ZMR 243

ZONER

USERS MANUAL

ZMR 243 ZONER MIXER

FEATURES

The ZMR 243 has 2 low impedance balanced microphone inputs, 4 stereo line (music) inputs, and 3 stereo zone outputs with optional remote panels for source selection and volume control. Each stereo zone output can be used as 2 mono outputs (internal mono jumper).

Front panel controls are laid out in 3 identical groups that relate to the 3 outputs. Each group of controls has two rotary controls for Mic 1 and Mic 2 volume, one rotary control for music volume, one push button selector switch (along with 4 LED's showing the music-input selection), and one LED showing if the remote panel is enabled.

A further group of four LED's indicate microphone 1 enabled, microphone 2 enabled, priority signal present and remote music dim/mute activated. An illuminated mains power on off switch completes the front panel controls.

The microphone inputs can be mixed or routed in any combination to any or all outputs and can be set for auto voice override (AVO) if required. Each of the microphone inputs have treble and bass tone controls (2 band equalisation) accessible through holes in the rear panel.

The stereo inputs can be individually selected to any output via the push button selector switch, pressing the button cycles through the various inputs and also enables the remote function which allows selection of the music sources (and volume control) from an optional remote panel. Adjacent LED's provided clear indication of selection.

If remote panels are used the selector switches on the ZMR 243 front panel can be disabled by pressing selector buttons 1 and 3 at the same time. Source select will then only be possible using the remote panels. Pressing selector buttons 1 and 3 at the same time again reverts back to normal operation.

The volume of the music source may be adjusted either from the front panel or from a remote panel, the front panel control may be internally bypassed so the volume is only controlled remotely if required. Remote zone selection on zones 2 & 3 may be linked to follow zone 1 by fitting a link between pins 1 & 4 on the remote connector. Remote volume control of these zones is unaffected.

Input gain controls are fitted to all inputs these are accessible through holes in the rear panel, input 1 can be set as a priority input and automatically routed to selected outputs (jukebox).

Each of the 3 stereo outputs also have treble and bass tone controls (these affect only the music and not any microphone 1 and 2 content).

On the 2 Zone version of the ZMR 243 the third output is inactive, a plug in card can be retro fitted to a 2 zone ZMR 243 to make it a 3 zone ZMR 243.

Zone outputs may be operated as a pair of mono outputs sharing the same source, the front panel volume control sets the level for both mono outputs however 2 remote panels can be connected for independent control of each mono output volume (only one remote source select can be active).

Provision to connect the ZMR 243 to a fire alarm has been provided to satisfy the requirements of fire safety. This requires a fully isolated pair of contacts from the alarm panel. It is labelled as music dim / mute. The attenuation of the music signal is fully adjustable via an internal pre-set.

INSTALLATION

The factory setting is priority off, microphones 1 and 2 enabled (phantom power off), stereo output and AVO (auto voice override) on. For different settings internal jumpers must be moved.

To change the internal settings first ensure mains power is disconnected, then remove 3 screws from each side of the top cover and 2 screws from the top of the top cover (8 screws total, retain for refitting).

The setting of the options is described below with references to drawings 947 and 948 later in the manual for the positions of the relevant jumpers.

Mono mode

Any output can be selected to operate in mono by the position of a jumper link on the individual output cards (see drawings 947 and 948 fig C) to give 2 mono outputs from any zone. In mono mode the front panel volume control sets the level for both mono outputs however each mono output can have a separate remote volume control by setting the remote option to split mono (drawing 947 and 948 fig H).

Microphones 1 and 2 paging option.

Microphones 1 and 2 are paging/announcement/commentary microphones, each with a volume control for each zone. Either or both microphones can be enabled or disabled and phantom power can be selected for either or both.

A typical configuration would be microphone 1 used for paging and announcements to all zones and the second microphone used for commentary in one zone only.

To do this both microphones would be enabled, the front panel volume controls on microphone 1 set to mid position and the front panel volume controls on microphone 2 set fully anticlockwise on the two unwanted zones and mid position on the required zone.

