Installation & User manual for the mObridge M1000-M-DA series of Pre-Amplifiers

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Welcome!

Dear Buyer,

Congratulations on your purchase of a mObridge M1000-M-DA Pre-Amplifier. mObridge prides itself on striving to develop and manufacture products to the highest engineering quality standards and seamlessly integrating these products with factory audio visual systems.

The mObridge M1000-M-DA series are some of the most advanced DSP aftermarket audio integration interfaces available for the MOST Bus based vehicles, and comes with an easy to use PC & Mac Graphical Interface for set up and tuning for the DA2 (limited interface) & DA3 systems. This can be downloaded free from our www.mobridge.us website.

Features, depending on DA model, include TOSLINK output, Channel Mapping to 8 RCA output channels, 1000 Point Parametric Graphic Equalizer for each channel, as well as a 'Master EQ', Crossover Type and crossover points for each speaker, crossover slope, individual speaker time alignment, phase adjustment, Q factor (Both left and right), and summing for subwoofer or centre channel set up.

As with all mObridge products, we have included a USB port for USB upgrades of the software allowing for new features to be added as they become available. The M1000-M-DA series can be updated by simply loading the latest software from our website and through the use of either the Wizard or the DSP user interface.

The M1000-M-DA series may also have system function upgrades available for purchase and download from time to time. These will also be available on our website.

We hope you enjoy your new enhanced listening experience!

Kind regards,

mObridge

Disclaimer

mObridge makes every effort to try and keep the support and installation documentation up to date.

We do not reimburse or bear costs arising from installations should installation issues occur. mObridge can be contacted via email and also via its world wide distribution network. We always recommend contacting the local distributor first, and although we endeavor to answer emails we receive in a timely manner, due to time zone differences we may not be able to respond immediately.

mObridge always recommends professional installation of these products as they are technically complex, involving optical fiber across multiple vehicle configurations and software versions within these vehicles.

In some cases vehicles may require coding by specialist workshops and diagnostic equipment. mObridge always recommends allocating a number of hours to any installation, just in case any issues should arise.

Mercedes Supported Radios

Figure 1 W220 S Class COMAND NTG1.0

Figure 2 Audio20

Figure 3 Audio50

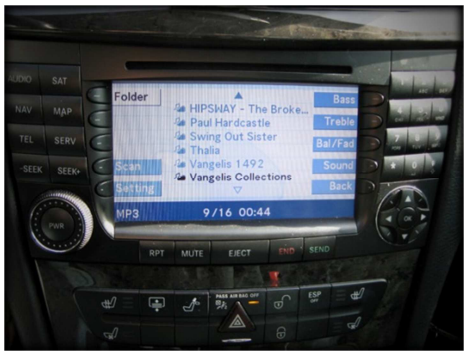

Figure 4 COMAND NTG2.0

Figure 5 COMAND NTG2.5

Figure 6 NTG 4.0/4.5/4.7

The Mercedes W211 (E Class 2003-2008) and the R171 (SLK 2005-2008) use the Audio50 and COMAND NTG radios with a separate Audio Gateway known as the AGW. The DA series of products is not compatible with these vehicles!

The W220 (S class 2004-2007) also use the AGW system but the Siemens based COMAND radio in this vehicle is compatible with the DA series.

Kit Contents

M1000-M-DA1Contents

The M1000-M-DA series product comes complete and ready to install into the MOST Bus systems within the compatible vehicles.

The mObridge M1000-M-DA1 kit contains the following items:

- M1000-M-DA1 main unit
- Power, Ground & Remote wiring harness
- MOST extension cable
- MOST connectors
- Free software download from http://www.mobridge.us/wizard (this is not provided in the package contents)

M1000-M-DA2 & M1000-M-DA3 Contents

- M1000-M-DA2 main unit
- Power, Ground & Remote wiring harness
- 8x RCA output cable
- MOST extension cable
- MOST connectors
- Free software download from http://www.mobridge.us/wizard and also the DSP user interface http://www.mobridge.us/node/15213 (this is not provided in the package contents)

Common Install Notes

Important Items
ATTENTION

1. **Prior to commencing any installation! Some vehicles may need to be coded for the M1000-M-DA for correct operation. Please refer to the Coding notes chapter in this instruction manual.**
2. **Initially, please set the gain controls on your analogue amplifiers to minimum. This will reduce noise significantly and allow your amplifiers to run smother for longer. NB: We recommend that you use the M1000-M-DA gain control as your master set up gain.**

Power Wiring Harness & MOST cable

The M1000-M-DA kits come with a universal power, ground & remote turn on harness as pictured below. We recommend these products be installed by a professional Installation Technician.

