

## MAZ-4160



Amplificadores con matriz de 5 canales de entrada a 4 zonas de salida con control independiente de volumen. Indicados para instalaciones comerciales con varias zonas y diferentes programas musicales.

<b>POTENCIA</b>	4 x 45 W máximo, 4 x 40 W RMS
<b>RESPUESTA</b>	50-17.000 Hz $\pm$ 3 dB
<b>DISTORSIÓN</b>	Armónica: < 0'5%
<b>ENTRADAS</b>	3 micros/líneas balanceados, combo (XLR y jack 6'3 mm) 600 Ohm 7 mV y 15.000 Ohm 100 mV, conmutables 2 auxiliares, 2 x RCA 50.000 Ohm 300 mV 1 tel. paging, terminales roscados 600 Ohm 100-300 mV
<b>SALIDAS</b>	4 líneas balanceadas o desbalanceadas zonas 1 a 4, terminales roscados 1 monitor, terminales roscados 600 Ohm 775 mV y 1 W 8 Ohm 1 auriculares estéreo, jack 3'5 mm 47 Ohm 0'5 W
<b>CONTROLES</b>	Canales 1 a 5: ganancia, graves, agudos, volumen y asignación de zonas Tel. paging: volumen y selector de zonas Zonas 1 a 4: volumen, selector de monitor Volumen de auriculares monitor
<b>PHANTOM</b>	15 V en micros 1 a 3, seleccionable
<b>PRIORIDAD</b>	Tel. paging y entrada 1 por nivel de señal, seleccionable Entrada 1 por cierre de contactos
<b>IMPEDANCIA</b>	4 zonas: 4 y 8 Ohm y líneas 100, 70 y 25 V, terminales roscados
<b>ALIMENTACIÓN</b>	230/115 V CA, 800 W máximo
<b>MEDIDAS</b>	483 x 133 x 335 mm fondo. 3 U rack 19"
<b>PESO</b>	15'5 kg

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# MAZ-4160 MULTIZONE AMPLIFIER WITH 4 OUTPUT ZONES

EN Instruction Manual



We take this opportunity to thank you for buying this product.

We recommend you read the instruction manual before switching on the machine and follow the instructions that are given. Keep the manual for future reference.

## SECURITY AND THE ENVIRONMENT

### ELECTRICAL SECURITY

Check that the current in the mains connection where the machine is to be installed corresponds to the power supply of the machine.

To avoid damaging the equipment, electrical shocks, fire or physical injury when you connect or disconnect the equipment from the power supply, pull the plug firmly out of the mains socket holding the plug, never the cable.

Always do this with dry hands.

Keep the power supply cable far from sources of heat. Do not put heavy objects on top of it or change it.

Clean dust and dirt off the power supply cable regularly.

Do not open the machine; you could get an electric shock.

### CAUTION

While installing the machine, make sure it is switched off and unplugged.

Do not open the machine. Touching the internal parts is dangerous and you could receive an electric shock.

The machine must not be splashed or dripped on. Never place recipients with liquid inside on the machine.

Do not place anything inside the machine.

### LOCATION

Place the equipment on a horizontal surface with enough space around it to allow ventilation.

Avoid direct sunlight, heat sources and excessive dust.

Do not place the machine near magnetic fields or static electricity.

Do not use surfaces which vibrate or receive impact.

Do not pile machines on top of one another.

### VENTILATION

Never block or cover the ventilation slits on the machine.

Do not expose it to direct sunlight or place it near sources of heat.

### PERIODS OF INACTIVITY

When the machine is not going to be used for a long period of time, disconnect it from the mains.

If you are using an adapter, take into account that it will continue using electricity even if the machine is switched off. If it is not going to be used for a long period of time, disconnect it from the mains.

### THE ENVIRONMENT

To save energy, switch the machine off when you are not going to use it for a long time. The machine could contain substances that are harmful to the environment or human health. To minimize the effect of these substances the machine must be correctly managed and recycled when you decide to dispose of it.

When you dispose of it remember: it cannot be thrown into a conventional rubbish bin.

If it contains or uses batteries, these must be disposed of separately.

The machine (without batteries) must be disposed of correctly. Put it in a container specially intended for the collection of electronic and electrical appliances, at the dump or hand it over to the dealer when you purchase similar equipment, so that the dealer can dispose of it correctly (at no added cost).

