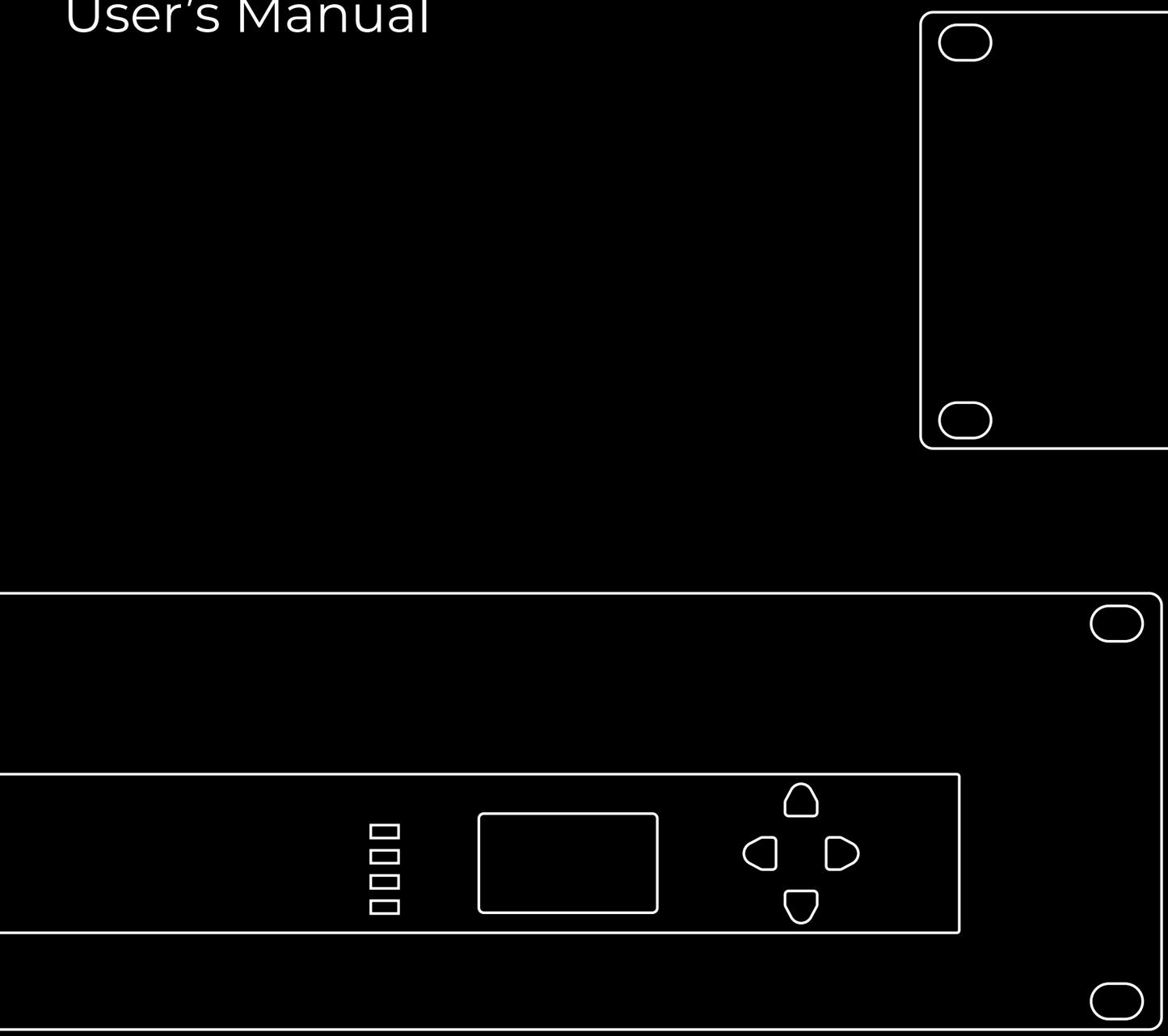
INTEGRAL-MA

User’s Manual



SOUND WITH SOUL

www.dasaudio.com

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DAS Audio is a unique brand. We create sound solutions for businesses, always adapted to the different needs of our clients.

The Integral Series is the heart and brain of our installation solutions. It comprises a series of devices that in addition to feeding and processing the signal of our speakers, allow absolute control to our users, guaranteeing the protection and quality of the equipment.

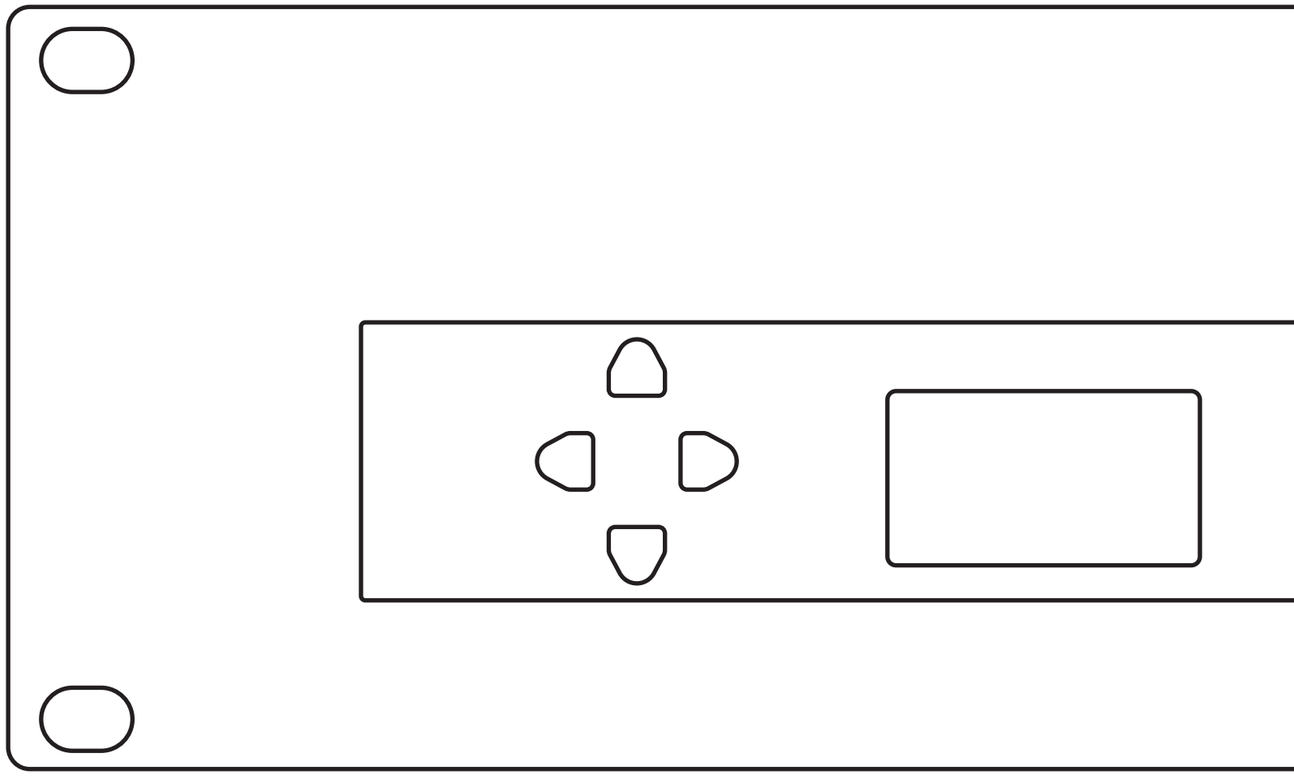
You are about to discover what it means to work with our brand, and this is just the beginning. You will have access to quality training materials on our website, where you will discover specific business solutions and learn how to use them: dasaudio.com/en/training/

This user manual is designed to guide you, swiftly and smoothly, during the installation of our equipment, but in case you have any questions or doubts, do not hesitate to contact our technical support team by writing directly to *support@dasaudio.com* or, if you prefer, through our website, contacting your nearest office at *dasaudio.com/contact*

INTEGRAL
Description and features

The INTEGRAL-MA is a 4-channel matrix-amplifier in 2U rack format with built-in digital signal processor, ideal for installations. The unit has 4 analog input channels, 8 analog output channels and 4x4 DANTE digital audio channels. Control, configuration and management of the unit can be executed with the ALMA software via Ethernet or Open Sound Control (OSC) protocol. Digital audio channels can be processed and injected back into the network.

Main features include priority assignment (two levels) per every output, routing matrix with gains, equalization and advanced filters for each channel, phantom power for Mic/Line inputs, etc., making it the essential unit or brain of any installation. The internal memory is capable of managing more than 100 global presets and 200 output channel presets (presets for each loudspeaker model). A bank of presets per output channel with specific processing and parameters for each and every DAS Audio system is included, allowing users to configure each channel independently and flexibly. Two of the analog inputs can be selected as microphone inputs with phantom power available.

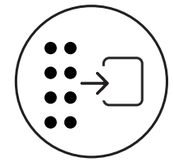


INTEGRAL
Description and features

Additional features include a 1.54” OLED screen for displaying input and output vumeters, equipped with keys to navigate quickly, intuitively and easily through the different menus. The front panel provides access to multiple functions such as input and output muting, output routing, input and output gain, memory recall, channel linking, priority and phantom activation, etc... Incluye un switch de ethernet para conexiones en cadena además de WiFi y BT.

The unit includes an Ethernet switch for daisy-chain connections in addition to Wi-Fi and BT.

- 4 CH Matrix-amplifier with built-in DSP
- 250/400 W per channel @ 4 ohms
- High performance Class D
- Low Z and High Z (bridge mode 70 V/100 V)
- 4 independent analog inputs
- 2 MIC/Line Inputs with phantom power
- 4 x 4 DANTE digital audio channels
- Control and monitoring with ALMA software


8 INDEPENDENT DSP CHANNELS

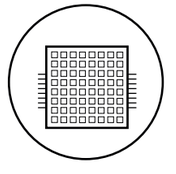

TWO SELECTABLE PRIORITY LEVELS PER OUTPUT CHANNEL

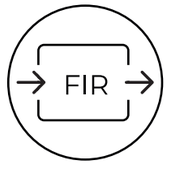

DANTE

SYSTEM MANAGEMENT OVER IP

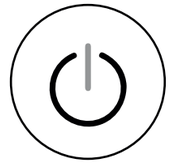

BANK OF DAS SPEAKER PRESETS

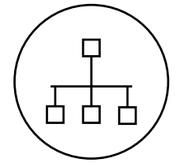

REAL TIME STATUS MONITORING

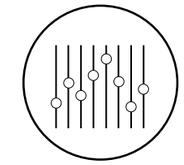

8x8 CONFIGURABLE FULL MATRIX



FIR CAPABILITY


STAND BY MODE


ETHERNET SWITCH INCLUDED


8 BAND EQ

CLASS D AMPLIFIER

OPEN SOUND CONTROL FOR TABLETS & PHONES


WI-FI REMOTE CONTROL

INTEGRAL
Front panel

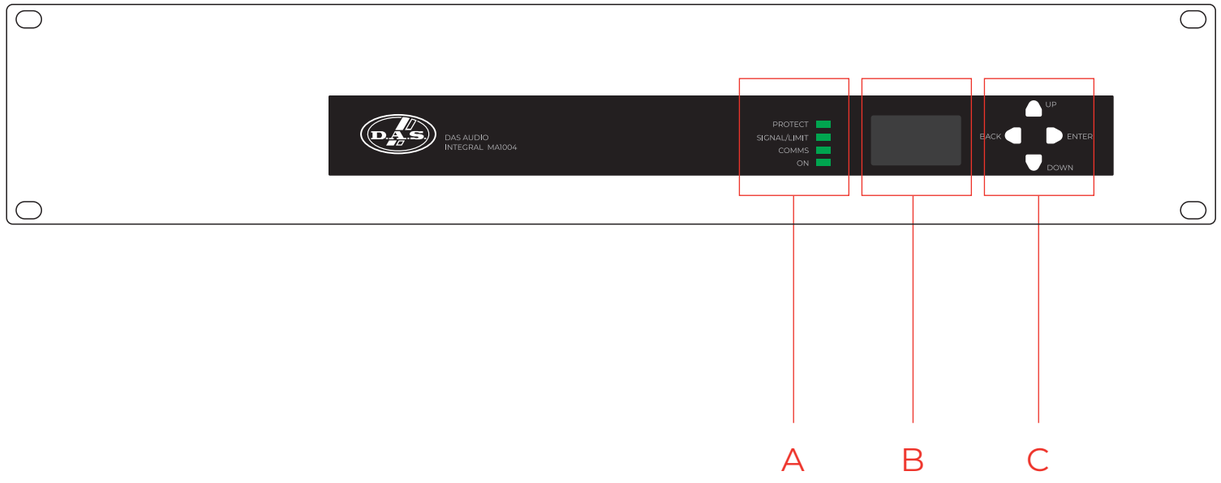
A LEDS

PROTECT: The LED indicator will light up RED when the amplifier enters protection mode due to overheating, short-circuit or another cause.

SIGNAL/LIMIT: The LED indicator will light up GREEN when there is presence of signal in an output channel. If the limiter of one of the channels is activated, it will light up RED.

COMMS: The LED will light up ORANGE when the system is connected via OSC or ALMA to PCs or mobile devices.

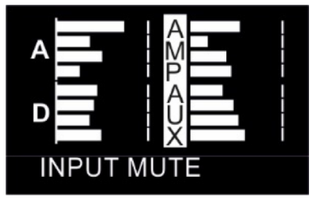
ON: When the amplifier is turned on, the LED illuminates GREEN (steadily); The light will blink GREEN when the amplifier is in STANDBY mode.



B 1.54” OLED DISPLAY

Allows the visualization of the signal level of input channels (both analog “A” and digital “D”), as well as the output channels (AMP + AUX).

The display also lets you navigate through the matrix-amplifier configuration menus and select parameters.



C NAVIGATION KEYS

Four navigation and selection keys allow you to select options and settings from the screen menus. To access a menu from the vumeters screen, just press the right key or ENTER.

INTEGRAL
Rear panel

A Analog Signal Inputs

Analog signal input connections use 3.5mm pitch, 5-pin “Terminal Block”-type connectors. There are 4 input channels: INPUT A, B, C and D. Channels A and B can be used as microphone inputs activating the phantom power from the front panel.

B Analog Gain Controls for Mic/Line Inputs

Gain controls for input channels A and B. They should only be used when channels A and B are employed as microphone inputs.

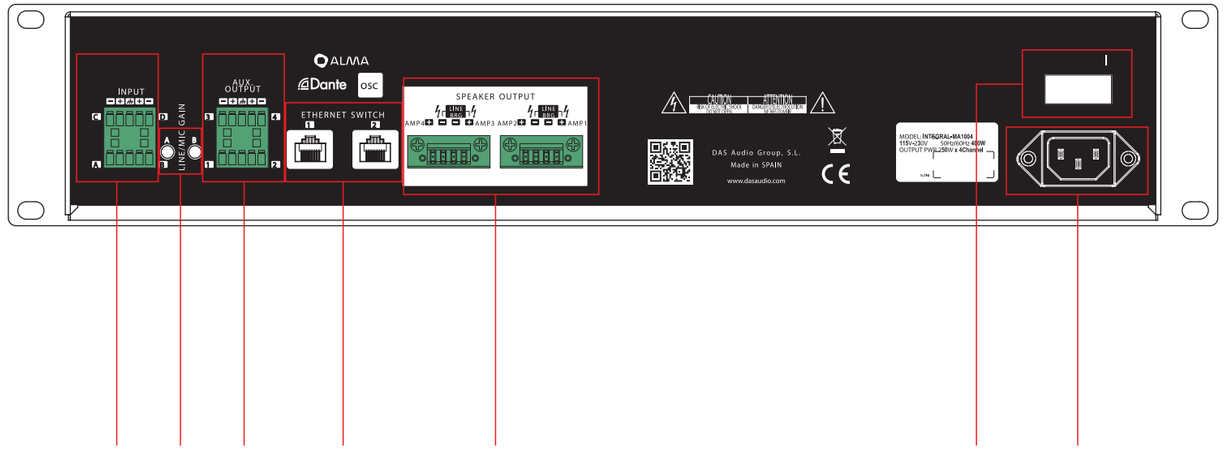
C Processed Analog Signal Outputs

These 3.5mm pitch, 5-pin “Terminal Block”-type connectors are the outputs carrying the amplifier´s DSP processed signals. There are 4 auxiliary processed output channels: AUX 1, AUX 2, AUX 3 and AUX 4. These outputs can be used to send signal to other amplifiers without processing (INTEGRAL-Axxxx models) or to self-powered systems.

D RJ45 Connectors

RJ45 connectors connected to an internal Ethernet switch that allows daisy-chaining between units. It is recommended to use a CAT5e cable or superior. The RJ45 ports will be used for:

- Connecting the unit to the network so it can be controlled with ALMA / OSC
- Send/Receive DANTE digital audio

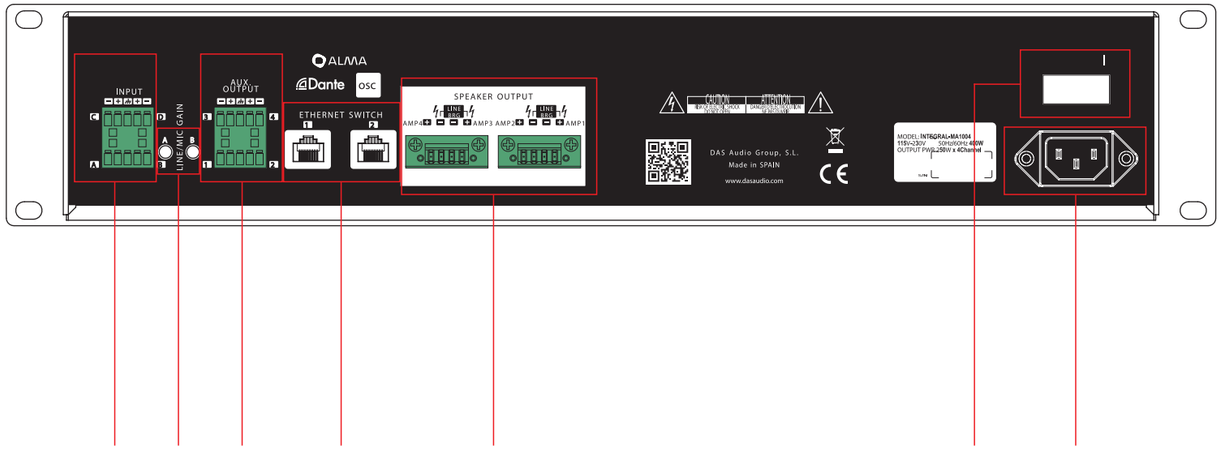


Rear panel

E Speaker Power Outputs

Speaker Outputs use 5.08mm pitch, 4-pin “Terminal Block”-type connectors. There are 4 amplified and processed speaker output channels. Channels AMP 1, AMP 2, AMP 3 and AMP 4.

Channels can be bridged in pairs for high impedance lines (100/70V). Select the AMP BRIGE mode to bridge two power channels (AMP1-2 or AMP3-4) and directly connect the systems in parallel with transformer (high impedance).



F On / Off Switch

G Power Cord Socket

Connect the power cable supplied to the unit.

