

# DA-240

## DISTRIBUTION UNIT

## OWNERS MANUAL

**AUDIO ELECTRONICS DESIGN**



**EQUIPOS EUROPEOS ELECTRÓNICOS, S.A.L**

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## 1. INTRODUCTION

Congratulations on your purchase of the **ALTAIR** distribution unit **DA-410**. Our dilated experience in the design and manufacture of effect processing equipment, had led to us to carry out this distribution unit of great performances.

There are a lot the characteristics that make of the **ALTAIR DA-240**, one of the most highlighted of the audio professional market, here enumerated some:

- 40 Balanced OUTPUTS
- Complement of the Altair DA-410 Distribution Unit.
- 3 POSITION attenuator per output.
- INDIVIDUAL short circuit protection in any output.
- Output TRANSFORMER optional.
- COMBO (tm) & XLR link on inputs.
- Survival audio patch: XLR male, XLR female, Jack ¼, RCA and minijack to ease interconnections.

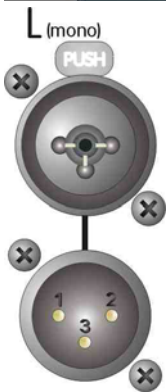
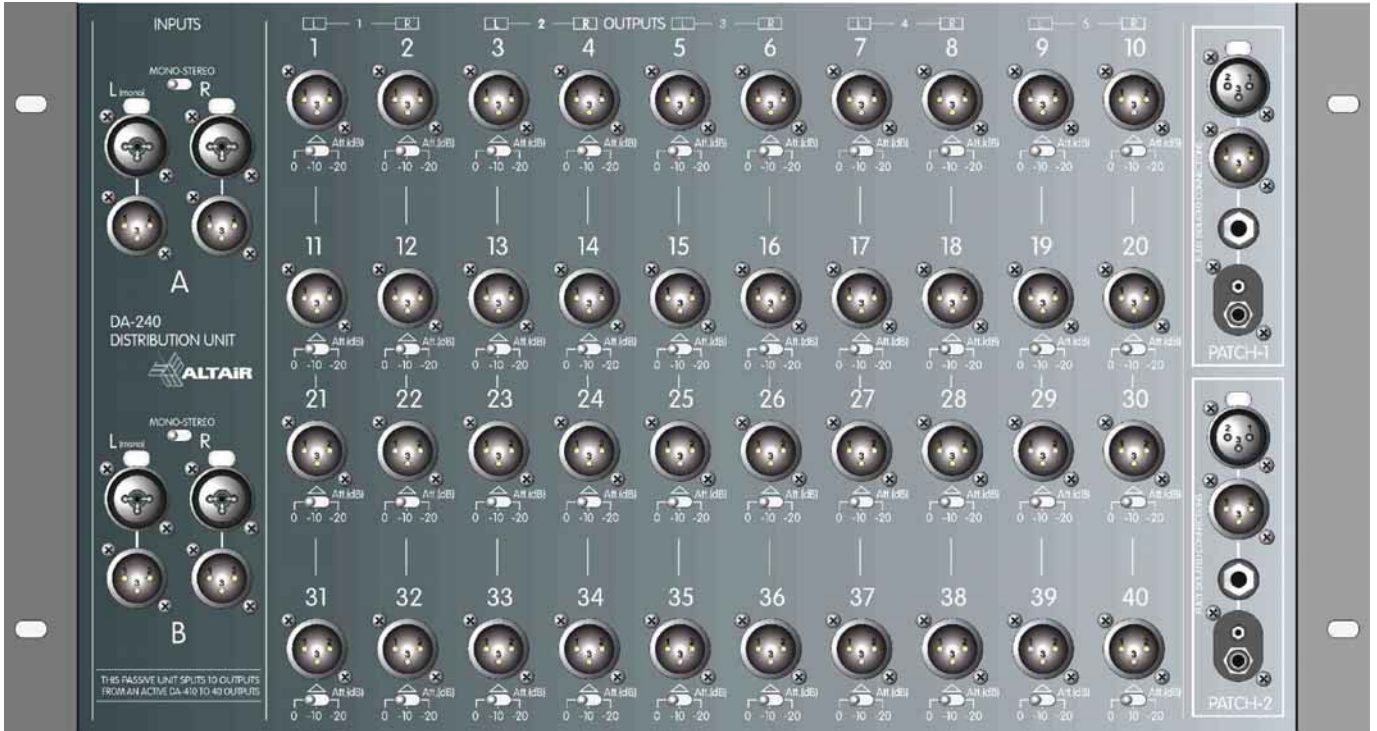
Naturally, you want to use your distribution unit, but before beginning is important that you read this manual. This manual will help you to install and use your new distribution unit. It is very important that you read it carefully, mainly the paragraphs marked as NOTE, PRECAUTION and DANGER, for your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

Save the original packing, you can re-use it to transport the unit. **NEVER SHIP THE DISTRIBUTION UNIT ALTAIR DA-240 WITHOUT IT'S ORIGINAL PACKING.**

## 2. SWITCHES, CONTROLS, ADJUSTMENTS AND CONNECTORS

These are the switches, controls, adjustments and connectors that you could find in your ALTAIR distribution unit. The description and explanation of each one of them, you will find in the corresponding section.

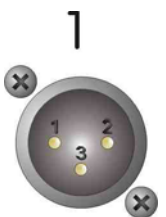
### FRONT PANEL



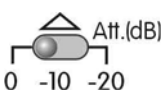
COMBO (tm) & XLR link input connectors.



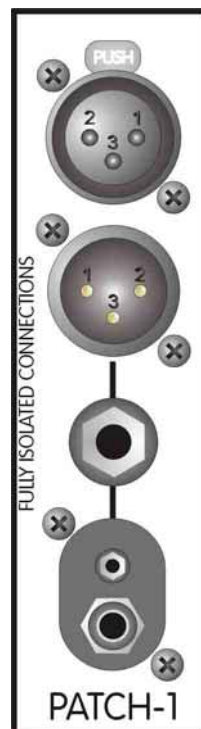
Mono/Stereo input switch.



XLR male output connector.

