using the EMI 2I6 for the very first time connect the EMI 2I6 to the USB port of your computer only after it has been completely booted. Please follow the installation procedure afterwards. From now on the EMI 2I6 can stay connected to the computer permanently.

 Please check www.emagic.de for updated driver versions and further information.

3 Safety Instructions

There are no user-serviceable parts inside the EMI 2l6. Please do not try to open its casing. Any attempt to do so will automatically void your warranty.

- The EMI 2l6 is powered via USB. If an external power supply is employed, it is strongly advised that only the optional Emagic EMI 2l6 power supply unit is used.
- Do not touch the connector contacts with sharp or metallic objects.
- Place your EMI 2l6 on a non-slip surface.
- Avoid the use of the EMI 2l6 in extremely hot or cold conditions.
- Ensure that the EMI 2l6 is not placed in direct sunlight or near other heat sources.
- Protect your EMI 2l6 from moisture, heavy dust, aggressive liquids and steam. If any moisture gets inside the EMI 2l6, you should immediately remove all cables and contact Emagic support.
- Do not place your EMI 2l6 near electro-magnetic fields, as this can affect audio quality. Avoid positions near to radios, TVs and video units.
- Never carry your EMI 2l6 with any cables connected to it.
- Cleaning the casing of your EMI 2l6 should only be done with a soft, dry anti-static cloth. Do not use any cleaning solvents or chemical substances for cleaning the unit.

If you encounter any problems, please refer to the *Troubleshooting* section from page 56 onwards. If this information does not provide a solution to your problem, please contact your local Emagic retailer or distributor.

4 Contents of the EMI 2|6 Package

Please check your EMI 2|6 packaging for the following contents:

- The EMI 2|6
- The EMI 2|6 satchel
- A USB cable
- An installation CD which contains the driver software
- This manual

If any of the abovementioned items are missing, please contact your dealer or local Emagic distributor.

In order to connect the EMI 2|6 to other audio devices, the following items—not supplied with the package—are required:

- RCA cables for the analog inputs and outputs.
- 75 Ohm coaxial cables for the digital inputs and outputs.
- A pair of stereo headphones with a 3.5mm (1/8th inch) stereo plug.

Note that the requirement for any, or all, of the items listed above is dependent on how you connect and use the EMI 2|6.

5 EMI 2I6 Hardware

In this chapter, the connectors and hardware features of the EMI 2I6 are explained. You will also find several application examples outlined here.

Connectors, Switches and Displays

USB Connector

This is the jack used for the connection of the EMI 2I6 to your computer. A USB cable is supplied. The EMI 2I6 is compatible with the Universal Serial Bus Revision 1.1 or higher.

When the EMI 2I6 is connected to the USB port of the computer, and the computer is turned on, the blue power LED will be illuminated. The EMI 2I6 will be ready for use after a self-initialization procedure which takes approximately five seconds.

Please note that this assumes that the operating system is properly installed and configured. Also note that only the blue power indicator LED will be lit until all drivers are loaded and available for use by the EMI 2I6. The EMI 2I6 can not be used when it is not connected to the computer or when the computer is switched off.

Analog Inputs and Outputs

The EMI 2I6 is equipped with RCA connectors offering two analog inputs and six analog outputs. The output level is 2.8Vpp or 1Vrms, which corresponds to approx. 0dBV or +2.2dBu respectively. This makes the EMI 2I6 compatible with (consumer) levels of -10dBV (CD players and other “line” devices) as well as with levels of +4dBu (professional studio equipment). A green LED that indicates level is available for each input and output.

Headphone Output

This jack allows the connection of a pair of headphones with a 3.5mm stereo plug. The headphone output jack mirrors the signals from outputs 1 and 2.

Headphone Volume Control

Headphone volume can be adjusted via the volume knob on the front panel of the EMI 2|6.

Digital Input and Output

The EMI 2|6 offers digital input and output via coaxial S/PDIF connectors. The digital input and output can also be used for synchronizing the EMI 2|6 with another digital source. The Channel Status of the digital signal is set to “Consumer Use”, in accordance with the IEC60958 specification.

You may connect a CD player, digital mixer or a DAT recorder to the EMI 2|6’s digital input in order to record their signals digitally. The digital output of the EMI 2|6 always mirrors the signals from analog outputs 1 and 2. It can be used to connect the EMI 2|6 to a digital mixer for further processing or a DAT machine for recording.

 A table in the appendix displays the application of channel status in the EMI 2|6, according to the IEC standard.

External Power Supply

The EMI 2|6 is powered directly via USB, and requires no external power supply. In some circumstances, however, the USB current delivered by some computers is not clean, or powerful, enough for audio applications and can cause noise artifacts in the audio signals. In these situations/systems, the EMI 2|6 can also be powered by an external power supply. If an external power supply is connected to the power supply jack, its current is used instead of the current supplied via the USB port.


A suitable, high-quality power supply for the EMI 2I6 is available from Emagic as an optional accessory. This power supply has very precise specifications. Use of another power supply may permanently damage your EMI 2I6, and will void your warranty. Please ask your dealer or Emagic distributor for further information.

Input Selector

This switch is used for the selection of the analog or digital inputs. Only the signal from the selected input will be sent to the computer. It is not possible to mix the analog and digital inputs.

Clock Source Selector

This switch allows you to select between the EMI 2I6's internal clock, or an external clock source connected to the EMI 2I6's digital input.

 If no valid digital clock signal is received, the EMI 2I6 automatically switches to its internal clock and ignores the switch setting.

Some digital synchronization examples for the EMI 2I6 are offered in the following section.

Status LEDs

The configuration and operating mode of the EMI 2I6 is indicated by eight status LEDs. The meaning of the LEDs and the corresponding options are explained in the table below:

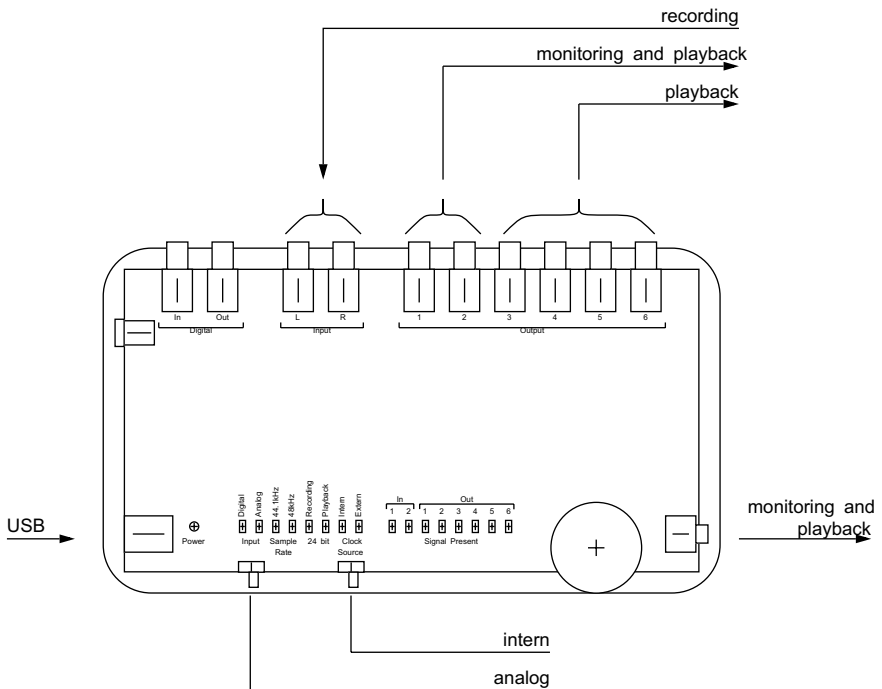
Function	LED/ switch	Meaning	Where to switch
Input	Digital	this LED is lit when the digital input is selected	the input can be selected via the left-most switch
	Analog	this LED is lit when the analog input is selected	
Sample Rate	44.1kHz	this LED is lit when the selected sampling rate is 44.1kHz	the sampling rate is selected on the connected computer
	48kHz	this LED is lit when the selected sampling rate is 48kHz	
24 bit	Recording	this LED is lit when the selected recording resolution is 24 bit (unlit = 16 bit)	the bit resolution is selected on the connected computer
	Playback	this LED is lit when the selected playback resolution is 24 bit (unlit = 16 bit)	
Clock Source	Intern	this LED is lit when the EMI 2I6's internal synchronization is selected	the clock source for synchronization is selected via the clock source switch on the EMI 2I6
	Extern	this LED is lit when external synchronization from the digital input is selected	

Application Examples



This section describes how the EMI 2I6 is connected and set up for some typical recording and playback applications.

A block diagram in the appendix provides a detailed overview of the internal audio path of the EMI 2I6.