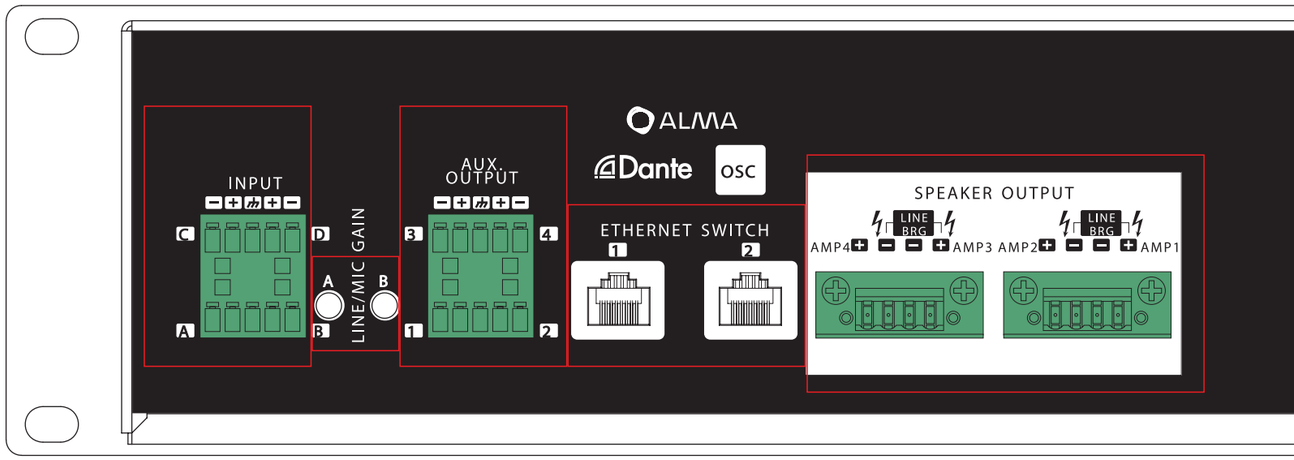
INTEGRAL
Analog audio connections

The MA matrix-amplifiers have 4 balanced input channels for analog audio. These are INPUT A, INPUT B, INPUT C and INPUT D.

Channels A and B can be used for both line and microphone. There are two analog gain controls on the rear panel for the two mic/line A and B inputs. Remember that the gain controls should be used primarily when connecting microphones to these inputs. Phantom power for channels A and B is available from the options menu, which can be operated from the front panel display and navigation keys, (it can also be activated from ALMA).

One of the main features of the INTEGRAL-MAxxxx, matrix-amplifiers is that they feature 8 independent processing channels with two assignable priority levels per output.

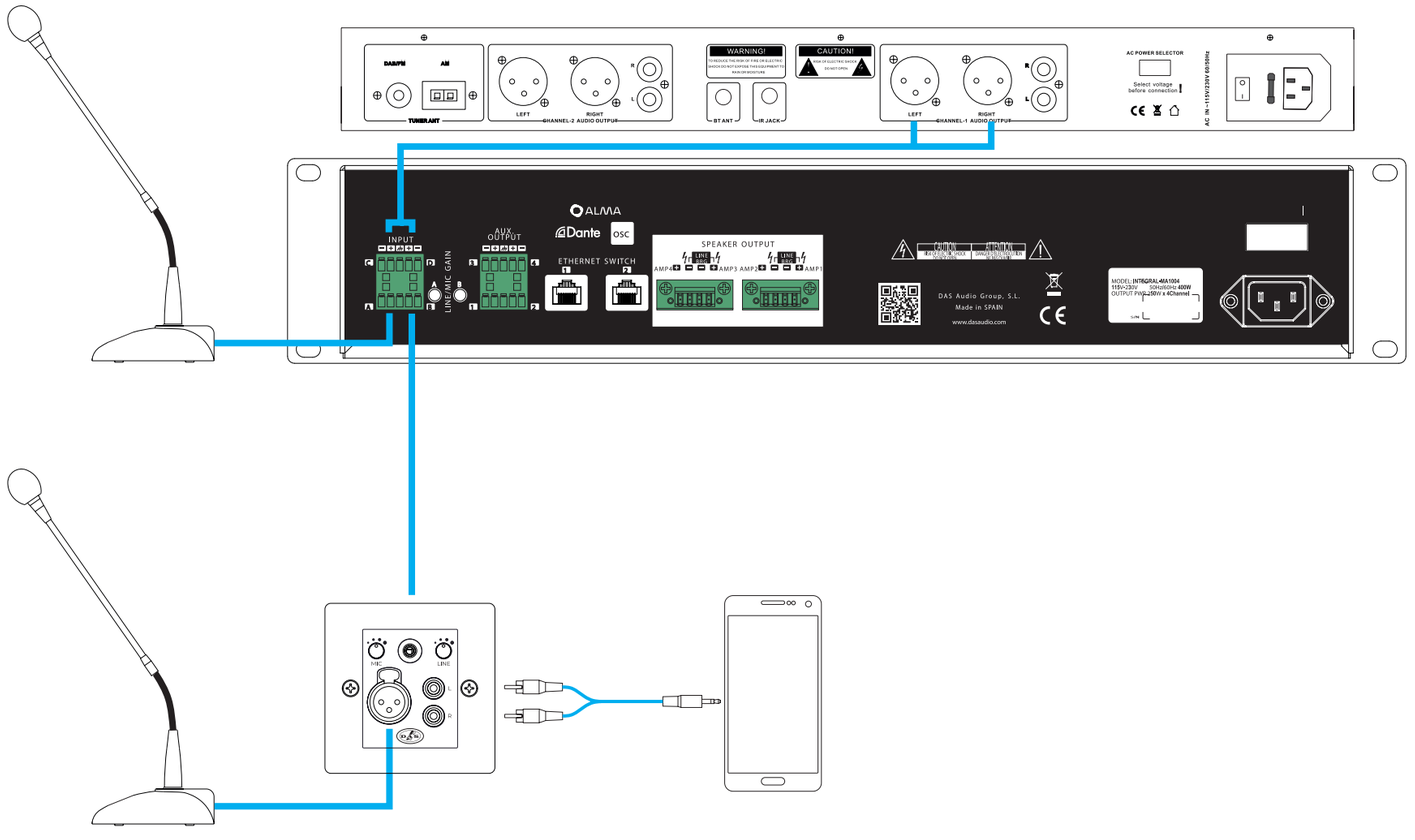
Four channels are used to process the 4 amplifier channels, while the remaining channels, named AUX OUTPUT, are used to send balanced signal to INTEGRAL-Axxxx modules or active systems.



Analog audio connections

Analog Audio Inputs

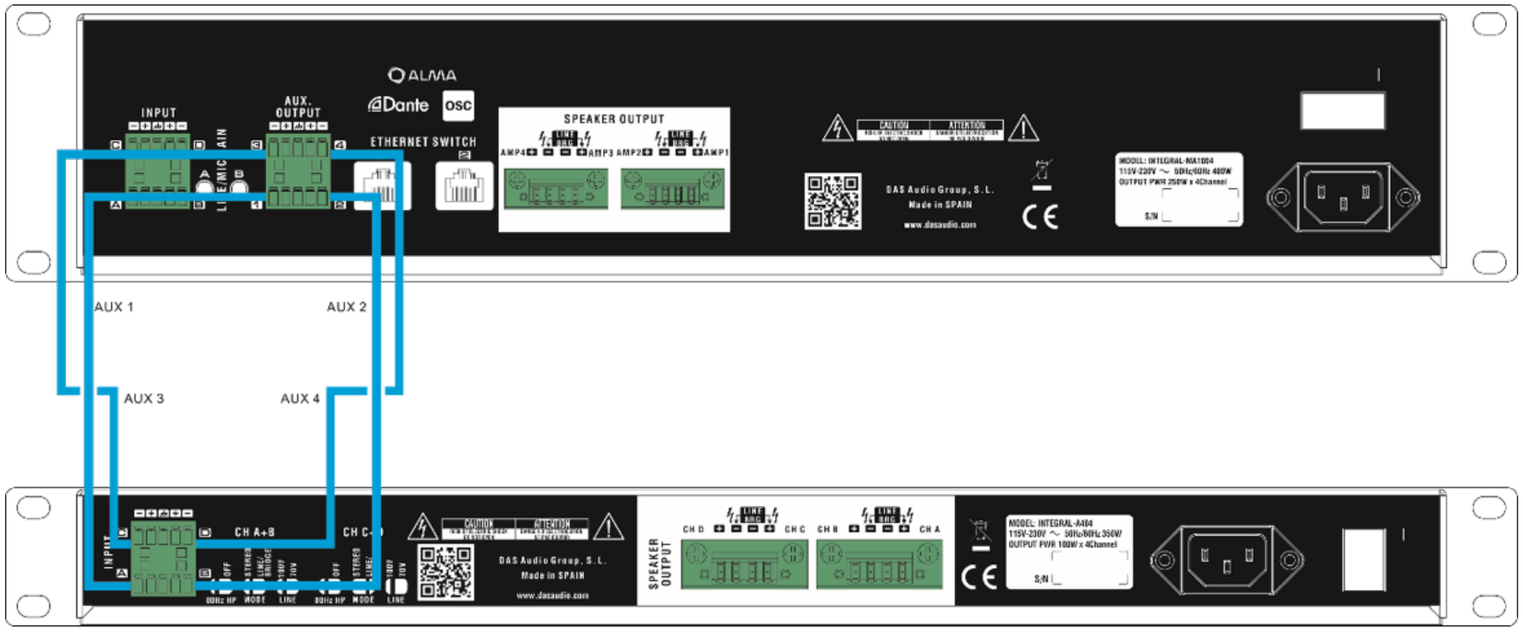
The following illustration shows an example of a system connection with 4 analog audio inputs: a microphone is connected to input A, a monophonic line signal (from a WPM1 wall mixer) is connected to input B and a stereo line signal (from an AS2 unit) is connected to inputs C and D.



Analog audio connections

Analog Audio Outputs (AUX)

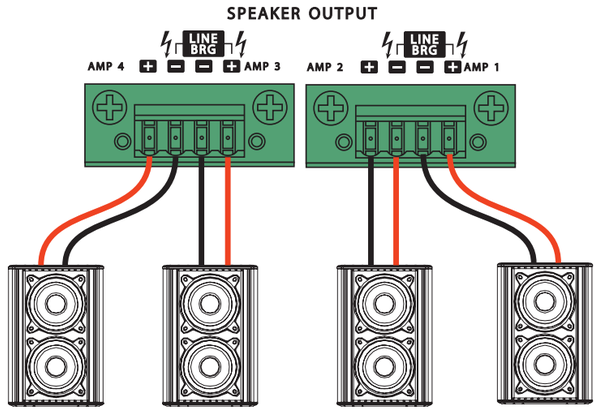
The following illustration shows an example of processed auxiliary audio output connections: a slave amplifier, an INTEGRAL-A404 model, receives as input signal the 4 auxiliary channels (AUX 1, AUX 2, AUX 3, AUX 4) independently processed from the INTEGRAL-Maxxxx.

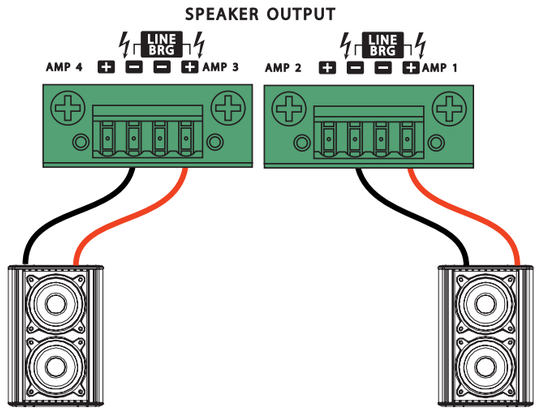


Power connections

The MA matrix-amplifiers have 4 power output connections that use 5.08mm pitch “terminal block” connectors to the speakers. These channels are AMP 1, AMP 2, AMP 3 and AMP 4. DAS Audio recommends using high quality power cord or two-conductor twisted cable. To prevent the possibility of short circuits, the cables should be stripped back no more than 6mm (1/4”). Cable run and gauge (section) will be determined by the application and cable power loss. High impedance configurations (systems with transformer and 100/70V lines) should be used when distances are considerable and cable losses are greater than 10% (around 1dB).

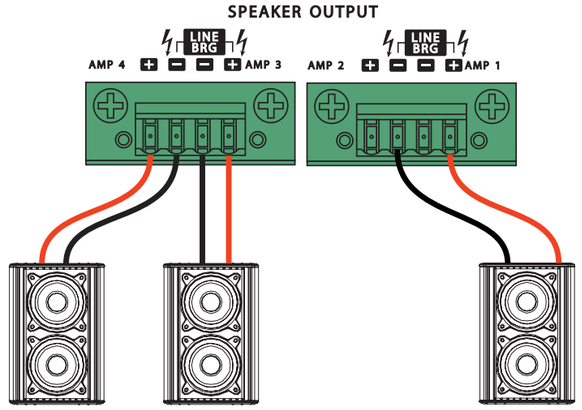
Low impedance power outputs (4/8 ohm)





High impedance power outputs (Hi Z, Bridge mode active)

Hybrid configuration, two channels in low impedance and two channels in high impedance connection



Power connections

The user must select the output mode (Bridge or Stereo) for the 4 power channels using the front display and navigation keys or using the ALMA software.

Losses for 100/70V lines

These values serve as a reference when selecting cable gauge / length (copper cables) for maximum admissible distances in high quality installations and maximum losses of up to 10% (1dB):

100V	Potencia total de la línea	Distancia Máxima (m / ft)
	200W	242 / 794
1.5mm²	500W	97 / 318
AWG15	800W	60 / 197
	200W	325 / 1066
2mm²	500W	130 / 426.5
AWG14	800W	82 / 269
	200W	405 / 1329
2.5mm²	500W	162 / 531.5
AWG13	800W	102 / 334.6
	200W	535 / 1755
3.3mm²	500W	215 / 705
AWG12	800W	134 / 440

For 70V lines, the distances above should be divided by 2. For example, the maximum admissible distance for a 2mm2, 200W and 70V line would be 325/2=162.5meters.

Losses for 4/8ohm lines

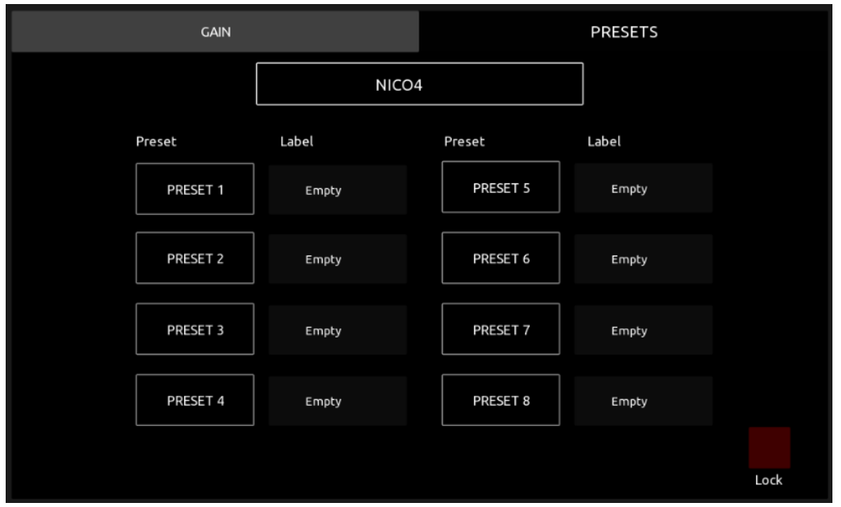
These values serve as a reference for the most common cable gauge /length (copper cables) for maximum admissible distances and maximum losses of up to 10% (1dB):

	Distancia máxima (m / ft)	
	8ohm	4ohm
AWG15 o 1.5mm²	40 / 131	20 / 65.6
AWG14 o 2mm²	52 / 170	26 / 85.3
AWG13 o 2.5mm²	65 /213	32 / 105
AWG12 o 3.3mm²	85 / 279	43 / 141

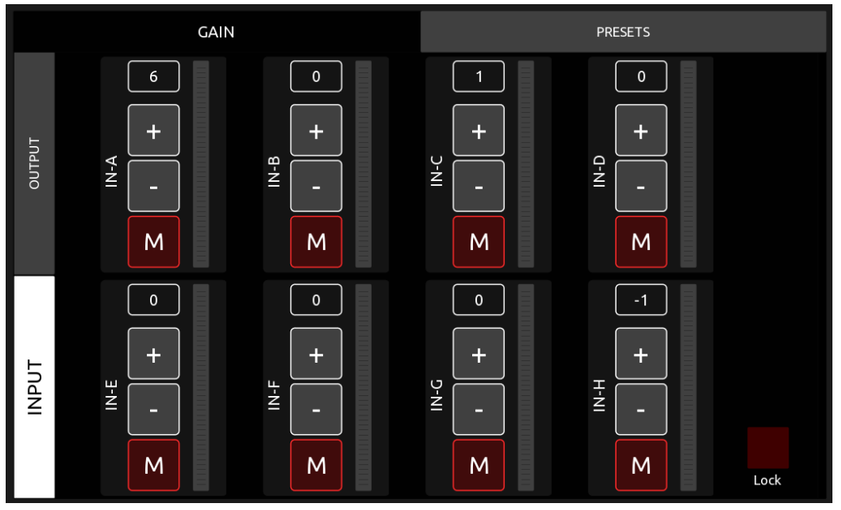
ALMA software is the control and configuration tool for the INTEGRAL series devices with on-board digital signal processor (DSP). ALMA gives you access to the unit´s front display settings and configuration options and to additional advanced options and settings that are not accessible from the front display.

There are standard adjustment parameters such as input channel gains, output channel gains, input channel mute, output channel mute, presets and recall that are accessible via OSC (Open Sound Control). Open Sound Control (OSC) is a data transport specification (an encoding) for real-time message communication among applications and hardware.

DAS Audio provides the codes to program access to these parameters (gain, mute, etc.) with OSC compatible applications. It also provides default templates for INTEGRAL-MA units controlled with the TouchOSC application. These templates can be used with iPads, smartphones or INTEGRAL-WP3 (7” touch screen control) devices.



Example of a TouchOSC template for iPad used for preset recovery.



Example of a TouchOSC template for iPad featuring gain control, VU meters, and a mute function for each input and output channel.

For more details, see the OSC Control chapter in this manual.

MA matrix-amplifiers have 2 RJ45 connectors in the rear panel for IP network connections. The RJ45 is used to connect the unit to a computer via router (Wi-Fi or not) or to an Ethernet switch in the installation. RJ45 connectors can also be used to send and receive DANTE digital audio. The two RJ45 connectors are connected to an internal Ethernet switch which enables Daisy-chaining of up to eight units. CAT5e cables or superior are highly recommended.

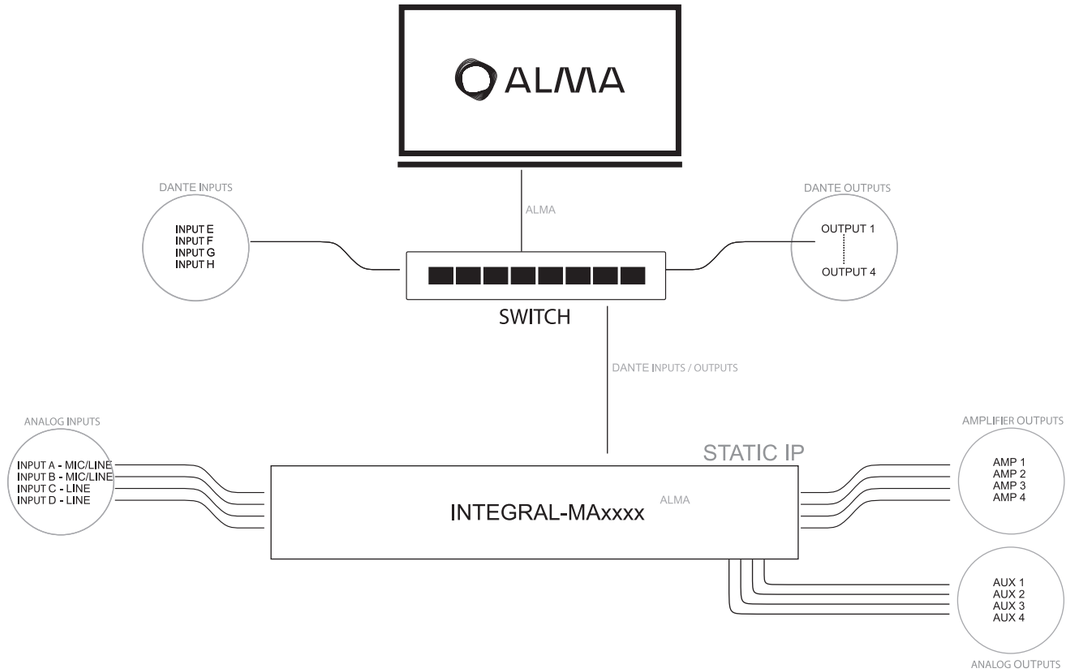
DANTE digital audio as well as control and management data from ALMA will use the same Ethernet cable.

DANTE digital channels assignment between devices must be done via DANTE Controller software *(https://www. audinate.com/products/software/dante-controller)*. See chapter on Dante channel configuration and assignment.

