

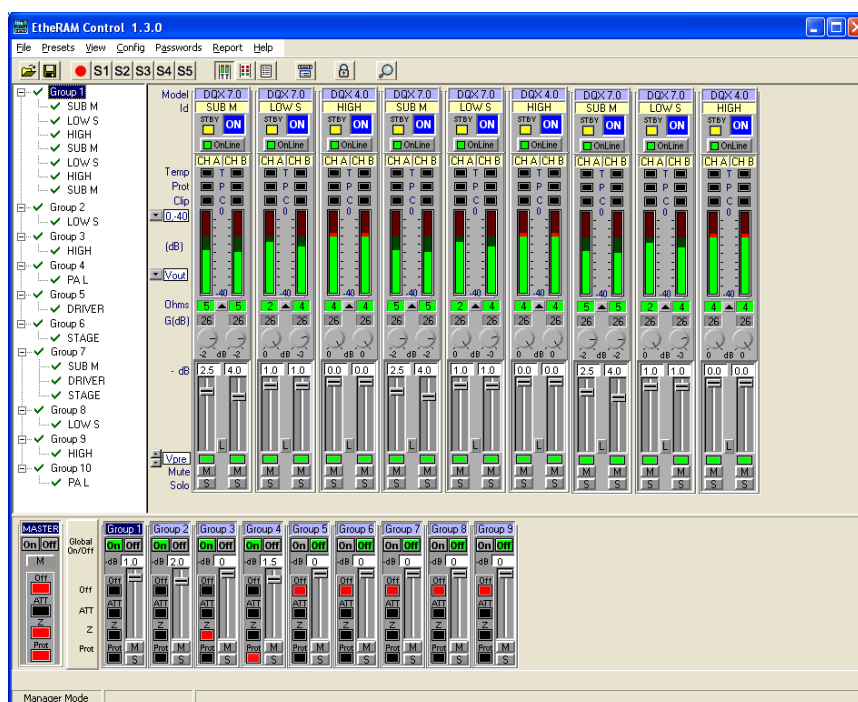


RAM

Audio®

EtheRAM Software

Power Amplifier Ethernet Control



OPERATION MANUAL



Introduction

General View

EtheRAM is a control system which permits, with just a computer, the control and monitoring of an installed group of DQX or S Power Amps, connected to a standard EtherNet LAN (local area network). The system can be used to switch-on remotely the amplifiers as well as to control their output levels, it can also be used as a monitoring system for all the DQL Amps parameters. Finally, it can be used as a diagnosis tool to visualize the status of any acoustic system connected to the Amps.

The EtheRAM Control software, installed in any Windows system, permits the visualization and control of more than a hundred amps in real time, with a simple connection to a wired or a wireless EtherNet LAN. The system can be integrated in any existing EtherNet LAN and does not require any other external device to function. In other words, the system does not need any exclusive or specific network installation. Each Power Amp network-ready includes a DataCom port with a RJ45 connector (Neutrik®), through which the amp is connected to the EtherNet LAN via a standard switch.

Features

Input Control and Monitoring:

- Input sensitivity selected: 26-32-38dB
- Pre/Post-fader signal level metering (dBu or Volts)
- Pre/Post-fader signal monitoring
- Front panel level knob position monitoring (dB)
- Level control
- Level monitoring (dB)
- Mute control
- Solo control

Output Monitoring:

- Output voltage metering (dB relative to true maximum voltage output)
- Output current metering (Amperes)
- Output power metering (Watts)
- Output Clip monitoring
- Output signal monitoring

Load Monitoring:

- Open/shorted load detection
- Adjustable threshold for detecting load opens and shorts
- Real time average minimum impedance (Ohms)

General Parameters:

- On/Stby control mode selection
- Supply mode indication (Off/Stby/On)
- Fault status monitoring
- Temp protection status monitoring
- Operating temperature metering
- Model indication
- SN indication
- User-writable main reference
- User-writable channel references

Other Features:

Log file report (On/Stby/Off mode, Fault, Temp, excessive Clip, incorrect load, connection state), 10 direct presets, Passwords manager, amplifier groups tree visualization, sequential turn-on, 3 visualization modes, off-line operation option, instant emergency alarm visualization (Standby/Off, Fault, low gain, mismatch load), amplifier groups level, mute and solo control.