## SIGNIFICANCE OF THE SYMBOLS ON THE MACHINE\*



The symbol formed by the expression “Class 1 laser product” written in a rectangle indicates that visible or invisible laser radiation could be produced. Avoid direct exposure to the laser.



The symbol formed by a ray of lightning inside a triangle shows that the machine has connection terminals or a circuit with areas with a current which could cause an electric shock, even in normal working conditions.



The symbol formed by an exclamation mark in a triangle shows that the instruction manual must be referred to for information on how the machine works and its use.



The symbol formed by one square inside another square shows that the machine has double electrical insulation.



The European Community symbol shows that the machine complies with the current European Union legislation, as well as its transposition to local legislation.



The symbol of a rubbish bin crossed out and over a horizontal line shows that when the product is disposed of it must be done properly, placing it in a special selective electronic and electrical equipment container or through a dealer when purchasing a similar product, at no additional cost. It also shows that the machine was put on the market after 13th August 2005 (European Community Directive 2002/96/CE of Electrical and Electronic recycling, and its Spanish equivalent R.D.208/2005).

In accordance with what is set out in the aforementioned decree, FONESTAR is registered in the RAEE (Registro de Aparatos Eléctricos y Electrónicos) in a special section REI (Registro de establecimientos Industriales), with the entry number 001851.



The symbol RoHS (Restriction of Hazardous Substances) shows that the product has been designed and manufactured restricting the use of certain dangerous materials (Directive 2011/65/CE on the restriction of certain dangerous substances in electrical and electronic appliances, and its transferal to the Spanish regulations, R.D.219/2013).

\*It is possible that some of these symbols do not appear on the machine.

### EXEMPTION OF LIABILITY

The characteristics of the equipment and the content of the manual can change without forewarning.

**FONESTAR, S.A.** does not assume responsibilities regarding the inappropriate use of the equipment or the information supplied in this instruction manual, and specifically disclaims any implied liability for marketability or fitness for any other use.

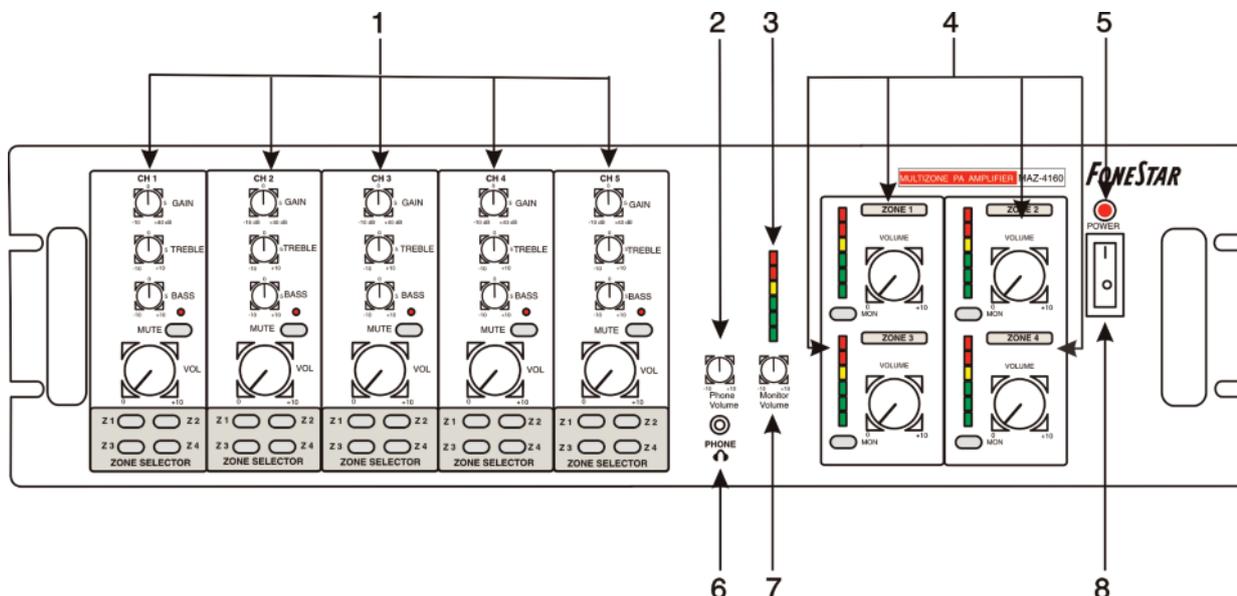
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## DESCRIPTION

Multizone amplifier with matrix of 5 input channels to 4 output zones with independent volume control. Suitable for shops with various areas and different music programmes.

