

marian
MARC 2 PRO

User's Guide

© June 2001, Marian.
Hardware Design by Marian
"SyncBus" developed by Marian
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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 that will make the handling with MARC 2 PRO and the MARC Extender easier for you.

Your MARC 2 PRO provides some special characteristics. In the following you will get a short overview of them:

- Support of 24 bit and 96 kHz
- Balanced analog inputs and outputs
- An integrated SyncBus
- Windows multi-client drivers for ASIO, GSIF, MME and DirectSound
- Multiple card support (upto 4 cards can be used at the same time)
- DAT Marker support
- Latency-free and flexible monitoring
- Using ASIO latency periods of 2 ms are possible
- Wordclock synchronisation
- AES/EBU digital ports
- Electrical S/PDIF digital ports

As manufacturer we offer you the possibility to have the max. analog input level changed over to a value between +15 and +18 dBu and the output level to a value of max. +24 dBu free of charge.

If you are interested, please get in touch with us:

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1. Scope of Supply

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

- MARC 2 PRO PCI card
- MARC Extender
- Cable for analog input and output
- AES/EBU cable
- Extender cable
- Cable for digital audio CD input
- User's Guide
- CD-ROM incl. drivers

2. System Requirements

In order to be able to operate the MARC 2 PRO, your PC should meet the following requirements:

- AT compatible PC with a spare PCI slot
- One spare case output for the MARC Extender
- Pentium processor or AMD
- Windows 95/98/ME/NT4/2000

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

3. Hardware Installation

Following the described steps below you can install upto four cards of the MARC 2 PRO 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 the MARC 2 PRO from the anti-static foil. Make sure to hold the card only at its edges or the slot brackets. Do not touch any components or contacts.
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. Remove the MARC Extender from the anti-static foil. Make sure to hold the card only at its edges or the slot brackets. Do not touch any components or contacts.
7. Insert the MARC Extender carefully into a spare case's output which can also belong to an unused slot on the motherboard. Ensure that the extender was inserted properly into the slot.
8. Screw the MARC Extender on the slot bracket to the case.
9. Connect the extender with the MARC 2 PRO using the supplied flat cable. For more information, see pictures and hints in chapter "Ports" on pages 7 and 8.
10. ***If you wish to use Wordclock synchronisation, please refer to chapter 5.4 before opening the case.***
11. ***If you wish to use the SyncBus for multi-card operation, please refer to chapter 5.3 before opening the case.***
12. Close the PC case and reconnect it to the power supply.

4. Driver Installation

4.1. About MME, DirectX, ASIO and GSIF

For connecting software and hardware you can use the driver interfaces MME, DirectX or DirectSound, ASIO and the NemeSys GigaSampler Interface (GSIF). All these interfaces are provided by the MARC 2 PRO driver after it is installed on Windows 95/98/ME. On Windows NT 4.0 and 2000 only MME is available. This way you can use MARC 2 PRO 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!

For the MARC Extender there is no special driver installation required. MARC 2 PRO's driver contains all necessary components and recognizes the extender automatically.

4.2. Installation on 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 *\\marc2p\win9x\english* directory and confirm your selection. Windows copies the driver files and installs MARC 2 PRO.
7. After finishing the installation, your MARC 2 PRO is ready to be operated without having to restart the system.

4.3. Installation on 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 `\marc2p\win9x\english` directory on the CD and confirm it by clicking the "OK" button.
6. Windows copies the driver files and installs the MARC 2 PRO. 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 2 PRO is ready to be operated without having to restart the system.

4.4. Installation on 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 `\marc2p\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 2 PRO.
8. After finishing the installation click "Finish". The driver will be enabled and the MARC 2 PRO is ready to be operated without having to restart the system.

4.5. Installation on Windows NT 4

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 \marc2p\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 2 PRO is available without having to restart the system.

5. Ports

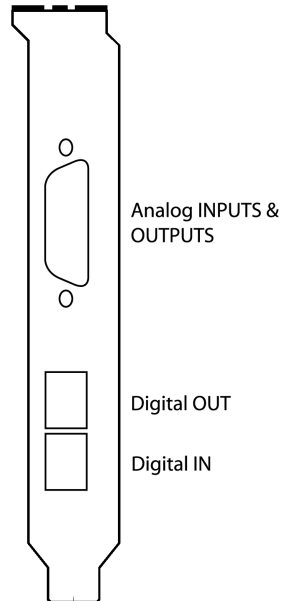
5.1. External Audio Ports

The picture on the right shows the slot bracket of your MARC 2 PRO with its external audio ports.