Network Connection

Ethernet Requirements

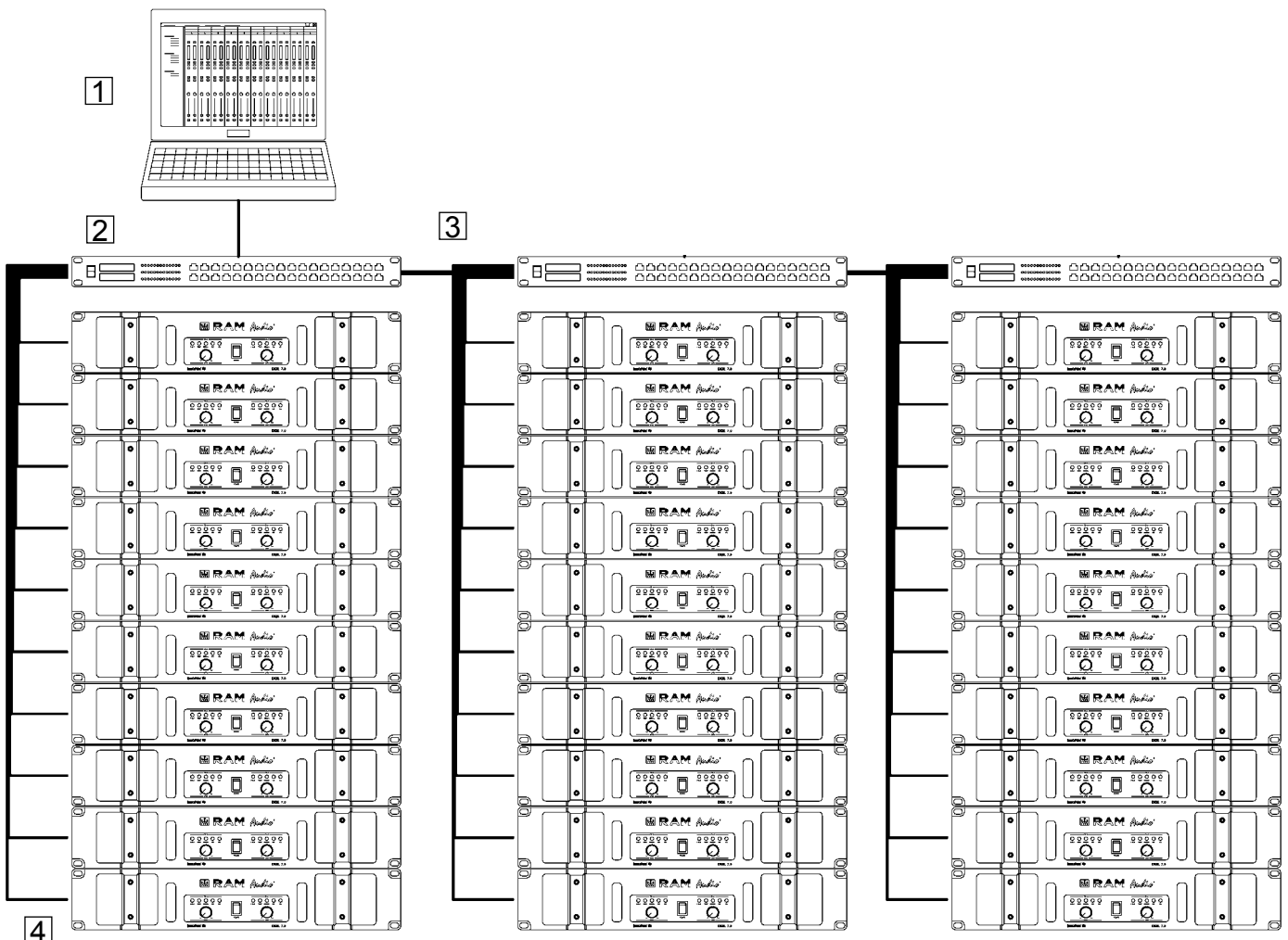
To create an ethernet network and control the DQX or S amplifiers with the EtherAM software, the following requirements are needed:

