

Digital Power Amplifier MDA-KDM Series



MDA-KDM Series Digital Power Amplifier

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Important User Safety Introduction

Firstly, thank you for purchasing and using our company's products. In this user manual, you will have a detailed understanding of the functions and usage of this device. Before you power on, it is necessary to read the following content.

Safety instructions

1. Please do not expose this machine to damp environments. Any container containing liquid, such as a vase, should not be placed on the machine.



2. Do not use this machine near heat sources or in enclosed spaces. It should be kept in a well ventilated and heat dissipating environment for use.

3. If necessary, use a clean cloth dipped in water to clean, do not use any organic solvents to clean the body, and do not block any ventilation openings.



4. During thunderstorms or when not in use for a long time, please unplug the power plug of this product.

When the device is damaged, such as the power cord or plug being damaged, liquid spilling or objects falling into the device, or the device being exposed to rain or moisture for a long time, please immediately turn off the machine and disconnect the power, and take it to the dealer for maintenance.

5. This device is only installed inside the cabinet.

6. Only accessories/accessories specified by the manufacturer can be used.

7. Use the power plug provided by this product correctly. The standard power plug provided by this product can provide you with more safety assurance.

8. Warning: If the grounding is damaged, the machine or the system connected to it may cause the casing to become live. If the casing and ground are touched simultaneously, it can cause serious injury or even death.



9. Before use, please confirm whether the load system parameters match the machine, such as impedance, maximum power, etc.

1 Installation

1.1 The input AC power supply of this machine can be adapted to 90-240V, 50-60Hz. The third pin (grounding pin) on the power cord included in the packaging is a necessary safety component. Do not attempt to disable this grounding connection by using an adapter or other methods.

1.2 This machine provides analog and digital balanced input card holder.

Please connect to the correct signal source according to relevant regulations.



Digital Power Amplifier

MDA-KDM Series



Box Contents:



Amplifier*1



Warranty Card*1



Network Cable*1

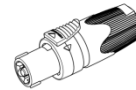


Power Cord*1

Audio Connections:

Input connections: Analog signal, Dante (Optional), AES3 digital signal. (The input signal line should have an independent shielding layer to maintain a distance of 50CM or more from other interference sources)

Output connection: Use the SpeakON plug to connect. A/C is the combined output, for example, interface A +1/-1 is the A output channel, and interface 2/-2 is the B output channel.



Front and Rear Panels:



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Note:

- ① 4.3 inches capacitive touch screen, which can quickly manage input source switching, channel link, network settings, local information, etc.
- ② Multi-function button/knob, press or rotate, you can confirm or modify the selected parameters.
- ③ USB interface, use Type-B2.0 cable to connect the power amplifier. (Note: The following systems in WIN7 require manually installation of drivers. Address: www.marani-proaudio.com)
- ④ Analog signal input interface. Before connecting to the signal, please ensure that the amplifier is in a mute or minimum volume state. (Factory default analog input)
- ⑤ Analog Input A/B Link for amplifiers' inputs daisy chain.
- ⑥ AES3 digital signal input interface. You need to select a digital signal input source in the software.
- ⑦ Double Port TCP/IP network interface, supporting STATIC and DHCP modes, capable of remote control of devices, firmware upgrades, and more.
- ⑧ Double Port Dante network audio interface, supports daisy chain connection.
<https://my.audinate.com/support/downloads/download-latest-dante-software>
- ⑨ A/B/C/D output interface, A/C port is a combined output. +1/-1 is the A/C output channel and +2/-2 is the B/D output channel.
- ⑩ Power input interface and power switch, connected using PowerCON plug, connected to 90-240V 50/60Hz AC power.
- ⑪ Removable Front Panel Grid for dust filter replacement

Digital Power Amplifier

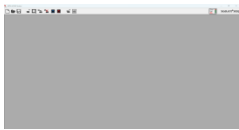
MDA-KDM Series



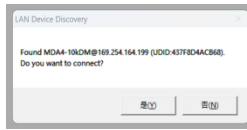
Control software connection interfaces:

The MDA-KDM series has two connection interfaces: a **Dual TCP/IP** port (recommended), allowing a daisy-chaining connection, and USB Type-B2.0 port.

- **TCP/IP connection:** use a CAT5/CAT6 network cable to connect the TCP/IP port of the power amplifier to the network adapter interface of the Computer or Switch or Router.
- The MDA-KDM series supports two IP addressing modes: **STATIC** addressing or **DHCP** mode (default). The amplifier addressing mode has to match the computer network settings. For DHCP mode connections, the IPv4 address option of the computer network adapter has to be **Dynamic (Automatic)**; on the contrary, when the amplifier is set in **STATIC** addressing mode, the computer network card has to use a **STATIC (manual)** IP address in the same network mask of the amplifier (e.g. if the amplifier IP is 192.168.0.100 with a Net mask 255.255.255.0, the computer IP should be in the range 192.168.0.XXX).
- The amplifier implements an automatic device discovery service, allowing to easily connect the PC control software: it is enough to open the control software, wait for the discovery message to appear and click OK to connect.



Open software

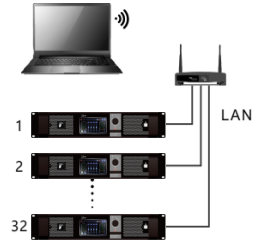
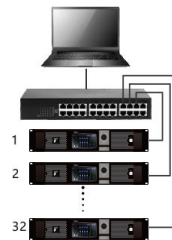
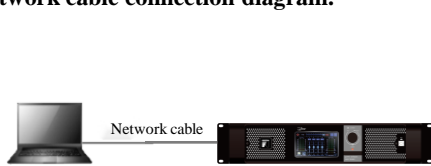


Automatic discovery



Connected Device

Network cable connection diagram:



Common issues with the TCP/IP connection:

1. The automatic discovery message doesn't appear.

Solution:

Click on the settings icon on the amplifier screen to enter the IP settings page and view the current IP mode of the amplifier. Open the computer's wired network card network adapter and ensure the IP mode of Internet Protocol Version 4 (TCP/IP v4) matches the amplifier IP settings, as described above.

If the IP settings of the computer has been properly set and the discovery message still not appear, it can be due to the computer firewall that filters the broadcast announce messages from the amplifier. To solve the issue, the firewall has to be disabled or a firewall exception for the control software has to be manually added in the Windows firewall settings (Note: the first time the control software is run, a firewall exception prompt appear to automatic add the software in the firewall exception list).

2. After opening the software, the software prompts a message like "Found MDA4-10kDM@192168.1.100 (UDID: 437F8D4ACB68) The device is UNREACHABLE! Please check your network settings". It means the amplifier is correctly connected to the network, but the IP settings of the computer doesn't match network settings of the amplifier.

Solution:

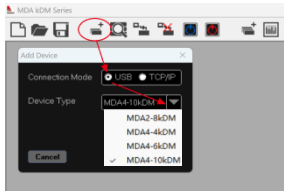
Check the computer settings and ensure the network card uses the same addressing mode of the amplifier and, if **STATIC** mode is selected, set the IP address of the computer in the amplifier Net mask range.

Digital Power Amplifier

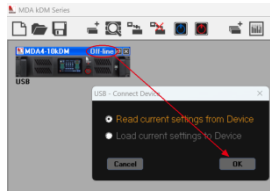
MDA-KDM Series



➤ **USB connection:** use a Type-B2.0 cable to connect the computer to the power amplifier and open the control software. Then, click the Add Device button, choose USB connection and select the right power amplifier model. Finally, Click the “Off-line” label to connect.



Add Device



Connected Device



Successfully Connected

Common issues with the USB connection

The message “Device not found” appears when trying to connect the amplifier.

It means the control software can't recognize the amplifier, due to a model mismatch or an issue related to the USB COM port driver.

Solution 1: be sure the model of the added device match the amplifier model.

Solution 2: open the computer device manager to check whether the COM port and SUB driver are correctly installed. In the case the COM port number is greater than 32, manually change it to a free COM port in the range 1...32. If the amplifier USB driver cannot be properly recognized, please try using another USB port of the computer or reinstall the driver.

Download address: www.marani-proaudio.com (Note: Drivers below WIN7 need to be manually installed)

Download link: https://www.marani-proaudio.com/dettprodotti-USB_Drivers_Download/178_133/eng/

DANTE Audio interface

MDA-KDM series amplifiers feature Dual Dante ethernet port (labelled Primary and Secondary).

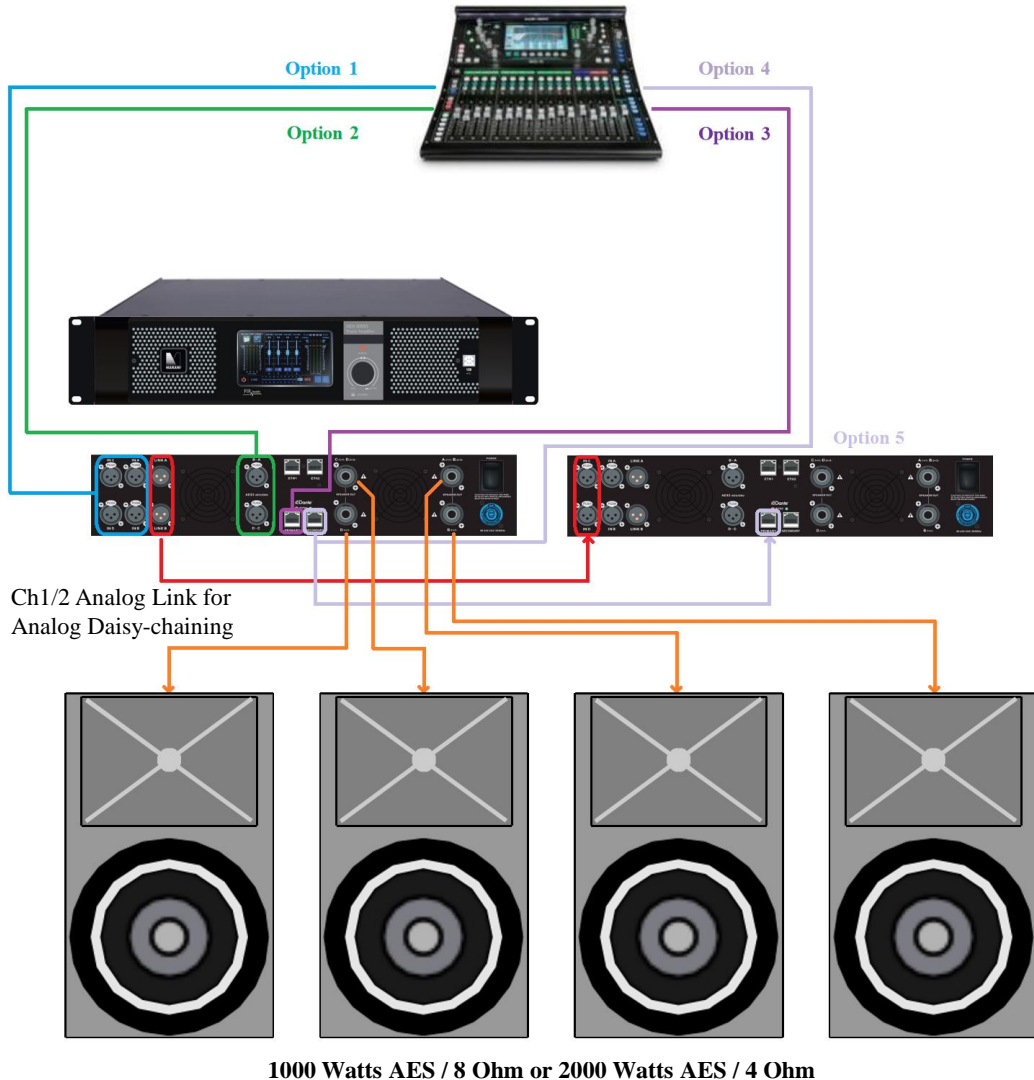
➤ When PRIMARY DANTE port is connected to the external DANTE source, the Secondary Dante port behaves as a standard switch port, allowing daisy-chaining through the amplifier to other audio devices as source.



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MDA Series Sound System standard application Topology



Sound system Connection

Option 1: Analog

Option 2: Digital AES/EBU

DANTE (Installed Dante card), can be select between the Option 4/5.

1. Base on Dante **Brooklyn** Card:

Option 3: Dante Primary

Option 4: Dante Secondary (Redundancy available)

2. Base on Dante **Ultimo** Card:

Option 5: Dante to next Amplifier or other devices

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MDA-KDM Series



Display screen management:

The MDA-KDM series power amplifier has a 4.3 inches capacitive touch screen, by which users can easily recall presets, switch input source, set input gain/mute as well as channels linkage or network settings, and monitor the main amplifier status information.

Main Window appearing after Loading

Preset name

* current preset name.

Open and load Preset button



* LOAD PRESET page, here one of up to 50 Presets can be selected for being uploaded (LOAD)

Input meters

* input channels meters / OVER / COMP status display, up to 4 channels.

Standby soft button

* Standby ON / OFF

Input gains

* from -12dB to +12dB, up to 4 channels /MUTE buttons for each channel

Status area

* the temperature, the THERMAL, the LOAD 4/8 OHM, the drive 70V/ 100V.

Output meters

* output channel meters / OVER / LIMIT status display, up to 4 channels.

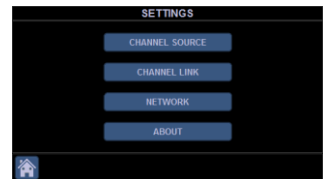
Master Volume gain control

* from -80dB to 0dB /ALL Outputs MUTE button

Settings button



* SETTINGS page, including: CHANNEL SOURCE / CHANNEL LINK / NETWORK / ABOUT.



Channel Source page Inputs A/B/C/D

Source

* The source for any input channel can be selected independently as ANALOG or DIGITAL or DANTE

TSG

* Noise Signal Generator (Pink or White) with level, ranging from -40dBu to 0dBu

Meters

* Meters can be set to display the Input Signal level as PFL (Pre Fader) or AFL (After Fader)



IP Settings page

- The Current IP Settings shows the current setting of the IP interface

- New IP Settings, is allowing to set a new IP address

* IP Address

* xxx.xxx.xxx.xxx , editing.

* Subnet mask

* xxx.xxx.xxx.xxx , editing.

* Gateway

* xxx.xxx.xxx.xxx , editing.

* STATIC / DHCP

* LAN Mode = DHCP / STATIC ,



Note: if set as DHCP, PC side set as auto IP settings, if set as STATIC, PC side need to set the same range IP settings.

Channel Link page

Input / Output channels can be linked singularly, or be set automatically as Stereo couples



About page

* MODEL: the model name

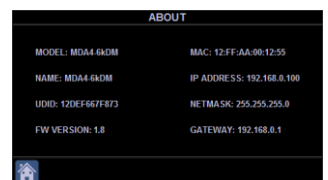
* NAME: the device name

* UDID: the model identify ID

* FW VERSION: the firmware version

* MAC: the network MAC address

* IP Address: IP ADDRESS / NETMASK / GATEWAY



Note: A **FACTORY RESET** can be operated turning ON the amplifier power while pressed and hold the **STANDBY** button on front panel. **After a Factory Reset the current data will be lost !!!**

Digital Power Amplifier

MDA-KDM Series



Software management:

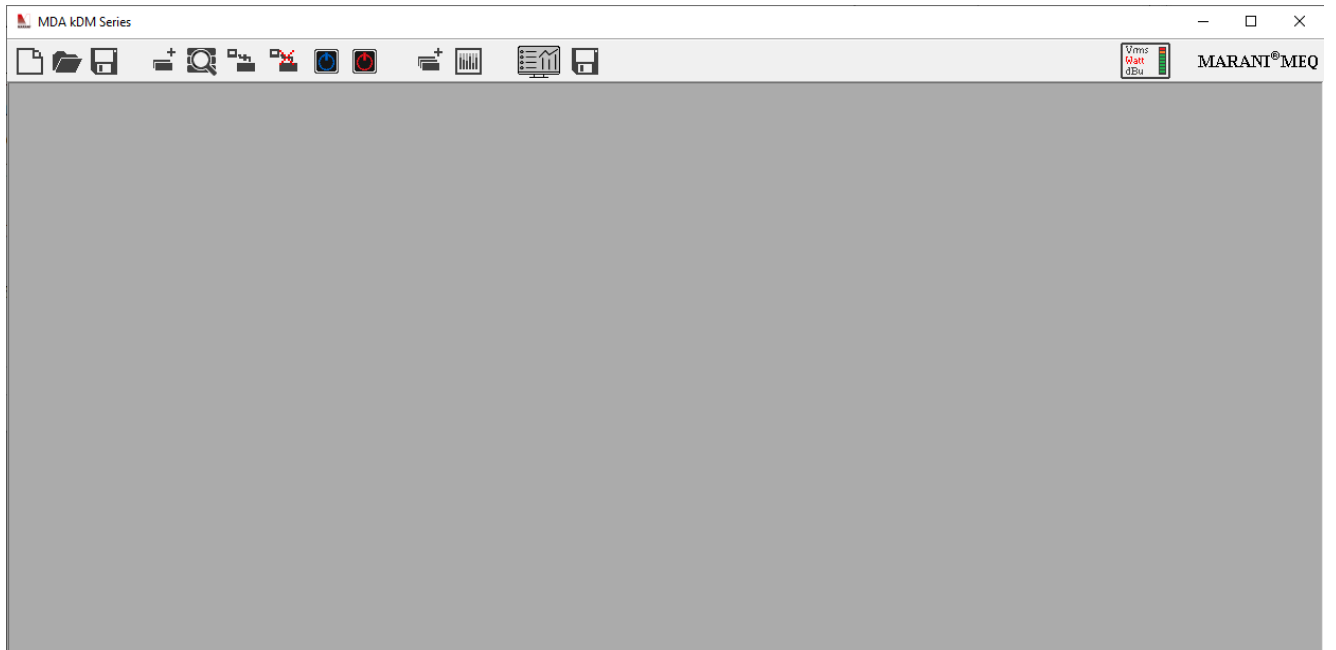
The toolbar of the main page is the following:



1. New project
2. Load project
3. Save project
4. Add device
5. Search new device
6. Connect all offline devices added to the main page
7. Disconnect all currently connected devices
8. Set all devices in operational mode (exit standby)
9. Set all device in standby mode
10. Add a group
11. Level monitoring and mute of all power amplifiers
12. View monitoring
13. Export log file to txt file
14. Select output unit

After installed the setup, at the first start-up of the PC Software, the Firewall of PC ask to blocked some features of this app, **is recommended to allow the access** otherwise the amplifier connect via TCP/IP can't be automatically announced.

