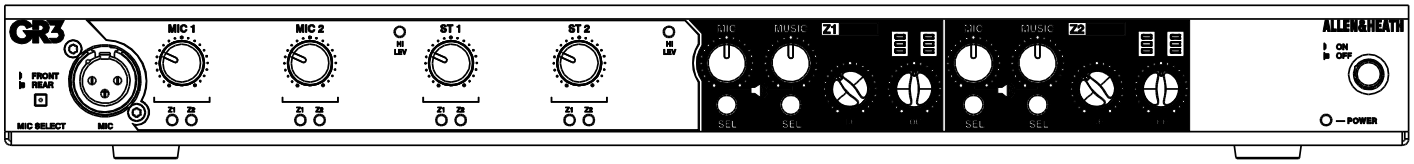
ALLEN&HEATH

GR3

INSTALLATION & USER GUIDE



ANALOGUE ZONE SERIES

Limited One Year Manufacturer's Warranty

Allen & Heath warrants the Allen & Heath branded hardware product and accessories contained in the original packaging ("**Allen & Heath Product**") against defects in materials and workmanship when used in accordance with Allen & Heath's user manuals, technical specifications and other Allen & Heath product published guidelines for a period of ONE (1) YEAR from the date of original purchase by the end-user purchaser ("**Warranty Period**").

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Please refer to the licensing agreement accompanying the software for details of your rights with respect to the use of software/firmware ("EULA").

Details of the EULA, warranty policy and other useful information can be found on the Allen & Heath website: www.allen-heath.com/legal.

Repair or replacement under the terms of the warranty does not provide right to extension or renewal of the warranty period. Repair or direct replacement of the product under the terms of this warranty may be fulfilled with functionally equivalent service exchange units. This warranty is not transferable.

This warranty will be the purchaser's sole and exclusive remedy and neither Allen & Heath nor its approved service centres shall be liable for any incidental or consequential damages or breach of any express or implied warranty of this product.

Conditions Of Warranty

The equipment has not been subject to misuse either intended or accidental, neglect, or alteration other than as described in the User Guide or Service Manual, or approved by Allen & Heath. The warranty does not cover fader wear and tear.

Any necessary adjustment, alteration or repair has been carried out by an authorised Allen & Heath distributor or agent.

The defective unit is to be returned carriage prepaid to the place of purchase, an authorised Allen & Heath distributor or agent with proof of purchase. Please discuss this with the distributor or the agent before shipping. Units returned should be packed in the original carton to avoid transit damage.

DISCLAIMER: Allen & Heath shall not be liable for the loss of any saved/stored data in products that are either repaired or replaced.

Check with your Allen & Heath distributor or agent for any additional warranty information which may apply. If further assistance is required please contact Allen & Heath Ltd.

CE GR products comply with the European Electromagnetic Compatibility directive 2004/108/EC and the European Low Voltage directive 2006/95/EC.

Any changes or modifications to the product not approved by Allen & Heath could void the compliance of the product and therefore the user's authority to operate it.

GR3 User Guide

ALLEN&HEATH

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Before starting, read the Important Safety Instructions printed on the sheet supplied with the equipment. For your own safety and that of the operator, technical crew and performers, follow all instructions and heed all warnings printed on the sheet and on the equipment panels.

1 Introduction

4in / 2out Zone Mixer

The GR3 is a 1U rack-mounting or desktop audio mixer, providing simple yet comprehensive control of background music and paging in bars, restaurants, stores and other leisure / retail environments. Standout features include optional remote wall plates and a mic input on the front panel.

2 Packed Contents

The following items are included in the box when the GR3 is shipped.

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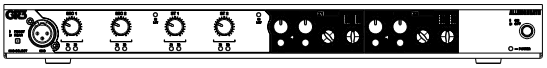
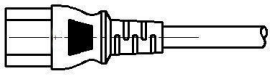
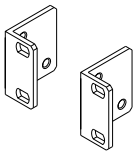


1 x GR3 Zone Mixer



1 x Mains Cable (IEC C13 to local mains connector)

4 x Blanking Bung



1 x Set of Rack ears

4 x M3 X 6mm Countersunk Pozi screws

2 x HDR Plug Phoenix 2W

2 x HDR Plug Phoenix 4W

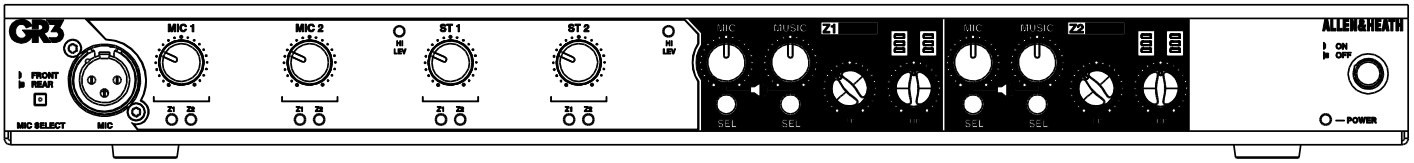
6 x HDR Plug Phoenix 3W

1 x User Guide (AP10573).

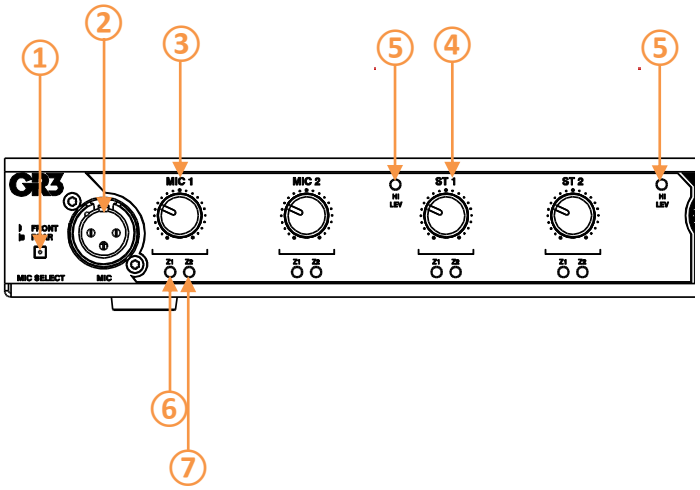
1 x ROHS Addendum Notes (AP7014).

1 x Safety Instructions (AP9240/CL1-1) - **PLEASE READ BEFORE CONTINUING WITH THIS MANUAL.**

3 Front Panel



3.1 Input Section



①**MIC SELECT** – a user selectable switch for MIC 1 input. MIC 1 signal can either be derived from the rear mount Phoenix or front mount XLR connectors.