There is a mute facility for the microphones operated via pins on the AUX connector on the back panel (located between the music input connectors). Microphone 1 is muted by linking pins 1 and 3 and microphone 2 is muted by linking pins 1 and 4, connecting switches to these pins allows the microphones to be switched off when not required.

Note: the front panel status LED’s for microphone 1 and 2 are illuminated if the microphones are enabled and not muted.

To set the required microphone configuration refer to drawings 947 and 948 fig B for microphone enable/disable jumpers and fig A for phantom power setting. Set as required.

Microphone gain and tone (EQ) are covered under the **set up** section, the microphone auto voice over (AVO) facility is covered in the **AVO** section.

AVO (auto voice override)

A voice override facility is provided for any or all outputs, either or both microphones may be set for this facility.

If AVO is selected then when a signal is present from the microphone the music level will be reduced so the microphone signal is clearly heard.

The jumpers for AVO are on each of the output cards shown on drawings 947 and 948 fig C, select to your requirements.

Priority input

Stereo music input 1 may be selected to be a priority input to 1,2 or all 3 outputs, when a signal is present on this input it will take priority and mute any line source currently selected. This may be useful for example for a jukebox which when playing will automatically override any other source selection to the set zones.

Drawings 947 and 948 fig G shows the position of the jumper to enable input 1 as priority and the priority sensitivity adjustment. The sensitivity adjustment sets the level from input 1 necessary to activate the priority input (line noise can activate priority input on very sensitive setting).

Drawings 947 and 948 fig F shows the position of an adjustment that sets the delay before priority stops when input 1 is below the set sensitivity (music can have quiet sections so a delay prevents the priority input dropping out prematurely).

Drawings 947 and 948 fig E shows the position of the jumper to select which zones priority is operational in. Note if you require priority in 1 zone it must be zone 1 of the ZMR 243 and if you require 2 zones it must be zones 1 & 2 of the ZMR 243.

A front panel status LED indicates the presence of a priority signal. Microphone inputs are not affected by this function.

Volume controls

If remote panels are being used the front panel volume control may be disabled if required, see drawings 947 and 948 fig D.

If you are using a zone as 2 mono zones and are using 2 remote panels to control the volumes independently then the front panel volume control should be disabled.

Note: Holding front panel source selector buttons 1 and 3 down at the same time disables front panel source selection and source select will then only be possible using the remote panels. Pressing selector buttons 1 and 3 at the same time again reverts back to normal operation.

Earth lift

Drawing 947 and 948 fig I shows the position of the earth lift jumper. Earth lift should not be changed unless you are a qualified engineer and have a good diagnostic reason.

Remote music dim / mute

The AUX connector on the back panel (located between the music input connectors) has a music dim or mute facility which is triggered by connecting pin 1 and 2 together.

The attenuation level is fully adjustable, drawings 947 and 948 fig G shows the position of the adjustment to set the amount of attenuation required.

The dim / mute connection is often used to connect to a fire alarm (via a pair of isolated normally open relay contacts) so that when operated the music dims or mutes. Sometimes a low level of background music is preferable to a complete mute so the attenuation can be set as required.

Microphone inputs are not affected by the dim/mute operation and may be used for emergency announcements. A front panel status LED indicates if remote dim/mute is operated.

230V/115V OPERATION

The mains transformer fitted to the ZMR 243 has split primary windings that allows 230V or 115V AC operation. The unit may be ordered to operate on either voltage, if not specified 230V will be supplied. Existing 230V units may be rewired to 115V operation and this must only be undertaken by a technically competent engineer. Contact the factory for more details.

SET UP

With the required internal jumper settings in place connect microphones and music sources to the back panel inputs as required, mono inputs require parallel connection to L and R connectors (ie a splitter cable), if the priority facility is being used then ensure input 1 is connected to the priority source (eg jukebox). Microphones are both on balanced XLR's, music inputs are phono type sockets at line level.

Zone outputs are on the back panel and are balanced but can be strapped unbalanced, see drawing 949. The zone outputs will normally go to amplifiers.

Twin screened cable should be used for all balanced lines particularly microphone connections.

