PHASE X24 FW

24 Bit/192 kHz Extended Audio System

TERRATEC PRODUCER PHASE X24 FW

English Manual

Version 1.0, last revised: March 2005

TRAKTOR DJ

THE NEW FACE OF DJ-MIXING: COMPLETE DJ SETUP FOR MP3 AND AUDIO CD

by

NATIVE INSTRUMENTS
SOFTWARE SYNTHESIS

Serial number: 613 – 019813 – 20177

CE Declaration

We:

TerraTec Electronic GmbH, Herrenpfad 38, D-41334 Nettetal, Germany

hereby declare that the product:

PHASE X24 FW,

to which this declaration refers is in compliance with the following standards or standardizing documents:

EN 50022, EN 50024

The following are the stipulated operating and environmental conditions for said compliance:

residential, business and commercial environments and small-company environments.

This declaration is based on:

Test report(s) of the EMC testing laboratory

Contents:

Safety information

Please ensure that analog audio devices are turned off before plugging them in. This will protect you from any possible—albeit weak—electrical shocks, as well as protect your speakers and your hearing from sudden peaks.

For digital devices, be sure to at least lower the volume on your playback equipment.

Connecting the device to the FireWire™ port of your computer may also cause a noise—please turn down the volume of your playback system accordingly.

Welcome!

We're pleased that you've chosen a TerraTec Producer audio interface for your musical endeavors and would like to congratulate you on your decision. With the PHASE X24 FW Audio System, you've purchased a sophisticated product representing the state of the art of studio technology—and we're convinced this innovative development will prove extremely useful to you in the coming years and, above all, provide you with a great deal of entertainment. We hope that this brochure is helpful to you while using the product. It is designed to illustrate technical relationships based on practical examples from the studio environment. This brochure is not only designed to help beginners with this complicated subject—advanced musicians will also find the occasional bit of useful information.

We hope you find this manual both informative and entertaining to read, and hope you find lots of pleasure in the PHASE X24 FW system.

Sincerely,
Your TerraTec Producer Team

Technology and design. PHASE X24 FW – the perfect TerraTec external audio system for mobile use, and not just because we included a protective pouch. Fantastic specs such as 24-bit/192kHz and versatile connections with two analog inputs (line, microphone or instrument levels), two insert jacks and four analog outputs, digital I/O (optical), FireWire™ and MIDI I/O make the PHASE X24 FW and a notebook perfect for the DJ on the road and a valuable assistant in the recording studio. And to top it all off, we've given it a stylish aluminum case. Feel free to flaunt it.

► For everything you need to know about connections, see ➲ page 18.

Nerve center—the software. As you know, a professional audio system is no sound card for wild-eyed gamers, but the heart of your day-to-day studio work with your PC. That's why we believe in clean functionality when it comes to software. And despite the extensive routing options, the PHASE software always provides you with a clear overview and—depending on the complexity of your switching needs—remains transparent and intuitive.

► For everything you need to know about the PHASE X24 FW Control Panel, see ➲ page 27.

The drivers provided for the PHASE X24 FW System, too, leave nothing to be desired. Our sophisticated software architecture guarantees trouble-free deployment in Windows XP (Service Pack 1 or higher) and MAC OS X Panther 10.3.6 (or higher).

The ASIO drivers—thoroughly proven throughout years of studio application—allow the lowest possible latency between the software-based sound generation and audio output.

► For everything you need to know about the driver use, see ➲ page 23.

From opening the package to installation

Before connecting the PHASE X24 FW System, take note of any special points pertaining to the configuration of your computer. Also refer to the manual of your computer and other studio peripheral devices for their settings.

The installation should run without any problems, especially in recent systems. If you are experiencing difficulties all the same, please review carefully the relevant chapter in this manual. If you are still having problems, please call our service hotline. You can find our contact information on the Internet at **www.terratec.com**

Scope of delivery

Start by making sure that the contents of the package are complete.

The PHASE X24 FW System package should contain the following items:

- 1 PHASE X24 FW (the PHASE X24 FW hardware)
- 1 protective pouch
- 1 network adapter 12VAC / 1500mA
- 1 IEEE 1394 FireWire™ cable 6-pin/6-pin
- 1 IEEE 1394 FireWire™ adapter 4-pin/6-pin
- 1 PHASE CD
- 1 manual German or English
- 1 service request form
- 1 registration card

Please fill out and return the registration card enclosed in the package to us at your earliest convenience or register online at **www.terratec.net/register.htm**. This is important for support and hotline services.

Windows installation—step by step

> **Please perform the following steps in the stated order. Do not connect the PHASE X24 FW module to the computer until instructed to do so.**

Which operating system?

The PHASE X24 FW can be used only under Windows XP (Home and Professional editions). Older Windows versions are not supported. Please ensure also that you have applied the current service packs and updates to your Windows installation (Service Pack 1 or higher!).

Power supply

Under normal circumstances, the PHASE X24 FW system draws its power from the 6-pin FireWire™ port, making an AC adapter unnecessary. However, not all FireWire™ controllers deliver a constant operating voltage—we therefore recommend using the included AC adapter. The AC adapter is also useful whenever you would like to conserve the battery power of your laptop. The AC adapter is required if your computer only features a 4-pin FireWire™ port. For more information, see "The FireWire™ port" starting on ➲ page 21.

Installing the driver and the Control Panel

1. Before you start, ensure that your Windows XP version is up to date. Right-click the "My Computer" icon and choose "Properties" from the context menu. If you're still using the default Teletubbyland XP wallpaper, you can access this menu item by clicking : Start -> Settings -> Control Panel -> System. Service Pack 1—or SP1 for short—must be installed on your computer. If it is not, please contact Microsoft (**www.microsoft.com**) to obtain an update for your system. The service pack is generally free of charge.

2. Insert the included PHASE CD and wait for the autorun application to launch. If the autorun application on the CD does not launch automatically, start the application manually by double-clicking "`Autorun.exe`" in the root folder of the CD.

3. Select your language, and "PHASE X24 FW" in the following menu. Next, click the "Driver/Control Panel" button. The setup wizard will now appear.