For using the analog ports you first of all need to insert the supplied cable into the connector which is labelled as "Analog INPUTS & OUTPUTS". For the connection of your audio devices you require 4 shielded balanced cables, of which two are equipped with an XLR male plug and two have an XLR female plug at the MARC side end. The plugs at the cable ends depend on the devices, which are to be connected.

If you want to use optical digital ports you require optical connection cables, which you can purchase in specialist shops.

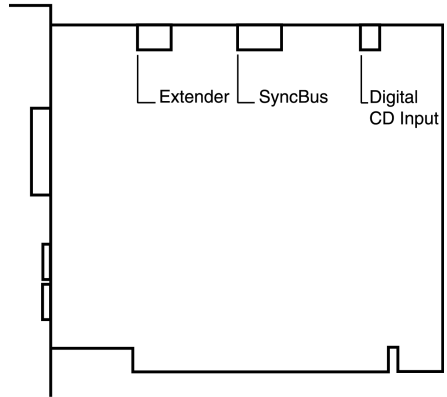
When using optical cables, please ensure that they are free of breaks and damage, because this may lead to failures.



5.2. Internal Ports

The picture on the right shows the board of the MARC 2 PRO with its internal ports.

For the processing of audio signal of your CD-ROM drive you can use an electrical digital input. For information on which ports your CD-ROM drive provides, please refer to the appropriate manual.



5.3. SyncBus Ports

If you use several MARC cards or other cards developed by Marian, such as Siena, Prodif 96 PRO or Prodif Plus, you can connect the SyncBus ports of the individual cards using a cable which is available as accessory. You can purchase a SyncBus cable also from Media Assistance, telephone +49-7949-94 16 80.

The SyncBus of your MARC 2 PRO has two jobs: on one side it synchronises the digital clock and ensures that several cards run sample-accurately and synchronously when they are operated parallelly. On the other side it takes care of the concurrent starting and stopping of several internal audio devices. Audio devices in this sense mean either cards with connected SyncBus or even inputs and outputs of one and the same card. For details on the settings see chapter 6.4.1.

5.4. Extender

The pictures on the right show the slot bracket and the MARC Extender's board.

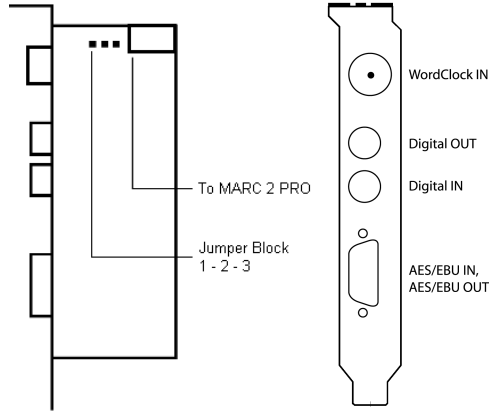
Using the Wordclock input you can implement the bond consisting of MARC 2 PRO and MARC Extender in a Wordclock environment. If the extender is connected at the end of the Wordclock bus, the Wordclock input of the extender will have to be

terminated. This is ensured by setting the jumper on the pins 2 to 3 of the jumper block. If a termination of the Wordclock is not required, you will have to set the jumper on the pins 1 to 2 of the jumper block.

For details concerning the synchronisation settings, please refer to chapter 6.4.1.

For the connection of external digital devices with electrical S/PDIF inputs and outputs you can use commercially available RCA cables.

For the connection of external digital devices with AES/EBU inputs and outputs you will have to plug the supplied break-out cable on the 9-pin SUB-D connector. This one will provide you with an XLR socket and an XLR plug, which you use for connecting your AES/EBU device.



6. MARC 2 PRO Manager

After successful driver installation the symbol shown on the right appears for the MARC Manager in the Windows taskbar.

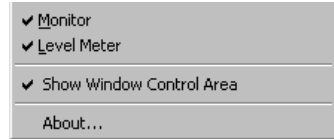


You open the MARC Manager by double-clicking the taskbar symbol. The dialog box is displayed on the right.



By enabling the checkboxes “*Analog Inputs*”, “*Digital Inputs*”, “*Analog Outputs*”, “*Digital Outputs*” and “*Settings*” further windows are opened, in which you can read and change the appropriate settings. By enabling the checkbox “*Always On Top*” you can always see the opened windows on top of all other application windows.