Analog Recording and Playback

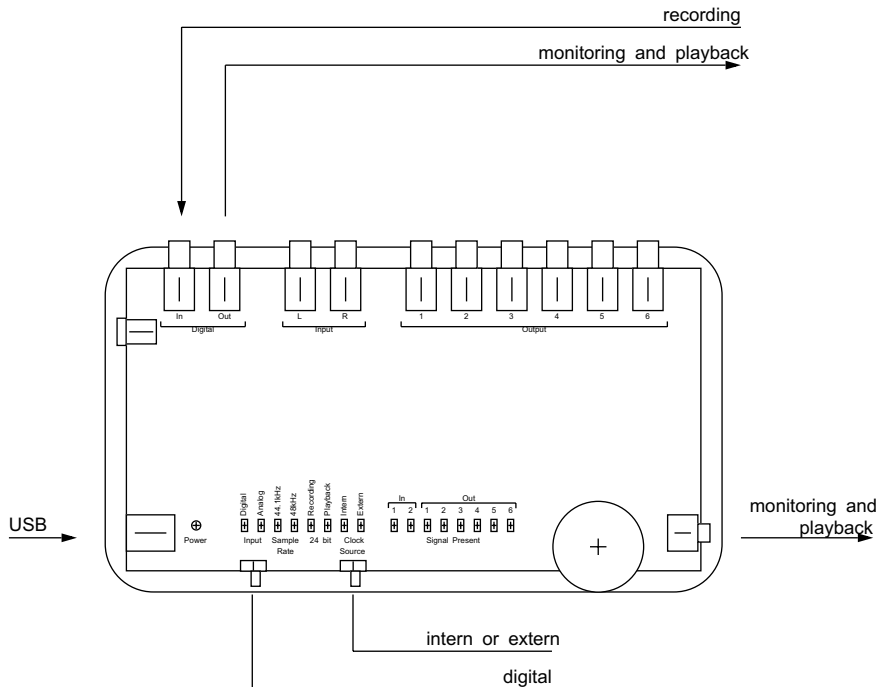


This is the set up for recording via the analog inputs while monitoring through the analog outputs. The clock source switch is set to *Intern*, the input selector to *Analog*. If you wish to take advantage of the EMI 2I6's latency-free monitoring, you should use outputs 1 and 2 or the headphone out.

-  The volume of the monitor signal can be set via the Windows mixer applet. See the *Setting the Input Level* section from page 45 onwards.
-  When using the SoundManager drivers, the volume of the monitor signal can be set via the mixer in the Sound Control Panel. When using the ASIO drivers, the monitor level is set via the input level faders of the ASIO host application, if software monitoring is available. Where unavailable, the audio input is fed directly to outputs 1 and 2, making use of EMI 2I6's hardware monitoring facility.




Digital Recording and Playback



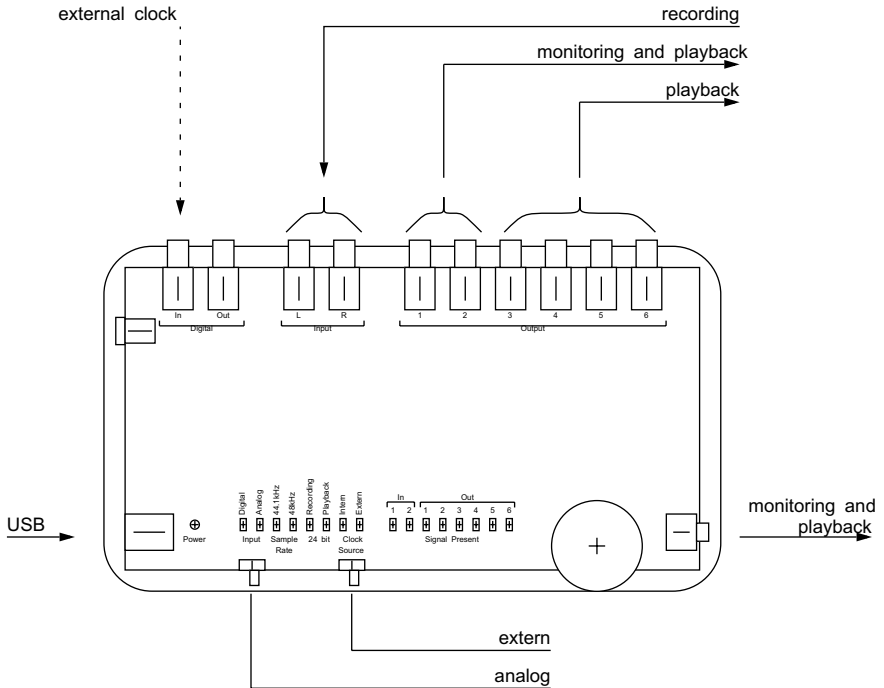
When recording from a digital source, the *Clock Source* setting is very important. The setting should correspond to the connected device—i.e. if a clock master device is connected, the switch should be set to *Extern*. If you insert an effects processor

(which will, in turn receive its clock from the EMI 2I6) between the EMI 2I6's digital input and digital output, *Clock Source* should be set to *Intern.*

If the selected clock source and the received digital signal aren't phase-locked, some resampling will occur, possibly lowering the quality of the signal slightly.

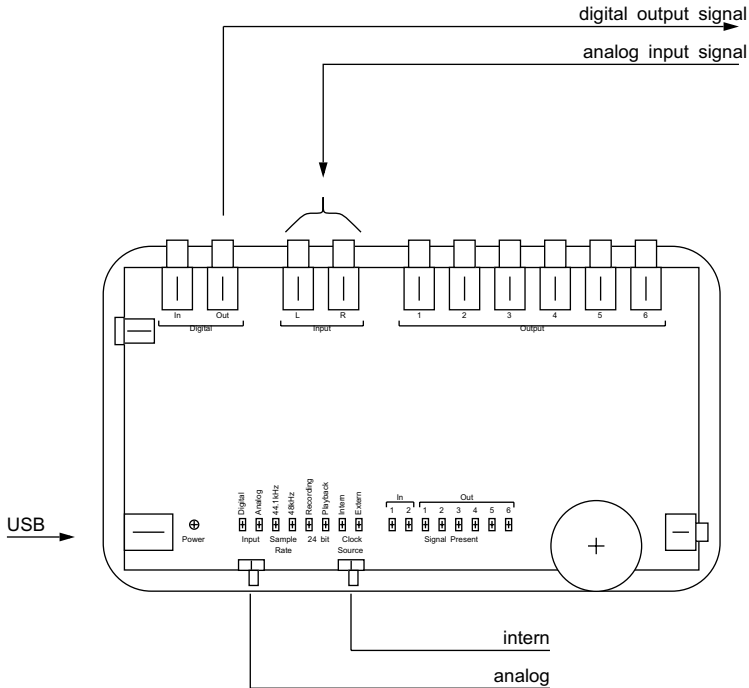
 A normal CD player—with digital outputs—is an ideal example of an audio device that is only able to work as a clock master. The CD player may have a digital out, but no digital in and therefore, can not be clocked externally. A digital device receiving the CD player's digital output signal must be clocked by this signal and can not act as the master device—i.e. it is the slave device. If two devices are acting as clock masters in a digital setup, one of them must be resampled (i.e. a sampling rate conversion must take place) in order to synchronize with the other.

Analog Recording and Playback with external Sync




This set up is similar to “Analog Recording and Playback”, as described above. Here, however, the EMI 2I6 is synchronized to a signal received at its digital input; the clock source setting is set to *Extern*. This setup is useful when the EMI 2I6 is used with another audio device with a digital output. By synchronizing the EMI 2I6 to this device, the sampling rates are locked to one another which prevent long audio files from “drifting apart” during playback.

Analog/Digital Conversion



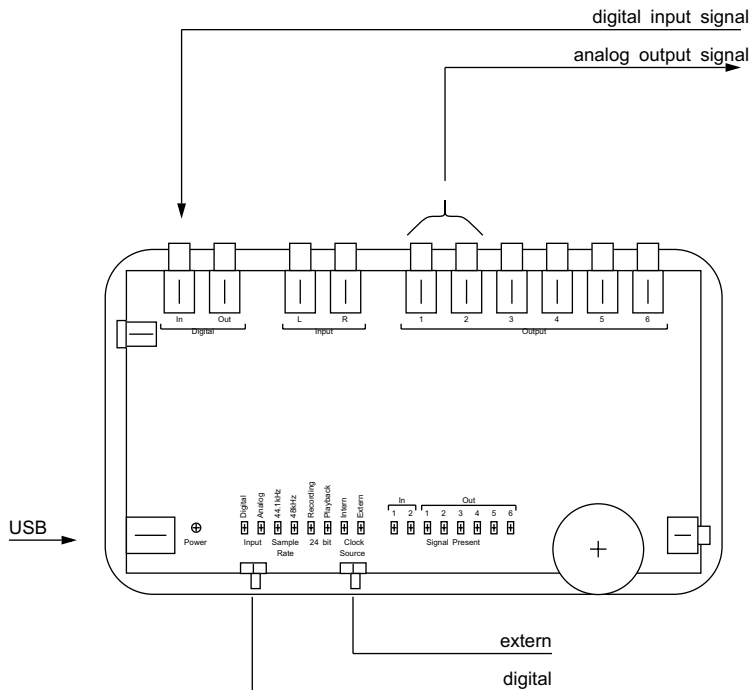
To use the EMI 216 for basic A/D conversion, simply connect an analog signal to the two inputs and feed the digital out to the digital device of your choice. Transmission of the signal from the analog inputs to the digital output is achieved via the EMI 216's built-in monitoring function.