4. Choose a language for the setup wizard and click "Next" to continue with the installation.
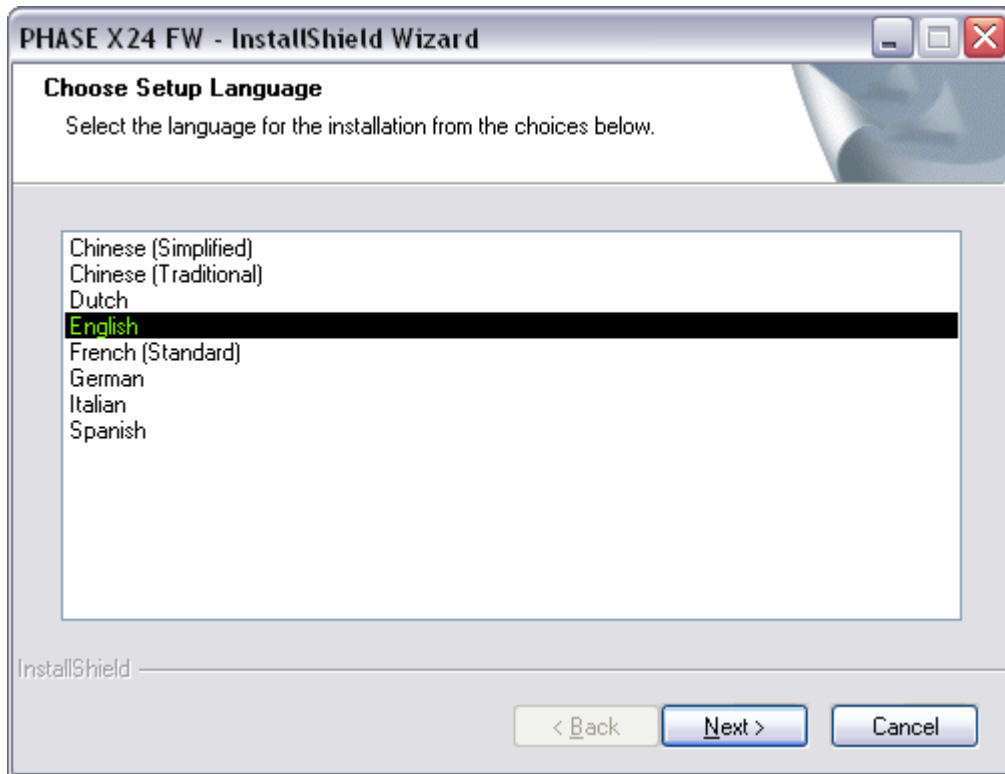
The InstallShield Wizard will now display its welcome message.
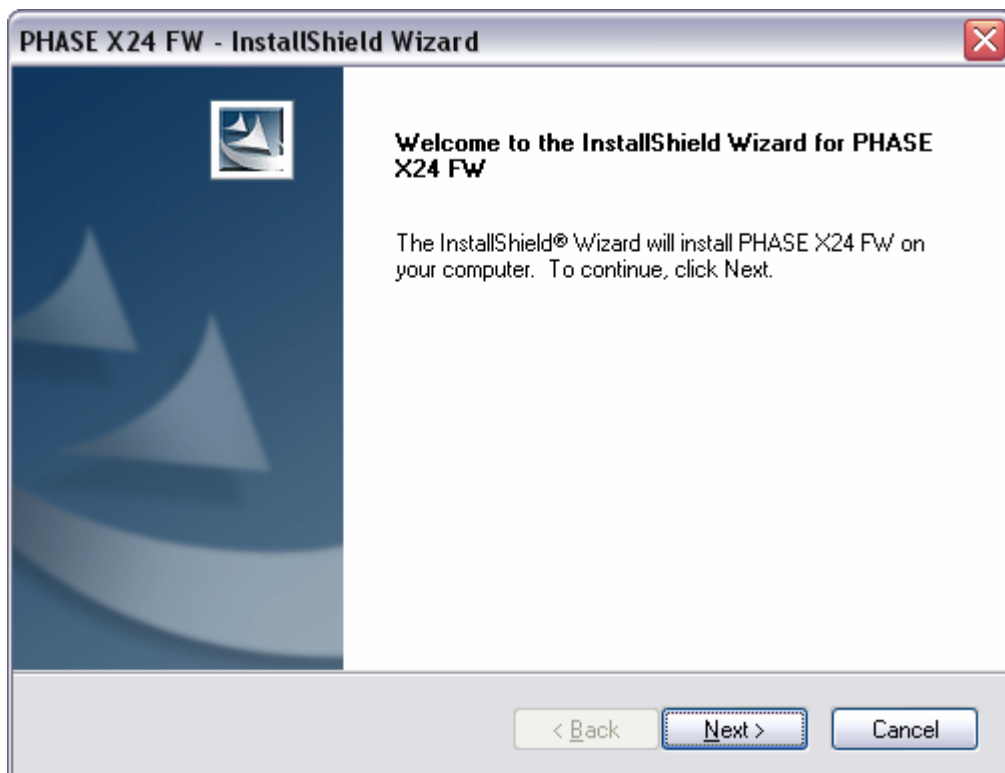
5. The default destination for the installation is specified in the following window. If you prefer a different location, please click "Change".
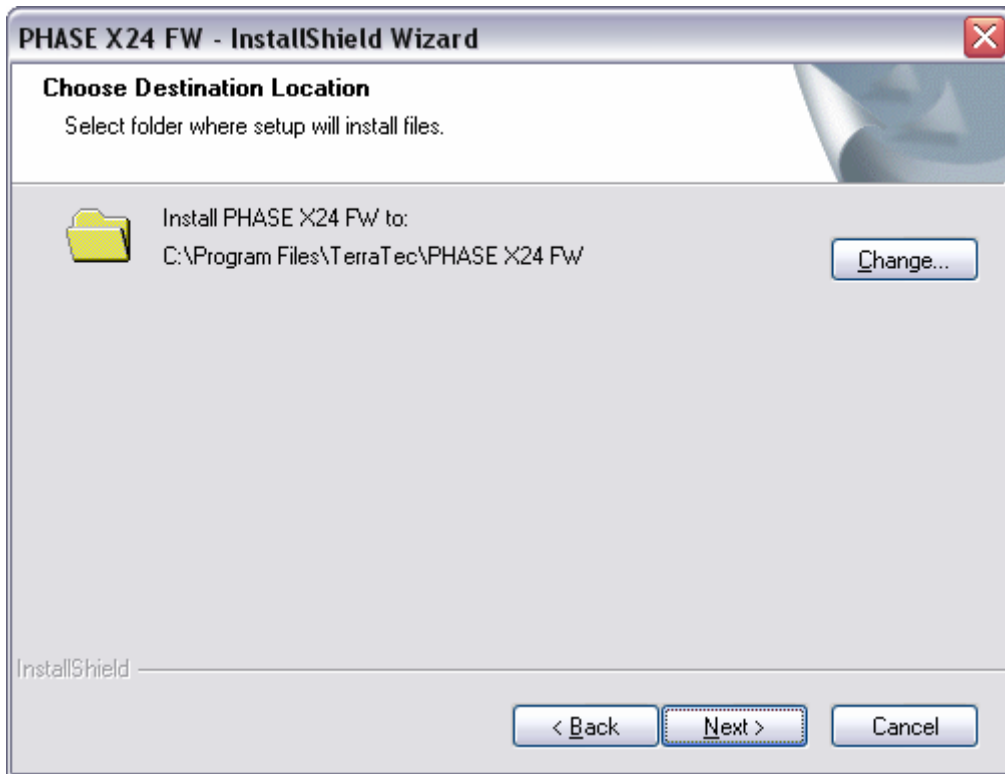
6. You can disregard the following safety warning without concern. Click "Continue Anyway" to continue.

7. The driver is now installed in your system. As soon as the message shown below appears, connect the PHASE X24 FW to your computer's FireWire™ port using the included cable. Windows XP will automatically recognize the device as new hardware and will open the driver installation dialog.
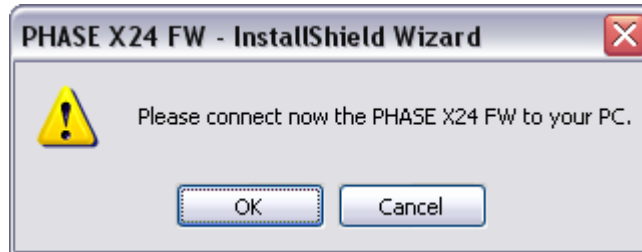
8. You may once again ignore the dialog box that will reappear to inform you that the software that you are installing has not passed the Windows logo test.