Since there can be multiple connection and configuration options, only the most common will be described below.

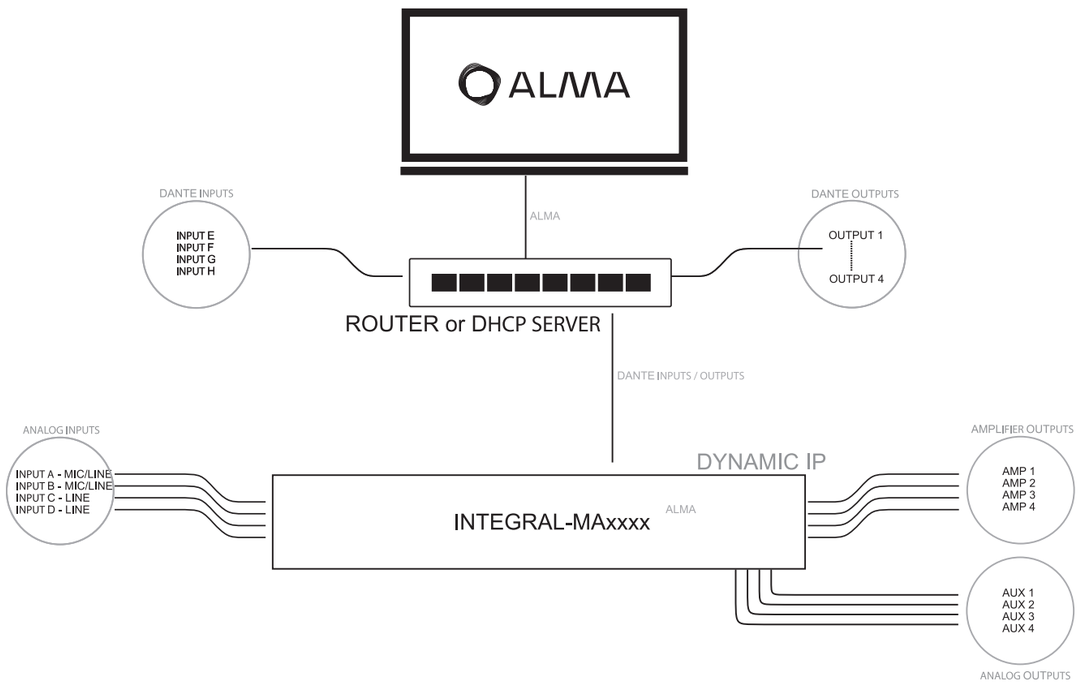
Static IP and Switch Connection

The system basic connection consists of an Ethernet switch connected to the computer via cable, as shown in the following illustration. The system is configured and monitored with Alma software. Ip address management will be static:



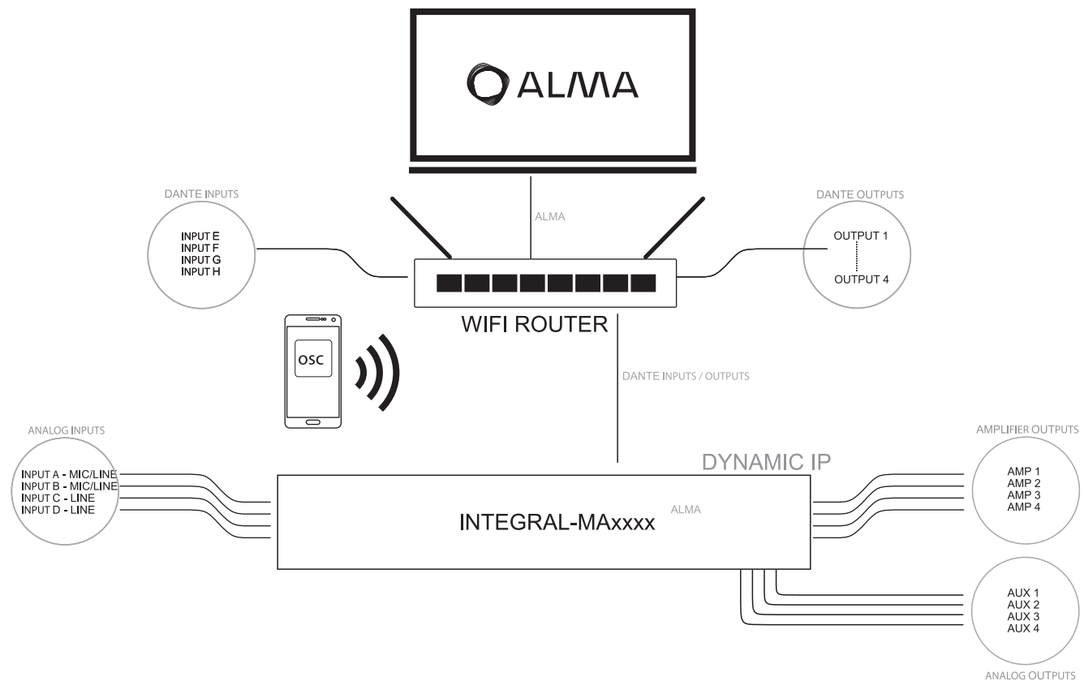
Dynamic IP and DHCP Server or Router Connection

The system basic dynamic connection consists of an Ethernet router (or DHCP server) connected via cables to the computer. The system is configured and monitored with Alma software.



Dynamic IP and DHCP Server or Wi-Fi Router Connection
OSC Control

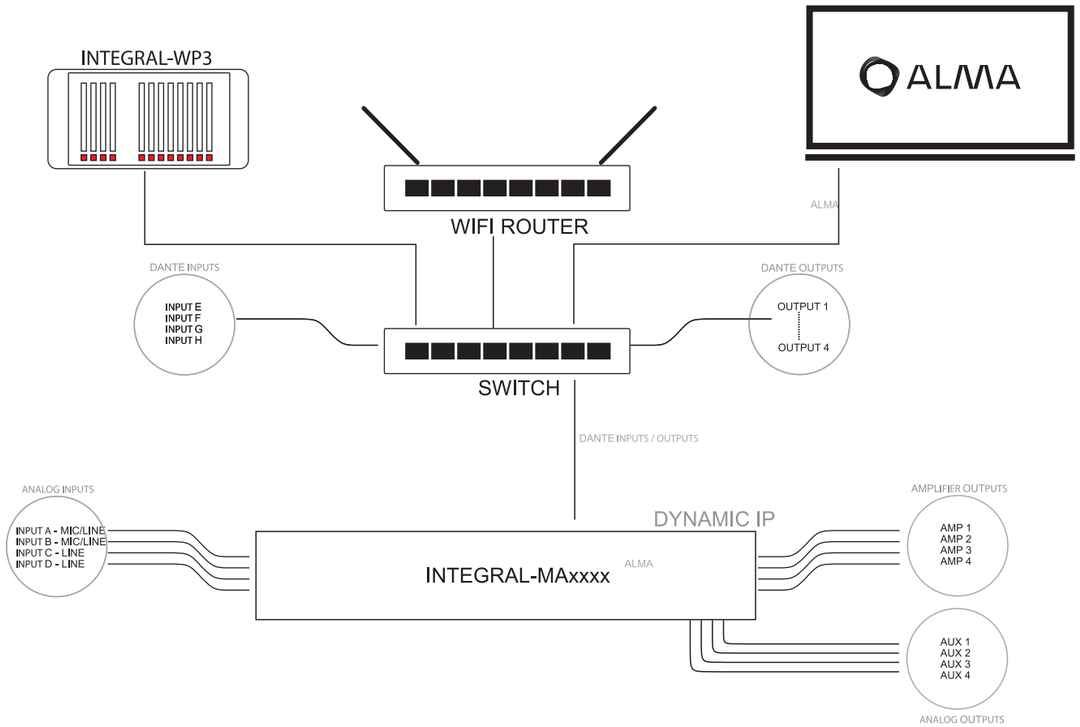
The system network connection consists of a Wi-Fi Ethernet router and a PC to configure the system using the ALMA software. The system can be controlled with a smartphone or tablet with OSC via Wi-Fi.



Conexiones de red

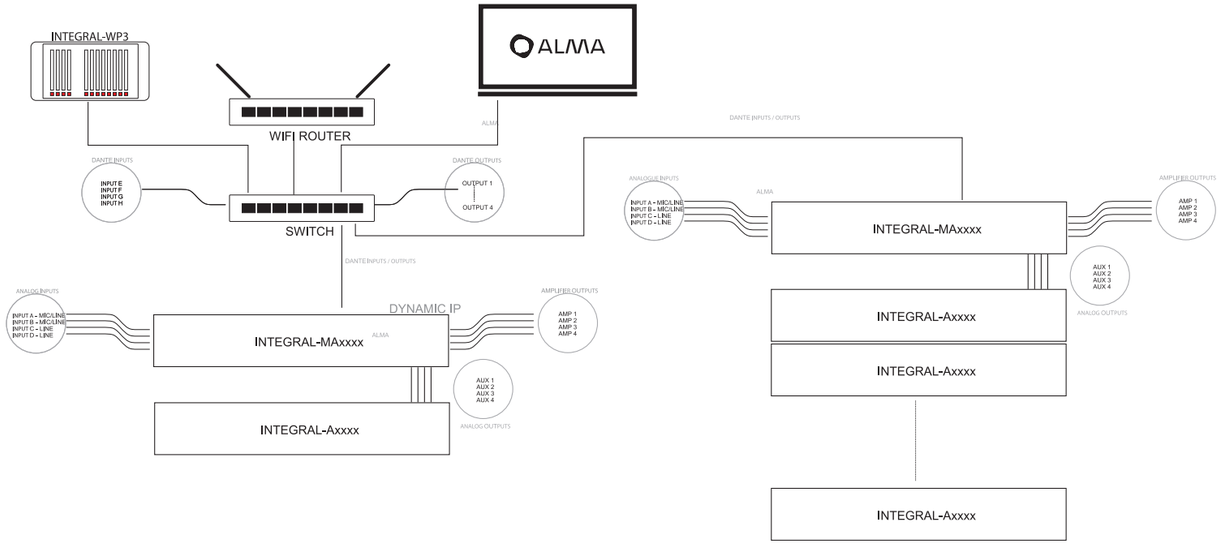
Dynamic IP and DHCP Server or Wi-Fi Router Connection
OSC Control and WP3 panel

The system network connection is made through a Wi-Fi Ethernet router + an Ethernet switch. A PC is used to configure the system. The system can be controlled with an INTEGRAL-WP3 panel powered by PoE from the switch:



Multi-zone Systems

The system network connection is made through a Wi-Fi Ethernet router + an Ethernet switch. A PC is used to configure the system. The system can be controlled with an INTEGRAL-WP3 panel powered by PoE from the switch:



INTEGRAL
Dante digital channel configuration

This chapter is not intended to be an advanced user´s guide to Dante digital audio, nor a user´s manual for Dante Controller software. For more detailed and complete information about Dante Controller and network configurations, it is important to consult the manufacturer website *www.audinate.com*

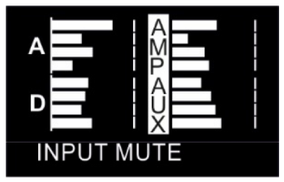
The INTEGRAL-MAxxxx unit includes two RJ45 connectors on the rear panel that enable control and monitoring with ALMA software, as well as sending and receiving Dante digital audio channels. As a result, the user is able to control the unit and manage digital audio using a single cable (CAT5e or superior). The network infrastructure connected to the units for the use of ALMA will also serve for the management of Dante channels, thus saving on installation and cabling costs.

The units have four Dante input channels and four Dante output channels.

Routing of Dante digital channels (DANTE-1, DANTE-2, DANTE-3 and DANTE-4) within the units connected to the network must be done with Dante Controller software, available at the following webpage:

https://www.audinate.com/products/software/dante-controller

Note that the 4 input digital channels are shown on the display, on the bottom left corner (D):



The unit´s Dante input channels DANTE-1, DANTE-2, DANTE-3 and DANTE-4 correspond to INPUTS E, F, G and H, respectively.

Dante Controller, channel routing

In order to route the INTEGRAL-MAxxxx digital audio channels, it is necessary, at least, to use the Dante Controller software and connect the units through an Ethernet switch. Additionally, if ALMA is going to be used as the control software, it is recommended to use a DHCP server or connect the units to a router.

Dante Controller provides essential device status information in the audio network. It provides real-time network monitoring, including device latency, clock stability stats, multicast bandwidth usage, enabling you to manage and identify in the event history any potential network issues.

Devices are automatically identified by the program. Additionally, the firmware version of each Dante board in the network is displayed. If necessary, the DANTE UPDATER application can be used to update the devices to the latest firmware version.

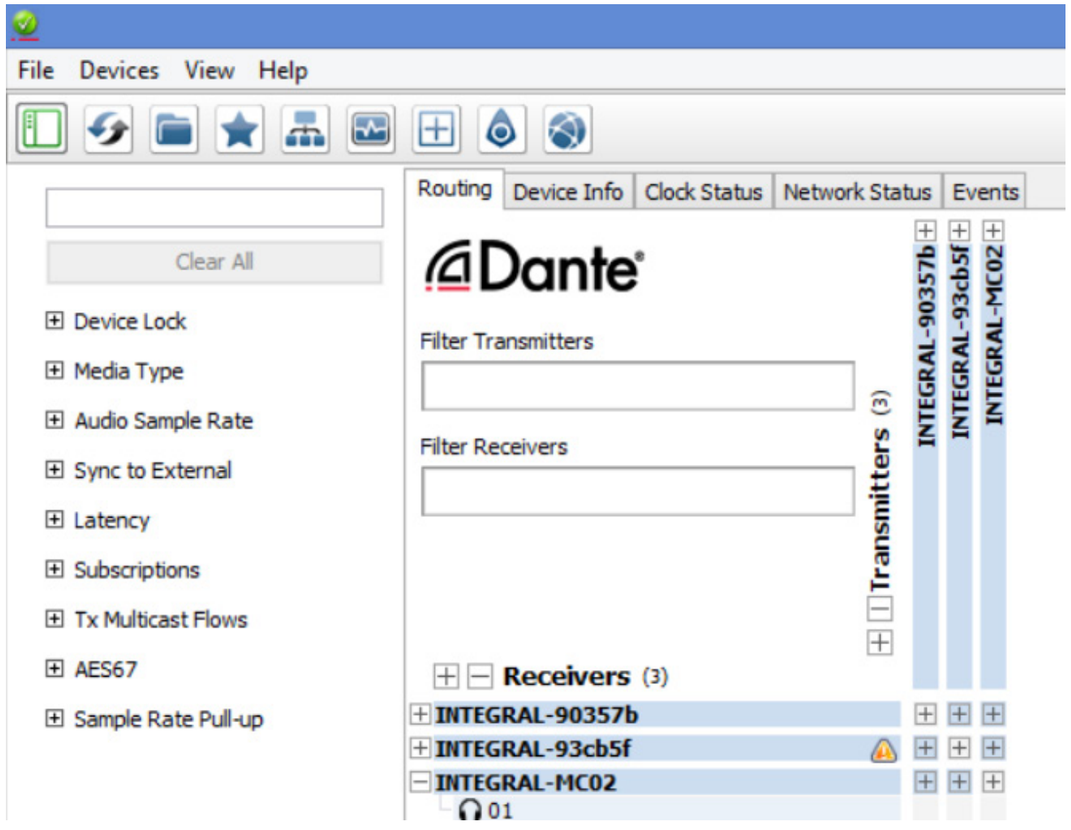
Dante Controller is available for Windows and macOS.

Dante digital channel configuration

Digital Audio Channel Configuration with Dante Controller

1 Start Dante Controller

2 Automatically, the program will detect all the units present on the network and will show them in the main screen; if this is the first time the units are connected to the network, their names might show in Dante as follows:

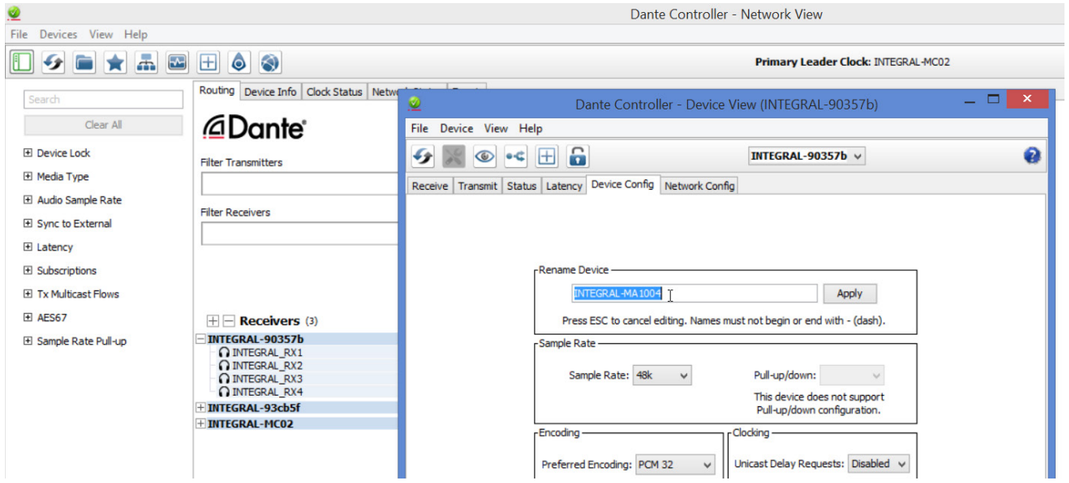


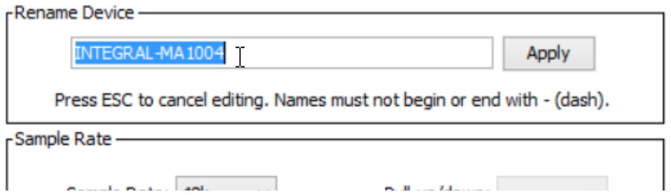
Note: If a unit fails to appear because it has not been detected by Dante Controller, the reasons could be:

- The unit has no power or has not been switched on.
- The CAT5e cable, or superior, is defective or incorrectly connected.
- The unit is in a different subnet.
- The unit is not able to synchronize with the other devices on the network.

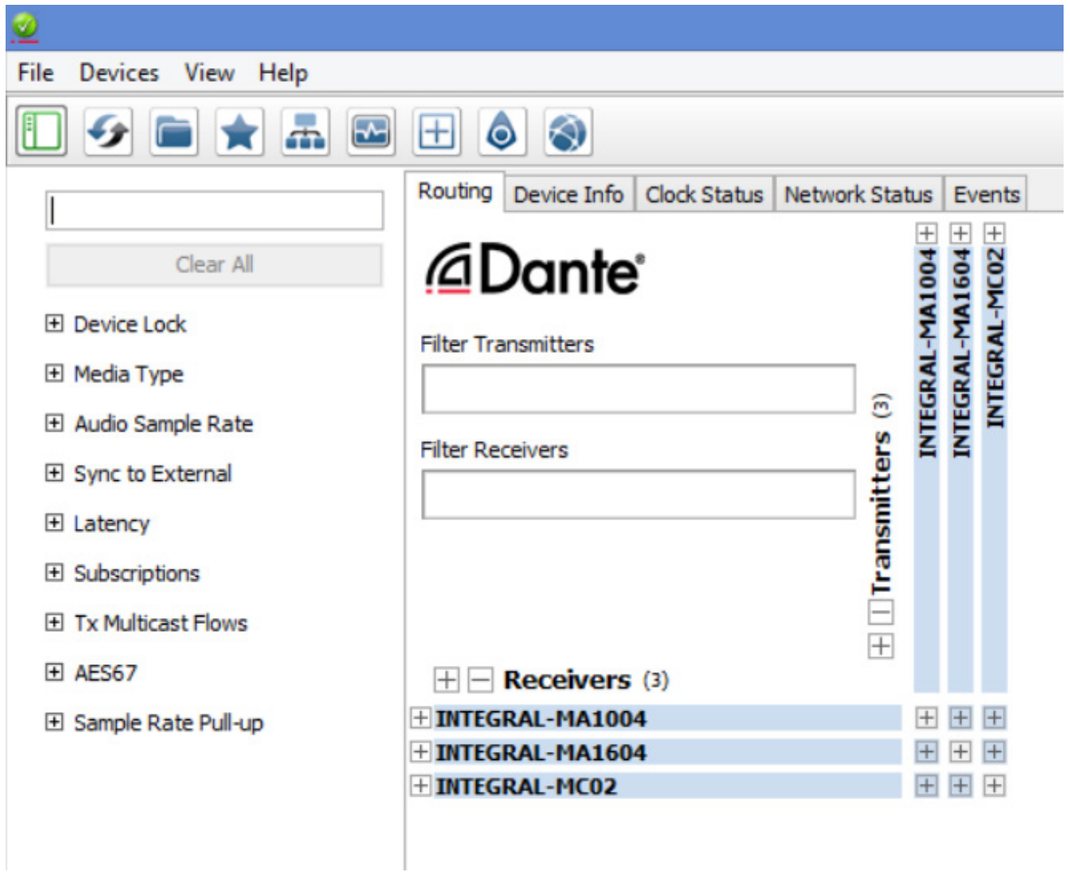
However, if one of the two last reasons applies, the unit should at least appear under the tabs “Device Info” or “Clock Status.” A quick solution to the problem may be to turn the unit off and on and re-establish the connection with the Ethernet switch.