②**MIC 1 INPUT** – Front mount XLR receptacle for MIC 1 input.

③**MIC LEVEL** – Adjustable rotary level control for MIC inputs 1-4. Mic level control of -80 to +5dB.

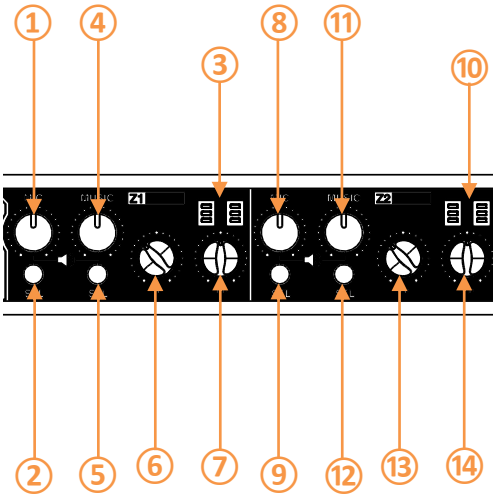
④**MUSIC LEVEL** – Adjustable rotary level control for LINE inputs 1-4. Line level control of -76 to +6dB.

⑤**Hi LEV LED** – LED level indicator which illuminates when signal to MIC 1-4 is approaching clip level. Mic Hi Level illuminates at +18dBu (clip level is +21dBu).

⑥**Z1 SELECTION INDICATOR** – LED indicator showing input selection to ZONE 1 mix bus.

⑦**Z2 SELECTION INDICATOR** – LED indicator showing input selection to ZONE 2 mix bus.

3.2 Output Section



①**Z1 MIC MIX OUTPUT LEVEL** – Adjustable rotary level control for MIC Mix to Zone 1. Output level control of -74 to 0dB.

②**Z1 MIC SELECT SWITCH** – Output Zone Mic selection switch used to add/remove mic sources to/from the output Zone 1 mix signal. The following combinations are supported; Mic 1 only/Mic 2 only/All Mics.

③**Z1 OUTPUT METER** - Three-segment LED meter showing output level of Z1 Mix. Clip Level +21dBu.

④**Z1 MUSIC OUTPUT LEVEL** – Adjustable rotary level control of Music source to Zone 1. Output level control of -74 to 0dB.

⑤**Z1 MUSIC SELECT SWITCH** – Output Zone Music selection switch used to select Music source to output Zone 1 mix.

⑥**Z1 OUTPUT EQ** – LF control of Zone 1 output signal.

⑦**Z1 OUTPUT EQ** – HF control of Zone 1 output signal.

⑧**Z2 MIC MIX OUTPUT LEVEL** – Adjustable rotary level control for MIC Mix to Zone 2. Output level control of -74 to 0dB.

⑨**Z2 MIC SELECT SWITCH** – Output Zone Mic selection switch used to add/remove mic sources to/from the output Zone 2 mix signal. The following combinations are supported; Mic 1 only/Mics 2 only/All Mics.

⑩**Z2 OUTPUT METER** - Three-segment LED meter showing output level of Z2 Mix. Clip Level +21dBu.

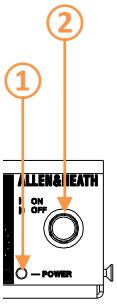
⑪**Z2 MUSIC OUTPUT LEVEL** – Adjustable rotary level control of Music source to Zone 2. Output level control of -74 to 0dB.

⑫**Z2 MUSIC SELECT SWITCH** – Output Zone Music selection switch used to select Music source to output Zone 2 mix.

⑬**Z2 OUTPUT EQ –** LF control of Zone 2 output signal.

⑭**Z2 OUTPUT EQ –** HF control of Zone 2 output signal.

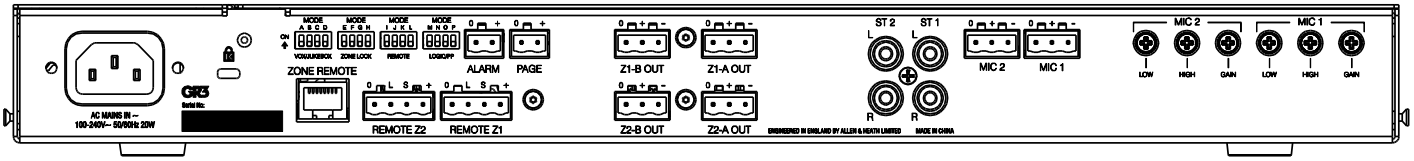
3.3 General



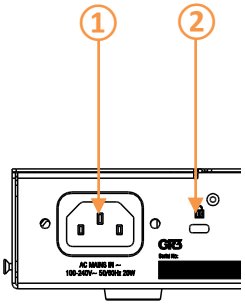
①**POWER INDICATOR** – LED indicator showing the unit has power. Also used to indicate when unit is in 'Programming' mode (see section 6.4).

②**MAINS SWITCH** – Switch to power the unitON/OFF.

4 Rear Panel



4.1 General



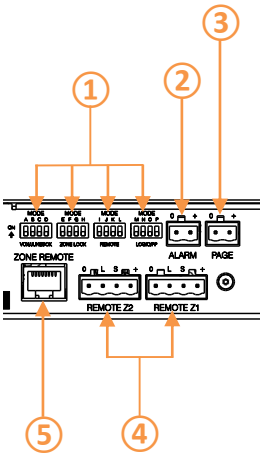
①**AC POWER**

IEC receptacle to connect mains power cable (included). 100V to 240V accepted.

②**KENSINGTON LOCK**

Kensington lock cut-out for securing unit.

4.2 Control Section



①DIP SWITCHES

Dip switches used to control priority settings, zone lock, remote operation and contact closure configuration.

(See section 6.3 for detailed description).

②ALARM INPUT

Normally Open contact closure (DIP switch option for Normally Closed) for emergency input detect. On activation all inputs will fade to the pre-set level except for Mic 1 and Z1 & Z2 LED's will flash quickly. Normal operation will resume once contact is reset to original state.

③PAGE INPUT

Normally Open contact closure (DIP switch option for Normally Closed) for paging announcements. On activation all inputs will fade to the pre-set level except for Mic 1 and Z1 & Z2 LED's will flash slowly. Normal operation will resume once contact is reset to original state.

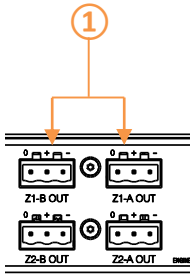
④ANALOGUE ZONE REMOTE

4-pole Euroblock connector for connection of custom or 3rd party volume and/or source selection panels.

