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D I G I T A L   A U D I O   E L E C T R O N I C S

MARC 4 MIDI

User's Guide

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Dear User,

thank you very much for your decision to purchase one of our products from the MARC product series. We wish you lots of success in working with our product.

Please consider taking 15 minutes to study this guide. Besides traditional installation and operation instructions it contains information/hints that will make the handling with the MARC 4 MIDI easier for you.

Your MARC 4 MIDI provides some special characteristics. In the following you will get a short overview of them:

- Support of 24 bit and 96 kHz
- Two MIDI interfaces
- An integrated SyncBus
- Comprehensive Windows driver support
- Latency-free and flexible monitoring
- adjustable latency down to 2 ms using ASIO

1. Scope of Supply

First of all, please check, whether you received the following components undamaged and complete.

- MARC 4 MIDI PCI card
- MIDI break-out cable
- User's Guide
- CD-ROM incl. drivers
- Bundle software

2. System Requirements

In order to be able to operate the MARC 4 MIDI, your PC should meet the following requirements:

- AT compatible PC with a spare PCI slot
- Pentium processor or AMD
- Windows 95/98 or Windows NT 4.0 with Service Pack 3, 2000/XP

Please note, that your used audio software may ask for different/additional requirements.

3.   Hardware Installation

Following the described steps below you can install up to four cards of the MARC series on the same PC.

1. Turn off your PC and all devices connected to it, disconnect the power supply.
2. Open the case.
3. Remove all cards from the anti-static foil. Make sure to hold the MARC 4 MIDI only at its edges or the slot bracket. Do not touch the components of the cards.
4. Insert the card carefully and rectangular into a spare PCI slot. Ensure that the card was inserted properly into the slot.
5. Screw the card on the slot bracket to the case.
6. ***If you use the SyncBus for multi-card operation, please read Chapter 5.3 before closing the case.***
    Close the PC case and reconnect it to the power supply.

4.   Driver Installation

4.1   *About MME, DirectX and ASIO*

For connecting software and hardware you can use the driver interfaces MME, DirectX or DirectSound and ASIO. All these interfaces are provided by the MARC 4 MIDI driver after it is installed on Windows 95/98/ME/2000/XP. On Windows NT only MME is available. This way you can use MARC 4 MIDI with all common audio applications. If you use an ASIO compatible audio software, you will achieve extremely higher performance of the system as well as shorter latency periods. In an ideal case 2 ms are possible!

4.2   *Windows 95 (Release 950 and 95a)*

1. Start your PC after installing your hardware.
2. Windows automatically recognizes at startup the newly installed device and starts the Hardware Wizard.
3. The *"A new hardware component was found"* window appears.
4. When selecting the driver which is to be installed, please select the option *"Driver from disk provided by hardware manufacturer"* and confirm your selection.
5. Insert the supplied CD in your CD-ROM drive.
6. Select your CD-ROM drive using the "*Browse*" button, change to *\marian\drivers\marc4m\win9x\english* directory and confirm your selection. Windows copies the driver files and installs MARC 4 MIDI.
7. After finishing the installation, your MARC 4 MIDI is ready to be operated without having to restart the system.

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4.3 Windows 95 (Release 95b and 95c)

1. Start your PC after installing your hardware.
2. Windows automatically recognizes at startup the newly installed device and starts the Hardware Wizard.
3. The *"Wizard for device driver updates"* appears.
4. Insert the supplied CD in your CD-ROM drive and click *"Next"*.
5. Windows now searches for the updated drivers, but it cannot find any. Click *"Other position"* and click "*Browse*" in the opening window. Change into the *\marian\drivers\marc4m\win9x\english* directory on the CD and confirm it by clicking the *"OK"* button.
6. Windows copies the driver files and installs the MARC 4 MIDI. During this process you are asked again for the driver's directory. Select the directory as described previously in step 5.
7. After finishing the installation, your MARC 4 MIDI is ready to be operated without having to restart the system.

