MAP128 /MAP1216

MATRIX AUDIO PROCESSOR
12 MIC/LINE BALANCED INPUTS TO
8 (16) BALANCED OUTPUTS

OWNERS MANUAL

PRELIMINARY Version.   May 2014

3cMAP SOFTWARE DOWNLOAD:
http://www.altairaudio.com/firmware/map128_2/setup_map128.exe

PACKING LIST:

  - 1x MAP128/1216 AUDIO PROCESSOR
  - THIS OWNERS MANUAL
  - 20/28 units (MAP128/1216) TERMINAL BLOCK PLUGS (3.5mm)
  - 1x MAINS PLUG EURO OR UK MODELS
  - 4x RUBBER FEET

1. INTRODUCTION

Congratulations on your purchase of the **ALTAIR** Matrix Audio Processor MAP128/MAP1216. There are a lot the specifications that make of the Matrix Audio Processor devices one of the most highlighted in the A/V professional market, some are enumerated here:

● 12 Mic/Line/+48V balanced inputs. Connections by Phoenix ® type 3.5mm terminal blocks.

● 8 or 16 (MAP1216) balanced outputs. Connections by Phoenix ® type 3.5mm terminal blocks.

● USB connector in the front panel for an easy PC control.

● Ethernet 10/100 rear connection. Allows connection to either a PC or a network.

● Software control by Altair 3cMAP program. Most common adjustments can be done wiressly by using our 3cMAP for Android devices when the unit is connected to a WLAN.

● MAP Audio Processor includes a full set of audio components as high performance mic/line pre-amps, virtual input routing, mixers, Eqs, filtering, dynamics, delays, crossovers, output matrices, priority ducking, frequency shifters, remote controls, presets, meters and more to satisfy the most demanding applications.

● As a bonus the unit incorporates a proprietary digital audio LINK connector to allow two units to be sharing the signals so forming a huge 24x32 IN/OUT system.

It is important to read this manual before using the matrix audio processor. This manual will help you to install and use your new MAP Audio Processor. For your security, it is very important to read it carefully, specially the paragraphs marked as NOTE, PRECAUTION and DANGER.

Save the original packing, you can re-use it to transport the unit. **NEVER SHIP THE ALTAIR MAP128/MAP1216 WITHOUT ITS ORIGINAL PACKAGING**.

2 SWITCHES, INDICATORS AND CONNECTORS

2.1 FRONT PANEL. MAP128 and MAP1216 models shown

Clock source indication on Altair logo	INPUT/OUTPUT ACTIVITY LEDS	PROCESSOR INFO LEDS	USB Connection	Power-On switch
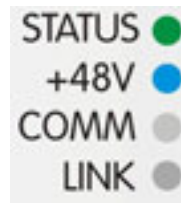
Clock source indication on Altair logo
MASTER/STAND ALONE Blue
SLAVE Green

INPUT/OUTPUT ACTIVITY LEDS
GREEN-Signal Presence
ORANGE 0 dB
RED Clip point
BLUE Burst (inputs) Phantom active

PROCESSOR INFO LEDS
STATUS Green-OK/Red-Error
+48 Blue Phantom activity
COMM Comms in progress
LINK Units linked

USB Connection

Power-On switch

2.2 REAR PANEL. MAP128 and MAP1216 models shown
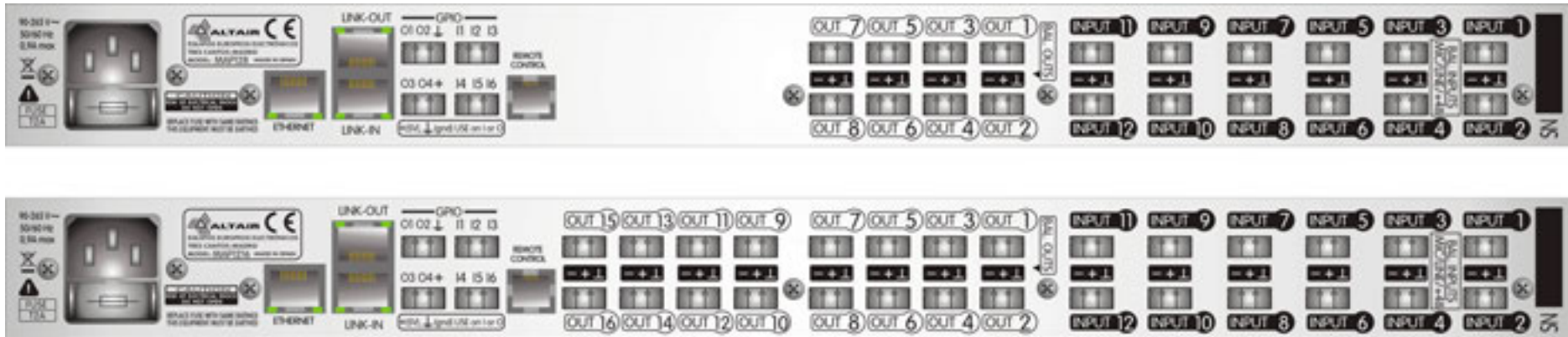
MAINS connector.
FUSE holder.
IEC type
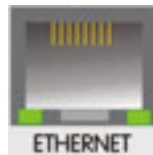
ETHERNET connection
RJ-45
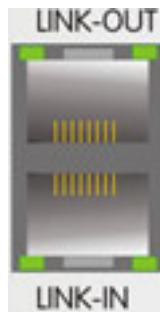
LINK CONNECTIONS
RJ-45 / RJ-45

REMOTES
RJ-11 6/4

GENERAL PURPOSE
INPUTS OUTPUTS
Logic connections
Phoenix ® (3.5mm)
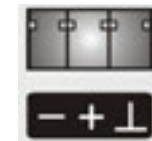
BALANCED ANALOG
AUDIO INPUTS/OUTPUTS
Phoenix ® (3.5mm)

3. WORKING PRECAUTIONS

The manufacturer is not responsible of any damage that can possibly happens to the Matrix Audio Processor outside the limits of the warranty or those produced by not taking care with the working precautions.

Mains voltage must be between the limits of the universal voltage power supply 90-265 VAC, 50-60 Hz and the fuse must be the appropriate slow blow type: 2AT.
Damage caused by connection to improper AC voltage is not covered by any warranty.

DANGER: *Inside the unit there are high voltages, do not open it. The unit does not contain elements that could be repaired by the user. Whenever the MAP Audio Processor is connected to the mains, it carries elements with high voltages. In order to disconnect the unit completely, you must disconnect it from the mains.*

CAUTION: *Protect the unit from the rain and moisture. Ensure that no objects or liquids enter it. If liquid is spilled into the unit, disconnect it from the mains and consult a qualified service technician.*

Do not place the unit close to heat sources.

4. INSTALLATION
4.1 UNPACKING

Before leaving the factory, each MAP Audio Processor has been carefully inspected and tested. Unpack and inspect the unit for any damage that may have occurred during shipment. If any damage is found, does not connect the unit to the mains; notify the salesperson immediately; a qualified service technician should inspect the unit.
Save the original packaging, you could use if you need to transport the unit. SHIP THE MAP AUDIO PROCESSOR WITH ITS ORIGINAL CASE OR INSTEAD USE A SIMILAR PACKAGING BOX.

4.2 MOUNTING
It is always recommended to mount the unit in a rack, either for mobile or fixed installations, for protection, safety, aesthetics, etc. The ALTAIR MAP128/MAP1216 are designed for standard 19" rack mounting, and takes up 1U high rack space.
For operation in ambient temperatures above 35ºC (100ºF) it is advisable to install the unit between empty rack slots to allow free fresh air circulation above and below the unit.
Never allow the unit to direct sun exposition or other heat sources.

4.3 CHANGING THE FUSE

This unit incorporates an internal, worldwide voltage operation power supply, and it is prepared to work from 90 to 264 VAC, 50-60Hz.

■ Make sure that the unit is disconnected from the mains.

■ In the unit rear panel are placed the mains connector and the fuse holder. The box bellow this mains connector is called fuse holder. Take out the fuse holder.

■ After extracting the fuse holder, the fuse will appear, take it out and change for a new one.

■ Insert the fuse holder into the mains connector again.

■ Make sure that the fuse is the right one: 2A slow blow type – **T2A.**

CAUTION: *Always make sure after changing the fuse, that it is the right one.*

4.4 CONNECTING TO THE MAINS

The connection of the MAP processors to the mains takes place by a standard cord included in the box.

■ Make sure that the unit power switch is at 0 position (turned off).

■ Insert the female I.E.C. connector of the tripolar cable into the unit power supply male connector, placed at the rear panel.

■ Insert the male connector of the tripolar cable into the mains plug.

■ Turn on the unit power switch. In that moment the LEDs indicators will light, indicating that the unit is turned on. The STATUS led will lights green when the system boots up in right conditions. Otherwise in red.