⑤DIGITAL ZONE REMOTE

RJ45 connector for use with the Allen & Heath PL-14 remote controller.

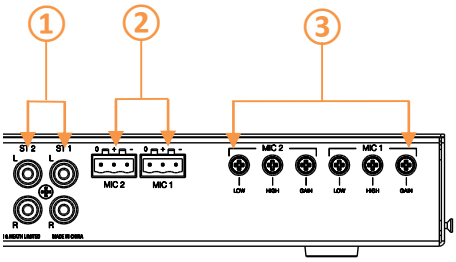
4.3 Output Section



①Z1 & Z2 OUTPUTS

Stereo (mono configurable) balanced outputs on Phoenix connectors.

4.4 Input Section



①STEREO INPUTS

Line level inputs 1 to 2 on unbalanced phono connectors.

Note: Unloaded Phono connectors can induce noise on the output if the input level is not on the fully off position. Either ensure unused channels have Zero Gain/Level or use termination connectors on unused inputs.

②MIC INPUTS

Microphone input on balanced phoenix connector.

③MIC INPUT ADJUSTMENT

Microphone gain trim pot used to adjust the input sensitivity of the pre-amplifier channel*.

***Setting the channel gain**.

1. *Connect the microphone to be used with the associated input.*
2. *Speak into the microphone whilst adjusting the gain trim with a small flat blade screwdriver.*
3. *Adjust the trim until the Hi Lev LED illuminates and then trim back the level slightly so it no longer illuminates.*
4. *Further adjustments may be required to suit the dynamics of the users' normal range.*

5 Installing GR3

5.1 Mounting the unit

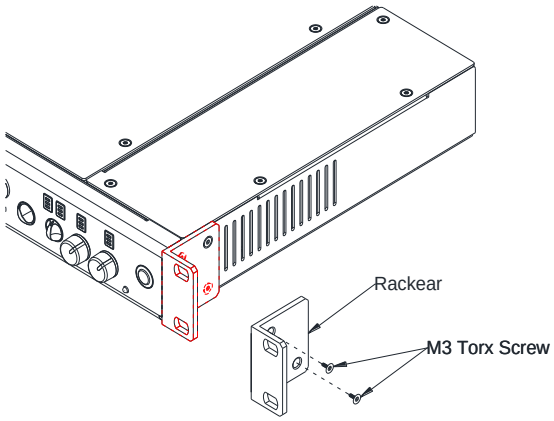
The GR3 can be used as a stand-alone unit and placed on a hard surface or rack-mounted in a standard 19” profile.

You will need the following items;

- T10 Torx screwdriver
- Small flat blade screwdriver
- Hex Screwdriver
- Rack ears (supplied)
- 4 x M3 Torx screws (supplied)
- 4 x M6 Screws

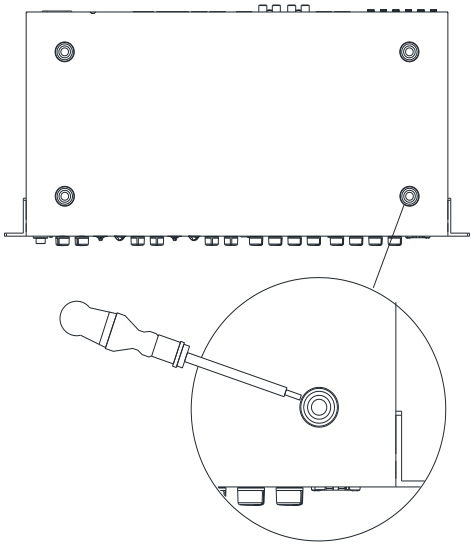
To rack-mount the unit follow the below procedure;

1. Using the supplied rack ears and M3 Torx screws fit to the unit as in the below diagram.



Be sure to use the supplied screws or exact replacements (damage to internal PCB’s can result when using longer screws).

2. Using the small flat bladed screwdriver gently remove the four rubberized feet on the base of the unit.



3. Install within the 19” rack making sure the unit is secure.

   Please ensure you have enough depth within the rack to accommodate the GR3 together with sufficient cable bending radius (the GR3 is 220mm deep).

6 Connecting to GR3

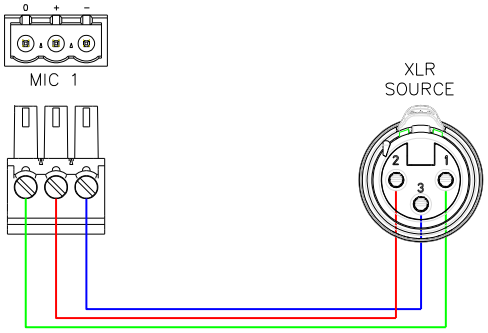
6.1 Microphone Inputs

Microphone inputs are balanced connections on Euroblock type connectors.
Pin assignments are screen printed above the connector or alternatively use the below wiring diagram.

Refer to 4.4 Input Section ② for location details

XLR to Phoenix (Balanced to Balanced)

0 = Screen
\+ = Hot
\- = Cold



Balanced microphone input wiring example.

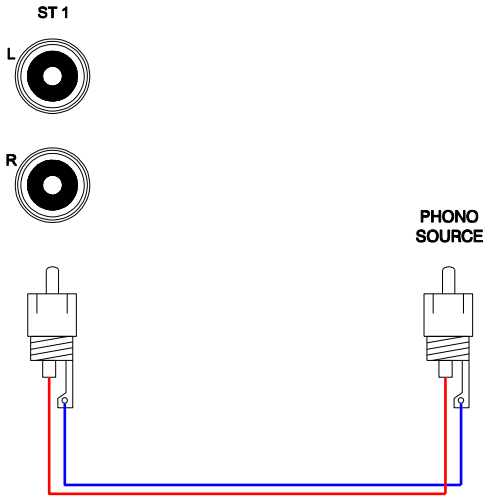
6.2 Stereo Inputs

Line level stereo inputs are unbalanced on standard phono connectors.
Pin assignments are screen printed above the connector or alternatively use the below wiring diagrams.