4.4 Windows 98

1. Start your PC after installing your hardware.
2. Windows automatically recognizes at startup the newly installed device and starts the Hardware Wizard.
3. During the start of Windows the Hardware Wizard searches for new drivers. Click *"Next"* to start the search.
4. Enable the *"Search for the best driver for your device"* option and confirm by clicking *"Next"*.
5. Insert the supplied CD in your CD-ROM drive.
6. Select your CD-ROM drive in the next dialog, change into the *\marian\drivers\marc4m\win9x\english* directory and then click *"Next"*. The Hardware Wizard searches the CD-ROM for the appropriate drivers and finally displays the names of the drivers.
7. Click *"Next"*; Windows copies the driver files and installs the MARC 4 MIDI.
8. After finishing the installation click *"Finish"*. The driver will be enabled and the MARC 4 MIDI is ready to be operated without having to restart the system.

4.5   Windows NT 4.0

1. Start your PC after installing your hardware.
2. Log in using administrator rights.
3. Open "*System Control*" and choose *"Multimedia"*, then change to the *"Devices"* tab.
4. Click *"Add"* button and confirm the opening window by clicking *"OK"*.
5. Insert the supplied CD in your CD-ROM drive.
6. The *"Install driver"* window opens. Click "*Browse*", select your CD-ROM drive and on the CD-ROM select the *\marian\drivers\marc4m\nt4\english* directory.
7. Confirm your selection by clicking *"OK"*. Windows shows the recognized drivers in the *"Unlisted or Updated Driver"* window.
8. Confirm the window by clicking *"OK"*. The driver files are then copied.
9. Then the MARC 4 MIDI is available without having to restart the system.

4.6   Windows 2000

1. Start your PC after installing your hardware.
2. Log in using administrator rights.
3. Windows automatically recognizes at startup the newly installed device and starts the Hardware Wizard.
4. During the start of Windows the Hardware Wizard searches for new drivers. Click "Next" to start the search.
5. Enable the "Search for the best driver for your device" option and confirm by clicking "Next".
6. Insert the supplied CD in your CD-ROM drive.
7. Confirm the next dialog with „Next"
8. Confirm the next window also with „Next"
9. Ignore the message „Digital signature not found" and continue the installation with „Yes"
10. Windows copies the driver files and installs the MARC 4 MIDI.
11. After finishing the installation click "Finish" and restart Windows™ 2000.

4.7   Windows XP

1. Start your PC after installing your hardware.
2. Log in using administrator rights.
3. Insert the supplied CD in your CD-ROM drive.
4. Windows automatically recognizes at startup the newly installed device and starts the Hardware Wizard.
5. Enable the option „Install Software automatically" and confirm by clicking „Next".
6. Ignore the next message and click „Continue"
7. Windows copies the driver files and installs the MARC 4 MIDI.

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8. After finishing the installation the MARC 4 MIDI is ready to be operated without having to restart the system.

4.8 Driver Updates

Sometimes we offer a driver update for the MARC 4 MIDI in the download area of the MARIAN homepage. This may include:

- functional improvements of the driver and/or the manager
- adjustments to new operating systems and/or their new components (updates and service packs)
- improvements of compatibility towards other audio applications

In case of a driver update, please follow the instructions of the "readme.htm" file. This file is included in the packed folder of the new driver files.
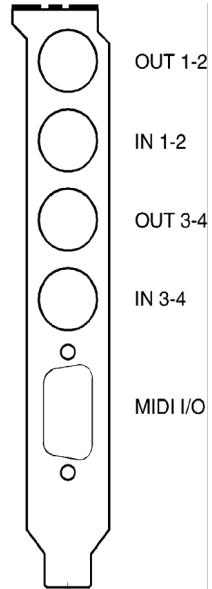
5.   Ports

The picture on the right shows the slot bracket of your MARC 4 MIDI with the external audio and MIDI ports.

5.1   *Audio Ports*

For using the audio ports of the MARC 4 MIDI you require four cables, which are equipped with a 1/4" TRS plug at the MARC side end. The plugs at the other cable end depend on the ports of the device, which are to be connected. The input and output signals have line level.

5.2   *MIDI Ports*

First of all plug the supplied break-out cable into the MIDI port (9-pin D-Sub connector). Using the 5-pin DIN connectors you can connect as many devices as you like with the MIDI port.

OUT 1-2

IN 1-2

OUT 3-4

IN 3-4

MIDI I/O

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5.3 **SyncBus**

The figure on below shows the board of your MARC 4 MIDI with the SyncBus port. You can see it as an 8-pin plug. If you use several MARC cards or other Marian cards, you connect the SyncBus ports of the individual cards using a cable which is available as accessory.

