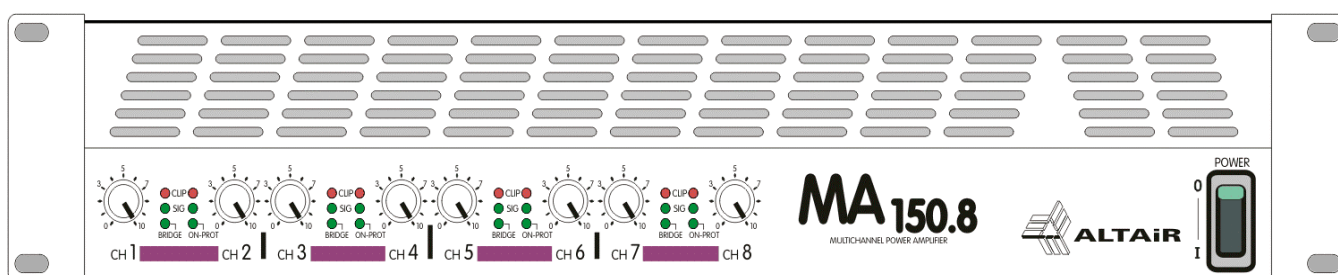


MA Series

MULTICHANNEL PROFESSIONAL POWER AMPLIFIER



OWNERS MANUAL

V 1.1 web

AUDIO ELECTRONICS DESIGN



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1. Contents:

1. Contents:	2
2. INTRODUCTION	3
Multiple protection	3
Clipping circuit limiter	3
Under control loads	4
Remote control	4
Flexibility	4
3. SWITCHES, INDICATORS, ATTENUATORS AND CONNECTORS	4
FRONT PANEL:	5
REAR PANEL:	6
4. WORKING PRECAUTIONS	7
5. INSTALLATION	7
UNPACKING	7
MOUNTING	7
CHANGING THE FUSE	8
CONNECTING TO THE MAINS	8
INPUT CONNECTION	9
UNBALANCED INPUT:	10
BALANCED INPUT:	11
OUTPUT POWER CONNECTION, OPERATING MODES	11
INDEPENDENT MODE OPERATING (NO BRIDGE)	13
OPERATING IN BRIDGE MODE:	13
MONO CH1+CH2 (CH5+CH6)	13
INDEPENDENTS OUTPUTS 3 AND 4 (OUTPUTS 7 AND 8):	13
OUTPUTS 3 AND 4 (7 AND 8) LIKE 1 AND 2 (LIKE 5 AND 6):	13
OUTPUTS 3 AND 4 (7 AND 8) LIKE 1+2 (LIKE 5+6):	14
HIGH PASS FILTER (HPF)	14
EARTH LIFT	15
6. OPERATION	15
POWER UP	15
INPUTS ATENUATORS	16
CLIP INDICATORS (INPUT SIGNAL OVERLOAD)	16
SIGNAL INDICATORS	16
ON/PROTECT INDICATORS	16
FAN	17
LOAD IMPEDANCES	17
MAINTENANCE	17
7. REMOTE CONTROL	18
RVC-1 REMOTE VOLUME CONTROL (Not included in the amplifier)	18
Installing	18
8. INSTALLATION EXAMPLES	18
1. GLOBAL VOLUME CONTROL INSTALLATION	18
Diagram	18
REMOTE CONTROL SETUP	19
MA 150x8 set-up	19
CONNECTIONS	19
9. SPECIAL OPERATIONS	20
SENSITIVITY/GAIN ADJUST	20
ON/OFF LIMITER	21
REMOTE	21
FILTER CHANGE, FRECUENCY, HPF, LPF	21
CHANGING THE MAINS VOLTAGE	21
10. TECHNICAL SPECIFICATIONS	22
11. WARRANTY	23



About electronic manual.

The present manual have hypertext, when you click above a cursive text that mention other part of document (*for example: This*) it will go to this part of document.

2. INTRODUCTION

Congratulations on your purchase of the ALTAIR MULTICHANNEL series power amplifier. Our dilated experience in the design and manufacture of audio power amplifiers has led us to carry out a series of general purpose bipolar power amplifiers of great performances.

There are a lot the characteristics that make of the ALTAIR power amplifiers MULTICHANNEL series; one of the most highlighted of the audio professional market, here enumerated some:

Multiple protection

The DC output protection and transient suppression commands a relay (per output channel pairs). It is improved several characteristics of the signal quality by incorporating cascode preamps, damping factor control and special care to global reliability.

Equally, the conventional thermal switches (based on contacts) has been substituted of the power modules by solid state sensors whose information completes the double condition of speed fan control and thermal shutdown protection.

All the protection situations are displayed in the power amplifier front panel.

Clipping circuit limiter

Since most of the damage caused to loudspeakers, and even to the power amplifiers, is normally the result of the permanence of the power unit during long periods of time in clipping, It is necessary to have limiter mechanisms that assure their reliable operation.

For this purpose, all the MULTICHANNEL series power amplifiers has a "soft-clipping" circuit that acts on the output power by comparing the input and output signals. Once it detects a distortion



or other noticeable cut, it stabilises the output signal integrity, thereby avoiding overloading and saturation levels that might damage the system. This limiter effect is switchable on or off internally.

Limiter is not level adjustable. Limiter action depends only upon the excess distortion found in the output channels.

Under control loads

The conception of the new loudspeakers, especially the uses for low frequencies is based on that the amplifiers that govern them behave as ideal voltage amplifiers, i.e., with zero output impedance. The MULTICHANNEL series approaches to this nearly zero value presenting a damping factor better than 300 what redounds to a perfect control of the loudspeaker voice coil position along their excursion.

Remote control

The MULTICHANNEL Amplifiers series allows a versatile remote control of its channels, allowing, controlling the 8 channels independently, or in groups. We can install and control a sound system in different places.

Flexibility

We can use it in multiple configurations since it has 8 channels modular structure, for example, multichannel amplification of up to 4 stereo ways, independent bi-amplification, thanks to its internal filter, like for instance operating with satellites and subwoofer, multi-channel amplification, L R C, 5,1 etc, amplification in different places, matching channels to duplicate the given power to a loudspeaker (bridge), mixing two inputs and to amplify the mono signal in several channels.