Main page




Digital Power Amplifier

MDA-KDM Series



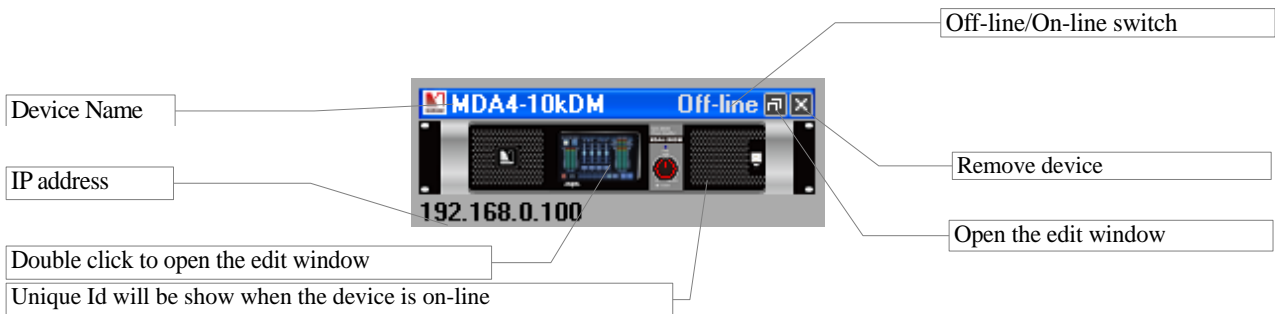
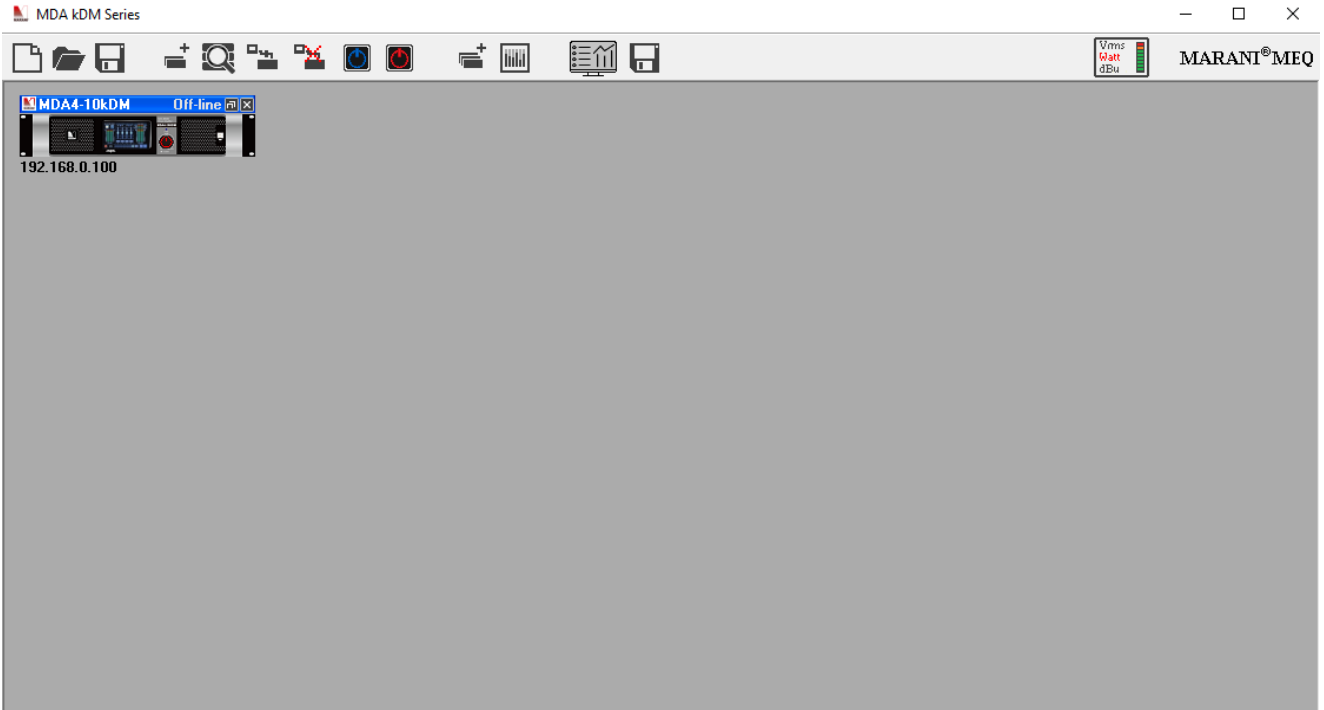
To start the USER must manually add a USB device and click the label “Off-line” to search and connect the amplifier (if working with USB or if the device can't be automatically announced)

Click the  button, the window ‘Add Device’ will be open.



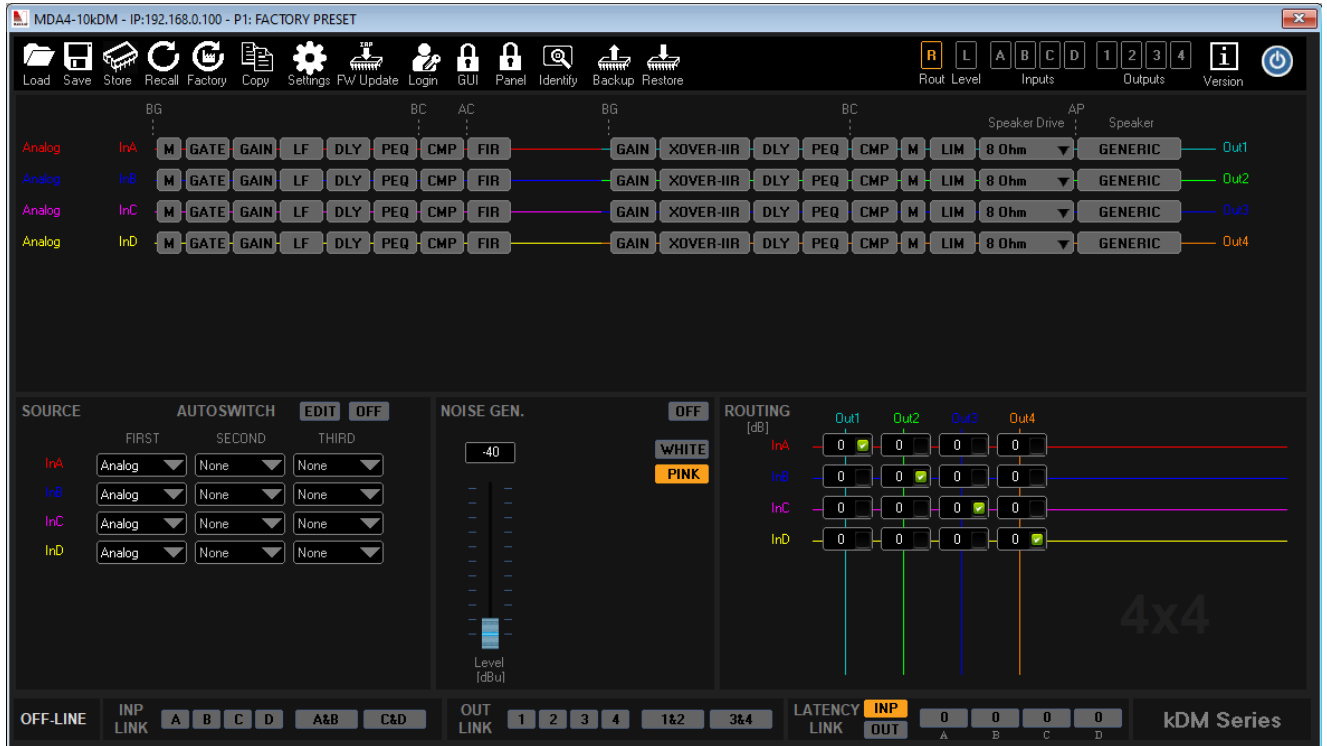
- Select the connection mode: USB or TCP/IP (if TCP/IP is selected then insert the right IP address)
- Select the device type: MDA2-8kDM or MDA4-10kDM or MDA4-6kDM or MDA4-4kDM
- Click OK to add the new device, cancel to abort the add

After clicked OK then the device will be show in the main window



Edit window

ROUTING PAGE



Toolbar



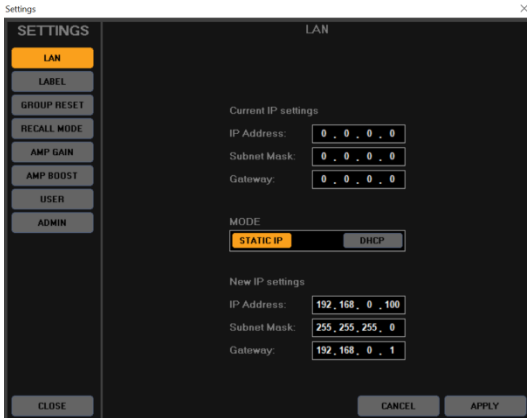
1. Load preset file from PC
2. Save preset file to PC
3. Store preset to device (from position 1 to 50)
4. Recall preset from device (from position 1 to 50)
5. Recall factory preset (overwrite the current preset settings, **the current preset data will lost!!!**)
6. Copy channels
7. Amplifier settings, including LAN, name, group reset, preset recall mode, amplifier gain, amplifier dynamic boost, user and admin password
8. Firmware update (for TCP/IP connection only)
9. Admin Login: Admin mode has the highest management permissions for the device, which can lock or hide processor data and functions. (Default password: 111111)
10. User interface lock (Default password: 000000)
11. Panel lock (Default password: 000000)
12. Identify (click the button to identify the device in the network)
13. Backup data
14. Restore data
15. Page selector (R: routing page; L: Levels and meters page; A/B/C/D input channel pages, 1/2/3/4 Output channel pages)
16. About (some info about the firmware and software version)
17. Standby button (red on, blue off)

Settings

On this page is possible modify some system's parameters

- * LAN mode
- * Labels
- * Group Reset
- * Recall Mode
- * AMP Gain
- * AMP Boost
- * Power Save
- * Bridge Mode
- * User
- * Admin

LAN

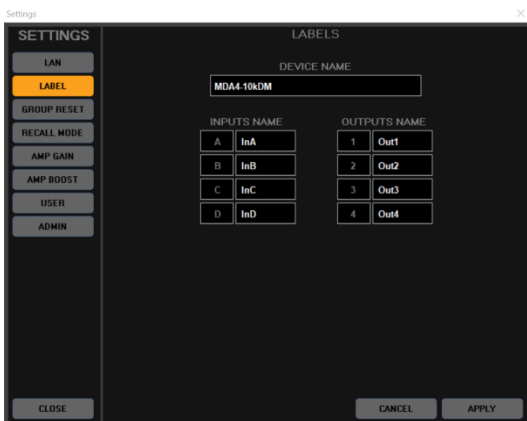


When the LAN Mode is set as Dynamic IP (**DHCP**) then on the current IP settings is possible see the current settings of IP , subnet mask and gateway. The new IP settings can't be edit.

When the LAN Mode is set as **STATIC IP** then on the current IP settings is possible see the current settings of IP , subnet mask and gateway. The new IP settings can be used to set a new configuration

The new settings are become effective after reboot the device

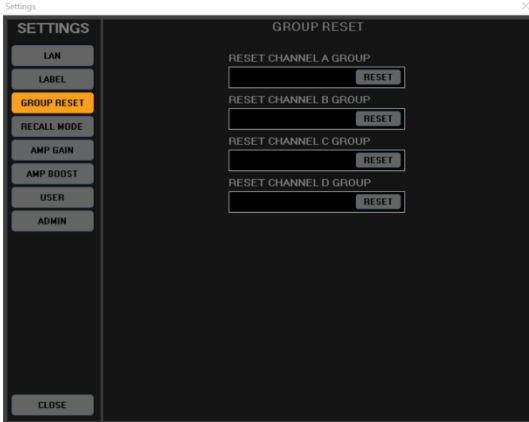
Labels



Can set different labels for the input and output channels (involving the front panel display, only English characters and Arabic numerals are supported).

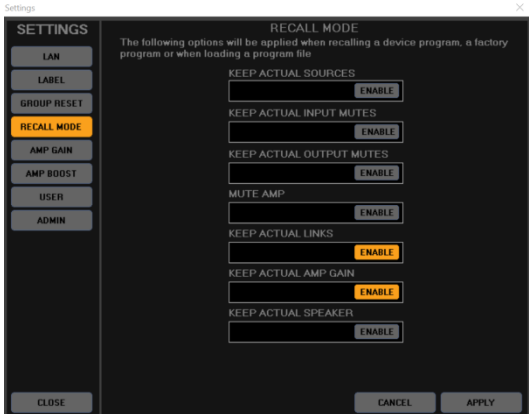
Max 16 characters for the device name are possible,
Max 6 characters for the input and output names

Group Reset



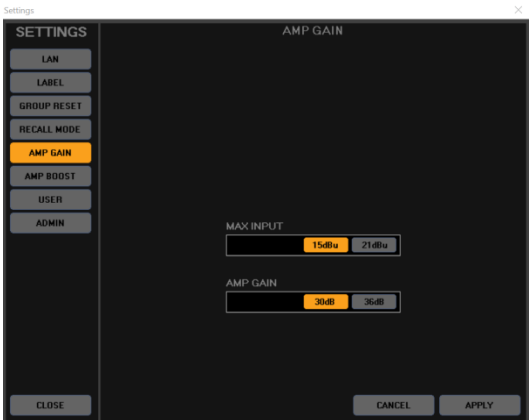
Group Reset: after using the group, the last saved group information is still in the input channel. If you need to remove it, you need to reset the required channels in the group reset.

Recall Mode



Recall Mode: When the functions are set on the device, the device will keep the state after setting the preset, restore the factory mode, and load the preset.

AMP Gain



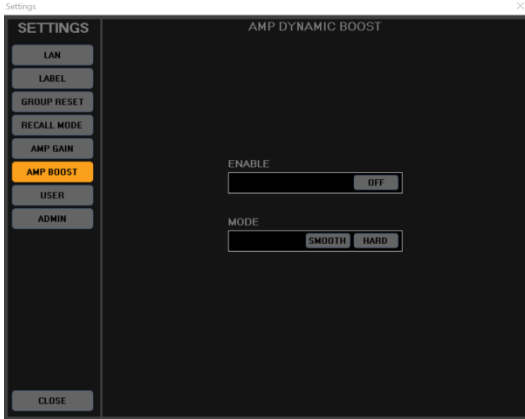
AMP Gain: MDA-KDM amplifier is a configurable amplifier, allowing customers to set the maximum input and gain of the amplifier.

Max Input (sensitivity): +15dBu or +21dBu

Amp Gain (max gain of the amplifiers):

MDA2-8KDM: 26dB, 32dB, 38dB
MDA4-4KDM: 19dB, 25dB, 31dB
MDA4-6KDM: 21dB, 27dB, 33dB
MDA4-10KDM: 24dB, 30dB, 36dB

AMP Boost



AMP Boost: the boost is provided on the base of the evaluation of the Signal Crest Factor

The boost is as stronger as the crest factor is high

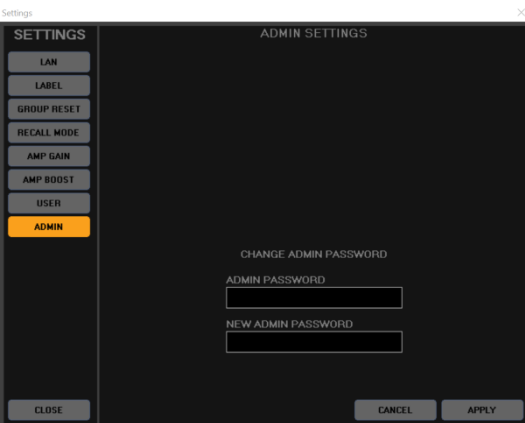
User



User: When the PC software is logged in as administrator, part or all of the output channel functions of the machine can be locked to ensure the integrity of the preset.

The administrator password is **111111** by default.

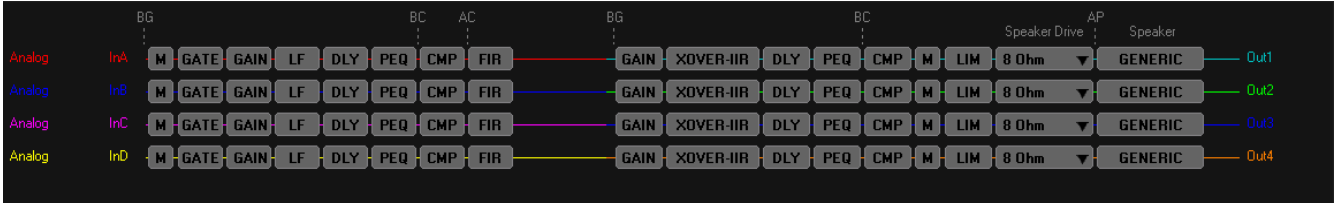
Admin



Admin: Here is possible change the **Admin password**

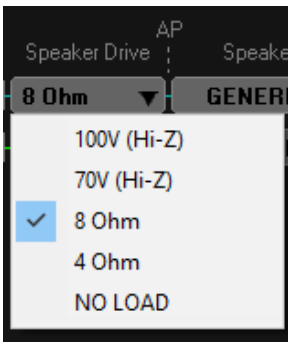
(the User need to know the current Admin password)

Block-Scheme



The picture above is showing the full audio path from input to output. Click on the corresponding block for quick access.

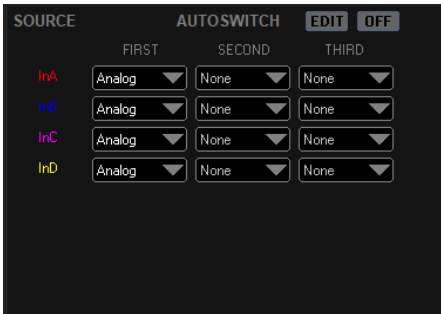
Speaker Drive



it shows the current selected load for each output channel. Power amplifier load status, MDA-KDM series amplifier supports 100V, 70V constant voltage and 8 Ω, 4 Ω, 2 Ω, (depending from the model used). the “NO LOAD” option is used when there are not speaker connected.

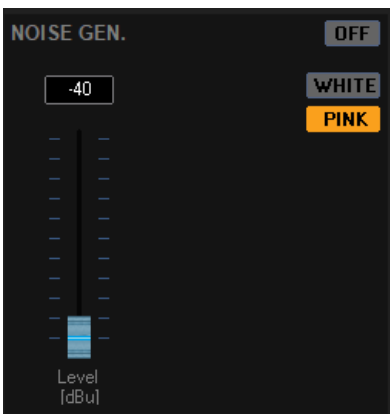
	100V	70V	8 Ω	4 Ω	2 Ω
MDA2-8kDM	yes	yes	yes	yes	-
MDA4-10kDM	yes	yes	yes	yes	-
MDA4-6kDM	-	yes	yes	yes	yes
MDA4-4kDM	-	yes	yes	yes	yes

Source



The MDA-KDM series power amplifiers support analog, digital, and Dante signal inputs. They also support the input source hot backup function, allowing users to specify backup signals for the primary source. When the AUTOSWITCH function is enabled (“ON”), the amplifier detects any signal loss on the primary (first) source, due for example to a cable disconnection, and automatically switches to one of the backup sources, following the priority set by the user. When the primary signal is restored, the system automatically switches back to the primary source. The User can set the source priority and adjust the level of each source in the “AUTOSWITCH EDIT” window. When the AUTOSWITCH function is disabled the device uses the primary (First) Source.

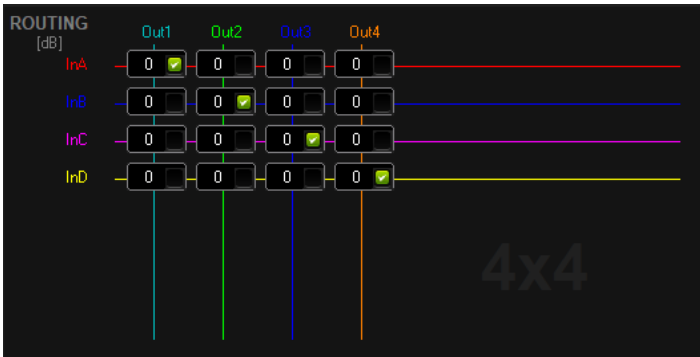
Noise Generator



The noise generator allows to feeds all the input channel with a white or pink noise. Noise Level can be adjusted within the range 0 ~ -40dBu.

Attention: Before turning on the noise generator, the level should be at the minimum value (-40dBu) to ensure the safety of the system and on-site workers.

Routing



The MDA-KDM series MDA4-X power amplifiers have a 4x4 input/output routing matrix, (the MDA2-8KDM, that has a 2x2 input/output routing matrix),

Allowing users to mixing the signal, with a suitable level, any input signal into one or more output channels. The mixing level can be adjusted within the range (0...-30dB).

Status Bar



1. Connection status(OFF-LINE/ON-LINE).
2. Input channel link, any settings change in the current input channel will be applied on the linked input channels too .
3. Output channel link, any settings change in the current output channel will be applied on the linked output channels too.
4. It shows the processing latency of each input/output channel. Clicking the latency labels of two or more channels, will enable the link latency function, that allows to automatically align the selected channel latency.

LEVEL PAGE



The level monitoring interface shows input and output channels level meter, as well as the main amplifier status information. It also allows to set channels gain and mute.

- The Vu-Meter section shows the level of the inputs (before gain “BG”) and of the outputs (after process “AP”)

- Input and output channels level can be adjusted within the range -12dB~+12dB with a 0.1dB step. Double click the fader’s thumb to quickly return to the 0dB position.

- **SPEAKER DRIVE**: it shows the current selected load for each output channel.

Note: before to un-Mute an output channel, please be sure the speaker drive selection in the routing page matches the current load connected to the amplifier.

- **TEMPERATURE**: it shows the temperature of each output channel, with a maximum display value of 85°C. When the temperature reaches 85°C, the power amplifier will trigger the temperature protection, and the corresponding channel red light will turn on.