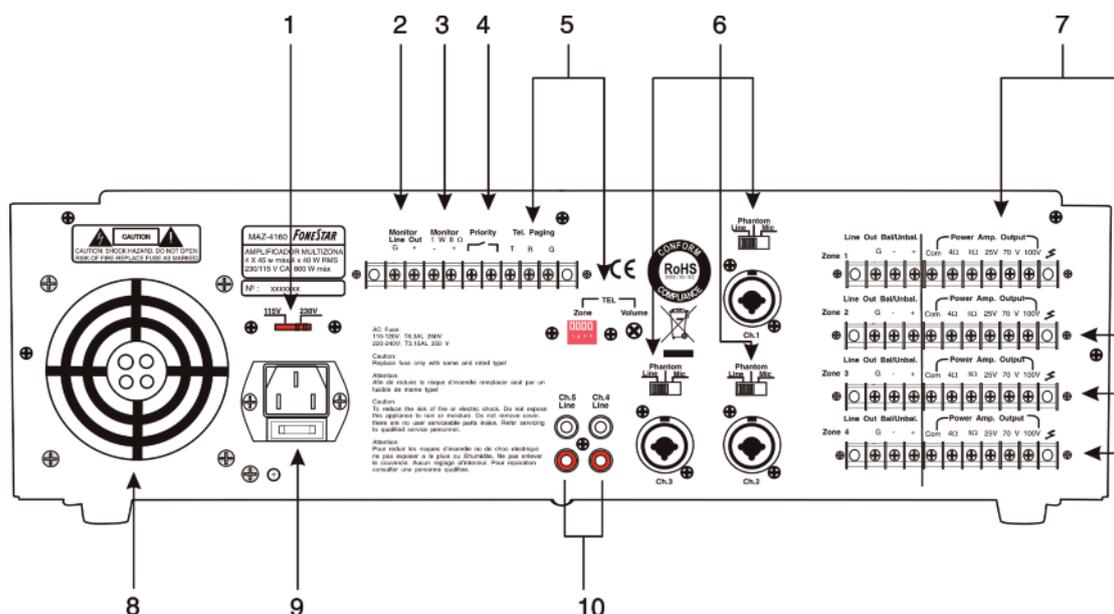
## CONTROLS AND FUNCTIONS

### FRONT PANEL



- 1.- **CH 1 to CH 4 (GAIN, TREBLE, BASS, MUTE, VOL, ZONE SELECTOR):** input zone controls with the following functions:  
**GAIN:** adjusts the input gain to suit them to the amplifier mixer levels. It adjusts the signal level so that there is no distortion.  
**TREBLE, BASS:** treble and bass tone control.  
**MUTE:** cancels the audio input.  
**VOL:** to adjust the output level of the input that is sent to the allocation matrix.  
**ZONE SELECTOR, Z 1 to Z 4:** these controls let you allocate the input signal to one or various output zones. To assign an input channel to one or various output zones, press the corresponding buttons in the input channel for the output zones (Z1 to 4), through which you want to hear the input channel.
- 2.- **PHONE VOLUME:** volume control in the headphone output.
- 3.- LED indicator for the signal level in the MONITOR output.
- 4.- **ZONE 1 to ZONE 4:** controls for the output zones, zone 1 to 4 with the following functions:  
LED output signal level indicator.  
**MON:** by pressing this button you can monitor the channel signal through the MONITOR output.  
**VOLUME:** to adjust the output level of the zone.
- 5.- LED power indicator.
- 6.- **PHONE:** headphone output for monitoring the output channels allocated to MONITOR.
- 7.- **MONITOR VOLUME:** to adjust the MONITOR output level.
- 8.- On/off switch.