CAUTION: *Make sure that the voltage is on the range and the fuse is the right one.*

5 FRONT PANEL DESCRIPTION

5.1 ALTAIR LOGO
The light on this logo is dependent of the system clock settings.
Normally when the unit is operating in stand alone mode it will lights on *blue.*
When the unit operates linked to other unit and operating as Master clock, it will also lights on *blue*.
When the unit operates linked to other unit the clock must be operate slaved to this unit and the logo would light on *green*. See also the 3cMAP program *edit>link* window.

5.2 INPUT INDICATOR LEDS
Each input block includes a multipoint activity led showing diverse information:
Green. Input signal presence. Level is above -40 dBu
Orange. Input is reaching nominal point. Level is above 0 dBu.
Red. Input peak indicator. Level is above +14,5 dBu having a headroom (reserve) of 5 dB before real clipping.
Blue flashing. The input has the phantom power activated.
> Note: Phantom powering could damage equipment when improper used.

5.3 OUTPUT INDICATOR LEDS
Each output block includes a multipoint activity led showing diverse information:
Green. Output signal presence. Level is above -40 dBu
Orange. Output is reaching nominal point. Level is above 0 dBu.
Red. Input peak indicator. Level is above +14,5 dBu having a headroom (reserve) of 5 dB before real clipping.

5.4 USB PORT
Connect it to a PC equipped with USB. Altair 3cMAP software works with USB or Ethernet but not at the same time. This connection allows for firmware updates.

5.5 STATUS INDICATOR LEDS
The STATUS led will show the global state of the internal DSP activity.
Green is the normal state showing everything is running properly.
Red color indicates a lose of clock sourcing, dsp over occupation, etc. Resume it by cycling the unit or by a better selection of the processors blocks in use. Verify the clock sourcing state on 3cMAP *Edit>Link* window.

5.6 +48V INDICATOR LED
The +48V led will show one or more phantom power is activated. By default it lights on *blue.*
> Note: Phantom powering could damage equipment when improper used.

5.7 COMM INDICATOR LED
This indicator lights whenever there is communication activity to the unit from a host PC. By default it lights on white color. When the processor is uploading VOICE messages or when firmware updating the led will momentary light off. Tiene mas colores o funciones

5.8 LINK INDICATOR LED
This led informs about the state of the LINK connectors activity. By default it lights on white color.

5.9 UNIT SWITCH ON-OFF   I-O
Although the design incorporates output muting elements on every individual output, it is advisable to switch on the unit prior to switch on the speaker amplifiers in order to reduce transients. Switch off process is cycled inverted, first unit to switch off is the amplifier and then the other elements including the MAP.
Maintain when possible the power amp rule: Amplifiers are the LAST TO SWITCH-ON and the FIRST TO SWITCH-OFF.
In some installations in particular when some unattended networked elements, this switch must be always set in the ON state and is only used for maintenance operations. The unit is designed to be connected to the mains continuously.

6 REAR PANEL DESCRIPTION

6.1 INPUT CONNECTIONS

The MAP Audio Processor balanced input signals are carried out through the 3 pin Phoenix ® type Terminal Blocks. Input signal must be connected to the included terminal plugs and operated by using a small 2 mm flat blade screwdriver. Signal arrangement is depicted on the next drawing as seen from the rear panel.
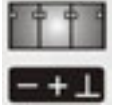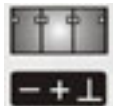
For unbalanced signals connect the signal to the (+) connection and connect the ground wire to both the (-) and ground 0V connections. A stripped wire can be used for linking the ground to the (-) terminal.

When using balanced signal, the ground terminal 0V could be left unterminated to solve some unexpected ground loops from the input side devices. Moreover, the design of the MAP series makes very unlikely the presence of such a loops.

Input impedance is 4K ohm.

CAUTION. *PHANTOM POWER* Check carefully the setting of the *phantom power* because standard devices as CD players, etc. does not manage it and could be damaged. Check front panel *+48V* led indicator. Phantom power is used for some professional microphones an ancillary audio equipment.

6.2 OUTPUT CONNECTIONS

The MAP Audio Processor floating balanced output signals are carried out through the 3 pin Phoenix ® type Terminal Blocks. Output signal lines must be connected to the included terminal plugs and operated by using a small 2 mm flat blade screwdriver. Signal arrangement is depicted on the next drawing as seen from the rear panel.

For unbalanced output connection, use the (+) connection and ground making a link from the (-) terminal to the ground by using a stripped wire. An important signal loss can be found when not following this rule.

Output impedance is 100 Ω nominal.

6.3 REMOTE CONTROL

This RJ-11 6/6 connector allows Altair remote controls to be connected here. The connector includes power and data for up to 32 remote units.

All the remote controls are connected in parallel and the network can be done in either daisy chain for the simplest way, star or a combination depending on the installation or additional considerations. Maximum wire network length is 1200 meter.

See the REM-2 instruction manual for more information.

6.4 GENERAL PURPOSE logic INPUT/OUTPUTS (GPIO's).

The MAP-128/1216 includes six general purpose logic inputs and four general purpose logic outputs allowing remote control from/to auxiliary equipment to/from the MAP processor.

These GPIO´s employs standard connectors (3.5 pitch) Phoenix ™ type.

Both inputs/outputs share the power (+) positive and ground reference.

The inputs are logical, with an internal pull-up of 5 Volts and 100 Kohm, and therefore the simplest assembly is a simple switch to ground. Assemblies can also be connected to an open collector output from an ancillary equipment.
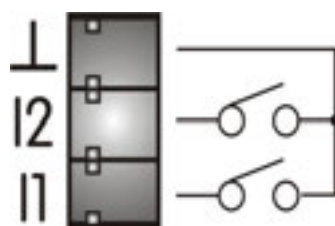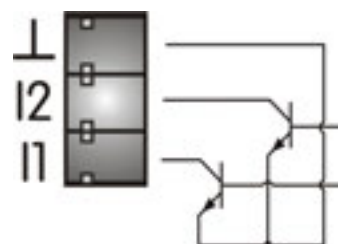
SWITCHES TO GROUND   OPEN COLLECTOR

The general purpose inputs makes actions defined in the 3cMAP software as:
Preset Recall, Input levelling, Input On/Off, Output levelling, Output On/Off, Routing select and levelling, Voice messages prompts and logic outputs.

As the MAP processors has no user front panel control it makes ideal for permanent installations where security is an issue. However sometimes and due to many factors as time of the day, room size, etc some settings needs changes. This changes can be easily done making a preset Recall by using user installed switches connected to the GPIO's connectors or by using the remote controls REM-2 units. These switches when closed would recall previously defined preset that makes the appropriate change.

The outputs are open collector, so we can feed to other power circuits provided (50 Volts DC maximum). In the output connector is available a supply of 5 volts DC to power the open collector circuit, this power is limited to 500 mA. The outputs can be connected to LEDs indicators and DC relays among others.
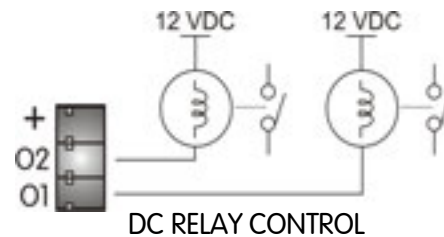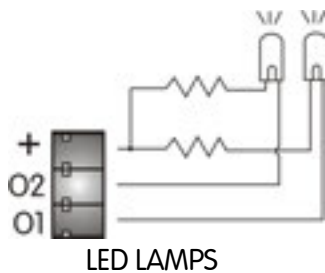
LED LAMPS   DC RELAY CONTROL

To general-purpose outputs generates logic signals upon controls defined on the 3cMAP software as: Input On/Off, Input signal presence, Input peak, Output On/Off, Output signal presence, Output peak, GPIO Remote Schedule, Ethernet Link led status, Usb link led status.

As an example a led lamp connected on O1 would light when the output 8 level reaches a peak or a relay connected on O2 would changeover when a schedule event is active.

6.5 LINK CONNECTORS

When the installation requires more inputs or outputs the unit incorporates a LINK connection for cascading to another unit (MAP series only) so making a combined processing of the two unit's signals.

Linking is made by using two RJ45 Ethernet leads connecting the Link-Out from one unit to the Link-In to the other in both units. Leads are composed of four pairs of twisted wire as the cat5 cords. Lead pin-out must be pin to pin type so each end would have the same color code distribution.

Leads length must be left to the minimum available, i.e., 0.5 or 1 meter is adequate.

6.6 10/100 ETHERNET CONNECTION

Use this RJ-45 connection port to connect to an 10/100 Base-T Ethernet networks. Computers connected to the LAN must run the Altair 3cMAP software included. The software runs on Windows (TM) and offers control over all the MAP hardware features, DSP algorithms, remote controls, firmware update and more.