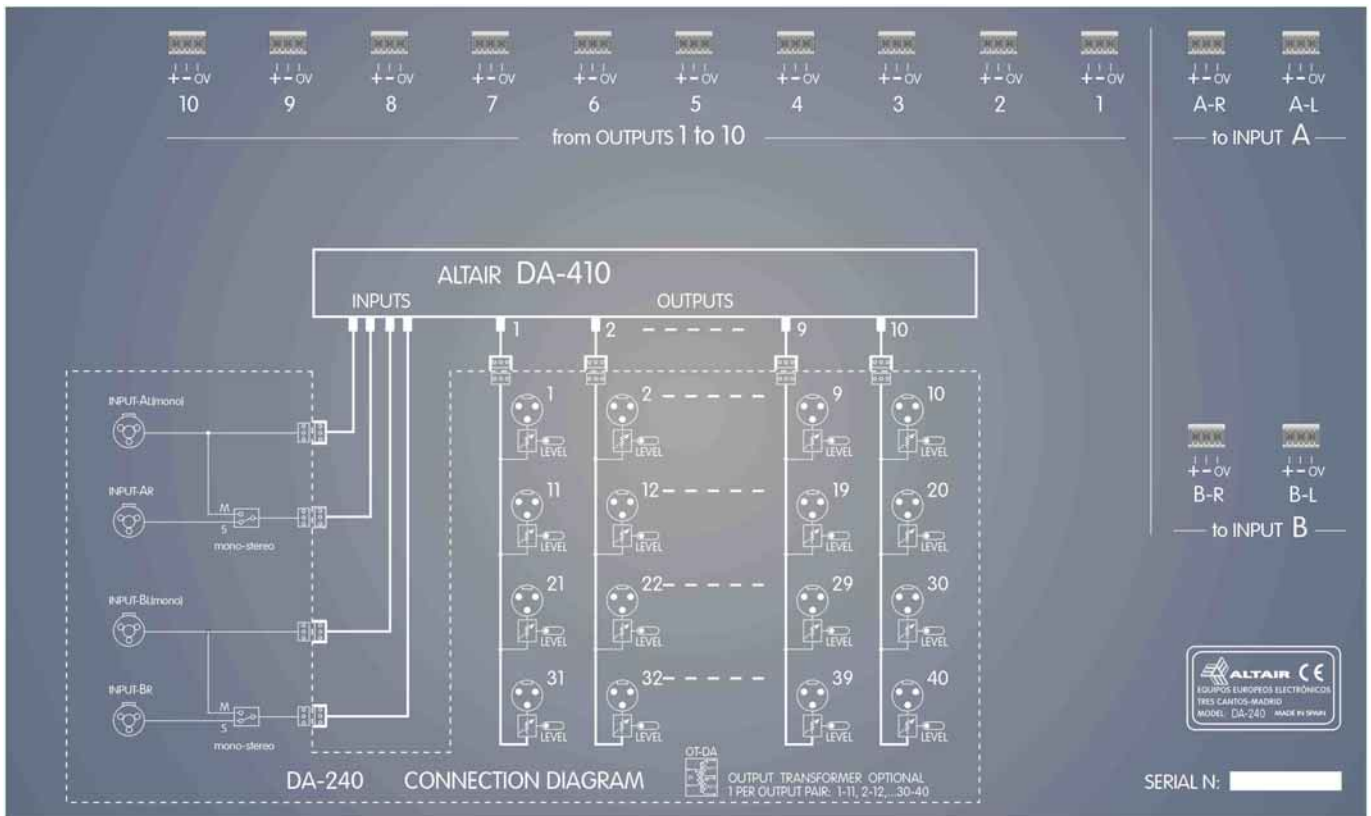


Attenuator output switch.



Survival audio patch: XLR male, XLR female, Jack 1/4, RCA and minijack.

REAR PANEL



REAR PHOENIX CONECTOR TO DA-410 INPUT.

+-OV  
A-L



REAR PHOENIX CONECTOR FROM THE DA-410 OUTPUT.

+-OV  
1

3. INSTALLATION

UNPACKING

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

Save the original packing, you could use if you need to transport the unit. **NEVER SHIP THE DISTRIBUTION UNIT DA-240 WITHOUT IT'S ORIGINAL PACKING.**

MOUNTING

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

The **ALTAIR DA-240** is designed for standard 19" rack mounting, and occupy 6u high rack space.

## INPUT CONNECTION TO THE DA-410

The distribution unit DA-240 input connection is made by means of four pigtail cables of PHOENIX connectors and XLR male connectors, one by each DA-410 input signal: (A-L with A-L, A-R with A-R, B-L with B-L and B-R with B-R). The cable and the connection are described in the following graph:



## OUTPUT CONNECTION FROM THE DA-410

The distribution unit DA-240 output connection is made by means of ten pigtail cables of PHOENIX connectors and XLR female connectors, one by each DA-410 output signal: (1 with 1, 2 with 2, ... and 10 with 10). The cable and the connection are described in the following graph:

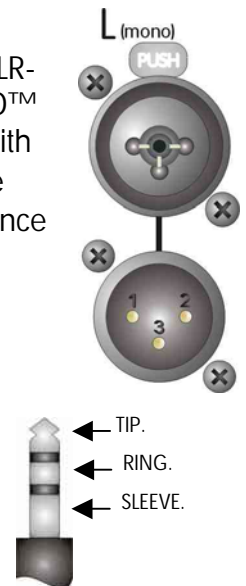


## INPUT CONNECTION

The distribution unit input signals is carried out through four COMBO™ or four XLR-3-32 male connectors, two per stereo channel. Each input internally has one COMBO™ and an XLR-3-32 connector wired in parallel. The input connections are balanced, with a nominal impedance of 5 k $\Omega$  (2,5k $\Omega$  unbalanced) with the input set-up in line mode and 2 k $\Omega$  (1k $\Omega$  unbalanced) with the input set-up in mic mode. (NOTE: These impedance values correspond to the DA-410 unit, since the inputs are connected directly).

The COMBO™ connectors accept XLR female or Jack 1/4", reason why in the following table is to the correspondence of the pins of connectors XLR as well as of a Jack 1/4" .

XLR-3-31/XLR-3-32		JACK 1/4"	
PIN 1	GND	SLEEVE	GND
PIN 2	HOT (+)	TIP	HOT (+)
PIN 3	COLD (-)	RING	COLD (-)



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).