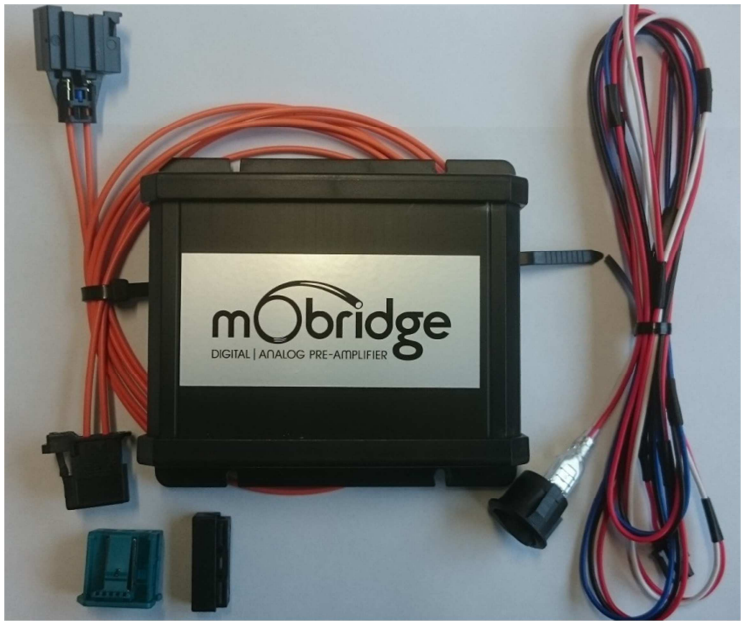

Figure 7 DA1 Kit Contents

Red = 12v Positive
Black = Ground
Blue = Remote Turn On

Figure 8 DA2/DA3 Kit Contents

We highly recommend the MOST connection be made as soon after the Head unit as possible. The DA units come with a MOST fiber extension to be able to extend the factory amplifier wiring to the unit. The units also come with a range of other MOST connector shells just in the case the car does not have an existing amplifier. In these cases the installer can change the MOST connector shells and form a 'T' piece from the MOST cabling.

NB: The DA unit needs to be connected to the car before the PC software will work as the DA will not power up until it has MOST light.

NB: If the MOST Bus is not connected properly, this can affect many functions of the vehicles operating system including the ability to start the vehicle.

Graphical Interface Operation

The Graphical Interface can be downloaded from our website, and can be used both online and offline mode. However, in order to 'Map the Channels' you will need to be connected to the DA2/DA3 with power connected too. Offline mode allows you to configure Graphic EQ settings and store them for later fine-tuning in the car if desired. We recommend all tuning be done with a 'Live' System, because this way you can hear all changes being made in real time. Graphic EQ, Crossover settings and Time Alignment changes, can all be heard as you make the changes when 'Live'.

Connecting and Channel Mapping

Once downloaded, we recommend you open the application and connect to your DA unit via a USB cable (not provided). If power is connected to the DA and turned on, you will see the below screen.

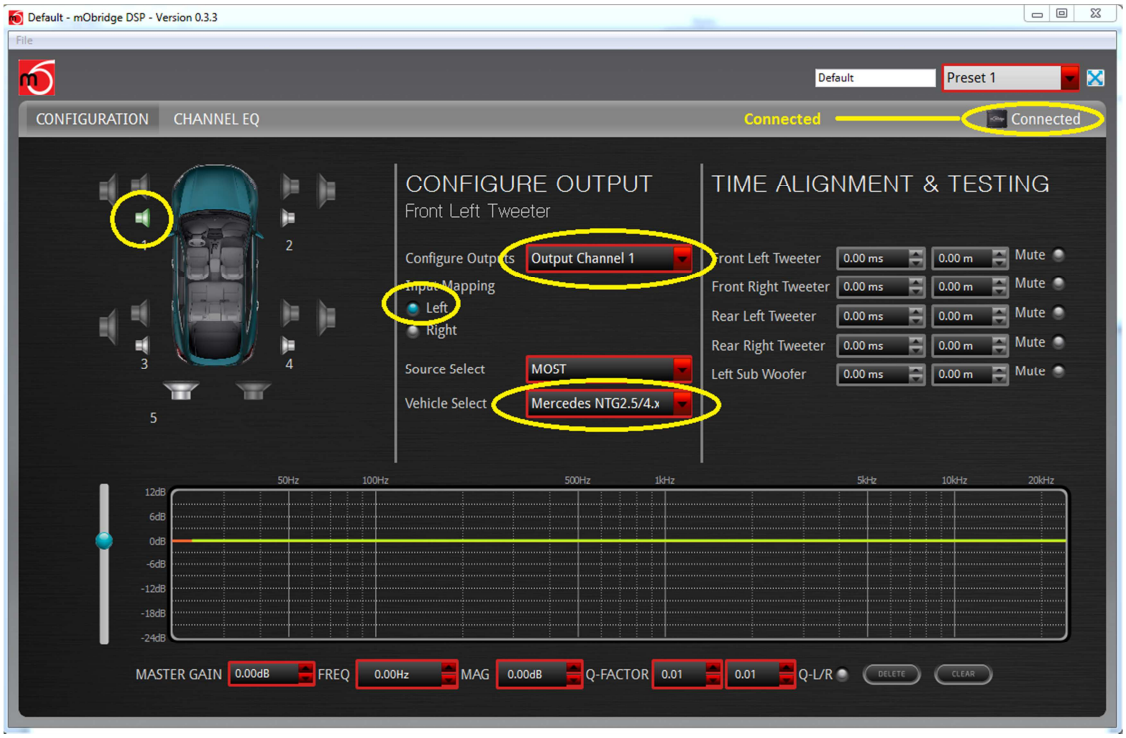

Figure 9 M1000-M-DA3 Connected

The first thing you will need to do is to select the vehicle the DA is being fitted to and then configure the channels for the correct mapping of your particular system.

First select a speaker from the image of the vehicle then from the drop down menu in the middle of the screen, select the channel output you have connected for that particular speaker. Repeat this for each speaker and its corresponding output channel.

When running a component speaker system with a passive crossover, only select one of the speakers in the cluster. It is not important which speaker is chosen, as this is only the mapping stage. Crossover settings will allow for correct settings for this type of speaker system!