Alternatively the MAP processors can be controlled wirelessly by running the Altair 3cMAP for android (TM) machines logged to the above LAN through a WIFI access point.

7. ALTAIR 3cMAP SOFTWARE

Installation.

Altair 3cMAP program for Windows (TM) has to be downloaded from the bellow address:
http://www.altairaudio.com/firmware/map128_2/setup_map128.exe

As the program comes in an executable format, some cautions and reserves from your browser can be expected. You have to permit it and download to your computer normally.

Next, proceed to the installation in your favourite directory and run the application.

Connection to a LAN

Use an Ethernet connection lead (direct 8 wires, pin1 to pin1… pin8 to pin8) from your choice and connect it to the rear panel Ethernet port to an available Ethernet port of your network. The default IP address of the unit is IP: 192.168.1.127

You can change for a new IP of your choice to permit more units in the same LAN. Best way to change IP is by using the MAP communicated by USB mode.

LAN Verification link. Device Data

First verification of the LAN communication could be done by writing in your browser the IP address of the MAP processor. This IP is factory defined as 192.168.1.127 You can read the device serial number, firmware versions and more. IP address can be changed in the *Edit>IP config* menu bar.
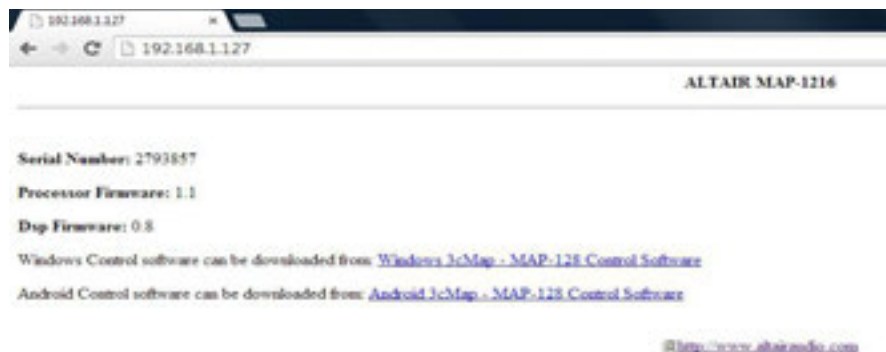
Direct PC communication. USB

The 3cMAP can be communicate with the PC by using an USB connector fitted on the front panel.
This connection is preferred to the LAN connection when needing a quick set-up or small changes of the system, service maintenance, software updates or for setting up the IP address of the unit.
Follow the installation procedure needed for USB driver configuration on your PC.

DSP OCCUPATION.

This tab located on the bottom left corner in the main canvas indicates the % of the DSP processor that is currently occupied by the audio processing tasks. The color of the tab helps in the importance of the number.

Care must be taken when adding elements in not surpassing the maximum capacity. To do so, always close or set in By-pass the unused elements and make a compromise between the need of some elements and the reserve capacity. The more consumption elements are the AUTOMIX, the CMP (compressors/expansors) and the LIM (limiters) in this order. High slope crossovers also makes some consumption. Rest of the processing as EQ makes only a small dsp occupation.

7.1 CONFIGURATION MENU BARS

<File

PC to MAP preset transfers

Load Loads a preset from the PC to the MAP working memory.

Save Save the working memory to the PC by updating the existing file. Ask a name for the first time.

Save as. Saves the working memory as a new preset.

<Edit

Date/Time Sets the internal real time clock used for scheduled tasks.

IP config Sets the IP address and Port of the connected device. Default **IP** 192.168.1.127   **Port** 1200

Link Defines the clocking method and link operation.

Stand Alone. This is the default mode when the MAP is working with no slave connected.

Master. Select this mode when the MAP is used as Master clock of the system.

Slave. Select this mode when the unit is working slaved to a Master, meaning it takes clock from it.

Password Establish a password on the MAP processor to protect entrance. Passwords are high case/low case sensitive. Consult Altair for unlock passwords. The available settings:

Map-1216 Password. Enter here the current password. By default is blank (nothing to write)

Map-1216 New Password. Type here the new one. Write blank (nothing to write) to avoid password petition.

Retype New Password. Confirmation box.

Connect. This tab helps in retry a defective connection from the MAP to the computer, so avoiding to restart the software.

<Presets

Internal presets transfers

Load Loads the selected preset to the working memory

Save Saves the working memory to the selected preset

Clear Memory Sets the MAP working memory to default.

DEAFAULT DEFINITION Preamp Gain to 0 dB, Oscillator off, phantom off, EQ default and off, Delay off,   Dynamics off, Fader and Master level to 0 dB and off, Output Routing unassigned.

<Configuration

Input Ducker

The Ducker component is used normally to allow one or more input signals take priority over   others meaning the most important signal were more audible than the others. The signals in the ducker are categorized in order of importance say the most important signal has the higher priority or in numbers the high number and the least the lower number.

One very known ducker example are the public address messages played given in a mall shop.   As a general rule, the back ground music are categorized as the lower priority (#1), the offer of the day is mandatory over the music normally so it is medium priority (#2) and the siren fire alarm is the most   priority signal (#3). Under this example the music is running until a higher priority signal appears, in this   example the offer message that shuts the music off or at a lower level to help in distinguish it. On the   case that a fire alarm appears it overrides obviously both music and ad so it has the highest priority number #3.

The most used parameters as priority level and activation can be defined on the main INPUT   DETAIL panel. Go to more parameters by double click there or by the configuration bar options.

Ducker Parameter list:

LIMITER. You can adjust the limiter parameters inside the ducker that makes it possible.

THRESHOLD. Level point at witch the ducker reacts.

ATACK and RELEASE. The time constants to react and to maintain the limiter effect after a signal shuts over the selected threshold point.

PRIORITY DEPTH. This parameter adjust the attenuation produced by each priority to the affected or "ducked" signals. Following the above example you would adjust the fire alarm priority #3 priority depth to 60 dB meaning all the ducked (music or ads) would be reduced

drastically to nothing. Y the other hand, you would adjust ads priority #2 to a priority depth of 10 dB meaning the ducked signals in this case the background would be attenuated only 10 dB and both and ads can be heard naturally.

PRIORITY   Selects the number given to each separate signal. Higher number results in higher priority or mandatory over the lower ones. You can select same priority to different signals owning that are in the same category, example music from CD or from VoIP music.

DUCKED ENABLE Selects the action of the ducker, On active, OFF disabled.

Microphone Anti Feedback. AF

This audio component helps in reducing the feedback (or larsen) effect due to an excessive   acoustic gain in a reinforcement installation. Some elements as additive wall reflections, high gain in some frequencies on the microphone/loudspeaker combination tends to make the system unstable and very prone to feedback. Things become worst when the sound system is not attended in real time by an audio engineer. Among other tools as frequency spectrum tailoring or signal compression, the MAP processor incorporates a new effect to combat the feedback based on frequency shifting by constant amount.

The effect makes a very small change of the full frequency spectrum that is not perceptible when normal speech listening at a benefit of about 4 to 6 dB higher acoustic gain possible before feedback.

The effect is not useful for music due to the nature of the spectral modification.

This component is very useful for unattended churches or speech centres.

You can set the following parameters:

AF. This button on the INPUT DETAIL panel, near to fader starts/stops the effect on desired input channels.

SHIFT The amount of positive frequency constant shift. Try with 2 to 5 Hz with optimization between extra gain of the system and timbre alteration.

INVERSE. Makes negative frequency shift, try it on large reverb spaces.

DOWN.   Reserved for future use.

Oscillator

This local oscillator combined with the multiple accurate level bar graphs can help you as general tool for Inspection, level setting, set of dynamics etc.

Parameters selection:

SINE. Sinusoidal waveform. Freq. selectable from 20 to 20KHz. Level -75 to +15 dBu

WHITE NOISE / PINK NOISE. Random noise waveform generators. Used for spectral analysis.

Output Automix

This audio component allows for an easy mixing process relaxing the operator continuous gain adjustments of the microphones. Useful scenarios are company board rooms, county councils, courts and places of worship where normally exist difficult solution.

Defining a precise gain set increases intelligibility and system stability against feedback. This job is easily done inside the MAP.

The method used inside the processor is called *shared gain*. It means the installer defines a total gain given to all the microphones in the system and the MAP shares the available gain between them, giving more gain to the microphones that shows more activity (more signal) and less gain to the lower. In other words, the mic that is inactive has reduced its gain to give it to the active

The total gain available is a constant dependant of the microphone polar pattern, loudspeaker frequency response, distance etc. and must be adjusted with certain margins.

The following parameters can be set:

ATTACK defines the time taken to begin the auto mixing, avoiding false trigering.

RELEASE defines the time the auto mix is still actuating after signals drops in level.

RATIO Controls de auto-mix level ranging from 1:1, no effect to ratio 2:1 where two equal amplitude signals are reduced 6 dB each to ratio 3:1 where two equal signals are reduced 12 dB.

