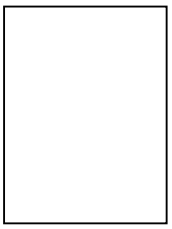
ALLEN&HEATH



GR05

SOUND CONTRACTOR SERIES

AUDIO ZONE MIXER
2 MICROPHONE INPUTS
3 STEREO LINE INPUTS
4 ZONE OUTPUTS
REMOTE CONTROL
DUCKING
INSTALLER ASSIGNABLE

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USER GUIDE

INSTALLATION

Publication AP3181

LIMITED ONE YEAR WARRANTY

This product has been manufactured in the UK by ALLEN & HEATH and is warranted to be free from defects in materials or workmanship for a period of one year from the date of purchase by the original owner.

To ensure a high level of performance and reliability for which this equipment has been designed and manufactured, read this User Guide before operating.

In the event of a failure, notify and return the defective unit to ALLEN & HEATH or its authorised agent as soon as possible for repair under warranty subject to the following conditions

CONDITIONS OF WARRANTY

The equipment has been installed and operated in accordance with the instructions in this User Guide

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.

Any necessary adjustment, alteration or repair has been carried out by ALLEN & HEATH or its authorised agent.

The defective unit is to be returned carriage prepaid to ALLEN & HEATH or its authorised agent with proof of purchase.

Units returned should be packed to avoid transit damage

These terms of warranty apply to UK sales. In other territories the terms may vary according to legal requirements. Check with your ALLEN & HEATH agent for any additional warranty which may apply.

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CE This product complies with the European Electromagnetic Compatibility Directives 89/336/EEC & 92/31EEC and the European Low Voltage Directives 73/23/EEC & 93/68EEC.

Manufactured in England by: ALLEN&HEATH

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INTRODUCTION

This User Guide provides a quick reference to the installation and operation of the ***GR05*** sound contractor audio mixer. For further information on the basic principles of audio system engineering please refer to one of the specialist publications available, or to your audio equipment dealer.

We refer to two types of user in this guide: The **Installer** configures the unit for the application and is assumed to have technical knowledge in audio system interconnection and setup. The **Operator** is the day to day user of the unit and does not require technical knowledge. This guide provides the technical information required by the installer.

A Configuration Sheet is included on the rear cover of this guide so that the user configuration may be logged. One side logs the internal link and trimmer settings providing a record for the installer. The other side logs the control and connector assignment and is suitable to be copied as an instruction sheet for the operator.

Whilst we believe the information in this guide to be reliable we do not assume responsibility for inaccuracies. We also reserve the right to make changes in the interest of further product development.

SAFETY WARNING !

Mains voltage is dangerous and can kill. Mains voltage is present within the unit. Do not remove the cover while mains is connected. Do not carry out any work within the unit while it is powered except for installation calibration. High voltage components are insulated for safety but should not be touched with power applied. Do not attempt to remove the main circuit assembly from the chassis. Refer service work to qualified service personnel only.

To ensure your safety the mains earth is connected to the chassis through the power lead. **Do not remove the mains earth connection**.

PRECAUTIONS

MAINS VOLTAGE

The mains voltage setting is factory wired and is marked on the rear panel. Check that this matches your local mains supply. Ensure that the mains lead is fitted with the correct safety approved mains plug.

VENTILATION

The rear panel and top panel may run slightly warm. This is normal. Do not completely cover the unit. Ensure that there is adequate air flow around the unit.

OPERATING ENVIRONMENT

Protect from excessive dirt, dust, heat or cold and vibration when operating, shipping or storing the unit.

MOISTURE

Avoid liquid spillage and exposure to rain and moisture. Should the unit become wet switch off and remove mains power immediately. Allow the unit to dry out completely before switching on again.

CLEANING

Avoid the use of chemicals, abrasives and solvents. The panels are best cleaned with a soft brush and dry lint-free cloth.