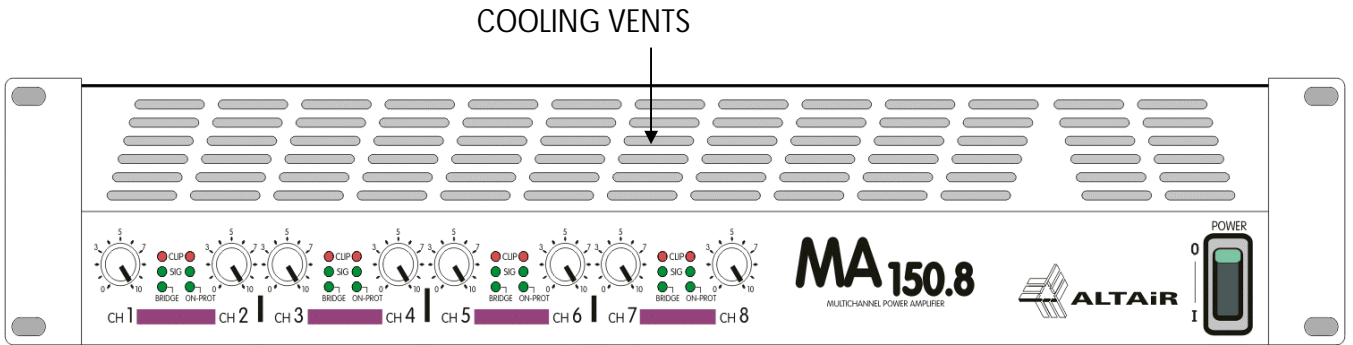
Naturally, you want to use your power amplifier just now, but before beginning is important that you read this manual. This manual will help you to install and use your new power amplifier. It is very important that you read it carefully, mainly the paragraphs marked as NOTE, PRECAUTION and DANGER, for your security.

Save the original packing, you can re-use it to transport the power amplifier. **NEVER SHIP THE POWER AMPLIFIER WITHOUT THE ORIGINAL PACKAGING.**

3. SWITCHES, INDICATORS, ATTENUATORS AND CONNECTORS

These are the switches, indicators, attenuators and connectors that we could find in your power amplifier. You will find the description and explanation of each one, it in the corresponding section.

FRONT PANEL:



INPUT ATTENUATOR.



CLIP

INPUT SIGNAL OVERLOAD INDICATOR/LIMITER ACTION



SIG

SIGNAL PRESENCE INDICATOR



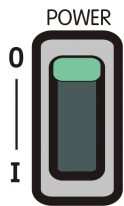
BRIDGE

BRIDGE MODE INDICATOR



ON-PROT

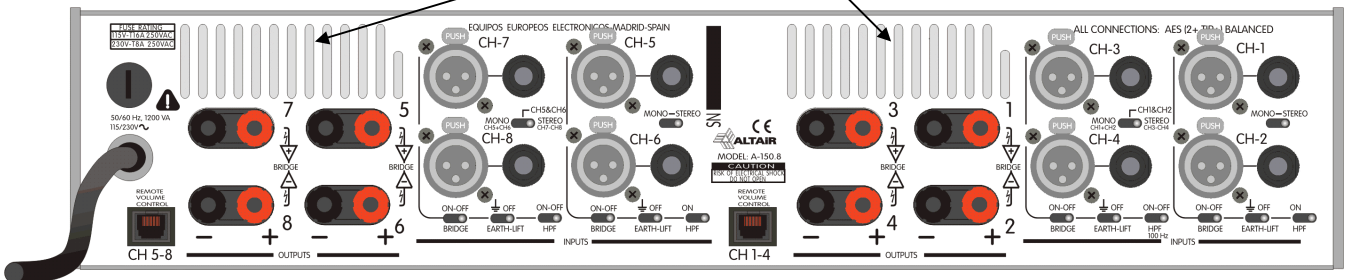
ON/PROTECTION INDICATOR



POWER SWITCH

REAR PANEL:

COOLING VENTS



BINDING POST



FUSE HOLDER.



MAINS CORD.



REMOTE VOLUME CONTROL



MONO/ESTEREO SWITCH



ASSIGN INPUTS SWITCH 1,2 OR 3,4, (5,6, OR, 7,8)



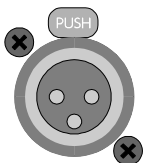
BRIDGE MODE SWITCH



EARTH LIFT SWITCH



HIGH PASS FILTER SWITCH



INPUT SIGNAL CONNECTOR XLR-3-31



INPUT SIGNAL JACK

4. WORKING PRECAUTIONS

- The manufacturer cannot be held responsible for any damage that is incurred by not using the power amplifier in compliance with the warranty or working precautions.
- **DANGER:** *High voltage inside the amplifier. Do not open! The power amplifier doesn't contain parts that can be repaired by the user. The power amplifier could have electric power stored in their interior even disconnected it from the mains.*
- **CAUTION:** *Protect the power amplifier from the rain and moisture. Ensure that no objects or liquids enter it. If liquid is spilled into the power amplifier, disconnect the power amplifier from the mains and consult a qualified service technician.*
- Don't place the power amplifier close to sources of heat. Also make sure that the front, lateral and the rear panel there are free of obstructions, since the fan could not work properly and cause the thermal protection work.
- **DANGER:** *The power amplifier output connectors could have high voltage. Make sure of turning off the power amplifier before handling on these output connectors.*



5. INSTALLATION

UNPACKING

Before leaving from factory, each power amplifier was carefully inspected and tested. Unpack and inspect the power amplifier for any damage that may have occurred during shipment. If any damage is found, doesn't connect the power amplifier to the mains, notify the sales person immediately, because the unit must be inspected by a qualified service technician

Save the original packing, you could use if you need to transport the power amplifier. **NEVER SHIP THE POWER AMPLIFIER WITHOUT IT'S ORIGINAL PACKING.**

MOUNTING

It is always advisable to mount the power amplifiers in rack, either for mobile or fixed installations, for protection, safety, aesthetics, etc.

The MULTICHANNEL series power amplifiers are designed for standard 19" rack mounting, and occupy 2u high rack space.

Due to the weight of the unit, it should be securely fastened at the front and the back of the cabinet. If the racks are carriage ones, it is advisable that have trays in order to allow the power amplifier to rest on its base and in an elastic cradle, if possible. It is advisable, leave a separation space between amplifiers and other units in order to facilitate its cooling, upon mounting the amplifier in a rack.

In the mounting, either fixed or in rack, the cooling vents placed in the front, lateral and rear panel should be free, so that the air circulates freely, and the amplifier could have a better heat

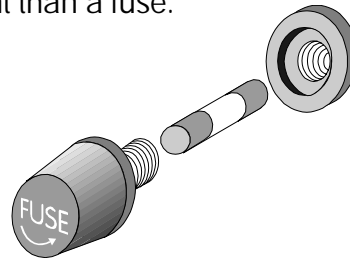
dissipation. In the same way, make sure that there are no heat sources near the front cooling vent, because the fan exhaust cool air through this vent.

CHANGING THE FUSE

The power amplifiers are designed to work with slow blow type fuses of 6x32, whose values in order to work with a mains voltage of 230V 50-60 Hz or 115V 50-60 Hz. are specified in the following list:

MODEL	FUSE (230V. 50-60 Hz)	FUSE (115V. 50-60 Hz)
MA80.4	T5A.	T10A.
MA80.8	T6.3A.	T12A.
MA150.4	T6.3A.	T12A.
MA150.8	T8A.	T16A.

- 1 Make sure that the power amplifier is disconnected from the mains.
- 2 At the power amplifier rear panel is placed the fuse holder. Unscrew the most external part of the fuse holder.
- 3 Upon unscrewing the most external part of the fuse holder, the fuse will appear. Remove it and change for a new one. Never use other type of element than a fuse.
- 4 Screw the external part of the fuse holder.