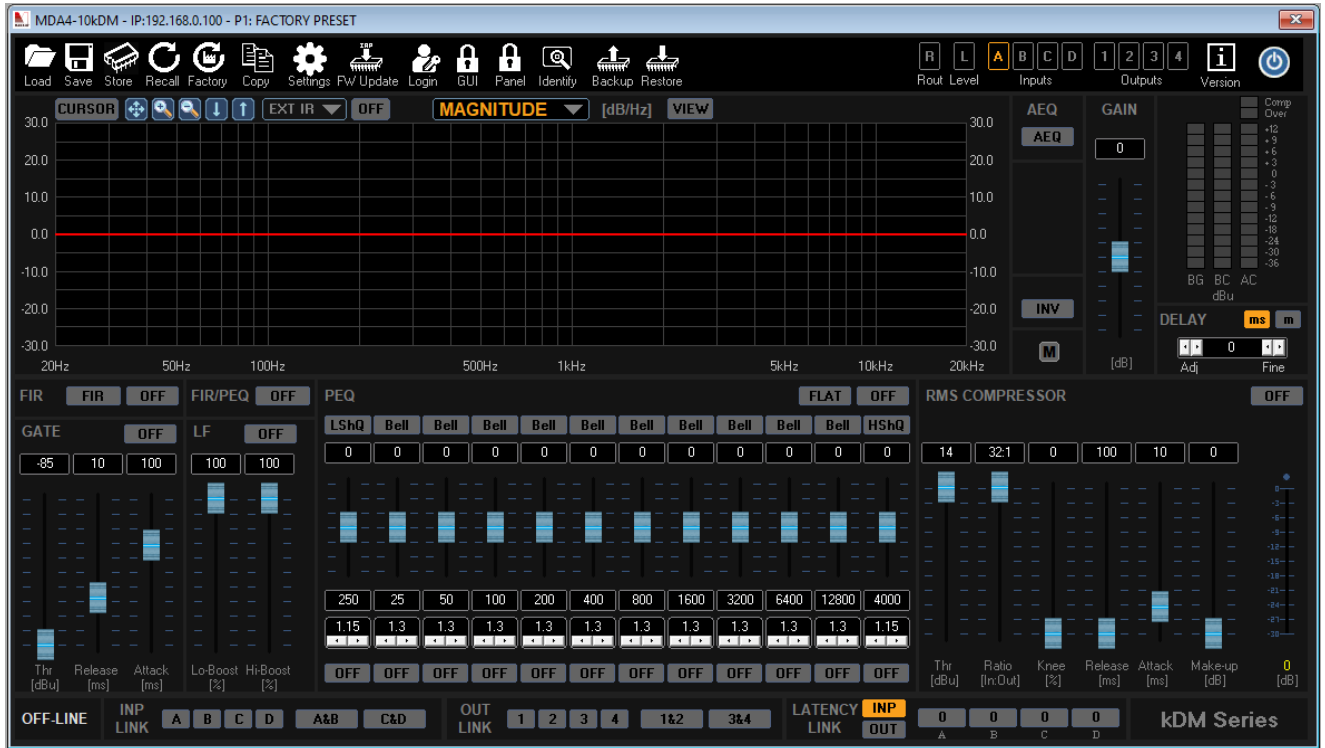
(Please use this device in a well ventilated and heat dissipating environment, and do not block or cover any air inlets and outlets)

- **MASTER GAIN**: gain acting on all the inputs channel (range -12dB~+12dB).

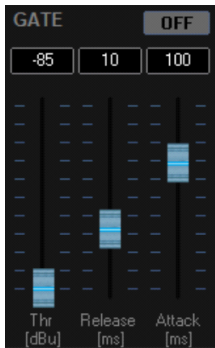
- **MASTER VOL**: volume acting on all the output channel (range -80dB~0dB).

- **MASTER MUTE**: mute all output channels

INPUT PAGE



Noise Gate



The noise gate is the first process in the input signal path. To enable the process, click "OFF" / "ON" button. Threshold: it represents the signal level below which the noise gate "close" (mute) the input channel. Once the noise gate is active (gated), an average signal above the threshold (+5dB of hysteresis) will "open" (un-Mute) again the input channel.

Available thresholds are:

-85dBu, -75dBu, -70dBu, -65dBu, -60dBu, -55dBu, -50dBu when the Max Input is set to +15dBu
-80dBu, -70dBu, -65dBu, -60dBu, -55dBu, -50dBu, -45dBu when the Max Input is set to +21dBu

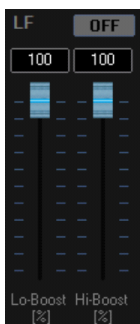
Release Time: it represents the "speed" in exiting the Gated signal condition, when detected a input signal peak exceeding the Threshold level.

Release times range is from 1ms up to 1sec.

Attack Time: it represents the "speed" in entering the Gated signal condition, when detected an average input signal peak belowing the Threshold level.

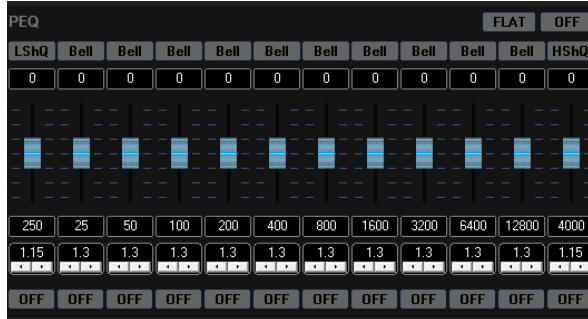
Attack times range is from 1ms up to 1sec.

Dynamic Loudness

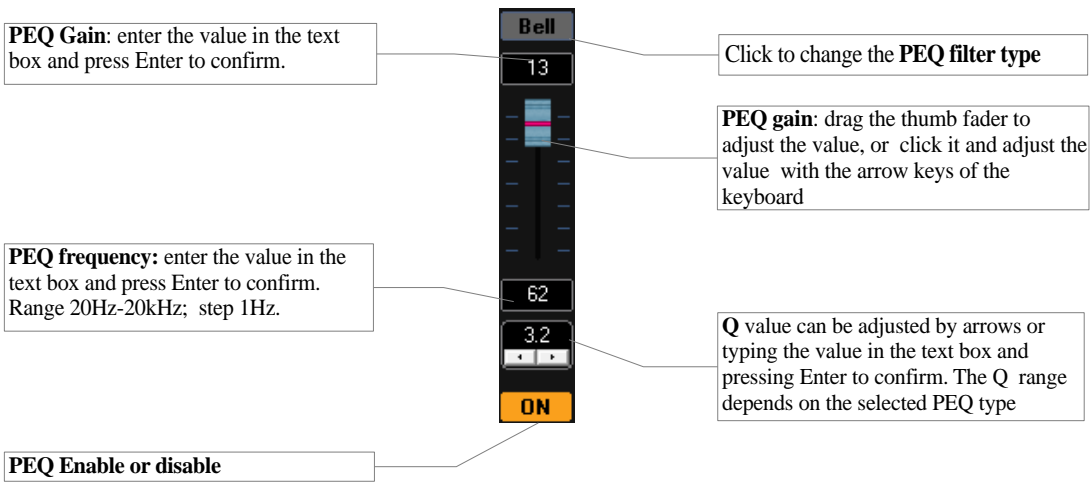


The dynamic loudness filter boosts the low and high frequencies of an adjustable amount when the sound pressure level is low, in accord to the human hearing curve. The boost effect automatically decreases when the signal level approaches the maximum value.

PEQ



PEQ Slider



PEQ Gain: enter the value in the text box and press Enter to confirm.

Click to change the PEQ filter type

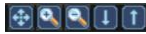

PEQ gain: drag the thumb fader to adjust the value, or click it and adjust the value with the arrow keys of the keyboard

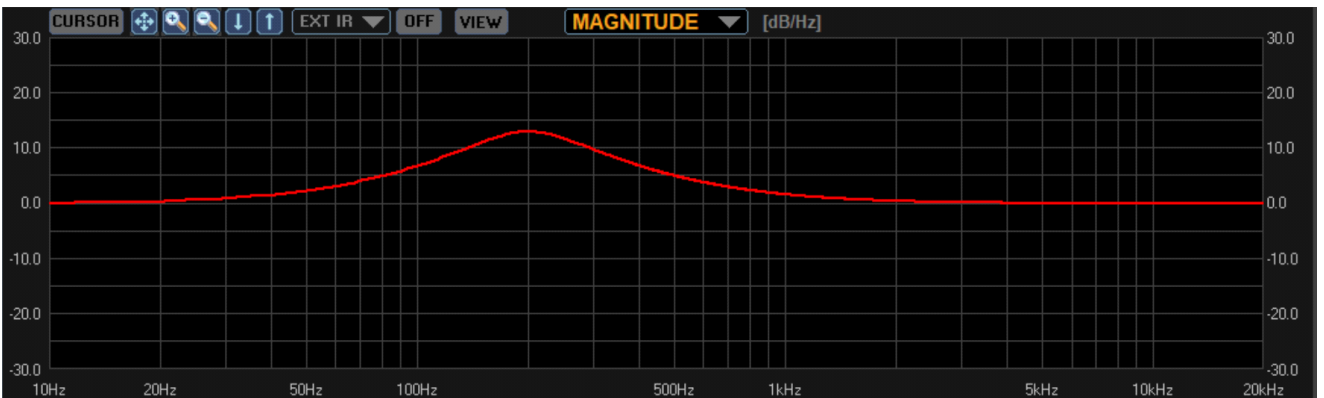
PEQ frequency: enter the value in the text box and press Enter to confirm. Range 20Hz-20kHz; step 1Hz.

Q value can be adjusted by arrows or typing the value in the text box and pressing Enter to confirm. The Q range depends on the selected PEQ type

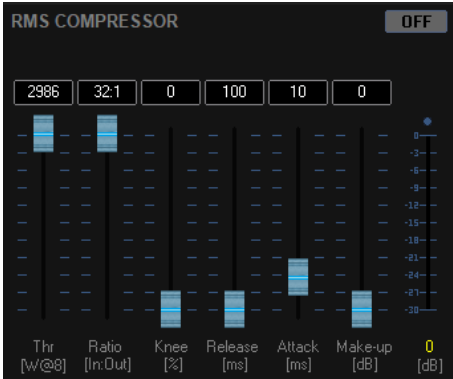
PEQ Enable or disable

The PEQs can be also adjusted directly in the plot area by cursors. To enable this function click on the **CURSOR** button (the equalizer and PEQ filter has to be enabled to show the corresponding cursor).

In the plot view, it's also possible to Zoom In/Out the curves with the  buttons, select the plot type (magnitude or phase) and import an impulse response data provided by third party software 

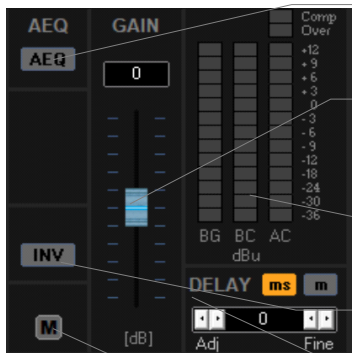


RMS Compressor



The MDA-KDM provides a low distortion RMS compressor on each Input channel. It can be used as a conventional compressor, using the threshold, ratio, knee, attack/release times and makeup parameters

Controls



Open the **AEQ** Tool to working on selected channel. See later for AEQ

Channel gain: enter a value and press Enter to confirm, or drag the thumb fader, or select the fader by clicking the thumb and use the keyboard arrows to adjust the value.

Gain range: -12dB ~ +12dB step 0.1dB.

Input channel Vu-Meter: The user can observe the input signal in real time.

BG represents the signal before gain,

BC represents the signal before compressor,

AP represents the signal after channel process.

Input channel **polarity** switch

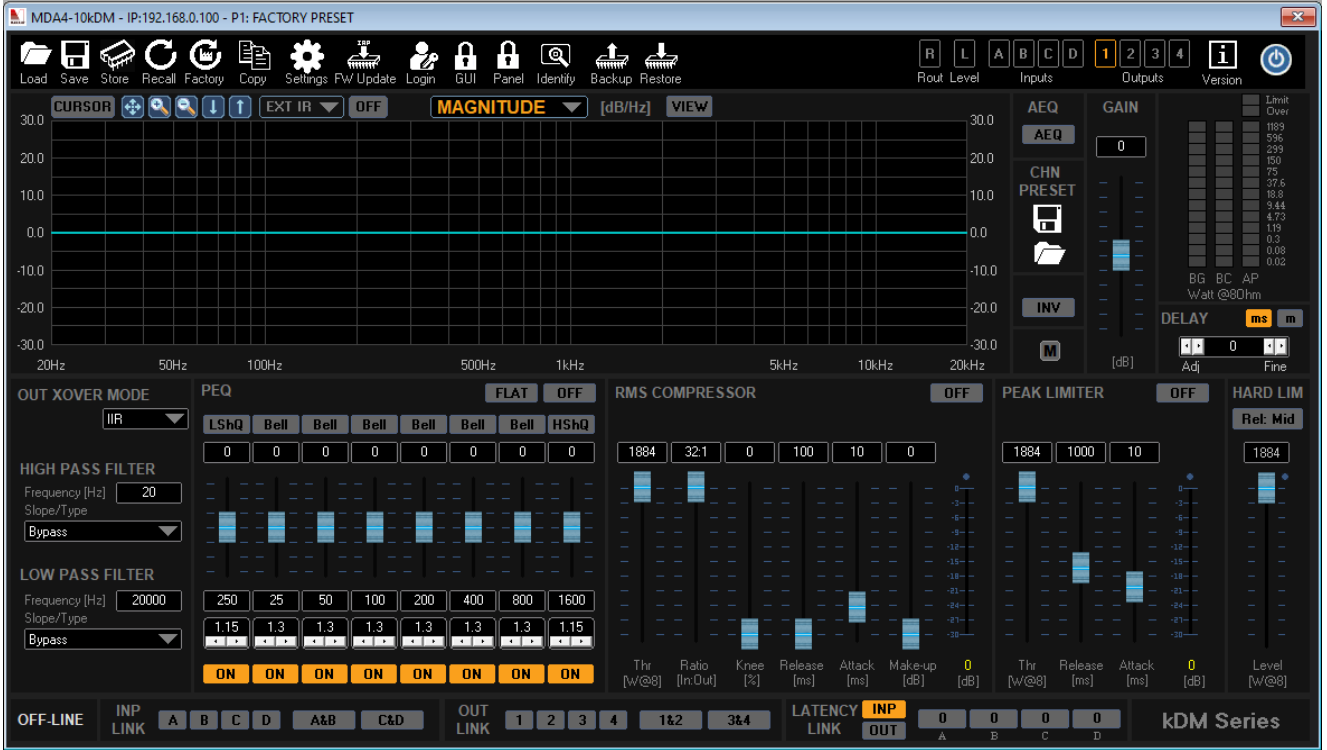
Delay adjustment in millisecond [**ms**] / meter [**m**].

Delay range: 0-300.989ms / 0-102.336m.

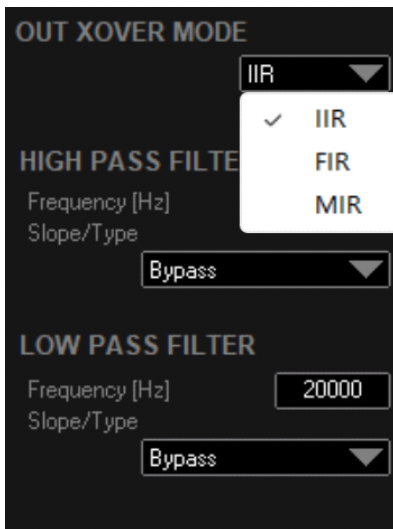
Step fine: 0.01ms/0.003m.

Input channel **mute** switch

OUTPUT PAGE



Crossover Modes



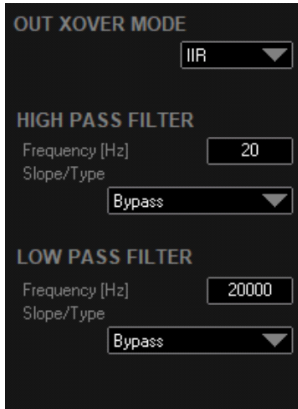
Each output channel can be set to use **IIR**, **FIR** or **MIR** X-over mode.

The conventional **IIR** has the magnitude slope of the equivalent analog filters, therefore produces a significant phase deviation especially close to the cutoff frequency. The higher the order, the more the phase shifts.

FIR X-over can provide a very sharp magnitude response and linear phase function, but also brings an high amount of latency depending from the numbers of the taps used.

To this end, Marani's proprietary **MIR** filters integrates advantages of both IIR and FIR based X-over, since they provide the same magnitude response of the IIR and a linear phase as the FIR, with a low latency value.

IIR Cross Over



Slope / Type:

Bypass
 - 6dB/Oct BW
 -12dB/Oct BW
 -12dB/Oct LR
 -12dB/Oct BS
 -18dB/Oct BW
 -24dB/Oct BW
 -24dB/Oct LR
 -24dB/Oct BS
 -36dB/Oct BW
 -36dB/Oct LR
 -48dB/Oct BW
 -48dB/Oct LR
 -40dB NXF
 -45dB NXF
 -50dB NXF
 -55dB NXF
 -60dB NXF
 -65dB NXF
 -70dB NXF
 <-75dB NXF

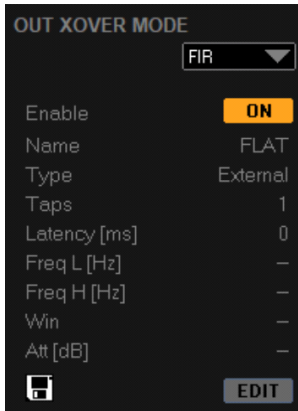
IIR X-over.

Four types of IIR filters are available:

Butterworth,
 Linkwitz-Riley,
 Bessel,
 NXF,

with slopes ranging from -6dB/Oct to -75dB/Oct

FIR Cross Over



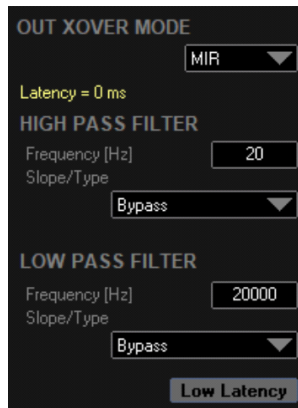
FIR X-over.

It supports high/low/band pass linear phase filters and offers a full set of parameters (number of taps, stop-band attenuation, window type) to customize the filter generation.

A third-party FIR filter data file can also be imported (*.CSV, *.TXT or *.SAF type files are currently supported).

The maximum number of taps for the FIR filter is 512.

MIR Cross Over



Slope / Type:

Bypass
 -12dB/Oct BW
 -12dB/Oct LR
 -12dB/Oct BS
 -24dB/Oct BW
 -24dB/Oct LR
 -24dB/Oct BS
 -36dB/Oct BW
 -36dB/Oct LR
 -48dB/Oct BW
 -48dB/Oct LR
 -40dB NXF
 -45dB NXF
 -50dB NXF
 -55dB NXF
 -60dB NXF
 -65dB NXF
 -70dB NXF
 <-75dB NXF

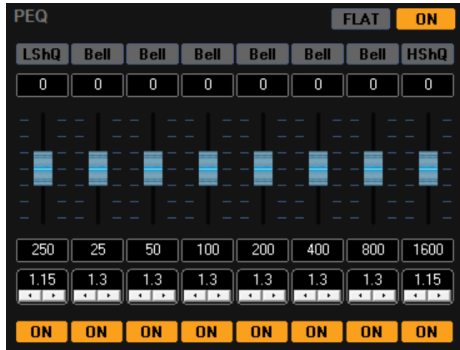
MIR X-over.

Four types of IIR filters are available:

Butterworth,
 Linkwitz-Riley,
 Bessel,
 NXF,

with slopes ranging from -6dB/Oct to -75dB/Oct

PEQ



The output section of the MDA-KDM amplifier provides 8 bands PEQ filter. Available filter type are:

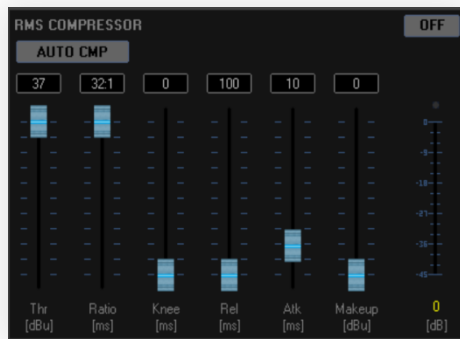
Bell,

Hi-Shelving 1st order, Hi-shelving 2nd order, Hi-shelving Q,
 Lo-Shelving 1st order, Lo-Shelving 2nd order, Lo-Shelving Q,

Low Pass 1st order, Low Pass 2nd order, Low Pass Q,
 High Pass 1st order, High Pass 2nd order, High Pass Q,

Band Pass, Notch, All Pass 1st order, All Pass 2nd order

RMS Compressor



The MDA-KDM provides a low distortion RMS compressor on each output channel. It can be used as a conventional compressor, using the threshold, ratio, knee, attack/release times and makeup parameters, but it also offers the possibility to enable the AUTO compressor mode.