Refer to 4.4 Input Section ① for location details

Phono to Phono (Unbalanced to Unbalanced)

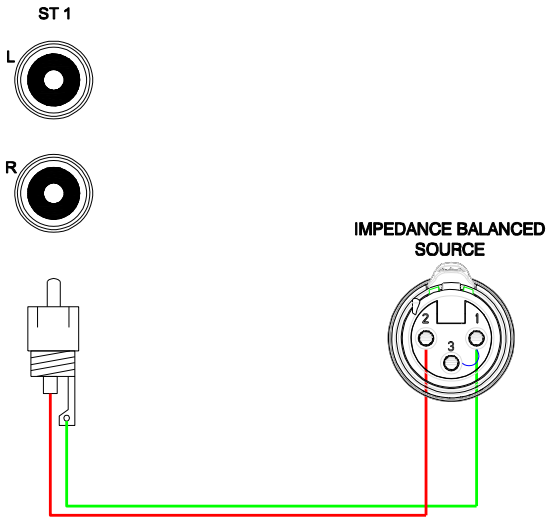
Tip = Tip
Sleeve = Sleeve



Unbalanced line input wiring example.

XLR/Euroblock to Phono (Impedance Balanced to Unbalanced)

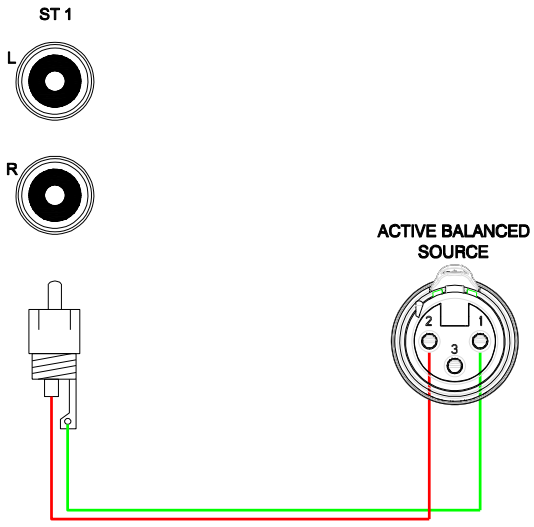
Screen (Pin 1) = Sleeve
Hot (Pin 2) = Tip
Cold (Pin 3) = Link to Pin 1 on XLR



Balanced line input wiring example.

XLR/Euroblock to Phono (Active Balanced to Unbalanced)

Screen (Pin 1) = Sleeve
Hot (Pin 2) = Tip
Cold (Pin 3) = Floating



Balanced line input wiring example.

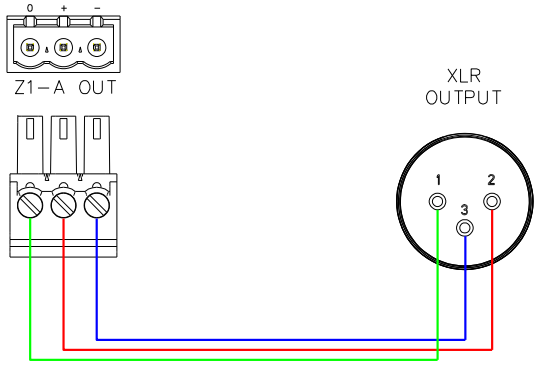
6.3 Zone Outputs

Zone outputs are balanced connections on Euroblock type connectors.
Pin assignments are screen printed above the connector or alternatively use the below wiring diagrams.

Refer to 4.3 Output Section ① for location details

Phoenix to XLR (Balanced to Balanced)

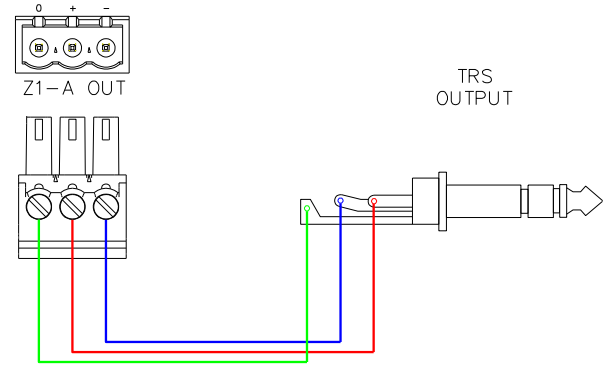
0 = Screen
\+ = Hot
\- = Cold



Balanced line output (XLR) wiring example.

Phoenix to TRS (Balanced to Balanced)

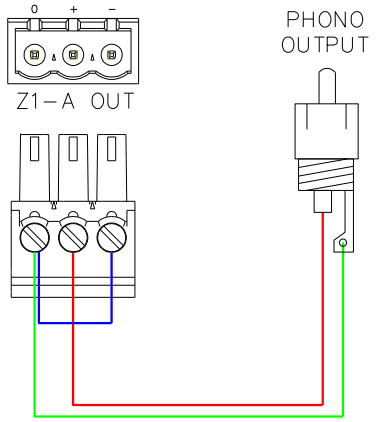
0 = Sleeve
\+ = Tip
\- = Ring



Balanced line output (TRS) wiring example.

Phoenix to Phono (Balanced to Unbalanced)

0 = Sleeve
+ = Tip
- = Link to 0 on Phoenix



Balanced line output (Phono) wiring example.

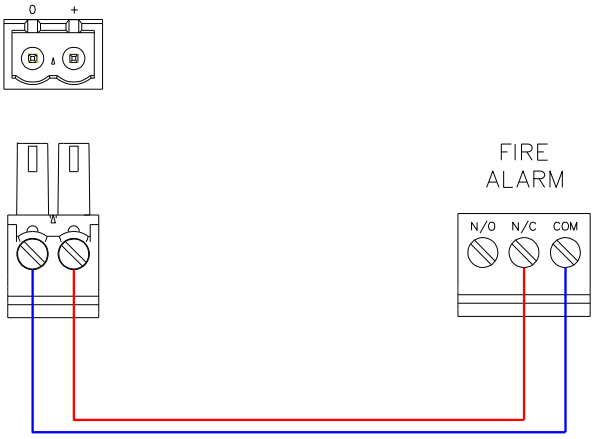
6.4 Alarm Input

The Alarm input is a 2-pole connection on Euroblock type connector and is typically configured to the Normally Closed contacts. Pin assignments are screen printed above the connector or alternatively use the below wiring diagrams.

Refer to 4.2 Control Section ② for location details

2-Wire Alarm Contact Closure

0 = COM
+ = N/C (or N/O)



2-wire contact example.