CAUTION: Always make sure upon changing the fuse, that this is the adequate.

CONNECTING TO THE MAINS

The connection of the power amplifier to the mains takes place by means of a three-wire cord provided by the factory. The European standard colour code is: Brown-Live, Blue-Neutral and Yellow/Green-Earth, keeps in mind this mains configuration, whenever handle the power amplifier plug.

In the connection of several devices to the same AC distribution board and extension cables, keeps in mind the maximum current of the power amplifier, and make sure that the mains connector, as well as the AC distribution board, are of enough current capacity, since could take place in the mains connector, and in the same AC distribution board a overheating, with the risk of fire and/or

short circuit. The following list shows the maximum average current requirement of the different models of power amplifiers at normal music operation:

MODEL	MÁXIMUM CURRENT REQUIREMENT
MA80.4	2A.
MA80.8	4A.
MA150.4	6A.
MA150.8	8A.

- 1 Make sure that the power amplifier power switch is at position 0 (turned off).
- 2 Insert the male connector of the three-wire cable into the mains plug.
- 3 Turn on the power amplifier power switch. Right now, the power amplifier will turn on.

CAUTION: Make sure that the mains voltage is the correct, as well as their fuse is the adequate.

INPUT CONNECTION

The input signal to the power amplifier is made by 8 (4) IN Xlr-3-31 female connectors and 8 (4) Jacks 1/4 connectors, both in parallel (XLR with Jack), one XLR and Jack for each channel input. The inputs are balanced, with a nominal impedance of 20 K Ω (10 K Ω unbalanced), the positive corresponds to pin 2, and the negative to pin 3 and pin 1 is ground. The following table shows the correspondence of inputs pins:



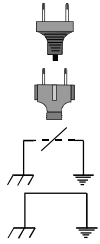
INPUT CONECTOR XLR-3-31	
PIN 1	GND
PIN2	HOT (+)
PIN3	COLD (-)

PRECAUTION: If you are a user of another old ALTAIR amplifier series having your equipment with PIN 3+, you must change your wiring configuration externally to avoid phase problems.

The input connection depends on two factors, the first is the type of input signal balanced or unbalanced, and the second the ground configuration of the sound source (floating or ground-referenced). The next pictures show some of the different possibilities of connection, relying on the

type of input signal, balanced or unbalanced and according to the ground configuration of the equipment (floating or ground-referenced).

In the next diagrams, we use the following symbols:



Sound source with mains cord without ground connection.

Sound source with mains cord with ground connection.

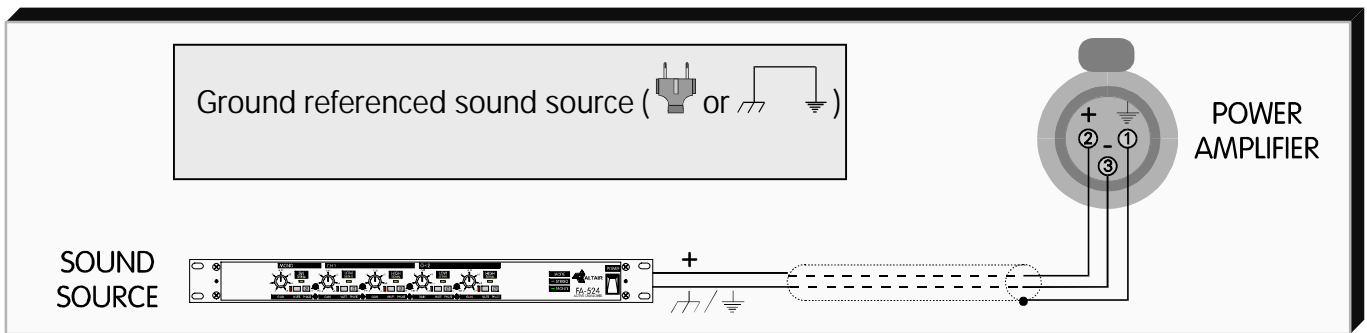
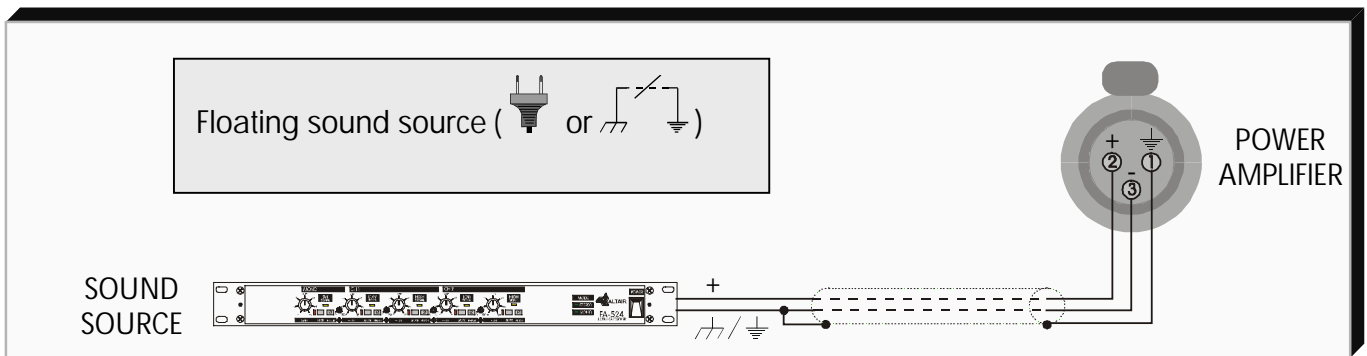
Sound source with the EARTH-LIFT ON.

Sound source with the EARTH-LIFT OFF.

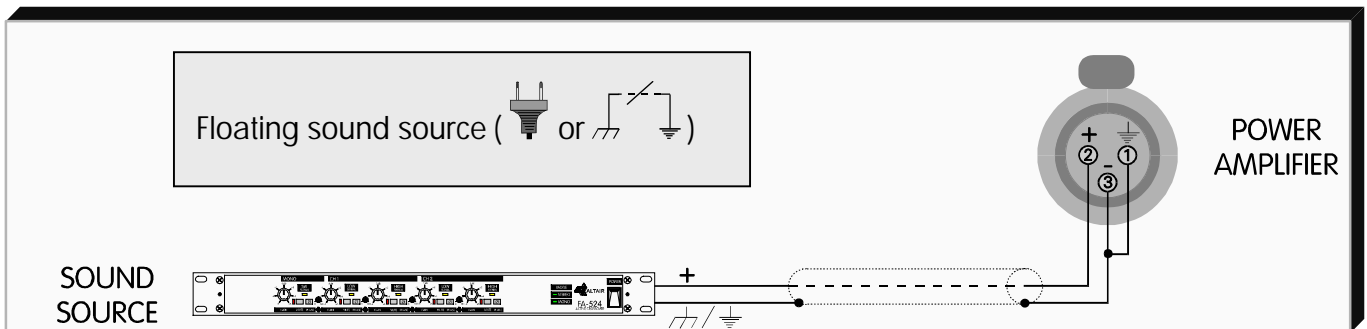
UNBALANCED INPUT:

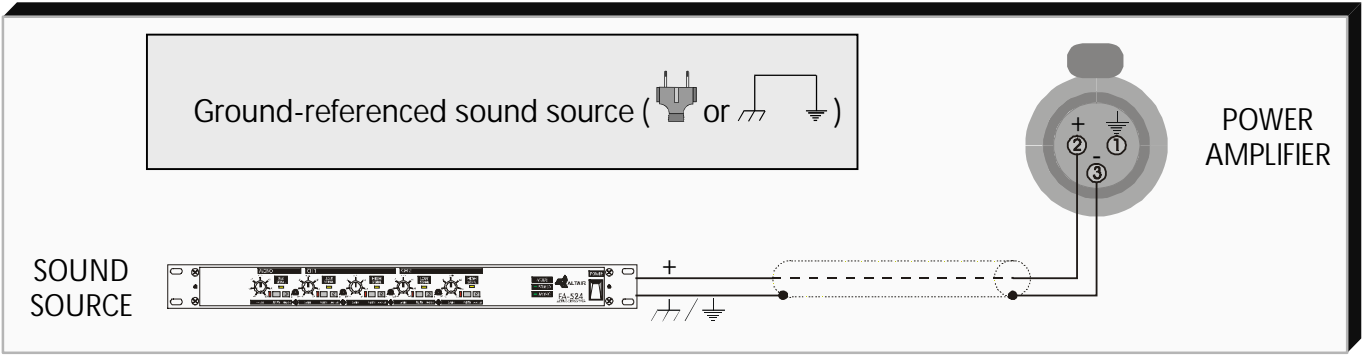
This type of connection will be used when the sound source doesn't provide balanced output. If it is possible, we recommend the use of connection type 1.

- 1) Using twin-lead shielded cable:

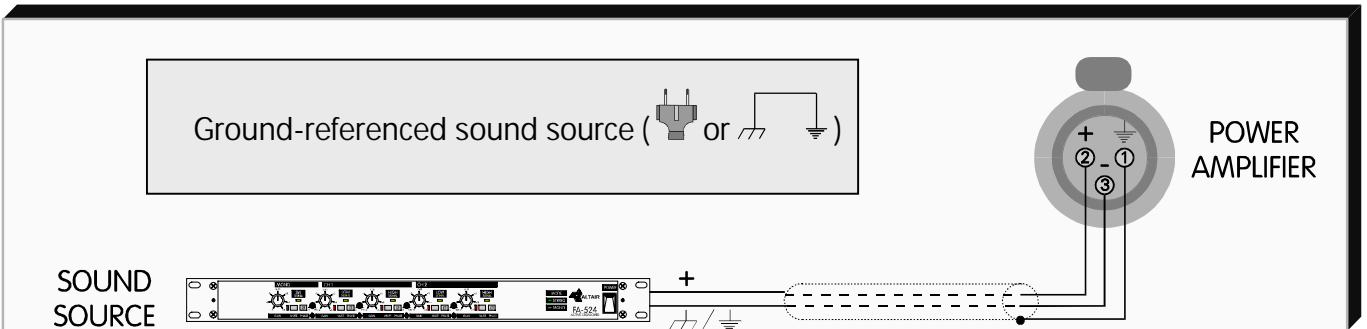
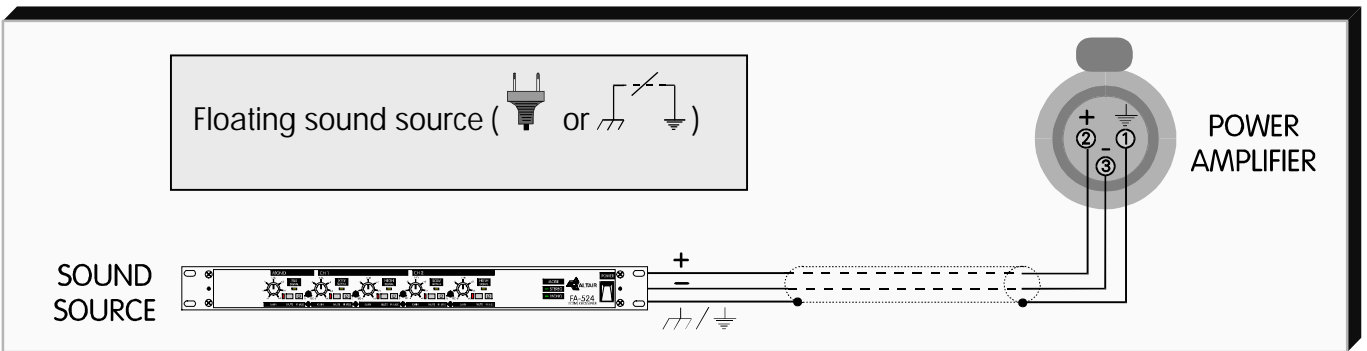


- 2) Using single conductor coax cable:





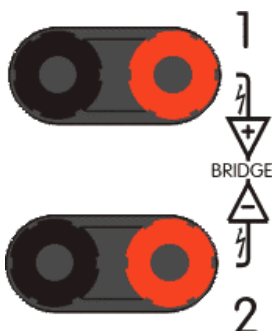
BALANCED INPUT:



OUTPUT POWER CONNECTION. OPERATING MODES

Each channel includes a pair of five-way binding post. The red binding post is positive and the black is negative phase. Keep in mind the polarity upon connecting the speakers since changing the speaker polarity of a system reduces the total output power by the effect of phase cancellations mechanisms.

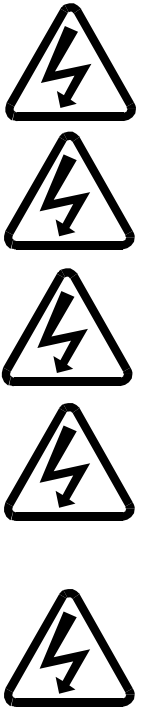
We must connect both wires to the red binding in **bridge mode**. Follow printing instructions



Hot (+) speaker wire must be connected to red binding 1 and (-) speaker wire must be connected to red binding post 2 (BRIDGE MODE).

There are important precautions to avoid accidental short circuit or possible damage in the equipment, in output connections.

- Consider the power-handling capacity of your speakers before connecting it to the power amplifier. Equipos Europeos Electrónicos is not liable for damage occurred by the connection of speakers to the power amplifier with a nominal power lower that the power amplifier.
- Turn off the power amplifier and turn down the input attenuators, whenever takes place an output power connection. The output power connectors could have high voltage, with the rising danger of short circuit.
- Never put the output power connectors in parallel. This connection doesn't increase the power and could cause the break of the power amplifier.
- Do not connect the power amplifier output connectors to the output connectors of any other power amplifier. This connection could cause the break of one or both power amplifiers.
- Do not connect the output connector ground (black binding post) to any input connector ground (PIN 1 of the connector XLR-3-31). This could create a ground loop and could cause feedback oscillations.
- Use loudspeaker cables sizes capable to manage the output current of the power amplifier. The selection of a good loudspeaker cable, with a good quality and an adequate diameter is very important, and is one of the things that less is kept in mind.