AUDIO CONNECTIONS

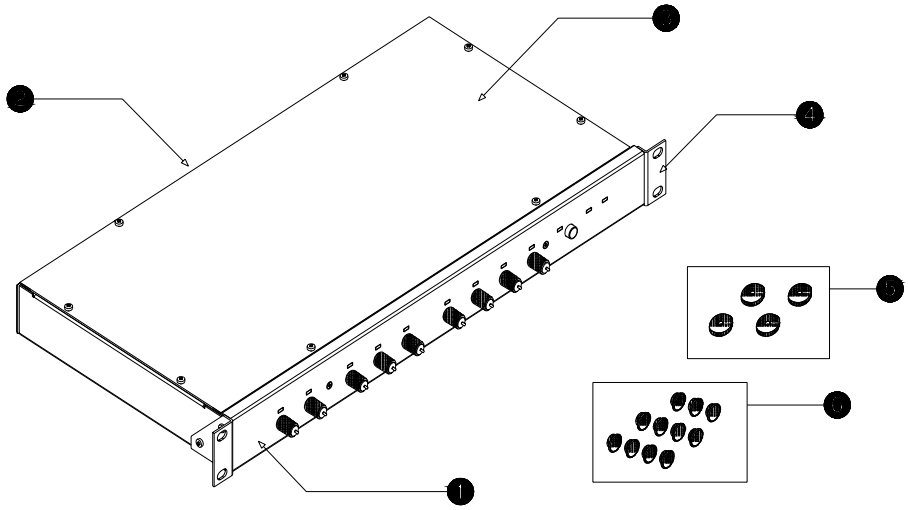
Do not connect sources of AC or DC power or the output of power amplifiers directly to the audio input or output connectors.

WELCOME TO THE GR05

The ***GR05*** is a 1U rack or desk mount audio zone mixer for installation applications such as paging and background music systems in restaurants, retail outlets, leisure centres, clubs, theatres, business offices etc. It has a flexible architecture which allows easy custom configuration by the installer to exactly suit the requirements of the installation. Once installed it presents a simple control interface for day to day operation by non-technical staff.

The ***GR05*** has 2 microphone inputs and 3 stereo line inputs. These can be assigned to 4 zone outputs configurable in mono or stereo pairs and controlled by front panel or remote level controls. Ducking, EQ and muting can be configured. Further inputs and outputs are available using the expander system.

The next page summarises the facilities which can be configured by the installer to satisfy the needs of the installation.



❶ CONTROL PANEL PAGE 10

This has a simple layout for easy day to day control of audio levels and zone switching by non-technical operators. 3-colour LED indicators provide dynamic indication of signal levels and system status.

The installer decides which controls are available to the operator. Others can be removed, configured as preset trimmers or locked out to prevent accidental operation. Large write-on blocks allow custom identification of the controls.

❷ CONNECTOR PANEL 11

Pluggable connectors are provided for all audio inputs and outputs, the expander / remote facility, and mains input. This allows the unit to be installed and removed independent of the wiring harnesses.

The mains power switch is rear panel mounted to prevent illegal operation. The unit serial number and mains voltage setting is marked on the rear panel.

Gain trimmers are included to match the microphone levels to the unit. These can be configured for easy knob access, preset trimmers, or locked out once set.

❸ COVER 6

The top cover is removable to allow the installer to configure the internal links and trimmers. The system block diagram, preset configuration map, and connector details are printed on the cover for installer reference. The cover can be inverted when refitted so that the print is hidden from view. This may be preferred when the unit is desk mounted.

❹ RACK EARS 8

The two rack ears allow the unit to be mounted in a standard 19” rack case along with other equipment in the system. For desktop operation these may be unscrewed and removed.

❺ PLASTIC FEET 8

A set of plastic feet is supplied with the unit for desktop use.