9. Click "Finish" to complete the installation.
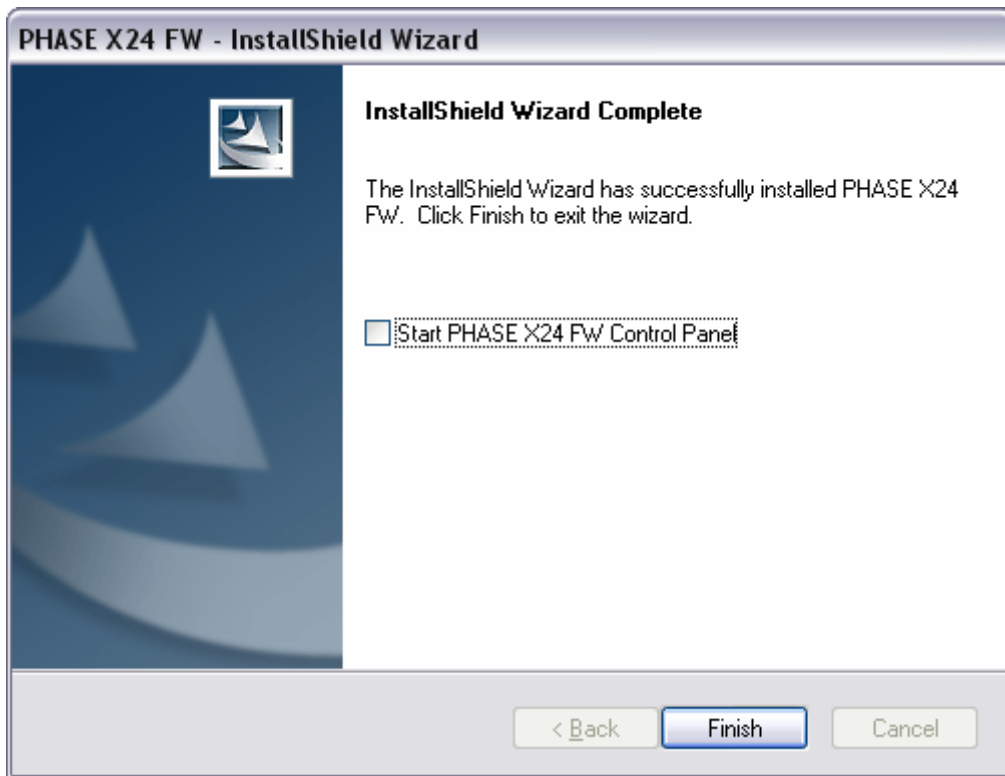
10. Once the driver installation is complete, the PHASE X24 FW should appear as the following entry in the Device Manager. The Device Manager can be found on the Control Panel under "System" > "Hardware". Then click the "Device Manager" button.
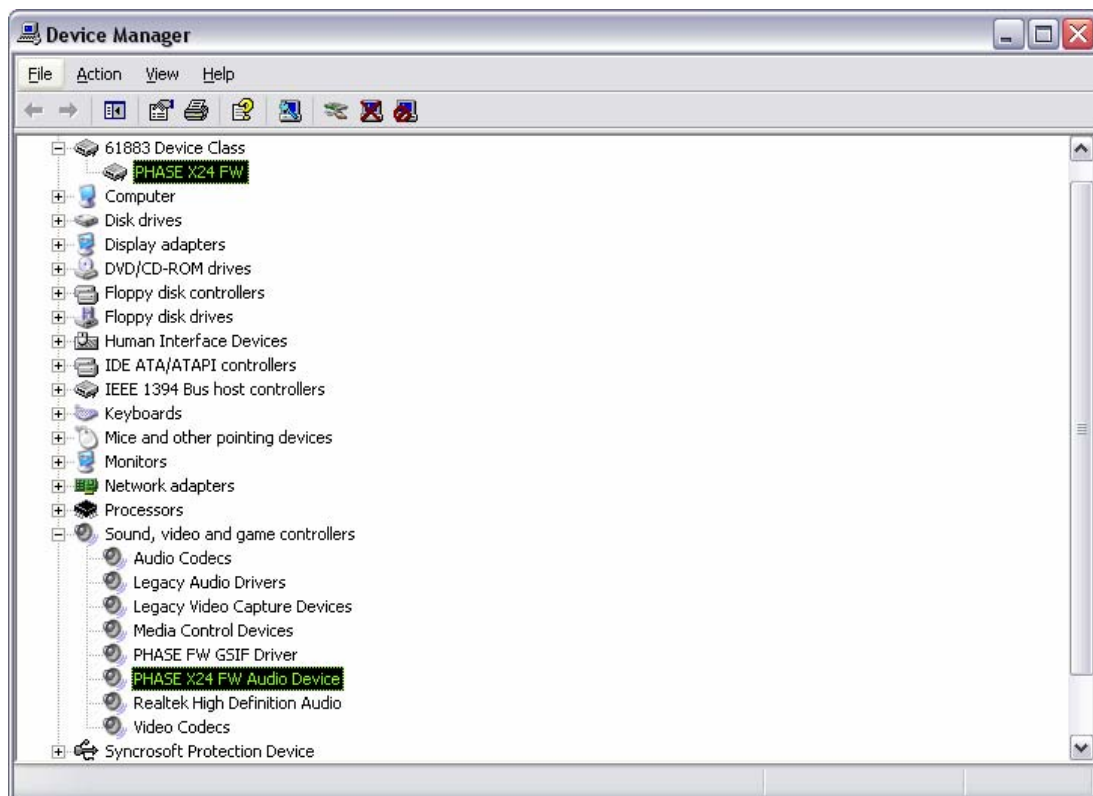
Installing the GSIF driver

If you intend to use the GigaStudio sampler application, you will need to install the GSIF driver. You can also access this installation routine via the autorun application of the PHASE CD. If the autorun application on the CD does not launch automatically, start the application manually by double-clicking "`Autorun.exe`" in the root folder of the CD.

Select your language, and "PHASE X24 FW" in the following menu. Click the "GSIF Installation" button to start the setup wizard. Follow the on-screen instructions and click "Next" to continue.

The PHASE X24 FW as a system audio device (Windows)

If you would like to use the PHASE X24 FW not only for specific audio applications, but as your default Windows audio device, select the PHASE X24 FW audio driver in the Control Panel under "Sounds and Audio Devices" > "Audio" as the default device for the desired functions.

As the PHASE X24 FW is a professional audio interface, its levels can only be adjusted using its included Control Panel. The Windows mixer is disabled to prevent it from adversely affecting the signal quality.
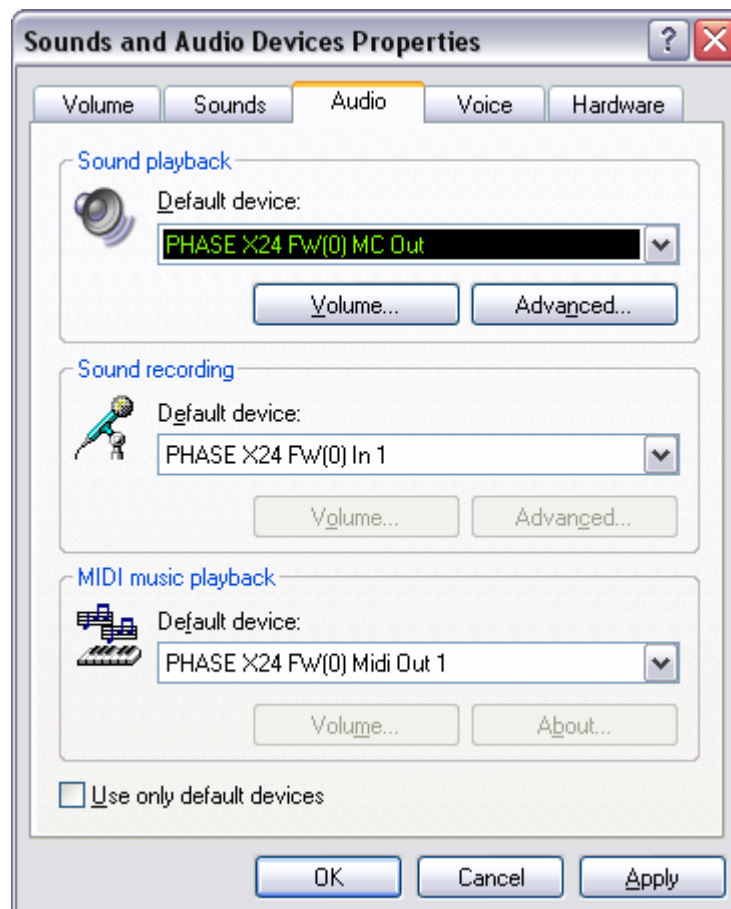
Updating the firmware (Windows)

Thanks to software technology, updates to existing standards and new functions can be added to the PHASE X24 FW without changes to the hardware by updating its so-called "firmware". To update the firmware, proceed as follows:

- Run the program "TT_*FW_WinFlash_*vX.X.exe". It can be found on the driver CD in the "Firmware" folder and can also be downloaded from the Internet.