 The volume of the monitor signal can be set via the Windows mixer applet. See the *Setting the Input Level* section from page 45 onwards.

 When using the SoundManager driver, the volume of the monitor signal can be set in the Sound Control Panel.




For this application, the EMI 216 can be either externally or internally synchronized. Even though no signal is sent via the USB connection, the computer needs to be switched on for this functionality of operate.




nal—i.e. Clock Source should be set to *Extern*. Even though no signal is sent via the USB connection, the computer needs to be switched on for this functionality to operate.

6 Installation and Updating

This chapter outlines the installation of the EMI 2|6 software. The software is located on the CD-ROM which was supplied with your EMI 2|6. Software updates will be made available on our web site—www.emagic.de.

 Please note: When using the EMI 2|6 for the very first time connect the EMI 2|6 to the USB port of your computer only after it has been completely booted. Please follow the installation procedure afterwards. From now on the EMI 2|6 can stay connected to the computer permanently.

 Please note that the installation procedures outlined in this chapter may change periodically. Please consult the readme file supplied with any future EMI 2|6 driver updates for details.

The first section concerns installation on all currently supported Windows versions. Macintosh installation instructions can be found in the *Installation on Mac OS* section from page 29 onwards.

The latter portion of this chapter covers the update procedure for an existing EMI 2|6 driver.

For all Windows versions, the driver package will install drivers for the following driver interfaces:

- Windows Multimedia (Wave MME)
- DirectSound
- EASI
- ASIO

For the Macintosh, the driver package will optionally install drivers for the following driver interfaces:

- SoundManager
- ASIO


Installation on Windows Millennium



Start and boot your computer completely. Place the EMI 216 Installation CD in the CD-ROM drive of your computer and connect the EMI 216 to a USB port—using the supplied cable.

Following connection of the EMI 216 to the computer's USB port, the blue power LED should be illuminated, indicating that the EMI 216 is receiving power via the Universal Serial Bus (USB). The Windows Hardware Wizard should automatically launch and will indicate that a new USB device has been detected:



 Please note that the dialog boxes shown in this manual are those found in Windows Me. These may look slightly different to dialog boxes displayed in other Windows versions.

Click on the “Specify the location of the driver (Advanced)” radio button and confirm by clicking on the “Next” button.

In the ensuing window, select the “Removable Media” checkbox by clicking once in it. A tick should appear in the box, as shown.



Once the location of the driver file is selected—i.e. your CD-ROM drive, click the “Next” button. A new window will appear which displays all drivers found on the CD.

In the event that this doesn’t occur automatically, please navigate to the media that contains the drivers by clicking on the “Browse” button, and select the file named “EMI2-6.INF” manually.



Installation and Updating

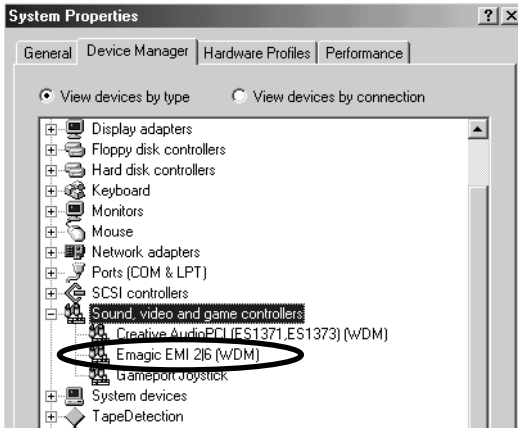
Click “Next” and Windows will install the driver from the CD and confirm the installation. If you are asked to insert your original Windows installation CD-ROM during the EMI 216 installation process, please do so and follow the on-screen instructions.



Click on the “Finish” button. A dialog appears, asking if you want to restart the computer. This is highly recommended before using the EMI 216 for the first time. Click the “Yes” button to restart your computer.



The EMI 216 requires, and uses, two separate driver components. Windows will ask for confirmation of the installation of each “device”. Please click on the “Finish” button to confirm when prompted. One of these components is found under the “Sound, video and game controllers” entry in the System Properties:



The second component is shown under the “Universal Serial Bus controllers” entry in the System Properties:



In the system tray, a small blue icon appears following a successful installation. Double-clicking on this icon will launch a small applet which accesses global options for the EMI 2|6:



Congratulations, you’ve successfully installed the EMI 2|6. You may now use your EMI 2|6 with MME/DirectSound, ASIO or the EASI driver with your music software. Information about

configuration and use of the EMI 216 can be found in the next chapter.

Installation on Windows 98 SE



The EMI 216 driver package will not run under Windows 98 “First Edition”. To ensure that you are really running the second edition of Windows 98, right click on the “My Computer” icon on your desktop and select Properties. Under System: “Microsoft Windows 98, Second Edition, 4.10.2222 A” should be displayed.

- Start and boot your computer completely. Insert the EMI 216 drivers CD-ROM into your computer’s CD-ROM drive.
- Connect the EMI 216 to any of your computer’s unused USB ports via the supplied USB cable. The “Add New Hardware” Wizard will automatically launch.
- Click on the “Next” button.
- Select the: “Search for the best driver for your device. (Recommended).” radio button.
- Click the “Next” button.
- Select an optional search location, if necessary. If you are installing the driver from CD-ROM, check the CD-ROM drive option.
- Click on the “Next” button.
- The: “Windows is now ready to install the best driver for this device.” dialog will appear.
- Click on the “Next” button.
- After a few seconds, the following message will be displayed: “Emagic EMI USB Device, Windows has finished installing the software that your new hardware device requires.”
- Click the “Finish” button.
- This will launch the: “To finish setting up your new hardware, you must restart your computer.” message.
- Click on the “Yes” button and your computer will restart.
- Several “New Hardware Found” boxes will be displayed when Windows relaunches. In some cases, you may need to

insert the Windows 98 Second Edition CD-ROM during this phase of the installation.

- You may encounter a number of version conflict boxes similar to the following: “A file being copied is older than the file currently on your computer. It is recommended that you keep your existing file.”
- Click the “Yes” button for each of these version conflict boxes.
- After a few moments, your installation will have been completed successfully.

N.B. It is possible that the EMI 2/6 may need to be re initialized following installation on Windows 98 SE. To do so, simply restart Windows.

Installation on Windows 2000



- Start and boot your computer completely. Insert the EMI 2/6 drivers CD-ROM into your computer's CD-ROM drive.
- Connect the EMI 2/6 to any of your computer's unused USB ports via the supplied USB cable.
- The “Add New Hardware” Wizard will automatically launch.
- Click on the “Next” button.
- Select “Search for a suitable driver for my device (recommended)”
- Click on the “Next” button.
- Select an optional search location, if necessary. If you are installing the driver from CD-ROM, check the CD-ROM drive option.
- Click on the “Next” button.
- The following message will appear on-screen: “The wizard found a driver for the following device: Emagic EMI USB Device”.
- Click on the “Next” button.
- The: “Completing the Found New Hardware Wizard, Emagic EMI USB Device, Windows has finished installing the software for this device. The hardware you installed will

Installation and Updating

not work until you restart your computer” message will appear.



- Click the “Finish” button.
- You will be prompted with the following dialog: “You must restart your computer before the new settings will take effect.”
- Click on the “Yes” button.
- Your computer will be restarted.
- On rebooting Windows 2000, The Found New Hardware Wizard will display: “Emagic EMI 216 (WDM)”
- This will be followed by the: “Digital Signature Not Found...” message. This message is shown as the Emagic EMI 216 drivers currently do not contain a Microsoft digital signature. It is safe to install the drivers. The Emagic drivers are fully functional, and there is no risk associated with the installation of these drivers on your system.
- You will be asked the following: “Do you want to continue the installation?”
- Click on the “Yes” button.
- During installation you may be asked to insert the Windows 2000 Installation CD-ROM or the Emagic Drivers CD-ROM. Please insert the appropriate media and/or select the correct drive and path from the file selector box, as prompted.
- Following these steps, your installation will have been completed successfully.

N.B. It is possible that the EMI 216 may need to be re-initialized following installation on Windows 2000. To do so, restart Windows 2000.

Installation on Mac OS



CD-ROM Installation

-  Please note that you should NOT connect the EMI 2|6 to any of your Macintosh USB ports until the software installation is complete.
-  Using the EMI 2|6 with Logic Audio requires version 4.7.3 (or higher) of Logic Audio. The necessary updates for version 4.x.x are located on the CD-ROM. Logic Audio users prior to version 4.x.x please contact your local Logic Audio distributor for further update information.

Place the EMI 2|6 Installation CD in the CD-ROM drive of your computer and a window will open automatically. Please read the readme text file for the latest driver information and for any changes not known at the time this manual was written.

During the installation, you will be asked to select the ASIO, SoundManager or a full driver installation. For applications such as Logic Audio and Cubase, the EMI 2|6 communicates via the ASIO driver. For applications such as iTunes, the SoundManager driver is used. We recommend that you select the “EMI 2|6 Full Driver Installation”.

Prior to installing any of these files, you should consult the documentation that was supplied with your audio application(s) to determine what audio driver type(s) is/are supported.