**NOTE:** All the inputs and outputs of the unit accept phantom power.

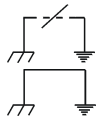
In the next diagrams, we use the following symbols:



Sound source with mains cord without ground connection.



Sound source with mains cord with ground connection.



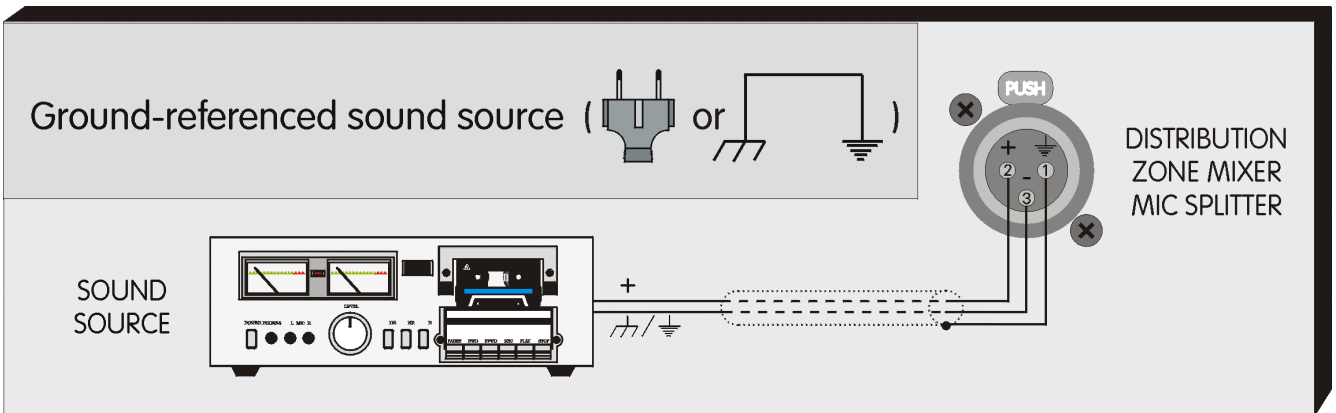
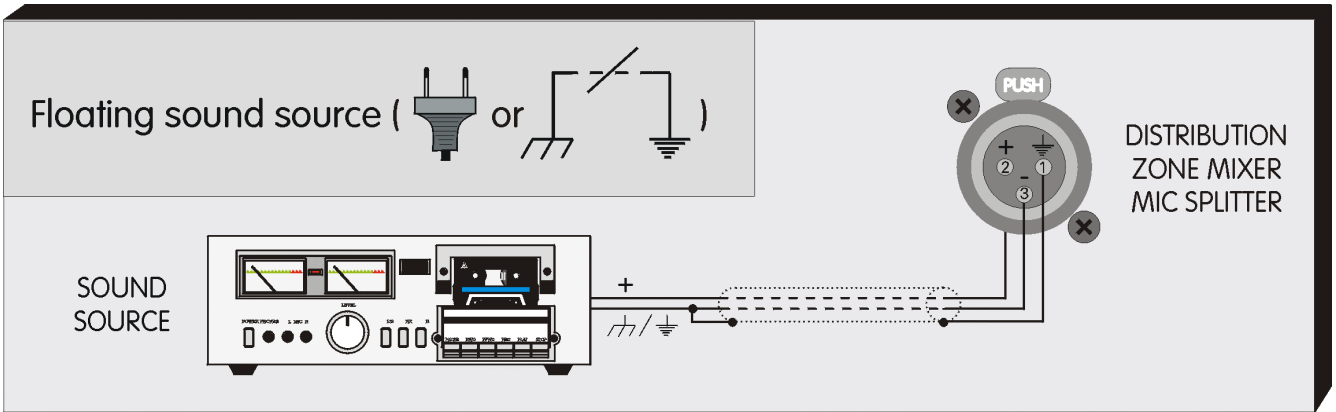
Sound source with the EARTH-LINK OFF.

Sound source with the EARTH LINK ON.