## BACK PANEL



- 1.- **115 V/230 V:** power supply voltage selection.
- 2.- **MONITOR (Line out):** line level output to monitor the output.
- 3.- **MONITOR (1 W, 8 Ω):** output for connection to a low impedance 8Ω speaker for monitoring the output.
- 4.- **PRIORITY:** priority in the CH1 input channel. By closing these contacts, priority is activated in the CH1 input channel. In this way the rest of the input channels are weakened.
- 5.- **TEL. PAGING, ZONE and VOLUME:** telephone switchboard input signal with volume control and priority depending on signal level with 4 switches to select the zones they are to be assigned to.
- 6.- **Microphone/CH1 line inputs:** these inputs use a combi connector (XLR and 6.3 mm stereo jack). Balanced and unbalanced microphone signals and microphones that need phantom power supply can be connected, as well as balanced or unbalanced line signals. The input is adjusted using the switch depending on the characteristics of the signal connected. These switches have 3 positions:
  - LINE:** in this position, the inputs CH1 to CH3 can have line level audio sources connected to them, for example a preamplified table microphone.
  - MIC:** in this position, the inputs CH1 to CH3 can have balanced or unbalanced, dynamic or electret condenser mics., or mics. which are powered by battery and do not need Phantom power supply, connected to them.
  - PHANTOM:** in this position condenser electret microphones which need Phantom power supply (15 V between pins 2 and 3 of the XLR connector) can be connected to inputs CH1 to CH3. Use this switch with the volume at its minimum to avoid damage.
- CAUTION: When connecting or disconnecting an unbalanced microphone the sensitivity switch must be in the MIC position. If the switch is in the Phantom position, it could damage seriously damage the microphone. When using balanced microphones that do not need Phantom power supply, make sure that the switch is in the MIC position, as the voltage in pins 2 and 3 of the XLR connector could seriously damage the microphones.
- 7.- **Speaker output terminals:**
  - Power Amp. Output:** speaker output for each zone (ZONE 1 to ZONE 4). Low impedance output terminals (4 -8 Ω) and 100, 70, 25 V high impedance lines.
  - Line Out Bal/Unbal:** line output for each zone (ZONE 1 to ZONE 4). Balanced line output terminal for connecting the output signal of the zone to another amp to be amplified.
- 8.- **Ventilation slits:** the ventilator speed is variable depending on the temperature.
- 9.- AC power supply socket.
- 10.- **CH 5 LINE and CH 4 LINE:** auxiliary line inputs for CD, tape, tuner, etc. connection.

## CONNECTION

Make the connections with the amplifier and all the audio system components switched off and disconnected from the power supply.

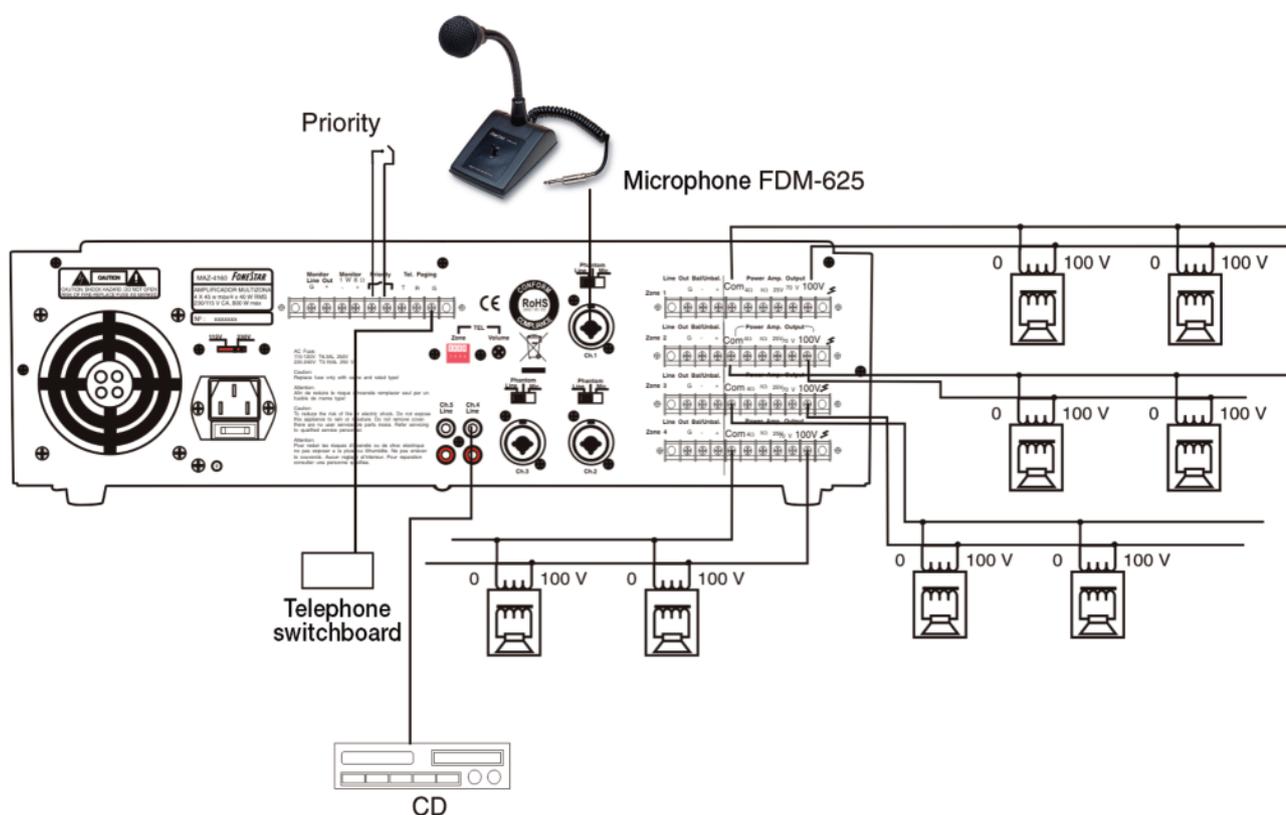
Firstly, connect the audio sources to the inputs. For example, connect a dynamic microphone to the CH1 input and select the position MIC on the input sensitivity selector. If using a preamplified table microphone, select the LINE position.