Gpios For a detailed hardware definition see paragraph 6.4.

Action taken by the General Purpose Inputs are:

Input level Up/Down /ON-OFF. Each logic transition makes a step of 0,5 dB change up or down on the selected input channels. ON-OFF produces a changeover of the input channel mute on-off switch.

Inputs ON. Forces to On the selected input channels. Not works as changeover.

Inputs OFF. Forces to Off the selected input channels. Not works as changeover.

Outputs level Up/Down/ON-OFF. Each logic transition makes a step of 0,5 dB change up or down on the selected output channels. ON-OFF makes a changeover of the output channel mute on-off switch.

Outputs ON. Forces to On the selected output channels. Not works as changeover.

Outputs OFF. Forces to Off the selected output channels. Not works as changeover.

Routing level Up/Down. Each logic transition makes a step of 0,5 dB change up or down in the selected routing.

Routing Select. Toggles the selected routing inputs to selected outputs from On (0 dB) to OFF (-oo) and viceversa. By checking *Stereo* option enables a duo combination. In *Exclusive mode* only the last selected remains active, cancelling the other routings.

Preset Recall. Recalls the selected preset number 1 to 10.

Plays Voice Message. Plays the selected Voice Message 1 to 5. Repeat mode allows a continuous loop. See the 7.1.5 VOICE MESSAGES PANEL for additional information.

Gpio Out ON. Forces the selected gpio output 1 to 4 to ON. Does not changeover.

Gpio Out OFF. Forces the selected gpio output 1 to 4 to OFF. Does not changeover.

Gpio Out ON/OFF. Toggles the selected gpio output 1 to 4 from ON to OFF or viceversa making changeover.

Action taken by the General Purpose Outputs are:

Input On/OFF. The gpio output reflects the status of the selected input channel (1 to 12). When channel in ON, the gpio out is active (logic 1, conducting). When in OFF the gpio is inactive (0, open)

Input Signal Same as above when the channel reaches signal presence.(Signal higher than -40 dBu).

Input Peak Same as above when the channel reaches peak level. (Signal higher than +14.5 dBu).

Output On/OFF The gpio output reflects the status of the selected output channel (1 to 8/16). When channel in ON, the gpio out is active (logic 1, conducting), OFF the gpio is inactive (0, open)

Output Signal Same as above when the channel reaches signal presence. (Signal higher than -40 dBu).

Output Peak Same as above when the channel reaches peak level. (Signal higher than +14,5 dBu).

Gpio/Remote/Schedule. The gpio output reflects the status of the Remote key or the Scheduled task. This featured is useful for remote curtain opening or for a scheduled action as light dim.

Ethernet link. The gpio reflects whenever the connection to the MAP is carried by Ethernet connection.

USB link. The gpio reflects whenever the connection to the MAP is carried by USB connection.

Schedule Task. The MAP incorporates a RTC real time clock to allow for shutting different type of scheduled actions. You can define up to 40 actions to be made each day of the week.

Action Inputs ON, Inputs OFF, Outputs ON, Outputs OFF, Routing Select, Preset Recall, play Voice Messages, Gpio out ON, Gpio out OFF. These action are the same as in gpio section above.

Input Channels. The affected channels on the action taken

Active The chosen action is active now, or not active.

Date/Time. Sets the rtc time manually or copied from the computer clock.

Week days. Days of the week when the action will be processed.

Clear. Clears all the parameters on the list.

Schedule File: Load and Save schedule configuration files in the computer.

Schedule Edit: Copy and Paste configuration options.

Remote Controls. Up to 32 wall remotes can be connected in daisy chain to the processor. See 6.3 paragraph for additional information. Consult appendix A1 for more help.

First window will show a graphical list of the remote controls recognized by the processor showing the name given at the installation time enumerated from 0 to 31.

In the case that a remote has been connected after the processor initialization (the remote has been connected to the remote network when the processor is running) or in maintenance tasks, you can at any time select the *Search* button to make a network analysis. Select the appropriate remote to check or re-set it.

In the properties window, select an option as below:

RETURN. Return to the previous, selection page wirdow.
HIGHLIGHT. Makes on the selected remote a full blinking light to help in identify it from the others.
IR CODES. Infrared Remote control code definition for each button. Consult IR-02 instruction manual or
        appendix A2.
CLEAR. Clears the button definition and name.
REMOTE … Click here to write a name description of the remote. Example: LOUNGE.
IR CODES. Selects a set of infrared codes (1 to 8, default 1) used for multiple devices in same room.

On each **Button1 to Button 4** you can define the Action taken with the following options:

Input level Up/Down /ON-OFF. Each key stroke makes a step of 0,5 dB change up or down on the
selected inputs. ON-OFF produces a changeover of the input channel mute on-off switch.
Inputs ON. Forces to On the selected input channels. Not works as changeover.
Inputs OFF. Forces to Off the selected input channels. Not works as changeover.
Output level Up/Down/ON-OFF. Each key stroke makes a step of 0,5 dB change up or down on the
selected outputs. ON-OFF makes a changeover of the output channel mute on-off switch.
Outputs ON. Forces to On the selected output channels. Not works as changeover.
Outputs OFF. Forces to Off the selected output channels. Not works as changeover.
Routing level Up/Down. Each key stroke makes a step of 0,5 dB change up or down in the selected
            routing.
Routing Select. Toggles the selected routing inputs to selected outputs from On (0 dB) to OFF (-oo) and
            viceversa. By checking *Stereo* option enables a duo combination. In *Exclusive* mode only
            the last selected remains active, cancelling the other routings.
Preset Recall. Recalls the selected preset number 1 to 10.
Play Voice Message. Plays the selected Voice Message 1 to 5. *Repeat* mode allows a continuous loop.
            See the 7.1.5 VOICE MESSAGES PANEL for additional information.
Gpio Out ON. Forces the selected gpio output 1 to 4 to ON. Does not changeover.
Gpio Out OFF. Forces the selected gpio output 1 to 4 to OFF. Does not changeover.
Gpio Out ON/OFF. Toggles the selected gpio output 1 to 4 from ON to OFF or viceversa making
            changeover.

Level Up/Down buttons can be defined to respond to the following actions:

Input Level Each +/- key stroke makes a step of 0,5 dB change up or down on the selected inputs.
Output level Each +/- key stroke makes a step of 0,5 dB change up or down on the selected inputs.
Routing level Each +/- key stroke makes a step of 0,5 dB change up or down on the selected routing.

ON button can be defined to respond to the following actions:

Inputs ON/OFF. Produces a changeover (ON-OFF-ON...)of the selected input channel mute on-off
switches.
Inputs ON. Forces to On the selected input channels. Not works as changeover.
Inputs OFF. Forces to On the selected input channels. Not works as changeover.
Outputs ON/OFF. Produces a changeover (ON-OFF-ON...)of the selected output channel mute on-off
switches.
Outputs ON. Forces to On the selected output channels. Not works as changeover.
Outputs OFF. Forces to On the selected output channels. Not works as changeover.
Gpio Out ON. Forces the selected gpio output 1 to 4 to ON. Does not changeover.
Gpio Out OFF. Forces the selected gpio output 1 to 4 to OFF. Does not changeover.
Gpio Out ON/OFF. Toggles the selected gpio output 1 to 4 from ON to OFF or viceversa making
            a changeover.

KEY ILLUMINATION/LED BRAGRAPH
All the key buttons are illuminated. When a button is selected as a up/down function, the led will illuminate when it is at the maximum or minimum
position. When the function is defined as toggle (ON-OFF-ON..) it will follow the status of the fuction.
When more than a input (or output or routing) is selected, the illumination corresponds to the first input (or output or routing) that is reaching the final value
(max/min).
An eight led dot bar, indicates the actual level in dBu's of the input or output channels defined on the **Level Up/down buttons.** This bargraph serves also
for momentary indication of the adjusted level point in dB's. Leds 1 to 6 are green. Leds 7 and 8 are red (indication of upper 0 dB region)

<Input Configuration

This tab includes a list of the permitted (checked) or blocked (unchecked) audio sections in the input panel. Check the sections that you want to be ready to use. As an example when the application does not need any input with phantom power, it is recommended to disable it so avoiding inadvertent operations. Sections that are not really used are also recommended to set unchecked so making the installer job easier.

<Output Configuration

This tab includes a list of the permitted (checked) or blocked (unchecked) audio sections in the input panel. Check the sections that you want to be ready to use. As an example when the application does not need any time delay, it is recommended to disable it so avoiding inadvertent operations. Sections that are not really used are also recommended to set unchecked so making the installer job easier.

<Help

You can set the unit to ask you for new software version at the start-up or eventually check for updates. Set it accordingly.