Remote panels connections are on the back panel, see drawing 949. The remote panel connections are low voltage (less than 15Vdc) and low current (less than 10mA).

Microphone mute and music dim / mute facility are on the AUX connector on the back panel.

With everything connected as required switch the ZMR 243 on and set the music level controls all fully anticlockwise, if microphones are being used set microphone level controls to 3/4 position, if microphones are not being used set microphone level controls fully anticlockwise.

Check status LED's on the front panel are as you have set the equipment.

If the mute LED is on then pins 1 and 2 on the AUX connector on the back panel will be linked.

If the priority LED is on and there is no music into input 1 then the priority sensitivity is set too high.

If you have selected a microphone the relevant LED should be lit, it is either the jumper position is not correctly set or the mute facility on the AUX connection is operating.

If you have selected a microphone and the relevant LED is lit, then speak into the microphone and check you have a signal in each zone. You may need to adjust the gain adjustment through a hole on the rear panel adjacent to the relevant microphone input with a small flat blade screwdriver to get the required level (if you cannot get a signal check if your microphone requires phantom power). If you are using 2 microphones repeat for the second microphone.

Each microphone also has two tone controls above and either side of the rear panel gain adjustments, adjust these while speaking into the microphone. The setting of these is subjective and according to individual taste, also setting with an empty room may not produce the right sound when the room is full of people.

If you are using the microphone mute facility, operate the switch and check the microphone mutes and the microphone enabled LED on the front panel is out.

On any zone that does not require a microphone set the front panel microphone level control fully anticlockwise.

Play music on any equipment connected to the music inputs and set the front panel music level controls to 3/4 position. Select source 1 and adjust the gain control adjustment through the back panel (adjacent to input 1) with a small flat blade screwdriver to get the required level. Repeat for as required for any other music inputs.

If auto voice override (AVO) has been selected play music and check the AVO operates as required.

If priority has been selected, set input to a source other than source 1 and then play music from source 1, check the designated outputs switch over to input 1 and the priority LED is lit.

If the remote mute facility is to be used select a source with music playing and link pins 1 and 2 on the rear panel AUX connector, the music should now dim/mute as required and the MUTE LED should be lit. Check microphones (if used) work as normal.