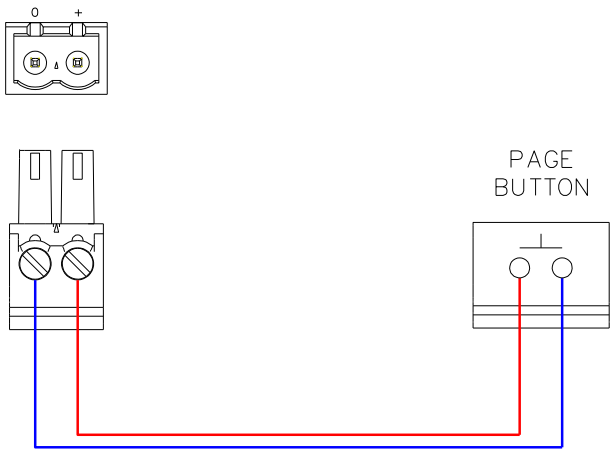
6.5 Page Input

The Page input is a 2-pole connection on Euroblock type connector and is typically configured to the Normally Open contacts.
Pin assignments are screen printed above the connector or alternatively use the below wiring diagrams.

Refer to 4.2 Control Section (3) for location details

2-Wire Paging Switch

0 = COM
\+ = N/O (or N/C)



2-wire switch example.

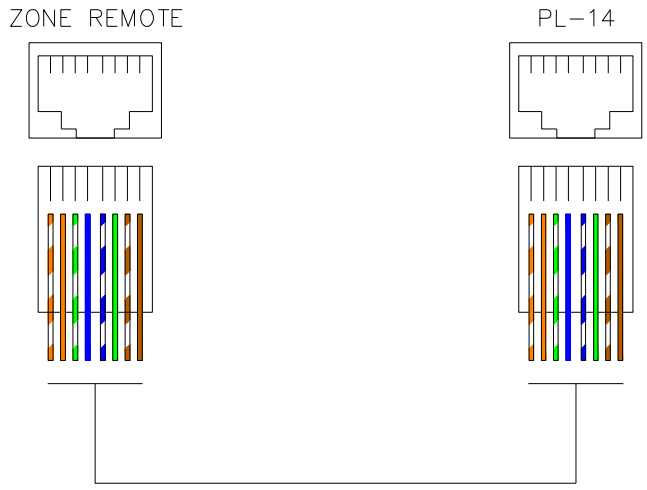
6.6 Remote Connection

There are two methods for connecting a remote control to the GR4.

Digital Remote Connection
The RJ45 “ZONE REMOTE” port allows for the connection of the Allen & Heath PL-14 remote controllers. A maximum of two PL-14’s can be connected in daisy-chain wiring with various control options depending on installation requirements (see PL-14 manual for additional details).

Refer to 4.2 Control Section (5) for location details

Digital Remote (RJ45 to RJ45)
1 = White/Orange
2 = Orange
3 = White/Green
4 = Blue
5 = White/Blue
6 = Green
7 = White/Brown
8 = Brown



RJ45 Wiring Example using TIA/EIA 568B standard.

Analogue Remote Connection

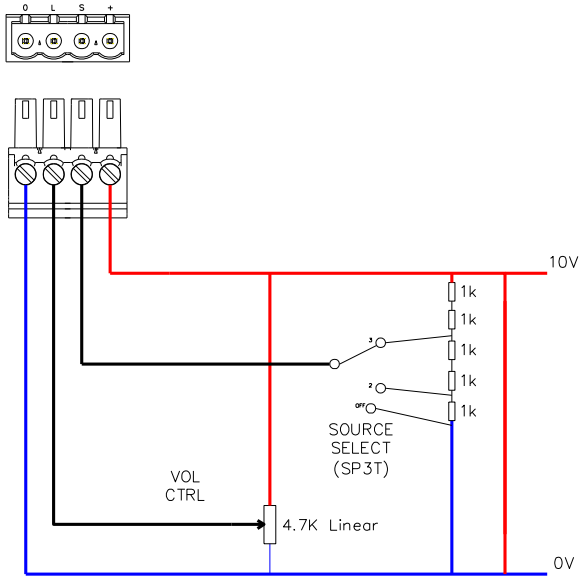
The analogue inputs are 4-pole Euroblock type connectors for Zone 1 & Zone 2 control. These are 0-10V inputs and are typically used as a variable resistance and stepped voltage control for analogue volume control and source selection.

Pin assignments are screen printed above the connector or alternatively use the below wiring diagrams.

Refer to 4.2 Control Section ④ for location details

4-Wire Analogue Remote

0 = 0V
L = Level
S = Source
+ = 10V



Analogue remote connection example

7 Setting up GR3

7.1 Operating Features

The GR3 is a feature rich analogue zone mixer. Multiple configurations are possible by means of internal jumpers, external dip switches and also via digital programmable pre-sets.

The below gives an overview of the various Modes that the GR3 enters when signal is sensed on various input connectors.

Primary Mic Mode: When audio sensed on Mic 1 channel and/or PAGE contact closure is sensed then music is faded to pre-set level and Mic 2 muted for the duration of the announcement. Mic 1 zone select LEDs flash slowly when in primary mic mode.

Secondary Mic Mode: When audio is sensed on Mic 2, then music is faded to pre-set level for the duration of the announcement. Mic 2 zone select LEDs flash slowly when in secondary mic mode.