<Input File /Output File

This tabs appears respectively in the tabs menu when application is on the INPUT DETAIL or OUTPUT DETAIL respectively. You can save/load the whole output channel number setup or the individual sections of that channel in the computer. The file only stores the channel number that is selected actually. For an all channel storing, click on the main *File* tab.

<Input Edit /Output Edit

This tabs appears respectively in the tabs menu when application is on the INPUT DETAIL or OUTPUT DETAIL respectively. You can copy/paste the whole output channel number setup or the individual sections of that channel in/from the clipboard. The clipboard only stores the channel number that is selected actually.

This tool is useful when copying configurations between channels that has many properties in common. This is the case when some inputs are using the same microphone model, or in the output section, when the loudspeakers used are the same in many outputs.

7.2 AUDIO MANAGEMENT

The program is composed of separate panels with some interactions, meaning a setting on a panel would be seen on another correlated one. Each panel can be opened or closed at any time depending on the actual job preferences and the resulting canvas could be organized upon the installer needs. The screen size and resolution would result in the number of opened windows to operate with simultaneously.

On the MAP processor design, all the audio components are always available to be used following the design of conventional audio devices. It is not necessary to create an EQ or drag a dynamic noise gate, simply switch it on or off to take it place.

In order to simplify the canvas, the section inside a panel that is not in use -in OFF- would change graphically to a second plane whitened but showing the more important set-up parameters. Simply make it alive by clicking it on ON.

7.2.1 INPUTS Panel

On this section you have a full view of all the inputs 1 to 12. Control and visibility includes all the main audio components at a glance. For a detailed control go to the INPUT DETAIL panel tab.
On each channel you will found
EQ by-pass switch with level bargraph

GATE by-pass switch with gate activity leds and level bargraph

CMP (compressor-expander) by-pass switch with gain reduction/expansion led and level bargraph

FADER with long range bargraph. Fader movements:

> -Double click on it to set to 0 dB.
> -Select it (changes fader color from yellow to blue) and turn your mouse wheel for setting it numerically in 0.5 dB/step.
> -Set the fader gain numerically on the box.

DUCK. By-pass switch with activity led. Click on the activity led for direct ducker setup.

ON-OFF switch. This is the main channel switch (also known as mute switch)

SOLO. This switch **makes a solo** of the channel by switching off (muting) all the other channels. This feature is used to isolate the channel in order to verify the system in a test procedure and for that reason it is not used normally when the system is operating. When using the processor as a microphone mixer, this button can be helpful to make a brief channel solo, for example for the presenter messages, so reducing the need to attenuate other microphones so loosing the relative fader positions.

> NOTE. Use this button carefully.

IN-01 Name label of the channel. Click on this tab to a quick launching to the INPUT DETAIL panel.

LINK This switch will make both channels operate as a single channel in terms of set up all the parameters except the pre-amp that can be set individually. When making a pair in *link* mode, the EQ, gate, cmp and fader definition of the even channel will be lost and replaced by the odd one properties. Conversely when setting in individual mode by clicking on the *link* again, the Eq, gate, cmp and fader definition will remain unchanged.

7.2.2 INPUT DETAIL Panel

This is the main input panel for individual adjustments.
CHANNEL NAME. Select ...to personalise the channel names. Allowed an 8 character name.
BUTTONS 1 TO 12. Selection of the channel

DUCKER Sets the ducker active and selects the a priority level for that channel. See Configuration bar.
Pre-Amp Section

CONNECTION. This button selects the pre-amp chosen for each channel. By default each channel is assigned to its same pre-amp but it is possible to patch a pre-amp to many channels. See the block diagram.
NOTE When a channel is patched to another pre-amp, the gain setting could have been made before from another input channel setting having the same pre-amp patched. The MAP has 12 pre-amps so 12 pre-amp settings.

OSCILLATOR. This switch enables the oscillator disconnecting the channel from the patch CONNECTION. Set the oscillator level and mode in the configuration>oscillator tab.

PHASE. Changes the relative phase of the signal.

+48V. Sets the phantom power ON.
CAUTION. *PHANTOM POWER* Check carefully the setting of the *phantom power* because standard devices as CD players, etc. does not manage it and could be damaged. Check front panel *+48V* led indicator. Phantom power is used for some professional microphones an ancillary audio equipment.

GAIN. Sets the pre-amp gain from 0 to +54 dB in 1 dB steps.
This pre-amp design allows the use of MIC and LINE signals in the same connector and with no additional PAD or attenuator.

> LINE PRO signals. For a better result, set the gain at 0 dB. This set would allow for maximum signal capability of the pre-amp: + 20 dBu max input signal with no clip.
> > NOTE For a better noise results, set the gain to +1 dB. Maximum input signal reduces to +13 dBu
>
> LINE CONSUMER signals. Set it to any gain level. Typical set at +10 dB
> MIC dynamic microphones. Set to the required gain. Typical set +25 to +40 dB
> MIC condenser microphones. Set to the required gain,. Typical set +10 to +25 dB

NOTE. Pro signals are found on professional XLR balanced outputs. Nominal levels ranges from 0 to +4 dBu or more.
Consumer line signals are normally found on players and devices with cinch/din connectors with nominal levels of around -10 dBu. When connecting to earphones outputs from computers or other players, set the gain as in PRO signal to avoid pre-amp distortion.

BARGRAPH Indicates de level in dBu from -40 to +20 dBu in 2 dB steps. The bar changes from green to red color and intermediates depending on the level. Level indication includes a peak reading dot.

DELAY Section. This component introduces a delay of the input signal useful for diverse applications. Range is from 0 (no delay, default) to 990 ms maximum. The delay can be entered as time or as travelled distance in meters or feet at a defined Temperature. When the delay is entered as distance, the user must define the actual air temperature and the processor would adjust the required time delay automatically.

SIX BANDS EQ. The equaliser is composed of six bands. Each band can be tailored as:
    Peq. Parametric filter with selectable Gain (dB), Freq (Hz) and Q factor (bandwidth)
    Low Sh/High Sh. Shelving type filters for low frequencies or for High frequencies
    Notch. The notch filter cuts out a very narrow band in the selected freq. Effect to the band is minimum.

The equalisation graph can be edited numerically or with the mouse by clicking and dragging over the band identifier.
Level and freq are changed by sliding up/down - left/right and the Q factor by scrolling the mouse wheel when pointing a band identifier.
Other features: Band button for selection of the operating band, Phase button for phase curve reading and clear button for a default setting of the complete EQ section.
The parameters on the EQ section can be saved/loaded to the computer and can be copy/paste to another input channel's sections.
ON/OFF is the EQ by-pass and turns the section whitened when OFF for a cleaner canvas job.

GATE Section. A gate is a type of expander with an abrupt level change. Signals entering the gate detector that are lower than the threshold setting would **shut** the gate so the signal becomes cut (or attenuated). When the signal is over the threshold the gate **open**s so the signal passes unmodified.
The noise gate section includes a side chain filter with selectable bandwidth and key source selection. Audio signal is not altered nor processed by the side chain. See the block diagram.

SIDE CHAIN. The detector on the gate takes the signal from its own channel (default key source=same channel number) or from another channel. Thanks to this feature it is possible to shut/open many channel's gates from the same channel in the same group or different so making special effects or conditioned processing. One example can be when processing stereo signals by selecting the same key source, the left channel, the L and R channels would shut synchronized.
The filter on the side chain would help in limiting the action of the gate to signals with a special frequency pattern . It means that a low frequency present on the signal would not opens a voice presenter gate that has been side chain filtered as voice pattern (300 to 3KHz).

LF (Hz) defines the low frequency point (minimum freq. entering the detector gate).
HF (Hz) defines the high frequency point(maximum freq.)
K.SOURCE. Key Source. Defines the channel selected for the detector input. See block diagram.
SHUT/OPEN gate activity indicators.
THRES Gate threshold. Is the level reference for the gate action.
RANGE. Is defined as the residual level of the signal when the gate is shut. The signal is weakened when shut to this amount so the change is less obtrusive.
ON/OFF is the gate by-pass and turns the section whitened when OFF for a cleaner canvas job.
        The range and threshold can be adjusted graphically from the transfer curve. Upper point defines de threshold and the lower point the range. Both points drags up/down to the new values.

COMPRESSOR Section. The dynamic section of the MAP includes a compressor/expander on each input channel. Definition of compressor or expander is done by the ratio settings:
COMPRESSOR Ratios from 1:1 to oo:1
EXPANDER Ratios from 1:1,2 to 1:7
FREQUENCY DEPENDANT COMPRESSOR/EXPANDER. This parametric EQ makes a spectrum correction to make the compressor or expander more sensitive to some frequencies. This makes a de-esser effect easy correcting for speech excess of sss and so other effects.
K.SOURCE. Key Source. Defines the channel selected for the detector input. See block diagram.

THRES Com/Exp threshold. Is the level reference for the dynamic action.