In AUTO mode, the compressor dynamically adjusts the attack and release time according to the comparison of the signal Crest Factor and the RMS value within a period of time. The result is a more natural and smooth sound, rather than the abrupt feeling caused by constant attack and release times.

AUTO KNEE and AUTO MAKEUP functions are also available.

Peak Limiter



A low distortion peak limiter is provided with low attack time to quickly suppress the burst signal.

It can be used to limit the maximum displacement of the speaker voice coil in conjunction with the max voltage data given by the speaker manufacturer.

It can well protect the loudspeaker from harm.

Users can adjust the limiter threshold, attack and release time.

*The enhanced Peak Limiter have Mode optional(FULL BAND, DUAL BAND)

With FULL BAND mode have adjustable:

(Thrould/Release/Attack)


With DUAL BAND mode have adjustable:

(Thrould Low/Thrould High/Release/Attack/Band Split Frequency)

Hard Limiter



An Hard limiter with attack 0ms is provided to suppress the burst signal. Used to protect the speaker and Amplifier.

Note: The value of the Compressor, Limiter, Hard Limiter Threshold are referred to the output amplifier and the unit can be shown in dBu, Vrms or Watt (select the option in the Output unit selector ).

If the Speaker Drive is set as 70V or 100V then the value show are only in Vrms.

If the speaker drive is set as 8/4/2 Ohm and the selected output unit is in Watt then the watt are referred to 8/4/2 Ohm

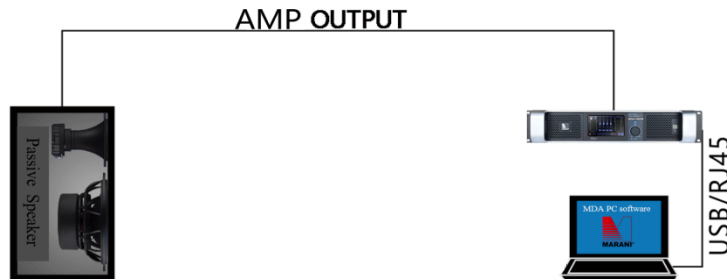
Amplifier Calibration

The MDA-KDM series includes a powerful calibration function, allowing to optimize the amplifier response depending on the current speaker connected to it. It processes a feedback signal at the output power connector and calibrate the amplifier settings to provide a flat magnitude and linear phase response.

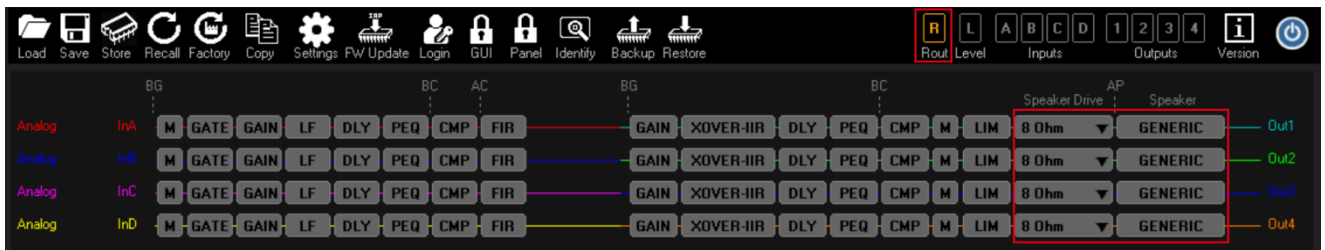
The calibration of the MDA-KDM series amplifier does not require any acoustic microphone or sound card.

Simply connect the amplifier to the speaker and follow the steps below to complete the calibration.

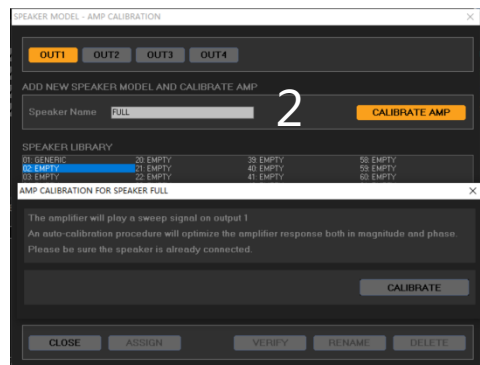
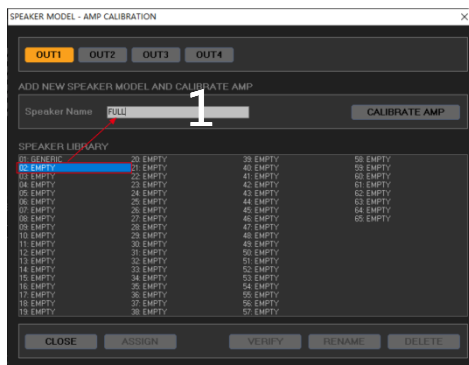
Note: it is recommended to mute any input signal when performing amplifier calibration.



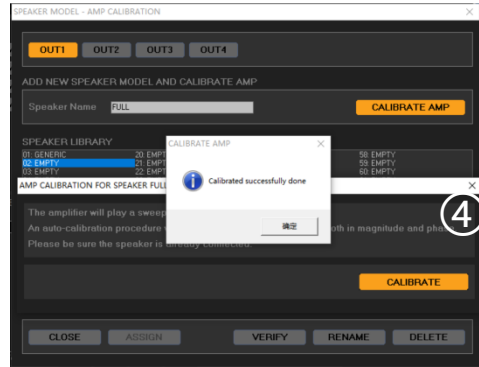
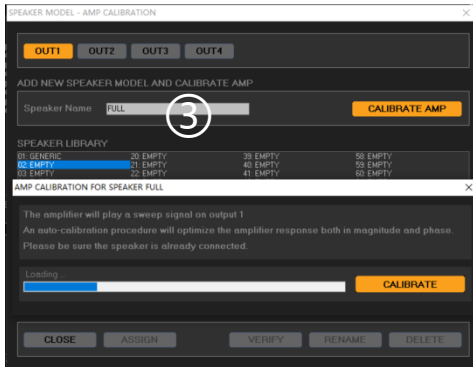
To start the calibration, select the nominal impedance values in the output channel where the speaker is connected. Then, click the speaker button of the same channel (in the picture below is “GENERIC”) to open the calibration page.



In the calibration view the current speaker library is shown. If the speaker model is already available, it is enough to select and ASSIGN it to the current output channel. On the contrary the amplifier calibration for the new speaker model has to be done. Insert the speaker name and click on “CALIBRATE AMP” button. The calibration process will start.



During the calibration, the power amplifier will emit a -18dBu sine sweep signal.

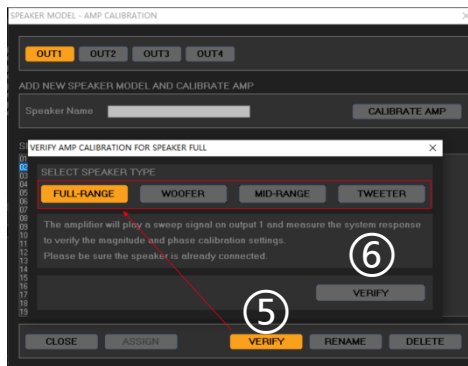


When the calibration is completed, the system adds the new amp calibration in the speaker library.

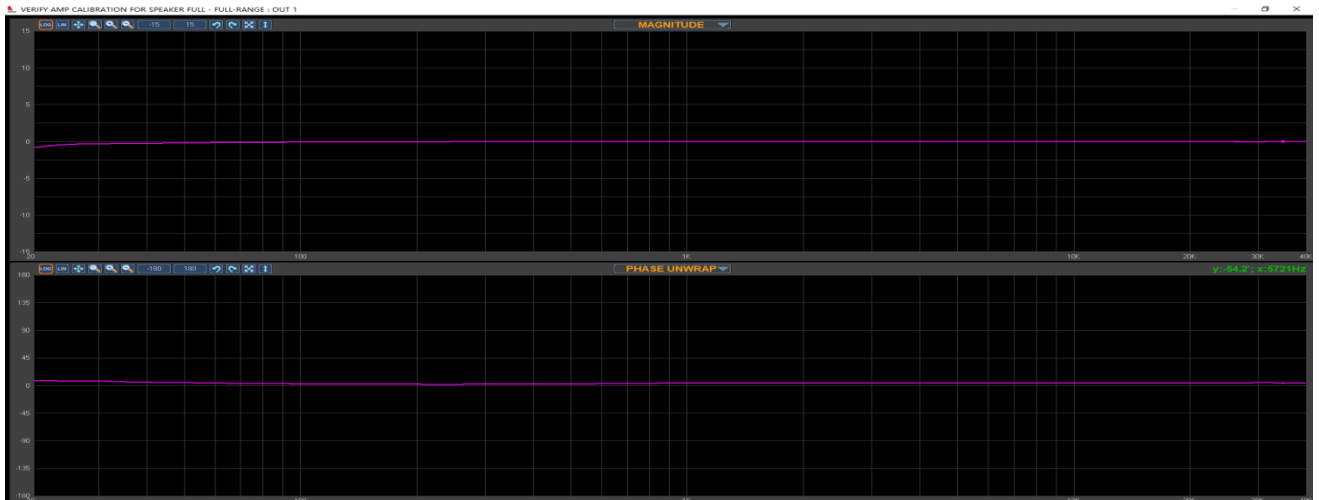
After calibration, the user can also verify the amplifier response,

by selecting the speaker in the library and clicking the “VERIFY” button. A new window will be open.

Select the speaker type (FULL-RANGE, WOOFER, MID-RANGE or TWEETER) and click the “VERIFY” button.



When the verification process completes, the amplifier response is shown, both in magnitude and phase.



AEQ

Preface

MARANI AEQ (Auto EQ) is an application, developed by Marani Pro Audio in Italy, for performing Acoustic correction of loudspeaker and room responses using DSP based approaches.

This tool allows to perform an impulse response measurement of speaker or room and then to design the optimal equalization filter. Filter can be designed in terms of magnitude and phase responses exploiting FIR and IIR structures.

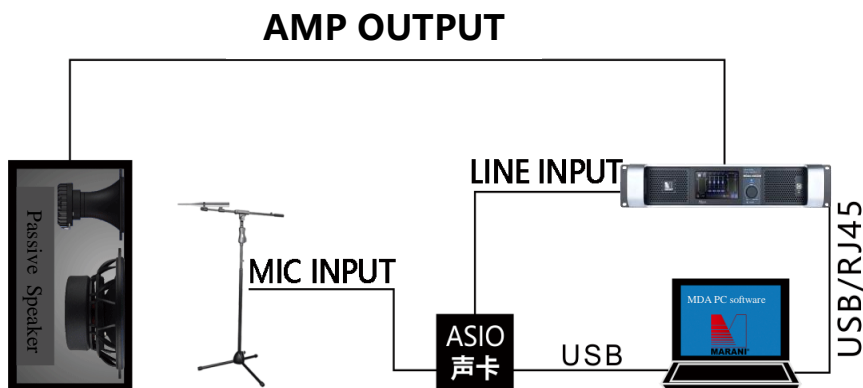
The equalization results can be easily analyzed using the listening tool environment integrated in the AEQ software. In this case it is possible to detect the best audio quality produced by the different equalization filters generated in the AEQ procedure. Finally, the filter can be easily loaded in any Marani processor or amplifier machine.

MARANI AEQ is therefore a powerful measurement system allowing to automatically adjust measurement parameters and calculate the proper coefficients for IIR and FIR filter design: the AEQ automatic equalization algorithm allows a “one-key” measurement of a system Impulse Response, Magnitude response and Phase Response and gives the possibility to modify the magnitude response flattening it or matching a target response so as to linearize the Phase response ... and all that on the overall measured band or sub portions of it.

For this “job” AEQ can use IIR filtering or FIR or a mixed IIR+FIR combination, all based on the resources of the unit where from AEQ has been activated.

Notes on setup for AEQ use:

1. Prepare an "ASIO" sound card and measurement microphone
2. AEQ needs to call the "ASIO" driver of the sound card. If other measurement software is used at the same time, other devices need to be adjusted to the "Wave" driver
3. If AEQ needs to use FIR filter, then need to have FIR available on the signal path where from AEQ will be activated



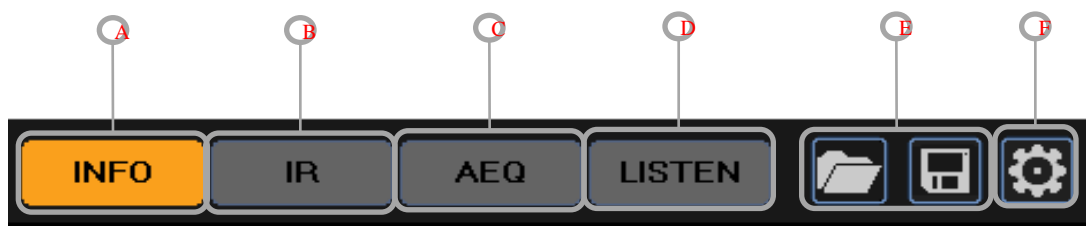
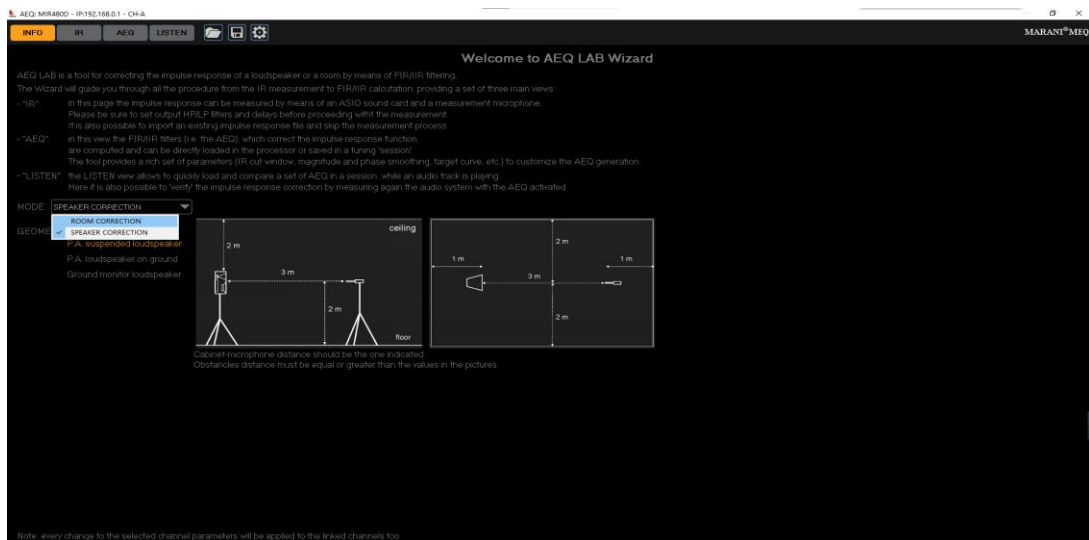
NOTE: When the USER selects the AEQ from an input page then the AEQ tool working only with the IIR section
When the USER select the AEQ from an output page then the AEQ tool can working with the IIR/FIR section (depending from the X-over mode selected)

Launch AEQ from any Input/Output signal path of the MDA KDM Series PC Software



This action will open the AEQ app for assisting in setting up the connected system with automated calculation of IIR/FIR filter's coefficients

● AEQ: INFO

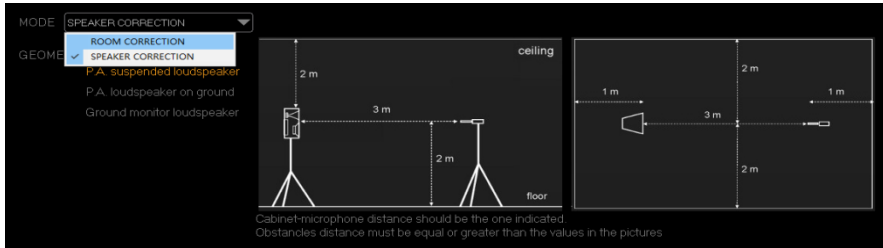


- A. **INFO:** Information page, AEQ and introduction to use, switching modes
- B. **IR:** System impulse response measurement and import of external measurement data
- C. **AEQ:** Auto EQ parameter configuration
- D. **LISTEN:** listen to the comparison
- E. **Recall/Saving:** AEQ project
- F. **Settings**

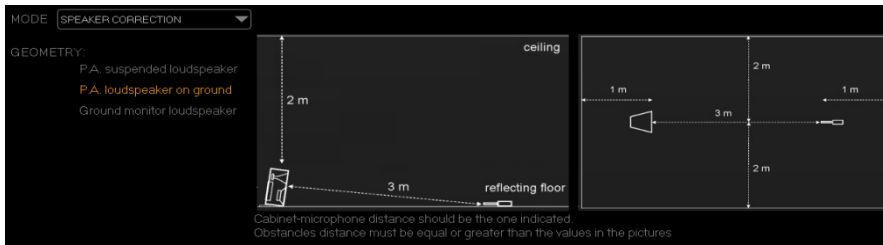
MODE Selection

- **Room correction:**
 The AEQ will work on its Automatic Processes considering the equalization of a large environment as a room
- **Speaker Correction :**
 The AEQ will work on its Automatic Processes considering short distances from source and measurement point

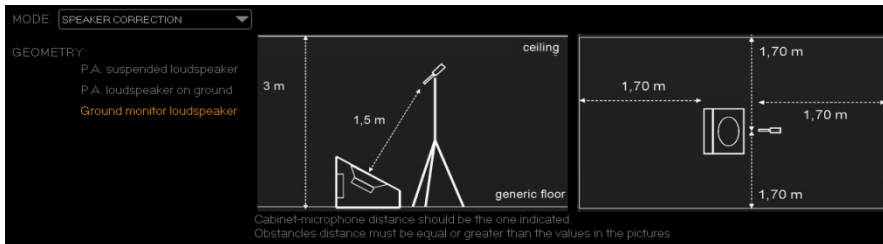
Speaker Correction



P.A. Suspended Loudspeaker Measurements



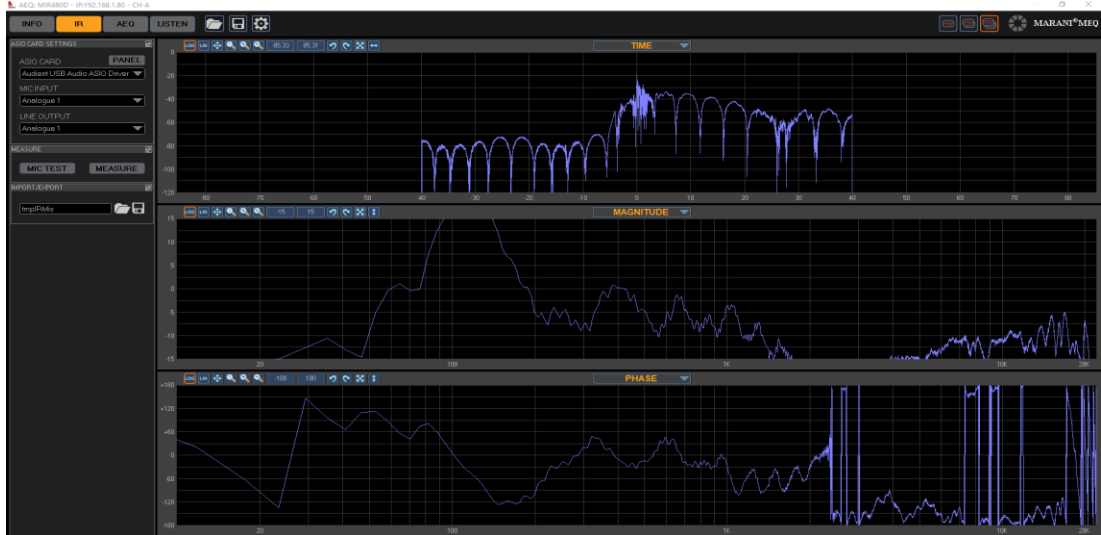
P.A. Loudspeaker on Ground Measurements



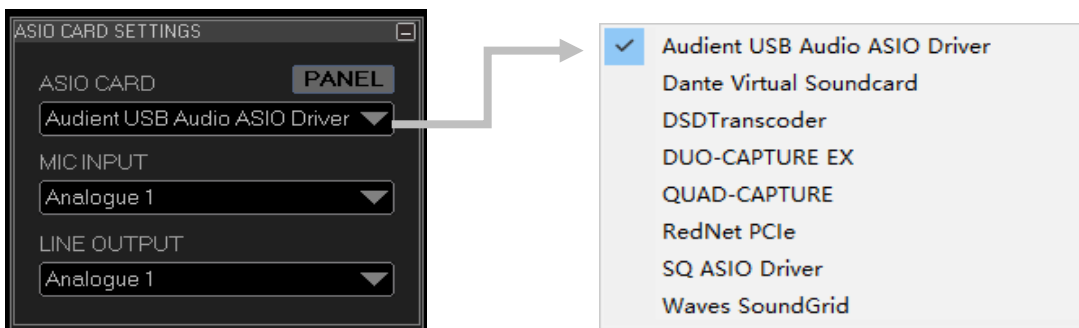
Ground Monitor Measurements

- The three options in speaker calibration are measurement guides. The distance from the speaker to the microphone and the distance from obstacles must be \geq the guide value to ensure better IR data.
- Switching between the three configurations does not affect the algorithm, which only depends on the “selected “MODE””. The purpose of the three configurations is to give advice on the best setting for getting a successful result, given the specific measurement to proceed with.