Connect the speakers to the speaker output. Use the low impedance (4-8  $\Omega$ ) output or the 100, 75 or 25 V high impedance line output, according to the type of speakers that you are going to connect. Do not use both types of output at the same time.

If using the low impedance output, you must connect the speakers in a series/parallel circuit so that the speaker load impedance is the same as the amplifier impedance and that the power supplied by the amplifier does not exceed what is withstood by the speakers.

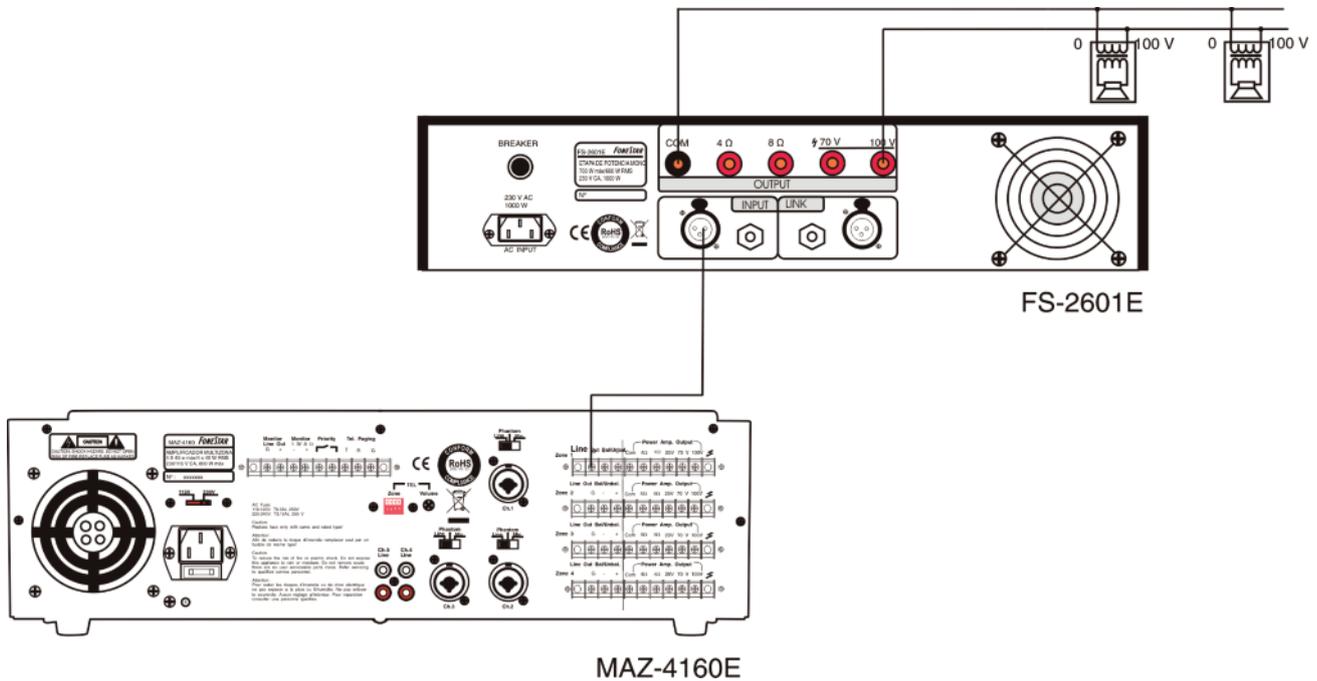
If using the 100, 75 or 25 V high impedance line output you must connect all the speakers in parallel and the sum of the power of all the speakers must not exceed the power supplied by the amplifier.