KNEE. In compressor mode it has the possibility to choose from hard (abrupt) or soft knee. This setup allows a more natural transition of the compression effect just near the beginning of the threshold point.
RATIO. Defines the rate of change of the output to input signals crossing the compressor or expander. A ratio 1:1 makes no changes. Setting the THRES at 0 dBu, a ratio of 2:1 (COMPRESSOR) reduces to 5 dB an input signal of 10 dB or conversely a ratio of 1:2 (EXPANDER) translates to 10 dB an input signal of 5 dB.
ATTACK and RELEASE Parameters time.
M.GAIN Make-up Gain. This knob makes a final gain or attenuation to compensate for the COM/EXP gain changes so making restoration of the signal path leveling.
          NOTE. Be careful with the setting of this knob as it is after the compressor patch.

          The ratio and threshold can be adjusted graphically from the transfer curve. Upper point defines de slope of the curve so defining the ratio and the lower point the threshold. Both points drags up/down to the new values.
          An additional bargraph indicates the Gain Reduction experimented on the signal when in Compressor mode -red bar- and changes to Gain Exp. when in expander mode -yellow bar-

INPUT FADER Section. Includes the fader, Mute, solo and AntiFeedback buttons.
FADER with long range bargraph. Fader movements:
          -Double click on it to set to 0 dB.
          -Select it (changes fader color from yellow to blue) and turn your mouse wheel for setting it numerically
           in 0.5 dB/step.
          -Set the fader gain numerically on the box.
AF. This button on the INPUT DETAIL panel, near to fader starts/stops the effect on desired input channels.
ON-OFF switch. This is the main channel switch (also known as mute switch)

SOLO. This switch **makes a solo** of the channel by switching off (muting) all the other channels. This feature is used to isolate the channel in order to verify the system in a test procedure and for that reason it is not used normally when the system is operating. When using the processor as a microphone mixer, this button can be helpful to make a brief channel solo, for example for the presenter messages, so reducing the need to attenuate other microphones so loosing the relative fader positions.
          NOTE. Use this button carefully.

7.2.3 OUTPUTS Panel

On this section you have a full view of all the outputs 1 to 8 (MAP 128) or 1 to 16 (MAP 1216). Control and visibility includes all the main audio components at a glance. For a detailed control permissions go to the OUTPUT DETAIL panel tab. On each channel you will found:

CR. By-pass status and level indicator for the Crossover section.

EQ. By-pass switch and level indicator for the EQ section.

LIM. By-pass status, gain reduction and level indicators for the Limiter section. Limiters are POST-FADER allowing a precise last control of the MAP outputs audio levels to protect loudspeakers or another post processing.

FADER with long range bargraph. Fader movements:
          -Double click on it to set to 0 dB.
          -Select it (changes fader color from yellow to blue) and turn your mouse wheel for setting it numerically
           in 0.5 dB/step.
          -Set the fader gain numerically on the box.

ON-OFF switch. This is the main channel switch (also known as mute switch)

SOLO. This switch **makes a solo** of the channel by switching off (muting) all the other channels. This feature is used to isolate the channel in order to verify the system in a test procedure and for that reason it is not used normally when the system is operating. When using the processor as a multizone processor, this button can be helpful to make a brief speaker solo, for testing the wiring, locating the speaker, making the EQ on a zone, etc., so reducing the installer time.

NOTE. Use this button carefully.

IN-01 Name label of the output. Click on this tab to a quick launching to the OTPUT DETAIL panel.

7.2.4 OUTPUT DETAIL Panel

This is the main output panel for individual adjustments.
CHANNEL NAME. Select ...to personalise the channel names. Allowed an 8 character name.

BUTTONS 1 TO 8 (MAP 128) 1 to 16 (MAP 1216). Selection of the output channel to edit.

MATRIX Section. This panel shows the ROUTING of the input channels to the selected output. Each input can be adjusted from cancelled (-oo) to the maximum level (0dB) so making a mixing of all the inputs for each output.

FADER with bargraph. Fader movements:
-Double click on it to set to -oo dB (zero, no signal).
-Select it (changes fader color from yellow to blue) and turn your mouse wheel for setting it numerically in 1 dB/step.

BARGRAPH Indicates de level in dBu from -40 to +20 dBu in 4 dB steps. The bar changes from green to red color and intermediates depending on the level. Level indication includes a peak reading dot.

AUTO-MIX. Select this button on the input you want to be managed by the auto mixing system. The input that is not included will work in manual mode so not altered by the automatic system. See more details on the menu bar Configuration>Output auto-mix.
When an Automix is selected, one additional bargraph appears showing the gain reduction activity on this input. The Automix system needs a lot of computing process and for this reason care must be taken not to overload it.

The Automix works on the inputs that makes a routing group for each output. It means that an input can be set in Automix to the output #1 but this same input can be working in manual mode (not set in Automix) on the output #2.

CROSSOVER Section. You can configure a pair of filters -HP High Pass and LP Low Pass- on any of the outputs. Selectable filter types are: Full Range, Butterworth, Bessel and Linkwith Rilley. Select full range to make a by-pass on this side, say you don't need a filter there. The type of filters and the selected slope depends on the loudspeaker characteristics or composition, number of ways, etc.
When the type has been selected, set the operating crossover frequency manually or graphically on the curve by clicking and drag on the LP and HP symbols.
XR ON. This is the by-pass button to cancel out setting to full range, the crossover filters section. A confirmation appears just to show you the importance of this change.

NOTE. Be very carefully when selecting the HP frequency cut-off or set a crossover in by-pass as many speaker systems can be overloaded and be destroyed when working out of band for a small time.

SIX BANDS EQ. The equaliser is composed of six bands. Each band can be tailored as:
Peq. Parametric filter with selectable Gain (dB), Freq (Hz) and Q factor (bandwidth)
Low Sh/High Sh. Shelving type filters for low frequencies or for High frequencies
Notch. The notch filter cuts out a very narrow band in the selected freq. Effect to the band is minimum.

The equalisation graph can be edited numerically or with the mouse by clicking and dragging over the band identifier.

Level and freq are changed by sliding up/down - left/right and the Q factor by scrolling the mouse wheel when pointing a band identifier.

Other features: <u>Band button</u> for selection of the operating band, <u>Phase button</u> for phase curve reading and <u>clear</u> button for a default setting of the complete EQ section.

The parameters on the EQ section can be saved/loaded to the computer and can be copy/paste to another input channel ́s sections.

ON/OFF is the EQ by-pass and turns the section whitened when OFF for a cleaner canvas job.

LIMITER Section. The dynamic section of the MAP includes a LIMITER on each output set in POST-FADER mode allowing a precise last control of the MAP outputs audio levels to protect loudspeakers or another post processing.

THRESHOLD. Is the level reference for the dynamic action.

ATTACK and RELEASE Parameters time.

> The threshold can be adjusted graphically from the transfer curve. The point defines the threshold. Just drag up/down to the new value.
> An additional bargraph indicates the Gain Reduction experimented on the output signal -red bar-

DELAY Section. This component introduces a delay of the input signal useful for diverse applications. Range is from 0 (no delay, default) to 300 ms maximum. The delay can be entered as time or as travelled distance in meters or feet at a defined Temperature. When the delay is entered as distance, the user must define the actual air temperature and the processor would adjust the required time delay automatically.

OUTPUT FADER Section. Includes the fader, Mute, solo and phase buttons.

FADER with long range bargraph. Fader movements:
> -Double click on it to set to 0 dB.
> -Select it (changes fader color from yellow to blue) and turn your mouse wheel for setting it numerically in 0.5 dB/step.
> -Set the fader gain numerically on the box.

ON-OFF switch. This is the main channel switch (also known as mute switch)

PHASE. Changes the relative phase of the output signal.

SOLO. This switch **makes a solo** of the channel by switching off (muting) all the other channels. This feature is used to isolate the channel in order to verify the system in a test procedure and for that reason it is not used normally when the system is operating. When using the processor as a microphone mixer, this button can be helpful to make a brief channel solo, for example for the presenter messages, so reducing the need to attenuate other microphones so loosing the relative fader positions.
> NOTE. Use this button carefully.

7.2.5 VOICE MESSAGES Panel

The MAP processor can store internally up to 5 voice messages to be played anytime.

The messages has a maximum length of 16 seconds each and are mainly used for alarm and evacuation systems, warning messages or any other short message including corporate music or welcome messages.

The system only accepts message files with the following specification: file type pcm, extension .wav, sampling rate 22.050 samples per second, mono. You can use your favourite sound converter to make the file ready for upload to the MAP. Files longer than 16 seconds would be cut.

For a continuous loop, check the *repeat* box in the configuration menu.

OUTPUT. Comes from input **channel 12**. This channel #12 mixes the voices messages (gain always at unity gain) with the ch-12 preamp output. See the block diagram for details.