The next list shows the maximum output current of the power amplifiers according to the model:

MODEL	MAXIMUM RMS CURRENT REQUIEREMENT per channel (4 ohm loads)
MA80.4	4,5A.
MA80.8	4,5A.
MA150.4	6A.
MA150.8	6A

There are many factors that determine the loudspeaker cable diameter: the length of the cable, the type of signal that is going to circulate for it, the output power of the power amplifier etc. A cable with high resistance reduces the damping factor, limiting the power amplifier capacity for controlling the speakers accurately. Typical values are 1 to 2,5 mm².

The possible output connections, depends on the configuration of the MONO, STEREO, BRIDGE mode switches on the rear panel:

CAUTION: Do not change the configuration of ON/OFF BRIDGE switch unless the power amplifier is first turned off. Before turn on the power amplifier, make sure that the mains, input and



output connections are correct. If doesn't follow these recommendations, could cause a power amplifier and/or loudspeakers breakdown

INDEPENDENT MODE OPERATING (NO BRIDGE)

Both channels are independent in this mode, for that reason we connect both inputs (1-2, 3-4, 5-6, 7-8) and outputs independently.

Be sure that BRIDGE SWITCH is towards right position (rear view).

In order to perform the power amplifier in stereo mode, switch off and then perform it.

OPERATING IN BRIDGE MODE:

In order to perform bridge mode, **switch off** your power amplifier, then puts switch towards left (rear view) and wire inputs and outputs connections accordingly.

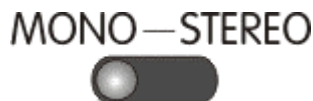
We use pairs of channels in bridge mode, (CH1-CH2, CH3-CH4, CH5-CH6, CH7-CH8), inputs should connected thought odd inputs (or putting the switch corresponding to the channels that we want to put in bridge in MONO) of pairs that we want put in Bridge mode. The power from the two channels is added to one only speaker.

The input odd attenuator (for example CH1) controls both channels, the even attenuator is disabled (in this example, CH2)

The output in bridge mode must be, hot (+) speaker connect to red binding odd (in picture 1) and (-) speaker wire must be connected to red binding post even (2 in image).

MONO CH1+CH2 (CH5+CH6)

The connections may be the same than in independent operating mode, but you must change mono/stereo switch to mono:



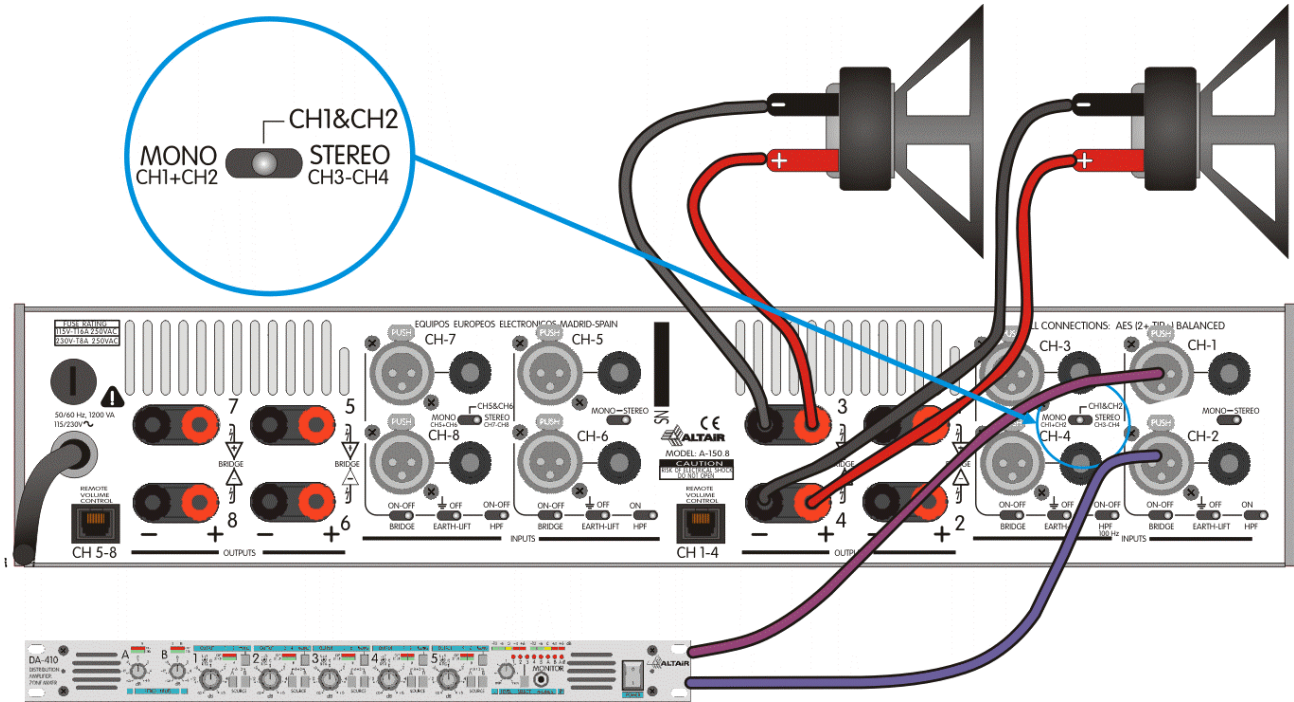
The level is controlled from CH1 (CH5), the input signal comes from mixing CH1 and CH2 (CH5 and CH6). Therefore, we have mono mix CH1 and CH2 (CH5 and 6) signal in (loudspeakers) OUTPUTS 1 and 2 (5 and 6).

INDEPENDENTS OUTPUTS 3 AND 4 (OUTPUTS 7 AND 8):

We have connect loudspeakers in OUTPUTS 3 and 4 (7 and 8), the signal that we want amplify is connected to inputs CH3 and CH4 (CH7 and CH8).

OUTPUTS 3 AND 4 (7 AND 8) LIKE 1 AND 2 (LIKE 5 AND 6):

We have connect loudspeakers in OUTPUTS 3 and 4 (7 and 8), the signal that we want amplify connected to CH1 and CH2 (CH5 and CH6). The level is controlled from CH3 and CH4 (CH7 and CH8)

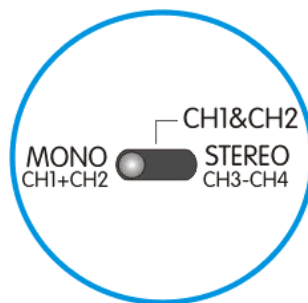


OUTPUTS 3 AND 4 (7 AND 8) LIKE 1+2 (LIKE 5+6):

We have connect loudspeakers in OUTPUTS 3 and 4 (7 and 8), the signal that we want amplify connected to CH1 and CH2 (CH5 and CH6).