- Click "Open" and specify the firmware file you would like to load. The file will have the ending ".bcd" and can be found in the Firmware folder or downloaded from the Internet.

- Next, click "Upgrade Firmware" to start the update process.

- Answer "Yes" to the safety prompt that appears now.

- The PHASE X24 FW must be restarted after the firmware update completes successfully. Either disconnect the PHASE X24 FW from the computer and reconnect it, or restart the computer.

- In the event of a power failure during the update, or if the update does not complete successfully for any other reason, simply repeat the update. It's not possible to damage anything in the process.

Mac installation—step by step

Which operating system?

The PHASE X24 FW can only be used under Mac OS 10.3.6 (OS X) or higher. It can be integrated easily using OS X CoreAudio and CoreMIDI.

Power supply

It should be possible to use the PHASE X24 FW without an AC adapter on a 6-pin FireWire™ connection. However, some FireWire™ controllers do not provide a consistently adequate operating voltage. We therefore recommend the use of the included AC adapter. The AC adapter is a must if your computer only features a 4-pin FireWire™ connection, as these do not have the two power conductors of the 6-pin port.

Installing the PHASE X24 FW driver in OS X

As mentioned above, the PHASE X24 FW uses the operating system's CoreAudio and CoreMIDI drivers. It's therefore not necessary to install a device-specific driver. Simply plug the device into your FireWire™ port and it's available immediately. However, to take full advantage of advanced routing, sampler rate switching and other features, please install the included Control Panel. Simply run the installer in the *PHASE X24 FW\Driver & Control Panel\MAC* folder.

The PHASE X24 FW as a system audio device (Mac OS X)

If you would like to use the PHASE X24 FW not only for specific audio applications, but as your default Mac OS X audio device, select the PHASE X24 FW audio driver in the "Sound" control panel as the default device for audio output.
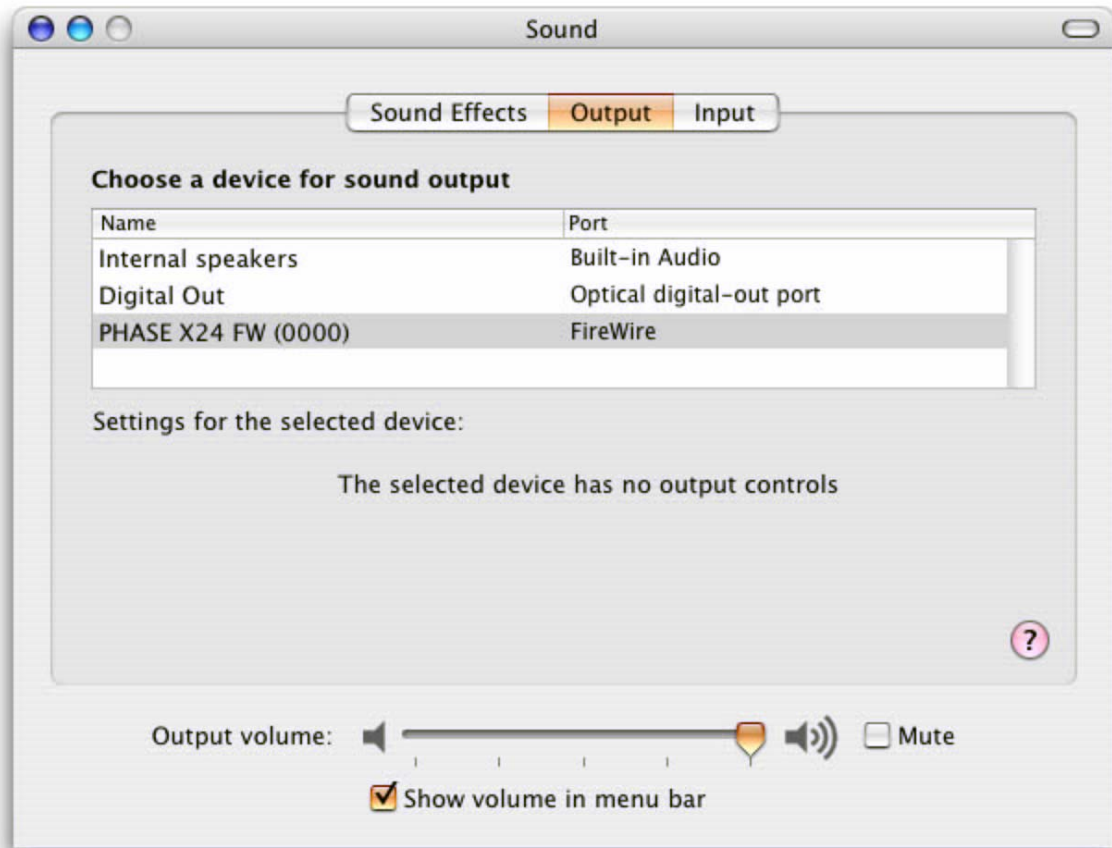
The PHASE X24 FW as the default device in OS X

Updating the firmware (Mac OS X)

■ Run the program "*FWUpdater_*vX.X.app". It can be found on the driver CD in the "Firmware" folder and can be downloaded from the Internet. Click "Close" to acknowledge the following security warning.

■ Click "Open" and specify the firmware file you would like to load. The file will have the ending "bcd" and can be found in the Firmware folder.

■ Next, click "Upgrade Firmware" to start the update process. You must have local administrator rights to update the firmware.

■ The PHASE X24 FW must be restarted after the firmware update completes successfully. Either disconnect the PHASE X24 FW from the computer and reconnect it, or restart the computer.

Connectors and controls

The PHASE X24 FW audio interface offers you numerous options for connecting professional studio peripherals and HiFi devices. Following is a detailed overview of its technical and electrical characteristics.

Front panel

1. **Microphone/Instrument Input 1**, this input is intended for microphones with XLR connectors or instruments with 1/4" jacks and works with autopriority over the Line Input 1 on the rear panel. In other words, you can leave the cabling on the back panel in place when connecting a microphone or instrument to the front panel; the input on the front panel will automatically be active. This switching is performed by high-quality relays to ensure the optimal quality of the analog signal path.

2. **Microphone/Instrument Input 2**, this input is intended for microphones with XLR connectors or instruments with 1/4" jacks and also works with autopriority over the Line Input 2 on the rear panel.

3. **Gain 1**, controls the preamplification of the signal being applied to input 1.

4. **Signal and Clip LED**, provides visual level monitoring of the signal to be recorded on channel 1. The lower blue LED indicates the presence of a signal, while the upper red one indicates an overload of the input converter.

5. **48V**, applies 48V phantom power to Microphone Input 1.

6. **Gain 2**, controls the preamplification of the signal being applied to Input 2.

7. **Signal and Clip LED**, provides visual level monitoring of the signal to be recorded on channel 2. The lower blue LED signals the presence of a signal, while the upper red one indicates an overload of the input converter.

8. **48V**, applies 48V phantom power to Microphone Input 2.