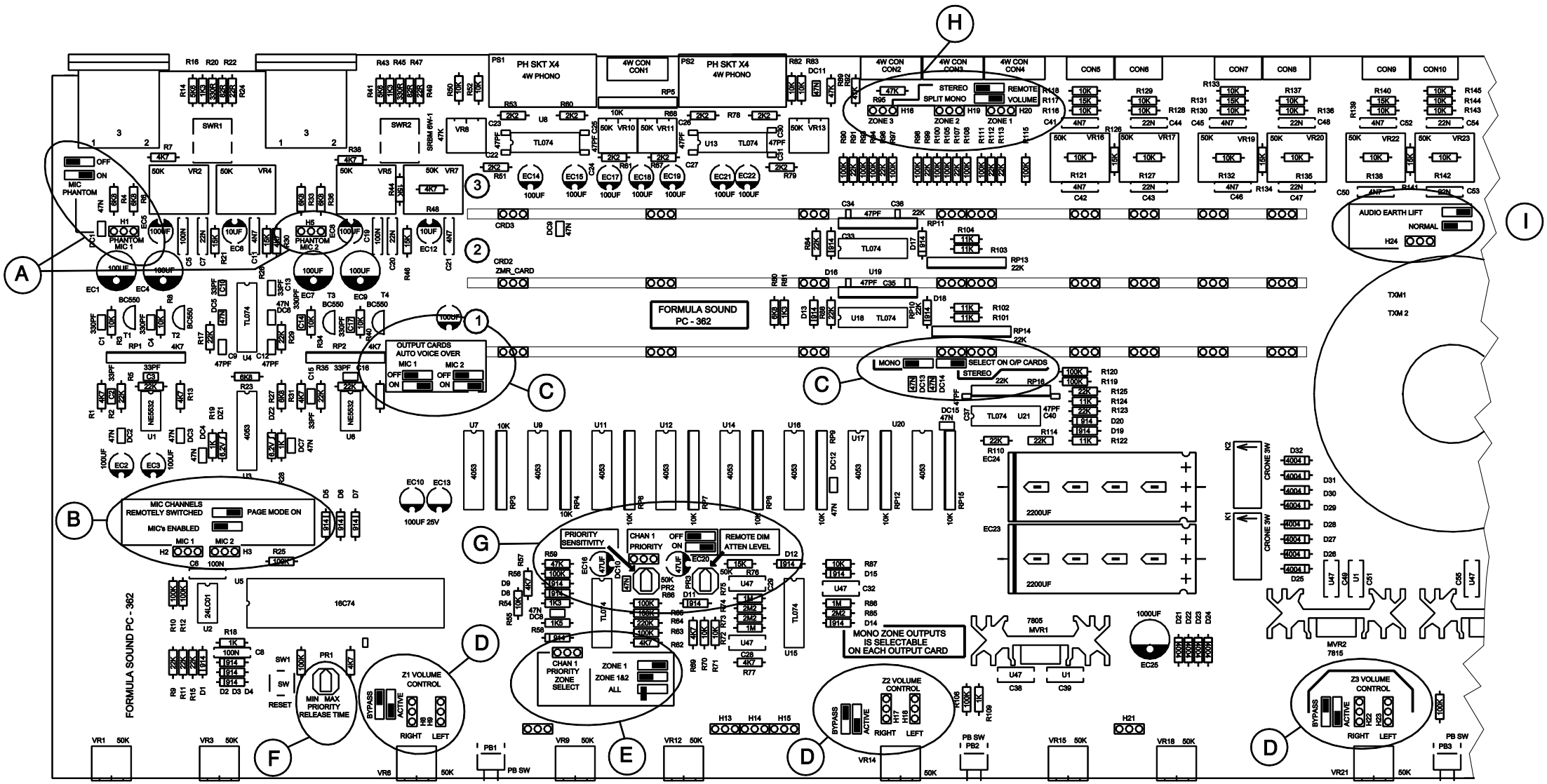
If remote panels are fitted then check remote panels operate as required.

Play music into each zone in turn and adjust the two tone controls on the rear panel above the relevant zone output connector. The setting of these is subjective and according to individual taste, also setting with an empty room may not produce the right sound when the room is full of people.

Formula Sound Limited
Unit 23 Stadium Business Centre
North End Road
Wembley
HA9 0AT

Tel +44 (0) 208 900 0947 Fax +44 (0) 208 903 8657

www.formula-sound.co.uk email info@formula-sound.co.uk



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		ALSO SEE DRG 948	
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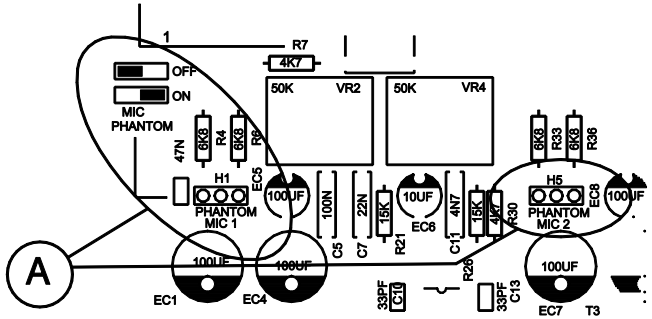
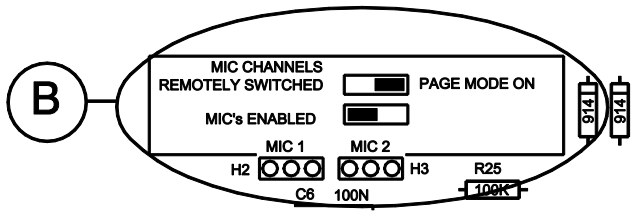
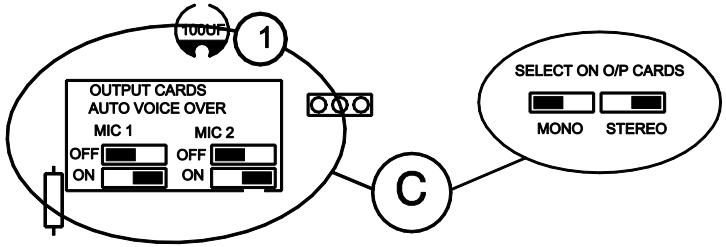