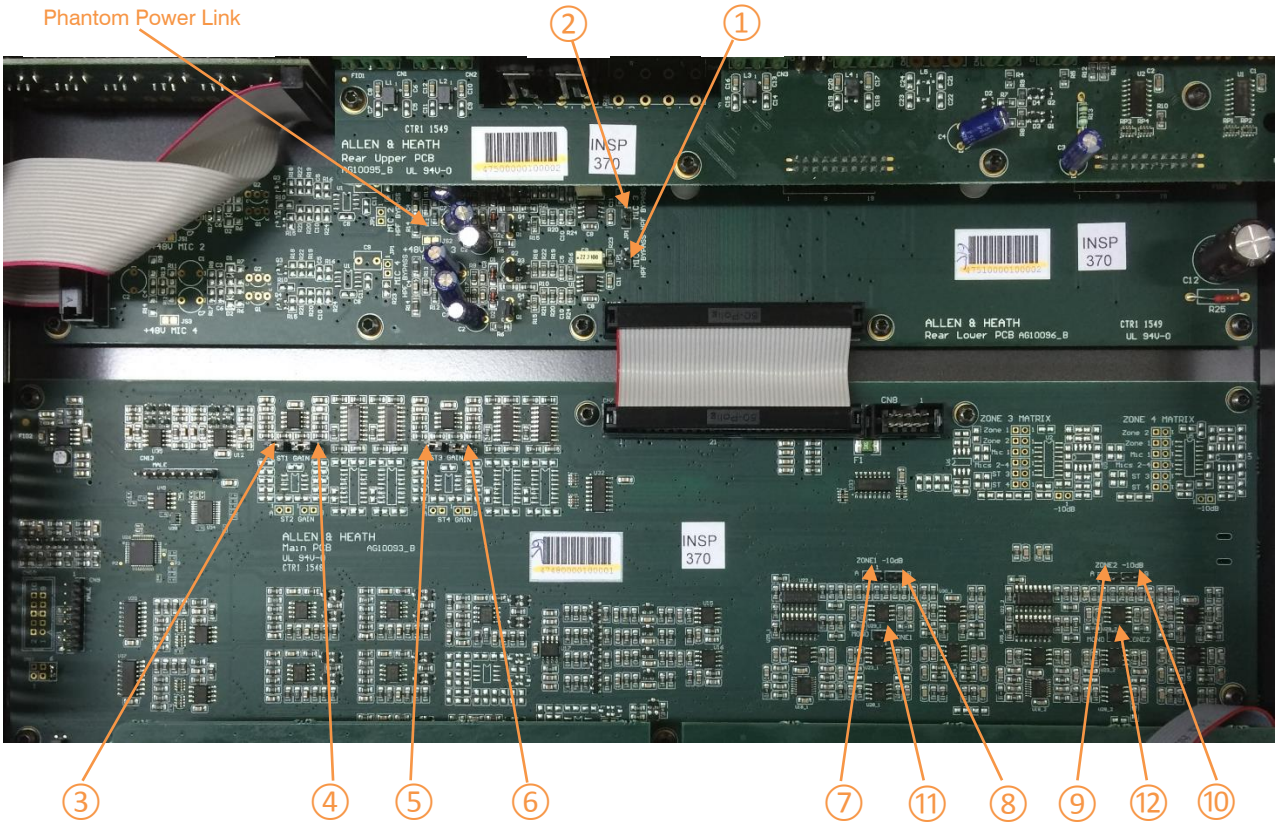
Emergency Mic Mode: When ALARM contact is activated all zone feeds are muted and Mic 1 is fed direct to all zones. All select LEDs except Mic 1 LED are switched off for the duration. Mic 1 LED will flash quickly.

Juke Box Mode: Is a priority Music feed. When in Jukebox mode and audio is sensed on ST2 the current music feed will 'duck'***** to the pre-set level. If ST2 is silent for the pre-set period, the previous Music selection will resume. Mic volume is not affected by Jukebox priority.

**Pre-set levels for the above modes are achieved via a side-chain compressor or 'ducker'. A ducker is dynamic control of Input x by input y which has a higher priority. If audio is detected at Input y then Input x will be 'Ducked' by a predetermined level which can be set by the user (see Table 1 6.4 for user definable parameters). In addition to the amount of attenuation is applied to the 'Ducked' signal the user can also control the hold time and release time of the compressor to suit the application.*

7.2 Internal Jumper Settings

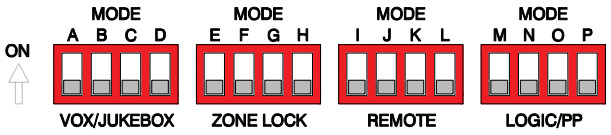
Please ensure that unit is switched off before changing any jumper settings. Ensure necessary precautions have been taken prior to removal of cover. If in doubt call an experienced engineer.



Jumper	Function	State when Jumper fitted
①	MIC 1 High Pass Filter @ 150Hz	Filter Inactive
②	MIC 2 High Pass Filter @ 150Hz	Filter Inactive
③	ST1 A Gain	+10dB of gain applied
④	ST1 B Gain	+10dB of gain applied
⑤	ST2 A Gain	+10dB of gain applied
⑥	ST2 B Gain	+10dB of gain applied
⑦	Zone 1 A Gain	-10dB Attenuation
⑧	Zone 1 B Gain	-10dB Attenuation
⑨	Zone 2 A Gain	-10dB Attenuation
⑩	Zone 2 B Gain	-10dB Attenuation
⑪	Zone 1 Mono	Mono Mix of Zone 1
⑫	Zone 2 Mono	Mono Mix of Zone 2

7.3 Dip Switch Settings

There are 16 Rear mounted DIP switches for selecting various options.



DIP switch settings Up = ON. Factory default = all switches down (OFF).

A	Mic 1 Level Paging Detect	Switches Primary Mic mode (ON)
B	Mic 2 Level Paging Detect	Switches Secondary Mic mode (ON)
C	Jukebox Mode Z1	Switches Jukebox mode in Zone 1 (ON)
D	Jukebox Mode Z2	Switches Jukebox mode in Zone 2 (ON)
E	Z1 Mic Select Lock	Locks the front MIC SEL switch for Z1 (ON)
F	Z1 Music Select Lock	Locks the front MUSIC SEL switch for Z1 (ON)
G	Z2 Mic Select Lock	Locks the front MIC SEL switch for Z2 (ON)
H	Z2 Music Select Lock	Locks the front MUSIC SEL switch for Z2 (ON)
I	Z1 Volume Remote Enable	Enables Z1 remote volume control (ON)
J	Z1 Stereo Input Remote Enable	Enables Z1 remote source select (ON)
K	Z2 Volume Remote Enable	Enables Z2 remote volume control (ON)
L	Z2 Stereo Input Remote Enable	Enables Z2 remote source select (ON)
M	PAGE logic invert	Normally Open (OFF) Normally Closed (ON)
N	ALARM logic invert	Normally Open (OFF) Normally Closed (ON)
O	Phantom Power Enable Mic 1	Enables Phantom Power MIC 1 (ON)
P	Phantom Power Enable Mic 2	Enables Phantom Power MICS 2* (ON)

**Phantom Power for individual mics can be disconnected via an internal link (as shown in internal jumper diagram)*

7.4 Programming Parameters

The GR3 has a total of 7 parameters (shown in Table 1) which are configurable by the installer/user.

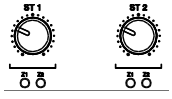
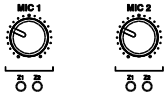
Each parameter has four pre-defined values which can be stepped through and set as required.

Changing a Parameter Step by Step Guide

To enter Programming Mode;

1. Press and hold Z1 Mic & Music "SEL" switches  whilst powering on the GR3 
2. Power LED  will flash continuously whilst in Programming Mode.