9. **Master**, this rotary encoder controls the levels of the analog outputs (Main and Monitor). The output pair to be controlled can be selected via the Push function (Main or Monitor or Main & Monitor). In addition, pressing and holding will mute the channels currently being controlled. This can be used to switch back and forth between two monitor speaker sets for a direct comparison. This function is also available via the Control Panel if ever the PHASE X24 FW isn't within reach.

10. **Main and Monitor LED**, indicates the output pair currently being controlled by the master or muted. The following overview describes the operation and displays:

MAIN LED	MONITOR LED	MASTER controls:	Press and hold MASTER:
on	off	MAIN OUT 1/2 level	MAIN OUT 1/2 muted
off	on	MONITOR OUT 3/4 level	MAIN OUT 3/4 muted
on	on	MAIN and MONITOR OUT level	MAIN and MONITOR OUT muted
flashing	off	MAIN OUT 1/2 muted	MAIN OUT 1/2 unmuted
flashing	on	MONITOR OUT 3/4 level, (note: MAIN OUT remains muted)	MAIN and MONITOR OUT muted
off	flashing	MAIN OUT 3/4 muted	MAIN OUT 3/4 unmuted
on	flashing	MAIN OUT 1/2 level, (note: MONITOR OUT remains muted)	MAIN and MONITOR OUT muted
flashing	flashing	MAIN and MONITOR OUT muted	MAIN and MONITOR OUT unmuted

11. **Headphone Level**, adjusts the volume of the headphone output. The signal from Analog Output 3/4 (Monitor) is always available at the headphone output. The actual signal available there depends on the routing, which you can set up to suit your needs in the Control Panel. For more information on routing, please see the Control Panel chapter on ➲ page 27.

12. **Headphone Out**, output for a 1/4" stereo headphone jack.

Rear panel

13. Input 1/2, the PHASE X24 FW System features two high-quality analog mono inputs. The connections have been realized for balanced 1/4" jacks. Unbalanced sources can also be plugged into the outputs, of course. The gain for these inputs can also be set using the gain controls on the front panel.

14. **Insert 1/2**, external effects such as compressors can be inserted into the recording path upstream of the A/D converter via these 1/4" stereo jack sockets.

> **Practical tip**: While recording, try to achieve as high a recording level as possible to get the greatest benefit from the wide dynamic range of the 24-bit converter. Always remember that a clean take is far more valuable than the best corrective plugin.

15. **Main 1/2**, analog mono outputs 1/2; the connections have been realized as balanced 1/4" jack sockets. Unbalanced cables can also be plugged into the outputs, of course. The analog outputs operate with music-compatible levels of 2.0 V_{rms}. Here, you can connect a mixing card, active speakers, or amplifiers.

16. **Monitor 3/4**, analog mono outputs 3/4; the connections have been realized as balanced 1/4" jack sockets. Unbalanced cables can also be plugged into the outputs, of course.

17. **Digital In**, to record digital audio data with your computer, use the digital input of the PHASE X24 FW. The interface can receive sample rates of up to 24-bit / 96 . When recording from a digital source, make sure that the sampling rates of both devices (e.g. DAT recorder and laptop) are synchronized. The S/PDIF protocol contains a signal for this purpose. If such a signal is applied to the digital input and the Master Clock switch is set to "External", the PHASE X24 FW will automatically synchronize to it and the "Digital In" channel will be available in the mixer. ASIO applications such as Cubase SX often have an option to switch the hardware from an internal to an external (sometimes also called S/PDIF) clock source. This

changeover currently has no effect on the PHASE X24 FW. The switch to an external clock is not to be confused with external synchronization to MIDI devices, video equipment or tape decks and therefore cannot be found in the Sync, MIDI Clock, MTC or SMPTE settings of the applications.

18. **Digital Out**, use the digital output of your PHASE X24 FW to transfer music digitally from your computer to other devices. The interface can send sample rates of up to 24-bit / 96 kHz. For playback, set the routing in the Control Panel to the digital output. **AC3** and **DTS** can also be played back via the digital output. Select "NonAudio" for the digital output in the Control Panel under "Routing". This setting mutes the Digital Play path in the digital mixer so that the non-audio signals are not also sent to the analog outputs.

19. **FireWire**, connect your PHASE X24 FW system to your computer using the included FireWire cable. For more information on the FireWire connection, please see ➲ page 21.

20. **MIDI In**, use this connector for keyboards, DAW controllers and similar MIDI devices.

21. **MIDI Out**, use this connector for external MIDI devices such as synthesizers, expanders and the like. The cables for MIDI connections are always connected "crosswise", meaning OUT to IN and vice-versa. MIDI sequencer software usually offers you to loop MIDI data through, using the Through function.

22. **AC Power**, connect the included 12VAC/1500mA power adapter to your PHASE X24 FW system here.

The FireWire™ port

FireWire™ is a serial PC interface similar to USB that was developed by Apple in 1995, and which was originally intended for digital video data and for external mass storage and audio devices. It has since been given many names that all refer to the same port: for example, Sony calls FireWire™ "i.LINK™", Texas Instruments refers to it as "Lynx™", and one also frequently sees the mysterious abbreviation "1394". The latter designation actually refers to the common IEEE 1394 standard, which is notable for its high data rates (IEEE 1394a = 400 Mbps and IEEE 1394b = 800, 1600 and 3200 Mbps). (For those of you who are sticklers for detail, IEEE stands for the US "Institute of Electrical and Electronic Engineers".)

Like USB, FireWire™ also supports hot plugging—in other words, you do not need to shut down your computer to add or remove devices. However, you should take care not to interrupt any applications that may be accessing the PHASE X24 FW to prevent possible data losses or blue screens. Also please note that it may take the operating system a while to process the new situation—after all, machines are only human :-)

One standard—two sockets

The socket on your PC can have two different forms, with either 4 or 6 conductors. According to the standard, in the 6-pin version the two extra pins are used to supply 7.5 – 30V / 1.5A per port. Unfortunately, this is often not the case due to the poor quality of some controllers that are unable to provide a constant operating voltage—despite the requirements of the specification. So if you'd like to avoid any unexpected failures of the PHASE X24 FW, please use the included AC adapter—better safe than sorry. If your computer "only" has a 4-pin port, you must use the AC adapter. To connect the sound module to your PC in this case, please use the included adapter (6-pin to 4-pin).

Two sockets—continued

Unlike USB, FireWire™ is a bus system. In other words, every FireWire™ device has a full-featured port for further equipment, so that individual devices can also be connected in series. OK, it's currently only possible to link 64 devices in practice, but who has that many peripherals? Hubs—like those used by USB devices—are therefore superfluous as long as the cable length between the individual devices does not exceed 4.5 meters or a total of 72 meters, as this would cause problems due to signal attenuation. The connected devices will still work with one of the intermediate devices is switched off—the rest will still communicate via the ports. Please ensure that you don't create a loop—at some point you must have a final device without a further connection.

The PHASE X24 FW also has two connections for this reason. Which of the two ports you use to connect it to your computer is up to you—the sockets are identical.

Be careful nevertheless, there are a number of potential stumbling blocks. The values listed above are theoretical. Most camcorders, for example, do not comply with the IEEE 1394 specification and transmit their data without consideration of standards or potential losses. You should also consider that a complex audio production may use the full bus width (400 Mbps in theory, but it may be considerably lower in practice). Should you have problems with additional FireWire™ devices connected to the PHASE X24 FW, please connect them to a different controller port.

Drivers

The Windows drivers

The PHASE X24 FW audio interface features a range of drivers for a variety of applications. The audio drivers support all bit rates between 8 and 32 bits with all common sample rates between 32 and 192 kHz. (Digital I/O up to 96kHz)

The MME wave driver

In most Windows programs, you will encounter MME drivers with the designation *"PHASE X24 FW(0) MC Out"* for recording and playback. These are multichannel drivers that support all six outputs (4 analog and 2 digital). The specific routing options for these drivers can be found in the Control Panel.