When connecting a Mono Subwoofer, simply select the speaker image and click the 'Left' & 'Right' buttons for the input mapping in order for the M1000-M-DA3 to know that this is a 'summed' channel output, providing information from both the left and right hand sides.

Crossover (Filter) Set up

After channel mapping, you will need to set the crossover for each of the speakers connected. To do this, first click on the 'Channel EQ' TAB at the top left corner of the screen. This will open the Full EQ page for the individual speaker selected.

You will also note a 'XOVER L/R LINK' radio button. This allows you to set up both left and right crossovers simultaneously. It is very unusual to have separate crossover settings for the same type of speaker on opposite sides of the vehicle.
In the middle of the screen you will see the 'Filter type' drop down menu. Select your desired crossover.

- Low Pass for Subwoofers
- Band Pass for Mid-Bass or Midrange Speaker
- High Pass for Tweeters
-

If you are running a passive crossover on your component speakers, then select High Pass filter and simply lower the crossover point.

To adjust the crossover point, there are two methods:

1. Simply type a number into the Lo-P Hz or Hi-P Hz boxes provided
2. Drag the 3db down point (shown as a grey or blue dot on the Graphic Screen) to the desired frequency.

As you make the adjustments, you will hear the difference your changes make if you are connected and powered on!

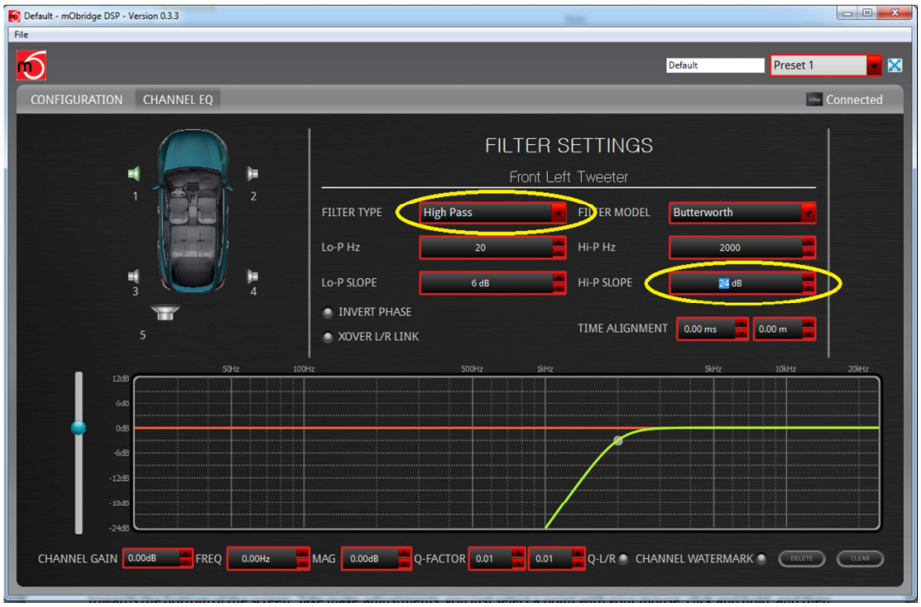

Figure 10 M1000-M-DA3 Crossovers

You can also adjust the slope of the crossover. The adjustment options for slope are 6dB, 12dB, 18dB and 24dB.

In the above figure we have selected a tweeter and applied a hi-pass filter to it with a 24dB slope.

Individual Channel Equalization

Each speaker can be equalizer or tuned to your own taste. NB: If the 'XOVER L/R LINK' radio button is selected, the linked speakers of left and right will be equalized together. We recommend this for initial tuning. You can always uncheck this radio button to fine tune individually later.

Go back to the 'Configuration' TAB at the top left corner. Here you will see a flat yellow line across the Parametric Equalizer towards the bottom of the screen. Take make adjustments, you just select a point with your mouse, click and hold, and then drag it to your desired setting. You can do this up to 1000 points!

As you move the point on the screen, you will hear the sound adjust. For each point in the Eq curve you can adjust the left and right Q-factor or you can link the Q-factor together.

There is also a checkbox for watermarking the related speakers so that the user can see exactly where the cross-over points are.