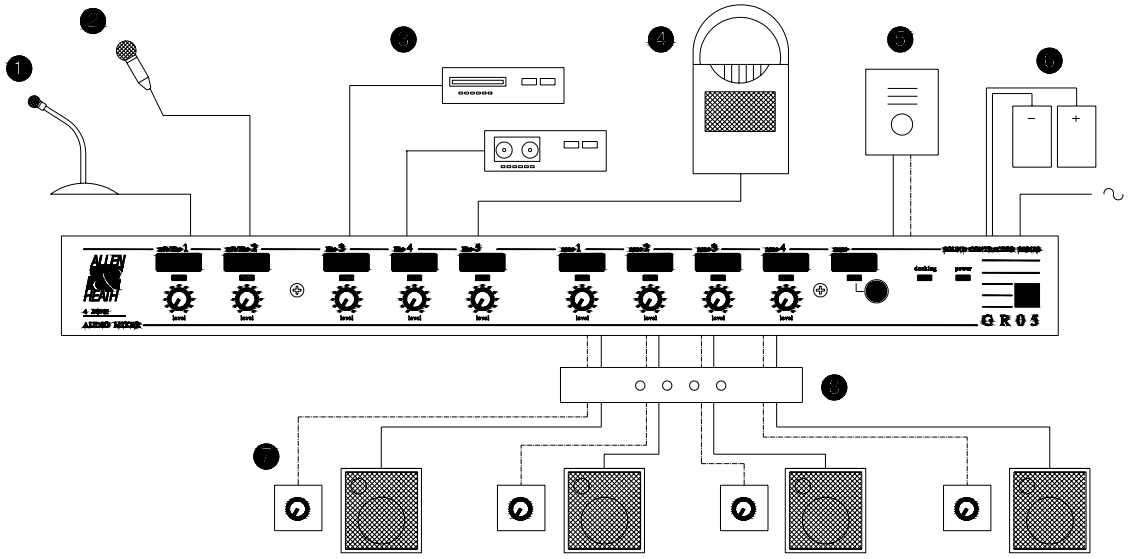
❻ HOLE PLUGS 10

A bag of hole plugs is provided for front and rear panel control lockout.

THE SYSTEM

The following diagram shows the ***GR05*** in a typical sound contractor installation. This combines paging microphones with background music sources feeding up to 4 speaker zones. An alarm interface and battery backup are included to ensure crowd control in the event of a fire or power failure. Remote level controls are wall mounted for local speaker control.

Each installation has its own particular combination of input/output and control requirements. For this reason the ***GR05*** offers a uniquely flexible architecture that can be installer configured for each application. We recommend that you take time to fully understand the full capabilities of this unit and carefully plan the most suitable configuration.



❶ PAGING MICROPHONE 12,18

This is the microphone used by the receptionist to call for or 'page' staff or customers. It is set so that speaking into the mic automatically overrides the background music by reducing its level. This is known as 'voiceover' or 'ducking'.

❷ ANNOUNCEMENT MICROPHONE 12,18

Similar to the paging mic but usually kept behind the bar or counter for occasional announcements or special function use. Can be set to duck music sources, or be itself ducked by the announcer for example when being used as the karaoke mic.

❸ LINE INPUTS 14

These are commonly the cassette or CD inputs for background music. They may be stereo or mono.

❹ JUKEBOX 19

The jukebox provides music selected and paid for by the customer. As such it is a priority source that automatically overrides any other background music playing at the time.

❺ EVACUATION ALARM 19

It is often a safety requirement to link the audio system to the fire alarm for automatic playback of an evacuation message should the alarm be triggered. The pre-recorded signal would override any background music source.

❻ POWER INPUT 9

The ***GR05*** has a built in mains operated power supply. An additional input is provided to connect a backup supply such as a battery unit which automatically takes over should the mains power fail. This is important when the unit is linked to an alarm system as described above.

❼ REMOTE LEVEL CONTROL 17

+10V DC control inputs allow the ***GR05*** VCA output levels to be adjusted by volume controls positioned away from the unit and near the speakers.