The SyncBus of your MARC 4 MIDI has two jobs: on one side it synchronizes the digital clock and ensures that several cards run synchronously when they are operated parallel. On the other side it takes care of the concurrent and sample-accurate starting and stopping of several internal audio devices. Audio devices in this sense means either cards with SyncBus or even inputs and outputs of one and the same card.

SyncBus-Anschluß
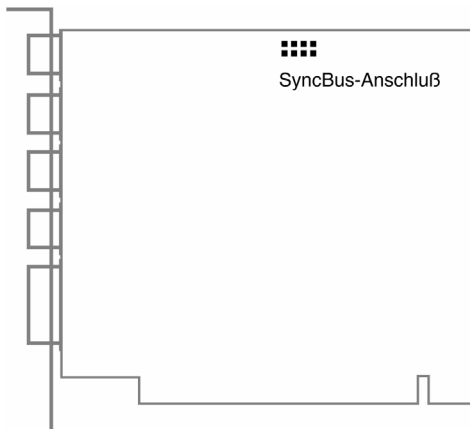
# 6.	MARC 4 MIDI Manager

After successful installation of the driver the shown symbol appears in the Windows taskbar for the MARC-Manager.
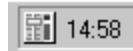
On Windows 95/98/ME you open the MARC-Manager by double-clicking the taskbar symbol. The dialog box with checkboxes on the right is then displayed. By enabling the checkboxes *"Analog Inputs"*, *"Analog Outputs"* and *"Settings"* further windows are opened, in which you can read and change the appropriate settings.

On Windows 2000/XP you simply need to click the taskbar icon and select the function/window you'd like to see.

In the *"Analog Inputs"* and *"Analog Outputs"* windows you have two possibilities to change the section view and hide or unhide the sections the way you want. You can either use the lowest section with the checkboxes *"Monitoring"*, *"PunchIn Mon."*, *"Level"* and *"Fader"*, or you right-click the title bar of the window and enable or disable the hooks in front of the section titles as shown on the right.

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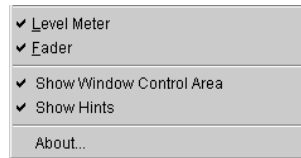
6.1. Analog Inputs

The settings window for the analog inputs is divided from the top to the bottom into the sections *Peak Meters* and *Gain Faders*.

In the *Peak Meters* you can see the level of the signals present at the input in the range between –72 and +18 dB. Using the *Gain Faders* you can adjust the input level.

The *"M"* button below the gain fader is a mute button. It turns off the audio signal on the appropriate channel.

The checkbox in the middle below the mute button groups or ungroups the gain faders of the single channels to stereo groups.

6.2. Analog Outputs

The settings window for the analog outputs is divided from the top to the bottom into the sections *Monitoring*, *Peak Meters and Volume Faders*.

In the *Monitoring* section you determine which input is the signal source for the stereo channel below using the upper buttons *"In 1-2"* and *"In 3-4"*.

The *"OnRec"* and *"OnPunch"* buttons below enable two special modes for Monitoring, "On Recording" and "On Punch".
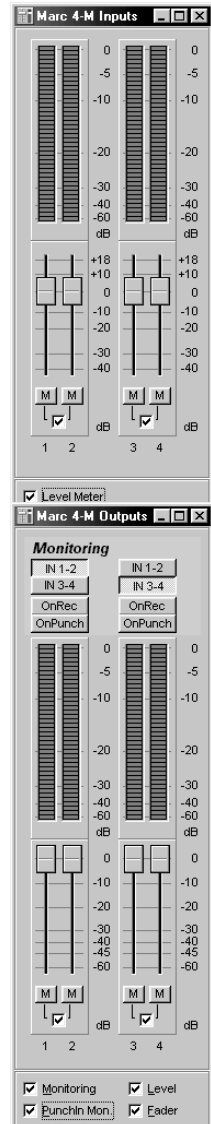
The Direct Monitoring, which is shown on the right, is always enabled, as long as "On Recording" and "On Punch" are not used. Direct Monitoring means, that the input signal is switched to the output independently from the used audio software and the appropriate settings.
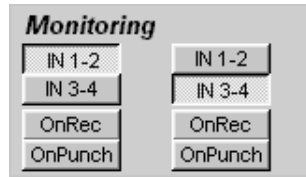
"On Recording" – which is also shown on the right - means, that the input signal is switched to the output only during recording. This way you can check the recorded signal.
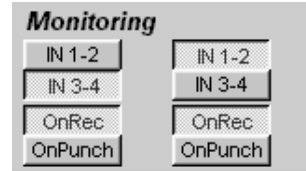
"On Punch" (figure on the right) means, that the input signal is switched over to the output during the period of a Punch Recording. For this the audio software needs to provide the PunchIn or PunchOut command for the driver.
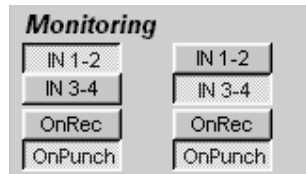
In the peak meters you can see the signal levels at the output ranging from –60 to 0 dB. You can use the volume faders for adjusting the level.