VOICE MESSAGE ACTIVATION. The Voice messages can be activated by either:
-Manually from the bar menu option.
-At a programmed time from the Schedule Task option menu.
-Externally from a logic input connection (GPIO options). See GPIO configuration menu.
-From the Remote control and IR control. See Remote Control configuration menu.

7.3 SPECIAL OPERATIONS. MEMORY – PRESETS – SETUP

The Map processor operates with parameters as master level, preamp gain, EQ curves, etc. that are the actual parameters that defines the audio behaviour. We define the whole set of these parameters as the WORKING MEMORY. The working memory is then saved as presets when needed.

When the MAP shuts down, the working memory is not lost and is used on the next switch ON to operate the device.

The working memory can be changed from the 3cMAP user, remote controls, gpio or schedules so it is necessary a first time store on the internal memory or outside in the PC for future recalls.

The MAP processor can store internally up to 10 named presets and externally on the PC drives as backup organized in files and directories.

A preset loaded from the PC would transfer parameters to the working memory for operate the unit but **it is not automatically stored on any of the 1 to 10 internal presets. Save it on presets if necessary.**

The Remote Control parameters are stored on the remote devices it shelves and not in the MAP processor nor in the PC presets.

The list of *schedules tasks* and the *GPIO definitions* are stored in the MAP only and are not stored in the presets nor in the PC presets.

The action of the *voice message* is only stored on presets with the condition that the preset is stored at the moment it is played and the repeat function is enabled (checked).

7.4 MAP FIRMWARE UPDATES

The MAP processor firmware and the 3cMAP version could be updated from the internet.
In order to manage an automatic check for updates, check the appropriate option "Check for updates" on the HELP menu from the 3cMAP software.
If you prefer an automatic update, check the appropriate box "Check for updates at start up" on the HELP menu from the 3cMAP.
The update process checks for new firmware and software revisions for the mcu processor, the dsp processor on the MAP device and on the 3cMAP sequentially.
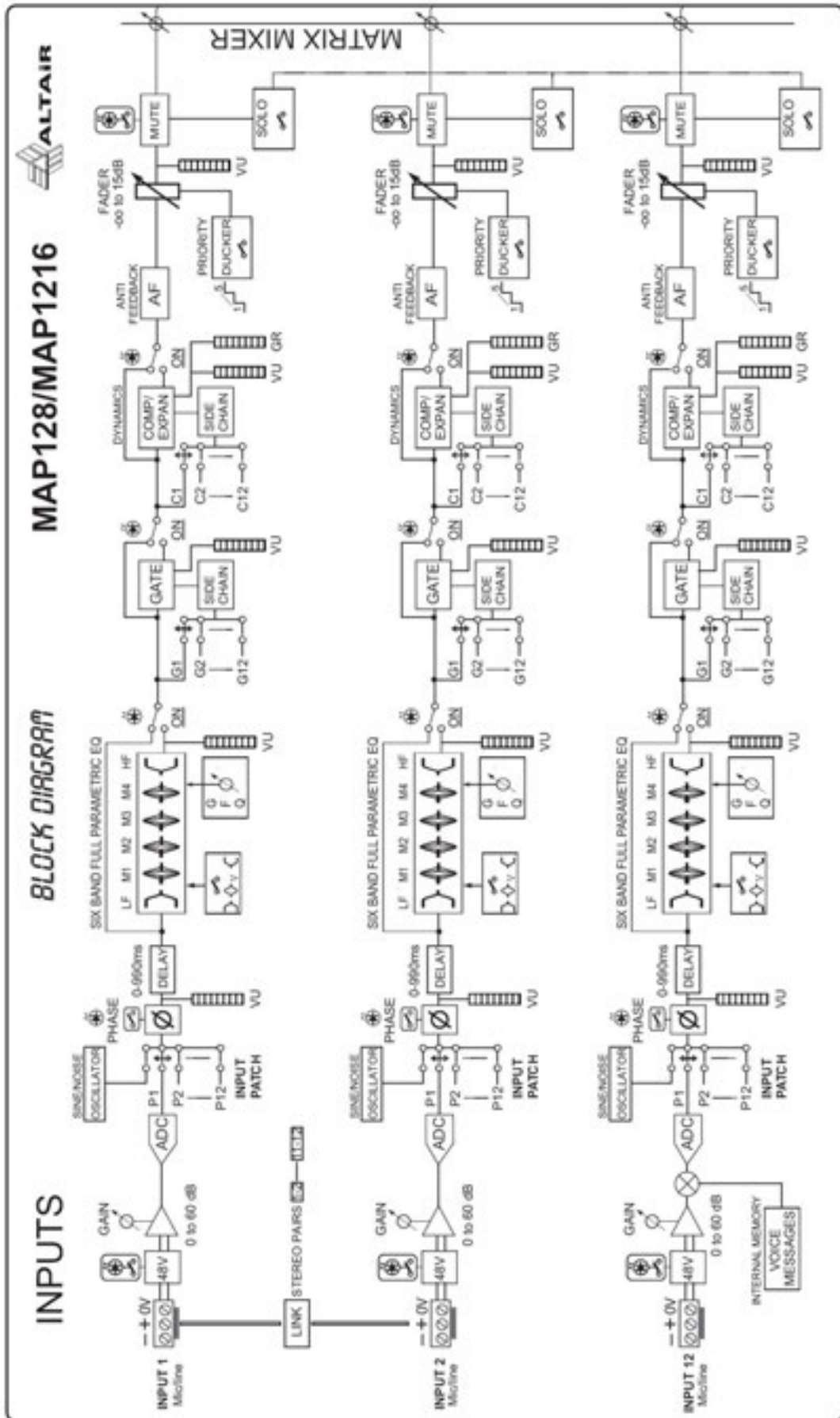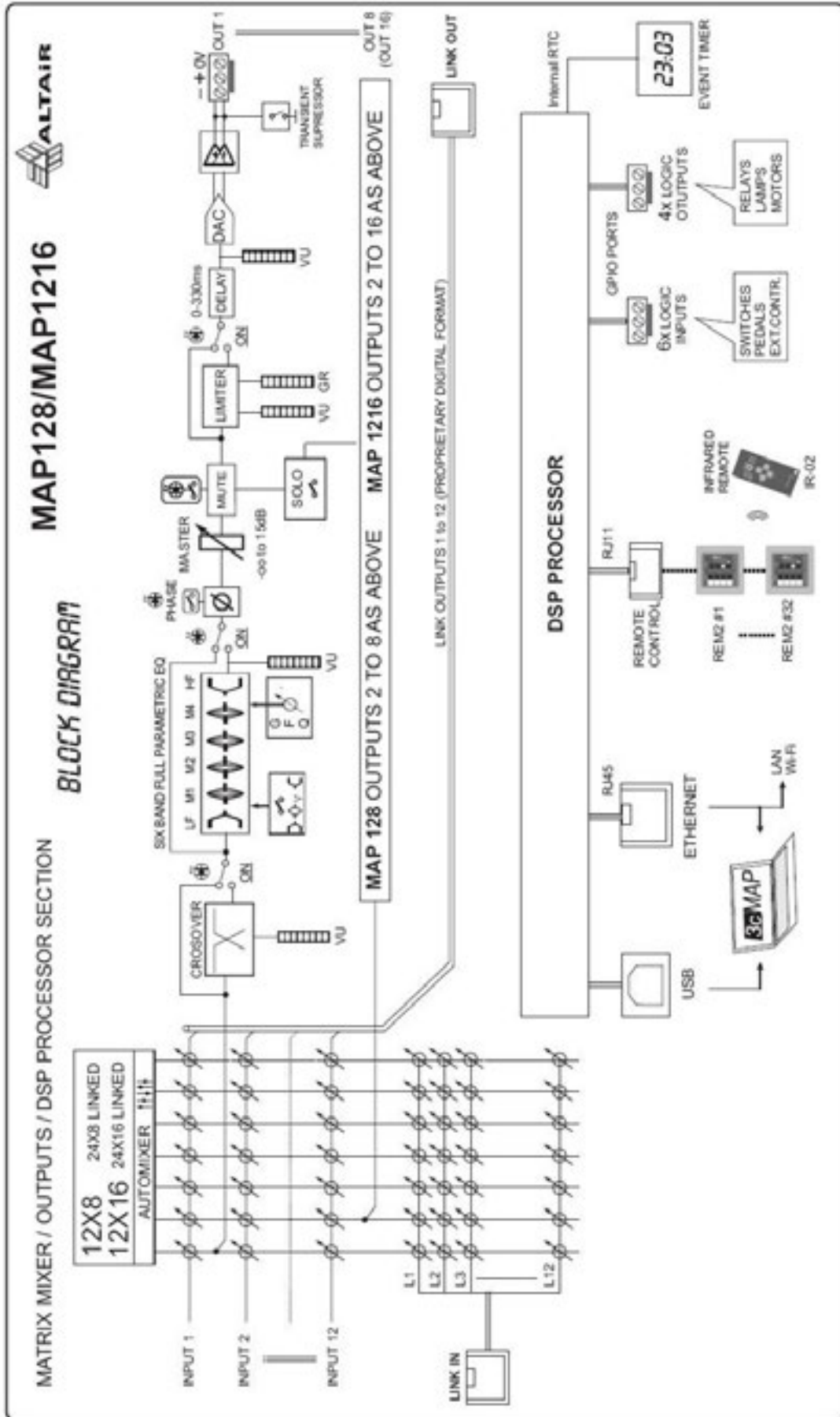
8.0 BLOCK DIAGRAM. Full view
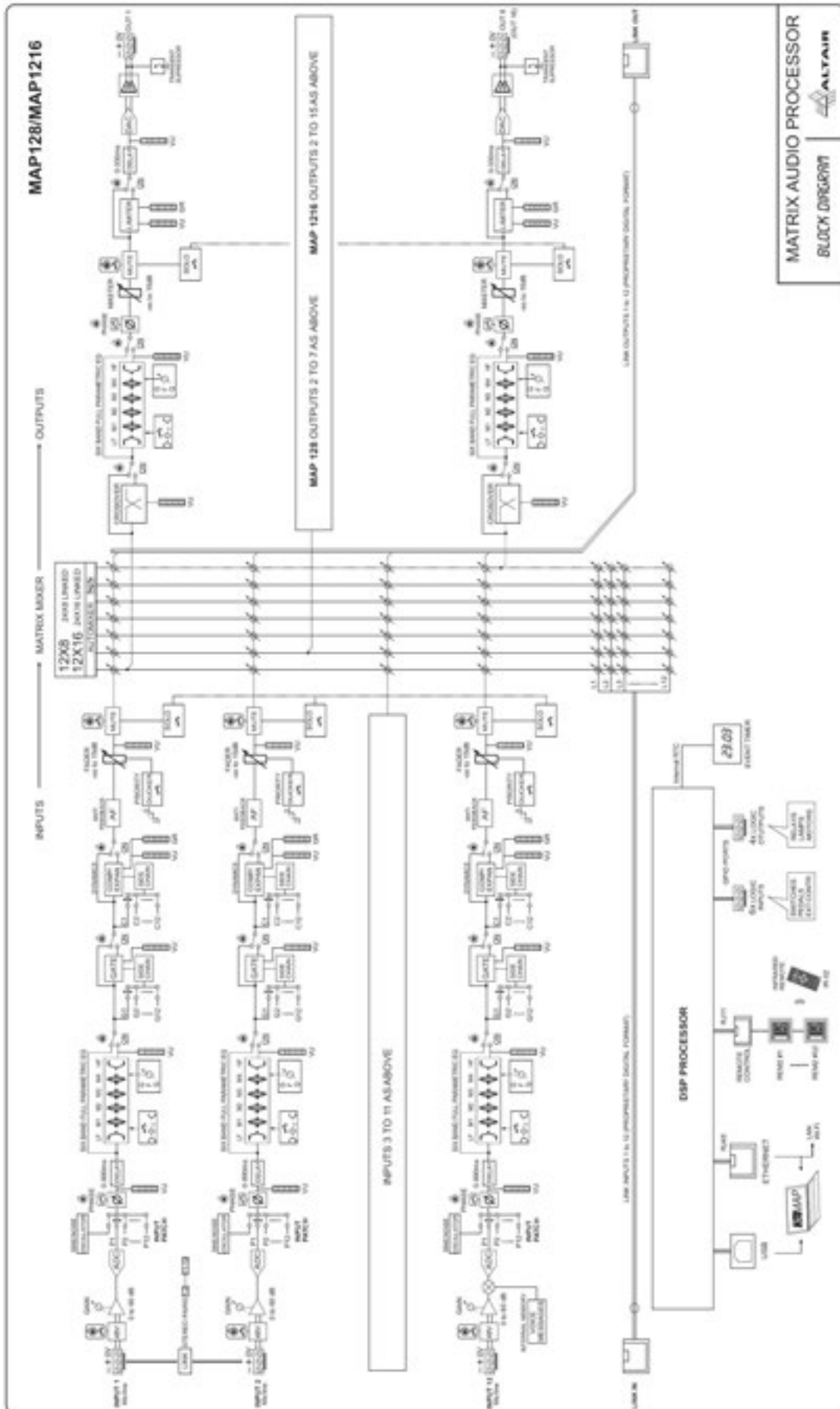
8.1 INPUT BLOCK DIAGRAM Detail