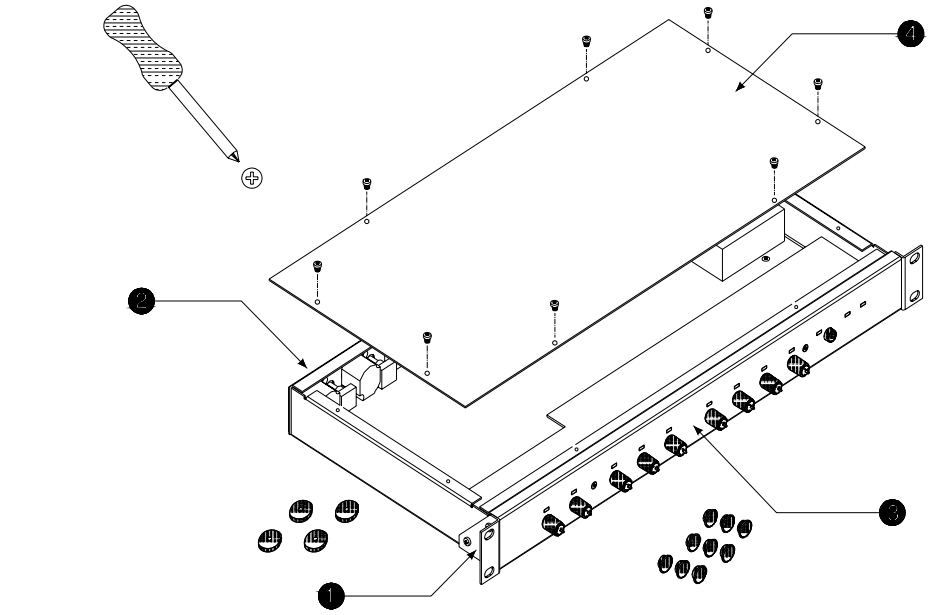
❽ ZONE OUTPUTS 15

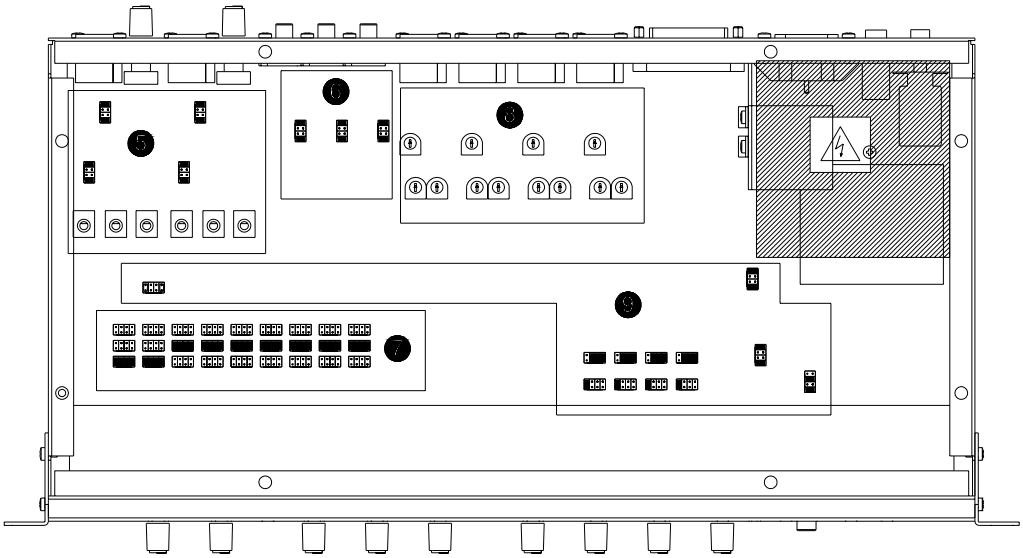
These provide 4 separate feeds to the amplifiers driving the speakers in different areas or 'zones'.

INSTALLATION

Before starting make sure you have read this User Guide and understand the full capabilities of the ***GR05***. Plan the complete system first to decide how the ***GR05*** should be configured. Make sure you know the operating levels of the equipment to be interconnected. To configure the unit you need to remove the top cover and set internal links and trimmers. These adjust input and output level matching, EQ, routing, ducking and level control. To complete the installation configure the front and rear panel controls and set the unit for rack or desk mounting. Log the details on the Configuration Sheet provided at the rear of this guide. Remember to check the complete system for correct operation after configuration.

The next page summarises the installation process. For full details on each stage please refer to the page numbers indicated.





❶ RACK OR DESK MOUNT 8

The ***GR05*** is shipped with the two rack ears fitted. The unit will fit into a 1U space in a standard 19" industrial rack case. Use the bolts provided by the rack supplier to mount the unit in the rack. You can also use the rack ears to mount the unit into a plinth.