MICROPHONE CHANNELS PHANTOM POWER SELECT



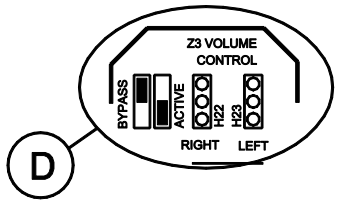
MICROPHONE CHANNELS PAGE MODE SELECT

WITH PAGE MODE SELECTED MICROPHONE CHANNELS
ARE OFF UNTIL REMOTELY ENABLED
EITHER OR BOTH MAY BE SELECTED TO PAGE MODE

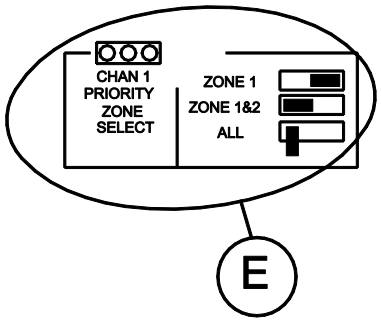


AUTOMATIC VOICE OVER SELECTION
SELECTION IS ON EACH OUTPUT CARD AND EITHER OR
BOTH MICROPHONE CHANNELS MAY BE SELECTED TO
DIM MUSIC CHANNELS WHEN A MICROPHONE SIGNAL IS PRESENT

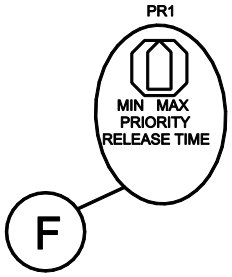
INDEPENDENT MONO OPERATION OF EACH OUTPUT IS ALSO
SELECTED ON EACH OUTPUT CARD.



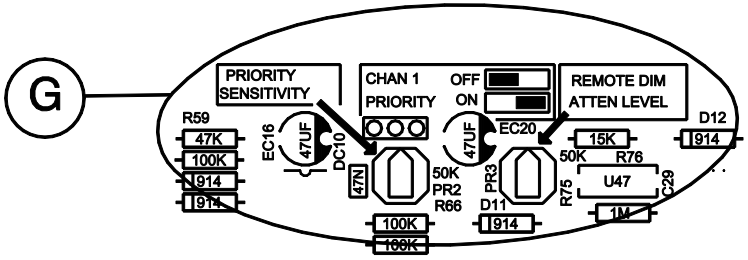
3 SETS OF SELECTION ARE PROVIDED TO
DISABLE THE FRONT PANEL MUSIC VOLUME
CONTROLS.
USE THIS FACILITY IN CONJUNCTION WITH
REMOTE VOLUME CONTROLS.



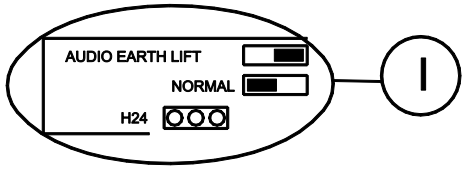
SELECTS IF THE PRIORITY INPUT IS OPERATIONAL
IN ALL ZONES. SEE ALSO "G" TO ENABLE PRIORITY



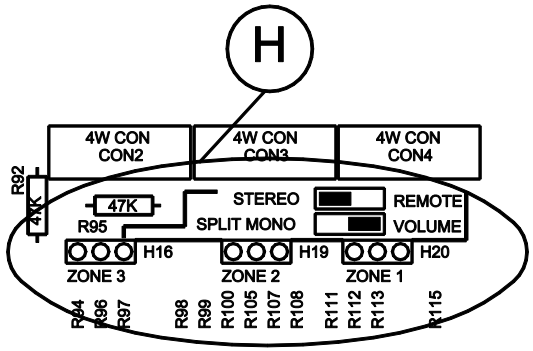
THIS PRESET ADJUSTS THE PRIORITY RELEASE TIME
I.E. THE TIME AFTER THE PRIORITY SIGNAL IS NO LONGER
PRESENT AND NORMAL OPERATION RESUMES