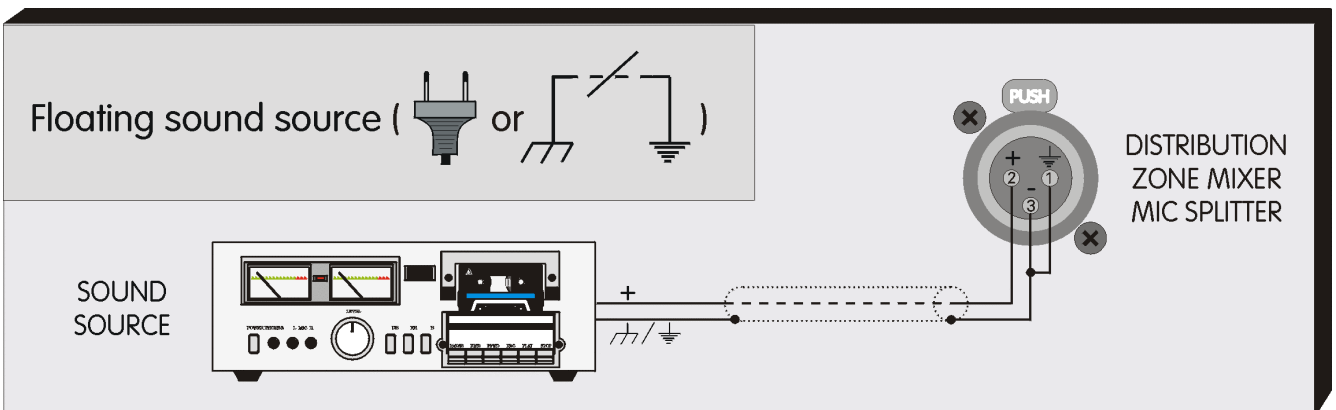
UNBALANCED INPUT

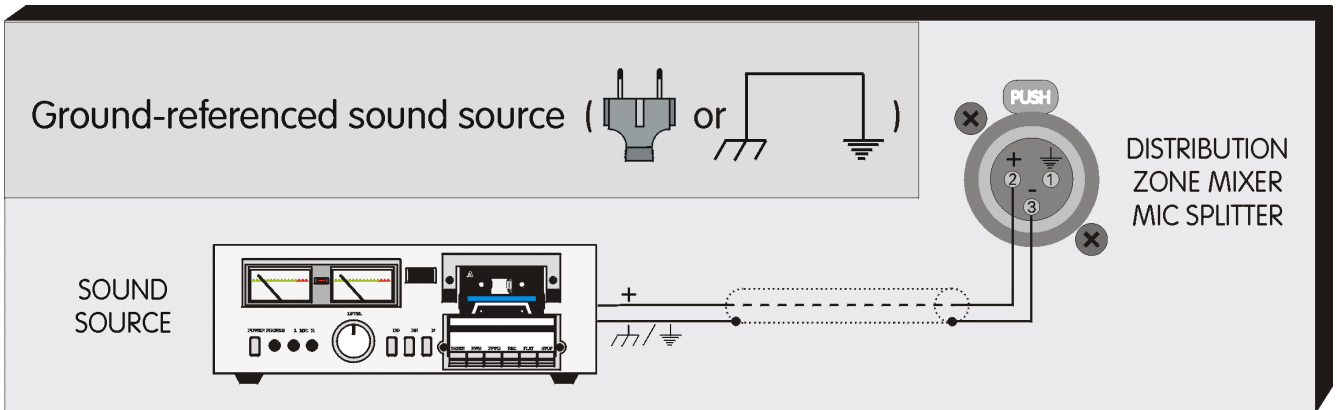
This type of connection will be used when the sound source doesn't provide balanced output. When possible, employ the connection type 1.

- 1) Using twin-lead shielded cable:

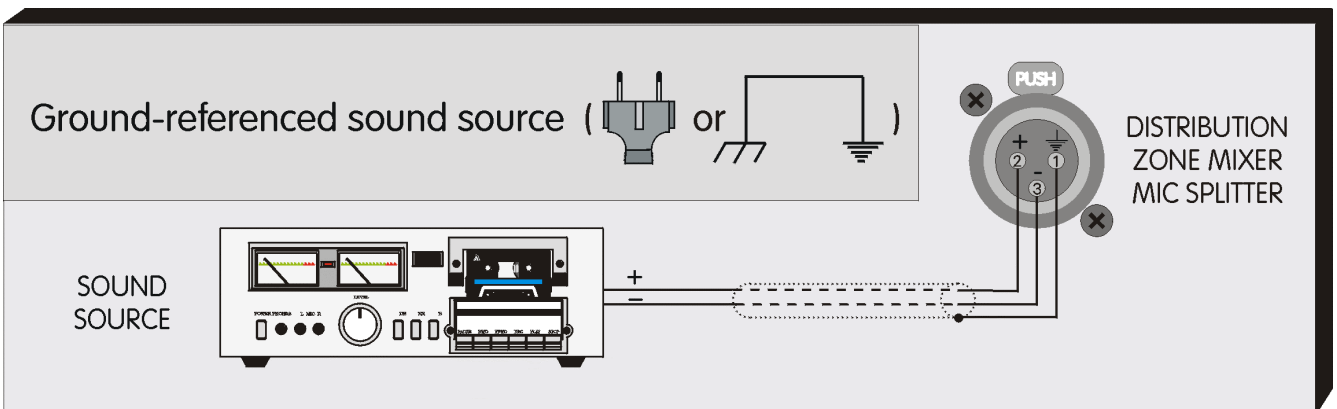
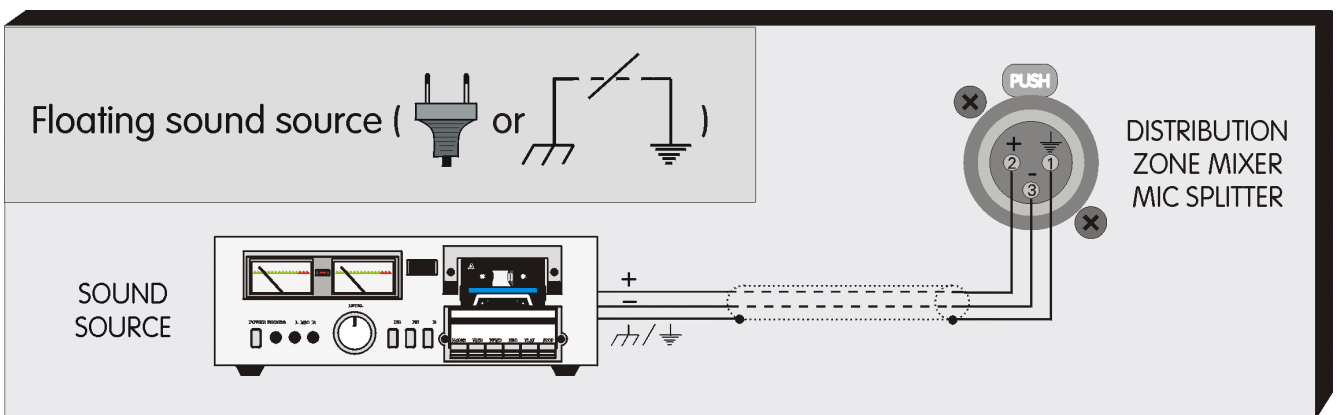


- 2) Using single conductor shielded cable:





### BALANCED INPUT:



### OUTPUT CONNECTION

The distribution unit output signal is carried out through XLR-3-32 male connectors. The outputs are balanced, with a nominal impedance of 100  $\Omega$ . (NOTE: this impedance values correspond to the unit without output transformers and with the attenuator placed at 0 dB).

The next list shows the input pins correspondence:

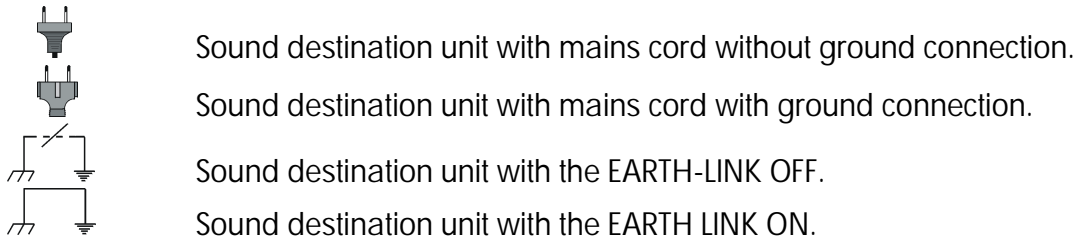
OUTPUT CONNECTOR XLR-3-32	
PIN 1	GND
PIN2	HOT (+)
PIN3	COLD (-)



The output 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 destination unit (floating or ground-referenced). The next pictures show some of the different possibilities of connection, relying on the type of output signal, balanced or unbalanced and according to the ground configuration of the equipment (floating or ground-referenced).