For desktop or shelf operation the rack ears can be removed. Plastic feet are provided. These prevent the unit scratching the mounting surface or slipping. Fit these by pressing them into the base of the unit.

❷ PLUG UP THE CONNECTORS 9,12-20

The wiring harnesses can be prewired and installed before the unit is put in place. All connections are pluggable. Connector types are 3-pin XLR for the microphone inputs and zone outputs, RCA phono for the stereo line inputs, and 25-pin D-type for the expander/remote and battery interface. The mains input is on standard 3-pin IEC connector.

Make sure that you allow enough length in the cables for the unit to be removed for configuration.

❸ ASSIGN THE CONTROLS 10,11

The ***GR05*** front panel level controls and rear panel gain trimmers may be set in 3 ways: The knob is fitted for user control, the knob may be removed so that it becomes a preset trimmer adjustable using a slotted screwdriver, or a plug may be fitted locking the control so that it cannot be adjusted by the operator. It is important to assign these so that the operator has access only to those controls which need adjusting during normal daily operation.

Front panel ident blocks are provided so that the controls can be identified according to the application. These can be marked using permanent pen, or adhesive labels.

❹ REMOVE THE COVER

Switch off mains power before removing the cover. To gain access to the configuration links and trimmers remove the 8 crosspoint head screws and lift the top cover away from the unit. Power may be re-applied while adjusting the internal trimmers. **Avoid the internal power supply components.** There are no adjustable parts in the power supply.

❽ MICROPHONE INPUTS 1,2 12

A balanced XLR input for each accepts a microphone or mono line level signal. Adjust the sensitivity using the rear panel gain trimmer. Use the meter LED to check for correct signal level. Internal links provide options for an attenuator pad, phantom power and lo-cut filter. Internal trimmers adjust the EQ providing control of the low frequency and mid/high frequencies, ideal for optimising the tonal response of speech microphones.

❻ LINE INPUTS 3,4,5 14

Each has a pair of RCA phono sockets for Left and Right inputs. For mono sources only one need be used. To mono a stereo source use the routing options as described below. Use the internal jumper links to set the sensitivity for high level +4dBu or low level –10dBV equipment. Check for correct signal level using the meter LEDs.

❼ ROUTING MATRIX 12,14

Internal link options let you route any input to any combination of outputs. For example a stereo line input could be routed to outputs 1 and 2 in mono and to outputs 3 and 4 in stereo, or a microphone could be routed to just one zone only. For each input to each output set the link to 'OFF' for no routing, 'VCA' for routing with level control and ducking, or 'DIRECT' for routing without level control or ducking.

❽ OUTPUTS 15

The 4 outputs are line level on 3-pin XLR impedance balanced connectors for interference rejection on long cable runs. These have internal trimmers that adjust between –10dBV low level and +4dBu high level for signal matching and balance control. A 2band EQ with internal trimmers lets you adjust the low and high frequency response to match the speakers or room acoustics. This can also be used to compensate for the loudness effect when playing background music at low volume.

❾ LEVEL AND DUCKING 16-19

Signals routed direct to the outputs are not affected by level control or ducking. These would include paging microphones, jukebox playback and alarm messages. Signals routed through the VCAs to the outputs are affected by level control and ducking.

Internal link options for each output determine whether the level is controlled from the front panel or by +10V remote. Front panel controls can be grouped for single control of several outputs, for example a stereo zone. The front panel mute switch can be set to control any combination of outputs.