- Click on the EMI 2|6 Driver Installation icon which will launch the installer. Please read the license agreement and click on the “Accept” button.
- In the ensuing dialog window, you will see a list of Installation options.
- Select the desired installation—by default, the “EMI 2|6 Full Driver Installation” is selected—and click on the “Install” button. We recommend that all drivers are installed unless you only wish to use the EMI 2|6 via SoundManager or ASIO. If this is the case, please click once on the appropriate installation checkbox.


Installation and Updating

- A warning dialog will advise you to “Disconnect EMI 2I6” and to ensure “that the EMI 2I6 is NOT connected to the computer during installation.” If the EMI 2I6 is connected to any Macintosh USB port, please disconnect it before continuing with the installation.
- Click on the “OK” button.

If the “EMI 2I6 SoundManager Driver Installation” was selected in the driver list window, a dialog will advise that installation was successful. Click on the “Quit” button to exit the installer.

- You may now connect the EMI 2I6 to a USB port—using the supplied cable.

If either the “EMI 2I6 ASIO Driver” or “EMI 2I6 Full Driver” Installation was selected in the driver list dialog, you will be prompted to select an ASIO Drivers folder.

 Note that the display of the ASIO Drivers selection dialog is dependent on whether or not multiple ASIO host applications exist on your Macintosh.


- Select the desired ASIO Drivers folder, and click on the “OK” button.
- If the “EMI 2I6 ASIO Driver” installation was selected, the installer will complete and a dialog will inform you that the EMI 2I6 ASIO drivers were successfully installed and to connect the EMI 2I6. Click on the “OK” button to clear the dialog.
- If the “EMI 2I6 Full Driver” installation was selected, a dialog window will ask you to select, and activate, either the ASIO or SoundManager driver. Click on the appropriate radio button to the left of the desired driver name, and click on the “OK” button to exit the installer.
- You may now connect the EMI 2I6 to a USB port—using the supplied cable.

Following connection of the EMI 2I6 to the computer’s USB port, the blue power LED should be lit, indicating that the EMI 2I6 is receiving power via USB.

Internet Installation

The EMI 2|6 can be connected to a free Macintosh USB port before installation of the software which will automatically launch a Mac OS 9 Internet Updater.

Following the onscreen info dialogs, this will automatically download and install the latest SoundManager drivers for the EMI 2|6, provided you have a valid and active Internet account.

 Note that this method of installation does not install the EMI 2|6 ASIO driver. To install the ASIO driver, you must follow the steps outlined in the *CD-ROM Installation* section from page 29 onwards.

Installation Components

The installation procedures outlined above may install any, or all, of the following:

- The utility *EMI 2|6 Driver Switch* which allows fast switching between the ASIO and SoundManager drivers.
- *USB Emagic EMI 2|6 Driver*—is the firmware for the EMI 2|6. It is required by the Macintosh to recognize the type of USB device connected to it, and what the EMI 2|6 does. Without this system extension installed in the System Extensions folder, the EMI 2|6 will not function.
- *USB Emagic EMI 2|6 Audio*—is the connection between the EMI 2|6 and the ASIO driver. This is a system extension which is placed inside the System Extensions folder.
- *EMI 2|6 ASIO*—is the actual ASIO driver. It is placed in the ASIO Drivers folder of ASIO host applications.

The EMI 2|6 can be addressed by *either* the ASIO or SoundManager driver. Please read the *Switching Between SoundManager and ASIO* section from page 32 onwards if you make use of multiple audio applications with different driver requirements.

ASIO

Some further information about the EMI 2|6 ASIO driver.

The *EMI 2|6 ASIO* driver needs to be placed into the *ASIO Drivers* sub-folder of your ASIO-compatible host application(s) to be functional.

Typically, the ASIO Drivers folder is located in the top level of the host application program folder: *Logic Audio Platinum > ASIO Drivers* or *Cubase > ASIO Drivers*, for example.

To add the EMI 2|6 ASIO driver to ASIO compliant host applications, you may use the Installer or you can simply copy or move the *EMI 2|6 ASIO* file into the appropriate *ASIO Drivers* folder(s). The Installer may be run multiple times if several ASIO host applications are installed on your system.

SoundManager

The SoundManager driver for the EMI 2|6 is limited to stereo in/out, 16-Bit operation.

If your audio application uses SoundManager to access audio hardware, *only* the *USB Emagic EMI 2|6 Driver* extension file can be active in the *System Folder > Extensions* sub-folder.

If the *USB Emagic EMI 2|6 Audio* extension file is active in the *System Folder > Extensions* sub-folder, the SoundManager will not recognize the EMI 2|6 as an audio device. This will disable the functionality of the EMI 2|6 in any application which relies on SoundManager to communicate with the audio hardware.


Switching Between SoundManager and ASIO

As stated above, the *USB Emagic EMI 2|6 Driver* and *USB Emagic EMI 2|6 Audio* extension files cannot both be active in the *System Folder > Extensions* sub-folder without disabling SoundManager support of the EMI 2|6. This is due to a technical limitation with the audio architecture of Mac OS 9.x.

Should you have multiple audio applications which rely on either ASIO or SoundManager drivers, you will need to switch between the driver types to make use of the EMI 2|6.

As part of the installation procedure, a small driver switching utility was added to the Apple Menu. To make use of this utility:

- Click on the Apple Menu.
- Browse to the “EMI 2|6 Driver Switch” entry.
- A dialog window will launch, advising you of the currently active driver. You will be asked if you wish to select the other driver.
- To select the non-active driver, click on the “Switch” button. To leave the current driver active, click on the “Cancel” button.
- A dialog will launch, advising you to disconnect the EMI 2|6 and click “OK”.
- Once “OK” is clicked, a further dialog will advise you that the driver has switched, and that you are able to reconnect the EMI 2|6 to the USB port.
- You must disconnect and reconnect the EMI 2|6 USB connection each time you switch between drivers. Should the EMI 2|6 fail to be recognized or re-initialize, please restart your Macintosh.

 Please note that future revisions of the EMI 2|6 driver software may feature an alternative driver switching mechanism. Please consult the readme text supplied with any driver updates for further information.

Driver Updates

This section describes the update procedure for a system with an existing EMI 2|6 driver installed. If this is the first time you have connected the EMI 2|6 to your computer, you should refer to the earlier installation section.



The EMI 2|6 must have been previously installed successfully on the system.

- Insert the EMI 2|6 Driver Update CD-ROM into your computer's CD-ROM drive, or unpack the updated drivers package to a local drive on your computer, if downloaded from the Internet.
- Follow the installation instructions outlined in the readme file which shipped with your CD-ROM or was downloaded via the Internet as part of the drivers package.
- It is possible that the EMI 2|6 may need to be re-initialized following any file updates on your Macintosh. To do so, disconnect and reconnect the USB connection or follow the instructions provided in the readme text.

7 Configuring and Using the EMI 2|6

This chapter explains the use of the EMI 2|6 and how to configure the options in its software.

Audio Drivers

The EMI 2|6 is easy to handle and convenient. It offers extended functionality, and there are only a few important parameters you need to deal with. Various audio drivers can be used with the EMI 2|6, as described in the following sections. The reason for the inclusion of these different drivers is that various software applications access the audio hardware (the EMI 2|6) in different ways.

On Windows systems, the EMI 2|6 supports these audio drivers:



- *Wave Driver (MME)*, used by sample editors like CoolEdit, for example. *This driver takes advantage of the WDM (Windows Driver Model) architecture. It is multi-client capable, which means that multiple applications can use the driver—and therefore the EMI 2|6—simultaneously.*
- *DirectSound*, for games and stand-alone software synthesizers, such as Rebirth. *This driver takes advantage of the WDM (Windows Driver Model) architecture. It is multi-client capable, which means that multiple applications can use the driver—and therefore the EMI 2|6—simultaneously.*
- *ASIO*, for all applications supporting this driver interface—Logic Audio, Reaktor or Cubase, for example.
- *EASI*, a very powerful driver interface that is recommended for use within Logic Audio

On Mac OS systems, the EMI supports these audio drivers:

- *SoundManager*, used by iTunes, for example. *It is multi-client capable, which means that multiple applications can use the driver—and therefore the EMI 2|6—simultaneously.*



- *ASIO*, for all applications supporting this driver interface—Logic Audio, Reaktor or Cubase, for example.

Selecting The Appropriate Driver

The driver chosen for your audio application depends on the program itself. Some applications, such as Logic Audio, are capable of using multiple types of drivers.

It is important to know that the EMI 216 can only be used with one of the driver types at any given time. The exception to this rule is the parallel use of the MME/DirectSound drivers. Software applications can only access the EMI 216 using one driver type at a time, i.e.—either with SoundManager or MME/DirectSound *or* with ASIO, *or* with EASI (Windows only).

If the EMI 216 is using the SoundManager or MME driver within a particular audio application, it is “locked” to that driver and can not be used with the ASIO or EASI driver at the same time. If you try to activate one of these driver types in the same program, or in another simultaneously, an error message will appear onscreen indicating that the hardware is busy or not available.

SoundManager, MME and DirectSound

If a program only supports SoundManager or MME, you are limited to the use of the EMI 216 SoundManager or MME driver. The SoundManager or MME driver has a higher latency than the other driver type(s).