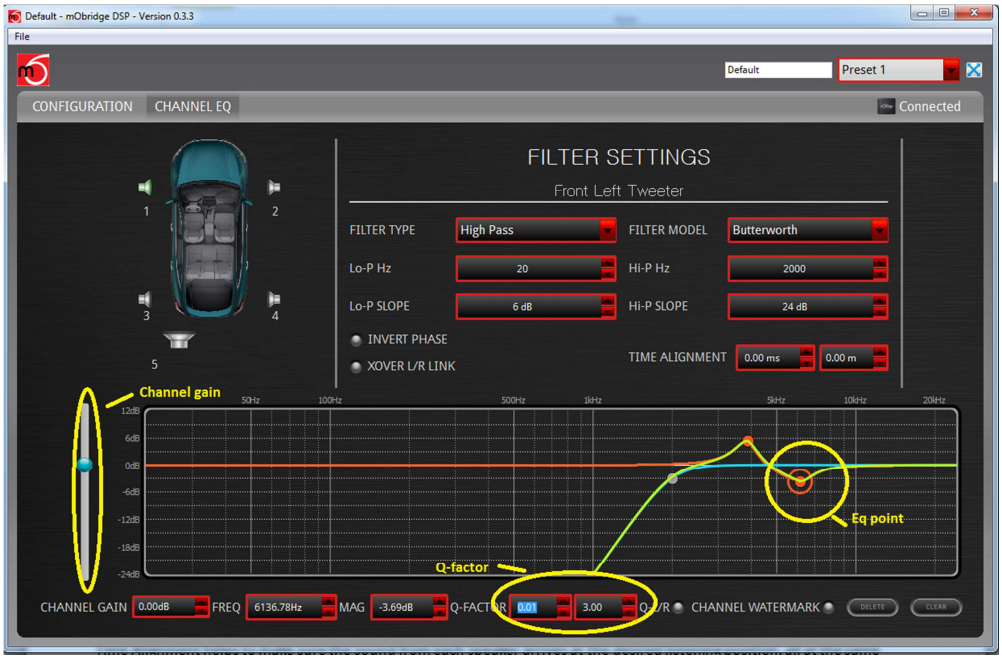

Figure 11 Channel Equalizer

We can see in figure 5 that we have placed two points in the Eq curve and that we have adjust one point at 6136Hz down a little and adjusted the left Q factor down to 0.01 and the right Q-factor is at 3.00. There is also a slider bar for channel gain control.

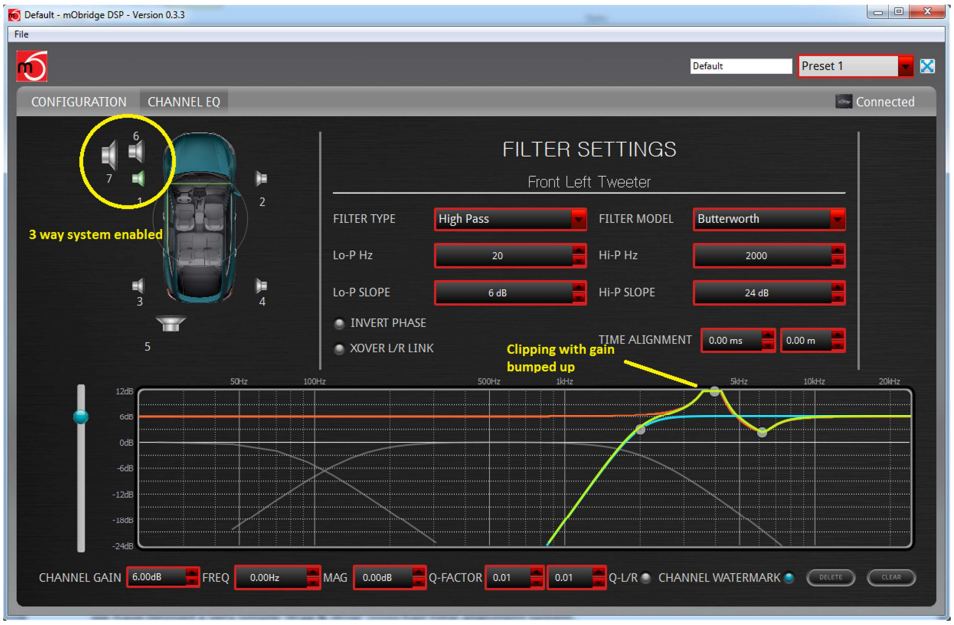

Figure 12 Channel Equalizer with mater mark

In figure 6 we can see that we have enabled a 3-way system and checked the box for the watermark. We have also bumped up the gain a little on the tweeter and we can now see on the graph that the Eq point we dropped in at 4 KHz has now started to clip.

Individual Speaker Time Alignment

Time Alignment helps to make sure the sound from each speaker arrives at the desired listening position, all at the same time. Normally a measuring tape is required for this task, which you can do with our system BUT for ease and speed of setup, we have devised a very simple 'drag & drop' cross hair time alignment system.

Choose the speaker you want to align, and then drag the green cross hair (pictured in the vehicle image) to the desired listening position.

For example, if you are setting up for the driver's position as optimal performance, and then drag all speakers to roughly where the driver's head will be. If you are setting up for a well-centered sound for all to enjoy, then drag your cross hairs to a centered position just at the edge of the dashboard (Individuals like a different sound position so this is only a recommendation).