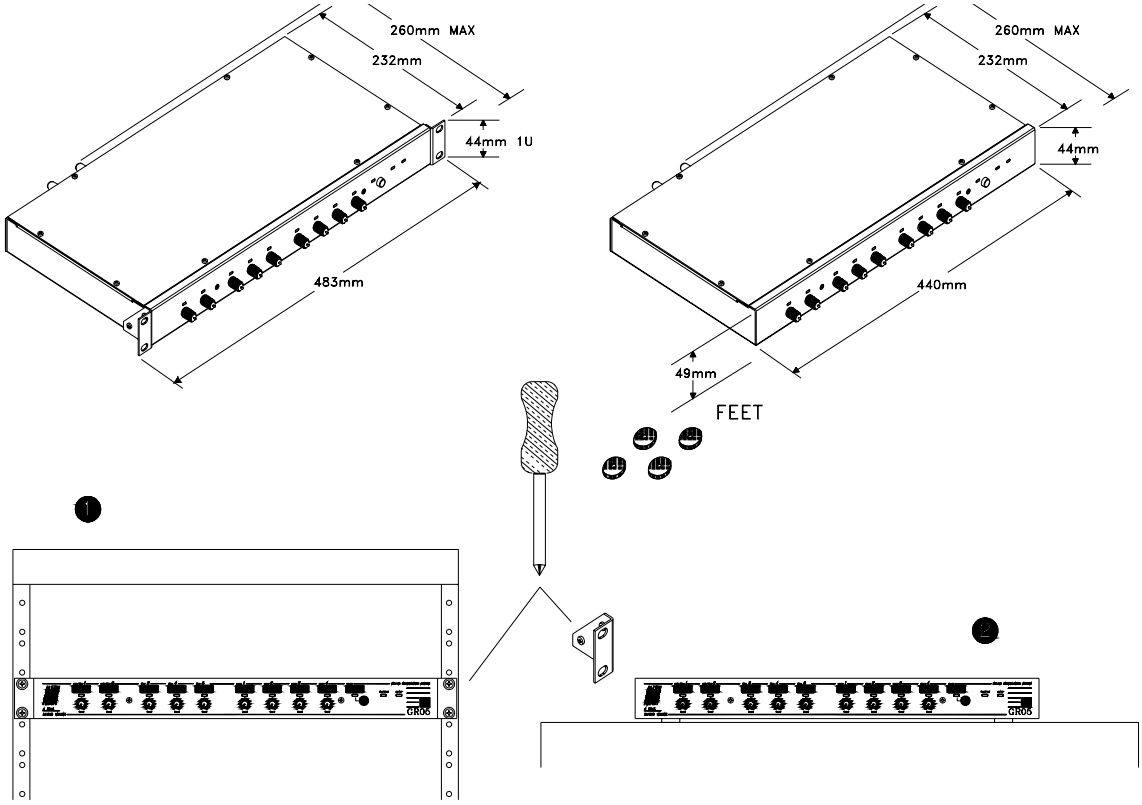
Internal and external ducking can be separately configured to affect any combination of outputs. Internal ducking is triggered by setting links for Mic1 or Mic2 or both. Option links separately set internal and external ducking depth and release time. Ducking can be set to mute rather than reduce the signal, for example with jukebox override.

❿ COMPLETION

After configuring the unit check the system for correct operation. Refit the cover. The cover may be fitted with screened diagram on the inside if required. Log the details on the Configuration Sheet provided at the rear of this Guide.

POSITIONING THE UNIT

The ***GR05*** is built into a compact all steel case. This can fit into a standard 1U 19" rack space with the mounting ears provided. Alternatively the unit can be desk or shelf mounted by removing the ears and fitting plastic feet.



❶ 19" RACK MOUNT

The ***GR05*** is shipped with the two rack mount ears already fitted. This enables the unit to be mounted in a 1U space in a standard 19" industrial rack case.

Use the mounting fixings provided by the supplier of the rack case. These are usually black or chrome plated M6 bolts that seat in black plastic cups to prevent damage to the equipment panels. All four mounting fixings should be fitted.

Avoid positioning the unit or audio cables too close to equipment such as power amplifiers, power supplies or computer monitors which emit high levels of radiated interference.

Avoid positioning the unit directly above or below equipment which generates large amounts of heat such as power amplifiers or power supplies.

❷ DESKTOP OR SHELF MOUNT

Desktop or shelf mounting may be required where the unit is operated by a receptionist or bar staff.

To configure the ***GR05*** for desktop or shelf mounting remove the two rack ears. Use a crosspoint screwdriver to remove the 3 fixing screws on each side. Fit the 4 plastic feet supplied separately with the unit. Press the plastic rivets in the centre of the feet into the holes on the underside of the unit.