The name of the devices can be edited on the Device View tab (Ctrl + D):





Once the names are confirmed (the names will not change unless they are edited again), the list of devices for this example will be displayed as follows: 2 INTEGRAL-MA models (MA1004 and MA1604) and a MC02 microphone.



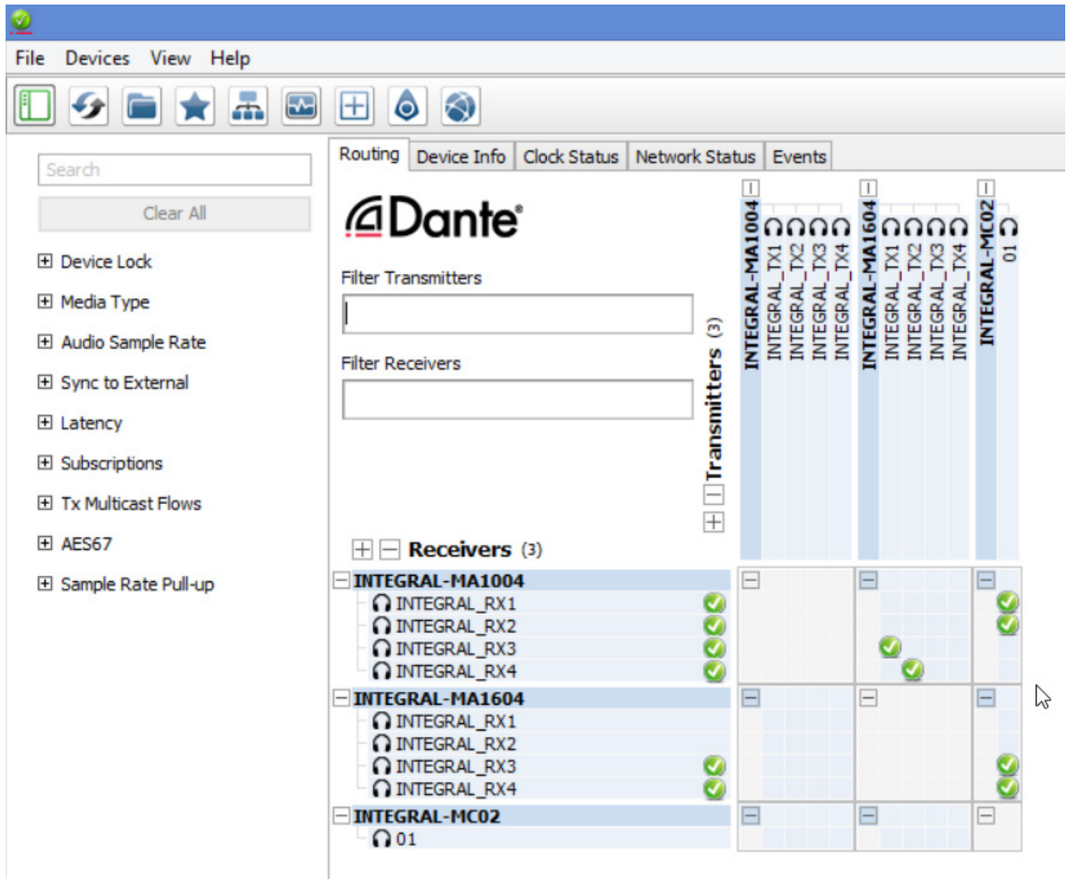
On the top right corner are the transmitter devices and their channels, at the bottom left are the receiver devices and their channels.

Dante digital channel configuration

3 Start routing the input and output channels to the different devices.

The ROUTING tab displays all the devices on the network as well as their transmitter channels (Dante Transmitters; top right) and receiver channels (Dante Receivers; bottom left). Click to expand the view of these channels in the ROUTING window. To route the channels, click at the intersection. Note that it is not possible to assign two transmitter channels to a single receiver channel. However, it is possible to assign a transmitter channel to several receiver channels.

Eventually the box will show a green circle with a check mark ✓ indicating that the audio channel assignment/routing has been successful.

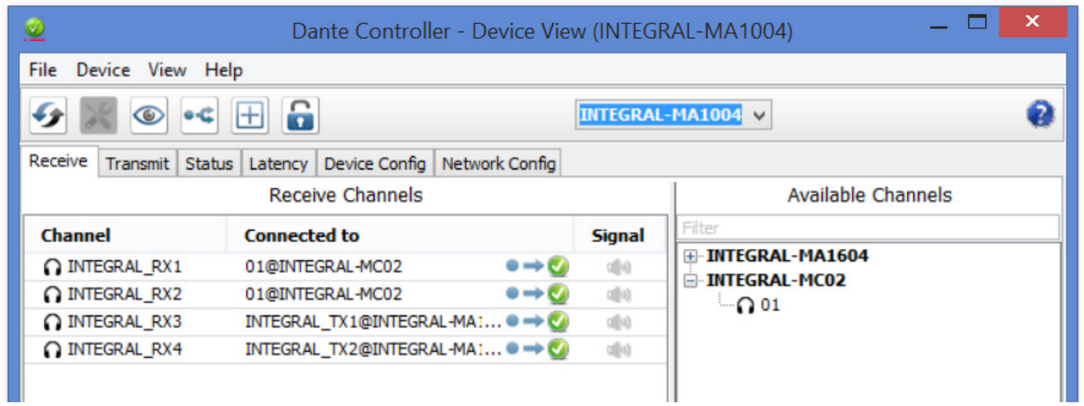


As shown in the image, an MC02 microphone is routed to INTEGRAL-MA1004´s Dante channels RX1 and RX2 (INPUTS E and F in the device) and to INTEGRAL-MA1604´s Dante channels RX3 y RX4 (INPUTS G and H in the device).

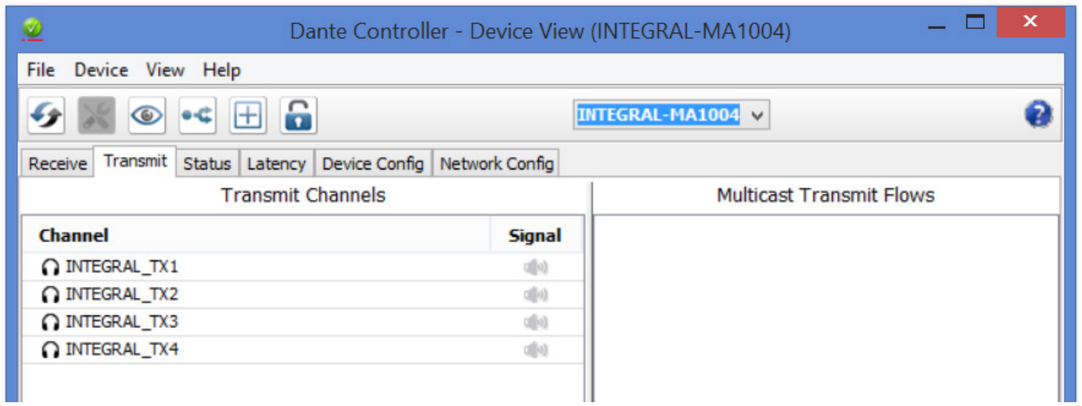
In addition, two MA1604´s Dante channels are routed to INTEGRAL-MA1004´s INPUT G and H (RX3 and RX4).

Dante digital channel configuration

4 The device name and other properties can be configured from the Device View window. The following image shows in the Device View window, under the Receive tab, the MA1004´s active audio receiver channels.

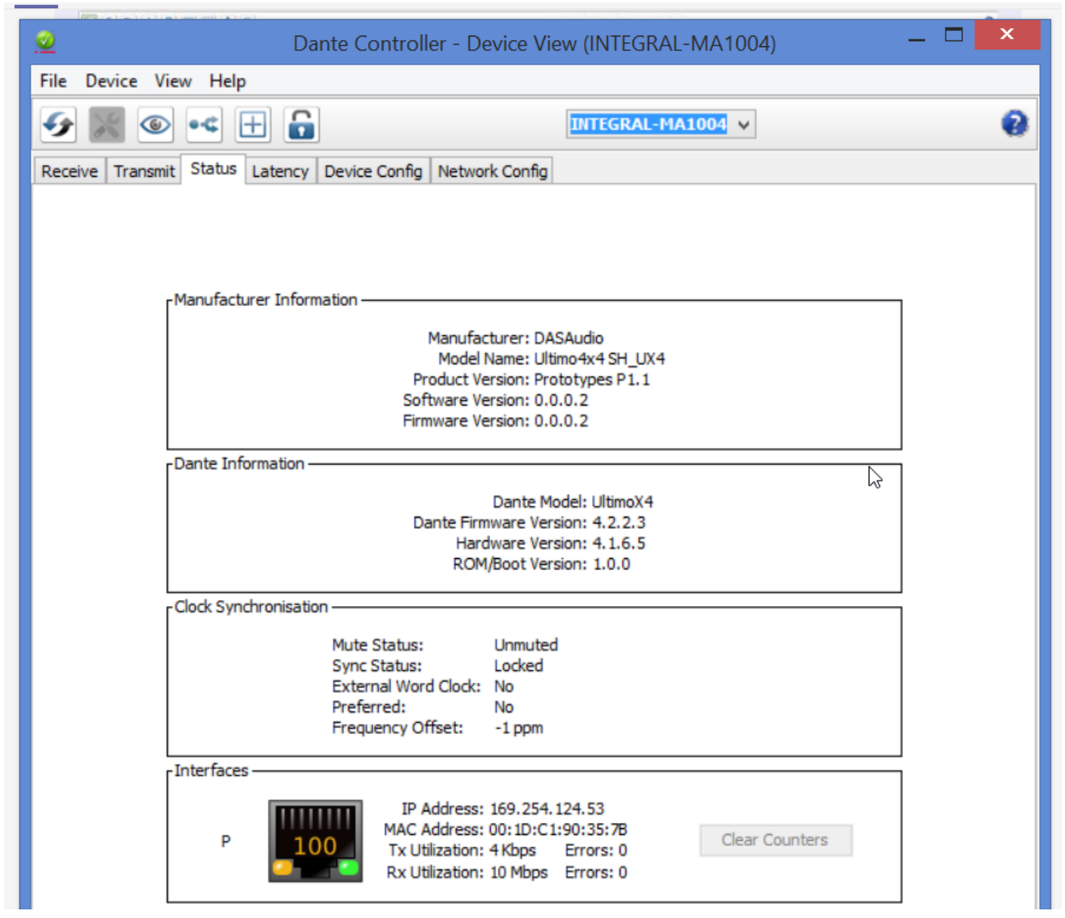


The transmitter channels will be displayed under the Transmit tab (in this example, no channels have been configured as transmitters for the MA1004):

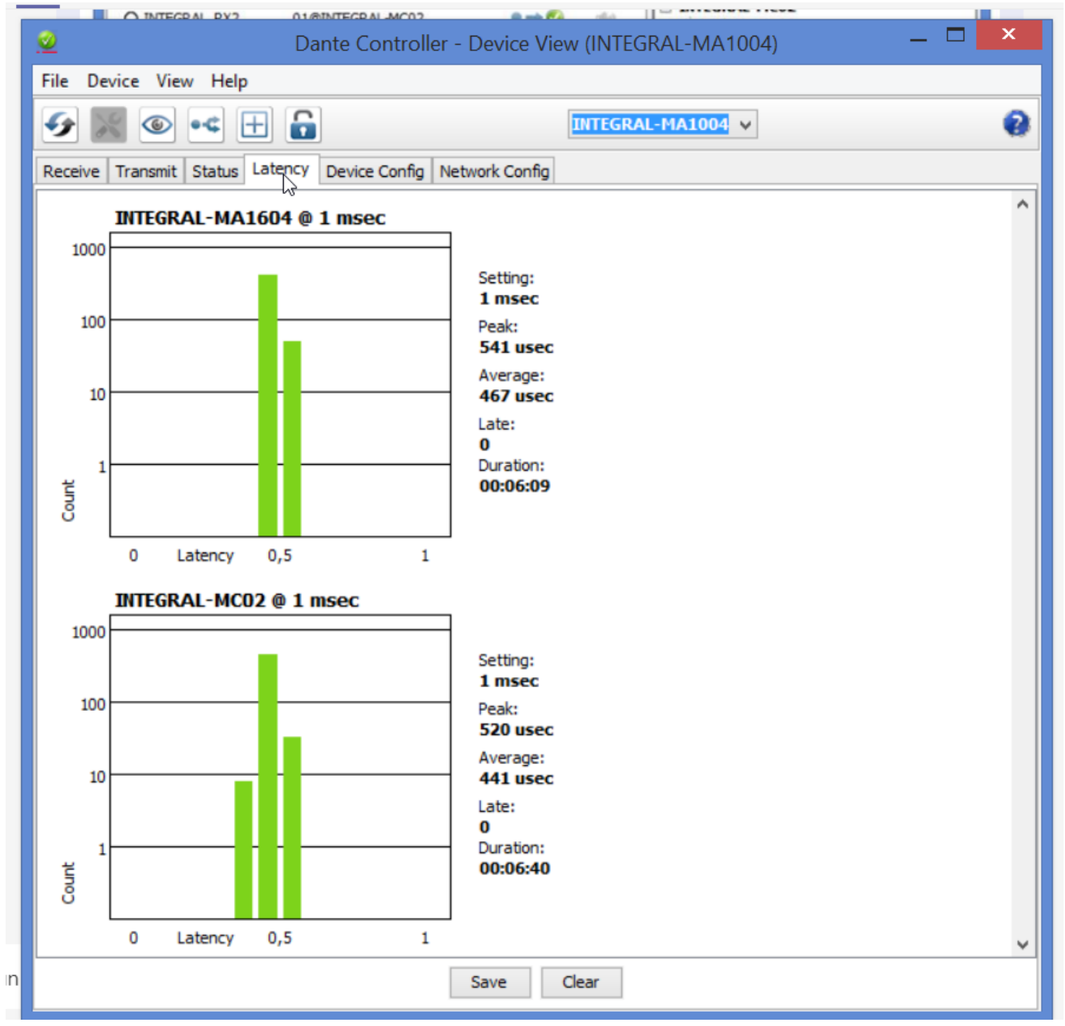


Dante digital channel configuration

The Status tab displays information regarding the Dante chip used in the device, its firmware version and IP address, among other information.

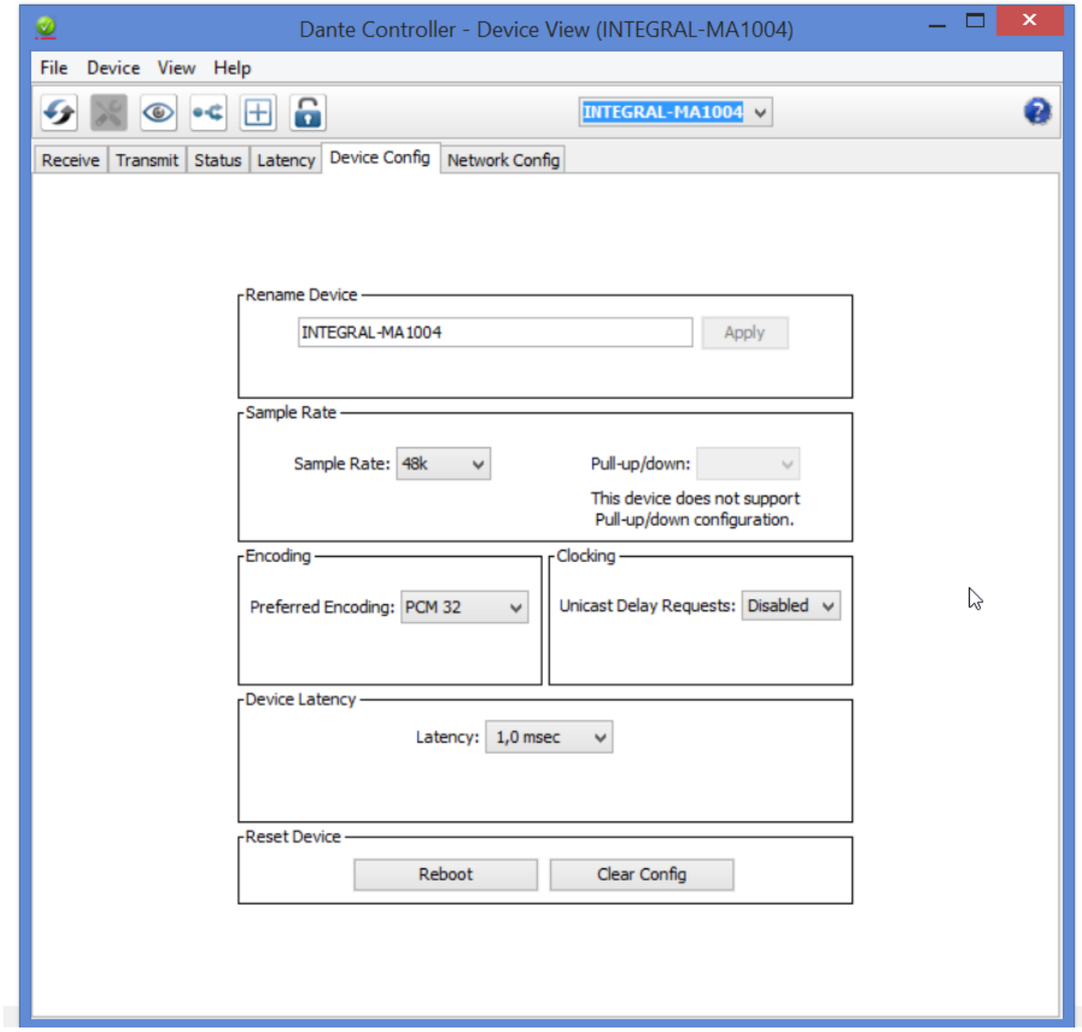


The Latency tab displays the latency for each transmitter that the device is subscribed to. In this example, Dante audio transmitters are INTEGRAL-MC02 y MA1604.