THIS SHOWS THE POSITIONS OF
PR2 THE PRIORITY SENSITIVITY ADJUSTMENT PRE-SET
THE CHANNEL 1 PRIORITY ON - OFF SELECTOR
THE REMOTE MUSIC DIM, ATTENUATION LEVEL PRE-SET



EARTH LIFT SELECTION
NORMAL = MAINS EARTH CONNECTED TO AUDIO COMMON



SELECTION OF THE REMOTE VOLUME CONTROL ACTION

STEREO IS THE NORMAL POSITION 1 REMOTE VOLUME
CONTROL ADJUSTS LEFT AND RIGHT SIGNALS

SPLIT MONO POSITION ALLOWS INDEPENDENT CONTROL
OF LEFT AND RIGHT CHANNELS
BY 2 REMOTE VOLUME CONTROLS
(THIS WOULD ONLY BE USED IF THE OUTPUT CARDS
WERE SELECTED TO MONO OPERATION

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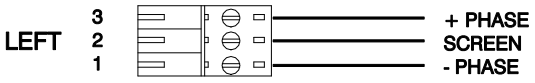
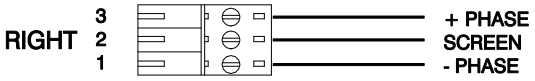
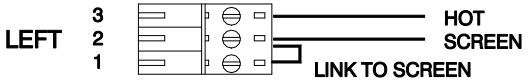
AUDIO CONNECTIONS

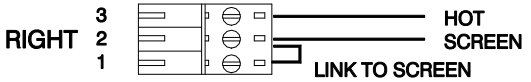


ZONE OUTPUTS BALANCED CONNECTIONS





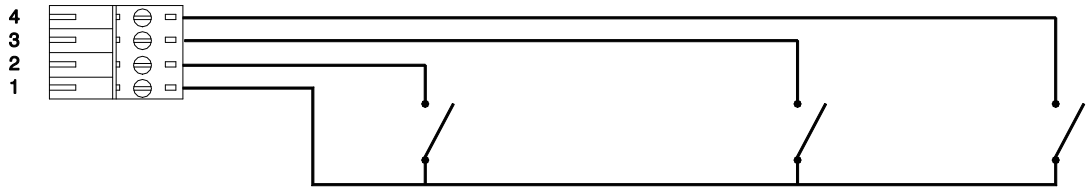
ZONE OUTPUTS UNBALANCED CONNECTIONS



MUSIC INPUTS, 2 CONVENTIONAL RCA PHONO PLUGS PER CHANNEL FOR LEFT AND RIGHT INPUTS

MICROPHONE INPUTS 2 CONVENTIONAL XLR CONNECTORS, PIN 1 SCREEN PIN 2 +PHASE PIN 3 -PHASE

AUXILIARY CONNECTOR



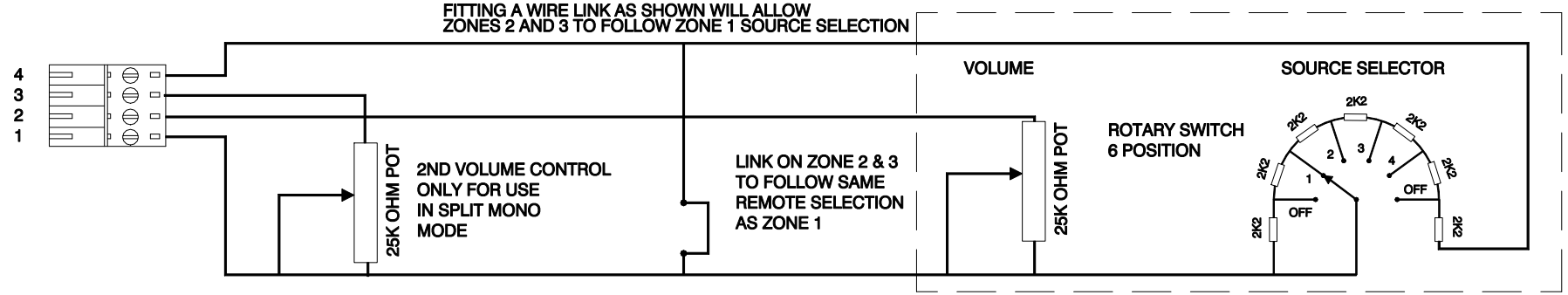
PAGE MODE IS INTERNALLY SELECTED
INDEPENDENTLY FOR MIC'S 1 & 2