In the “*Analog Inputs*”, “*Digital Inputs*”, “*Analog Outputs*”, and “*Digital Outputs*” windows you have two possibilities to change the section view of these windows and hide or unhide the desired section. You can either use the lowest section with the checkboxes “*Input Signal*” or “*Output Signal*”, “*Monitor*”, “*Level Meter*”, “*Fader*”, and “*Format*”, 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.

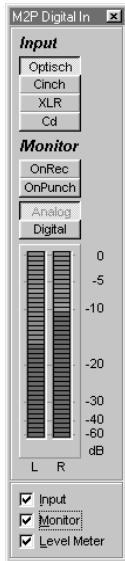


You can hide the section with the checkboxes for the window control by using the “*Show Window Control Area*” function.

6.1. Analog and Digital Inputs

The settings window for the analog and digital inputs is divided from the top to the bottom into the sections “Monitor” and “Level Meter”.

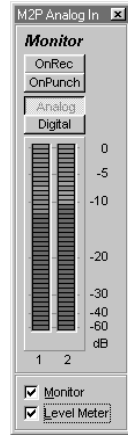
In the “Input” section of the “M2P Digital In” window you further determine which physical input is used for audio recording.



You can choose between the TOSLINK-input of the card (“Optical”), the electrical RCA-input of the extender (“RCA”), the XLR-input of the extender (“XLR”) and internal digital Audio-CD-input (“CD”).

In the “Monitor” section you determine a situation-dependent automatic monitoring. For details please refer to chapter 6.3.

The level meters show the level of the signals present at the input between –60 and 0 dB.



6.2. Analog and Digital Outputs

The settings window for analog and digital outputs is divided from the top to the bottom into the “*Output*”, “*Level Meter*”, and “*Fader*” sections.

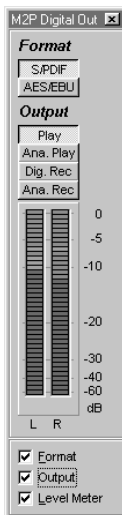
In the “*Output*” section you determine which signal is played on the output independently from the situation-dependent monitor settings. For details please refer to chapter 6.3.

The level meters show the level of the signals of the chosen signal source.

Using the faders you can decrease the analog output level down to -60 dB. This has no influence on the shown level in the level meters.

The “*M*” button below the faders turns off the audio signal on the appropriate channel.

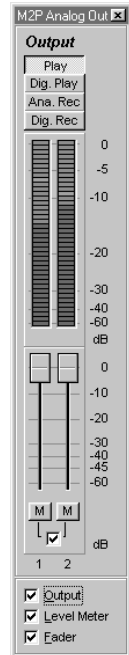
The checkbox in the middle below these buttons groups the faders of the individual channels to stereo pairs.



The settings window for digital outputs is divided from the top to the bottom into the “*Format*”, “*Output*” and “*Level Meter*” sections.

Apart from the sections, which you can find also in the settings window of the analog outputs, you can perform additional settings for the digital output of the MARC 2 PRO. In the “*Format*” section you determine whether the output signal will be an AES/EBU or S/PDIF signal.

At the AES/EBU output as well as at the S/PDIF cinch output of the extender always the same signal is distributed as at the optical output of the MARC 2 PRO.



6.3. Monitor Settings

The three pictures on the right show possible settings in the input windows for situation-dependent monitoring.



"OnRec"

means, that the signal at the input of the MARC 2 PRO is switched to the chosen output during recording (*"Analog"* or *"Digital"*). This way you can check the signal during recording.

"On Punch"

means, that the signal at the input of the MARC 2 PRO is switched over to the output during the period of a punch recording. For this the audio software needs to provide the *"PunchIn"* and/or *"PunchOut"* command for the driver.

The four pictures on the right show examples of monitor settings in the analog output windows.



"Play"

means that you can hear the playback signal of the audio software at the output of the MARC 2 PRO which uses one of the determined playback devices of the MARC 2 PRO. This way for instance *"Dig. Play"* in this window equals the *"MARC 2 PRO Digital Playback"* setting in the audio software.