The peak meters does not change when the volume faders are changed, because it only displays the level pre fader, which is sent from the audio software or the input.

The *"M"* button below the volume faders is the Mute button. It turns off the audio signal on the appropriate channel.

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6.3.   Settings

In this window you can perform general settings for the driver of the MARC 4 MIDI.

6.3.1.   Tab "Audio"
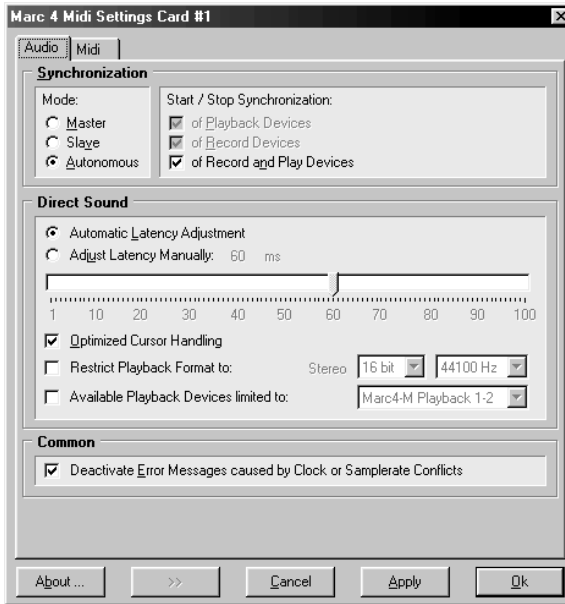
6.3.1.1. "Synchronization" Section

"Mode"

With the help of these options you determine, how MARC 4 MIDI deals with the SyncBus port and its signals.

All settings performed here are not of any importance to any external synchronization between the MARC card and for instance sequencers, samplers, etc.

"Master"

means that the card provides the synchronization signals for the SyncBus and synchronizes other cards.

"Slave"

means that the card evaluates the synchronization signals at the SyncBus and reacts on them.

"Autonomous"

means that the card does not provide and evaluate any signals at the SyncBus – the card runs in single operation. This setting is useful for instance if several audio applications have to use certain hardware.

If several cards are to be synchronized using the SyncBus, then exactly one card has to be configured as Master; the other cards have to be configured as Slave.

"Start/Stop Synchronization"

In this field you determine, whether the synchronization applies to the recording or playing device or to both types.

6.3.1.2. "DirectSound" Section (Windows 95/98/ME)

In this section you determine the settings for applications, which use DirectSound as driver interface.

Here are some information in advance: the ideal settings for the DirectSound usage depend on some factors in your PC. Because of this we cannot recommend any ideal settings, but can only provide you some information on what's behind the possibilities for the settings. You will have to test yourself, what settings will suit best. Anyway, using the standard settings will ensure a trouble-free operation.

"Adjust Latency Manually"

Moving the time control changes the size of the audio buffer on the card. If the settings for the latency period is too low, it may result in interruptions. In this case you will have to increase the latency period.

"Restrict playback format to:"

When using certain audio programs with DirectSound it may happen, that the DirectX system attempts to open the driver using a different sample format, than the audio programs intends to use. This results in a real time conversion of the signal format by the DirectX system. This conversion may have negative influence on the sound and system performance.
If a playback using DirectSound does not sound correct, you will have to set the signal format, which you use in the audio software. This way the DirectX system is forced to exclusively open the driver using the set format in the MARC Manager and the real time conversion is inapplicable.