1 System Controller: PC Windows system with ethernet port and EtherAM Control software. Your PC requires O.S. Windows 98SE/XP/2000/NT, 256MB RAM and a 10/100Mbps Ethernet port; also have TCP/IP communication protocol installed and IP address configured within range 192.168.0.x (x<100) with a subnet mask of 255.255.0.0.

2 Standard 10/100Mbps Ethernet LAN Switch. A 10/100Mbps Hub may be used instead, but if the number of amplifiers is high there could be troubles of communication. You can use as many switches as necessary to link all the amplifiers to the ethernet network with the PC.

3 Standard UTP-Cat 5 Ethernet wires. One end of the wire is connected to the switch and the other end to the Datacom port of the DQX or S amplifier with a Neutrik® RJ-45 connector (recommended) or any other RJ-45 standard connector.


4 RAM Audio DQX or S Series Amps. Each amplifier has available a Datacom port with a Neutrik® female connector RJ45. It is possible to connect a male RJ45 of the same brand (recommended) or any other RJ45 standard connector. Each amplifier is programmed at our warehouse with a different IP (modifiable by the user) which appears written at the rear of the amplifier, within range 192.168.x.y (y>100). The amplifiers have an internal memory to store all parameters assigned by the user through the EtherAM soft (IP, identifications, attenuation, remote switch-on...) and it goes back to factory default stand by pressing the reset button located at the rear.



EtheRAM Software

Installation & Network Scan

Installation: you have to execute the installation file setup.exe and follow the instructions. Once installed execute EtheRAM software.