The ASIO driver

The abbreviation ASIO stands for "Audio Streaming Input Output" and refers to a 32-bit driver model developed by Steinberg. The advantage of the ASIO driver is the extremely low audio recording and playback delay times, also known as latency. Values significantly under 10ms—and less than 4 ms on fast, cleanly-configured systems—at sample rates exceeding 96kHz are quite realistic. The format also supports sound cards with multiple inputs and outputs—so-called multi-I/O cards—as well as direct monitoring and multi-client mode (ASIO 2.0 or higher). Programs that make use of Steinberg's ASIO interface indicate in the corresponding dialogs the ASIO drivers of the PHASE X24 FW. The ASIO driver is listed in compatible programs under *"ASIO for PHASE FireWire series"*.

The outputs (generally called "busses" or "channels") available in the individual programs are usually referred to as *"Line Out 1 PHASE X24 FW, Line Out 2 PHASE X24 FW"*, etc. in Cubase SX, for example, or "*Multichannel 1 PHASEX24FW, Multichannel 2 PHASEX24FW"*, etc. in WaveLab.

The inputs are generally called *"Line In 1 PHASE X24 FW" and "Line In 2 PHASE X24 FW"* or *"Line_1/2 left PHASE X24 FW"* and *"Line_1/2 right PHASE X24 FW"*.
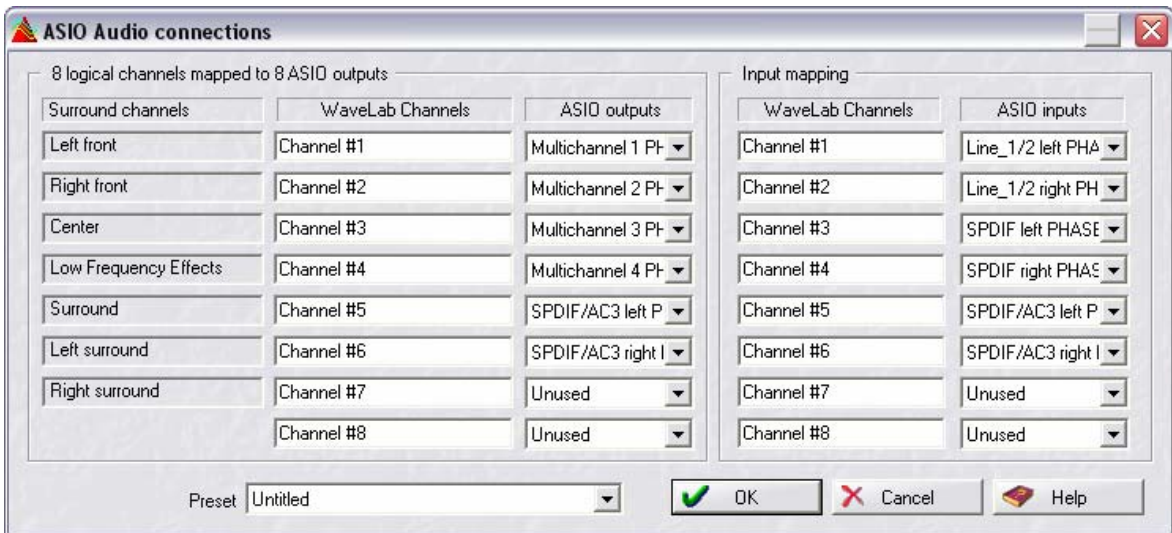
ASIO audio connections in WaveLab 5

The GSIF driver

The GigaStudio sampler application and other Tascam (Nemesys) products can also access the hardware in a very fast and direct manner. The outputs available in the individual programs are grouped under the "PHASE X24 FW (0)" driver. This driver must be installed separately.

The MIDI driver

For the recording and playback of MIDI data via the MIDI IN and OUT jacks, a separate driver is available. The driver designated as *"PHASE X24 FW(0) Midi In 1* or *Out 1"* in this system, and it can be selected in any situation in which its use would be appropriate.

Practical tip: If MIDI files, which can be played back using Windows' media players, are also to be transferred to externally connected devices, open the "Sounds and Multimedia" dialog window from the Windows Control Panel, go to "Audio" and set the "MIDI Music Playback" device to the driver mentioned above.

In detail—special properties of the drivers.

DirectSound & WDM

It goes without saying that the drivers of the PHASE system also support Microsoft's DirectSound or DirectSound 3D interface. What's more, the software complies strictly with Microsoft's WDM specification. For example, the drivers are able to play back audio data streams from multiple applications in parallel (multi-client, a "luxury" that faithful TerraTec customers have enjoyed since 1997).

Unlike MME drivers, WDM (Windows Driver Model) drivers are based on 32-bit architecture. It is also the basis for advanced interfaces such as "ASIO" or "Direct-X".

WDM sample rate conversion (SRC)

The multi-client capability of the WDM architecture also permits the simultaneous playback of multiple audio data streams with differing sample rates. The sampler frequency used for all streams is based on the file called up first. All further data streams—those called up during the run time of the first file—are interpolated as required and their pitch is not affected.

Note: Unlike PCI cards, the PHASE X24 FW system cannot automatically synchronize the required sample rate. Select the sample rate manually using the dropdown menu in the Control Panel to avoid a SRC. The sample rate set in the control panel will always be applied.

An SR conversion does always result in a certain loss of quality, however. You should therefore ensure that the selected sample rate matches the file to be played back for applications in which the highest possible audio quality is vital. When transferring a piece of music at 44.1 kHz to a DAT recorder, for example, also select 44.1 kHz in the Control Panel.

WDM kernel streaming

WDM kernel streaming also represents a new technology for Microsoft. Like established models such as Steinberg's ASIO interface, kernel streaming is designed to provide extremely fast access to audio hardware, bypassing the mixer for direct hardware access. Thus the name "kernel streaming"—the kernel of the Microsoft Windows operating system permits the audio data to stream directly through. This extension of the WDM format was designed after a proposal by Cakewalk and is now officially recognized by Microsoft. The deployed software (such as audio/MIDI sequencers or software synthesizers) must support the WDM function directly, however. One of these programs, for example, is the "Sonar" recording software produced by the Cakewalk company.

The Mac OS X drivers

In OS X (currently OS 10.3.8), the PHASE X24 FW system is supported completely by Apple CoreAudio and CoreMIDI. Device-specific drivers are thus not required.

The PHASE X24 FW can be selected as the default recording and playback device in "Control Panel -> Sound".