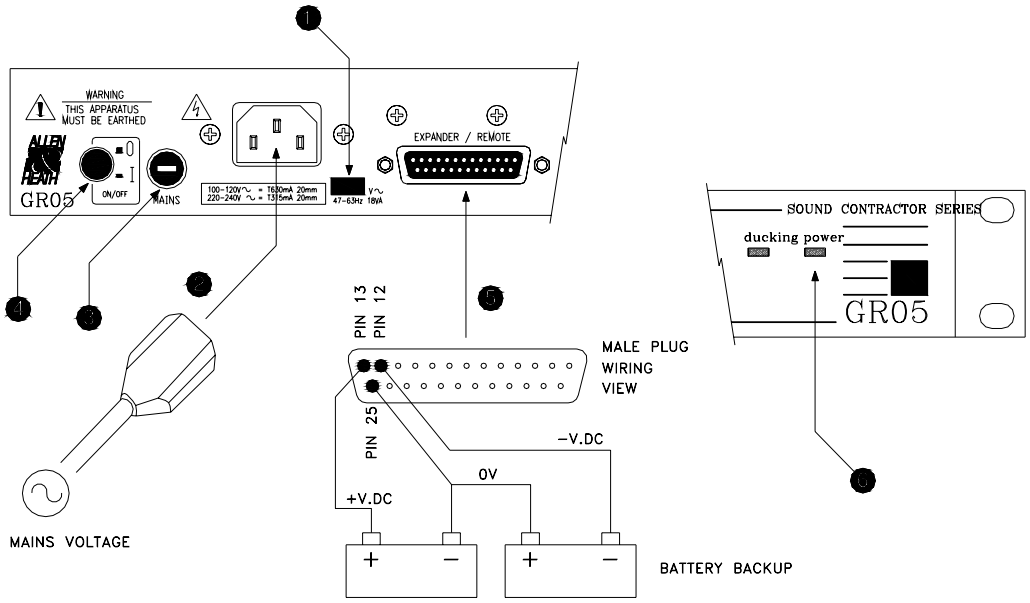
The top cover can be inverted so that the screened diagram is hidden from view. This may be preferred where the top of the unit is seen by the staff or customers.

Allow enough space behind the unit for the connecting plugs and cables. Do not completely cover the unit. To prevent excessive heat build up ensure adequate ventilation around the unit.

CONNECTING POWER

The ***GR05*** has a built in mains operated power supply unit. This converts and conditions the mains voltage to the DC voltages required to power the circuits. An additional DC power input is available on the rear panel expander/remote connector. This lets you connect a backup power supply such as a battery unit which automatically takes over in the event of a mains power failure. Check the requirements of the installation regarding the specification of safety and power systems.

Refer to the SAFETY WARNING ! and PRECAUTIONS on page 3 of this guide. Also read the safety warnings printed on the unit top cover.



❶ MAINS VOLTAGE SETTING

The factory set voltage setting is marked in this box. **Do not switch the unit on if this is not the same as your local mains voltage**. In this event please refer to your dealer or service agent.

❷ MAINS INPUT CABLE

The ***GR05*** is supplied with a separate 1.8 metre long IEC mains cable with fitted moulded mains plug suitable for the supply in your area. If this is not the case please refer to your dealer or service agent.

❸ MAINS FUSE

This fuse provides protection should the power unit fail. **Always replace this fuse with the correct type and rating as specified on the rear panel.**

❹ MAINS ON/OFF SWITCH

This switch is rear panel mounted to prevent accidental or illegal user operation. Press to switch the unit on or off.

❺ BATTERY BACKUP INPUT

The expander/remote connector includes 3 pins for connection to an external dual rail DC power supply unit or battery backup system. Input voltage range is +/- 12 to 15V DC:

pin13 = +V, pin12 = -V, pin25 = 0V

Should the mains power supply fail or be switched off the backup supply will automatically take over. There is no interruption to the operation of the unit.