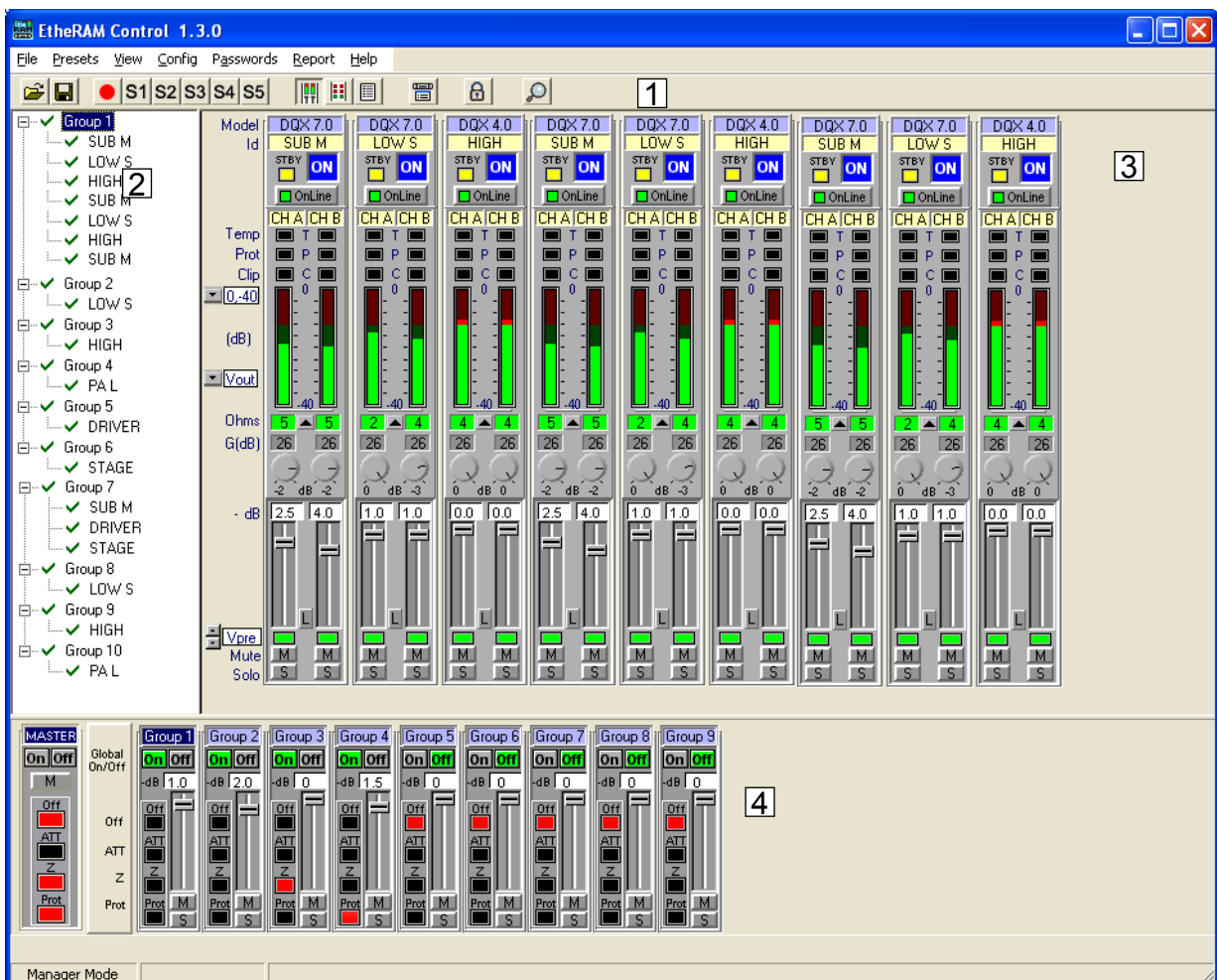
Network Scan: first scan the network to obtain a list of all the amplifiers connected to it (all amplifiers must be running on stand-by mode). To do so press on the magnifying glass icon  on the upper part of the screen, once the scan is finished a list appears showing the model and serial number of each amplifier found. To the right of each reference it appears 4 cells where you must fill in an identification (optional) for each amplifier and each channel, as well as the assignation to the group it belongs to. Press on the rescan button to add new amplifiers to the list or to identify the amps one by one. For instance, you can set all amplifiers in off mode except the one you pretend to detect, scan the network, configure only this one amplifier, set a new amp in standby, re-scan, configure this amplifier, set another amp in standby, re-scan again... and so on until all amplifiers have been configured one by one. Once all amplifiers have been configured press the OK button to continue.

Note: if no amplifier is detected on the first scan, it is recommended to deactivate any firewall software the computer may have (Windows XP provides by default a firewall configurable through the Control Panel).

General Description

Main screen: once all amplifiers have been detected and identified the main screen of the program appears. This screen is divided in 4 parts:

- 1 Menus and Icons Area (above)
- 2 Groups and Amplifiers Tree (left)
- 3 Amplifiers Section (right)
- 4 Groups Section (below)



1 Menus and Icons Area

- File:** New: enables you to delete entirely the present scene and start again from the beginning.
Load: load a scene file previously saved.
Save: stores in a file the present scene.
Scan Amps: scans the network to detect amplifiers connected to it. Use it also to add a new amp to the scene.
Start-up Option: select the desired option when initializing the soft: nothing, load preset or load last scene.
Exit: with this option you quit the program.
- Presets:** Save Preset: stores in a preset the scene being used.
Load Preset S1 to S5: recovers the scene previously stored in preset 1 to 5.
- View:** Complete: switch to complete view.
Reduced: switch to reduced view.
Report: switch to report view.
- Config:** Amps Config: change identifications and group assignments of the amps in the present scene.
- Password:** Password Config: enables you to configure or modify a user password.
Password Enabled: enables/disables the password system.
Control Lock: lock all controls to avoid they can be modified by any unauthorized person or by any incidental action upon the controls. To return to initial mode it is necessary to enter the user password.
- Report:** Report Config: configure the events to report.
Report Enabled: enables/disables the reports system.
Report View: switch to report view.