The CoreAudio/MIDI driver can also be selected in audio applications such as Cubase SX or Emagic Logic. Buffer sizes generally can also be configured there to accelerate access to the audio system. The latency under CoreAudio is comparable to the latency typical for Windows or OS9.
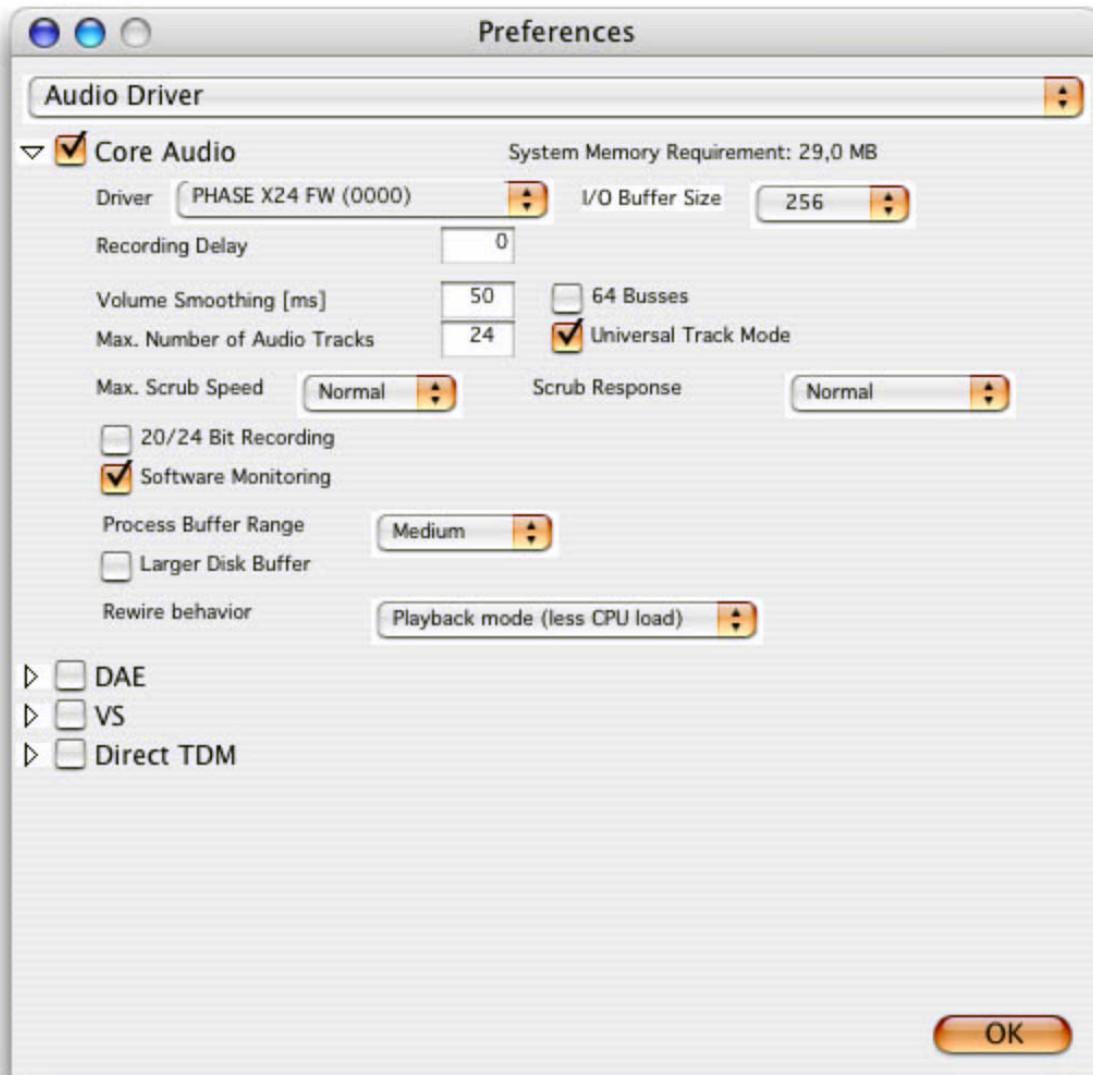
The PHASE X24 FW in Emagic Logic

The PHASE Control Panel

The PHASE Control Panel is—beside the drivers—by far the most important piece of software in the package. Here, depending on the requirements of each situation, you can have total control of the audio interface, reduce volumes (take this literally!), route inputs to any output or set the Master Clock values.

> **Note:** The functions and the position of the control elements are as identical as possible under Windows and MAC OS. The following illustrations correspond to the Windows version of the Control Panel.

The Control Panel is quite intuitive and should not present beginners with major problems. Nevertheless, the following section contains a number of explanations of the individual function blocks.

The digital mixer

Mixer PHASE X24 FW.

Inputs (Analog In, Digital In)

Here you can control the levels of the individual input channels of the PHASE X24 FW in the Digital Mixer. The individual sliders can be adjusted directly on the hardware mixer. A separate fader is available for each mono channel. The individual channels can be joined using the switchable stereo link function. The "Mute" buttons can be used to mute the individual channels. "Digital In" is grayed out until a signal is applied to the digital input and the Master Clock under "Output & Settings" is set to "External".

Outputs (Wave Play 1/2, 3/4, Digital Play)

Here you can adjust the volume of the output signals, provided you have selected "Digital Mixer" as the input signal in your routing. All other signals are sent straight to the output, bypassing the faders. As with the input, a separate fader is available for each mono channel. The individual channels can be joined using the switchable stereo link function. A "Mute" button can be used to mute the playback. If two mono channels are linked, clicking the mute button for the stereo pair is sufficient.

Master

The overall playback level can be set with the Master control of the digital mixer.

> **Note:** If you are working with common audio/MIDI sequencers, you should also use the this software for volume control. The advantage: the settings are usually saved together with your project (song, arrangement etc.).

Output & Settings

Master Clock

Here we're dealing with the sample rate used by the PHASE X24 FW. This is a very important point, as the card can be clocked by an external signal (External, e.g. from a DAT recorder) or it can set a sampler rate itself and provide this signal to other devices.

When choosing "Internal", you can choose from all commonly used sampler rates from 32 to 192 kHz—the actual bit rate is not important at this point. The external sample rate,

when applicable, is displayed in the box next to "External". If no signal is available or the connection has been interrupted, the message "--------" will be returned.

Note: Unlike PCI cards, the PHASE X24 FW system cannot automatically synchronize the required sample rate. Select the sample rate manually using the dropdown menu in the Control Panel to avoid a sample rate conversion and attendant loss of quality.

Routing

In the routing section, all input signals (Wave Play 1/2, Wave Play 3/4, Analog In, Digital In, Digital Mixer and Digital Play) can be routed to the three output pairs (Analog Out 1/2, Analog Out 3/4, Digital Out). Almost any combination is possible. Click the three buttons on the left-hand side to open a window in which you can select the desired pair. Needless to say, if you intend to use the digital mixer, "Digital Mixer" must also be selected on the input side, otherwise the signal will be sent straight to the output, bypassing the faders.
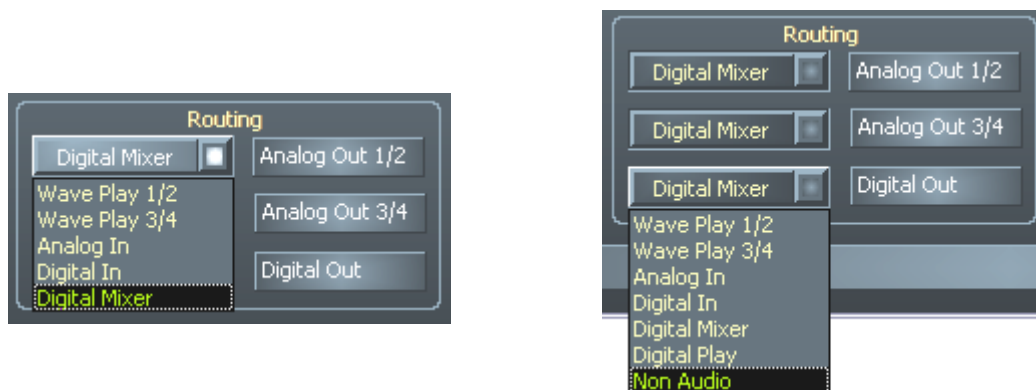