Typically, stereo applications that use SoundManager, MME or DirectSound use only the first two outputs of the EMI 216.


On Macintosh systems, the EMI 216 is limited to stereo operation when the SoundManager driver is in use. Via SoundManager several programs can share the audio outputs of the EMI 216.

On Windows, the EMI 216 MME drivers, however, are multi-channel drivers. If a program supports this feature, it can use



any, or all, of the EMI 2|6's outputs. In multi-client operating mode, several programs can share the audio outputs of the EMI 2|6. If two programs that use MME drivers are opened, their signals are mixed. The same is true for the Windows system sounds or audio files that are digitally extracted from an audio CD.

If a program supports both MME and DirectSound drivers, the latter is the preferable choice in most cases. It is possible to combine MME and DirectSound drivers in multi-client mode: the audio signals of two programs, one using an MME driver, and the other DirectSound, are mixed before they are sent to the EMI 2|6's outputs. When using MME or DirectSound drivers, a format conversion occurs automatically, if, for example, two signals with different sampling rates are played back from two applications.

 Note that on Windows 98 SE, it is possible that the quality of audio playback in some applications may not be optimal. Please refer to the *Audio quality is poor in Windows 98 SE* section from page 59 onwards for solutions.


ASIO and EASI

ASIO and EASI are driver types that were specifically designed for music applications where multiple low latency audio channels are required. The ASIO and EASI drivers for the EMI 2|6 are low-level kernel drivers which deliver extremely low latency figures. If a program supports ASIO or EASI, one of these drivers should be selected in preference to the Sound-Manager or MME/DirectSound drivers. This is especially true if multiple channels of audio playback are required. The lower latencies of the ASIO or EASI drivers are also beneficial for realtime monitoring through effects plug-ins and the live playing of software synthesizers.


In order to use the EMI 2|6 with EASI or ASIO, you must ensure that it isn't *actively* using an MME/DirectSound, ASIO or EASI driver in another application. In this scenario, you will need to quit any programs which are currently accessing the

Configuring and Using the EMI 216


EMI 216 and may possibly need to switch off the system sounds.

 Note that this applies to the “Microsoft GS Wavetable SW Synth”, a program that can be used to play back MIDI files. You may need to deactivate it in your music program/s, as it can not be used simultaneously with the EMI 216 EASI/ASIO driver.




 Logic Audio’s WavePlayer uses DirectSound drivers to access audio hardware. If you would like to access the EMI 216 via EASI or ASIO drivers, for general audio use in Logic Audio, you will need to deactivate the WavePlayer or route its output to a different sound card.




 The EASI driver offers the most direct connection of the EMI 216 to Logic Audio and should be selected over the EMI 216 ASIO driver, where possible. The EMI 216 EASI driver is optimized for use with Logic’s audio engine, and delivers efficient and reliable performance, even under heavy system loads.



 The “Release Audio if Stopped in Background” option allows the EMI 216 audio driver (ASIO/EASI, for example) to be released by Logic Audio whenever the sequencer is stopped. This allows the EMI 216 to be used by another application—e.g. a sample editor using the MME driver to access the EMI 216—when Logic is not playing back audio. This effectively allows the EMI 216 to “switch” between drivers used in Logic and another application. It should be noted that only Logic **or** the other application can play back audio at any one time, i.e.—when a sample editor (using the MME driver) is not playing, the EMI 216 is released and Logic’s ASIO/EASI driver is reactivated, and vice versa.



 The MME/DirectSound driver combination must be used if you wish to access the EMI 216’s outputs within two different applications simultaneously.



Software Controls

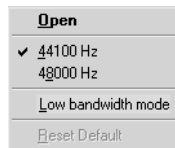
The EMI 2|6 offers only a few—but important—parameters, accessible from one control panel on the Mac OS or two control panels on Windows machines.

Windows

In the diagram below, the icon for one of these control panels is shown in the system tray:



When the icon is clicked with the right mouse button, the following menu appears:

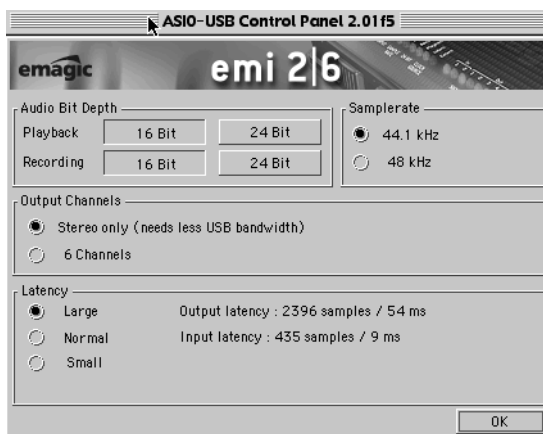


If you double-click on the icon with the left mouse button, or select **Open** from the menu above, the *Emagic EMI 2|6 Device Options* are shown as per the diagram below:




The options available in this control panel are the same as those found in the menu illustrated above.

Macintosh



On Macintosh systems, all of the EMI 216's parameters are accessed from *one* control panel, as shown. It can be opened from within the audio settings section (or similar) of an ASIO compatible host program. The control panel offers exactly the same parameters as described for the combined Windows panels, although there are a few naming conventions which are different.

 The SoundManager driver is supplied by the Mac OS, so the parameters of the Control Panel discussed only affect the ASIO operation of the EMI 216.

Low Bandwidth Mode, Stereo Only, 16 Bit

Using this control panel option, you can globally select a sampling rate for the EMI 216 and activate *Low bandwidth mode: stereo 16 bit only*.



On Windows systems, changing this option should only occur when the EMI 216 is not currently in use. Quit all programs that can use the EMI 216 before changing either of these settings.

On Macintosh systems, switching to Low Bandwidth use of the EMI 216 is accessible via the various radio buttons. Select the




“Stereo only (needs less USB bandwidth)”, sample rate, and appropriate Bit-depth buttons, by clicking once on them.

You may select either of two sampling rates for the EMI 2|6—44.1kHz or 48kHz. Normally, 44.1 is the best choice, as this is the sampling rate used on audio CDs and by most music programs and devices. If you would like to connect a consumer DAT recorder (or other device that uses a 48kHz sampling rate) to the EMI 2|6’s digital output and/or want to record at a 48kHz sampling rate, you can select this rate here.

The option *Low bandwidth mode: stereo 16 bit only* option limits audio playback from the EMI 2|6 to two channels, and deactivates outputs 3, 4, 5 and 6. This option is deactivated by default. It can be very useful if you only use the EMI 2|6 in stereo as it saves USB bandwidth.



 The operating system reserves six audio channels for the EMI 2|6, even if only two of them are used—with the other outputs receiving “silence”. In this scenario, the USB bandwidth used by the other four channels is wasted unnecessarily. If you wish to use another device via USB (especially one with high bandwidth needs, such as a webcam), it may suffer from poor performance due to a data overload on the bus. The *Low bandwidth mode: stereo 16 bit only* option changes the behavior of the EMI 2|6 to that of a two channel device, thereby avoiding this waste of USB bandwidth.

The Reset Default Option

Clicking on the *Reset Default* button resets the EMI 2|6 control panel settings to their defaults—a sampling rate of 44.1 and the transmission of all six output channels. To confirm any changes to settings, press the *OK* button. To avoid making changes, press the *Cancel* button.

There is no *Reset Default* button in the EMI 2|6 Control Panel for the Macintosh.




Adjusting Latency

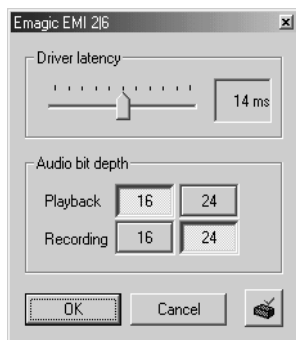
Latency is inherent in all digital audio devices and is most often used to describe the delay between audio signals arriving at the inputs and being sent from the outputs of a soundcard/digital audio device. Also see the *About the Term “Latency”* section from page 44 onwards.

At the other end of the signal path, the digital signal needs to be reconverted into an analog signal so that it can be listened to through analog audio playback systems—i.e. an amplifier and speakers. This process is called “digital to analog conversion” and is dealt with by the Digital to Analog Converter (DAC).

The conversions from analog to digital and back require time, which equals “latency”.

 The “Driver Latency” and “Audio bit depth” settings only affect the EAS/ASIO operation of the EMI 216. They do not have any impact on the MME/DirectSound or SoundManager drivers.

If the EMI 216 is used within a program which accesses it via ASIO or EASI (Windows only) drivers, an additional EMI 216 control panel can be found in the audio settings section of the program. It is accessed by clicking on a button named *Open Control Panel* (or similar) from within the application.



The slider in the “Driver Latency” panel allows adjustments to the EMI 2|6’s audio buffers. This parameter can be used to reduce latency figures and to ensure clean and undistorted playback through the EMI 2|6’s outputs. The latency slider in the EMI 2|6 control panel determines the driver latency in “ms”.