New: enables you to delete entirely the present scene and start again from the beginning.



Open: load a scene file previously saved.



Save: stores in a file the present scene.



Save Preset: stores in a preset the scene being used.



S1 to S5: recovers the scene previously stored in preset 1 to 5.



Complete View: switch to complete view.



Reduced View: switch to reduced view.



Report View: switch to report view.



Amps Config: change identifications and group assignments of the amps in the present scene.



Control Lock: lock all controls to avoid they can be modified by any unauthorized person or by any incidental action upon the controls. To return to initial mode it is necessary to enter the user password.




Scan Amps: scans the network to detect amplifiers connected to it.


2 Groups and Amplifiers Tree

Visualization of all the amplifiers in the system in tree structure, as well as the group they belong to. By selecting an amplifier or group you may see, in the amplifier visualization area, the amplifiers of the group selected or delete it from the system by pressing the delete icon above on the screen.

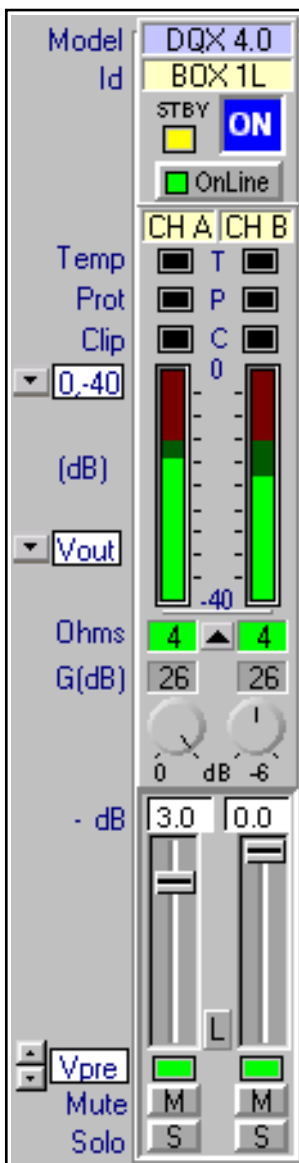
3 Amplifiers Section

In this area you may alternate among 3 different visualizations: Complete, Reduced and Report View. To change it you have to press over the icons 

Complete View

 In this view you can monitor and control all parameters of all amplifiers of the group selected.

View description:



Amplifier model, SN and IP address (when placing the cursor on it).

Amplifier general identification.

STBY: Standby mode status. When it lights, you can turn on/off the amp using the ON button.

ON: remote on/off. You can turn on/off the amp only if it is in Stby mode. This button may show a magnifying glass if you turn the amp directly off. Press it to try recovering the amp.

On-Line: on/off-line mode. With this feature the amplifier stops transmitting its parameters.

CHA-CHB: channel identification (when placing the cursor on it).

Temp: amplifier front panel led monitor to indicate an overheating status.

Prot: amplifier front panel led monitor to indicate an amplifier protection.

Clip: amplifier front panel led monitor to indicate an output clip.

VUmeter: Monitors different parameters of each channel of the amplifier by means of luminous bars. The meter scale and the parameter to be monitored may be modified with the pull down menu located on the left side of the VUmeter. These parameters can be: Vpre, Vpost, Vout, Iout, Pout, Temp and Mains (see note*).

Ohms: average minimum impedance connected to the output and thresholds adjust (see note**).

Gain: gain value selected at the rear of the amplifier. (it is necessary to have input signal)

Knob: front panel level knob position. Below it the attenuation in dB is indicated as well. (it is necessary to have input signal)

Fader: controls the attenuation level of the internal potentiometer and show it on the top part in dB. The potentiometers steps are 0.5, 1, 3 or 6dB according to the position. Between the 2 controllers there is a button marked as 'L' to link the two potentiometers.

Signal: signal presence and input Clip (red) monitor. You can select pre/post fader function.