● AEQ - Measurements Page : IR



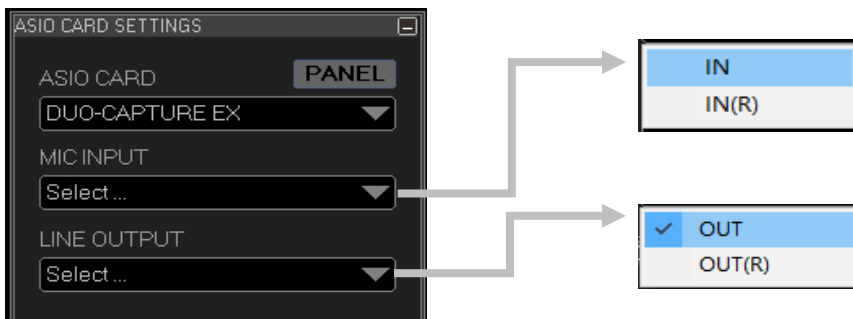
● Sound card selection



The AEQ function needs to call the "ASIO" driver of the sound card.

When the "ASIO" driver is installed correctly on the computer, the PC software will automatically detect the "ASIO" sound card device, and then select the corresponding sound card.

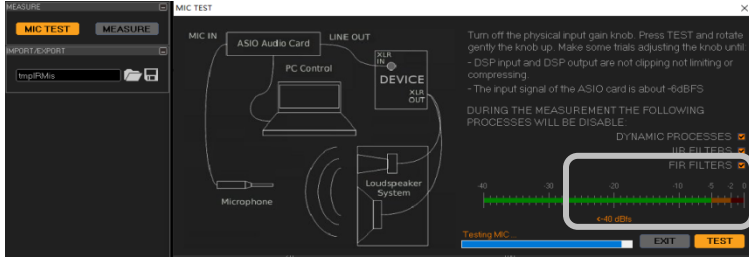
Click "PANEL" to quickly open the configuration program of the sound card "ASIO"



When the sound card is connected correctly, need to select input and output channels

AEQ - Measurements Page : IR- System measurement

● MIC Test



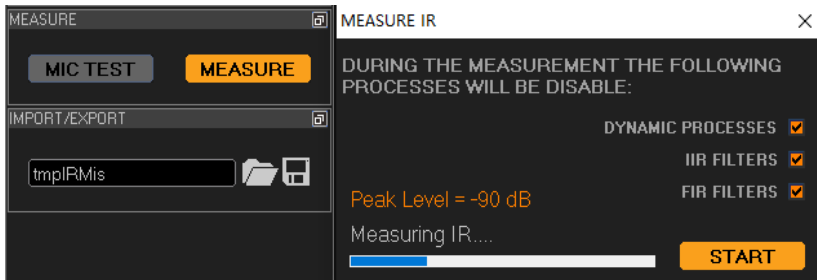
Select "MIC TEST" to test and adjust the output of the audio system and microphone acquisition; as setup, follow the simple diagram showing the right connection

(the dynamic processes, IIR filter, and FIR filter of the current channel will be disabled by default during the measurement process).

Test suggestion: First, adjust the output of the sound card to the minimum, and click "TEST" to gradually increase it (since a sweeping sine wave will be emitted during the measurement process, it can be adjusted to the acceptable range of the human ear).

Please Adjust to a suitable loudness: during the process, observe the microphone acquisition level meter, the acquisition signal has to remain between -20~-6dBfs, and the maximum has not to exceed the yellow area, adjust the microphone input gain of the sound card appropriately, and then confirm with "TEST".

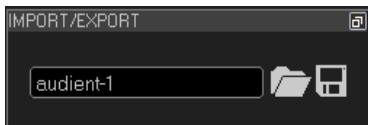
● System measurement



Click "MEASURE" to enter the measurement

Click "START" to start the measurement, the blue progress bar ends, and the measurement is completed.

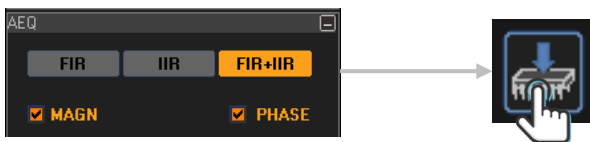
● IR import and save



Click "Import" to import the saved IR pulse data or third-party measurement software to measure the IR pulse data

Click "Export" to save the current IR pulse data to the local

! If fast automatic calculation is required, after the measurement is completed, you only need to select the corresponding mode (FIR/IIR/FIR+IIR) in the "AEQ page-AEQ item", select the Magnitude and Phase to be processed, and then insert the device.

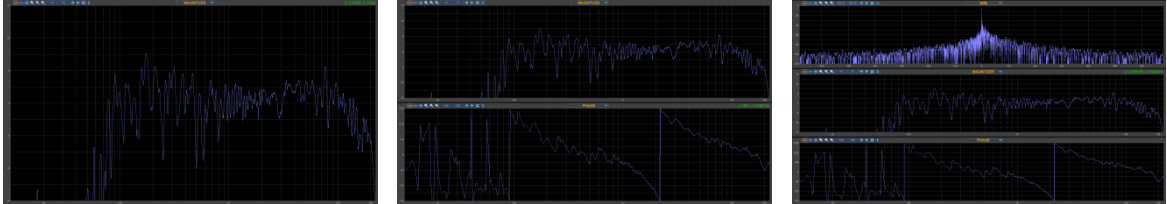


AEQ - Measurements Page : IR- Windows

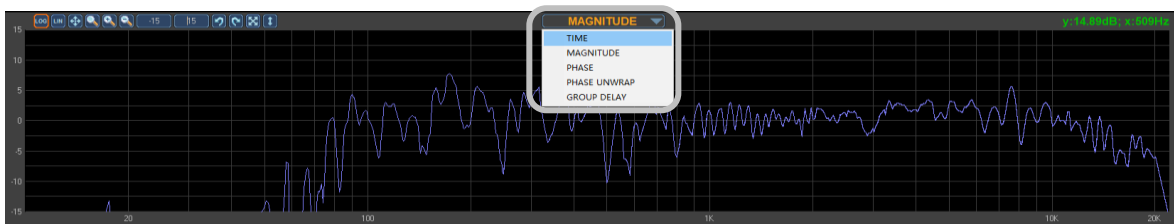
- **Multi-Windows switching**



Select the display window in the upper right corner: single window, dual window, triple window

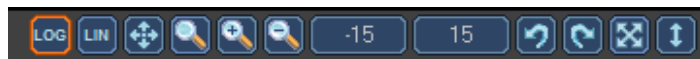


- **IR pulse display window content switching**



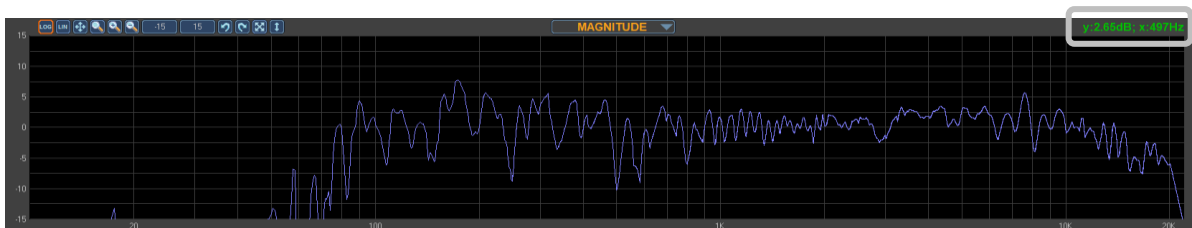
- TIME :** Time Window
- MAGNITUDE :** Magnitude response
- PHASE :** Phase response
- PHASE UNWRAP:** Phase unwrap
- GUOUR DELAY :** Group delay

- **Windows Adjustment**



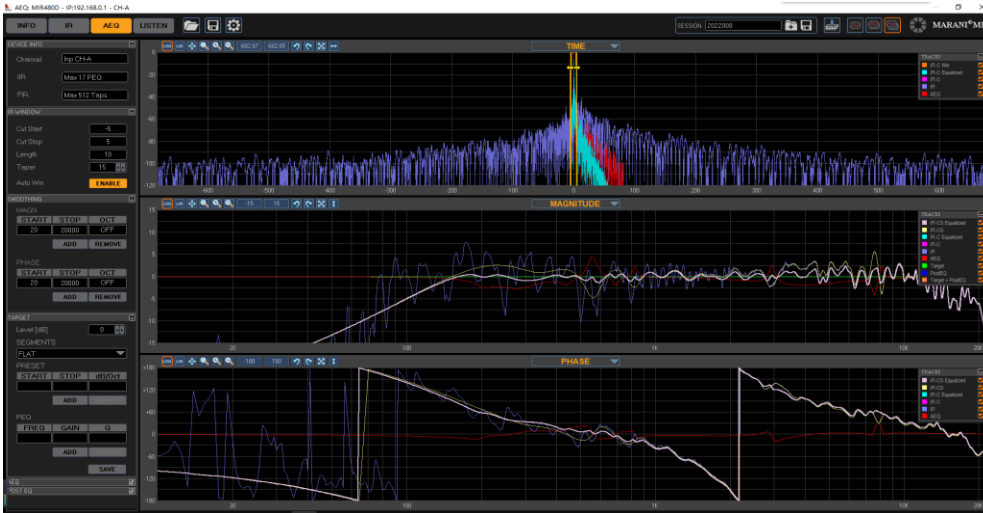
In the upper left corner of each window, multiple types of adjustments are provided, and the window parameters can be zoomed for better observation.

- **Display of information**



In the upper right corner of each window, the position information of the current mouse position is prompted.

AEQ-Configuration Page: AEQ Configuration



- **DEVICE INFO: Channel info**

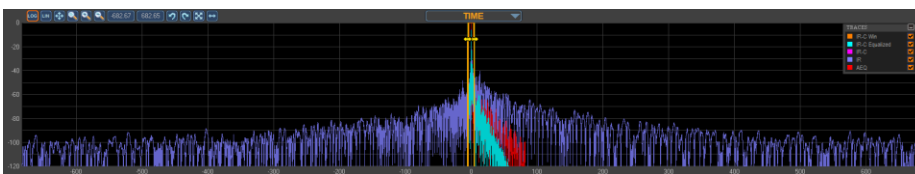


Channel : The current channel name
IIR : Max number of available PEQ segments
FIR : Max number of available FIR taps

- **IR Window: Impulse response time window**



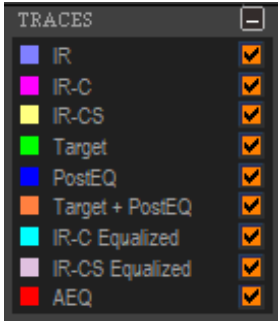
Cut start: Start the cutting
Cut stop: End the cutting
Length: End the cutting
Taper: Cut Taper
Auto Win: Automatic windowing



Used in conjunction with the time window, the range in the time window can be dragged and the impulse response can be manually windowed; the reflected sound pulse visible to the naked eye can be avoided, the accuracy can be improved, and the reflected sound can also be taken into account as required. Non-experienced users can consider, use the automatic windowing function, and turn on **Auto Win "ENABLE"** to enable the automatic windowing process.

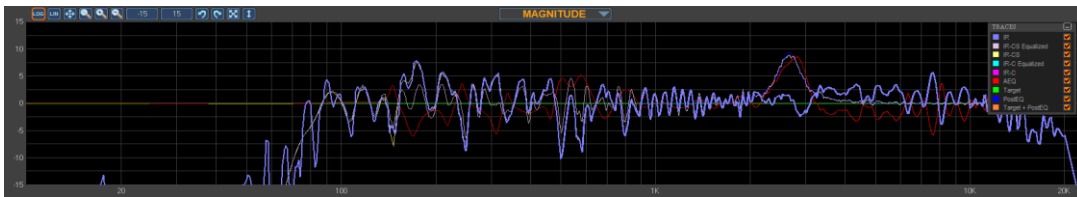
AEQ-Configuration Page: AEQ Configuration

- Multiple types of curves in the same window

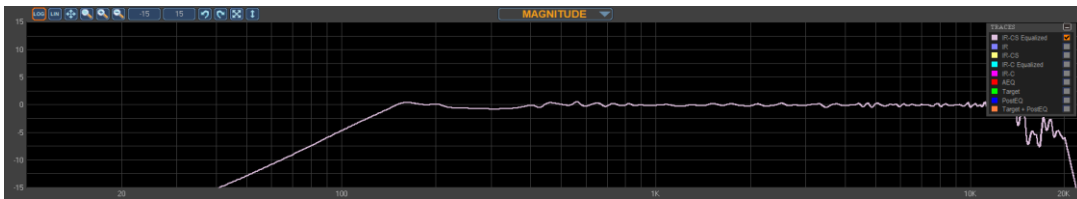


- IR :** Raw Impulse Response Curve
- IR-C:** Impulse response curve after windowing (CUT)
- IR-CS:** Windowed and Smoothed Impulse Response Curves
- Target:** Target (Magnitude) curve
- PostEQ:** Post Equalization, to be added to target curve
- Target+PostEQ:** Target curve + post-equalization
- IR-C Equalized:** Windowed curve of final Equalized system output
- IR-CS Equalized:** Windowed and smoothed curves of the final Equalized system output
- AEQ:** Automatic equalization calculation processing curve

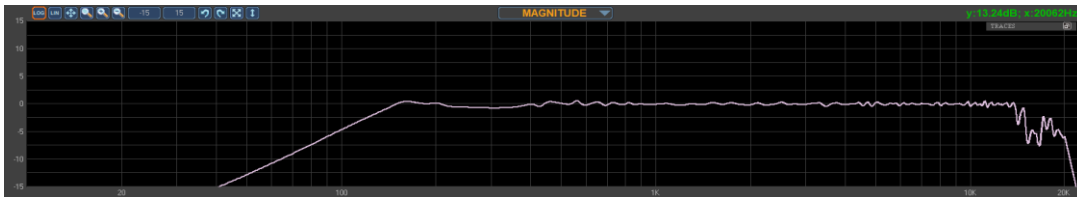
Click the curve name to put the curve on top, and the curve will be displayed in bold in the drawing area;



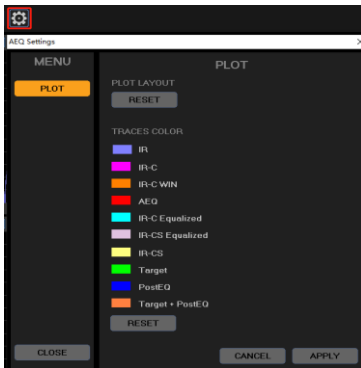
Un-check "tick" to hide unwanted curves



Click "-", you can abbreviate the small window



“Settings”: You can debug the layout and color of the curves



PLOT LAYOUT:

RESET: restores the view layout

TRACES COLOR: Freely set different curve colors

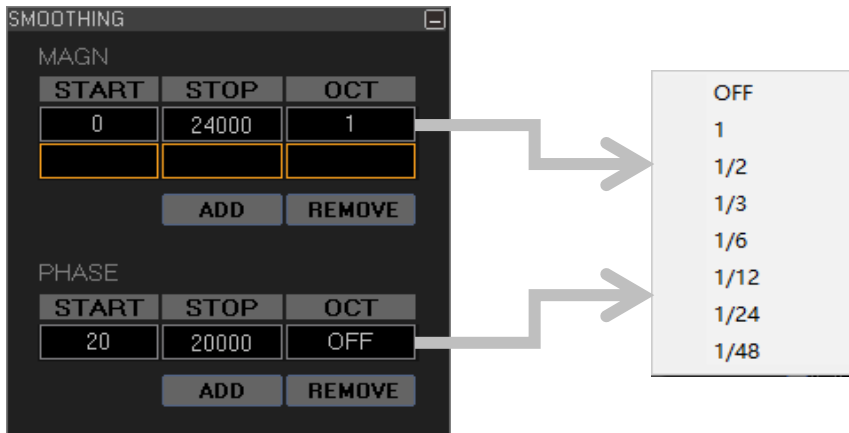
RESET: restore curve color

CLOSE: to close the page

CANCEL: cancels the setting

APPLY: apply settings

● **SMOOTHING: Smooth the IR curve**



Smoothing can perform smoothing or multi-segment smoothing on the Magnitude and phase response curves,

MAGN: Magnitude

PHASE: Phase

START: Smoothing start point

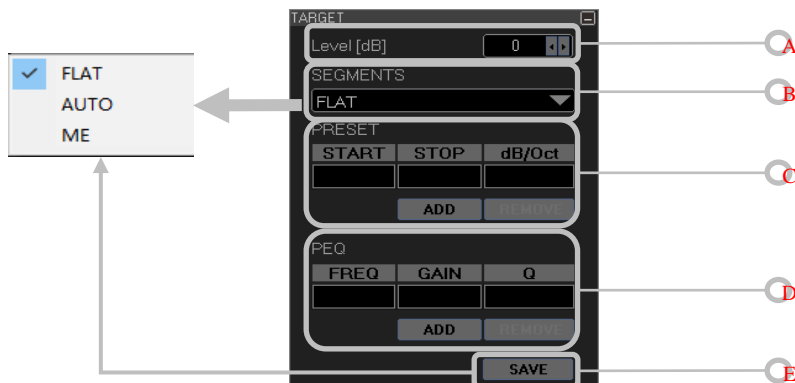
STOP: Smoothing end point

OCT: Degree of smoothing, OFF~1/48 per octave

ADD: can add multi-segment smoothing

REMOVE: removes the selected smoothing

● **Target: Target Curve Design**



Target curve design, design the system target curve you want, and then generate the curve that fits the target through the AEQ operation to obtain the curve the user wants.

A. Level : Overall level boost

B. Segments : Switch the target curve preset, the system defaults to two groups of presets,

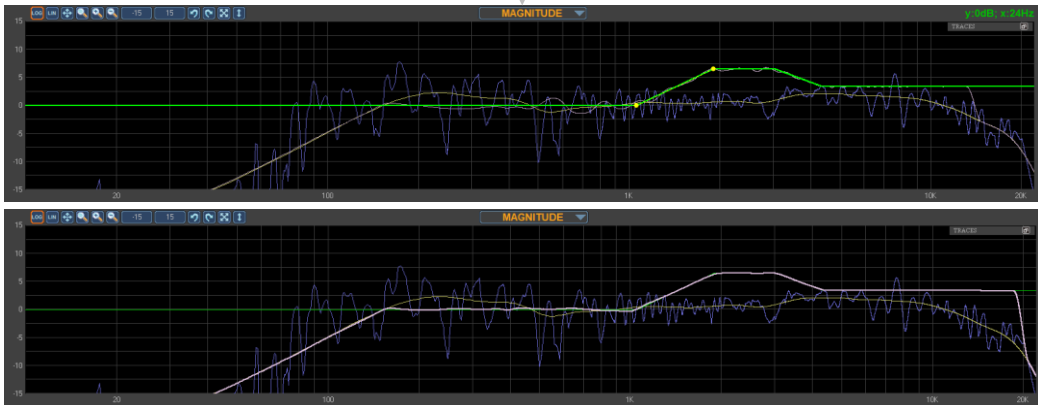
Flat: flat curve;

Auto: automatic curve (the algorithm will target an “optimized” curve following the shape of the measured original one)
new preset can be saved via function “**Save**” (**E**)

- C. Preset:** Preset parameters can be inserted, the overall boost/attenuation of the mid-high frequency can be performed, and multiple segments can be added at the same time (similar to boosting or attenuating a high shelving filter)

PRESET		
START	STOP	dB/Oct
1057	1903	7.7
3026	4331	-6
ADD		REMOVE

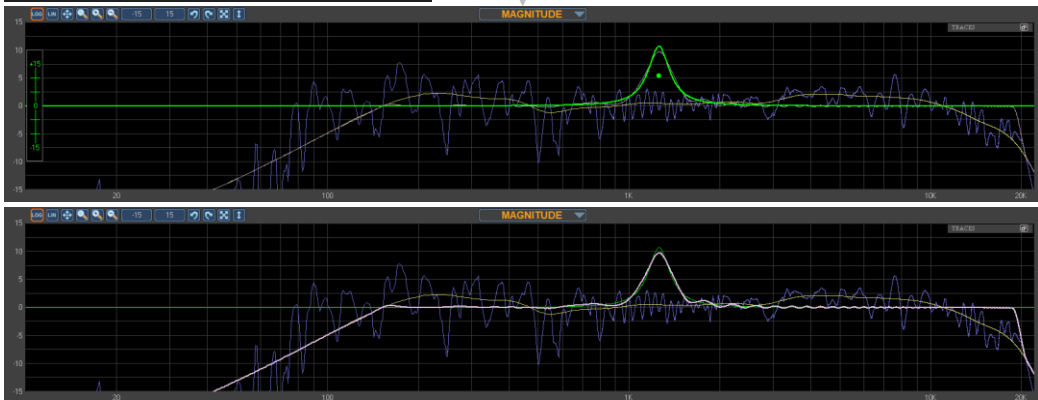
According to the preset design, it can be seen that the green Target curve changes, and the final output curve (pink) changes according to the Target curve at the same time.