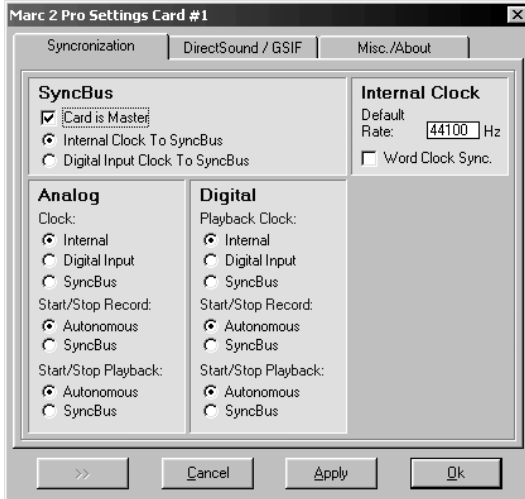


"Rec"

means that you can hear the signal of the chosen input at the output of the MARC 2 PRO.

All settings are independent from the used audio software and its settings. Please note, that the monitoring possibilities may be limited in dependence on the clock settings and the number and kind of enabled inputs.

6.4. Driver Settings



6.4.1. "Synchronisation" Tab

In this window you perform synchronisation settings for the MARC 2 PRO.

6.4.1.1. "SyncBus" Section

"Card is master"

means that the MARC 2 PRO provides the clock, which is responsible for the recording and playback sample rate, with the synchronisation signals on the SyncBus and therewith synchronises other cards.

If several cards are to be synchronised using the SyncBus, exactly one card has to be configured as master. All other cards have to be configured as slave.

"Internal clock to SyncBus"

means, that the MARC 2 PRO transfers the clock produced on the card to the SyncBus.

"Digital input clock to SyncBus"

means, that the clock of a device connected to the determined digital input is transferred to the SyncBus.

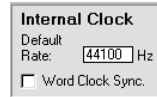
6.4.1.2. “Internal Clock” Section

“Default Rate”

This input field contains the frequency at which the internal clock works, provided no device of the card is used by the application. If the card is configured as master in the SyncBus operation you determine here the sample rate, which is used by the slave cards as reference, provided no device is used by the master card.

“Wordclock Sync.”

If you enable this checkbox the MARC 2 PRO internal clock synchronises to an externally connected Wordclock and operates as Wordclock slave. All devices which were synchronised before, are then dependent on the external Wordclock. The label changes accordingly from “Internal” to “Internal (Wordclock)”.



6.4.1.3. “Analog” and “Digital” Sections

Here you can perform separate synchronisation settings for the according inputs and outputs.

“Internal”, “Digital Input”, and “SyncBus” are available as clock sources.

In the chapters “Start/Stop Recording” and “Start/Stop Playback” the following applies:

“Autonomous”

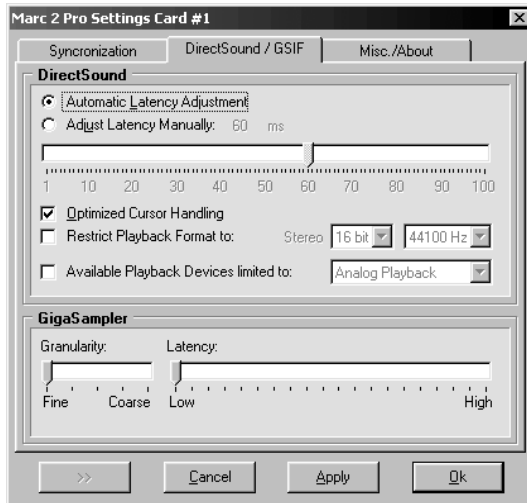
means, that the device does not evaluate any signals on the SyncBus. It runs in independent mode. This setting is especially of use, if several audio applications have to access independently different inputs and outputs.

“SyncBus”

means, that the device evaluates the signals on the SyncBus and synchronises.

Please note, that for some synchronisation settings the monitor settings of the driver may be reset.

6.4.2. “DirectSound / GSIF” Tab



In this tab you determine the settings for applications which use DirectSound or NemeSys GigaSampler Interface (GSIF) as driver interface.

6.4.2.1. “DirectSound” Section

Some information in advance: The ideal settings for the usage of DirectSound are dependent on some factors in your PC. Because of this we cannot tell you any ideal settings, but only information on what's behind the possibilities of the settings. You will have to find by testing which settings are the most suitable ones. By using the default settings an trouble-free operation can be guaranteed.

“Adjust Latency Manually”

Moving the latency control changes the size of the audio buffer on the card. This way latency is changed during playback of audio signals. 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 sounds falsified, 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 possibility to select the output manually. The output of the audio signals is then restricted to this (stereo) output.