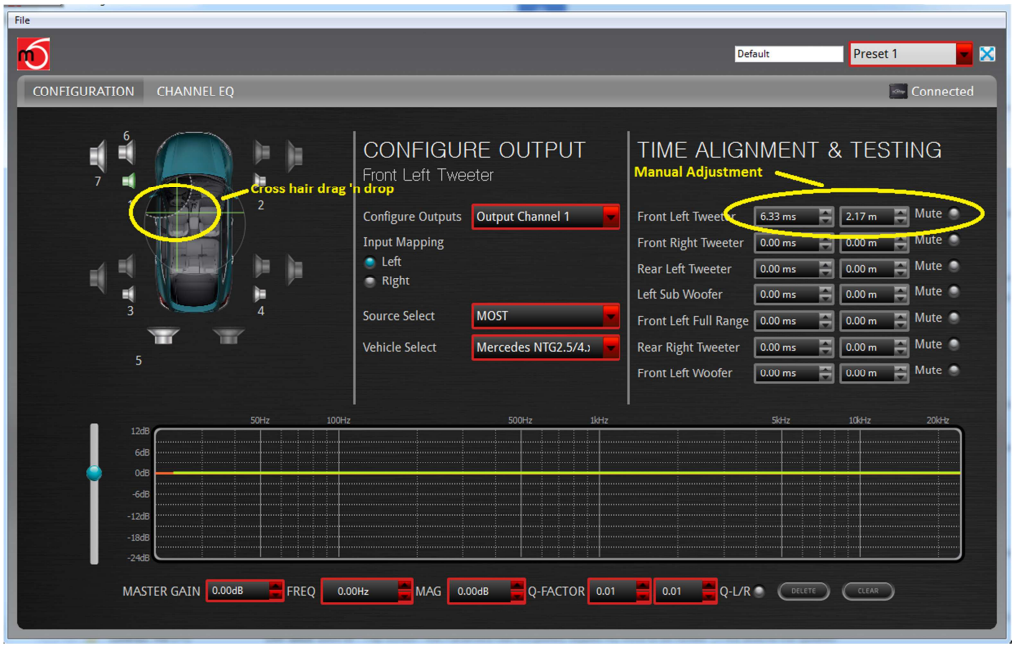

Figure 13 Time Alignment Cross Hairs

In figure 7 you can see that we have dragged the left tweeter crosshairs over and in the time alignment section on the right hand side we can see the actual offset in time and distance. The graphical interface uses both metric and imperial for the distance and will gather the regional zone of the computer you are using and do this automatically.

Master Equalization

The DA3 has a master eq. This gets overlaid over all of the channel cross/Eq curves. It is exactly the same operation as the individual channel equalization setup with multiple points, left and right Q –factors and overall master gain control.

Figure 14 Master Equalization

Figure 8 show us a master Eq setup with a number of points added to the adjustment. More points can be added simply by clicking on the graph.

Saving Setups & Presets

The DA will automatically save setups upon a shutdown of the MOST system. This needs to happen 'gracefully' as the user cannot just pull power from the unit as this will not work.

The DA3 has four different presets and these can individually tuned. The channel mapping will remain across all four presets and will also apply default filter setups to the speakers to avoid speaker damage.

You can save a backup of all of your Presets by simply clicking the 'File Button' on the top menu and then 'Save As'. This will save a backup of your setup across all four presets and this file can be used to load in saved settings.

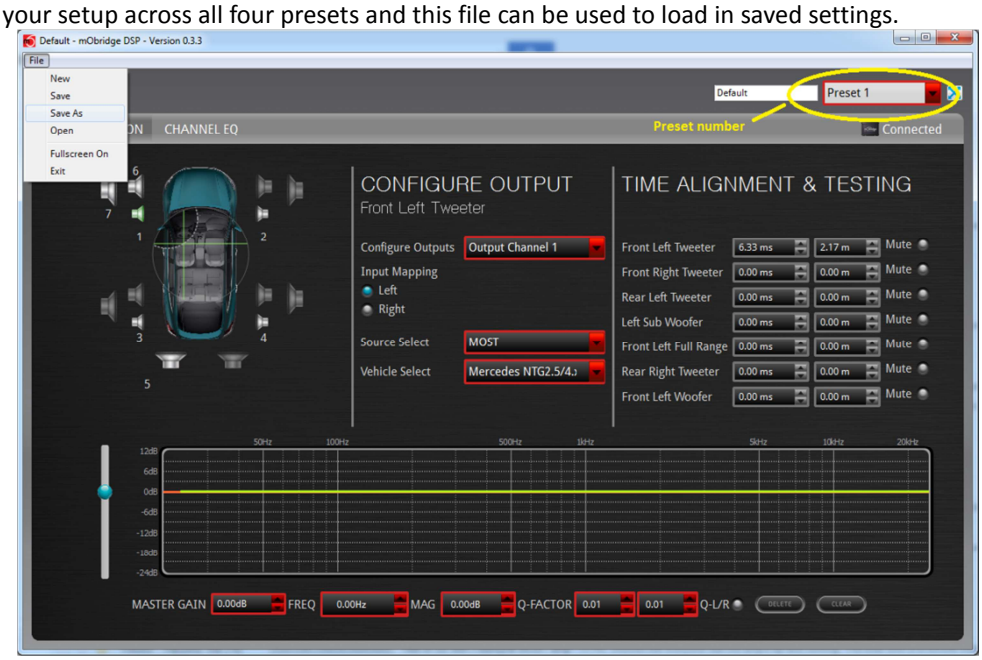

Figure 15 Saving Tuned Settings

In figure 7 we can see the user has selected to save the file by selecting the 'File' menu at which point the user can save the tuning session as a *.rax file.

You can also see in the figure that the user was currently tuning preset 1.

It is also possible to pull these presets up using the surround sound modes in the Mercedes vehicles.

Figure 16 NTG2.5 Surround Modes to change DA3 presets

Figure 17 NTG2.0 Surround Modes to change DA3 presets

Vehicle Coding

NTG1.0 W220 S Class

No coding required

NTG2.0/Audio20/Audio50

No coding required

NTG2.5

Unless the car came with an external Logic7 Harmon Karndon option then the vehicle will require coding with the Mercedes Stardiagnose or equivalent

NTG4.0/4.5/4.7

Thankfully in these later model radios there is an engineering menu that can quickly enable the external amplifier.

To enter engineering mode the user needs to hold down the phone hangup button and '1' and '#' for 10 seconds together. The NTG system will then enter engineering mode as can be seen in the next figure.