"Available Playback Devices limited to:"

Here you adjust the (stereo) output for DirectSound applications, which have no selection of the output. The output of the audio signals is then restricted to this (stereo) output.
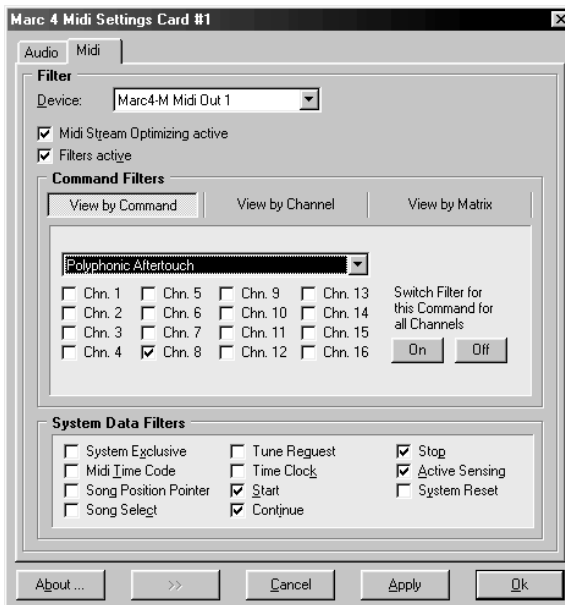
6.3.1.3. "Common" Section

"Deactivate Error Messages caused by Clock or Samplerate Conflicts"

Here we provide you the possibility to suppress all error messages in regard to clock and sample rate problems.

Please note, that suppressing these error messages makes it more difficult for you to investigate an appropriate problem.

6.3.2. Tab "MIDI"

On this tab you can change and especially filter all MIDI commands processed by the MARC 4 MIDI.

"Device"

Here you can select the MIDI input or MIDI output for the command, which you wish to change.

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"MIDI stream optimization active"

When enabling this option, you filter all unnecessary information from the transmitted MIDI commands. This way you achieve shorter processing times.

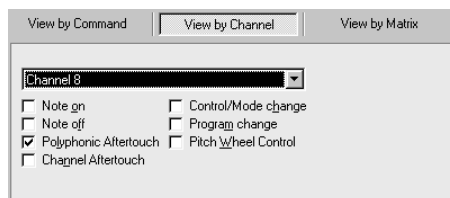**6.3.2.1.** **"Command Filters" Section**

In the Command Filter section channel related commands are processed. There are three view modes available: "**View by command**", "**View by channel**" and "**View by matrix**".

The related level for the "**View by command**" are the individual MIDI commands. This gives you the possibility to filter or transmit a command on the individual MIDI channels. Using the On"

and Off" buttons you can filter or transmit the command.
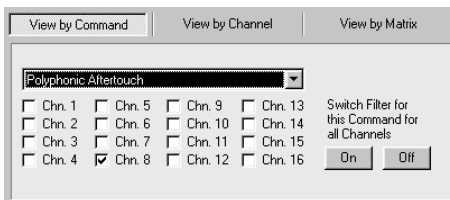
Please note, that enabling a checkbox means setting the appropriate filter, i.e. the non-transmission of the MIDI command.

The related level of the "**View by channel**" are the individual MIDI channels and provides for the selected channel the filtering or transmission of the individual commands.
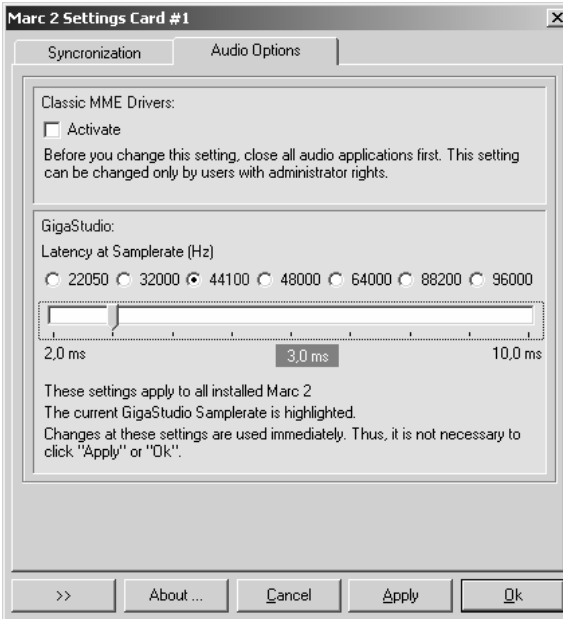