Once all the connections have been made according to your needs, connect the equipment to the mains and switch them on. After use, do not forget to switch them off and disconnect the equipment from the mains.



Example of 100 V line high impedance connection

To increase the power in a certain area, connect the line output from the chosen zone to the input on a power amp., for example model FS-2601E. Use the 100 V high impedance line output on the power amp to connect the speakers as shown in the following connection diagram.



Example of the connection of the line output from a zone to the FS-2601E power amp.

## INSTRUCTIONS FOR USE

### ON AND OFF

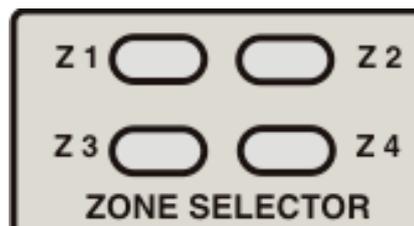
Before switching the amplifier on check that the output volume controls are at their minimum. Switch on the rest of the audio system, and then lastly, the amplifier and adjust the output volume.

To switch the audio system off, adjust the output volume on the amplifier to its minimum and switch it off. Lastly, switch off the rest of the audio system.

### INPUT CHANNEL ALLOCATION TO OUTPUT ZONES

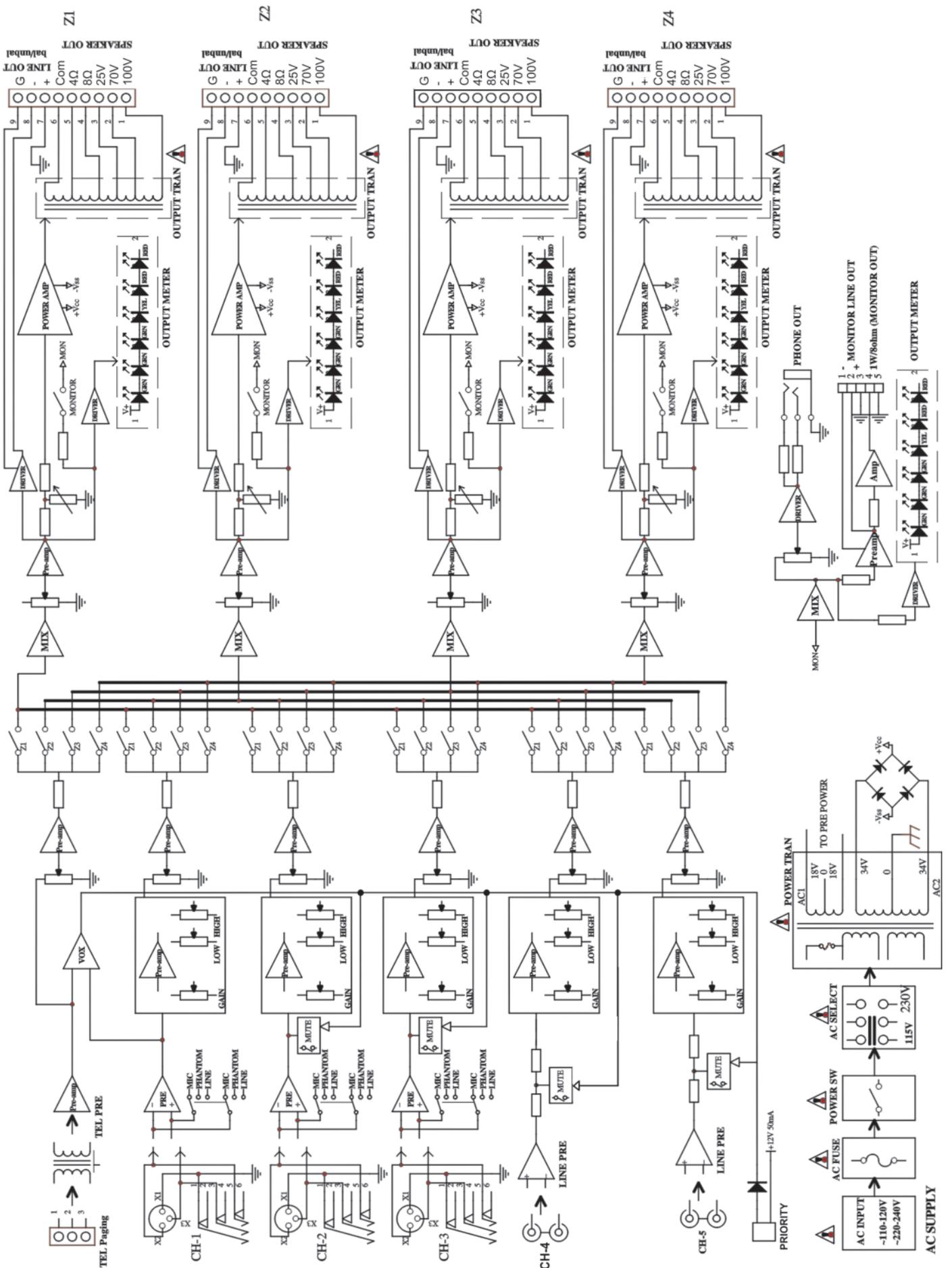
Each input channel CH1 to CH5 can be independently allocated to one or various output zones ZONE 1 to ZONE 4.