The level is controlled from CH3 and CH4 (CH7 and CH8)

The connection diagram is similar to the previous one but we must put the switch towards left



HIGH PASS FILTER (HPF)

An active filter 12 dB/oct Butt. type is built in, tuned at 100Hz high pass filter as factory default. By demand, filter structure, normally configured as HPF can be turned to LPF characteristic. The cut-off frequency can also be changed to a different one.

If you want more information go to *SPECIAL OPERATIONS - FILTER CHANGE, FREQUENCY, HPF, LPF.*

Main application is to drive systems with satellites (in HPF mode) and subwoofer in full range.

ON-OFF



HPF
100 Hz

DISABLED 100 HZ HIGH PASS FILTER

ON-OFF



HPF
100 Hz

ENABLED 100 HZ HIGH PASS FILTER

EARTH LIFT

In some installations, it might be necessary to isolate the power amplifier input signal electric ground, from the system mains earth, in order to avoid ground loops, that could generate unwanted noises. For this reason, the power amplifier provides an EARTH-LIFT switch placed at the rear panel to lift the mains earth from the power amplifier pair 1-2 (3-4, 5-6 and 7-8) input signal electric ground.



OFF



EARTH-LIFT

MAINS EARTH LINK TO THE POWER AMPLIFIER PAIR 1-2 (3-4, 5-6 AND 7-8)



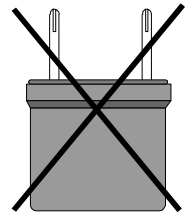
OFF



EARTH-LIFT

MAINS EARTH LIFT FROM THE POWER AMPLIFIER PAIR 1-2 (3-4, 5-6 AND 7-8)

CAUTION: Sometimes, lifting the mains earth, by using a ground-lift connector, cancels some hum noises on the audio system, but this is very dangerous and not advisable, because should any circumstance part of the mains signal is derived to the chassis, could cause a short circuit through our body, upon having eliminated one of the working precautions of the unit. For this circumstance, **NEVER** lifts the mains earth (use the EARTH-LINK switch of the unit) in order to avoid possible accidents.



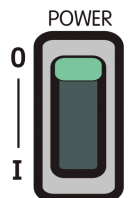
6. OPERATION

POWER UP

Plug in all inputs and outputs connectors (following the recommendations of the sections INSTALLATION - *OUTPUT POWER CONNECTION. MODES OF OPERATION*). Ensure that both power amplifier input attenuators are turned fully counter-clockwise ($-\infty$ position). At this time, we can switch on the power amplifier.

Upon switch the power amplifier on, the delay turn on system takes place that minimises the effect of the transient currents on the loudspeakers. In a few seconds, the delay turn on system stops working (a RELAY click will be listened) and the load is connected.

When turning on a rack of power amplifiers they should be switched on individually. The practice of leaving all power amplifiers in a rack switched on and powering up the whole rack by



connecting it to the mains is dangerous and likely, it blows the mains fuse of the rack power supply when available. In a rack of power amplifiers, switch the power amplifiers on in a one by one basis.

Note that upon switching the power amplifier on, the ON/PROTECT indicator blinks (indicating that the power amplifier is cutting the output signal), and after a few seconds this green doesn't blink, it light up and a RELAY click will be listened indicating that the power amplifier is connecting the output signal to the loudspeakers. At this time, we can turn up the power amplifier input attenuators.



INPUTS ATENUATORS

Each power amplifier channel has an input signal attenuator.

The input attenuators are independent for each channel. In BRIDGE mode, both channels depend on the odd (CH1, CH3, CH5, CH7) input attenuator.



CLIP INDICATORS (INPUT SIGNAL OVERLOAD)

The CLIP red ● CLIP LED, light on when the power amplifier starts to saturate, moreover, if the limiter is ON, this LED indicates that the circuit limiter starts to work, for more information see section *SPECIAL OPERATIONS - LIMITER ON/OFF*

The CLIP indicators are independent for each channel, indicate a real saturation.

The CLIP indicators also light on when there is an output short-circuit, whenever one input signal is being introduced to the power amplifier.

We must avoid this situation of overload during extended periods, to make the loudspeakers life longer.

If the input signal level is too high, don't turn the power amplifier limiter off, because it is an efficient protection for the loudspeakers.


In general, the loudspeakers resist high peaks of instantaneous power, but when exposed to extend overload situations they lose any guarantee of good operation.

SIGNAL INDICATORS

The SIGNAL ● SIG green LEDs illuminates when the output signal of the corresponding channel reaches approximately -35 dBu before saturation.

These LEDs indicate signal presence in the power amplifier output.

ON/PROTECT INDICATORS

The  ON/PROT green LED shows three working states:
Amplifier off, protection mode, amplifier working



The ON/PROT LED indicates the connection or disconnection of the load from the power amplifier.

The thermal protection disconnects the load from the power amplifier. This only happens under the most severe conditions of continuous overload; in such a case, it is essential to localise and to rectify the cause of this overheating condition. The thermal protection circuit returns automatically to its normal operation when the power amplifier output transistors drops under the security level, connecting the load again.

Each channel of the power amplifier has an independent load protection circuit.

The power amplifier has ON/PROT LED indicators and relay, one per channel pair (stereo).

FAN

The power amplifier includes a thermally controlled system, which continuously regulates the fan speed depending on the heat energy it has to discharge. This variable speed circuit avoids abrupt changes of temperature and substantially extends the working life of the components builds in.

At power amplifier turn on, the fan rotates at maximum speed, in order to exhaust the maximum dust possible. Soon after, the fan's speed drops to normal speed. The power amplifier fan rotates at maximum speed also, in an overheating situation (when a thermal protection is activated) so that the heat drops under the security level quickly.

The fan is placed inside the power amplifier, and incorporates some cooling vents in the front lateral and rear panel for which the air is evacuated, for that reason it is important make sure that the cooling vents are always free so that the air could circulate with freedom. The amplifier uses one only fan, so speed is related to any of the 4 (8) channels needs.

LOAD IMPEDANCES

The power amplifiers MULTICHANNEL series, are designed to drive a 4Ω or higher load impedances in INDEPENDENT mode (8Ω or higher in BRIDGE Mode), without current limiting.

When the power amplifier is working in BRIDGE mode, the load impedance must be 8Ω or higher, with the same consideration that in INDEPENDENT mode with 4Ω load impedance. This is because in BRIDGE mode, each channel is like driving with the half load impedance.

MAINTENANCE

Periodically, and in a technical service, you must clean the dust and dirt accumulated inside the power amplifier, especially in the heat sinks, the fan and the cooling vents, with a vacuum cleaner or with an air-compressor gun. The dirt diminishes considerably the capacity of radiation and ventilation.