- D. PEQ:** Design the target curve in PEQ mode, when the current PEQ is selected, you can drag the drawing area to modify the frequency band and gain

PEQ		
FREQ	GAIN	Q
256	10.7	5
ADD		REMOVE

Adding the PEQ design, it can be seen that the green Target curve changes, and the final output curve (pink) changes according to the Target curve at the same time.



- E. SAVE:** After the design is completed, the target curve can be saved, and the preset can be quickly selected and switched in **B "Segments"**.

AEQ: AEQ calculation adjustment

If you need fast automatic calculation, you only need to select the corresponding mode, turn on "Auto", and then plug in the device.



A. Mode switching:

FIR/IIR/FIR+IIR optional, enabling FIR requires external EQ/frequency division mode to use FIR filters (for example: EQ mode: FIR/FIR+IIR can be used, IIR can not be used FIR)

B. MAGN and Phase Optional:

Only check MAGN: AEQ only operates on the Magnitude, not the phase;

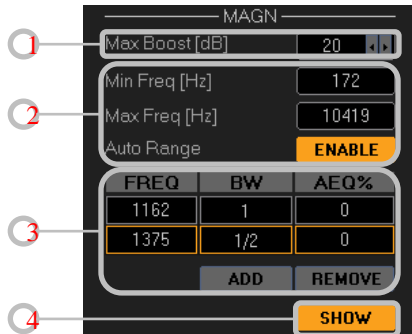
Only check Phase : AEQ only performs arithmetic processing for phase, not Magnitude;

Check MAGN + Phase: AEQ performs arithmetic processing on Magnitude and phase at the same time;

Note: In IIR mode, only MAGN can be checked, and IIR can only process Magnitude.

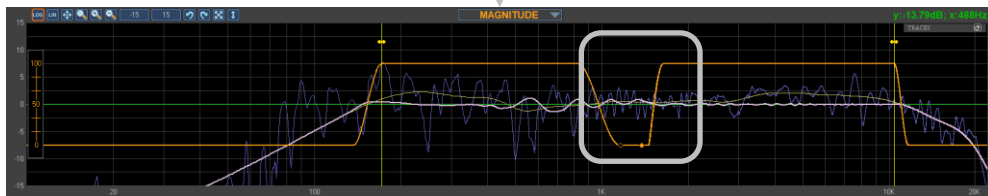
AEQ-Configuration Page: AEQ Configuration

C. MAGN : Magnitude part

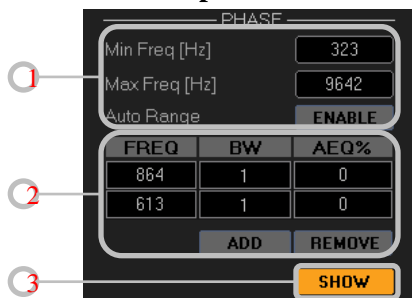


FREQ	BW	AEQ%
1162	1	0
1375	1/2	0

1. **Max Boost:** The maximum boost range of AEQ operation
2. **AEQ processing range,** open the "Auto Range" system to automatically select the frequency range or manually design the frequency range to be operate
3. You can select multiple ranges that do not need AEQ processing in the AEQ calculation range, such as the red zone range shown in the figure
4. Open "**SHOW**", open the AEQ range line in the drawing area, you can drag to select

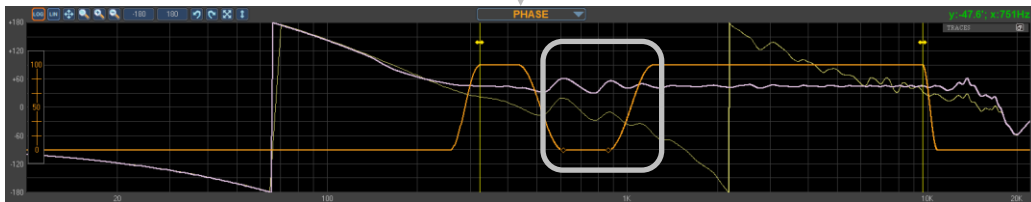


D. Phase : Phase part



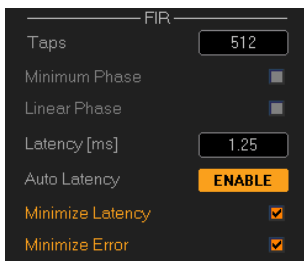
FREQ	BW	AEQ%
864	1	0
613	1	0

1. **AEQ processing range,** open the "Auto Range" system to automatically select the frequency range or manually design the frequency range to be operate
2. You can select multiple ranges that do not need AEQ processing in the AEQ calculation range, such as the red zone range shown in the figure
3. Open "**SHOW**", open the AEQ range line in the drawing area, you can drag to select



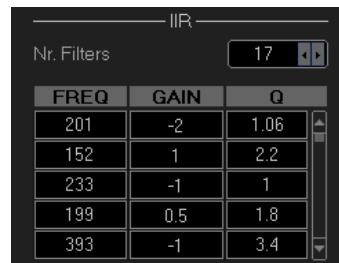
E. FIR:

Modify FIR Taps or reduce FIR latency (operation delay)



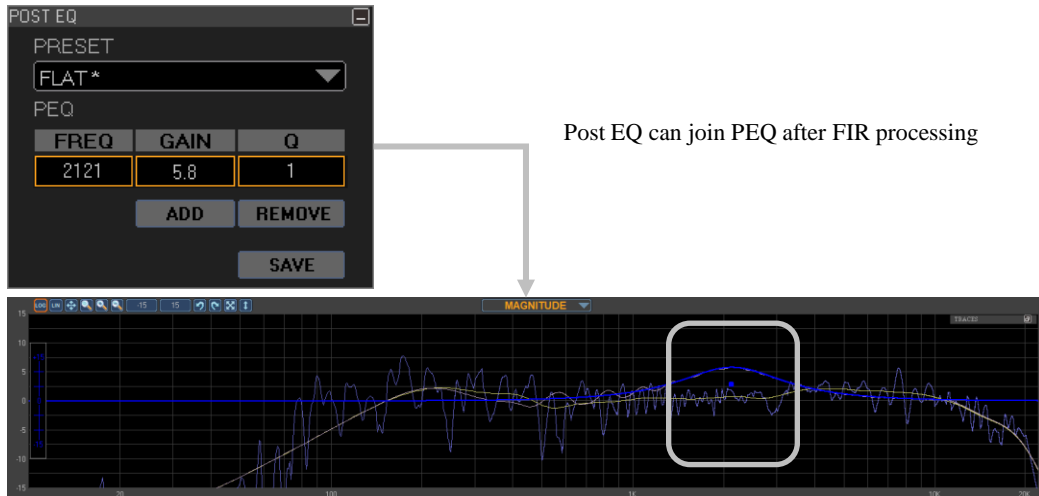
F. IIR :

Modify the number of PEQ segments and IIR data

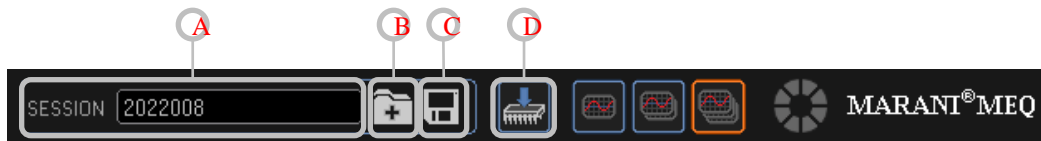


FREQ	GAIN	Q
201	-2	1.06
152	1	2.2
233	-1	1
199	0.5	1.8
393	-1	3.4

AEQ:Post EQ

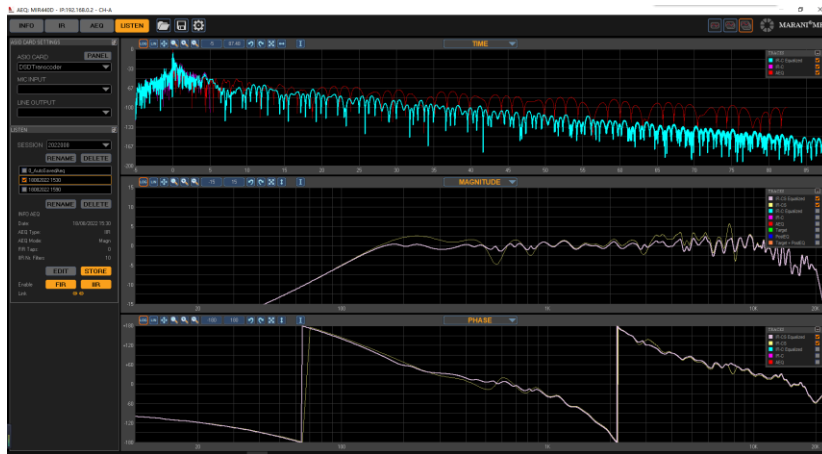


- **AEQ: save & write**

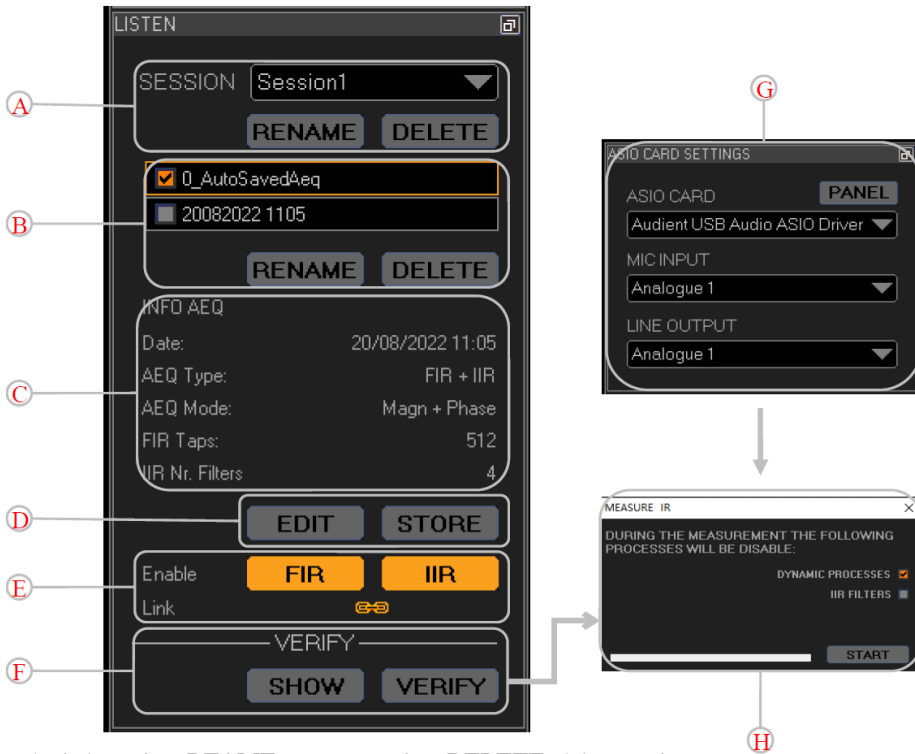


- A.** **Session** : select/switch session
- B.** Create a new session
- C.** Presets are saved to the current session
- D.** The current data is quickly written to the device

LISTEN :



This section is allowing to compare A/B the more results coming from more AEQ sessions



- A.** **Session:** select/switch session; **REAME:** rename session; **DELETE:** delete session
- B.** Presets in the current session, switchable for comparison; **REAME:** rename presets; **DELETE:** delete presets
- C.** Currently checked preset information **STORE:** apply the currently checked preset; **EDIT:** edit the currently checked preset
- D.** Currently check the FIR&IIR application selection in the preset, and it is selected when it is lit; link: FIR&IIR linkage selection
- E.** To verify the measurement, click "**STORE**" to apply the currently checked preset to the device to perform the verification measurement Select sound card and channel for verification measurements
- F.** Click "**START**" to start measuring the pulse response of the system after application, for verification
- G.** ASIO sound card settings, select the ASIO sound card and settings on "**PANEL**", select MIC INPUT and LINE OUTPUT
- H.** Measure IR, two options "DYNAMIC PROCESSES" and "IIR FILTERS", select one, and click "**START**", measuring the IR

Digital Power Amplifier

MDA-KDM Series



DSP Specifications

Overall:

- 96kHz sampling rate
- 56 bit double-precision 96kHz DSP processes
- 0.03% THD
- 15/21dB Max input Level, Software selectable (All)
- 32/38dB Amp Gain Software selectable (MDA2-8kDM)
- 25/31dB Amp Gain Software selectable (MDA4-4kDM)
- 30/36dB Amp Gain Software selectable (MDA4-6kDM)
- 27/33dB Amp Gain Software selectable (MDA4-10kDM)
- * Analog/AES3/DANTE (Dual port) Inputs

Control & Monitor:

- Load Type Selected per Channel
- Amp Protections indicator
- Remote Firmware update
- Temperature Led

Amplifier Specifications (CEA-2006/490A)

Input Section:

- * Inputs Auto Switch (on Input Failure Detection)
- Noise Generator(White, Pink)
- Inputs Routing on processing channels
- Gain, Mute and Phase inversion
- Noise Gate / Dynamic Loudness
- 12 Bands PEQ (Parametric, Shelf, LP, HP, BP, BS, AP)
- 512 Taps FIRs
- RMS Compressor (Attack/Release up to 15 Seconds)
- * Delay up to 300ms
- Input Channels Link

Communications:

- Dual port Ethernet Switch for daisy chain connection
- Dual port DANTE interface (Optional)
- USB 2.0 Type B port

Output Section:

- Crossover Filters: MIR/FIR/IIR up to 48dB/Oct (NXF/BW/LR/BS)
- Output IIR 8 Bands PEQ: (Parametric, Shelf, LP, HP, BP, BS, AP)
- RMS Compressor (Attack/Release time up to 15Seconds)
- Peak limiter (Min Attack 1ms and Max Release 5Seconds)
- Hard limiter (Zero Attack time)
- Output Delay up to 150ms
- * Independent Channel preset

Overall:

- 50 User preset memories library
- Manufacturer/User passwords, User control groups
- Independent selectable output power per channel (Z dependent)
- * Direct 70/100Vrms Drive
- * Amp Boost (Boost on Low Freq. For contour or punch increase)
- Latency Link (Auto Adjust of outputs latency if used FIRs)
- Analog Inputs Link
- AEO

MODEL	MDA4-4KDM	MDA4-6KDM	MDA4-10KDM	MDA2-8KDM
Number of channels	4			2
Total Power	4000W	6000W	10000W	8000W
Output Power (all Channels Driven)				
220VAC				
8Ohm	420W*4	630W*4	1600W*4	2000W*2
4Ohm	780W*4	1200W*4	2200W*4	4000W*2
2.7Ohm	1200W*4	\	1600W*4	3800W*2
110VAC				
8Ohm	381W*4	621W*4	1600W*4	2000W*2
4Ohm	689W*4	1136W*4	2000W*4	3970W*2
2.7Ohm	1200W*4	\	1580W*4	3790W*2
Max Output Voltage	52.49Vrms	67.41Vrms	89.4Vrms	126VVrms
Max Output Current	13.12Arms	16.9rms	22.4rms	31.5rms
Total Harmonic Distortion (THD)	<0.035%			
Voltage Gain	25dB	27dB	30dB	32dB
Operational Mains Voltage	90-260V AC			
Power Factor	>0.96			
Efficiency	>87%			
S/N	>104dB			
Consumption				
230Vac (4ohm 1/8)	514W /2.89A	801.5W / 4.1A	1538W / 7.5A	1400W / 6.7A
110Vac (4ohm 1/8)	533.89W /2.89A	832W / 7.7A	1614W / 14.9A	1447W / 13.29A
Idle (230Vac - 110Vac)	47W / 0.48A - 51.5W / 0.78A	48.8W / 0.49A - 55.7W / 0.82A	66W / 0.64A - 69.5W / 1A	49W / 0.616A - 57.7W / 0.9A
Thermal Dissipation				
230Vac (4ohm 1/8)	1754.2BTU/hr	2734.8BTU/hr	5247.8BTU/hr	4776.9BTU/hr
110Vac (4ohm 1/8)	1821.7BTU/hr	2838.9BTU/hr	5507.2BTU/hr	4937.3BTU/hr
Dimensions (WxHxD)	483x89x470 mm / 19x3.5x18.5 In			
Weight	17kg / 37.4lb			
Connections	USB(A-B)+TCPIP+Dante			
Protections	DC+HF+TEMP			

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E-mail: info@marani-proaudio.com



Appendix 1 GROUP Function

A group is an association of one or more input channels belonging to the same machine or different machines with which it is possible to control at the same time the Group-Gain, Mute, Delay and max 12 bands PEQ filter of each channel.

An additional gain (Group Gain) is added to all the channels added to the group in order to maintain the relative gain ratios set on each channel.

The Delay is shared with the channel delay, this meaning that the delay on each channel is used by group and channel

The Mute used on the group is the same mute used on the channel, so when the group mute is on all channel added to the group have the mute = on


About the PEQ, the Group use the same PEQ filter used on the channel so if a channel is added to the group, then all PEQ filter used by group will be disable on the channel

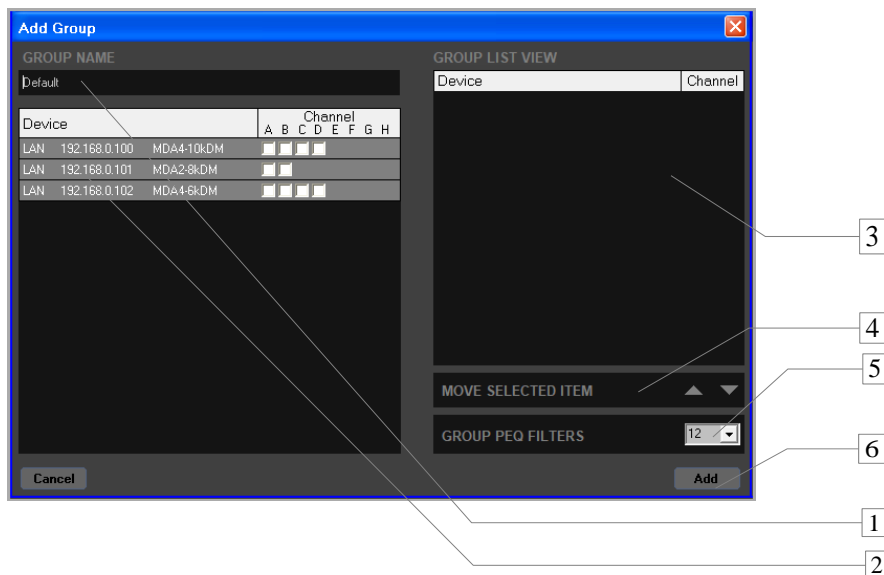
The User can create up to 8 Groups

On each group is possible to add all input channel device(s) present in the Main window

One channel can be used only in a group

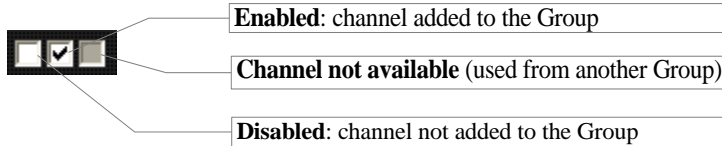
ADD a GROUP

To create a new group the User must, in the toolbar of the main window, click the group () button and the following window will be shown:



- 1) **Group name:** edit a name to identify the group on the main window
- 2) **Device list:** in this area are show all device added to the main window and the available channel that the User can add to the group
- 3) **Group list:** in this area will be show all channel device added to the group
- 4) **Move selected Item:** used to put at the top of the group list the desiderate channel
(the group will be initialized with some parameters present on the first channel of the list)
- 5) **Group filter:** the user can choose the number of the filter used by group
- 6) **Create a Group:** see in next page...