Changing a parameter;

1. Use Z2 Mic & Music "SEL" switches  to toggle through the parameter to change  as shown in Table 1 (Note LED sequence).
2. Use Z1 Mic & Music "SEL" switches  to toggle through the value required  as shown in Table 1.
3. The new parameter value is stored automatically. The parameter LED will flash quickly during the save procedure.

Exit Programming Mode;

1. Power cycle the unit  to return to normal operation, LED will remain solid

	Value	1	2	3	4
Parameter	**LED**	**MIC1 Z1**	**MIC1 Z2**	**MIC2-4 Z1**	**MIC2-4 Z2**
1 Ducker Attenuation	**ST1 Z1 (Solid)**	-6dB	-12dB	-20dB	-80dB
2 Ducker Hold Time	**ST1 Z2 (Solid)**	500mS	1500mS	5s	10s
3 Ducker Release Time	**ST2 Z1 (Solid)**	1.5s	5s	10s	30s
4 Music Crossfade Time	**ST2 Z2 (Solid)**	200mS	500mS	1.5s	3s
5 Jukebox Attack Time	**ST1 Z1 (Blink)**	40mS	100mS	250mS	500mS
6 Jukebox Hold Time	**ST1 Z2 (Blink)**	1s	5s	10s	30s
7 Jukebox Release Time	**ST2 Z1 (Blink)**	500mS	1.5s	5s	10s

Table 1 – Showing Parameter/Value/LED State matrix. (Factory settings in orange).

8 FAQ

Q: What are the main differences between the GR3 and GR2?

A: The GR3 has an additional stereo zone output. Each microphone input has individual tone control. Additional connectors have been added to the front panel in the form of an XLR Mic input for priority announcements. The ability to control the mix of mic and music sources on zone outputs 1 & 2.

Q: My audio sources keep fading in and out?

A: It is likely that one or more dip switches have been set to the "ON" position. The GR3 has various "MODES" that allow priority control of the incoming signals.

- **Primary Mic Mode** (Dip Switch A). This will automatically mute mic 2 and fade the music sources to a pre-defined level.
- **Secondary Mic Mode** (Dip Switch B). This will automatically fade the music sources to a pre-defined level.
- **Jukebox Mode** (Dip Switch C & D). This will fade down the music on all stereo inputs except for ST2 which is set as the Jukebox priority input.
-

Q: Can I control the unit over a standard network?

A: No, the rear RJ45 port is for use with Zone remote panels only and is not intended for connection to a network switch.

Q: How do I control the unit remotely?

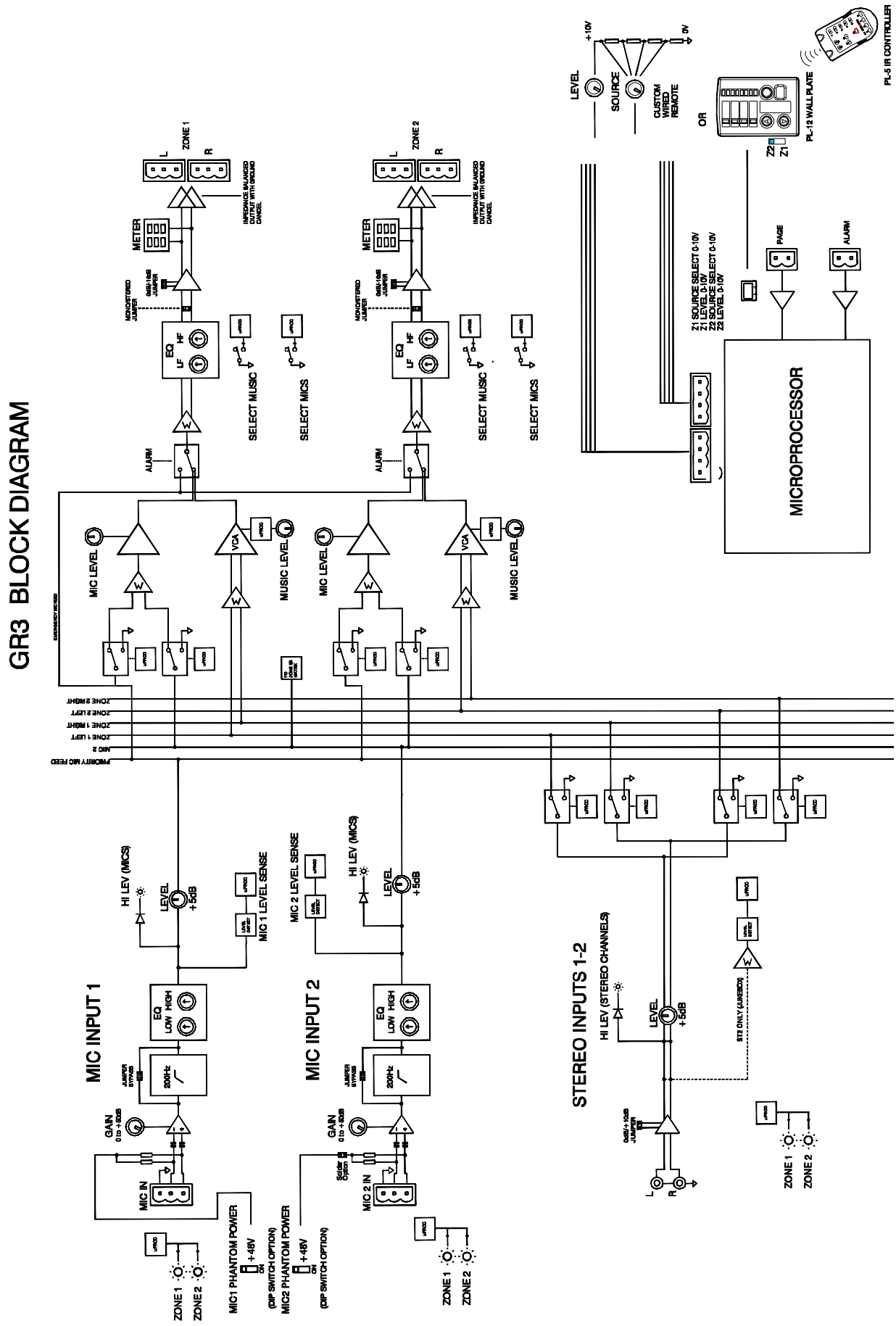
A: Remote control can be achieved by either using the optional Allen & Heath PL-14 controller or via custom wired control. The "ZONE REMOTE" RJ45 port on the rear of the unit will accept up to two PL-14's which are connected in a 'daisy-chain' configuration. An optional PL-5 remote is also available for Infrared control of the PL-14. Alternatively a custom or 3rd party 0-10v controller can be wired to the "REMOTE Z1" and/or "REMOTE Z2" connectors on the rear of the unit.