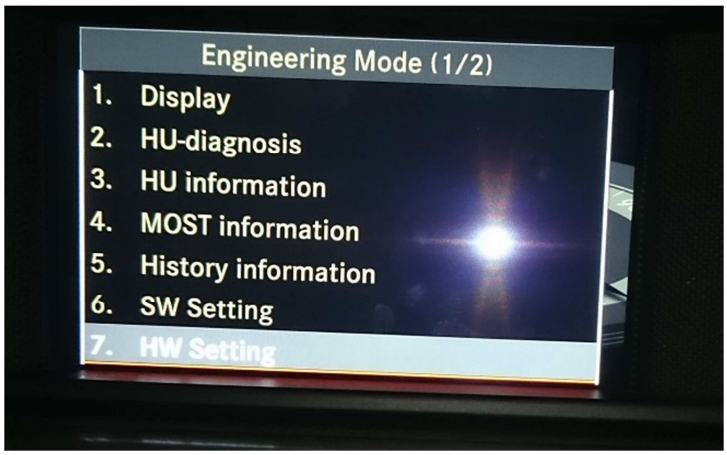

Figure 18 Engineering mode

To navigate this engineering mode use the following controls:

- '2' is up
- '8' is down
- '5' is OK

The user needs to navigate down to option 7 which is the 'HW setting'. After selecting this the NTG radfio will display another menu and we want to select 'TGW Parameter' as can be seen in the figure below.

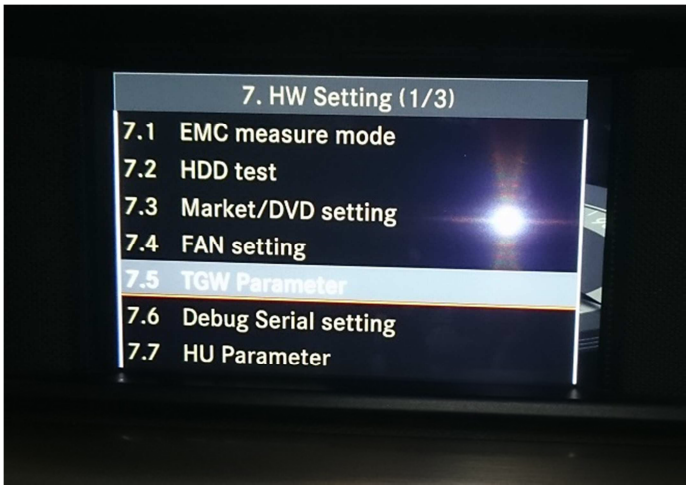

Figure 19 Select the TGW Parameter

Once in the TGW menu the user can select the 'Audio Source' as can be seen in the next figure.

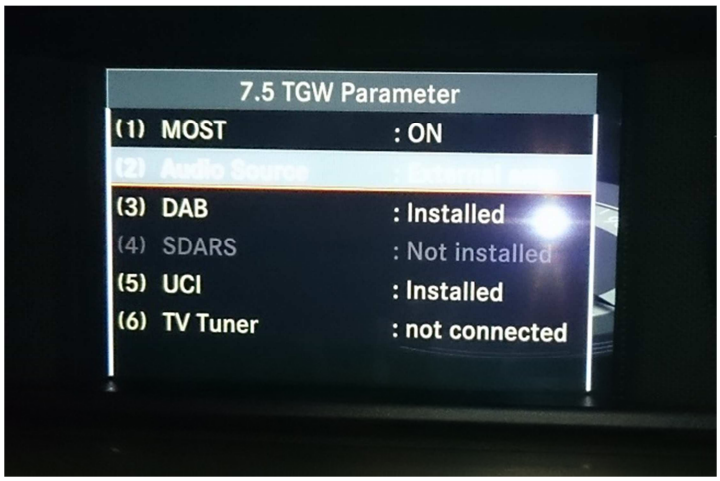

Figure 20 Select Audio Source

Then finally it is a simple matter of selecting the 'External Amp' option as can be seen in the next figure.

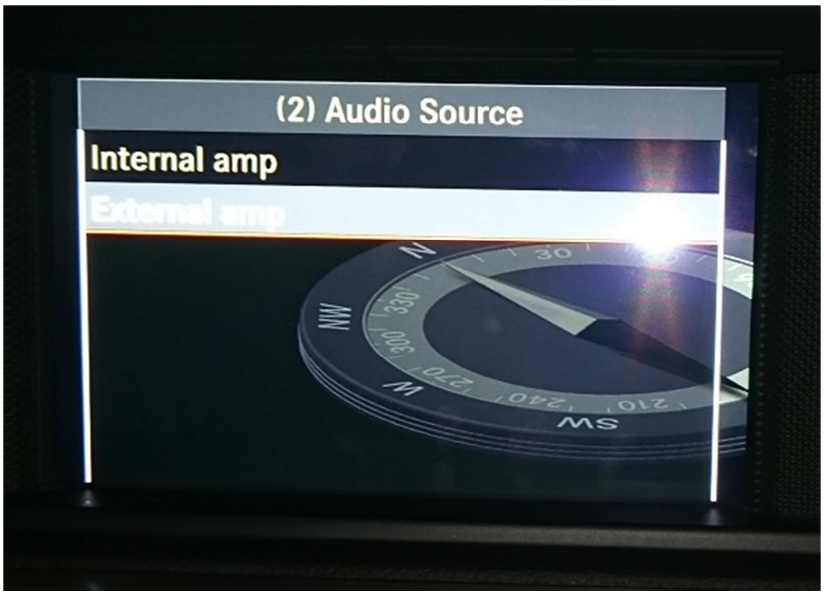

Figure 21 Select 'External Amp'

mObridge Software Update

Updating via the Wizard

All mObridge products can be software updated in the field via USB. This is necessary as sometime vehicle manufacturers do update the software in the vehicle which requires interfaces to be updated also to remain compatible. mObridge also regularly adds features into the software for better user experiences as well as software bug fixes. The mObridge DA products MOST unit can be software updated via its USB connection and use of the mObridge Wizard software interface that runs on Windows PC's.