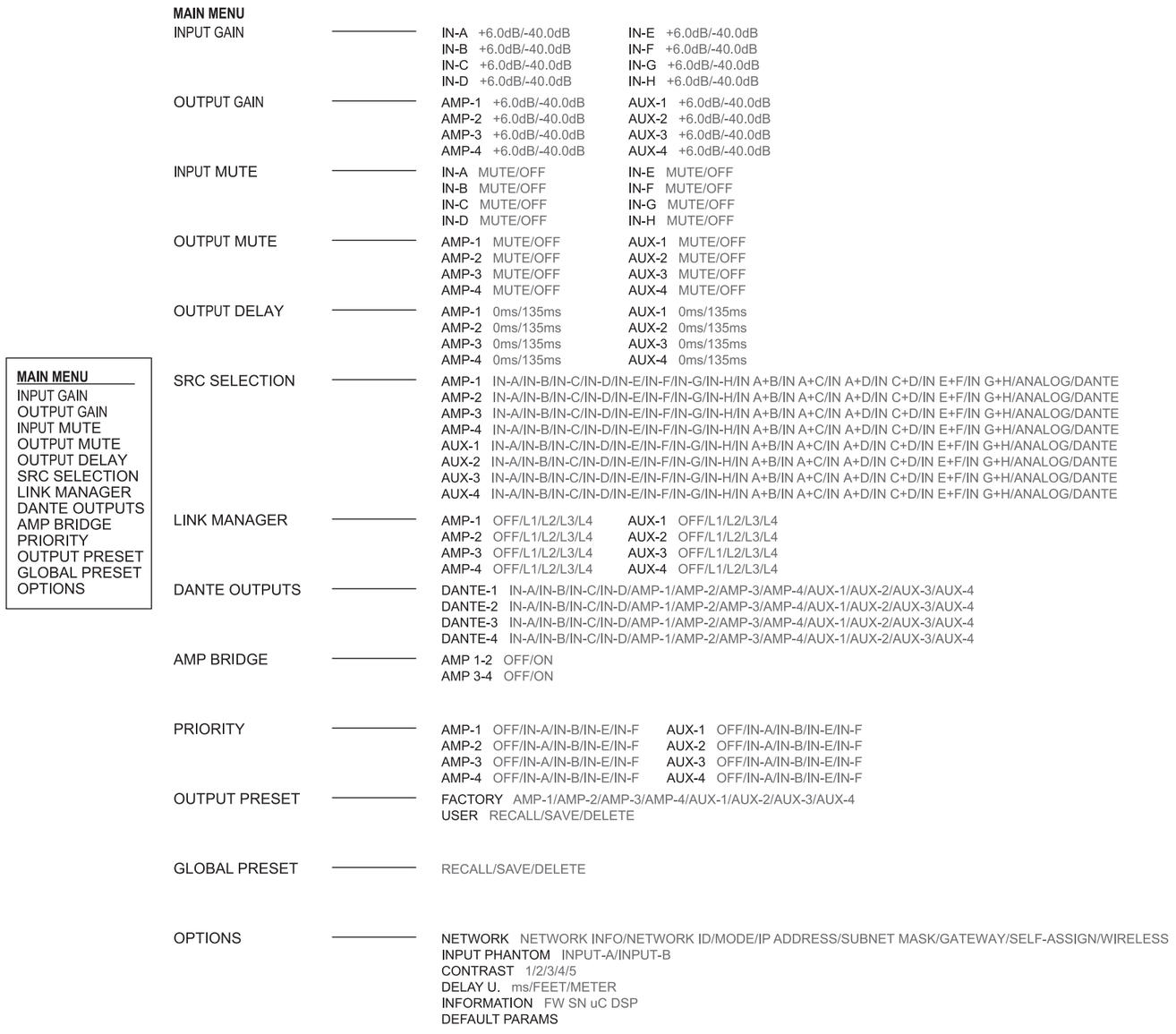
Dante digital channel configuration

The Device Config tab lets you rename and change the Sample Rate of the Dante chip. Note that in order to route audio between Transmitter and Receiver channels, they must have the same Sample Rate.



Front display navegation and settings

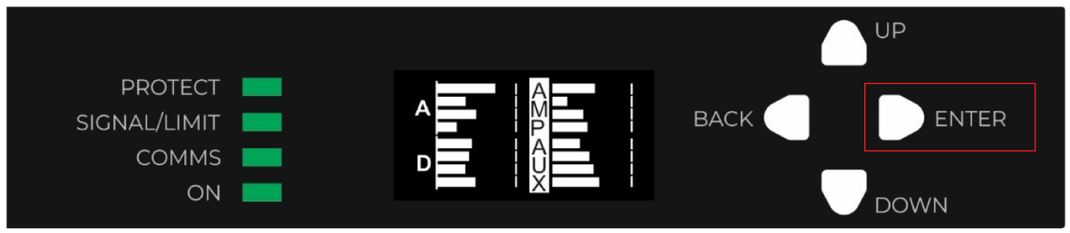
The MA matrix-amplifiers have a 1.54” OLED front panel display with navigation keys to access all the available options. The following illustration shows an overview of the options available from the front panel:



Using ALMA software gives you access to more complex and advanced options. For example, the SRC Selection and Priority menus let you access more configuration options when using the ALMA control software. This way, when in the input matrix or SRC Selection (Source Selection) the values of the input channels gains assigned to each output are different from zero, the message “ALMA” will appear on the display. Similarly, when an output has been assigned two priority input channels, the message “ALMA” will appear on the display (in the Priority menu).

Front display navegation and settings

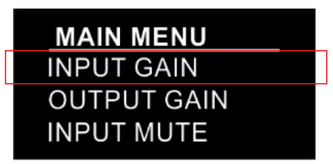
Navigation through the MAIN MENU options can be done using the navigation keys next to the display on the front panel. To enter the MAIN MENU from the main screen, press ENTER.



The display will show the MAIN MENU different options (INPUT GAIN, OUTPUT GAIN...):

Navigate through the different options using the UP / DOWN keys and press ENTER to select. To go back, press the BACK key:

ENTER to select



UP / DOWN
To scroll through
the options

INPUT GAIN

Enter INPUT GAIN. Using the UP / DOWN keys, select the desired channel and press ENTER to confirm. Adjust gain with the UP / DOWN keys. Gain can be adjusted in the input channels in 0.1dB steps over +6dB and -40dB. Holding down the UP / DOWN keys will quickly increase or decrease gain value.

OUPUT GAIN

Enter OUTPUT GAIN. Using the UP / DOWN keys, select the desired channel and press ENTER. Adjust gain with the UP / DOWN keys. Gain can be adjusted in the output channels in 0.1 dB steps from +6dB to -40dB. Holding down the UP / DOWN keys will quickly increase or decrease gain value.

INPUT MUTE

Enter INPUT MUTE. Using the UP / DOWN keys, select the desired channel and press ENTER. Activate or disable MUTE using the UP / DOWN keys. Note that the OFF position indicates that the channel is NOT muted.

IMPORTANT: when an input channel is muted, the channel vu-meter will still show signal presence (PRE-MUTE).

OUTPUT MUTE

Using the UP / DOWN keys, select the desired channel and press ENTER. Activate or disable MUTE using the UP / DOWN keys. Note that the OFF position indicates that the channel is NOT muted.

IMPORTANT: when an output channel is muted, the channel vumeter will still show signal presence on the front display (PRE-MUTE). Only if the input that feeds the output channel is muted, the output vumeter will no longer show signal presence.

OUTPUT DELAY

Using the UP / DOWN keys, select the desired channel and press ENTER. Adjust the delay with the UP / DOWN keys. The delay of output channels can be adjusted in 1ms / 0.1m / 1ft between 0ms and 135ms (0m and 46.3m, 0ft and 152ft). Holding down the UP / DOWN keys will quickly increase or decrease the delay value.

SRC SELECTION

Select the desired output channel and press ENTER. Using the UP / DOWN keys, select the inputs you wish to assign to that channel. In the front panel, all the inputs that have been assigned to an output channel (AMP or AUX) will keep their given gain. That is, if you assign inputs IN A+B to the output channel AMP-1, and previously in the INPUT GAIN menu you had selected IN-A 0dB and IN-B -6dB, AMP-1 will have as an input signal the sum of channels A and B, but input´s B volume will be attenuated 6dB. Note that if the input channel selection is OFF, nothing will be assigned to that output channel.

The following are the input options and combinations available for output channels (AMP-1,2,3,4 and AUX-1, 2, 3, 4) in the front panel:

OFF: no input assigned

IN-A: only channel A

IN-B: solo canal B

IN-C: only channel C

IN-D: solo canal D

IN-E: only channel E

IN-F: solo canal F

IN-G: only channel G

IN-H: solo canal H

IN A+B: sum of channels A and B

IN A+C: sum of channels A and C

IN A+D: sum of channels A and D

IN C+D: sum of channels C and D

IN E+F: sum of channels E and F

IN G+H: sum of channels G and H

ANALOG: sum of all the analog channels A, B, C and D

DANTE: sum of all digital channels E, F, G and H

Note that to access the input-output matrix with advanced gain settings for each input, you need to connect the unit to the network and configure these settings with ALMA.

A+C and A+D channel combinations can be useful when the user wants to sum in an output channel a microphone input (typically connected to input A or B, where phantom power is available) and a line input (channel C or D).

It is not necessary to route the priority input channels for each output from the SRC Selection menu. That is, if for the output channel AMP-1, you have selected as input sources the sum IN A+B and want to select input E (DANTE-1) as priority, it is not necessary to access the SRC Selection menu to select IN-E as the input channel for AMP-1. Just select IN-E as the priority input assigned to the channel AMP-1 from the Priority menu.

Front display navegation and settings

LINK MANAGER

Output channels can be grouped in LINK groups. This way, channels in a group will share the same settings (gain, delay, equalizations, filters, etc.). There is a maximum of 4 groups available per output, named L-1, L-2, L-3, L-4. By default, the output channels are not assigned to any group (OFF).

When two different output channels, e.g., AMP-1 and AMP-2, with different processing parameters are grouped in a link group, e.g., L-1, the last selected channel will adopt the processing parameters of the first selected channel. Therefore, when LINKing, it is always recommended to select first the channel whose parameters should prevail.

In the LINK MANAGER menu, using the UP / DOWN keys, select the desired channel and press ENTER to confirm. The chosen channel will be the channel whose parameters will prevail. Using the UP / DOWN keys, select the LINK or Group name for this channel (for example, select AMP-1 and L-1). Press BACK to go back to the LINK MANAGER menu. Here, you can select any other channel(s) that you wish to add to the group (in this case, AMP-2). Select the channel and scroll using the UP / DOWN keys to search for the name of the group previously selected.

The groups created with this tool are stored like any other parameter in global presets once they are saved to the memory.

DANTE OUTPUTS

The INTEGRAL-MAxxxx matrix amplifiers can inject in the network up to 4 DANTE digital channels. These output channels from the amplifier to other network elements can be processed. The user can independently select the processing for each digital channel output (DANTE-1, 2, 3 and 4). The Dante Outputs menu offers the following options:

- DANTE channels can be a copy of an input analog channel (IN A, B, C and D). As a result, it is possible to have four analog inputs in a unit and inject them into the network as four digital channels.

- DANTE channels can be a copy of an amplified output channel (AMP-1, 2, 3 and 4).

- DANTE channels can be a copy of an auxiliary output channel (AUX-1, 2, 3 and 4).

Remember: to access the desired channel, use the UP / DOWN keys to scroll through the menu and ENTER to select it. Once the channel is selected, use the UP / DOWN keys to select the input source for the DANTE channel. To go back, press BACK.

Front display navegation and settings

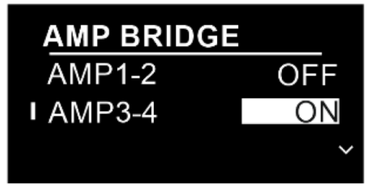
AMP BRIDGE

Channels AMP-1 and AMP-2 can be bridged to double the power or obtain 100V / 70 lines.

Channels AMP-3 and AMP-4 can be bridged to double the power or obtain 100V / 70V lines.

Channels can only be bridged when the nominal load or impedance is greater or equal to 8ohm or when systems with transformers have been installed (high impedance lines).

Select the desired channel with the UP / DOWN keys and press ENTER. Using the UP / DOWN keys, activate (ON) or deactivate (OFF) Bridge mode.

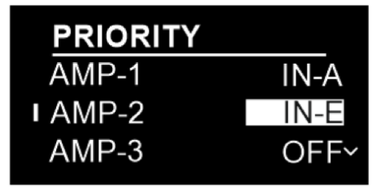


Note that it is not necessary to set the four channels in Bridge mode at once. You can choose a hybrid configuration where AMP-1 and AMP-2 work with an independent signal and in low impedance, and where channels AMP-3 and AMP-4 are in bridge mode with one signal to amplify a line of systems with transformer (high impedance).

PRIORITY

The 8 processor outputs included in the INTEGRAL-MAxxxx devices (AMP-1, 2, 3, 4 y AUX-1, 2, 3, 4) can have up to TWO priority levels. The priority channels available are: IN-A, IN-B, IN-E, IN-F; that is, two analog and two digital channels, with a maximum of 2 per output channel.

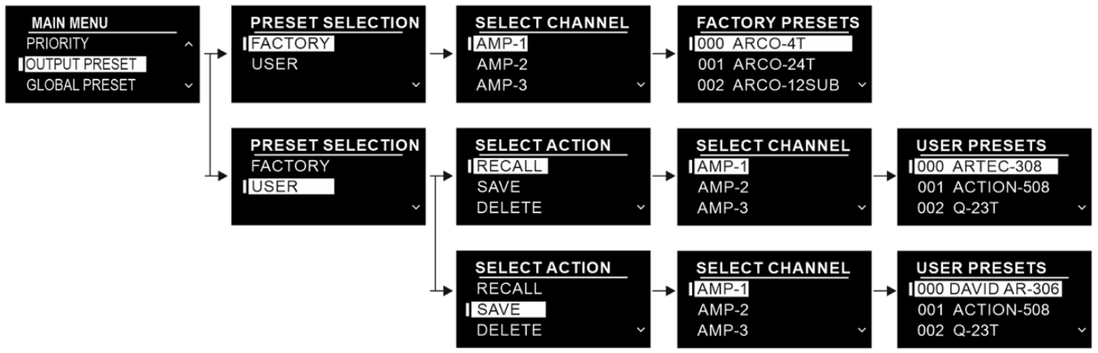
From the front panel display, it is only possible to choose ONE priority level per output channel. ALMA can be used to access advanced settings like doble priority level per output channel, threshold settings, release, attack time, gain reduction, etc.



It is not necessary to route the priority input channels for each output from the SRC Selection menu. That is, if for output channel AMP-1, you have selected as input sources the sum IN C+D and want input A (IN-A) to have priority, it is not necessary to access the SRC Selection menu to select IN-A as AMP-1´s input channel. Just select from the Priority menu IN-E as the priority input assigned to AMP-1.

OUTPUT PRESET

In the local memory of every device, DAS Audio provides a collection of presets per system model (Output presets). You can find presets for the following systems: ARCO-4T, ARCO-24T, Q-3T, Q-23T, Q-43T, Q-10, ARTEC-306, ARTEC-308, ARTEC-310, among others . As a result, the user can load individual presets for each output channel and create a global preset for their installation.



There is a bank of FACTORY presets for all the DAS models destined to the installation market (CL, ARCO, Q, ARTEC300, ARTEC500, HQ, WR Series, etc.). The OUTPUT PRESET navigation menu is as follows:

There are two options in the OUTPUT PRESET menu: load a FACTORY preset and load / save / delete a USER preset.

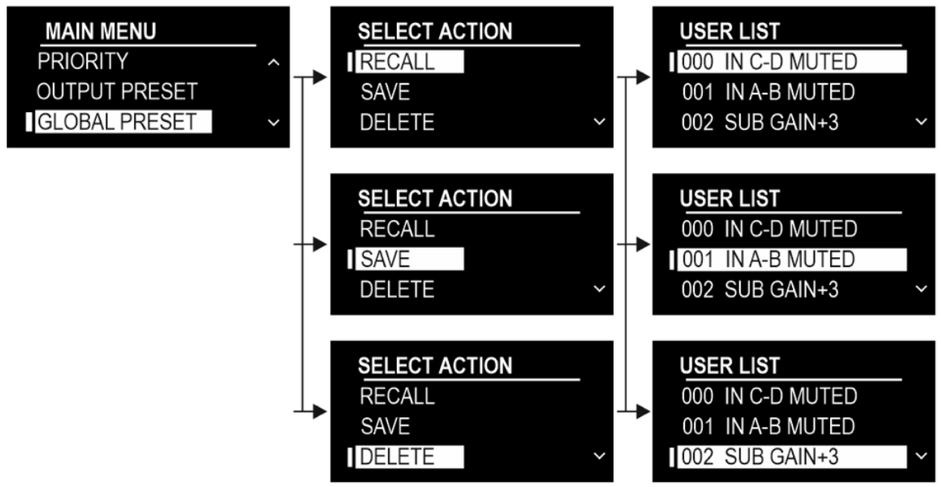
To assign a factory preset to a desired output, select the FACTORY option with the ENTER key in order to access the FACTORY sub-menu. Using the UP / DOWN keys, select the desired output channel where the preset will be loaded. In this example, AMP-1 has been selected. Press ENTER. The display will show all the available presets. Select the desired preset with the UP / DOWN keys, in this case, ARTEC-308, and press ENTER.

You can create your own presets from the factory presets. For this, you can load an output factory preset, for example, the ARTEC-308, and add EQ or change the gain. SAVE that preset as USER. Once the preset has been created, go to the USER menu and select SAVE, press ENTER and select the channel where the preset will be stored, press ENTER, and finally, select a name for the preset, in this case, DAVID AR-306.

If you want to RECALL a user preset in an output, the procedure is similar. It is further described in the previous illustration (RECALL → AMP-1 → ARTEC-308). Finally, user presets can also be deleted by selecting the DELETE option in the SELECT ACTION menu. In the list of user presets, use the UP / DOWN keys to select the preset you want to delete and press ENTER.

GLOBAL PRESET

Once the user has created their combination of OUTPUT PRESETS per output channel, they should save their global configuration in the device memory. To do this, go to the GLOBAL PRESET menu. In this menu, the user can SAVE, RECALL and DELETE the memories:

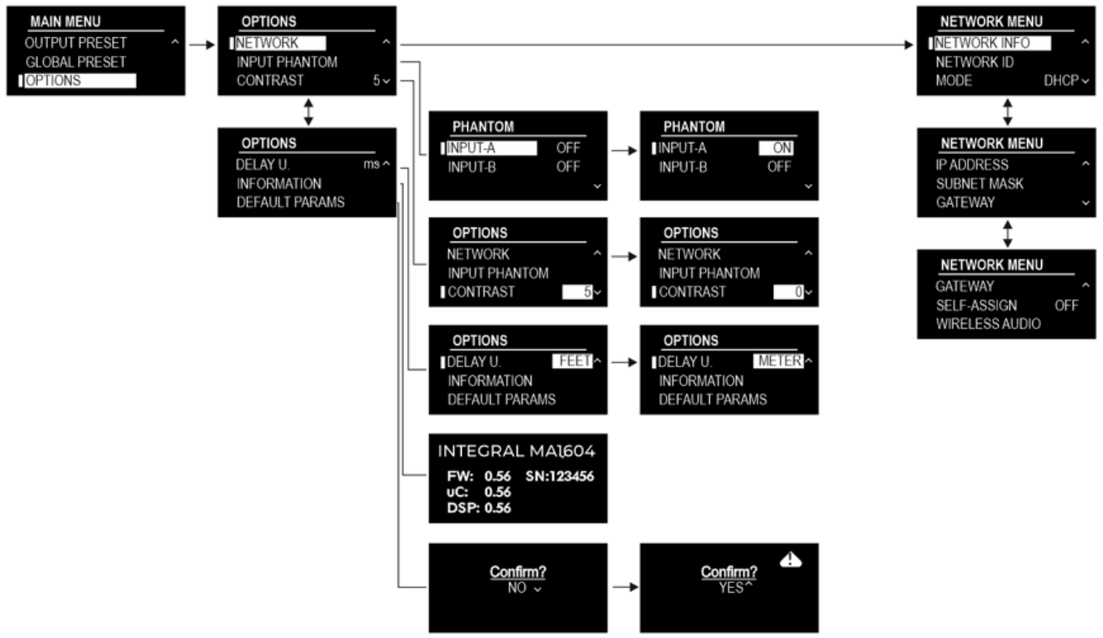


Navigate the sub-menus with the UP / DOWN keys and select the desired option with ENTER. In addition to saving all the information previously loaded in the output channels (OUTPUT PRESET), GLOBAL PRESETS also saves signal routing (SRC SELECTION), priority, output delays, DANTE output channel assignment, input/output Mute, etc. i.e., all the parameters are saved.

Front display navegation and settings

OPTIONS

This menu gives you access to the configuration of different parameters related to the network, phantom power, units, display settings, etc...



- The INPUT PHANTOM menu lets you activate the 15V power supply for the channels INPUT A and INPUT B and use microphones in these channels, such as the INTEGRAL-MC01. Note that you can adjust the microphone gain with the analog potentiometer located next to the input connector. Never use phantom power for line signals.

- The CONTRAST menu allows you to adjust the display contrast value between 0 and 5.