Create a Group: To add a channel device to the group the User must enable the relative check-box present on each device. group will be disable on the channel



When the User enable the check-box, automatically the channel will be added to the group list:

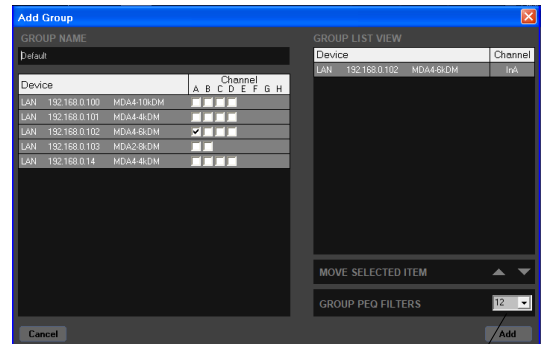
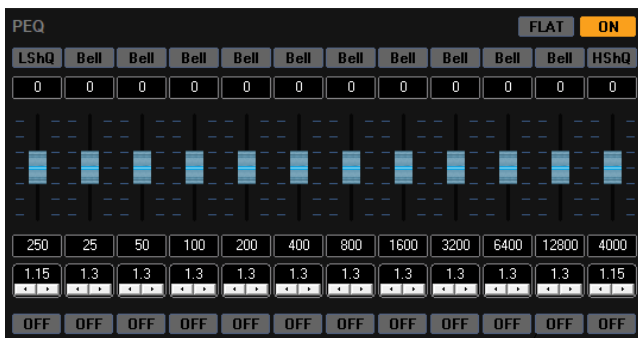


Note on Group PEQ filter.

A group can only use the "available" PEQ filters of the input channels, where "available" means all those channel PEQ filters that are in Bypass (PEQ filter enable off). The MAX number of filters that can be used by the group depends on the minimum number of bypassed filters of each channel added on the group.

Example of a single channel in a Group:

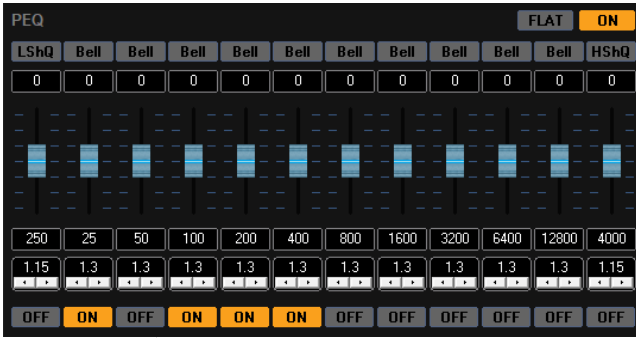
If all filters are in bypass state then the group can use up to 12 bands PEQ filter



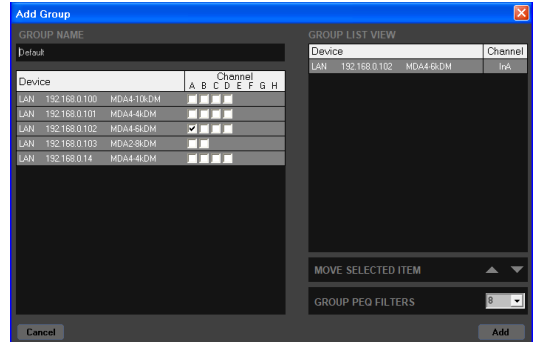
Peq filter enable off (bypass=ON)

Number filter Group max 12

If not all PEQ filter are in bypass, and in example 4 bands are used, then the group can use max 8 bands PEQ filter



PEQ bypass=off and 4 filters used

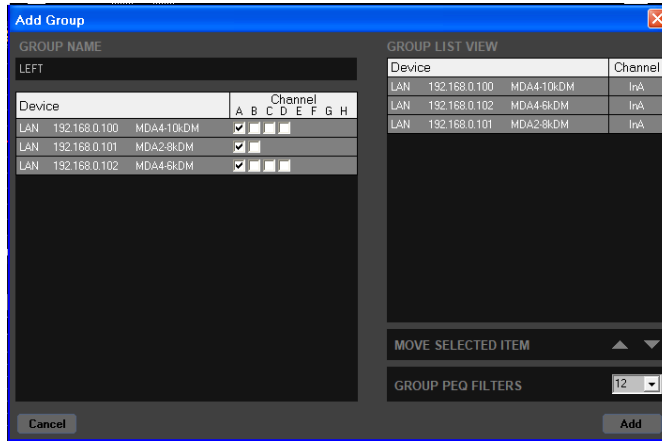


Number filter Group max 8

So after added all channel to the group the user can choose how many PEQ used, the minimum is 0 filter and the max number depending from the channel added (as described above)

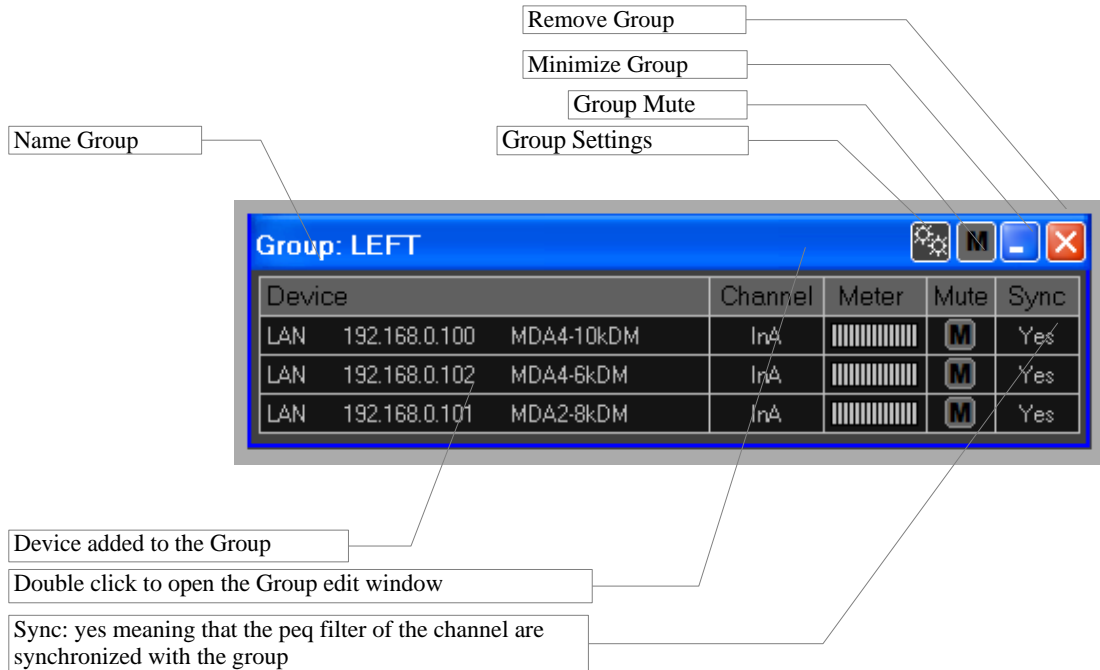
In the following picture an example:

- Group name = LEFT
- 3 Channels added to the Group from 3 different devices
- 12 bands PEQ filter are selected



Clicking on the **ADD** button, in the main window will be show the “**LEFT**” Group window

“LEFT” Group window



Remove Group

Minimize Group

Group Mute

Group Settings

Name Group

Device	Channel	Meter	Mute	Sync
LAN 192.168.0.100 MDA4-10kDM	InA			Yes
LAN 192.168.0.102 MDA4-8kDM	InA			Yes
LAN 192.168.0.101 MDA2-8kDM	InA			Yes

Device added to the Group

Double click to open the Group edit window


Sync: yes meaning that the peq filter of the channel are synchronized with the group

SETTINGS GROUP:

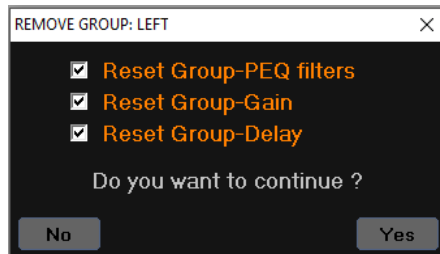
The User have the possibility to add/remove some other channel device to the group or change the PEQ filter number or re-edit the name.

To enter in the Group settings page, the User must click on the settings icon 

REMOVE GROUP

to remove the group, the User must click on the icon 

After clicked on the “remove” icon, the following window will be show:



REMOVE GROUP: LEFT

- Reset Group-PEQ filters
- Reset Group-Gain
- Reset Group-Delay

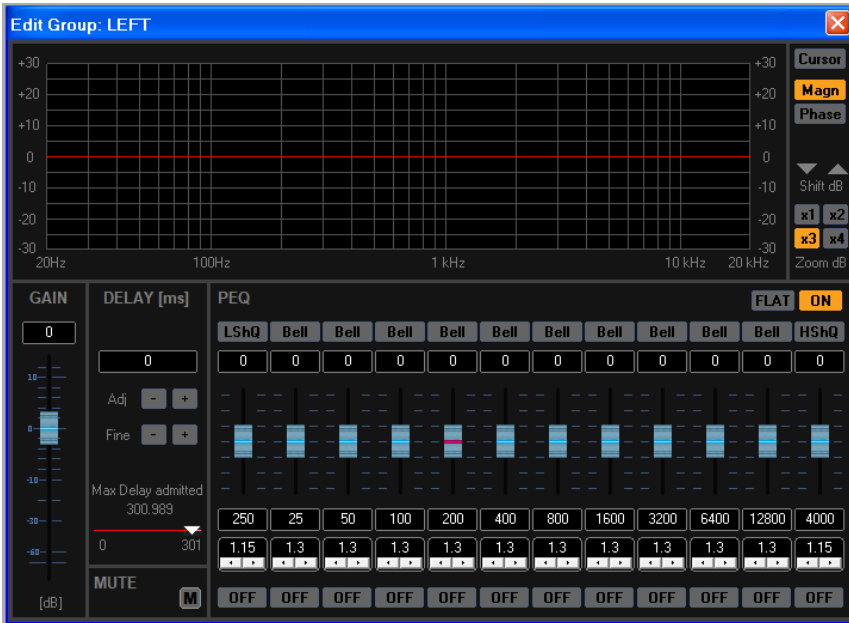
Do you want to continue ?

No Yes

where the system asks to the User if maintain the current settings on the channel or reset some things.

Note: if the group is created in on-line mode and removed when the software PC is Off-line then the settings of the group of each channel will be locked on the device and the User can not use these channels in other group, to use again the channel the User must reset the group from the settings page present on the Edit window of the device

EDIT GROUP window



On this window is possible see all the parameters controlled by the Group.

Each parameters edited on this page will be applied to the channel of the group in real-time .

GROUP Gain



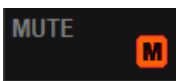
Group Gain

The amount of the gain used by Group is added to the channel gain added to the group. The range is from -inf (mute) to +12dB step 0.1dB.

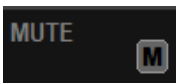
When the value of the gain is different from 0dB then the user can also see the group gain on each channel of the Edit window

GROUP Mute

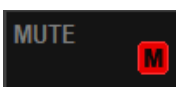
When the User use the Mute group then the status of the MUTE on each channel will be updated with the status of the group mute, If the User change a mute in a single channel added to group then the color of the Mute on the group will be orange to indicate that all channel of the group have not the same status.



Orange: Some channel devices added to the group are muted and some are un-muted.



Gray: All channel devices added to the group are un-muted



Red: All channel devices added to the group are muted

GROUP Delay



The max delay on each channel can be max 300ms, if all channel device added to the group have delay=0ms then the group can use the delay up to the max =300ms
 If some channel device added to the group have a delay different from 0ms (i.e. input delay = 50ms) then the group can use the delay up to the max =(300ms - 50ms) = 250ms



So all in all, the channel delay when it is added to a group is
 Channel delay= Group Delay + Input Delay (max can be 300ms)

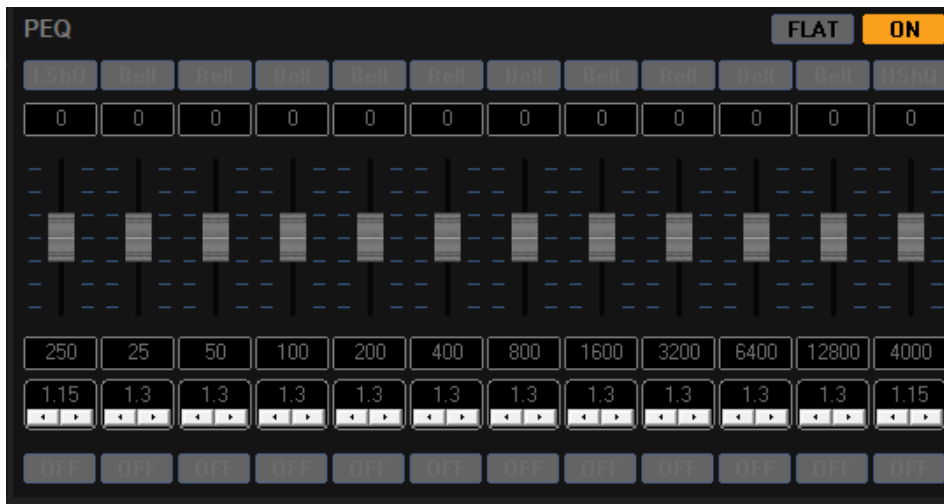


Group Delay

When the value of the group delay is different from 0ms then the user can also see the group delay on each channel of the Edit window

GROUP PEQ

The PEQ available into the Group is working at the same way of the input channel PEQ and is using of that the available filters.
 In the input channel all filter used by group will be disabled.
 (see the picture below, representing the case of 12 bands PEQ filter are used for the Group and no longer available to the Input PEQ)



When the specific device is removed from a Group, or when a Group is dismissed, then the input PEQ filters of the specific device will be again enabled and available

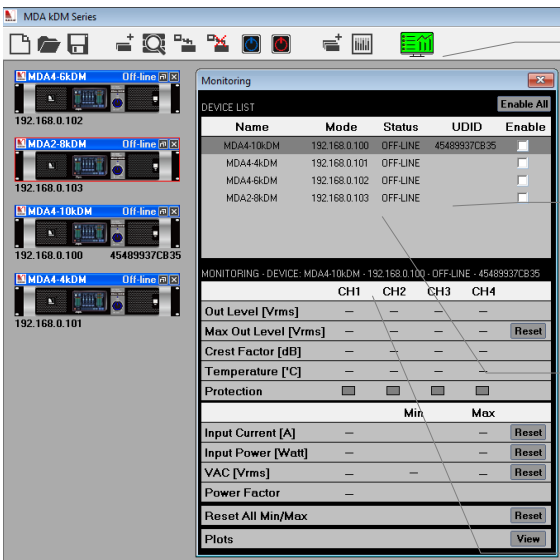
Appendix 2 MONITORING Function [Preliminary]

All devices with the Monitoring function enabled will have the monitored parameters (see later) recorded in background. Each time that the User enables the monitoring on device, the software add a log file and put inside the monitoring data (this recorded data will be show in a separate window called “Log file viewer”) The log file will be saved to the “LOG” folder (a sub-directory in the same directory where the software is installed). Around each 30 sec the file log will be update with the new recorded data. So each 30 sec the size of the single device log file will be increase of 15KByte.

NOTE: if the monitoring is not necessary is better to set the **Enable = OFF** in order to save memory and resource of the PC. The name of the log file is so structured:

“DeviceName_UDID_YYYYMMDD_HHMMSS.log” (i.e. MDA4-10kDM_45489937CB35_20240215_162306.log)

MONITORING Window



Monitoring button:
The green color indicate that the Monitoring window is open or that one or several devices have the enabled monitoring

Monitoring Devices List:
In this section will be show all device present in the Main window (if the device have the monitoring function available)

On each row of the device list is show the Name, the connection mode, the status, the uniqueID and the monitoring enable.
If the status is “OFF-LINE” the monitoring is Off
If the status is “ON-LINE” the monitoring is On only if the Enable = ON

The real-time monitoring show all parameters value of the device selected

PLOT Windows view



Clicking on the “View” button, then the software show a modal window “Log file viewer” where all the information present in the log file of the selected device are plotted.

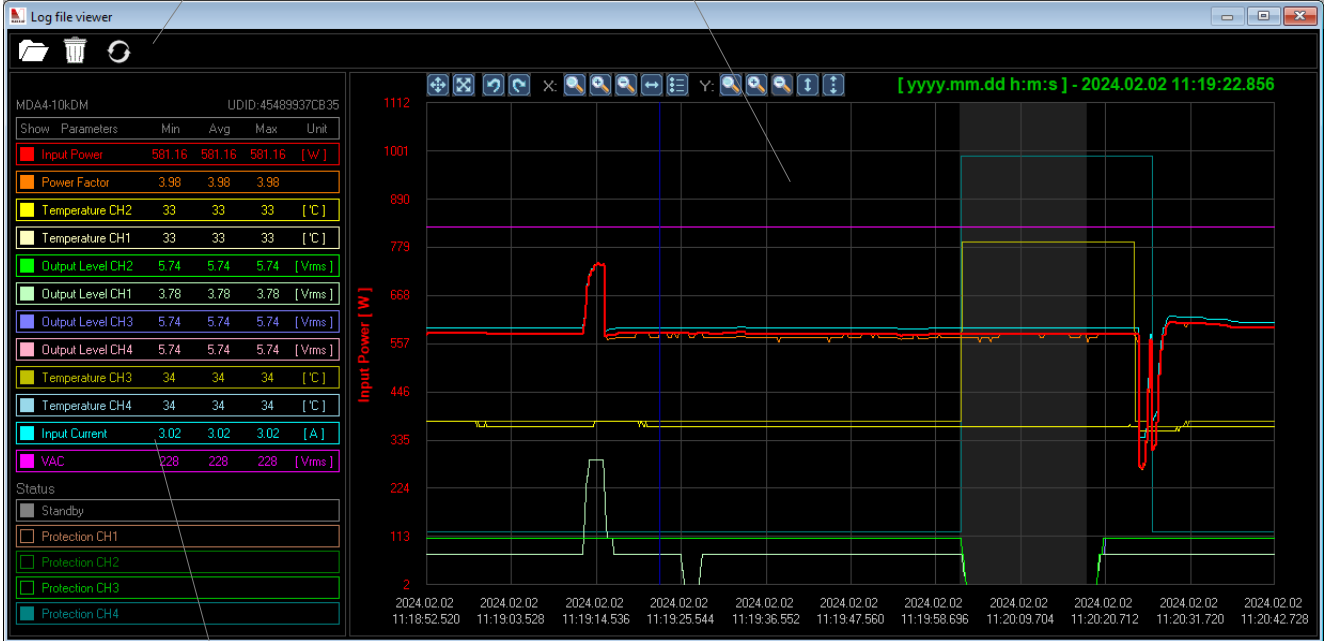
The software use all log file with the same Device Name and same UDID present in the folder “LOG”, and use all log file starting from the most recent file up to the file which reaches a maximum of 48 hours of recording in total (this meaning that if with the same device there are several log files, for examples one file created 2024.01.01 with 4 hours recording, one file created 2024.01.10 with 3 hours recording one file created 2024.03.10 with 8 hours recording, then the plot can show all parameters from 2024.01.01 to 2024.03.10 in total 15 hours).