Q: I want to change some of the processors software parameters?

A: These options can be accessed by holding down Z1 select buttons whilst powering the unit.

- Mic ducking attenuation, hold and release speeds.
- Music cross fade speed.
- Juke box attack, hold and release speed.

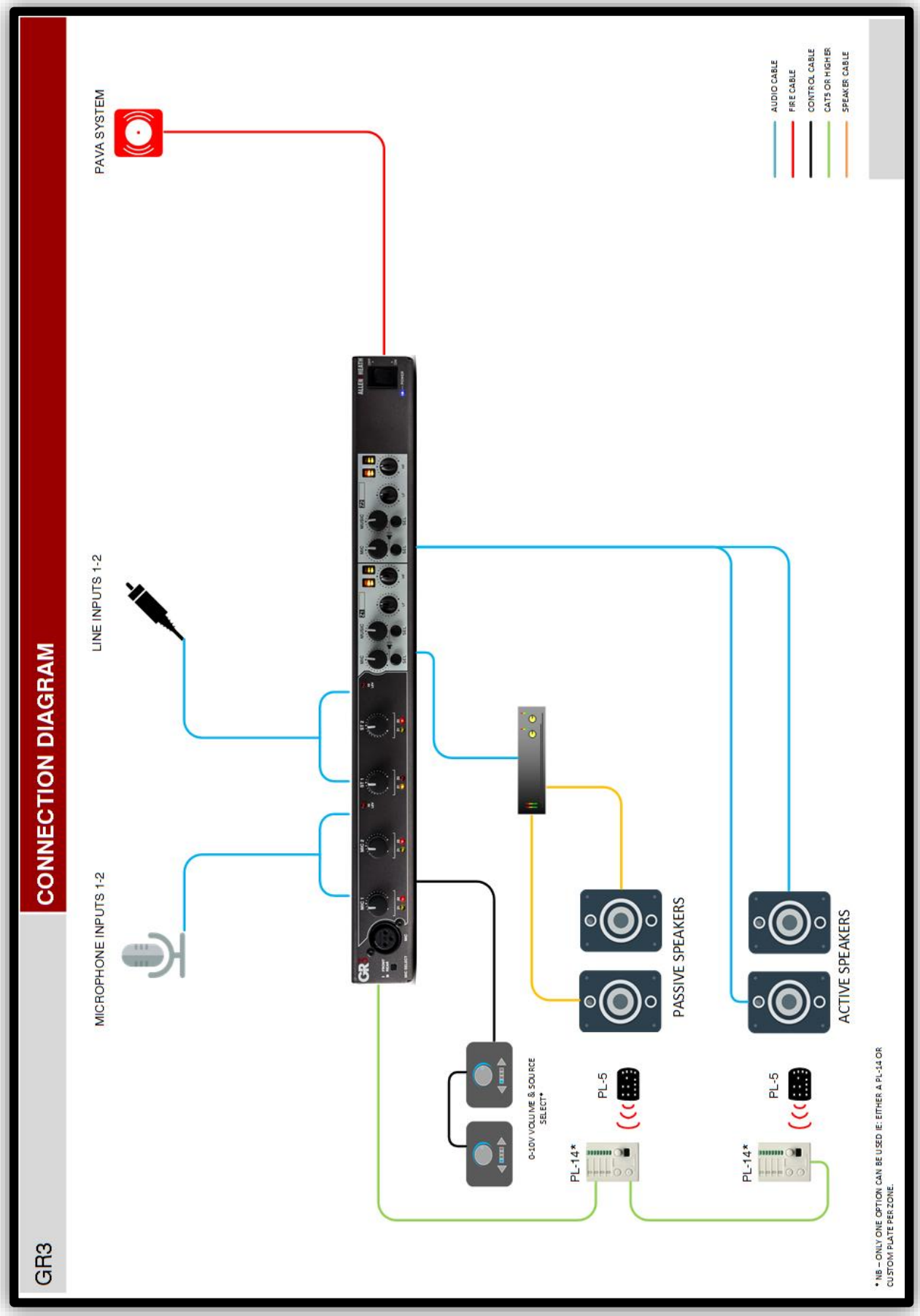
9 Block Diagram



10 Specifications

Microphone Inputs	
Mic Input Sensitivity (Gain = Min)	0dBu
Mic Input Sensitivity (Gain = Max)	-50dBu
Mic Level control (Max)	+5dB
Mic Level control (Min)	-80dB
Mic HPF -3dB	150Hz
Mic EQ LF	+/- 15dB fc = 80Hz
Mic EQ HF	+/-15dB fc = 8kHz
Mic Frequency Response 20Hz – 20kHz	+/-1dB
Mic THD+n @0dBu in 1kHz	0.004% 22-22kHz
Mic THD+n @-30dBu in 30dB gain 1kHz	0.005% 22-22kHz
Mic Hi Level warning LED (Unity gain)	+18dBu
Clip level (Unity gain)	+21dBu
Stereo Inputs	
ST Input Sensitivity (Gain link OFF)	0dBu
ST Input Sensitivity (Gain Link ON)	-10dBu
ST Level control (Max)	+6dB
ST Level control (Min)	-76dB
ST Frequency response 20Hz – 20kHz	+/-0.5dB
ST THD+n @-10dBu in 1kHz	0.015% 22-22kHz
ST THD+n @0dBu in 1kHz	0.035% 22-22kHz
Crosstalk from unselected channel	-75dB @ 1kHz
Zone Outputs	
Main Zone Level control (Max)	0dB
Main Zone Level control (Min)	-74dB
Main Zone Hi Lev LED (Unity gain)	+18dBu
Main Zone EQ LF	+/-15dB fc = 80Hz
Main Zone EQ HF	+/-15dB fc = 8kHz
Main Zone Clip level (Unity gain)	+21dBu
Noise	
ST Input to Main Zone output (Unity)	-90dBu 22-22kHz
Mic Input routed at Min gain as well	-88dBu 22-22kHz
Mic Input routed at Max gain	-77dBu 22-22kHz (150R source)
Power Consumption	
GR3 unit (no remote attached)	15W
Weights & Dimensions	
Height	48mm (1.9”)
Length	242mm (9.5”)
Width	438mm (17.2”)
Weight	3.4kg (7.5lbs)

11 Connection Diagram



12 Application Examples