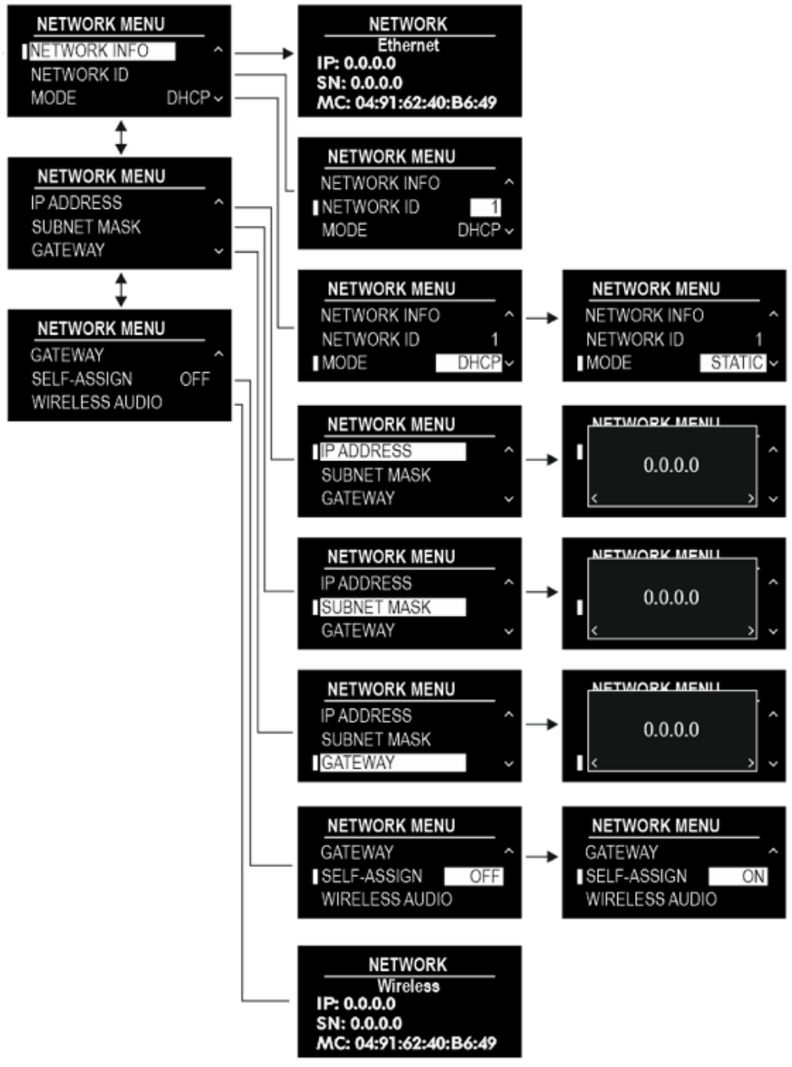
- The DELAY UNITS menu allows you to change the delay of the units shown in the display. You can choose ms (milliseconds), Meter and Feet.

- The INFORMATION menu gives you relevant information about the firmware version of the unit.

- The DEFAULT PARAMS menu allows you to set the unit to its original status. If you confirm the selection, you will lose all the active settings at that moment, like gain, mute, signal routing, delay, equalization, filtering, and so on. Both global and output memories will NOT be lost.

- The NETWORK MENU gives you access to the following information about the network connection and settings:

Front display navegation and settings



NETWORK INFO displays the IP address of the device, the subnet where it belongs (SN) and the Mac Address (MC).

NETWORK ID is the numerical identifier of the unit on the network. It can be any value between 1 and 256.

Using the MODE option, you can change the IP address assignment between Dynamic mode (DHCP) or Static mode (STATIC). it is necessary to fill the following fields in Static mode: IP ADDRESS, SUBNET MASK and GATEWAY.

The SELF ASSIGN option is disabled by default. When this option is activated, the units will be assigned an IP address automatically without the need of a DHCP server or Router.

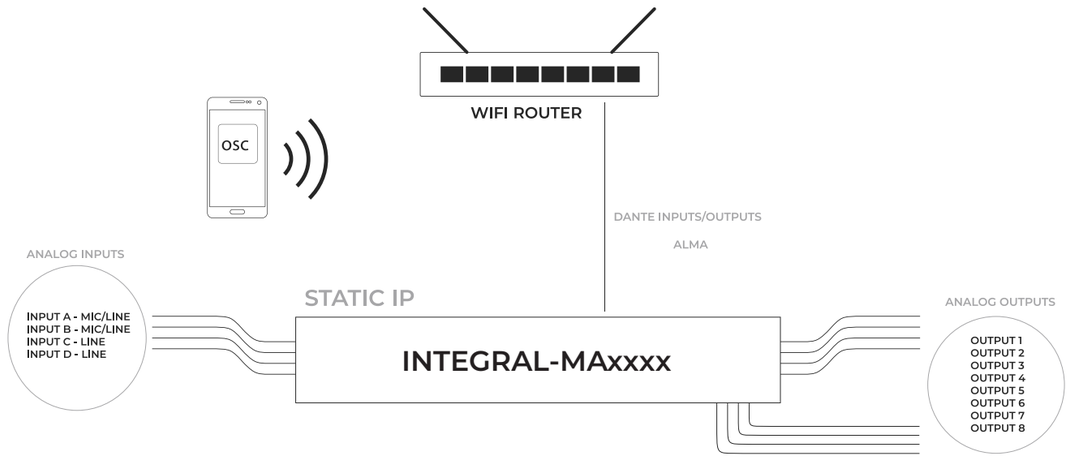
INTEGRAL
OSC control

What is OSC? (Open Sound Control)

OSC is a communication protocol between hardware and software that permits the adjustment and control of basic parameters of INTEGRAL-M88 / MA units from computers, tablets, smartphones or DAS Audio INTEGRAL-WP3 wall panels. Setting input and output mutes, input and output gain levels and recalling memories containing different configurations is very fast and easy by the use of OSC.

The application TouchOSC needs to be installed in the mobile devices or computers in order to control the units.
https://hexler.net/touchosc

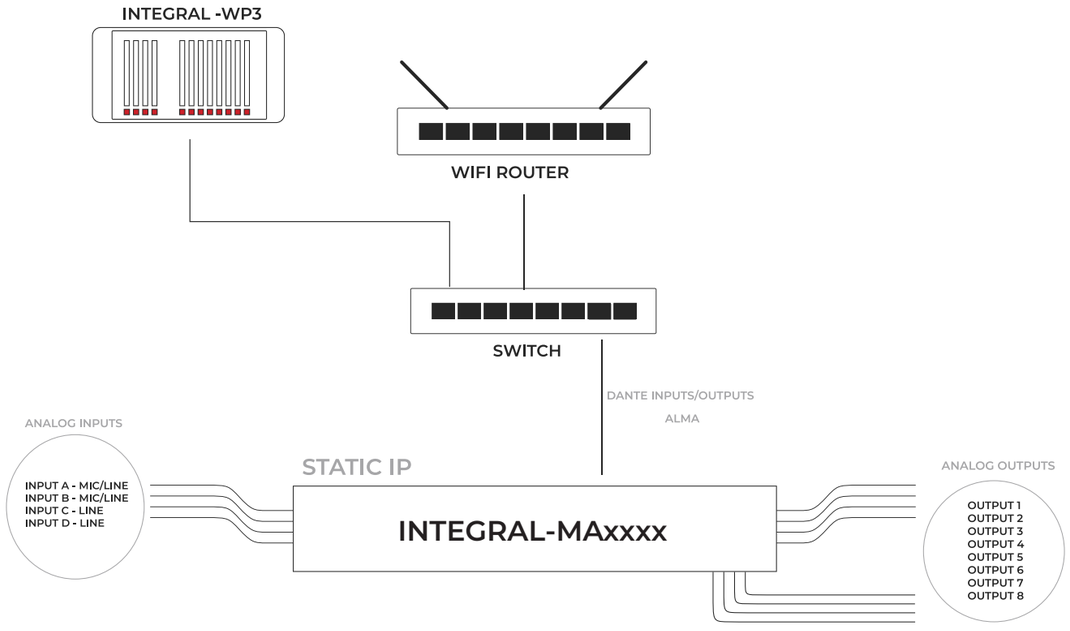
Each mobile device shall use (upload) a specific OSC template (provided by DAS) to control an Integral unit.



The connection between INTEGRAL-WP3 wall panels shall be done by the use of a WiFi router and a PoE (Power Over Ethernet) Switch. The WP3 wall panels need constant voltage (48V) provided through a CAT5e/6 cable from the ethernet switch.

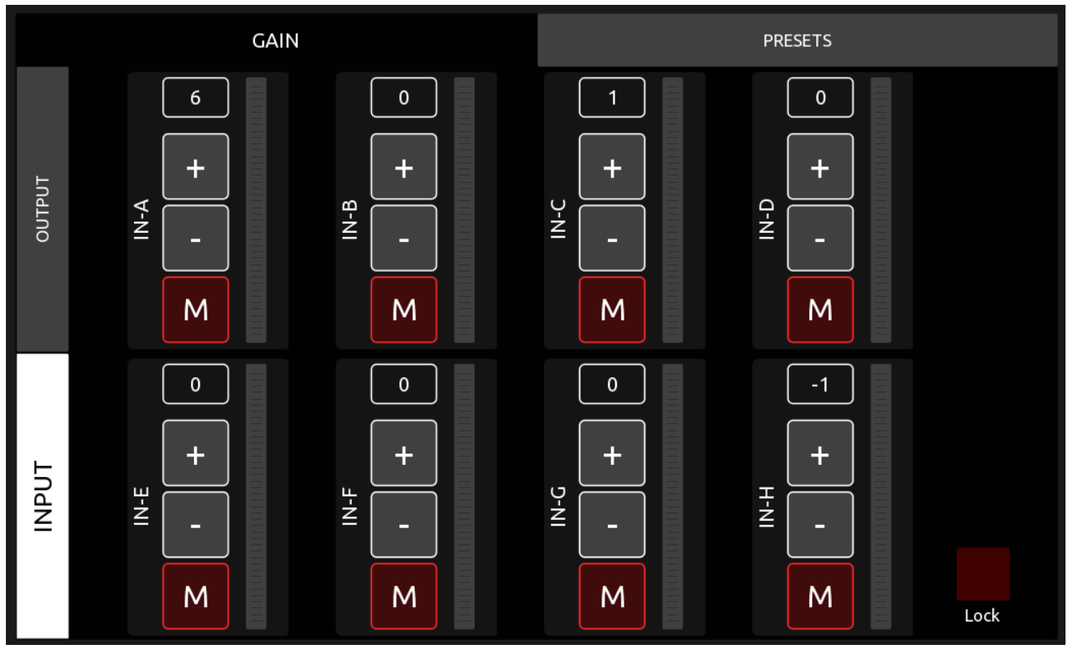
How does it work?

The connection between the mobile phones, tablets or laptops shall be done wireless by the use of a WiFi router.



OSC templates for mobile devices

Shown below the OSC standard DAS template for INTEGRAL-WP3 control panels. The template shall be upload into the mobile device using a computer as a server.
The template includes two main pages, one for gain, mute changes and meter monitoring and the second one for preset recall.



The gain can be adjusted on both, input and output channels in increments of 1.0dB. By the use of the “lock” button the user can block the access to the WP3 panel. The default password for the control panel Lock button is 0292. (Lock button only available on WP3 templates).

On the preset recall page the user can have access to the first 10 global presets or memories stored internally by the user in the Integral-MAxxxx or M88 units. A global preset change may affect routing, gains, mutes, delays, EQs, Dante Outputs, Priority settings etc, that is to say ALL the parameters.

Note: The user should use ALMA to configure all the settings and storing all the global presets created.

It is highly recommended to use OCS in simple configurations were one control panel controls a unique Integral device. (Although up to five devices may be controlled with one WP3 panel).

OSC control

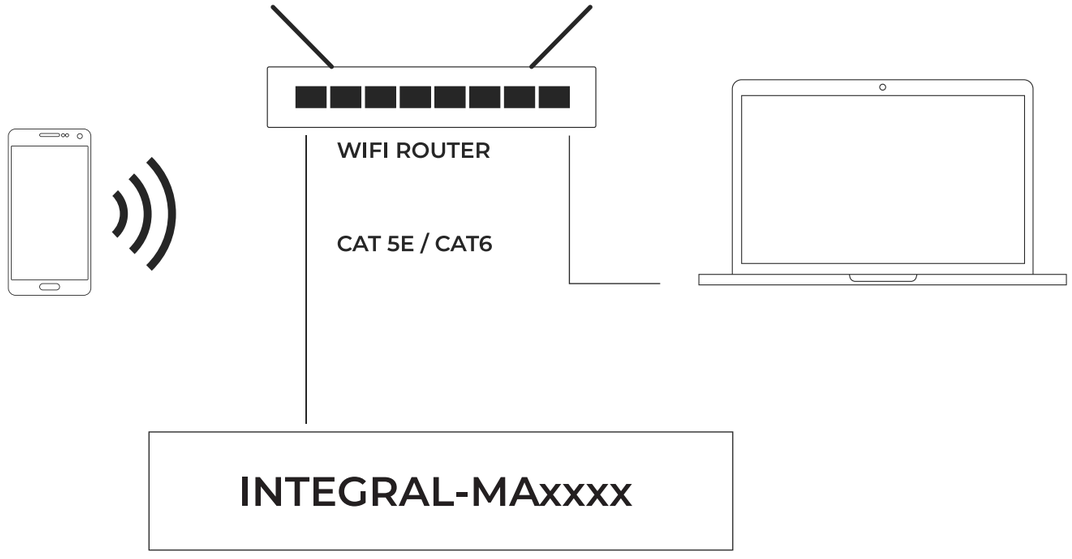
Previous steps - network configuration

- There must be included a WiFi Router for establishing the connection with the Tablet or Smartphone; the M88 will be connected with a cable to the router. The PC or laptop shall be connected to the same network (via cable or wireless) to upload the template to the Tablet or Smartphone.
-
-
- DAS Audio Provides OSC templates for smartphones and tablets. To upload the templates on the smartphones and tablets a PC or Laptop will be used. The software TouchOSC is needed in the computer (https://hexler.net/touchosc)

- Download from the “Store” the APP TouchOSC and install it in your mobile device.

* If the user wants to create his own control panels (other than the templates provided by DAS Audio) for mobile devices, there is a guide document in the product support resources explaining all the commands that can be generated to control parameters of the M88 matrix.

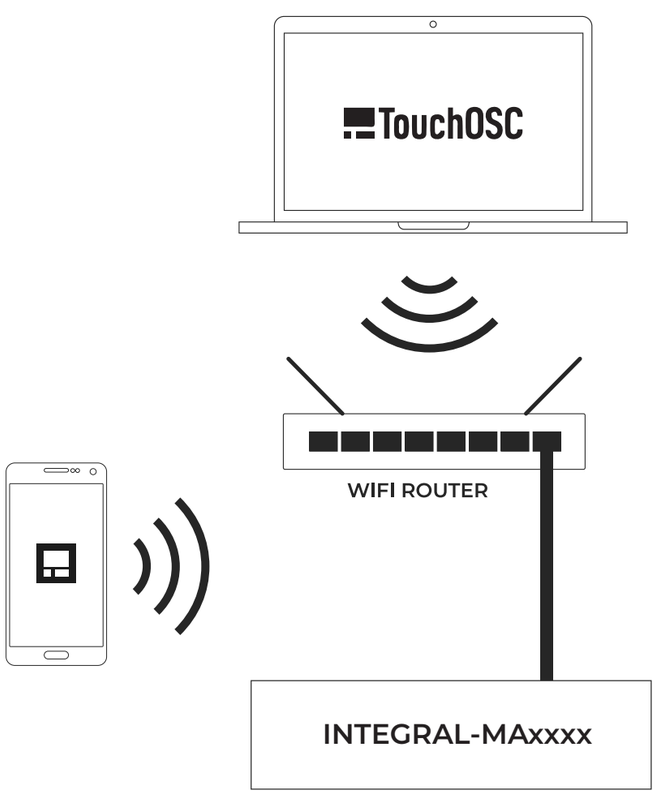
Connect the PC to the WiFi router. Connect your mobile device to the WiFi network:



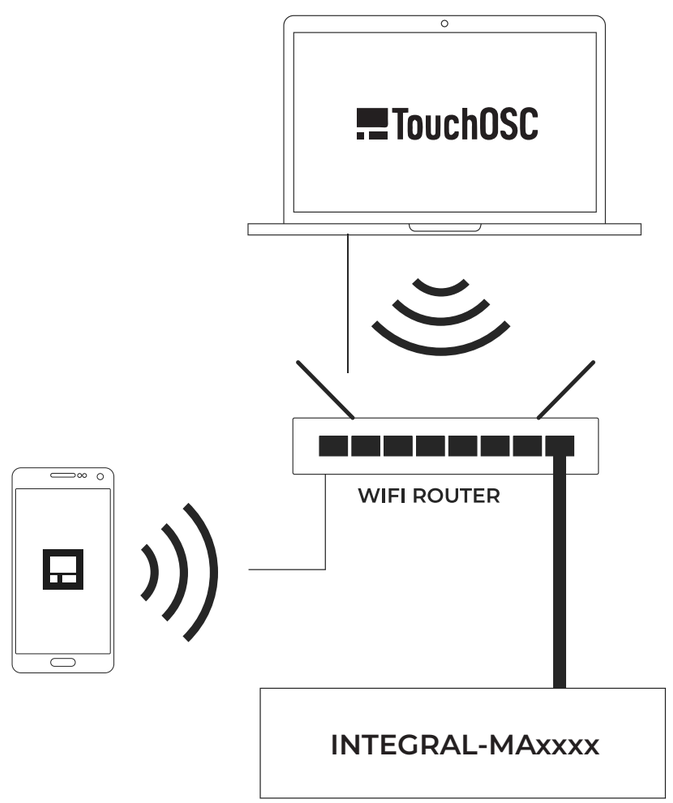
The PC can also be connected without cables.