The Wizard can be downloaded here http://www.mobridge.us/wizard

Once the Wizard has been downloaded, the latest DA software can be applied. The latest software can be found here http://mobridge.us/node/15145

The mObridge DA unit will need to be connected in the car and powered up for the unit to be updated. Once it is connected to the Wizard the user will be presented with the following screen. The user needs to select the USB cable option for the connection as seen below.

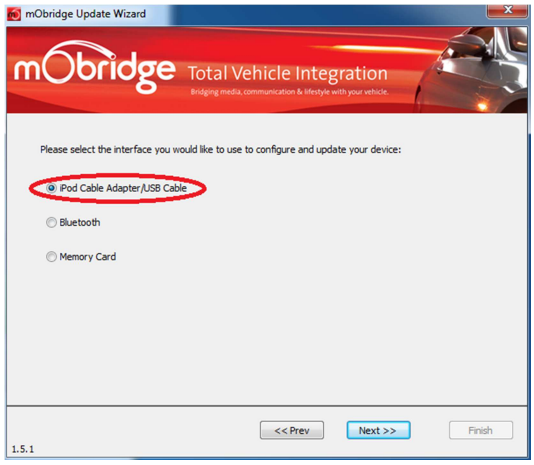

Figure 22 Wizard interface selection

When the 'Next' button is clicked the user will then be presented with the USB serial port to connect to the DA unit. This will be called 'FT232R USB UART' and will appear automatically or when the 'scan' button is clicked. It may take a few minutes for Windows to install the driver for the DA unit. Windows will install this automatically. Once the user has selected this USB port they can click next.

Figure 23 Select USB port

Upon selection of this USB port the unit will upload its software version to the Wizard and will be in a connected state. The figure below shows us the software versions of the DA unit and presents the user with a software update button.

Figure 24 DA software versions

To perform the software update, simply click on the 'Update' button, which will bring the user to the following screen. The user can browse their computer to the location that they have downloaded the update file to. Once selected the user can simply select 'Next' and the unit will update.

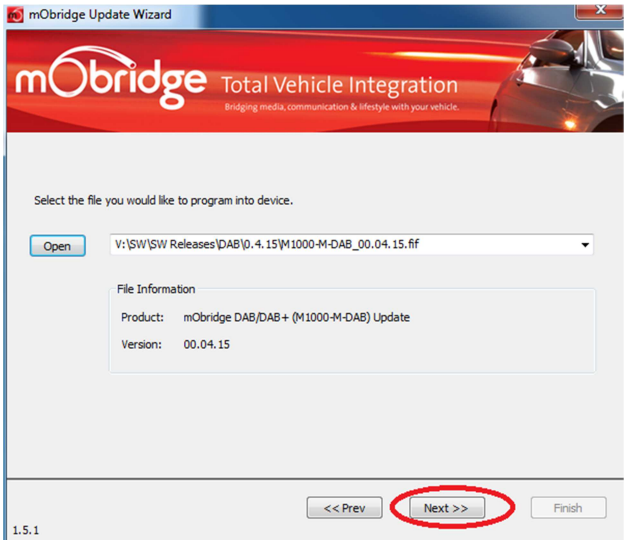

Figure 25 Select update file

The Wizard will download the file and then flash the memory of the DA unit. It is important not to remove power during this process! Once this has successfully flashed, then the user can simply click on the 'Next' button and the unit has been updated.

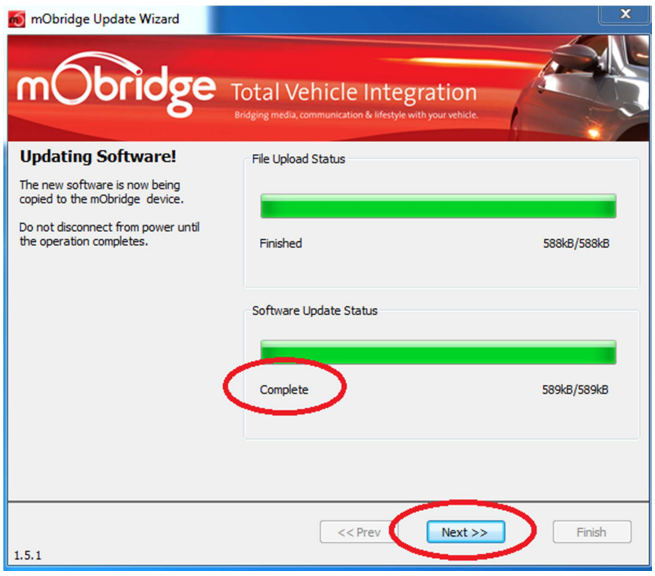

Figure 26 Software Update Complete

Updating via the DSP Graphical Interface

The mObridge DA products MOST unit can be software updated via its USB connection and use of the mObridge DSP software interface that runs on Windows and Mac PC's.

The DSP GUI can be downloaded here http://mobridge.us/node/15213

Once the GUI has been downloaded, the latest DA software can be applied. The latest software can be found here http://mobridge.us/products/da3-dsp-professional and here http://mobridge.us/products/most-analog-pre-amp

The mObridge DA unit will need to be connected in the car and powered up for the unit to be updated. Once it is connected to the DSP GUI the user will be presented with the following screen.