**NOTE:** All the outputs and inputs of the unit accept phantom power.

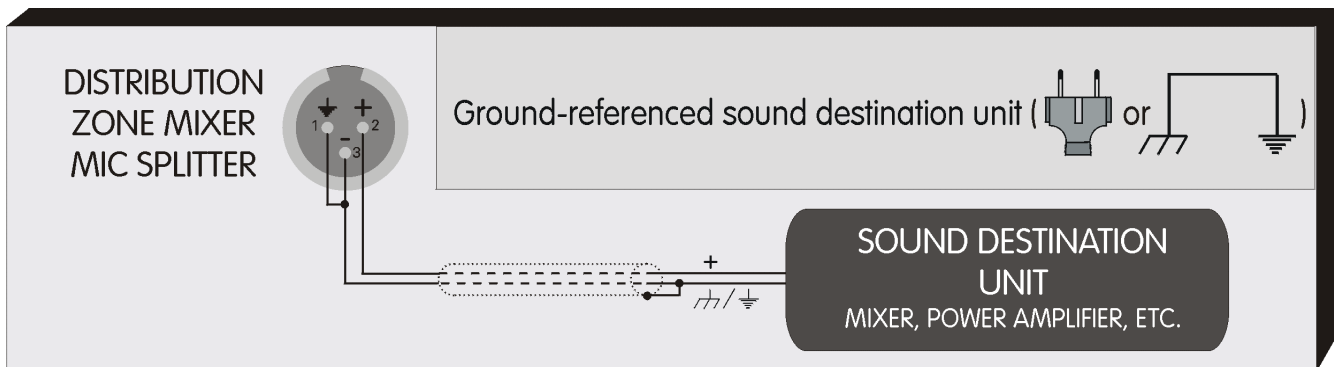
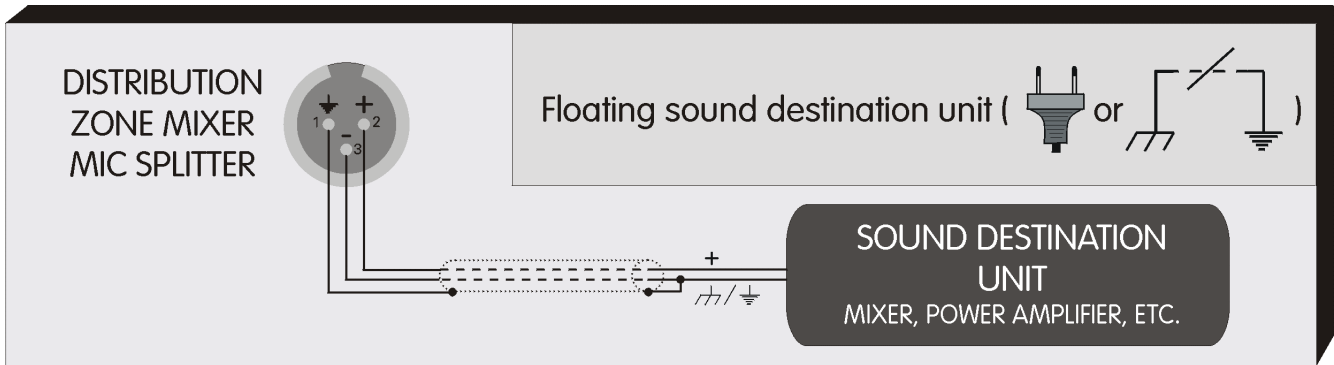
In the next diagrams, we use the following symbols:



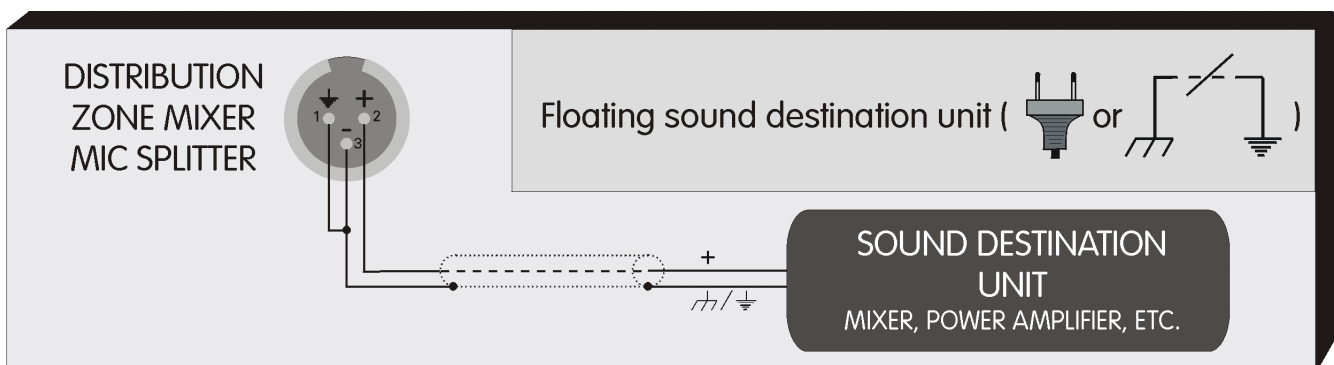
**UNBALANCED OUTPUT**

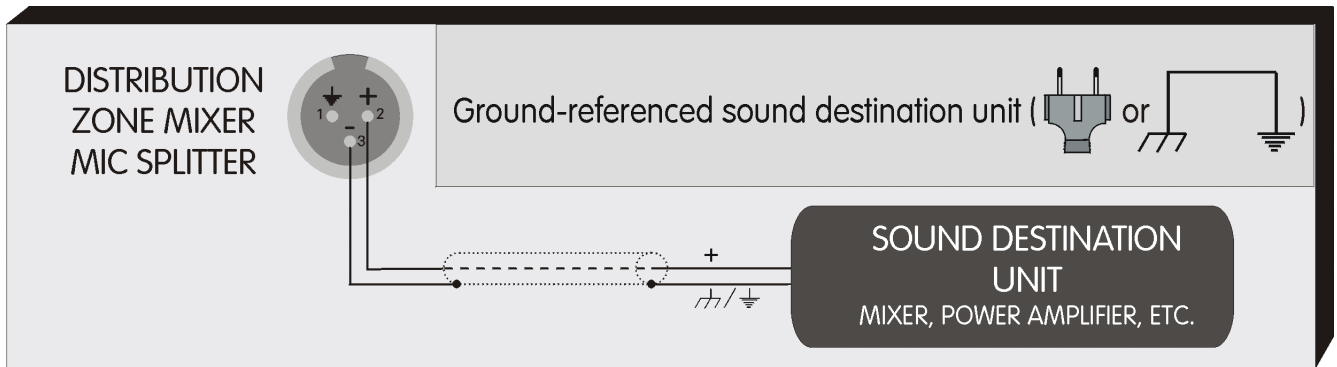
This type of connection will be used when the sound destination unit doesn't provide a balanced input. When possible, employ the connection type 1.

1) Using twin-lead shielded cable:

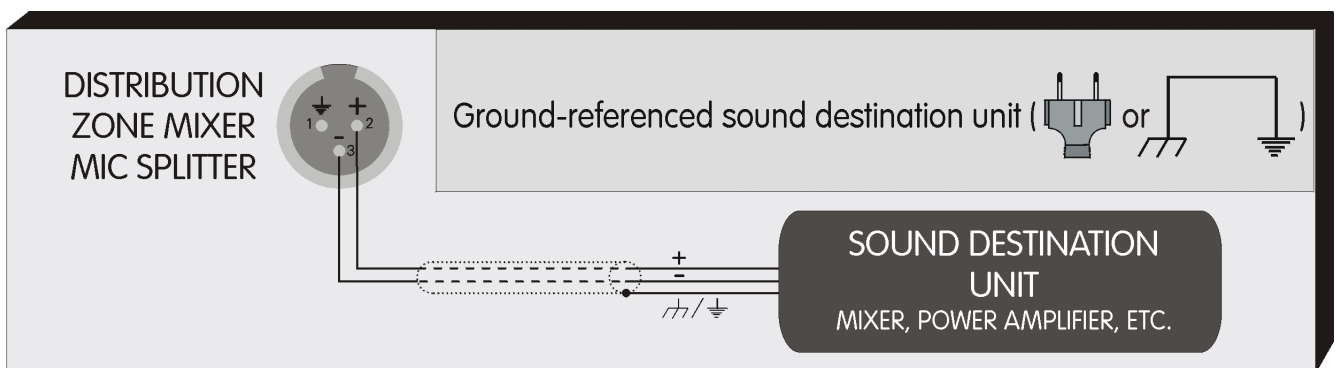
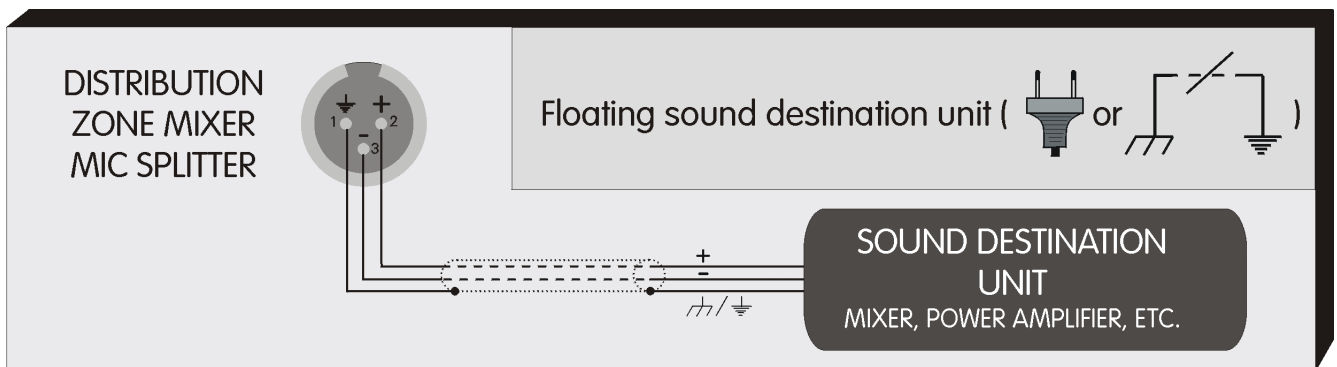


2) Using single conductor shielded cable:





#### BALANCED OUTPUT



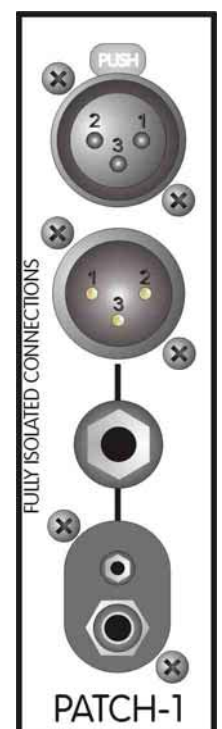
#### SURVIVAL AUDIO PATCH: XLR MALE, XLR FEMALE, Jack ¼, RCA and MINIJACK

The Audio distribution unit Altair DA-240 incorporates two multigender patches wirings in parallel, to assist in difficult interconnections like minijack or unbalanced RCA. Each patch is made up of a XLR male, a XLR female, JACK ¼", a RCA and minijack

#### 4. OPERATION

The Altair DA-240 appears to fulfil the huge demand of distributed audio signals in press and multimedia events. This passive panel must be associated to the well know active Altair DA-410 distribution and zone mixer unit. The panel allows a direct input and output XLR connections. Each Stereo input pairs can be selected as mono inputs. All the 40 outputs incorporate full range attenuators to interface a line level signal to a mic level to drive camera and recording sets easily.

Outputs are grouped in 10 blocks of 4 outputs vertically. Each block incorporates individual A/B input selection, speaker monitoring and level adjustment in the DA-410 side. All input and output are electronically balanced and can be optionally equipped with input and output transformer. Two multigender patches are included to assist in difficult interconnections.



## INPUT SIGNAL MONO/STEREO SWITCH

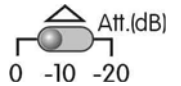
When this Mono/Stereo switch placed in the front panel, is placed in the MONO position of each one of the stereo input (A and B), the DA-240 unit take the L input signal and send it to the two DA-410 L and R inputs.