The input attenuators (potentiometers) are sensitive to the dust accumulated, and therefore for trouble free operation they must be cleaned with an air compressor gun or be changed if necessary.

NOTE: *Equipos Europeos Electrónicos don't recommend the use of spray cleaners because they could damage the lubricant layer of the potentiometers. Use compressed air to clean them or replace with similar parts.*

7. REMOTE CONTROL

The MULTICHANNEL SERIES has remote volume control possibility of each channel. Ask your dealer for the RVC-1 accessory

RVC-1 REMOTE VOLUME CONTROL (Not included in the amplifier)

Installing

The power multichannel remote control is made thought of RVC-1 unit, you be able to set-up the channels that you want control inside it.
It may be installed or into standard wall boxes or on surface adaptors.



If would like you can put all switches to ON therefore whit a single RVC-1 you can control all channels volume * (* it depends on which connector of remote control of the Multichannel power amplifier you have plug)

- The remote is wiring with a to standard Cat-5 cable, normally is used in computer networks it have 8 ways with RJ45 connectors. Pin 1 to pin 1, pin 2 to pin2, ... pin 8 to pin 8.



You should install in cascade (also in parallel, with a cat 5 splitter) to IN/SPLIT input and SPLIT/IN output

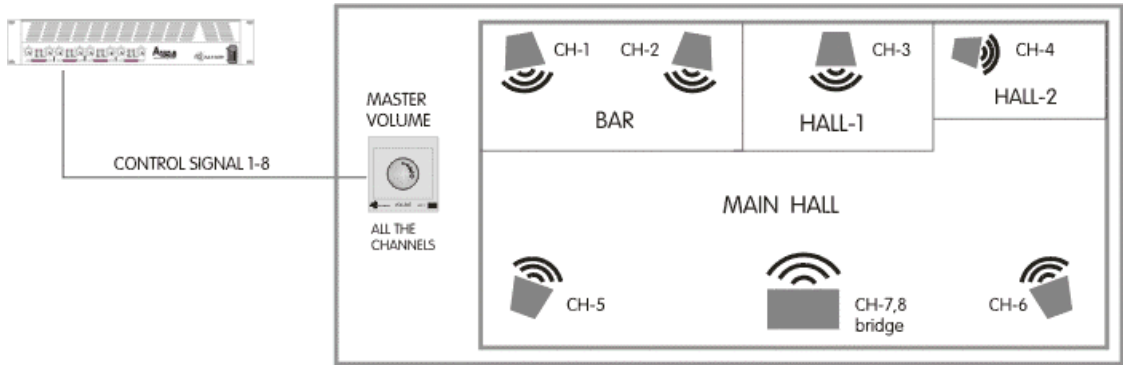
You have two remote volume control connection in each Multichannel Power Amplifier

8. INSTALLATION EXAMPLES

We show the examples with power amplifier MA_{150.8}, or a MA_{80.8}

1. GLOBAL VOLUME CONTROL INSTALLATION

Diagram



REMOTE CONTROL SETUP

You must put all switches towards on

Connected to REMOTE VOLUME CONTROL CH1-4						
	1 VOLUME CH1	2 VOLUME CH2	3 VOLUME CH3	4 VOLUME CH4	5 VOLUME CH5-6	6 VOLUME CH7-8
S1 (RVC-1)	ON	ON	ON	ON	ON	ON

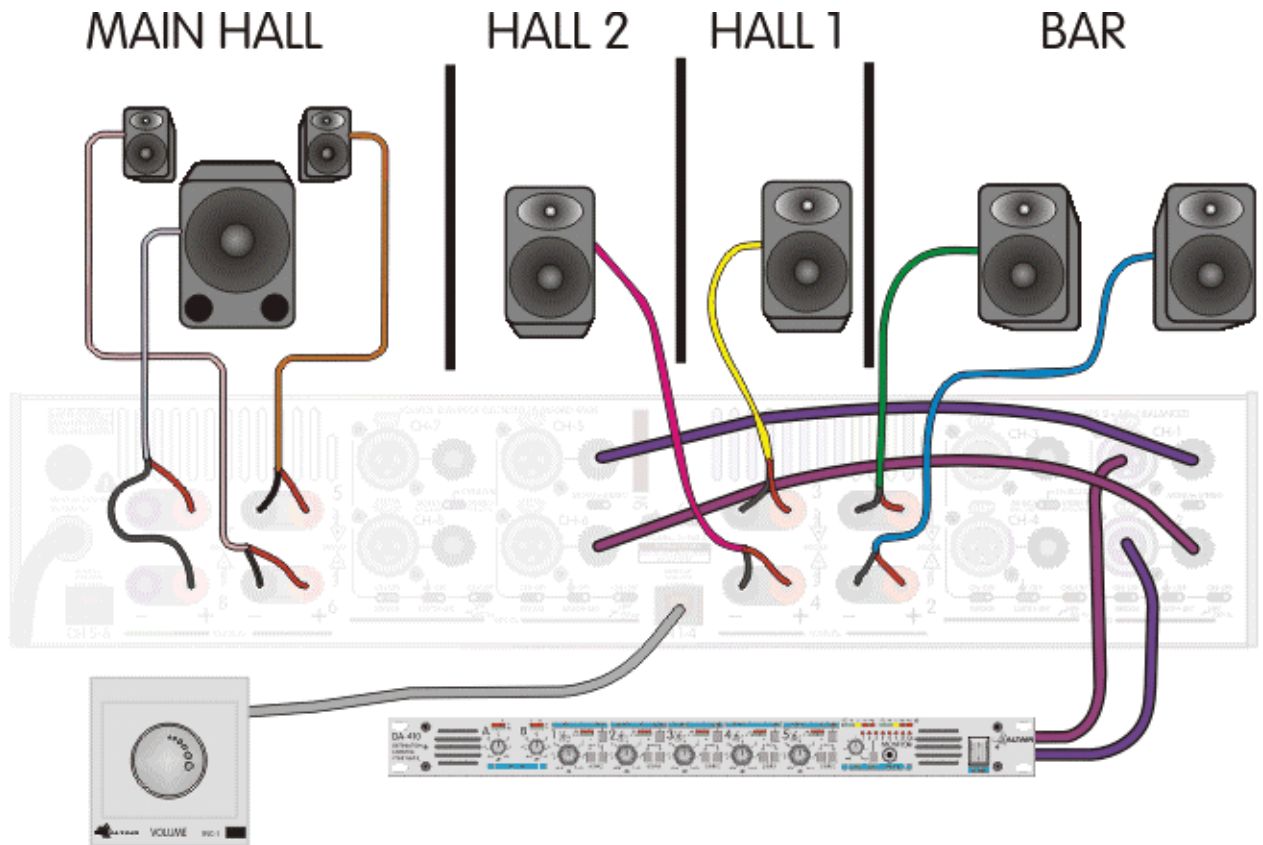
MA 150x8 set-up

	MODE	BRIDGE	EARTH LIFT	FILTER
CH1-CH2	STEREO	OFF	*	OFF
CH3-CH4	MONO CH1+CH2	OFF	*	OFF
CH5-CH6	STEREO	OFF	*	HPF
CH7-CH8	MONO CH1+CH2	ON	*	LPF**

* See section **INSTALLATION - INPUT CONNECTION**

** See section **SPECIAL OPERATIONS - FILTER CHANGE, FREQUENCY, HPF, LPF - Low Pass Filter (LPF)**

CONNECTIONS



9. SPECIAL OPERATIONS

In order to configure some of the power amplifier possibilities it is necessary to open upper cover, we need unscrewing the 12 screws.