Digital Power Amplifier MDA-KDM Series



PLOT Window

Toolbar Plot



Info device plotted

Tool bar



Remove log file

Reload the selected device log file

Load and show a single log file

Info on plotted device

Show	Parameters	Min	Avg	Max	Unit
<input checked="" type="checkbox"/>	VAC	224	225.3	227	[Vrms]
<input checked="" type="checkbox"/>	Input Current	0.67	0.67	0.67	[A]
<input checked="" type="checkbox"/>	Input Power	66.67	66.67	66.67	[W]
<input type="checkbox"/>	Power Factor	--	--	--	
<input type="checkbox"/>	Temperature CH2	--	--	--	[°C]
<input type="checkbox"/>	Temperature CH1	--	--	--	[°C]
<input type="checkbox"/>	Output Level CH2	--	--	--	[Vrms]
<input type="checkbox"/>	Output Level CH1	--	--	--	[Vrms]
<input type="checkbox"/>	Output Level CH3	--	--	--	[Vrms]
<input type="checkbox"/>	Output Level CH4	--	--	--	[Vrms]
<input type="checkbox"/>	Temperature CH3	--	--	--	[°C]
<input type="checkbox"/>	Temperature CH4	--	--	--	[°C]

Status

Standby

Protection CH1

Protection CH2

Protection CH3

Protection CH4

Parameters List

Top Position (see later)

Show: If enabled then the parameter will be show on the graphic

Parameter name

Click on this area to bring the parameter on the top

Unit

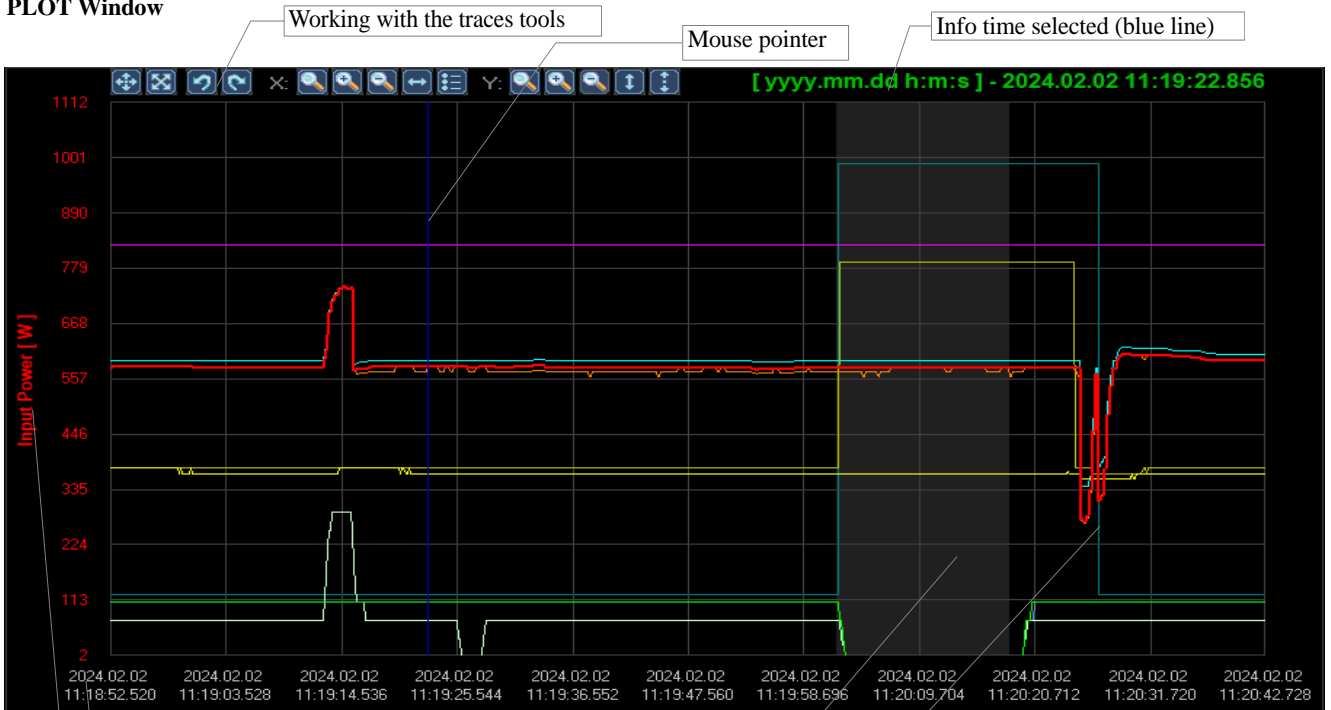
Click on this area to show/hide the trace in the plot

Value read on the plot: Min/Average/Max
When the range of the X axis [time] is very big then it is impossible to show all parameter's point so in that case in one single point the sw plot the average point and show in the parameter's label the min/avg/max value
When the time range is small then the min/avg/max value are all the same

The position of the frame is important because the frame on the top decide the Y axis scale unit and the trace will be show in foreground

Special traces (show only the status on/off)

PLOT Window



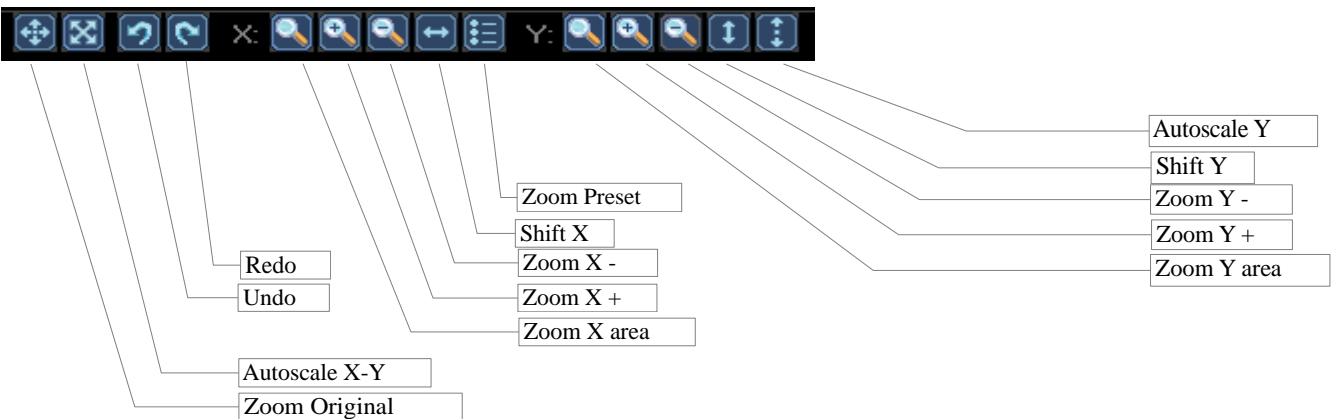
Standby status (on/off)

Protection status on CH4 (off/on)

X axis [time],
the upper label show the Year.Month.Day,
the lower label show the Hour:Minute:Second

Y axis, the unit of the scale depending from the parameter on the top of the parameters list

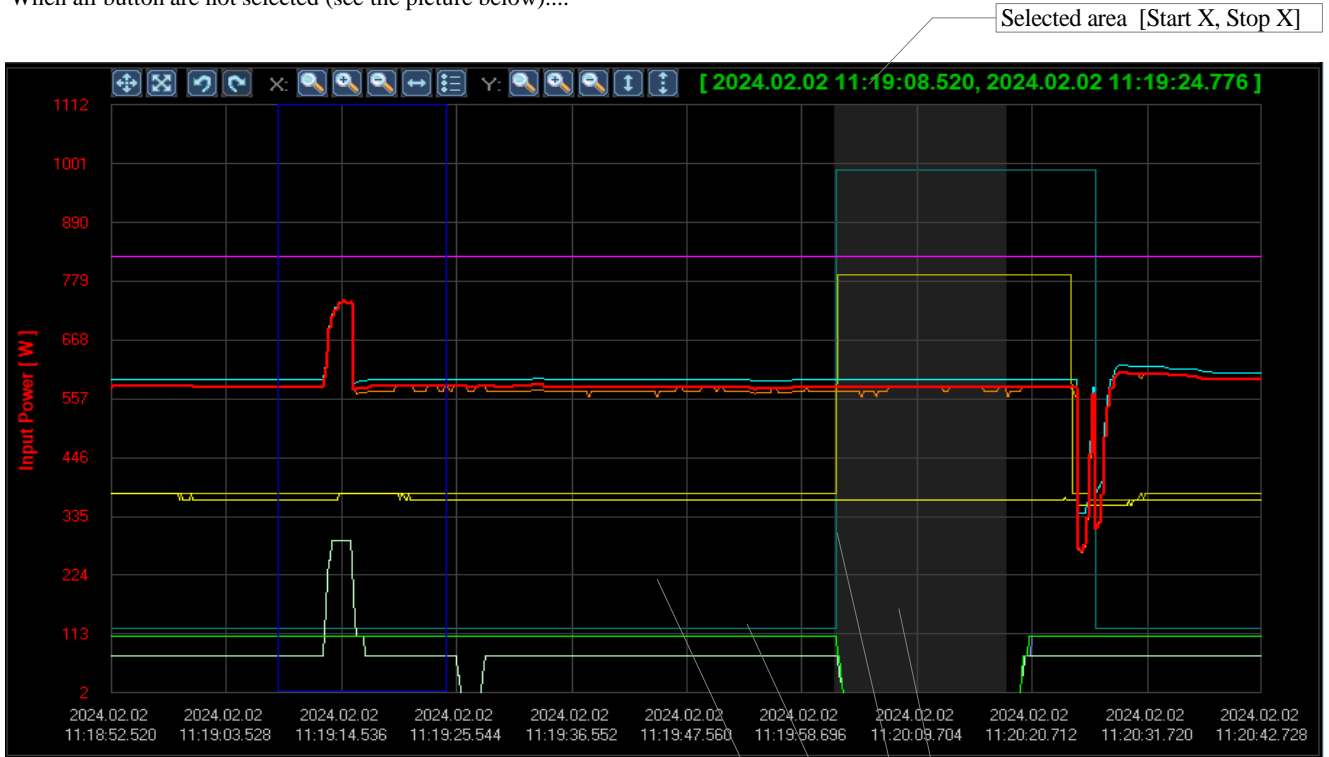
Tool bar



Tool bar controls

- * **Zoom Original:** show the default X-Y axis
- * **Autoscale:** show the X-Y axis with all parameter's trace inside the plot
- * **Undo:** remove last operation on the plot (the parameter will be reset when use the Load/Reload log file)
- * **Redo:** replicate last undo (the parameter will be reset when use the Load/Reload log file)
- * **Zoom X area:**
 1. when the button is selected
 2. Push down and hold the mouse button on the plot
 3. Move the mouse on the plot to create an area
 4. Release then button
 5. the traces will be show in the selected X area
- * **Zoom X +:** zoom as compared to the center x axis of the plot
- * **Zoom X -:** zoom as compared to the center x axis of the plot (until the min time is not reached)
- * **Shift X:** move the x axis
 1. when the button is selected
 2. Push down and hold the mouse button on the plot
 3. Move the mouse on left or right
- * **Zoom Preset:** there is a collection of zoom X
after push the button, the following menu will be show:
 1. Zoom last minute
 2. Zoom last 5 minutes
 3. Zoom last 10 minutes
 4. Zoom last 15 minutes
 5. Zoom last 1/2 hour (X default used for the plot)
 6. Zoom last hour
 7. Zoom last 12 hours
 8. Zoom last day
 9. Zoom last 2 days
 10. Zoom last 7 days
 11. Zoom last 14 days
 12. Zoom all
- * **Zoom Y area:**
 1. when the button is selected
 2. Push down and hold the mouse button on the plot
 3. Move the mouse on the plot to create an area
 4. Release then button
 5. the traces will be show in the selected Y area
- * **Zoom Y +:** zoom as compared to the center Y axis of the plot
- * **Zoom Y -:** zoom as compared to the center Y axis of the plot
- * **Shift Y:** move the Y axis
 1. when the button is selected
 2. Push down and hold the mouse button on the plot
 3. Move the mouse to up or down
- * **Autoscale Y:** show the Y axis with all parameter's trace inside the plot

When all button are not selected (see the picture below)...



- * Push down and hold the mouse button on the plot
- * Move the mouse on left or right to design an area
- * On the labels min/avg/max, where the option show is enabled, is possible see the min, average and max value of the selected X area

Input Power	573.74	657.8	741.9	[W]
Power Factor	--	--	--	
Output Level CH1	3.78	9.5	15.26	[Vrms]

Selected area [Start X, Stop X]

Standby status: ON

Protection status: ON

Protection status: OFF

Standby status: OFF

Standby

Protection CH4

NOTE: When the device is in standby (status is ON), all status protection will be ON and will be released (OFF) after some second that the device exit from standby.

So if the User see the protection ON, to understand if the amplifier was in real protection, User must every time to compare the trace of the protection with the trace of the Standby.

On the picture above, the amplifier was not in protection because the protection and standby are together ON in the same time.

Appendix 3

DANTE Setup

All **MARANI MDA-KDM Series** amplifiers feature a Dante card which can be set up to send and receive audio on a Dante network. This type of connection utilizes standard IP networks to transmit high-quality, uncompressed audio.

The configuration and routing of MDA-KDM amplifiers in a Dante network is entirely done via the software application 'Dante Controller', provided by Audinate. Free download versions of the software are available for 'Windows' and 'Mac OS X' directly on Audinate's website: www.audinate.com

Connecting MARANI MDA-KDM Series Amplifiers to a Dante Network

Physical connection to a Dante network is done via regular CAT5E (or higher) wiring.

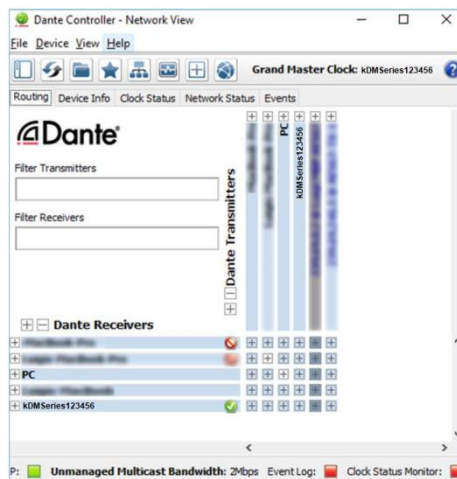
If a switch is used, special attention should be given to its capabilities, as some products are not compatible with Dante Networks.

In order to get maximum reliability, the network switches shall:

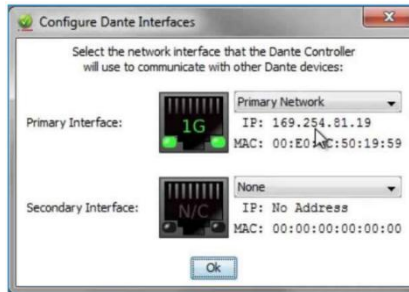
- * be Rated for Gigabit Ethernet;
- * be Non-blocking;
- * have Quality of Service (QoS) with at least four queues;
- * have Differentiated Service Code Point(DSCP) QoS with strict priority; and not have or have Energy Efficient Ethernet(EEE) switched off.

For more information on switch requirements for Dante compatibility, and on how to create and manage Dante networks, please refer to Audinate's website: www.audinate.com

When opening the 'Dante Controller', all devices connected to the Dante network will be displayed in the list of transmitters and receivers.



If the computer in use features multiple network ports, in some instances, 'Dante Controller' may connect to the wrong one. To overcome this issue, click on the square next to 'P:' at the bottom left corner of the 'Network View' window. This will open the Dante interface configuration window, from where the correct port can be selected



MARANI MDA-KDM Series amplifiers connected to the Dante network will automatically obtain IP addresses by default, and in most circumstances, there is no need to change the address settings.

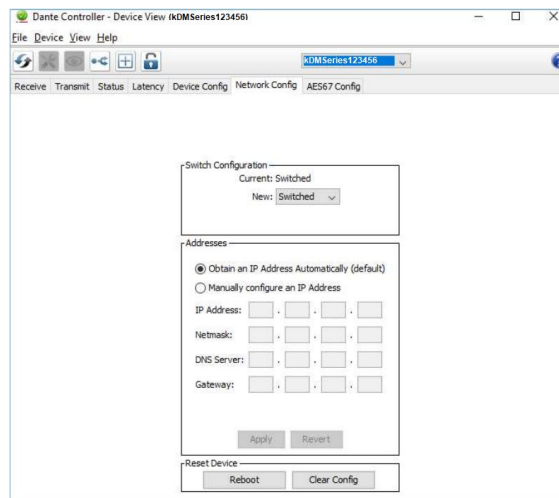
However, static IP addresses can be assigned if necessary.

To assign a static IP address:

1. Open the 'Device View' window by double-clicking on the device to be configured.
2. Click on the 'Network Config' tab
3. Under 'Addresses' switch to the option 'Manually configure an IP Address'
4. Enter the IP Address and Net mask.
5. Click 'Apply'

The DNS Server and Gateway settings are optional - the device will use network defaults if they are not specified. To revert to the previous settings, click 'Revert'.

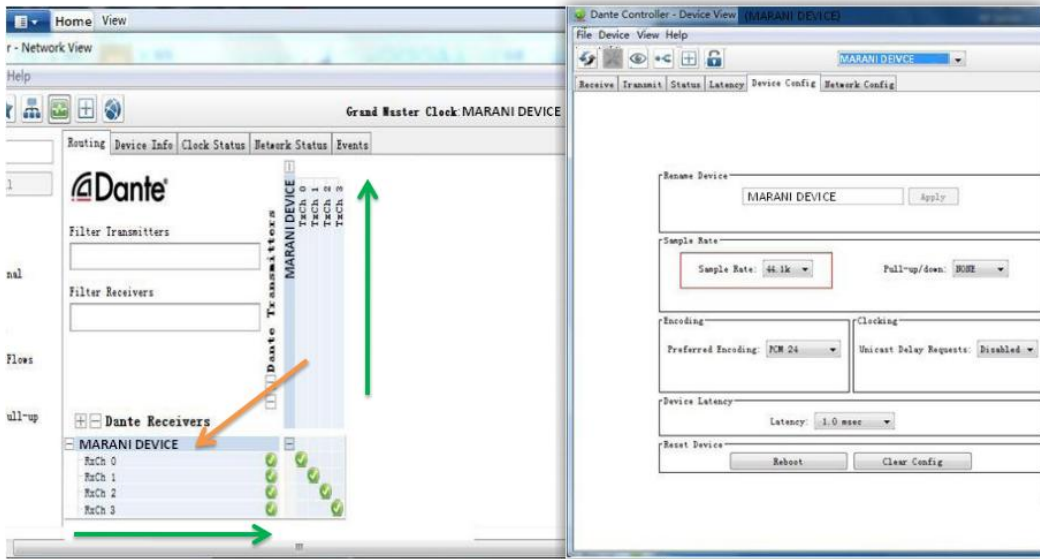
It is important to note that this operation requires a device reboot. This can be done by simply clicking 'Reboot' under 'Reset Device'. However, in some instances, it has been verified that a manual reboot of the amplifier is necessary for modifications to take effect and is therefore recommended as best practice.



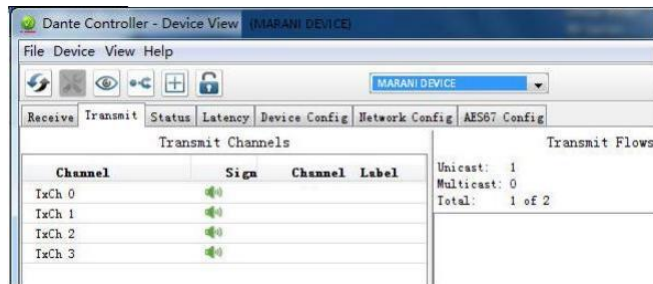
Please note that when **MARANI MDA-KDM** amplifiers are set to automatically obtain IP addresses, Dante Controller must be running on a host computer also configured to obtain IP addresses automatically. Likewise, for static IP address configurations, fixed IP addresses must be assigned to both host computer and amplifier, with both devices operating within the same subnet.

Routing setting Example

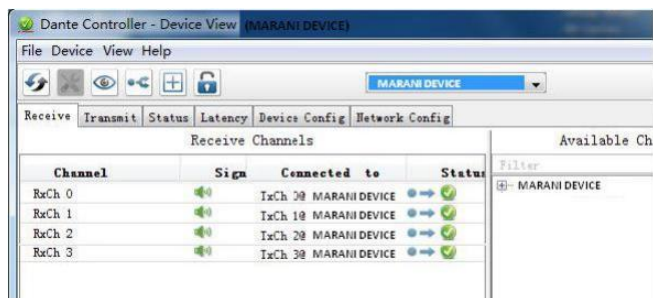
Given in example **MARANI DEVICE** as unit to route..



Double click the **MARANI DEVICE**, Will show the window as below: you can see the small green speaker indicating that the signal from the MARANI DEVICE is entering the DANTE board.



The Dante board with dual network ports can see the signal in the Receive submenu of the sub-window and can route it to the next machine.



Note: in the "Device Config" menu must be consistent which means that if a Device A is set at 96kHz (DANTE gives available as sampling frequencies options) a Device B must also be set at 96kHz; if they are inconsistent, the routing cannot be performed in the main window.



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LET'S TALK

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