With this switch in the Stereo position, each DA-410 stereo input, take the input signal from the correspondent input, L or R.



## OUTPUT SIGNAL ATTENUATOR SWITCH

The distribution unit incorporates an output signal attenuator, by each one of the 40 outputs, this allows adapt the signal output level to the final device. In the 0 position, the signal is not attenuates, in the position  $-10$  the signal is attenuated 10 dB and in the position  $-20$ , the signal is attenuated 20 dB.



## 5. OPTIONS

In this section will explain the different available options for the distribution unit DA-240.

### OUTPUT TRANSFORMER (OT-DA)

In order to get a galvanic isolation with the next part of the audio system, it is available an output transformer.

Each two XLR-3-32 outputs there are an insert point for the output transformer; therefore, you could mount twenty output transformers in the unit.

The provided transformers fulfil the isolation rule of 2 kV.

### SET OF PHOENIX TO XLR CABLE LINKS (MC-240)

Input and output cables to connect the distribution unit DA-240 to the active distribution unit DA-410.

### FLIGHT CASE (FC-240)

Flight case and two vented panels to the distribution unit DA-240 and the active distribution unit DA-410.

## 6. SPECIAL OPERATIONS

In order to set-up some of the distribution unit possibilities, the unit must be opened, clearing the fourteen lateral screws, as well as all the XLR male and female screws of the front panel.

**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 unit, disconnect it from all the other units.

**CAUTION:** Protect the distribution unit from the rain and moisture, mainly if it is open. If liquid is spilled into the unit, consult a qualified service technician.

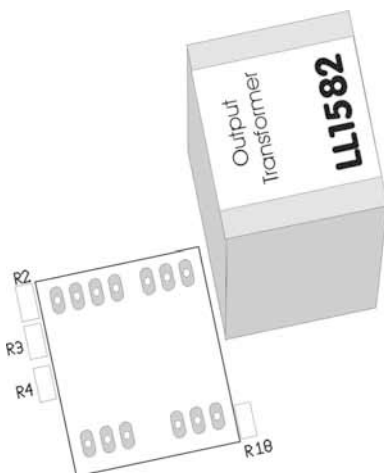
## OUTPUT TRANSFORMER (OT-DA)

In order to make a galvanic isolation with the next part of the audio system, it is available an output transformer.

Each two XLR-3-32 output has an insert point for the output transformer; therefore, you could mount twenty output transformers in the unit. In the following table are shown the correspondence between the outputs and their corresponding outputs transformers and the resistors that you must remove to place the output transformer.

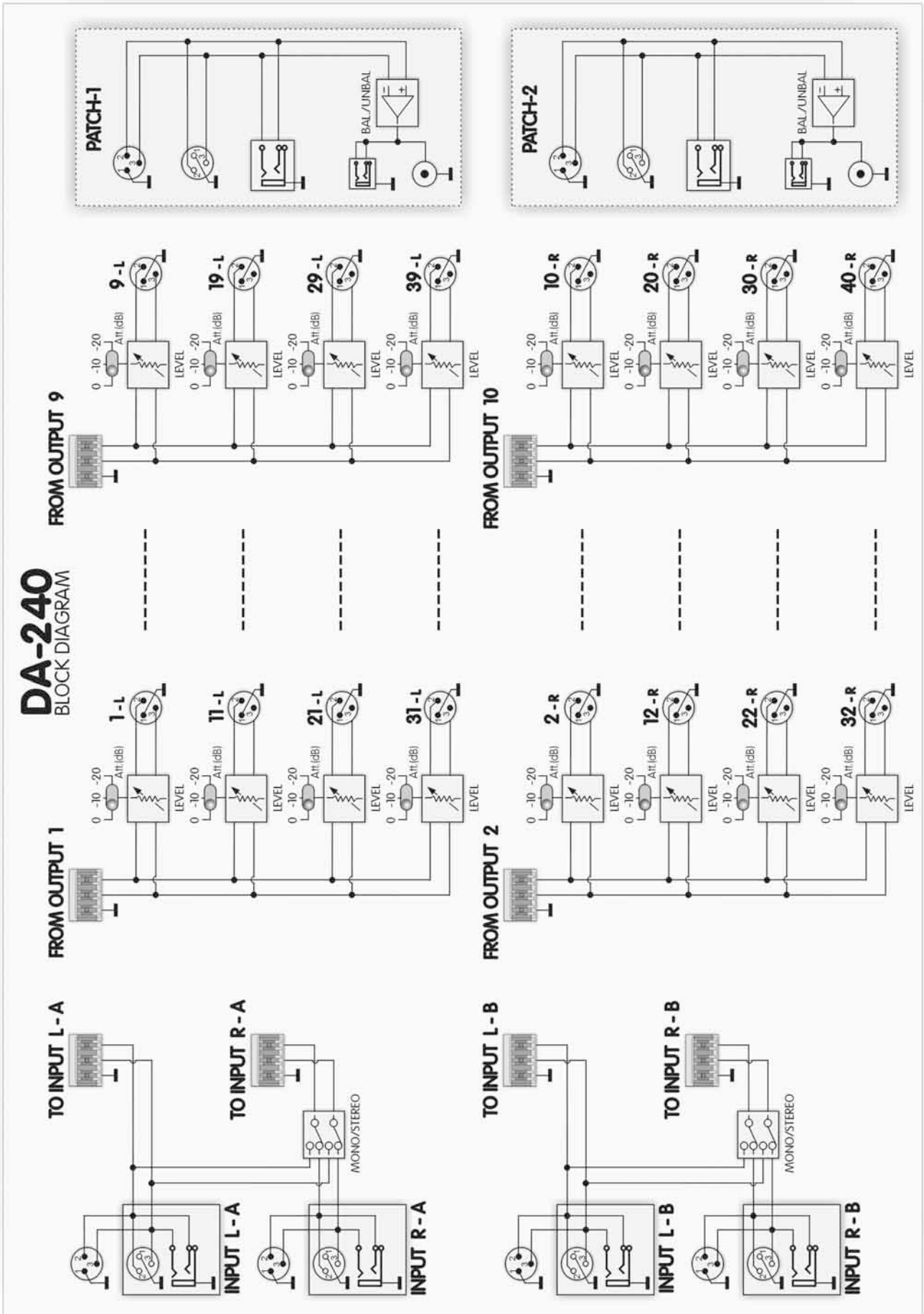
OUTPUTS	TRANSFORMER POSITION	RESISTORS TO REMOVE
1 and 11 - L	TR1 – UPPER BOARD	R2, R3, R4 and R18 – UPPER BOARD
21 and 31 – L	TR1 – LOWER BOARD	R2, R3, R4 and R18 – LOWER BOARD
2 and 12 – R	TR2 – UPPER BOARD	R15, R16, R17 and R32 – UPPER BOARD
22 and 32 – R	TR2 – LOWER BOARD	R15, R16, R17 and R32 – LOWER BOARD
3 and 13 - L	TR3 – UPPER BOARD	R29, R30, R31 and R46 – UPPER BOARD
23 and 33 – L	TR3 – LOWER BOARD	R29, R30, R31 and R46 – LOWER BOARD
4 and 14 – R	TR4 – UPPER BOARD	R43, R44, R45 and R60 – UPPER BOARD
24 and 34 – R	TR4 – LOWER BOARD	R43, R44, R45 and R60 – LOWER BOARD
5 and 15 - L	TR5 – UPPER BOARD	R57, R58, R59 and R74 – UPPER BOARD
25 and 35 – L	TR5 – LOWER BOARD	R57, R58, R59 and R74 – LOWER BOARD
6 and 16 – R	TR6 – UPPER BOARD	R71, R72, R73 and R88 – UPPER BOARD
26 and 36 – R	TR6 – LOWER BOARD	R71, R72, R73 and R88 – LOWER BOARD
7 and 17 - L	TR7 – UPPER BOARD	R85, R86, R87 and R102 – UPPER BOARD
27 and 37 – L	TR7 – LOWER BOARD	R85, R86, R87 and R102 – LOWER BOARD
8 and 18 – R	TR8 – UPPER BOARD	R99, R100, R101 and R116 – UPPER BOARD
28 and 38 – R	TR8 – LOWER BOARD	R99, R100, R101 and R116 – LOWER BOARD
9 and 19 - L	TR9 – UPPER BOARD	R113, R114, R115 and R130 – UPPER BOARD
29 and 39 – L	TR9 – LOWER BOARD	R113, R114, R115 and R130 – LOWER BOARD
10 and 20 – R	TR10 – UPPER BOARD	R127, R128, R129 and R140 – UPPER BOARD
30 and 40 - R	TR10 – LOWER BOARD	R127, R128, R129 and R140 – LOWER BOARD