8.2 OUTPUT BLOCK DIAGRAM Detail

MAP128/MAP1216

BLOCK DIAGRAM

MATRIX MIXER / OUTPUTS / DSP PROCESSOR SECTION

9. TECHNICAL SPECIFICATIONS

DISTORTION	• THD+N < 0,03% @ 0 dBu (25Hz- 50KHz).
FREQUENCY RESPONSE	• 20 Hz- 20KHz (-2, -0.5 dB) at +4 dBu input level
NOISE (preamp)	• -124 dBu (EIN) 20 Hz-22KHz, 60 dB gain, 150 ohm
DYNAMIC RANGE	• >104 dB, 0.1% THD, un-weighted (U/W 20-20 KHz)
INPUT IMPEDANCE (mic/line)	• 4 KΩ. Electronically balanced.
INPUT LEVEL	• 0 dBu nominal / +20 dBu maximum at 0dB gain
INPUT GAIN	• 0dB to +60dB, 1 dB step
CROSSTALK (channel to channel)	• Better than 80 dB at 1KHz. (>70 dB from 20 Hz to 20 KHz).
C.M.R.R.	• Typical value: Better than 65 dB at 1KHz.
PHANTOM POWER	• +48Vdc. Individually selected on each input channel
OUTPUT IMPEDANCE	• 100Ω. Electronically balanced and floating.
OUTPUT LEVEL	• 0 dBu nominal / +20 dBu maximum.
FRONT PANEL INDICATORS	• Input/Output levels: Signal present/nominal/peak. • Phantom power: Indication on every input individually • Device Status/ Phantom Power/Communications/Link
COMMUNICATIONS	• USB. Front panel. • Remote panel units (proprietary). RJ11 6/6 connector • Ethernet 10/100. RJ45 connector • Link (proprietary). Dual RJ45 connectors
SOFTWARE CONTROL	• 3cMAP for PC/android
A/D and D/A converters	• 24 bit
SAMPLING RATE	• 48 KHz
INPUT/OUTPUT/GPIO CONNECTIONS	• 3 pin Phoenix ™ 3.5 mm Type.
LINE POWER	• Autorange 90 TO 260 VAC, 50-60 Hz.
POWER COMPSUMPTION:	• 60 V.A.
DIMENSIONS/WEIGHT:	• 483x44x250 mm. (19" x 1U)/6Kg net

NOTE: Specifications subject to change without notice.

10. WARRANTY

This unit is warranted by Equipos Europeos Electrónicos to the original user, against flaws in the manufacturing and in the materials, for a period of two years (one year depending on some countries), starting from the date of sale.

Flaws due to wrong use of the unit, internal modifications or accidents, are not covered by this warranty.

There is no other warranty expressed or implicit.

Any faulty unit must be sent to the dealer or the manufacturer, previous an RMA authorisation. Carry it or ship prepaid in an adequate box. The serial number of the unit must be included for any request to the technical service.

Equipos Europeos Electrónicos reserves the right to modify the prices or the technical specifications without further notice.

SERIAL NUMBER   ....

Extract of the Declaration of Conformity (DoC)

"We, Equipos Europeos Electrónicos, S.A.L., declare, that the above mentioned product is manufactured according to our Full Quality Assurance System in compliance with ANNEX V of the R&TTE-Directive 99/5/EC. The presumption of conformity with the essential requirements regarding Council Directive 99/5/EC is ensured."

The Declaration of Conformity (DoC) has been signed. In case of needing a copy of the original DoC, it can be made available via the internet direction: http://www.altairaudio.com/DoC

European Union
Waste Electronics Information
Unión Europea
Información sobre residuos electrónicos

Waste from Electrical and Electronic Equipment (WEEE) directive
The WEEE logo signifies specific recycling programs and procedures for electronic products in countries of the European Union. We encourage the recycling of our products. If you have further questions about recycling, contact your local sales office.

Directiva sobre Residuos de Aparatos Eléctricos y Electrónicos (RAEE)
El logotipo de la Directiva RAEE se refiere a los programas y procedimientos específicos de reciclaje para aparatos electrónicos de países de la Unión Europea. Recomendamos el reciclaje de nuestros productos. Si tiene alguna consulta, póngase en contacto con su Distribuidor.

Information based on European Union WEEE Directive 2002/96/EC
Información basada en la Directiva de la unión europea RAEE 2002/96/EC y el Real Decreto 208/2005