How to upload an OSC template on a mobile device

Network configuration:



Sending the template from PC to the Tablet / SmartPhone via WiFi:

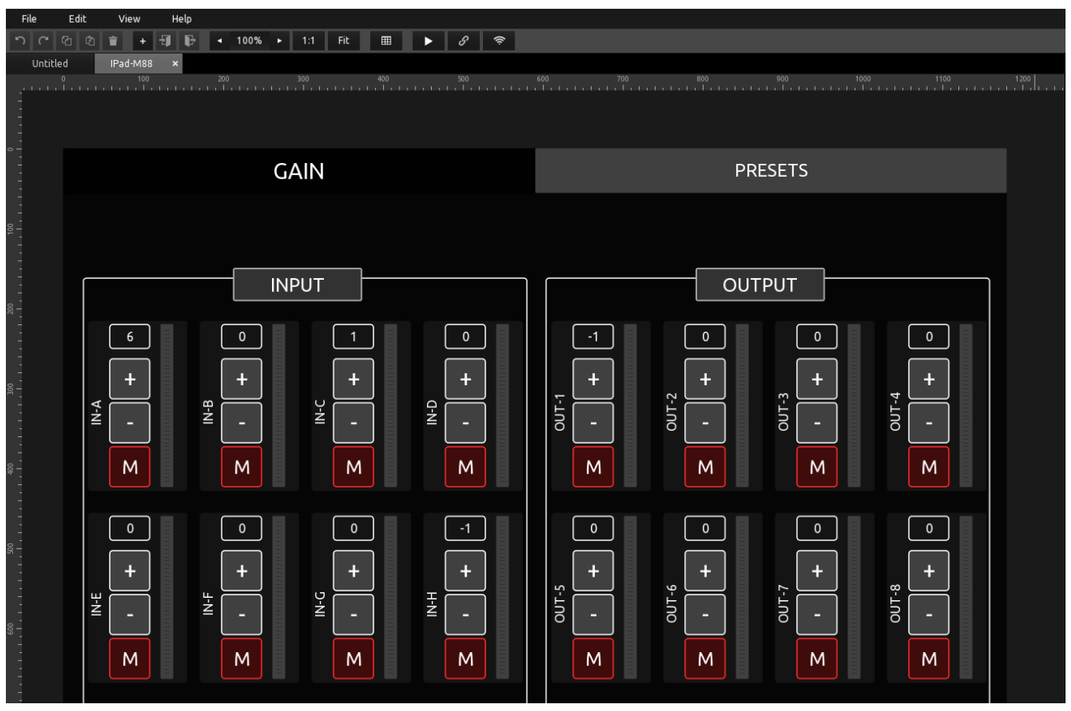


INTEGRAL
OSC control

Let´s see in detail the previous process:

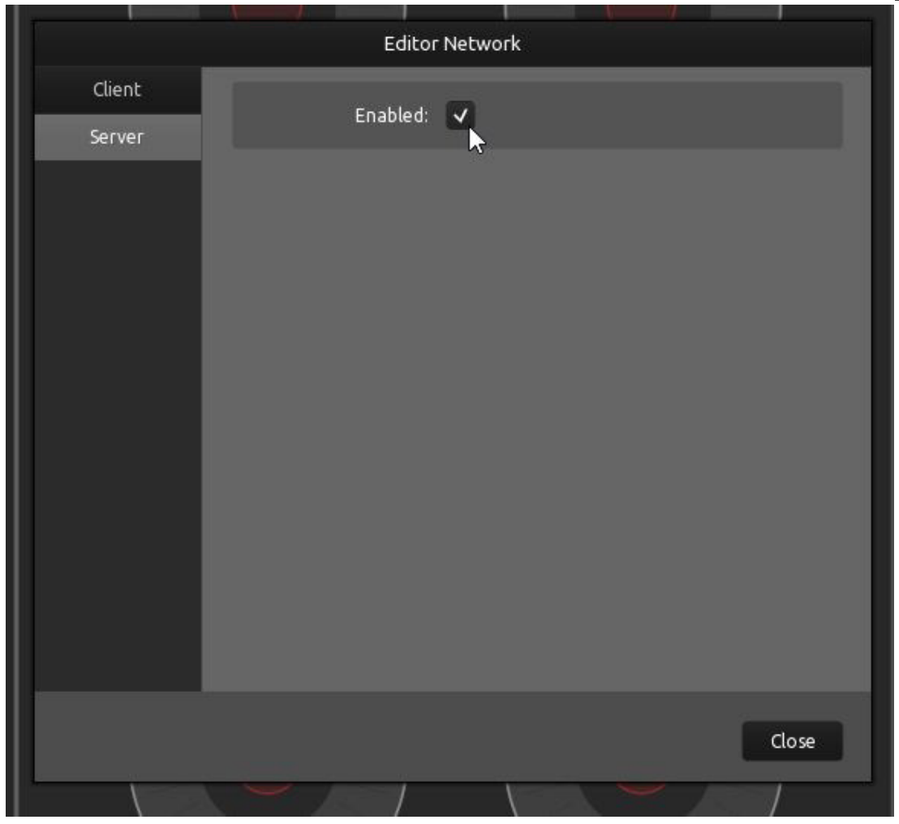
PC

1 Open TouchOSC program
2 Open the template file; in this case iPad-M88.tosc



3 Network Editor

Define the PC as a Server:



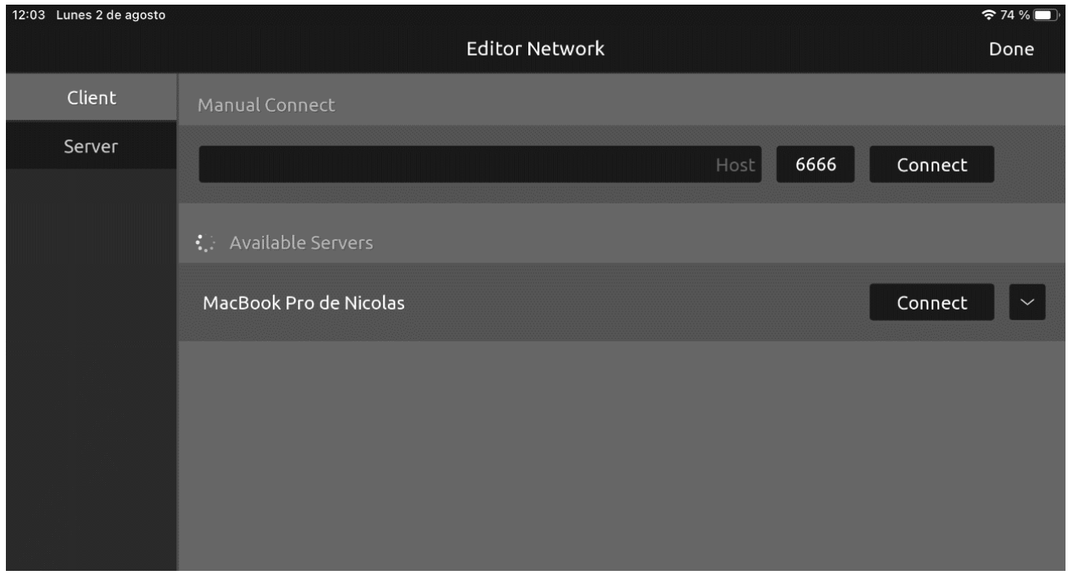
Once the PC has been configured as a Server the user shall need to carry a similar process on the mobile device or smartphone. It is important to keep on the PC the TouchOSC session active while transferring the template.

INTEGRAL
OSC control

Tablet/Smartphone
WiFi activated during the process

1 Launch TouchOSC APP
2 Network Editor

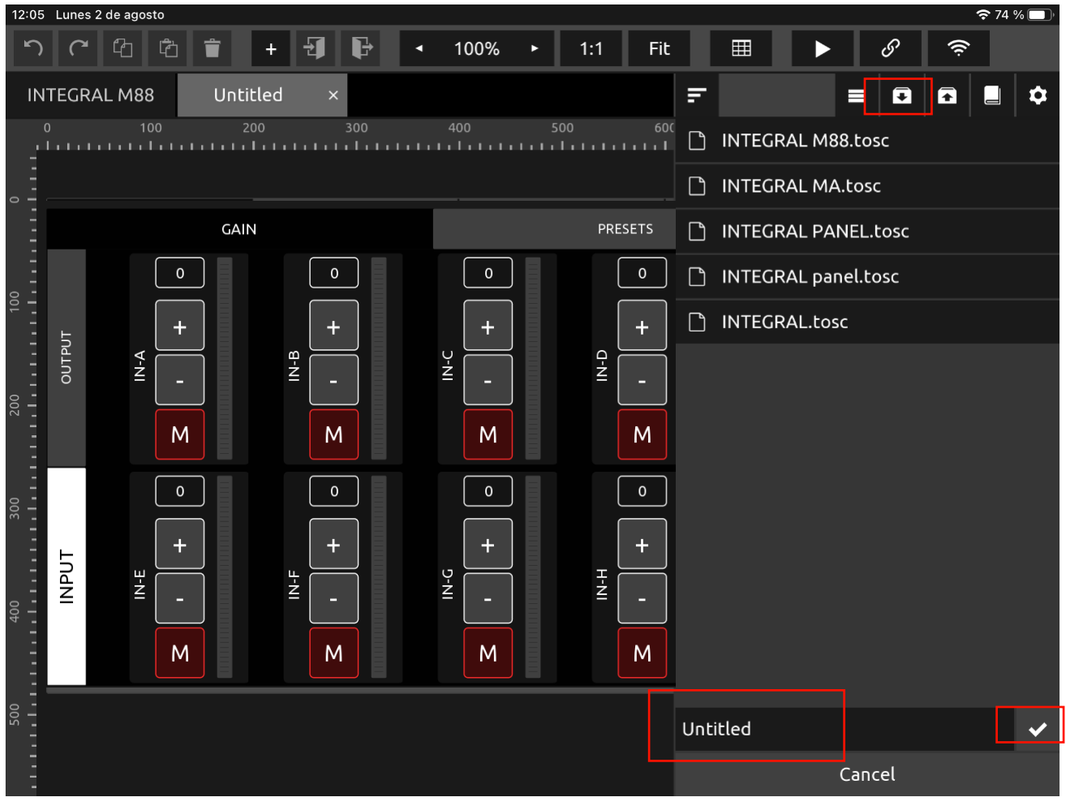
Define the Tablet or Smartphone as Client and select the server: click on the displayed PC (configured as Server previously). In the sample below, the server computer is Nicola´s MacBooK Pro; Press Connect:



At this moment the templated has been uploaded on to the smartphone or tablet.

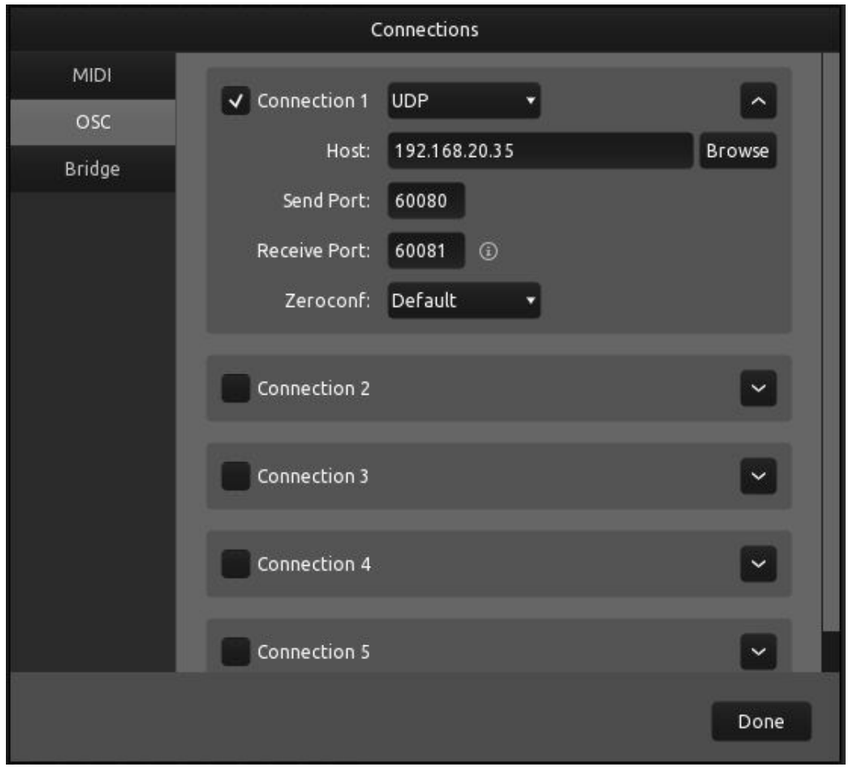
Note: It the Server Computer is not displayed automatically in the Editor Network menu, the connection can be configured manually by entering PC´s IP Adress in the “manual connect” Field.

3 Saving the template on the mobile device. Once the template has been transferred it will need to be saved in the device. Press the button with the”down arrow” as shown below:



Edit the name of the template before saving it and press OK.

4 Configuring Connections:

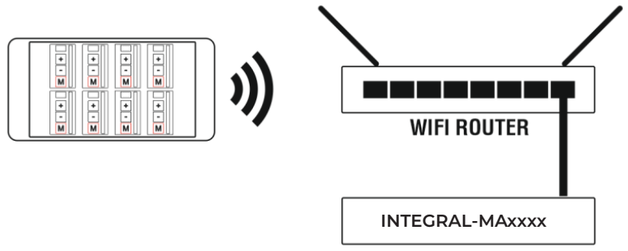


Select OSC and enter Integral-M88 or MA IP Adress in the Host field.

Send Port: 60080
Receive Port: 60081

5 Press “play” on the mobile device to start controlling your unit INTEGRAL-M88.

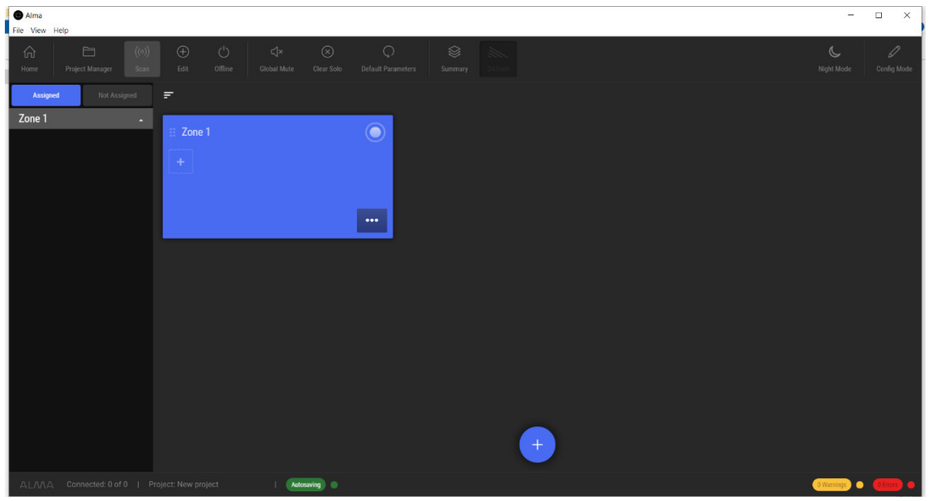
Once the mobile phone or tablet include the OSC template, the computer shall not be any more needed:



INTEGRAL
ALMA control

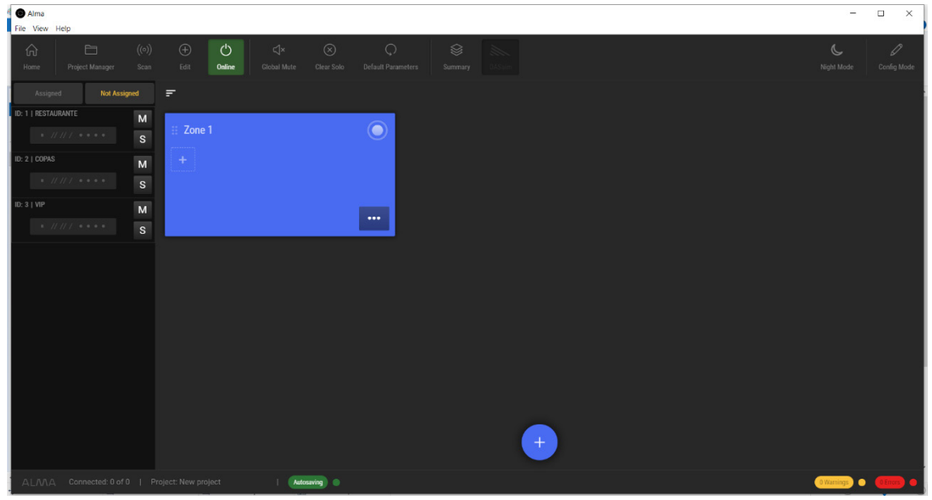
ALMA is the control and monitoring software for DAS Audio´s self-powered systems, rack amplifiers with built-in processors and matrixes. This advanced tool allows you to manage the systems instantly and intuitively, reducing system configuration times and streamlining the set-up process. The application allows all kinds of advanced settings, such as configuring up to two priority levels per output and digital audio output settings. Connectivity among units is done via TCP IP protocol.

There are different ways of configuring a network with the Integral devices; for more information, see the network Connections chapter in this manual.
First, when working “online” with all the units connected to the network, run a scan to detect them and assign them to a zone. During the scan process, the units detected will show under the “not assigned” tab on the left hand side of the screen.

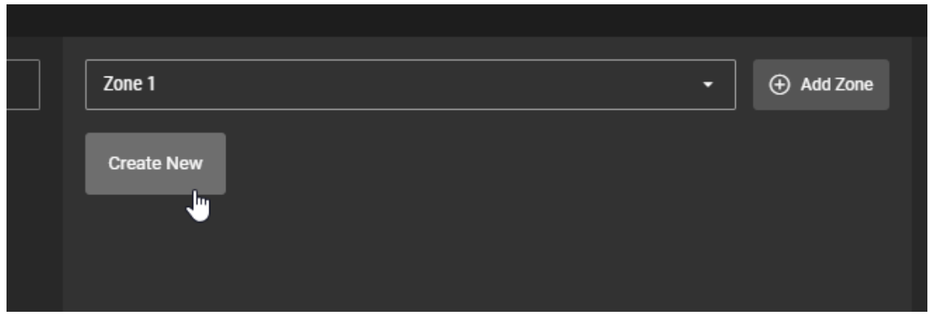


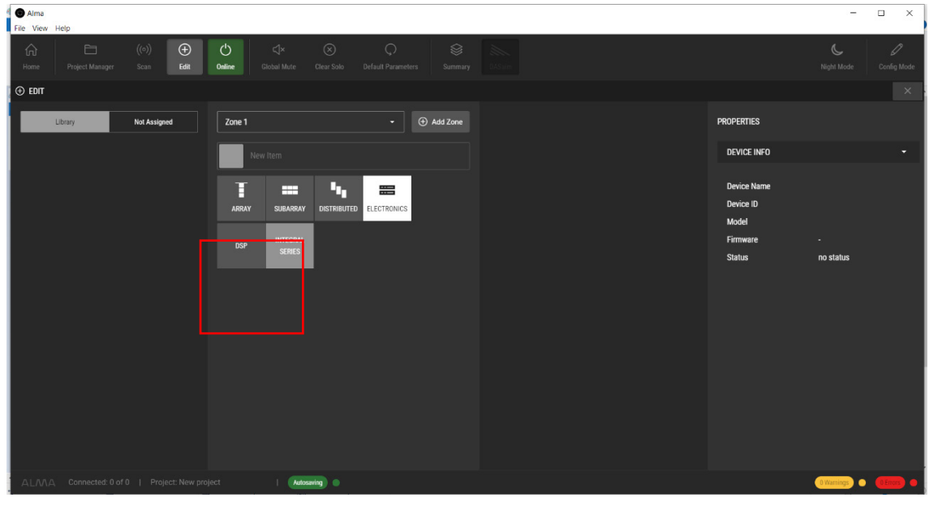
All units on the network must be assigned to a zone.
By default, when the software is launched, a zone is created automatically (Zone 1).

To create a new group of devices and add it to Zone 1, press the + icon that is shown below.

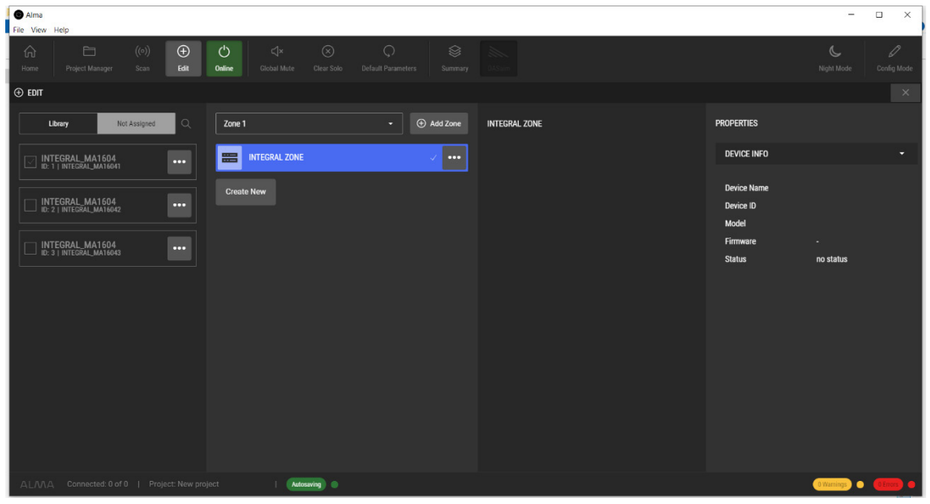


In Zone 1, click on “Create New”. Then select an option, in this case, Electronics -> Integral Series:

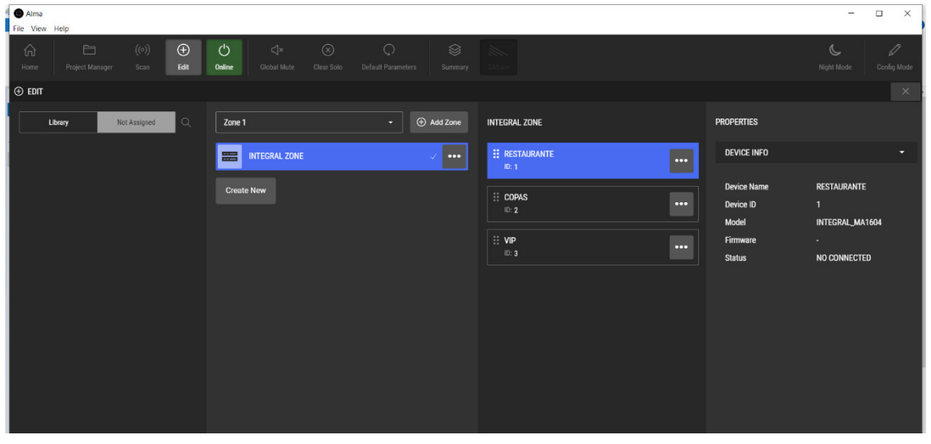




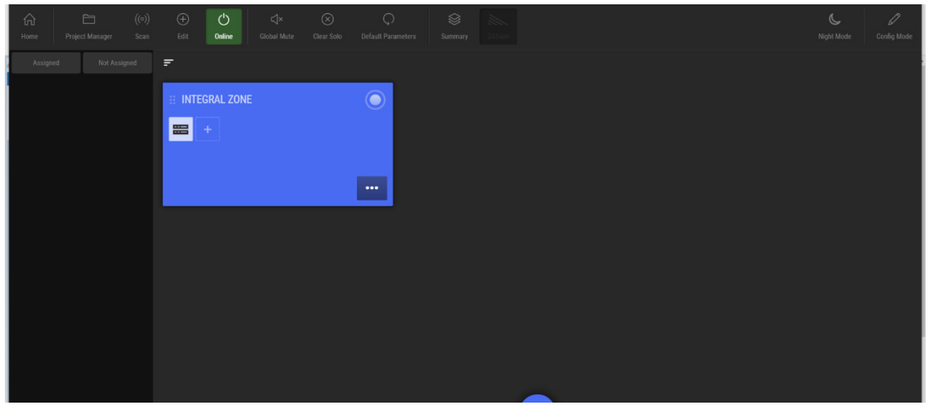
Next, assign the units that are under the “Not Assigned” tab to the group that has just been created. To do this, select from the “Not Assigned” tab the units that you want to include in this group by clicking on the tick boxes.