The routing options of the PHASE X24 FW

Output

The levels of the analog outputs can be controlled here. The individual sliders control the analog volume immediately downstream of the digital-analog converter. A separate fader is available for each mono channel. The individual channels can be joined using the switchable stereo link function. The "Mute" buttons can be used to mute the individual channels.
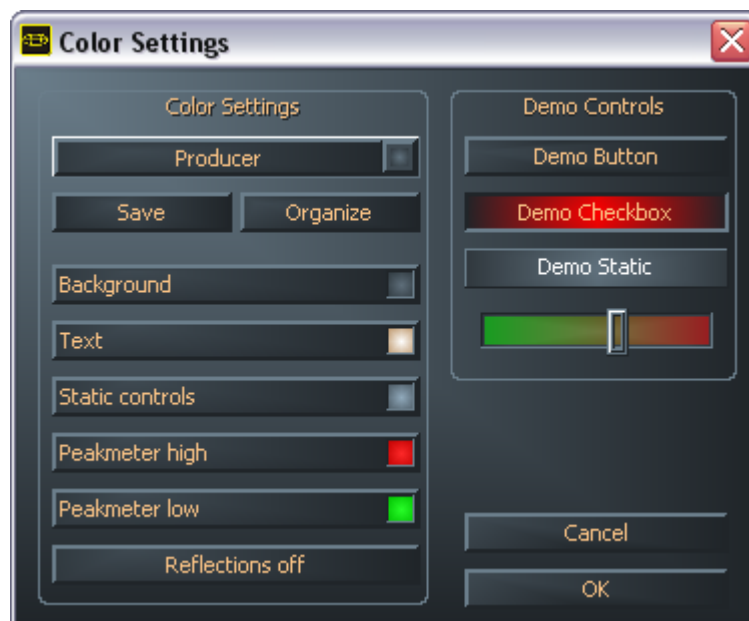
This section of the Control Panel can also be controlled completely via the Master control on the front panel, in case you ever lose the Control Panel under dozens of overlapping windows ;-)

The ASIO panel
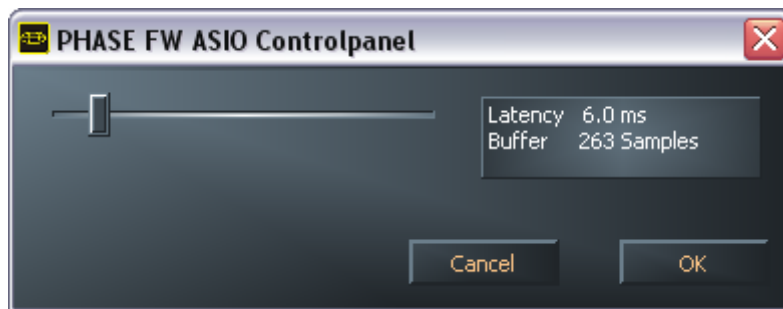
To open the ASIO panel, click the "ASIO" button (on the bottom left side of the PHASE Control Panel). Use the slider to adjust the latency (i.e. the delay between striking a key or a MIDI event and the output of the sound). If the value is too low (and the sample rate too high), this will negatively affect the performance of your overall system—a more powerful computer will support a lower latency setting. With a fast system, you should achieve values of less than 5ms at 96kHz without problems. "Without problems" means that you will not detect any dropouts during audio recording or playback. If such dropouts occur, increase the latency. Further options are generally available on the relevant panels of ASIO applications such as Cubase, Wavelab etc.

Colors

When it comes to the design of the PHASE Control Panel, we like things to be clean and functional. We don't want to force anything onto you, however—feel free to brighten your screen with the Color Panel. This section contains a number of truly useful settings that not only beautify your PHASE Control Panel, but which improve the overview of its display:

A click on the Background, Text, Static Controls and Peakmeter buttons opens the Windows dialog to change the colors.

The "Reflections off" option disables the attractive reflections of the elements. This can be helpful for slower systems.

Test the settings made above in the right-hand part of the window and save them when you're satisfied.

Once saved, you can find your personal color settings in the dropdown menu, which already contains a number of examples. The "Windows System" color set uses only colors that display correctly at an 8-bit color depth.

Scenes
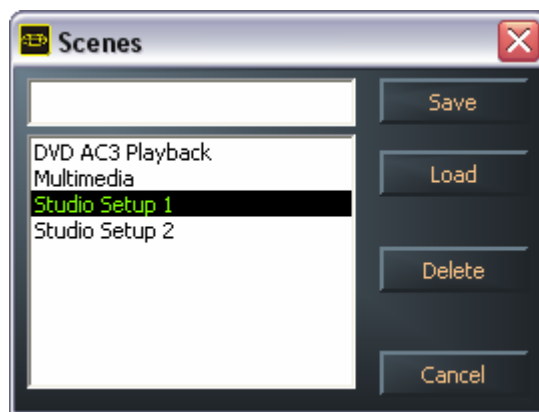
Faced with such a wealth of settings, it would be pretty tedious to have to set things up by hand every time. Needless to say, you can count on us to make your life easier with our extremely practical "Scenes" menu item. Simply save all of your control and fader settings at the click of a button and reload them whenever you need them.

The settings for **Standalone mode** will also be saved here if you don't assign a name to the scene. If the PHASE X24 FW system is then powered up without being connected to a computer, it can be used as a high-quality microphone preamp or D/A converter. Simply set up the routing as needed and save the scene without a name.

About

The About page of the PHASE Control Panel gives you all of the relevant facts on your Control Panel, audio drivers, firmware version and operating system.

Note: You can select the contents with your mouse and copy it to the clipboard ("Ctrl" + "c")—a convenient feature for a quick description of your system for support requests.

Appendix A—Technical Data

Technical data

- External FireWire™ audio system
- 2 microphone/instrument inputs, XLR combo jack, impedance: 10kOhm (microphone), 1MOhm (instrument)
- 48V phantom power, independently switchable per channel
- 2 gain controllers
- 2 analog input channels, 1/4" jack, balanced, impedance: 10Ohm
- 2 insert jacks, 1/4" (6.3mm) stereo jack
- 4 analog output channels, 1/4" jack, balanced, impedance: 75Ohm
- Master volume controller
- 1 separately adjustable headphone output, 1/4" (6.3mm) stereo jack
- Optical digital input, TOS link
- Optical digital output, TOS link
- Digital hardware mixer
- MIDI interface with 5 pin DIN connection
- analog playback with up to 24 bit/192 kHz resolution
- analog recording with up to 24 bit/192 kHz resolution
- digital playback with up to 24 bit/96 kHz resolution
- digital recording with up to 24 bit/96 kHz resolution
- Digital interface for S/PDIF, AC3 and DTS formats
- 24 bit/192 kHz A/D converter with 110 dB (A) SNR*, 109 dB(A) SNR typical
- 24 bit/192 kHz D/A converter with 114 dB (A) SNR*, 111 dB(A) SNR typical
- 2.1 V_{rms} output level

*)   This information depends on the technical data of the convertor used

Software

- WDM driver for Windows XP from SP 1
- Core Audio and Core MIDI support for Mac from OS X10 10.3.6
- ASIO 2.0 support—Windows only
- GSIF 2 support—Windows only
- WDM Kernel Streaming support—Windows only
- ASIO, GSIF, and WDM multiclient support—Windows only
- Support for MME and DirectSound—Windows only
- Control Panel for Windows XP from SP1 and Mac from OS X10 10.3.6

System requirements / recommendations

System requirements – PC

- Pentium III 800
- 256 MB RAM
- FireWire™ port
- Windows XP with Service Pack 1 (SP1) or higher

System requirements – MAC

- G4 800 MHz
- 256 MB RAM
- FireWire™ port
- MAC OS X Panther 10.3.6 or higher

System recommendations – PC

- Intel Pentium 4 2 GHz or AMD Athlon XP 2000+
- 512 MB RAM
- FireWire™ port
- Windows XP with Service Pack 1 (SP1) or higher

System recommendations – MAC

- G5 1.8 GHz
- 512 MB RAM
- FireWire™ port
- MAC OS X Panther 10.3.8 or higher

PHASE X24 FW

24 Bit/192 kHz Extended Audio System

TT600566