Using the Z1, Z2, Z3, Z4 zone selector buttons for each channel located on the front panel, you can choose the zone where the input channel signal is going to be sent.



For example if we want the CH1 channel to be heard in zones 1 and 2 and the CH2 channel in zones 1 and 3, in the CH1 channel zone selector we have to choose Z1 and Z2 and in the CH2 channel we must choose Z1 and Z3.

# BLOCK DIAGRAM



## PROTECTION

The amplifier has temperature and overload protection.

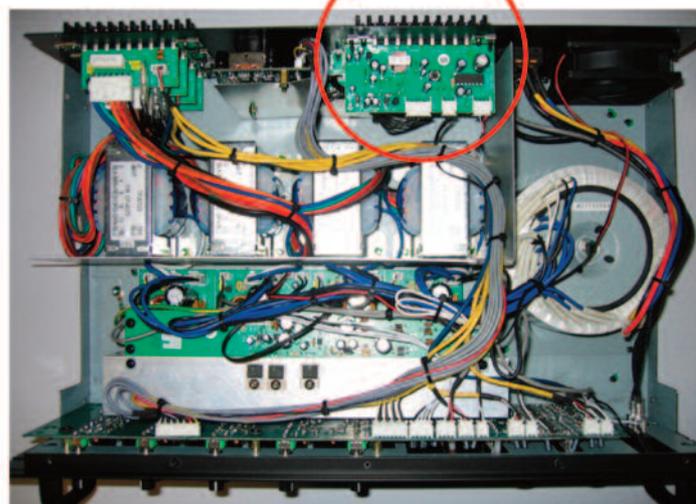
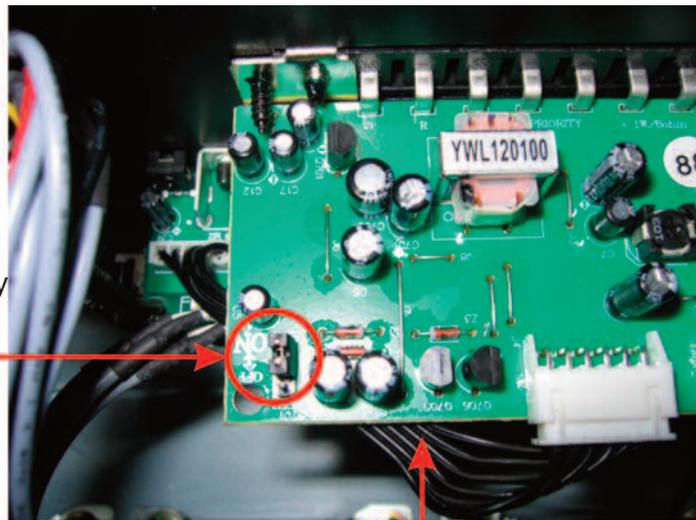
When protection is activated the output signal is cut off. In this case switch the amplifier off, check why the protection has been activated, leave the system for a while and then switch it on again.

## PRIORITY IN THE INPUTS

The priority function automatically reduces the input levels with less priority so that the message broadcast by those of more priority can be heard clearly.