The Macintosh version of the EMI 2|6 Control Panel does not feature a *Driver Latency* slider. There are three radio buttons marked as *Large*, *Normal* and *Small*. Selecting one of these buttons, by clicking once with the mouse will update the Output latency and Input latency information displayed in the “Latency” panel. Selection of the *Small* button will reduce the latency figures but will place higher overheads on the CPU and the USB. This may result in errors or erratic performance, such as clicks or distortion of your audio signals. In general, the *Normal* setting provides the most balanced performance on most systems. It provides acceptable latency for softsynth use, for example, and places less strain on system resources than the *Small* setting. If you find that the latency is disconcerting when using the *Normal* setting, select one of the other buttons. The *Large* button may prove of use on slower Macintosh computers or when bouncing (mixing down) a complex multi-track audio arrangement.



 Please check for possible parameter changes or updates in the included ReadMes and at www.emagic.de

There are no “correct” settings for the latency parameter as the optimal value varies from system to system. A fast computer should be able to work with a smaller value than a slow computer. Simply try out different settings and listen to the results. If you notice any crackles or drop-outs in your audio, you should increase the driver latency setting.

You should experiment with this setting to find the optimal value which provides clean playback on your system.

About the Term “Latency”

The term “Latency” describes the delay that occurs when audio signals are edited within a computer environment. It occurs because the computer needs to buffer the audio data between different stages of processing. This type of delay can not be avoided completely. It is desirable, however (and possible with fast computers and good drivers), to keep latency delays as small as possible. A reduction in latency figures will allow the monitoring of a recorded signal through the computer or live playing of a software synthesizer without noticeable delay.

An area of confusion—particularly to new users of digital audio hardware and software—is that the term “latency” is used to describe several types of delays that can accumulate in certain cases. As an example, each D/A or A/D conversion stage introduces a delay of approx. 1 ms (millisecond—i.e. 1/1000th of a second). If an audio signal is converted from analog to digital and back, it is delayed by 2 ms. In addition to this value, the latency from the audio driver itself plus a further (possible) latency from within the program being used, need to be added. It also makes a difference if an audio signal is monitored through the computer or if it’s generated inside the computer. To clarify—if you record a singer and monitor the signal through the computer, the input plus output latency are summed. If you play a software synthesizer from your MIDI keyboard, the input-related latency does not occur as the synthesizer’s signal is generated inside the computer. In this case, only the output-related latency matters.

Audio Bit Depth Controls

The “Audio bit depth” panel allows selection of the bit resolution used by the EMI 216 for playback and recording. Either 16 or 24 bit resolution can be selected for both options. Due to USB bandwidth limitations, the EMI 216 can only use 24 bit resolution in one direction at a time—i.e. either for playback or

recording. Please note that 24 bit settings should only be used if your software supports this format.

Confirm any changes made to the settings by pressing the *OK* button.

On Windows systems, you can reject changes by clicking on the *Cancel* button. Clicking on the blue icon from within this window, launches the *Device Options* control panel (Windows only).



Setting the Input Level

Note that controlling the actual input level *must be set at the source*—i.e. a mixing desk etc.

If you wish to record non line-level sources, such as microphones and guitars, use an external mic preamplifier, such as that found on a mixing desk, and route the signal from the mixer's sub groups into the EMI 2|6 analog or digital inputs. Note that use of the EMI 2|6 digital inputs requires a digital mixing desk or other digital device.

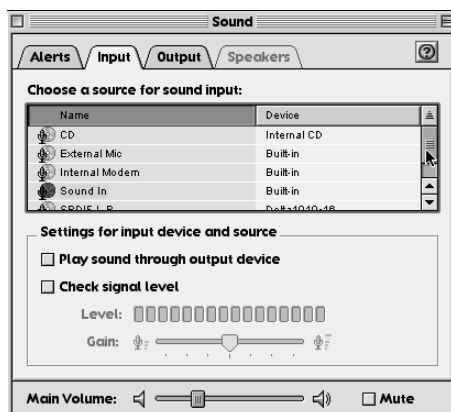
The Mac OS Sound Control Panel

To use the EMI 2|6's audio functions in any SoundManager reliant application, you will need to select an audio input and output source from the appropriate tabs in the Sound control panel. The sample rate is fixed at 44.1kHz.

Bit depth and input/output options in Mac OS 9.0.4 (or higher Mac OS 9 versions) are restricted to "16-bit" and "Stereo".



Configuring and Using the EMI 216



Volume

The Volume slider in the Sound control panel is placed after the EMI 216's output. This means that the master output fader within your audio application can only control the full output dynamic range of the EMI 216 if the Volume slider in the Sound control panel is set to its maximum level. Please check this setting if you feel that EMI 216's output level is too low.

The Windows Volume Control

The Windows "Volume Control" accessory provides control of the following:

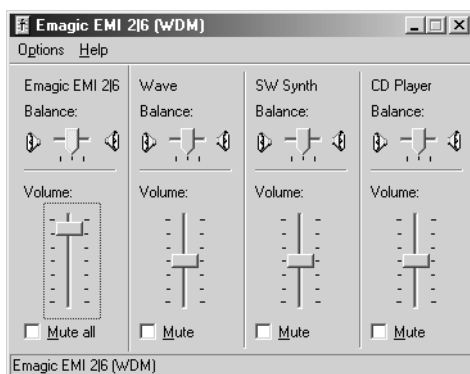
- Playback Level
- Input Monitoring Level

It is accessible via the Start menu: **Start > Programs > Accessories > Multimedia > Volume Control**, or in Windows 98 SE/ME via **Start > Programs > Accessories > Entertainment > Volume Control**.

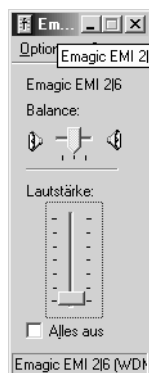
The Volume control can be accessed more easily if you check the option to Show Volume Control on Taskbar in Control Panel > MultiMedia > Audio. This will place a loudspeaker icon on the taskbar, which will reveal a master volume control when clicked once with the mouse.



Double-clicking will reveal the control panel discussed above.



This illustration shows the volume control panel for the EMI 2|6. The playback level for audio recordings is controlled via the “Wave” slider. This control is placed *after* EMI 2|6’s output. This means that EMI 2|6’s master output fader in your music software can only control the full output dynamic range if both the “Wave” *and* the “Emagic EMI 2|6” sliders are set to maximum.



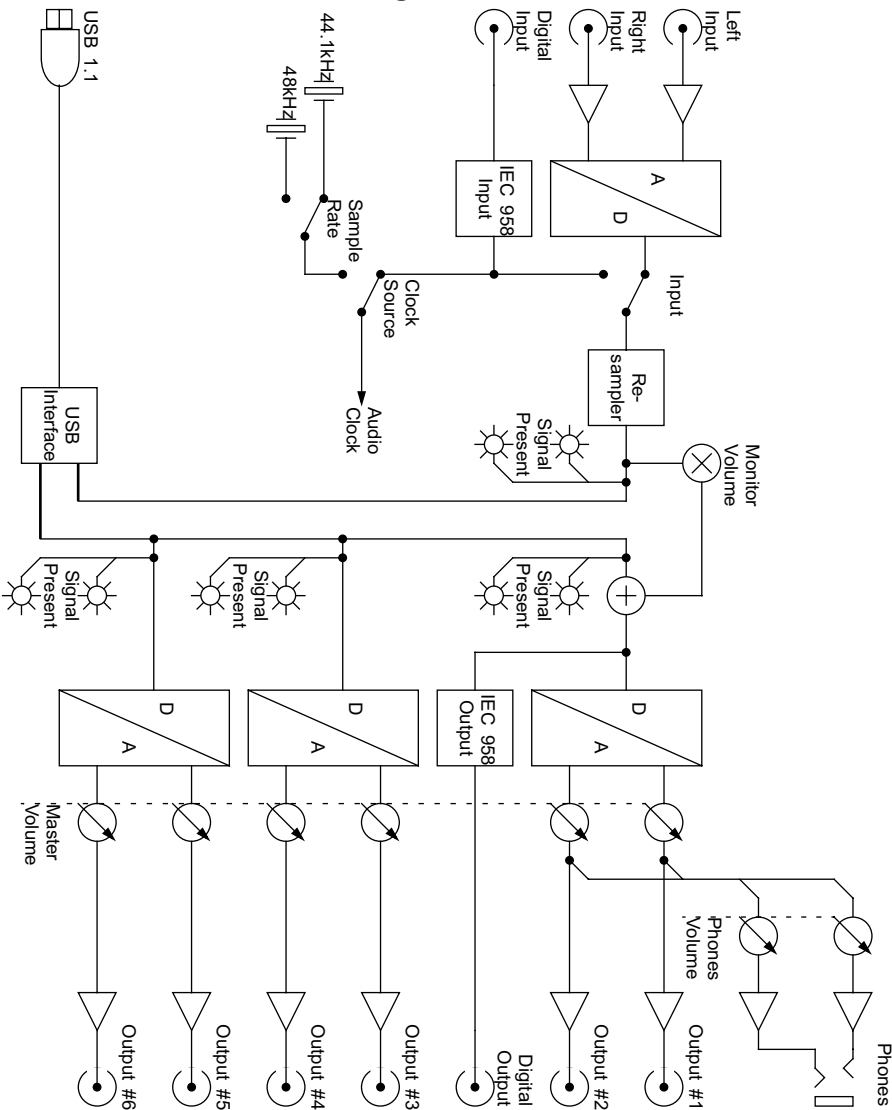
You can also switch views to display a mixer control panel that allows you to set the input *monitoring* level via **Options > Properties > Recording** from within the control panel shown above.