NOTE: This type of operations takes place with the unit open, for what it should be carried out by a qualified technician.

DANGER: Before opening the amplifier, disconnect it from the mains. It is important to indicate that although the unit is power out (with the power switch in 0 position), if it continues connected to the mains there are different parts of the unit that are subjected to high voltage.

CAUTION: Protect the power amplifier from the rain and moisture, mainly if it is open. If liquid is spilled into the power amplifier, disconnect it from the mains and consult a qualified service technician.

SENSITIVITY/GAIN ADJUST

Input sensibility change is made into unit.

Power amplifier input sensibility (input level necessary to obtain top level output) perform by means of a resistor (see next table), one for each channel



The factory default configuration is with input sensitivity 0 dBu.

The gain (times that the output signal is increased with respect to input signal) depends on the power amplifier model, as well as of the input sensitivity configuration. In the next table is shown the gains according to the power amplifier model and its input sensitivity configuration (with intermediate input sensitivities, subtract the gain corresponding to 0 dBu with the configured input sensitivity, and obtain the power amplifier gain i.e.: $36-6 = 30$).

GAIN (dB)		
MODEL	INPUT SENSITIVITY	
	0 dBu (0,775 V).	+8 dBu (1,95 V).
MA80x4	27	19
MA80x8	27	19
MA150x4	30	22
MA150x8	30	22

ON/OFF LIMITER

The power amplifier's limiter reduces the input signal when the power amplifier starts to saturate, which avoids high saturation and loudspeaker damage.

It is very advisable the use of the in built limiter circuit.

The factory default configuration is with the limiter enabled (ON) in all channels.

If it needed you can put off limiter into unit.

We have the possibility of change the set-up, enable or disable the limiter circuit in each channel.

REMOTE

We might adjust the volume remotely with RVC-1 REMOTE VOLUME CONTROL.

FILTER CHANGE, FREQUENCY, HPF, LPF

Filter characteristics can change for users. (100Hz HPF factory default)

Changes could be made on demand

CHANGING THE MAINS VOLTAGE

The power amplifier is set to operate at 230V, 50-60Hz or at 115V, 50-60Hz.

- 1 Make sure that the power amplifier is disconnected of the mains.
- 2 Make sure that the fuse is the right one for the selected voltage:

MODEL	FUSE (230V. 50-60 Hz)	FUSE (115V. 50-60 Hz)
MA80.4	T5A.	T10A.
MA80.8	T6.3A.	T12A.
MA150.4	T6.3A.	T12A.
MA150.8	T8A.	T16A.

10. TECHNICAL SPECIFICATIONS

MODEL	MA80.4	MA80.8	MA150.4	MA150.8	
OUTPUT POWER (RMS WATTS, 1KHz, THD < 0,1%)					
Stereo Mode: (All channels working)	8Ω	4X50	8X50	4X80	8X80
	4Ω	4X80	8X80	4X150	8X150
Bridge mode:	8Ω	2X160	4X160	2X300	4X300
Dynamic Power. EIA RS-490	4Ω	4x100	8x100	4x200	8x200
TOTAL HARMONIC DISTORTION (THD+N):	Less than 0,05% at full rated power into 4 Ω, 1 KHz.				
INTERMODULATION DISTORTION:	SMPTE: - Less than 0,08% at 60Hz, 7KHz 4:1 ratio Into 4Ω. At rated power. DIM-30: - Less than 0,04% into 4Ω.				
INPUT SENSITIVITY: At rated power (4Ω)	Internally user selection by resistor: From 0 dBu (0.775 V) to +8dBu (1.95 V).				
INPUT IMPEDANCE:	Balanced: 20 KΩ. Unbalanced: 10KΩ.				
C.M.R.R:	Greater than 60 dB, from 20 Hz to 10 KHz.; 70 dB at 50 Hz.				
DAMPING FACTOR:	Greater than 300 at 1 KHz into 8Ω.				
NOISE AND HUM ("A" weighted):	Greater than 98 dB, 20Hz to 20KHz at full power.				
FREQUENCY RESPONSE:	20 Hz to 20KHz (-0,5 dB).				
SLEW RATE:	Typically 20 V/μs.				
CHANNEL SEPARATION:	Greater than 60 dB at 1KHz.				
INPUT CONNECTIONS, PER CHANNEL:	XLR-3-31 Balanced, Jack 1/4. Paralleled				
OUTPUT CONNECTIONS, PER CHANNEL:	A pair of 5-way binding post.				
LED INDICATORS:	LIMIT/CLIP (per channel). SIGNAL (per channel). BRIDGE (per pair channel) ON/protection, ON/PROT (per channel pair).				
COOLING:	Front to rear low noise servo-assisted fan				

PROTECTIONS:	Electronic, Open circuit, short circuit, Thermal against output transistor overheats. Relay, DC, start up transient. Soft start protection.			
POWER:	115/230 Volts + 10%, -30%, 50/60 Hz. Internal selection.			
POWER CONSUMPTION:	350 V.A.	700 V.A.	750VA	1100 V.A.
NETT/SHIPPING WEIGHT:	11 Kg. / 14 Kg.	12 Kg. / 15 Kg.	14 Kg / 17 Kg.	15 Kg. / 18 Kg
DIMENSIONS:	483x89x370 m/m (19" x 2 u.).			
RACK DEPTH:	430 m/m, including XLR input connections.			

NOTE: EQUIPOS EUROPEOS ELECTRÓNICOS S.A.L. reserves the right to modify the technical specifications without previous notice.

11. WARRANTY

This unit is warranted by Equipos Europeos Electrónicos to the original user against flaws in the manufacturing and in the materials for a length of time of one year, starting from the date of sale.

Flaws due to misuse 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. The serial number of the unit must be included with any request for the service.

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

SERIAL NUMBER



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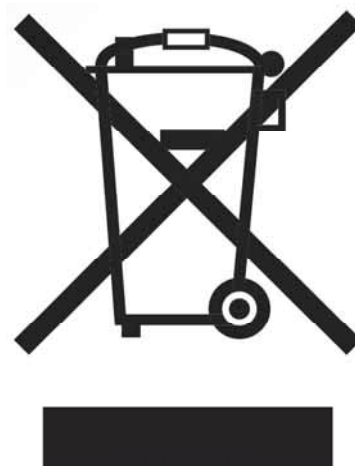
European Union Waste Electronics Information Unión Europea Información sobre residuos electrónicos

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

AUDIO ELECTRONICS DESIGN



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