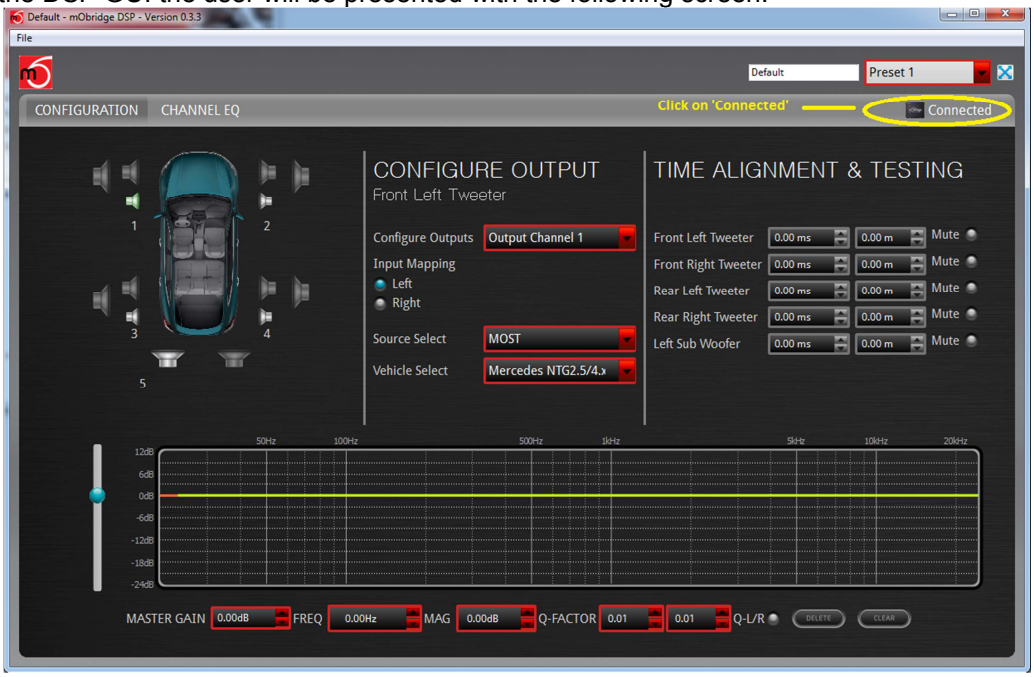

Figure 27 DA is connected to the DSP GUI and we can click on 'Connected'

Once the DA is connected via the GUI we can just click on the 'Connected' in the top right hand corner and this will bring us to the update page a seen below.

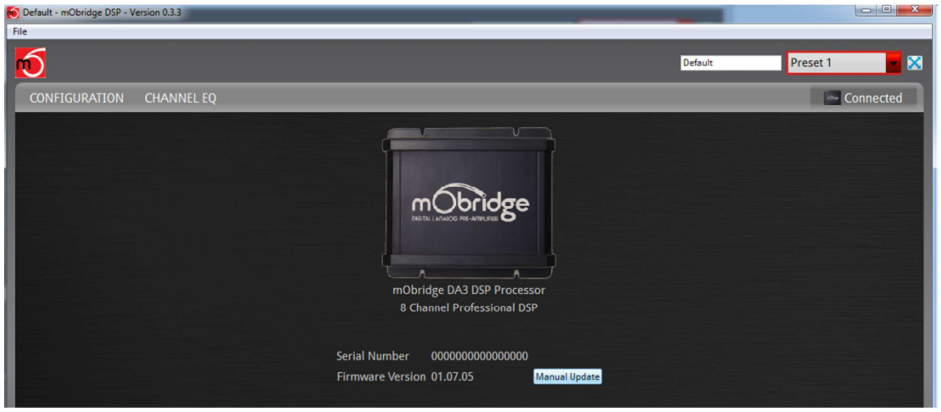

Figure 28 Click on 'Manual Update' and select the file

The user then needs to click on the 'Manual Update' button and select the new DA3 firmware file to update to and the update procedure will begin as seen in the next figure.

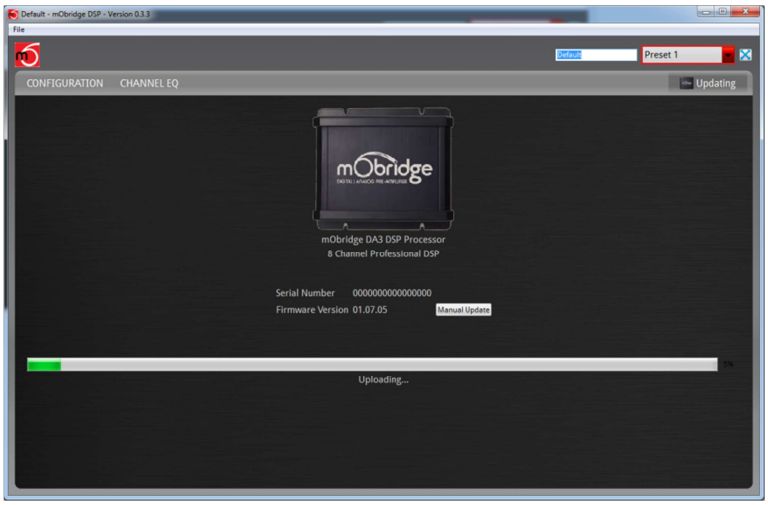

Figure 29 DA3 update in progress

Once the update has completed, the DA unit will reboot and start the system again. Sometimes it is a good idea to let the car sleep after the firmware upgrade as some MOST systems do not like ECU's resetting on the MOST bus.