In the following picture is showing the placement of the output transformer TR1 corresponding to the outputs 1 and 11 - L. It is important to keep in mind the placement of the output transformer pins so that they coincide with the main board (seven to the top and six to the bottom).



- 1 Remove the resistors corresponding to the output transformer. In this case R2, R3, R4 and R18.
- 2 Place the output transformer, keeping in mind the position of their pins (seven to the top and six to the bottom), and solder it to the main board.

7. BLOCK DIAGRAM



**8. TECHNICAL SPECIFICATIONS**

<b>INPUT CONNECTORS</b>	<ul style="list-style-type: none"><li>• 4 x XLR Combo + XLR link.</li></ul>
<b>OUTPUT CONNECTORS</b>	<ul style="list-style-type: none"><li>• 40 x XLR male.</li></ul>
<b>OUTPUT ATTENUATORS</b>	<ul style="list-style-type: none"><li>• 40 x 3 position lever.</li></ul>
<b>ATTENUATION ADJUSTMENT</b>	<ul style="list-style-type: none"><li>• 0 dB, -10 dB, -20 dB (+/- 2 dB, typ. Load.</li></ul>
<b>BANDWIDTH</b>	<ul style="list-style-type: none"><li>• 20Hz - 20 KHz (0, -0.5 dB).</li></ul>
<b>DISTORTION (THD + N)</b>	<ul style="list-style-type: none"><li>• &lt; 0,02 % 20 Hz - 20 KHz / +20 dBu.</li><li>• &lt; 0,5 % at 50 Hz / +18 dBu (Txmer option).</li></ul>
<b>CROSSTALK BETWEEN ADJACENT CHANNELS</b>	<ul style="list-style-type: none"><li>• Better than 100 dB (20Hz - 20 KHz)</li></ul>
<b>INSERTION LOSS</b>	<ul style="list-style-type: none"><li>• Typically: 2,6 dB.</li></ul>
<b>RECOMMENDED LOAD IMPEDANCE</b>	<ul style="list-style-type: none"><li>• 10 Kohm typical, 600 Ohm minimum.</li></ul>
<b>POWER SUPPLY (Only DA-410)</b>	<ul style="list-style-type: none"><li>• 115/230 VAC +10, -30 %.</li></ul>
<b>DIMENSIONS/WEIGHT</b>	<ul style="list-style-type: none"><li>• DA-240: 482x265x44,5 mm (19" x 6U) / 5 Kg.</li><li>• RP-240: 530x440x20 mm / 15 Kg.</li></ul>
<b>OPTIONS</b>	<ul style="list-style-type: none"><li>• TDA-0: Transformer output. Each transformer drives two outputs. Maximum: 20 units.</li></ul>

**NOTE:** Technical specifications subject to variation without previous notice.



## 9. WARRANTY

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

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

There is no other warranty expressed or implicit.

Any faulty unit must be sent, to the dealer or the manufacturer. The serial number of the unit must be included with any request for the technical service.

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

SERIAL NUMBER .....

## AUDIO ELECTRONICS DESIGN



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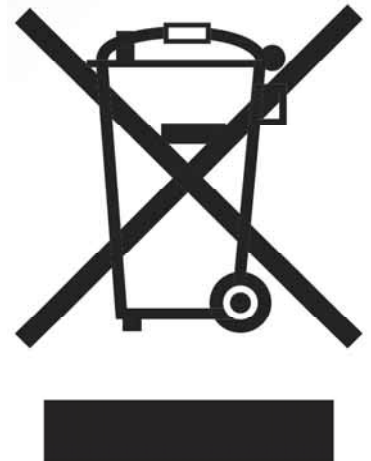
# European Union Waste Electronics Information Unión Europea Información sobre residuos electrónicos

## **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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