The "**View by matrix**" shows all settings in an overview. The columns show the 16 MIDI channels and the rows show the MIDI commands.
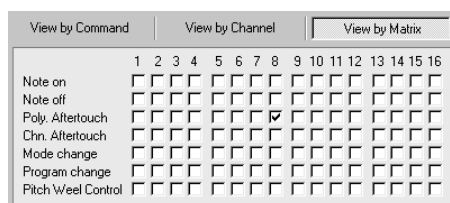
6.3.2.2. **System Data Filters" Section**

In this section you can filter the channel independent MIDI commands like system commands. All performed settings also apply for the selected MIDI device.

6.3.3. Audio Settings on Windows™ 2000/XP

6.3.3.1 WDM, MME and DirectSound

Audio applications, which do not use ASIO, GSIF or direct WDM-Audio (like Cakewalk Sonar), communicate with Microsoft MME or Microsoft DirectSound drivers instead of communicating with the MARIAN drivers directly. The Microsoft drivers in turn communicate with the MARIAN WDM-Audio drivers.

For audio applications using these Microsoft drivers, the following applies:

- They can playback simultaneously using the same playback device. The Microsoft Kernel Mixer mixes the playback signals of the applications into one stereo stream and routes it to one physical output device. If playback takes place with different sample rates, the Microsoft Kernel Mixer converts the sample rate of the playback streams to the highest sample rate required.

    Hint: You can improve the quality of this conversion! (See Control Panel | Sounds and Audio Devices | Audio | Sound Playback | Advanced | System Performance)

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- The described simultaneous playback of different applications fails, if the output device is already in use by ASIO, GSIF, "Classic MME" or direct WDM-Audio.
- The number of the available recording and playback devices is limited: on Windows 2000 to 10 devices each (20 channels) on Windows XP to 32 devices each (64 channels) This limitation applies to the number of all audio devices installed in the system. You can use "Classic MME" or ASIO avoid this limitation.
- The minimum possible latency is limited to app. 30ms through the Microsoft Kernel Mixer architecture. Use ASIO or GSIF to avoid this limitation.
- Some audio applications show additional audio devices with their names appended by "(3+4)", "(5+6)" or "(7+8)". This is caused by an anomaly of the Microsoft MME/DirectSound system. Please ignore these devices and do not use them.
- The Microsoft DirectSound or the Microsoft MME devices do not work with the Driver Settings for Start/Stop Synchronization "Synchronous" and "SyncBus". Activate these settings only if you are sure that you work with ASIO, GSIF or "Classic MME" only! Otherwise, the entire Microsoft WDM-Audio System could freeze. This circumstance cannot be influenced by the driver.

Attention: The Windows System Sounds are working with DirectSound or MME via WDM-Audio if you do not set a classic MME device as standard playback device!

Some audio applications require the MARIAN driver because of its additional hardware support functions:

- Hardware Punch In Monitoring
- Hardware Pitch Support
- Hardware Audio Signal Routing
- Hardware Audio Signal Level Measurement

These functions are not supported by the Microsoft drivers. Please supply these audio applications with the "Classic MME" devices.

6.3.3.2   Section "Classic MME Drivers"
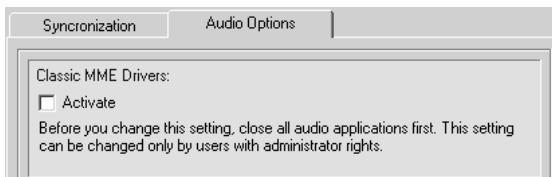
The MARIAN driver enables you to use the former MME driver interface, which was common until WDM-Audio was introduced, as an addition to all other driver interfaces. From now, we will call this interface "Classic MME". You can activate "Classic MME" within the MARC 4 MIDI Manager settings. If this driver interface is active, you get additional recording and playback devices in the appropriate device lists. These devices have the name suffix "(MME)". The "Classic MME" devices have these advantages:

- The number of the recording and playback devices available is NOT limited (see above)
- These devices support the MARIAN hardware support functions (see above)
- These devices work much faster and have better latency values than the MME via WDM-Audio devices
- These devices ensure correct start/stop synchronization. This is not possible with DirectSound or MME via WDM-Audio!