6.4.2.2. “GigaSampler” Section

We cannot inform you about the ideal settings for GSIF but will explain to you, what the terms stand for. In order to find the most suitable settings you will have to test.

“Granularity” and “Latency”

The granularity specifies the size of the audio data blocks, which are transferred to the hardware by the GigaSampler. The smaller the latency was set, the smaller will have to be the data blocks, in order to avoid interruption during playback (granularity: “*Fine*”). Though the system is more stressed because of the larger data overhead during the transfer, the reaction time for the sampler playback is shorter.

Larger data blocks (granularity: “*Coarse*”) stress the system less, but the reaction time is longer and easier leads to interruptions during playback.

For ideal results try to set the values of the two faders as low as possible.

6.4.3. “Others / Info” Tab



“Disable messages about sample rate conflicts” and “Disable messages about device conflicts”

Here we provide you with the possibility to display or suppress error messages of clock and sample rate problems as well as device problems. By standard the display of error messages is suppressed.

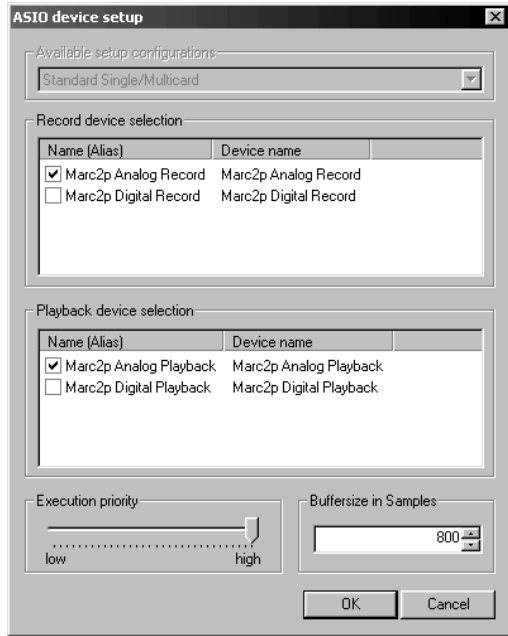
We recommend to enable the display only when you face problems during the start of recording or playback, or your audio software outputs error messages which refer to unknown external errors.

7. ASIO Settings

In the device control of the ASIO application you can see the windows shown on the right.

By enabling the checkboxes in front of the entries of the inputs and outputs you can determine which devices can be “seen” and be used by the ASIO application.

The ASIO application can see the devices with the names in the first “Names (Aliases)” column. These names you can rename as desired.



The “Execution Priority” slider 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.

When you enable the “Marc2p Digital Record“ device, please ensure that there is a valid digital signal at the selected digital input, because the clock of this signal will be used as reference clock for the entire ASIO setup. If this is not available, neither the recording nor the playback of any device will work.

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

8. Technical Data

- 2 analog inputs (XLR plug female)
- 2 analog outputs (XLR plug male)
- 1 digital input S/PDIF (optical)
- 1 digital output S/PDIF (optical)
- Sample formats: 8, 16, 20, 24, 32 Bit mono/stereo
- Sample rates, analog: 6–112 kHz
- Sample rates, digital: 32, 44.1, 48, 64, 88.2, 96 kHz +/- 10% pitch
- Frequency response @ 44,1 kHz: 20 Hz bis 20 kHz
- Frequency response @ 96 kHz: 20 Hz bis 40 kHz
- Maximum input and output level: +8 dBu
- Signal-to-noise ratio AD: 104 dB(A)
- Signal-to-noise ratio DA: 114 dB(A)
- Total Harmonic Distortion: 0.005%

Extender:

- 1 digital input S/PDIF (electrical)
- 1 digital output S/PDIF (electrical)
- 1 digital input AES/EBU
- 1 digital output AES/EBU
- 1 Wordclock input

9. Service and Support

Should you have any questions or problems during the installation or operation of your MARC 2 PRO please perform the following steps:

1. Ensure that you always have the latest driver installed. You find the latest driver files on the following web page:
2. Have a look in our Audio Guide, which has been published on the internet, whether you can find a solution to your problem. You can find it also on the following web pages:

www.marian.de/english/downloads.htm

www.marian.de

3. If any questions still remain, you can contact us via e-mail. Please write to:

support@marian.de

or give us a phone call:

0341-589 32 22

Interesting news, information and driver updates you can find here:

www.marian.de.

You can contact our Sales Department on the internet at

www.media-assistance.de

or via telephone at

+49-7946-94 16 80.