Mute: button to mute each channel individually.

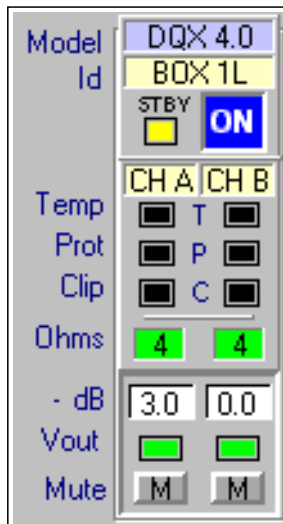
Solo: button to do a solo of a particular channel.

Reduced View



You may monitor the main parameters of all amplifiers of the group selected.

View description:



Amplifier model, SN and IP address (when placing the cursor on it)

Amplifier general identification

STBY: Standby mode status

ON: remote on/off

CHA-CHB: channel identification (when placing the cursor on it)

Temp: amplifier front panel led monitor to indicate an overheating status

Prot: amplifier front panel led monitor to indicate an amplifier protection

Clip: amplifier front panel led monitor to indicate an output clip

Ohms: average minimum impedance connected to the amplifier output *

Attenuation: shows the internal potentiometer attenuation in dB

Output Presence Signal: led that indicates there is output signal

Mute: button to mute each channel individually

* **VUmeter Section**: The parameters to monitor are:

Vpre: input signal of each channel at pre-fader. The units may be dBu or Volts and the meter scale may be the maximum allowed by the amplifier or automatic according to the selected gain.

Vpost: input signal of each channel at post-fader. The units may be dBu or Volts and the metre scale may be the maximum value allowed by the amplifier or automatic according to the selected gain.

Vout: output signal of each channel in dB, relative to the maximum output possible. Meter scales may be modified to increase the VUmeter resolution.

Iout: instantaneous peak output current of each channel in Amperes. The meter scale may be a fixed value selected by the user or automatic according to the present impedance load.

Pout: instantaneous peak power of each channel in Watts. The meter scale can be a fixed value selected by the user or automatic according to the present impedance load.

Temp: the present temperature of the power modules of each channel in percentage. When it reaches 100% the amplifier will protect itself against excessive temperature.

Mains: input voltage of the amplifier mains in Volts. To monitor this measure, there must be no output current in the amplifier, otherwise it may cause a great drop and obtain a false measure.

** **Ohms Impedance Section**: it shows, in Ohms, the average minimum impedance connected to each channel of the amplifier in real time. This measure is done by means of an algorithm that evaluates and weights the different instantaneous impedances in order to show an average minimum impedance value at any time. All this can result in slow response time. This indicator shows green when the minimum current and power requirements are met for doing this measurement.

Impedance Thresholds: at the middle of the impedance measurements of each channel there is a button with an arrow on it used for adjusting the maximum and minimum threshold levels allowed in the system. When these levels are surpassed the impedance indicator turns red and writes it in the report section. The threshold adjustment window has an AUTO button that allows automatic impedance threshold adjustment. To do so, press the AUTO button and set the amplifier in the right circumstances for the impedance monitor indicators to show green during the time the measurement needs to stabilize itself. An algorithm will estimate the maximum and minimum values of the system thresholds, it might possibly need little adjustments afterwards. When you close the thresholds adjust window the AUTO function feature also finishes and the system memorizes the final obtained values.

EtheRAM Software

Report View



It shows the report file being just generated, where the main system events are registered. Each event shows the hour, the group, the amplifier, the channel and a description when and where it occurs. The type of event this show reports can be configured with the configuration option in the report menu. This report may be activated or deactivated by the user, and you can get back a report of a particular date by using any ASCII file visualization program or word processor. The reports are saved at "reports" directory inside program directory, using the current date as name.