6.3.3.3 Section "GigaSampler/GigaStudio"
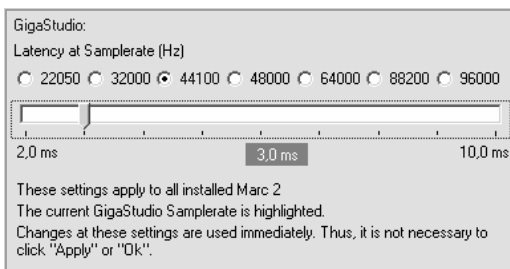
In section GigaSampler/GigaStudio you can setup the latency between a Tascam GigaStudio MIDI event and the resulting sound playback.

Move the latency slider right, to increase the latency value. Mode the latency slider left, to decrease the latency value.

You should increase the latency value only, if expirience drop outs during the GigaStudio playback. As a result of increasing the latency value, the GigaStudio playback becomes more stable.

The latency also depends on the playback sample rate. You can choose another sample rate to **show** the resulting latency value – this will not change the sample rate. The actual GigaStudio sample rate is shown in blue color.

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7. ASIO Settings

In the device setup you can see the window shown on the right.

By enabling the checkboxes in front of the entries of the inputs and outputs you determine, which devices he ASIO application can 'see' and use.

You can change the listed "*Name (Alias)"* in the first column by double-clicking the entry. This way you can rename it as you like.

The slider "*Execution priority"* determines in "*high"* position, that the transmission of ASIO data is given a higher processor priority, in the position "*low"* it is given the real time calculation of PlugIns.

Should you use an ASIO compatible audio software, you may have to perform separate settings in the ASIO configuration of the software. For details please refer to the software manual.
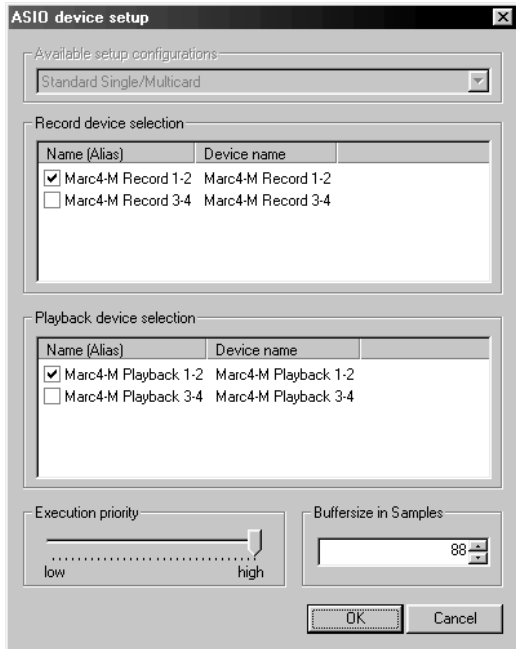
8.   Technical Data

- 4 analog inputs (1/4" TRS jacks)
- 4 analog outputs (1/4" TRS jacks)
- 2 MIDI inputs (5-pin DIN using break-out cable)
- 2 MIDI outputs (5-pin DIN using break-out cable)
- Sampling resolutions [bit]: 8; 16; 20; 24
- Sample rates: 11 kHz to 96 kHz (+/- 10% pitch)
- Frequency Response @ 44.1 kHz: 20 Hz to 20 kHz
- Frequency Response @ 96 kHz: 20 Hz to 40 kHz
- Maximum input level: +8 dBu
- Signal-to-noise ratio S (N+D): 95 dB
- THD: 0.005%

9.   Service and Support

If you have any questions or problems when installing or operating the Marc 4 MIDI, please proceed as follows:

1.   Make sure, the newest driver is installed. The current driver files can be found on: www.marian.de/en/downloads

2.   If still any questions remain, you can contact us via the internet using our support form at: www.marian.de/en/support

3.   Or talk to us personally. Dial: *+49 341 589 32 22*

Interesting news, information as well as information about our products and authorized dealers can be found on www.marian.de*.*

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