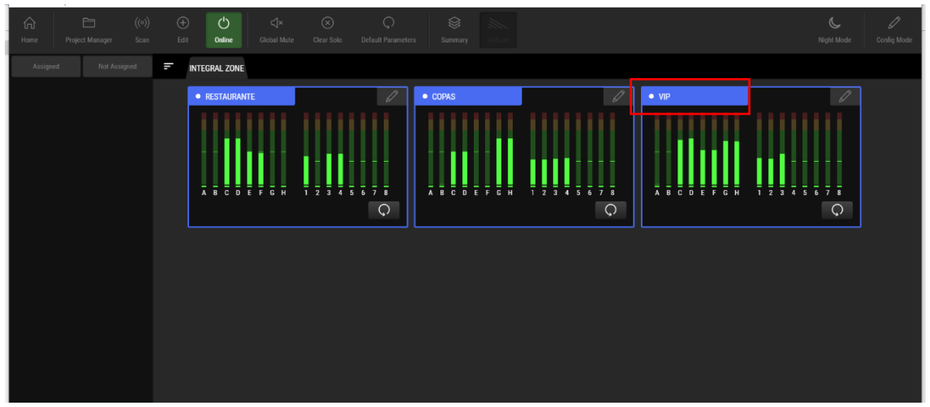
The units will automatically move to the “assigned” zone as part of the group in Zone 1.



The software offers the possibility of renaming the zones:



Double click on the blue section of Zone 1 to display the devices included in that Zone:

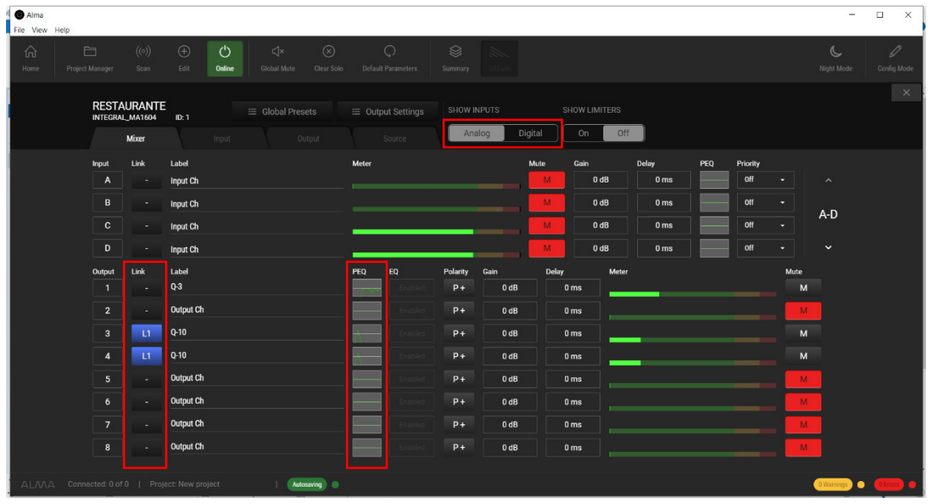


The figure above shows three INTEGRAL-MA1604 devices with their vumeters in operation. The user can view the 8 input and output channels per device. The name of the units can be edited by clicking on the blue section that contains their name.

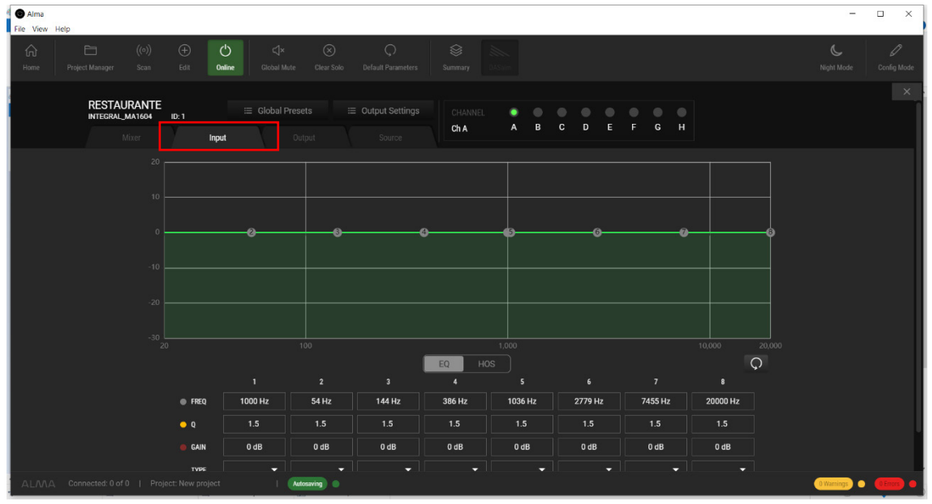
To access a more detailed view of the units, click on the upper right corner of the box showing the vumeters of the device. The device window will open displaying different tabs: MIXER, INPUT, OUTPUT and SOURCE.

The figure below shows the window of the RESTAURANTE unit with the MIXER tab opened. In this tab, you can view the 8 input and output channels. The analog input channels are in the first 4 positions (A, B, C, D) and the DANTE digital channels in the following (E, F, G, H). To access the digital channels, just click on Digital.

In this window, you can change the Mute, Gain, and Delay parameters. You can also LINK or group the systems. To access the EQ and X-over options, click on the boxes marked PEQ.

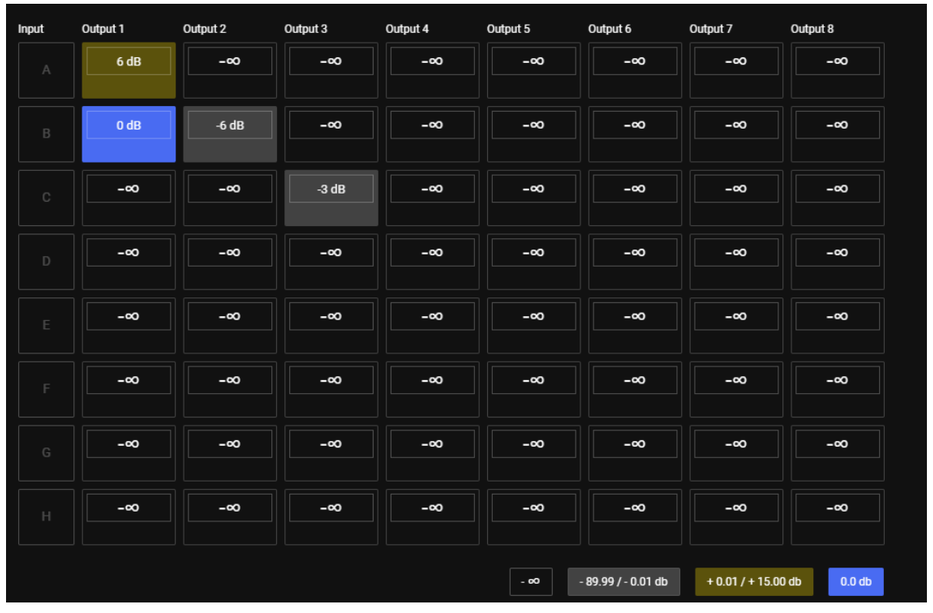


An alternative way to access the input channels is to click on the INPUT tab. The eight input channels are shown together with their corresponding equalization display:



The figure below shows the OUTPUT tab. The eight output channels are displayed with all the EQ points and X-overs available.

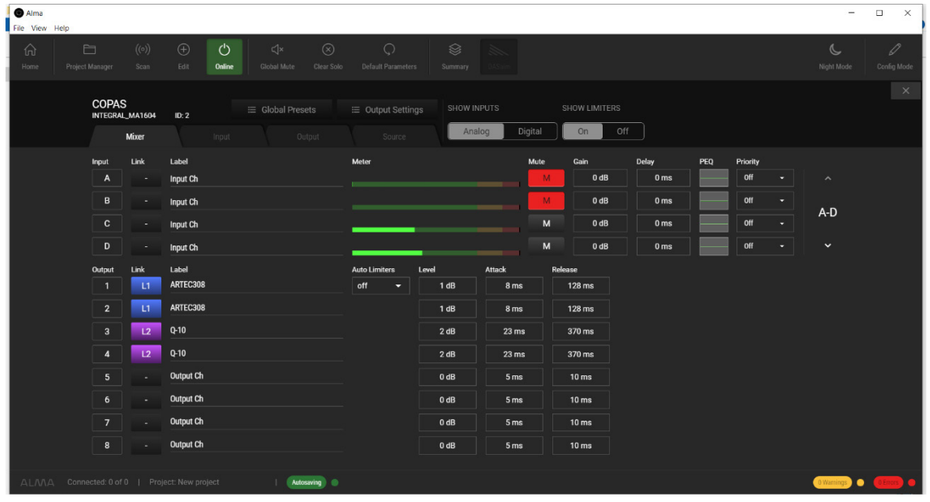
The figure below shows the SOURCE tab. Here, the user can define routing between input and output channels. One or more inputs can be assigned to an output channel and with a value of 0dB or any other value between +15dB and -90dB.



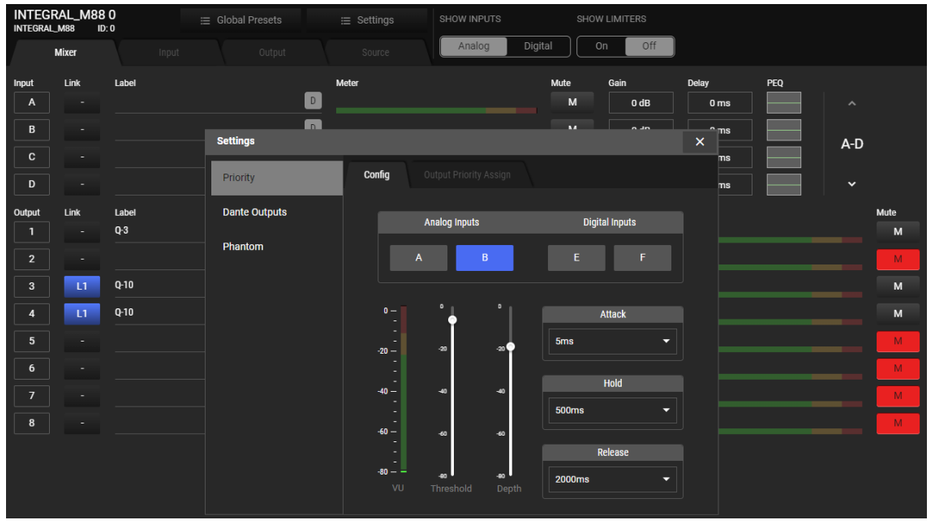
INTEGRAL
ALMA control

In addition to the MIXER, INPUT, OUTPUT and SOURCE options, you can access the Limiters tab and the Output Settings tab, where you can select the following configuration options: priority, bridge mode and DANTE outputs.

In the Limiters tab, the user can configure the threshold value for each output channel and the attack and release times, in the case of not using the automatic mode of the limiters. When using the automatic mode, the attack and release times are automatically configured according to the high cutoff frequency of that section or channel.

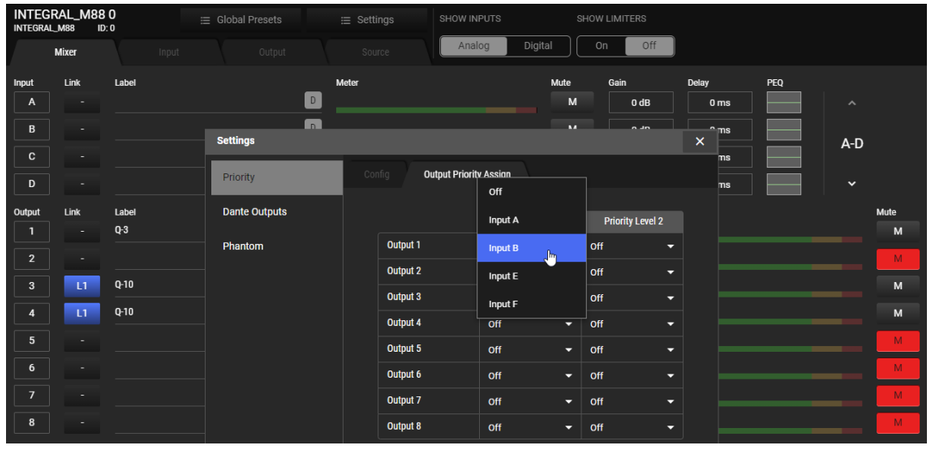


In the Settings tab, the first configuration option is Priority. Up to two priority levels are available for each output channel. The priority inputs can be any of the following: IN A, IN B, IN E, IN F.



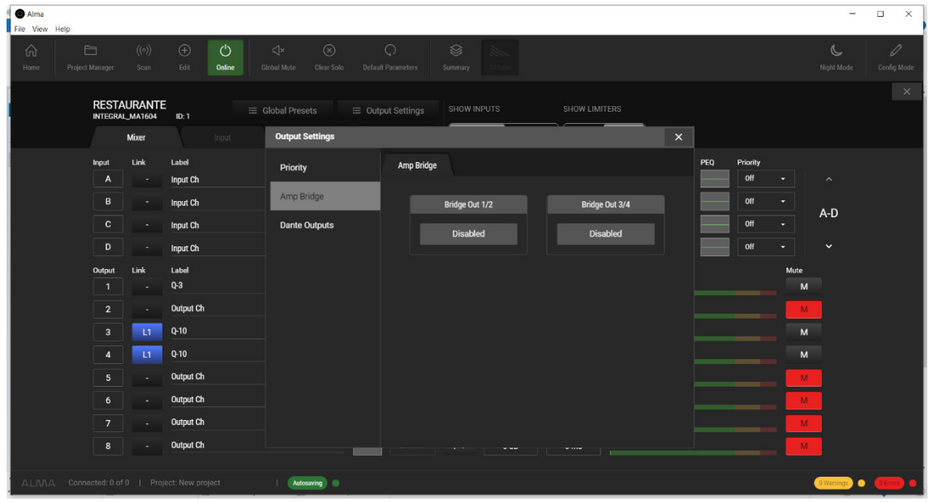
Attack, Release, Threshold and Depth times are the parameters available for the priority channels.

For every output channel, you can select up to two priority sources or input channels. In the following example, for Output 1, Input B has been assigned as level 1 priority channel (a letter P will appear indicating that there is a Priority input on that channel):



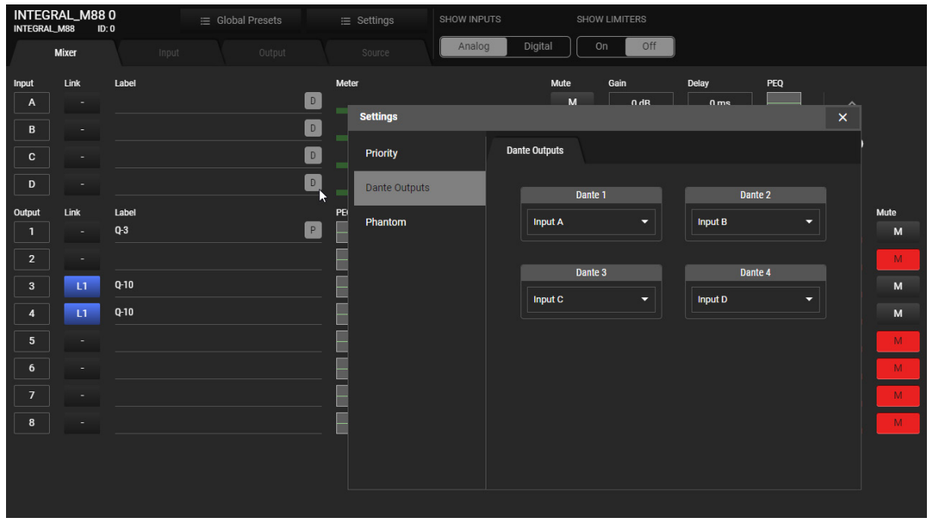
INTEGRAL
ALMA control

Two additional configurable parameters, Bridge mode (ONLY AVAILABLE ON MA MODELS) and Amp Bridge, are also available from the Settings tab. Bridge mode is used with systems with transformers (100 / 70V) or to double the output power of the amplifier.

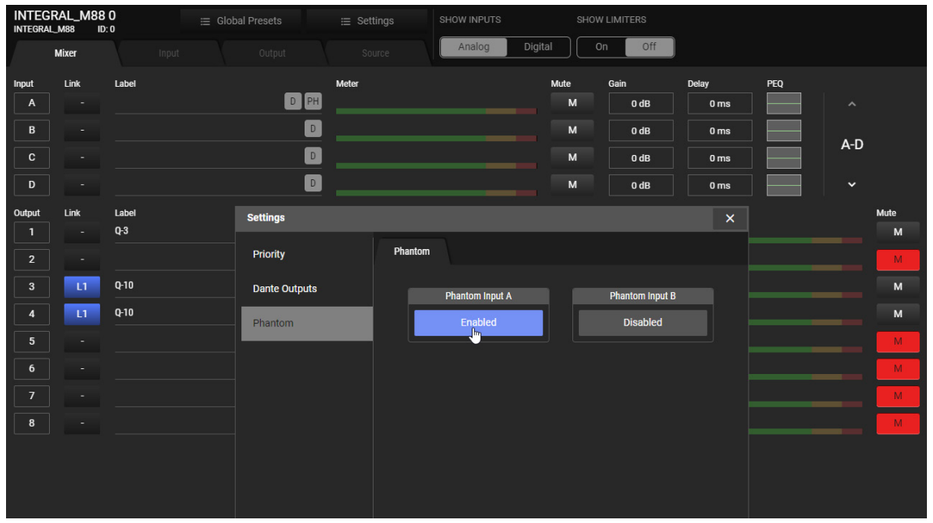


Note that the physical output pins employed when using the amplifier in Bridge mode are different from those used when configuring the amplifier in stereo mode.

In the Settings tab, you can also configure the DANTE digital output channels and select the output channels that the device will send to the network. The DANTE 1, DANTE 2, DANTE 3 and DANTE 4 channels can be a copy of any of the analog inputs IN A, IN B, IN C, IN D or any of the eight output channels OUTPUT 1, 2, 3,.....,8. This way, the audio injected into the network from a M88 device can be processed. In the following example, the DANTE 1,2,3,4 channels are copies of the input channels A, B, C and D (a D will appear on the input or output channel that has been assigned):



In addition to the previously mentioned options, from the Settings tab, the user can also enable and disable the phantom power supply of the analog input channels IN A, IN B (PH will appear on the channel with active phantom):



SOUND WITH SOUL