Surround Output Mapping

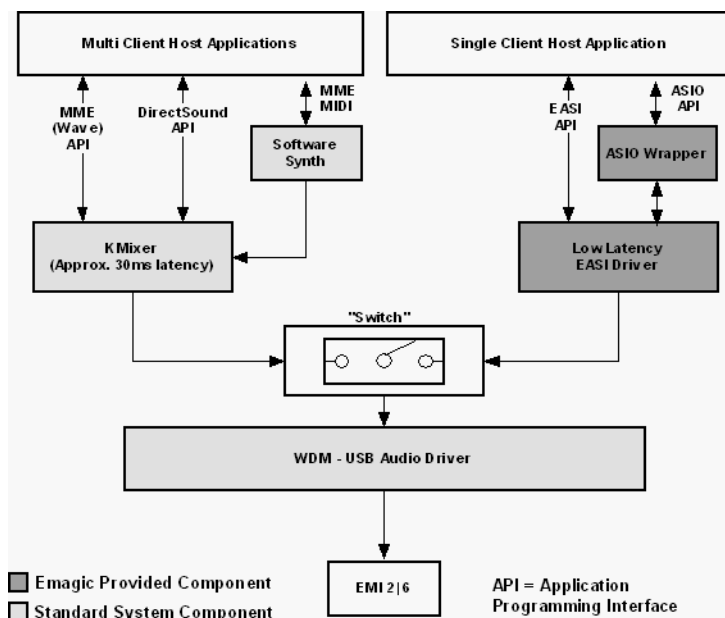
Output	Spatial Location
1	Front Left
2	Front Right
3	Front Center
4	Low Frequency Enhancement (LFE)
5	Rear Left
6	Rear Right

8 Block Diagrams

Schematic of EMI 2|6 Signal Flow



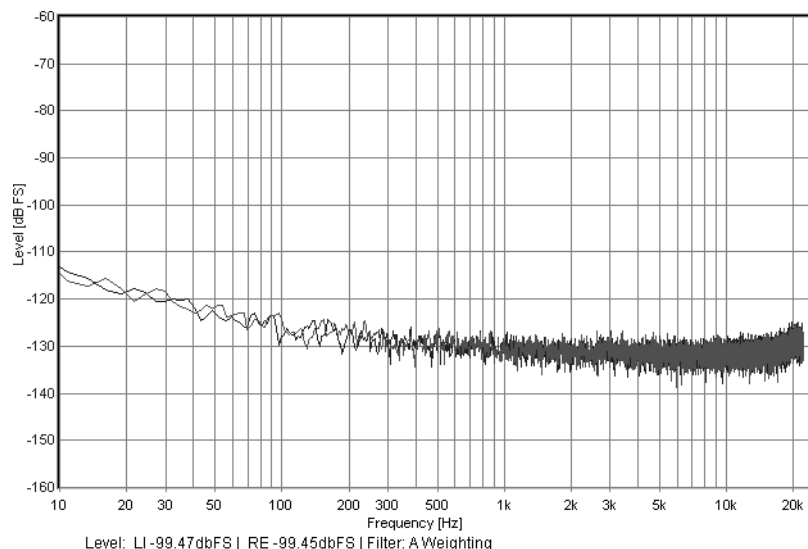
EMI 2|6 Software Driver Architecture (Windows)



9 Technical Specifications

Parameter	Typical value
bit resolution	16bit, 24bit
sampling rates	44.1kHz, 48kHz
signal to noise ratio	99dB
dynamic range	99dB
frequency response	20Hz—20kHz ± 0.5dB
input level	2.8Vpp 0dBV, +2.2dBu
output level	2.8Vpp 0dBV, +2.2dBu
Group Delay ADC	27.6/fs
Group Delay DAC	21.9/fs

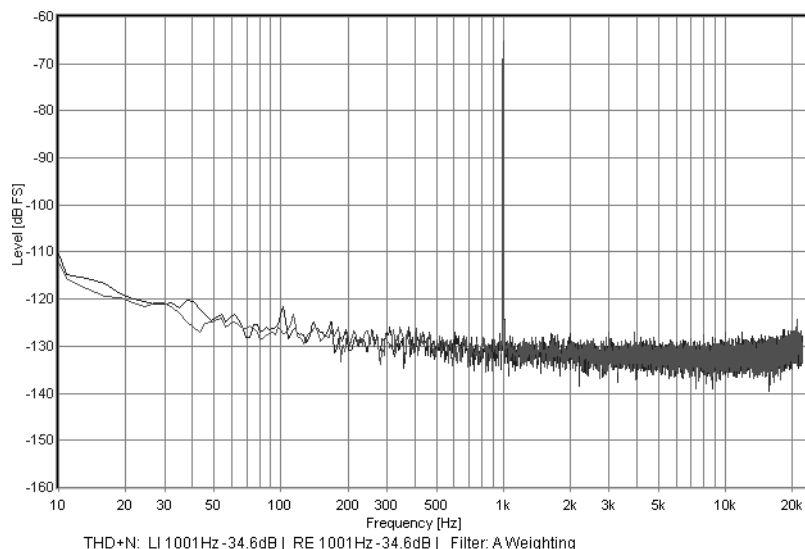
Signal to Noise Ratio



The signal to noise ratio was measured under the following conditions:

- input to output
- sampling rate 44.1kHz
- playback of digital zero,
DAC attenuation level -65dB
- recording with 16 Bit resolution
- FFT with 16,384 points,
Blackman-Harris window, A-weighted

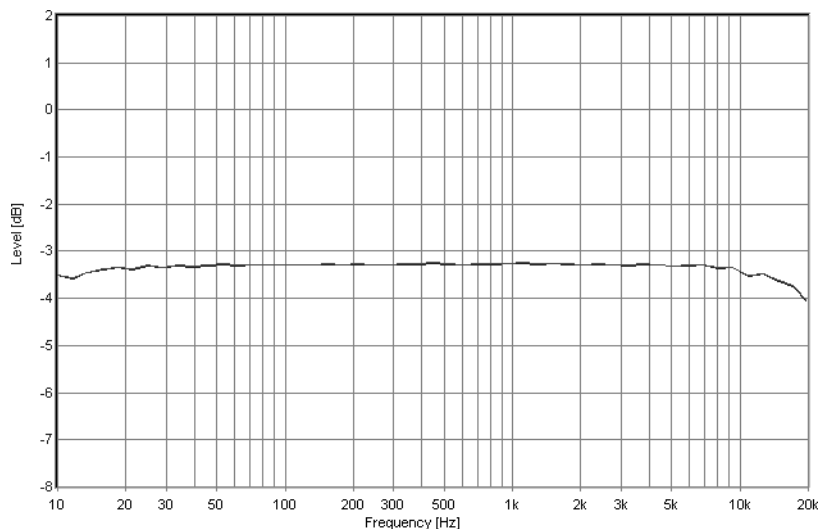
Dynamic Range



The dynamic range was measured under the following conditions:

- input to output
- sampling rate 44.1kHz
- playback of a 1kHz signal (appearing as a peak in the graphic) with a level of 0dBFS and 24bit resolution—DAC attenuation level -65dB
- recording at 16 bit resolution
- FFT with 16,384 points, Blackman-Harris window, A weighted

Frequency Response



The frequency response was measured under the following conditions:

- input to output
- sampling rate 44.1kHz
- playback sweep with a level of -3dBFS and 24bit resolution
- recording with 16 bit resolution

Application of the Channel Status in the EMI 2|6

Field	Bit	Value	Meaning
Control	0	0	Consumer use
	1—5	0X000	2 audio channels w/o pre-emphasis
		X0XXX	Digital copy permitted
Mode	6—7	00	Mode 0
Category Code	8—15	00000000	2-channel general format
Source Number	16—19	0000	Don't care
Channel Number	20—23	0000	Don't care
fs	24—27	0000	44.1kHz
		0100	48kHz
Clock Accuracy	28—29	00	Level II
Reserved	30—191	0	Reserved for future standardization

10 Troubleshooting

The blue power LED is not lit

- If you use the EMI 216 with an external power supply, the power supply must match the specifications outlined in the *External Power Supply* section from page 11 onwards. A suitable high-quality power supply for the EMI 216 is available from Emagic.
- If other devices are already connected to the USB port, the addition of the EMI 216 may overload the power supply of the bus. If this occurs, please remove one or more of the other devices, or connect them to a self-powered hub (i.e.—a hub with its own power supply).
- If the USB power supply is insufficient for use with the EMI 216 (which may be the case with some laptop computers), only use the Emagic-supplied external power supply for the EMI 216.

The blue power LED is lit but the green status LEDs are not

- It is possible that the EMI 216 drivers are not installed or not correctly installed. Please repeat the installation process using your driver installation CD. Restart the computer.
- During restart the drivers are not active. This means that the green status LEDs will only be illuminated after the operating system is completely booted.
- It is also possible that the EMI 216 has not been correctly initialized—in this situation the green status LEDs will remain unlit. Please disconnect the EMI 216, wait for a few seconds and then reconnect it.