REMOTE CONNECTORS

LINKING ZONE SELECTION

FITTING A WIRE LINK AS SHOWN WILL ALLOW
ZONES 2 AND 3 TO FOLLOW ZONE 1 SOURCE SELECTION

STANDARD REMOTE PANEL



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TECHNICAL SPECIFICATION

Frequency Response (EQ. set flat)	20Hz - 20KHz +/- 0.5dB
Distortion THD @ 1KHz @ operating level 0dBu	<.01%

MICROPHONE INPUTS 1-2

Connector type XLR	
Internally selectable phantom power (15V)	
Gain selection by 6 position rotary switch	
Gain Min / Max	10dB / 60dB
Noise ref 150R	EIN -126dB 20Hz-20KHz
Input impedance	>2K ohms active balanced
Maximum input level	+10dBu 775mV
Equalisation Microphone channels	HF (Treble) +/- 12dB @ 10KHz LF (Bass) +/- 12 dB @ 200Hz

STEREO INPUTS (Channels 3-6)

Connector type twin gold plated phono sockets	
Gain selection continuously variable via rotary potentiometer	
Gain Min / Max	-25dB / +12dB
Nominal input level	0dBu 775mV
Maximum input level	+20dBu 7.7V
Input impedance	>10K ohms
Noise @max gain	EIN -100dB 20Hz 20KHz

Zone Outputs X3

Audio Connector	2 X 3 pin connectors (Mating connectors supplied)
Balanced output	
Maximum output level	+20dBu 7.7V
Output impedance	<100ohms Balanced
Equalisation music sources	HF (Treble) +/- 12dB @ 10KHz LF (Bass) +/- 12 dB @ 100Hz

Balanced outputs are self compensating and may be linked for unbalanced operation without any degradation in performance.

Remote selection and volume	4 pole connector (Mating connector supplied)

Power

220-240V AC standard (115V to order. Or consult user manual to change)
Mains fuse 220-240v operation 250mA slow blow
Mains fuse 110-115v operation 500mA slow blow
I.E.C. Mains connector

Finish

Front and Rear panel Black anodised aluminium with silver notation
Case black plastic coated steel

Dimensions

19" rack mounting. 1RU
Width 482mm (19") Depth 200mm (7.9") Height 44mm (1.75")

Formula Sound reserve the right to alter the specification without notice.

FORMULA SOUND LIMITED
UNIT 23; STADIUM BUSINESS CENTRE; NORTH END ROAD; WEMBLEY; MIDDLESEX; HA9 0AT
TELEPHONE +44 (0)208-900-0947 FAX +44 (0)208-903-8657
www.formula-sound.co.uk email info@formula-sound.co.uk

E.U. CERTIFICATE OF CONFORMITY

We declare that the products listed conform to the following directives and standards

89/336/EEC amended by 92/31/EEC and 93/68/EEC

BS EN 50082-1 BS EN 50081-1

PRODUCT TYPE

ZMR 243

The CE mark was first applied in 1995

Signed

B. J. Penaligon General Manager

Attention

The attention of the specifier, purchaser, installer, or user is drawn to the fact that good wiring practice must be observed when connecting the above equipment. Good quality connectors and screened cables must be used for all audio connections. Twin screened cables should be used for all balanced lines.

THIS EQUIPMENT MUST BE EARTHED

CONSULT THE USERS MANUAL FOR TECHNICAL DETAILS