The inputs with maximum priority are Tel. Paging and CH1 and are activated depending on the signal level. To enable the priority function depending on signal level in the Tel. Paging and CH1 input, you have to change the jumper that is found inside the device to the ON position. The jumper is on the printed circuit board that is near the connector with the MONITOR outputs, the PRIORITY contacts and the Tel. Paging input. We can see its position in the following diagram:

Jumper to select CH 1 priority depending on signal level



In this way, with the jumper in the ON position, when a signal is detected in the Tel. Paging or CH1 input the rest of the inputs, CH2 to CH5 will weaken.

NOTE: By default the amplifier is supplied with the jumper in the OFF position. In other words, with priority depending on signal level in the Tel. .Paging and CH1 inputs, deactivated.

The next level of priority is the CH1 input over inputs CH2 to CH5. To activate priority in the CH1 input we must close the PRIORITY contact found on the back panel, using the button or switch.

## PRIORITY



## SPECIFICATIONS

	<b>MAZ-4160</b>
<b>CHARACTERISTICS</b>	Multizone amplifier. Matrix allocating 5 input channels to 4 output channels. 4 zones with independent volume control and line output. Phantom power. Priority paging.
<b>POWER</b>	4 x 45 W maximum, 4 x 40 W RMS
<b>RESPONSE</b>	50-17 000 Hz $\pm$ 3 dB
<b>DISTORTION</b>	Harmonic: < 0.5%
<b>INPUTS</b>	3 balanced mics./lines, combo (XLR and 6.3 mm stereo jack) 600 $\Omega$ 7 mV and 15000 $\Omega$ 100 mV, switchable. 2 auxiliaries, 2 x RCA 50000 $\Omega$ 300 mV. 1 tel. paging, screw terminals 600 $\Omega$ 100-300 mV
<b>OUTPUTS</b>	4 balanced lines or unbalanced zones 1 to 4, screw terminals 1 monitor, screw terminals 600 $\Omega$ 775 mV and 1 W 8 $\Omega$ 1 headphone, 3.5 mm stereo jack 47 $\Omega$ 0.5 W
<b>CONTROLS</b>	4 zone buttons. 1-4 for each of the 5 input channels and tel. paging to allocate them independently to zones 1 to 4 Channels 1-5: Gain, bass, treble and volume control Zones 1 to 4: Volume control, monitor selector, headphone volume and monitor volume
<b>PHANTOM</b>	15 V in mics. 1 to 3, selectable
<b>PRIORITY</b>	Tel. paging and input 1 depending on signal level, selectable Input 1, contact closure
<b>IMPEDANCE</b>	4 zones: 4 and 8 $\Omega$ and 100, 70 and 25 V lines, screw terminals
<b>POWER SUPPLY</b>	230/115 V AC, 800 W maximum
<b>DIMENSIONS</b>	483 x 133 x 335 mm depth. 3 U 19" rack

**DECLARATION OF CONFORMITY**

The multizone amplifier model **MAZ-4160** complies with the European Community directives 2004/108/EC on Electromagnetic Compatibility and 2006/95/EC on Low Voltage.

Santander, 4th April 2013

Juan Vallejo

Technical Engineer, Sales Department

**WARRANTY**

This product has been tested and has passed the corresponding quality control prior to being put on the market. **FONESTAR** guarantees the suitability of the product for its specified use during a period of 2 years from the delivery date and commits itself to repair or substitute the goods as expressed in the Spanish law 'La Ley General para la Defensa de los Consumidores y Usuarios, Real Decreto Legislativo 1/2007 16 Noviembre.

The lack of conformity in the first six months after purchase, due to a manufacturing defect, will be rectified with no more than showing the proof of purchase. After six months **FONESTAR** reserves the right to demand proof of the product being sold with that problem.

This warranty does not include damage produced by: inappropriate use or negligence, accidents, worn out parts due to use, breakages, burns, spilt liquids or other substances, excessive humidity, battery deterioration and internal manipulation of the device, the software or its components by unauthorized persons, and in general any use that is unrelated to the nature and purpose of the product.

If any service is needed during the warranty period because of lack of conformity, please contact the business or distributor where the product was purchased in no more than 2 months after being conscious of the problem. It is only necessary to contact **FONESTAR** if it is impossible or imposes an undue burden for them to solve it.

To benefit from this warranty it is necessary to show the proof of purchase with the date clearly visible, with no corrections or crossing out.

This document adds information, and never decreases the consumers' rights, which in all cases are protected by the Spanish law 'La Ley General para la Defensa de los Consumidores y Usuarios, Real Decreto Legislativo 1/2007 16 Noviembre'.



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