File report example:

```
[10:27:10]: ***** Start EtheRAM *****
[10:27:32]: {Group} Group 1 - {Amp} LOW Box          ----> Remote On
[10:32:53]: {Group} Group 1 - {Amp} LOW Box- {Ch} 15"L ----> Prot
[10:43:27]: {Group} Group 1 - {Amp} LOW Box- {Ch} 15"L ----> No Prot
[10:58:14]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_L ----> Hi Z Load
[11:04:37]: {Group} Group 2 - {Amp} MID Box- {Ch} DRL_L ----> Correct Z Load
[11:37:52]: {Group} Group 3 - {Amp} STAGE          ----> Remote Off
[11:43:27]: {Group} Group 1 - {Amp} LOW Box- {Ch} 15"L ----> Clip 3times/1second
[11:58:54]: {Group} Group 1 - {Amp} LOW Box          ----> Off Line
[12:32:34]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_L ----> Temp Prot
[13:24:43]: {Group} Group 1 - {Amp} LOW Box          ----> Lost Connection
[14:58:13]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_L ----> Clip 3 times/1second
[15:12:32]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_R ----> Low Z Load
[16:27:32]: {Group} Group 1 - {Amp} LOW Box          ----> Remote Off
[16:32:54]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_L ----> Prot
[16:37:52]: {Group} Group 3 - {Amp} STAGE          ----> Remote on
[10:58:14]: {Group} Group 2 - {Amp} MID Box- {Ch} DRV_L ----> Hi Z Load
```

3 Groups Section

You may visualize the parameters and monitoring of all the existing system groups. On the left all the amplifier masters are also shown. The controls and monitoring of these groups are the following:



Group Identification: shows the number of a particular group

Global On/Off: two buttons that allow a sequential turn-on and a simultaneous switch-off of all the group amplifiers. These buttons remain green when all amplifiers are in On or Off mode

Group Attenuation: controls the attenuation level of a particular group and show it on the top part in dB. This value adds to the value of each individual channel of the groups amplifiers

Mute of Group: mute simultaneously all channels of all the group amplifiers

Solo of Group: do a solo of a particular group, muting all amplifiers of the rest of the groups

The left side indications allow a quick visualization of any problem with any of the group amplifiers. These alarms are:

Off: it lights when any group amplifier is off or has a connection failure

Att: it lights when in any of the group channels the electronic potentiometer attenuation+group attenuation is too high, which may indicate an error in the position of any of the 2 attenuators

Z: it lights when there is a group channel which impedance measurement has exceeded the impedance threshold pre-adjusted by the user

Prot: it lights when a channel of a group amplifier is in Prot status

The **MASTER** visualization indicates whether a group has any alarm switched on, and allows to switch on or off all the system amplifiers. It also allows to mute all amplifiers simultaneously.

Security systems

The EtherAM control system provides several security systems, as lost files recovery or as getting back to the last running status in case of ethernet network or supply failure.

The systems allows to recover all amplifiers parameters as they are all stored in the amplifier. So, if for any reason the configuration file gets lost or if there is any problem with the control computer, the system can be entirely recovered by simply re-scanning the network all the configuration parameters of attenuators, identifications and group characteristics will be recovered.

Besides in case of failure in the electric supply while the amplifiers are functioning, and as soon as the supply is restored the amps go back immediately to their previous working status. Thus, there is no need to reactivate all the system via the control software. In this way, if there is any computer problem after the electric supply is restored, the amplifiers would be running automatically under the same conditions as it was doing before losing control of it, without needing to restore the computer system.

On the other hand, any amplifier system connected to an ethernet network and that will be controlled by EtherAM software can be operated manually (i.e. if there is any problem with the computer), exactly in the same conditions as if it were operated via computer. This can be done by simply setting the front switch in the position "On direct". In this way, any DQX or S may be used exactly the same with control as without.

To perform these functions, the amplifiers dispose of an internal memory to store all amplifier, channel and group identifications assigned by the user, as well as the attenuation of the internal electronic potentiometer controlled by the user through the EtherAM software. The present remote switch-on mode is also stored to allow a quick restoration of on/off mode status in case the ethernet network or AC mains fail. All these parameters may be configured as factory default by pressing the reset button located at the rear of the amplifier.