The signal presence LEDs indicate a signal but I can't hear any audio

- The master volume follows the signal presence LEDs in the EMI 2/6's signal path. Check the master volume setting. The Windows Volume Control is accessible via the Start menu: **Start > Programs > Accessories > Multimedia > Volume Control**, or in Windows 98 SE/ME via **Start > Programs > Accessories > Entertainment > Volume Control**.
- Under Windows 98 SE or Windows 2000, it may be necessary to reboot your computer following installation.
- On Macintosh systems using a SoundManager driver, check the Sound control panel and make sure the setting Mute is not selected.



Noise and synchronization issues when using the digital input in Windows 98 SE and Windows 2000

- Windows 98 SE and Windows 2000 do not fully provide the functionality required for external synchronization. We recommend that you set *Clock Source* on the EMI 2/6 to *Intern* to avoid this issue.



I cannot activate the EASI or ASIO driver for my EMI 2/6

Windows

- The EMI 2/6 can only be used with one driver type at any one time, with the exception of the MME/DirectSound combination. Software applications can only access the EMI 2/6 using one driver type at a time, i.e.—either with MME/DirectSound *or* with ASIO *or* with EASI. If the EMI 2/6 is using an MME driver within a particular audio application, for example, it is “locked” to that driver and can not be used via an ASIO or EASI driver at the same time. If you try to activate one of these driver types in the same program, or in another simultaneously, an error message will



Troubleshooting

appear onscreen indicating that the hardware is busy or not available.

- In order to use the EMI 2|6 with EASI or ASIO, you must ensure that it isn't *actively* using an MME/DirectSound, ASIO or EASI driver in another application. In this scenario, you will need to quit any programs which are currently accessing the EMI 2|6 and may possibly need to switch off the system sounds.
- Note that this applies to the “Microsoft GS Wavetable SW Synth”, a program that can be used to play back MIDI files. You may need to deactivate it in your music program/s, as it can not be used simultaneously with the EMI 2|6 EASI/ASIO driver.
- Logic Audio's WavePlayer uses DirectSound drivers to access audio hardware. If you would like to access the EMI 2|6 via EASI or ASIO drivers, for general audio use in Logic Audio, you will need to deactivate the WavePlayer or route its output to a different sound card.

Mac OS

- If you would like to use the EMI 2|6 via the SoundManager as an alternative to the integrated audio system of your Mac, please make use of the EMI 2|6 Driver switch utility. The procedure is outlined in the *Switching Between SoundManager and ASIO* section from page 32 onwards.
- If the EMI 2|6 is being used by an application which makes use of the SoundManager, it cannot be simultaneously used with an application which uses the ASIO driver. If you attempt to activate the EMI 2|6 ASIO driver within any program, an error message will be displayed indicating that the hardware is busy or not available.



Outputs 3 to 6 are not active

- Most programs which use MME or DirectSound or the SoundManager drivers are limited to stereo output. All EMI 2|6 outputs can be used with EASI or ASIO or if the

software used supports the multi channel feature of MME/DirectSound.

- Check if the option *Low bandwidth mode: stereo 16 bit only* in either of the EMI 2/6 control panels is activated. If active, EMI 2/6 playback is limited to two channels.
- EMI 2/6 users on Mac OS should also check the ASIO Control Panel, as the EMI 2/6 outputs can be switched from stereo to 6 channel operation here, as well.



I can't hear the monitor signal

- The volume of the monitor signal can be set via the *Recording Gain* fader in the Windows mixer. Check the setting of this fader. Please refer to the *Setting the Input Level* section from page 45 onwards.



Audio quality is poor in Windows 98 SE

- Open **Control Panel > Multimedia > Audio**. For both Sound Playback and Recording, click on the Advanced button. In the ensuing windows, select the Performance tab, and change the “Sample rate conversion quality” slider to “Best”. This must be changed in both Performance tabs to enhance the playback and recording audio quality.



Inserting a digital effects processor does not work

- Typically, digital effects processors are not clock master devices. They require an external synchronization signal (the signal coming from the EMI 2/6). Set *Clock Source* on the EMI 2/6 to *Intern*.

My digital recording is not bit-identical to the original

- Windows Millennium: If the connected digital source uses a sampling rate that is different to that of the EMI 2/6, resampling occurs in an attempt to match the rate used by the



Troubleshooting

EMI 2|6. Set *Clock Source* on the EMI 2|6 to *Extern* to avoid this issue.

- On Windows 98 SE and Windows 2000, there is a technical limitation that affects digital clock input signals. We therefore recommend that the EMI 2|6 is set to *Intern* for optimal performance on these operating systems.
- Mac OS: If the connected digital source uses a sampling rate that is different to that of the EMI 2|6, resampling occurs in an attempt to match the rate used by the EMI 2|6. Set *Clock Source* on the EMI 2|6 to *Extern* to avoid this issue.



My DAT recorder doesn't recognize the EMI 2|6's digital signal

- The S/PDIF signal carries additional information about the audio material in “Channel Status” messages. As an example, information about the sampling rate being used. This information needs to correspond with the actual sampling rate on some DAT recorders. In this situation, the sample rate setting of the EMI 2|6 needs to be set to the appropriate rate, even if the EMI 2|6 is synchronized to an external source.

Activating CD audio playback via the EMI 2|6 (Windows)



To activate CD audio playback via the EMI 2|6, click in the checkbox appropriate to the operating system used:

- Windows ME: **Control Panel > System > Device Manager > CD ROM > [your device] > Properties:** “Enable digital CD audio for this CD-ROM device”
- Windows 98 SE: **Control Panel > Multimedia > CD Music:** “Enable digital CD audio for this CD-ROM device”
- Windows 2000: **Control Panel > System > Hardware > Device Manager > DVD/CD-ROM drives > [yourdevice] > Properties:** “Enable digital CD audio for this CD-ROM device”

Unsupported Windows Version Detected dialog

- This dialog will appear if you are running Windows 95 or the “Gold” edition of Windows 98—i.e. the initial release of Windows 98.
- We recommend that you upgrade your operating system to Windows Millenium.



11 Glossary

Term	Meaning
S/P-DIF	Sony/Philips Digital Interface Format. Standard for the transmission of digital audio signals, developed by Sony and Philips. Optical or coaxial connectors.
IEC60958 (IEC958)	International standard of the IEC, describing the transmission of digital audio signals via S/P-DIF.
Clock Source	The clock source for a digital audio system. Only one clock source (master) is allowed in a digital audio system. All other digital devices must be synced (slaved) to this clock. The device that delivers the clock acts as the master and is synced internally. Other devices work as slaves and are synced externally to the clock master.
IEC	International Electrotechnical Commission. International institution for defining, publishing and controlling standards. See www.iec.ch
dB	decibel. A numerical value for the relative loudness of a sound expressed logarithmically. Different measures of dB such as dBu or dBV are used depend on the application and nominal value.
dBu	Logarithmic unit with a reference level of 0.775VRMS at any impedance. Studio devices use a standard level of +4dBu or 1.228V.
dBV	Logarithmic unit with a reference level of 1VRMS at any impedance. Consumer devices use a standard level of 10dBV or 316mV.
dBFS	Logarithmic unit with a reference level corresponding to the highest possible value of the given bit resolution.

12 EMC Statements

Declaration of Conformity

Product Name: EMI 2|6
Responsible Party: Emagic Incorporated
13348 Grass Valley Ave. bldg. C
Grass Valley, CA 95945 USA

The importer hereby declares that the abovementioned product complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

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

Caution

Unauthorized changes or modifications to this system can void the users authority to operate this equipment.

Note

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 against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee, however, 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 the 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

Canadian Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis Canadien

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EG Konformitätserklärung/ EC Declaration of Conformity

Produkt/ Product: EMI 2|6

Hersteller/ Manufacturer: Emagic Soft- und Hardware GmbH
Halstenbeker Weg 96
25462 Rellingen, Germany

Der Importeur bestätigt, dass das oben genannte Produkt mit den folgenden EG-Richtlinien zur Angleichung der Rechtsvorschriften der Mitgliedstaaten übereinstimmt:

The importer hereby declares that the abovementioned product is in conformity with the requirements of the European Council directives on the approximation of the laws of the Member States relating to:

Low Voltage Directive: 73/23/EEC

Zur Beurteilung hinsichtlich der Gerätesicherheit wurde der Europäische Standard EN 60950:1997 angewendet.

Conformity is based upon compliance of the product with the European Safety Standard EN 60950:1997 and includes all European country deviations

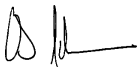
Electromagnetic Compatibility Directive: 89/336/EEC

Zur Beurteilung hinsichtlich der Elektromagnetischen Verträglichkeit wurden die folgenden harmonisierten Vorschriften angewendet:

Conformity is based upon compliance of the product with the following European Electromagnetic Standards:

Electromagnetic Emissions: EN 55022 Class B

Electromagnetic Immunity: EN 55024



Chris Adam, VP R&D
Rellingen, February 26, 2001

EMC Statements