❻ POWER INDICATOR

The front panel power indicator LED displays four power conditions:

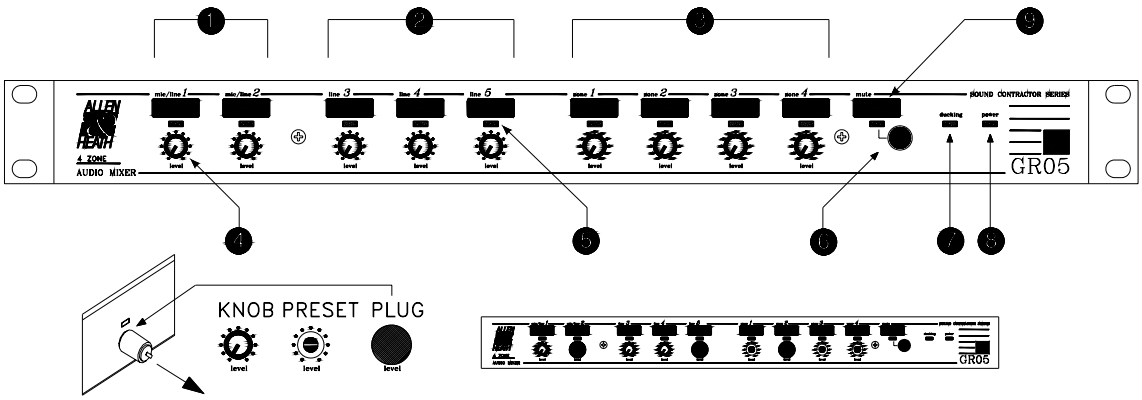
Off	=	No power applied
Green	=	Mains power on only
Red	=	Backup power on only
Yellow	=	Mains and backup power on

❼ EARTHING

Do not remove the earth connection from the mains cable.

FRONT PANEL

The front panel control layout is deliberately uncluttered and simple. These are the controls that are used by the non-technical operator who does not need to understand how the unit has been configured or what the controls do technically. Control function and access can be configured by the installer. A row of 3-colour LED indicators display the signal levels and system status. These are invaluable for system setup and diagnostics.



❶ MIC/LINE INPUTS 1,2

The sensitivity of the input stage is matched to the connected microphone using the rear panel gain trimmer. The front panel level control adjusts the level of the signal to all routed outputs. Fully anti-clockwise is signal off, clockwise signal on. A 3-colour LED displays pre-level input signal status.

❷ LINE INPUTS 3,4,5

The sensitivity of the input stage is matched to the connected equipment using the internal jumper links. The front panel level control adjusts the level of the signal to all routed outputs. Fully anti-clockwise is signal off, clockwise signal on. A 3-colour LED displays pre-level input signal status.

❸ ZONE OUTPUTS 1,2,3,4

These front panel controls adjust the level of the output signal routed through the VCA paths. Fully anti-clockwise is signal off, clockwise signal on. They may be disabled, for example when using remote level control. They may also be linked for stereo or group control. A 3-colour LED displays post-level output signal status.

❹ LEVEL CONTROL

Input level controls are always active. Output level controls may be disabled or grouped by internal links. All controls may be set in 3 ways:

Knob fitted for operator control
Knob removed for screwdriver preset
Hole plug fitted to lock out control

To remove the knob simply pull it forwards. To refit the knob align the knob hole with the flat on the control spindle.

❺ SIGNAL METER

A 3-colour LED meter for each input and output displays the signal level. Input signals are displayed before the level control, output signals after the level control.

Green = Signal present (from –12dB)
Yellow = Nominal 0dB signal
Red = Peak 5dB before clipping

❻ OUTPUT MUTE SWITCH AND INDICATOR

This front panel switch turns the outputs on or off. The switch function can be disabled for selected outputs by setting internal option links.

Off = Switch disabled
Green = Selected outputs on
Red = Selected outputs muted (off)

❼ DUCKING STATUS INDICATOR

Displays the status of the ducking system.

Off = No ducking active
Green = Internal ducking only active
Red = External ducking only active
Yellow = Both internal and external active

❽ POWER STATUS INDICATOR

Displays the status of the power system.

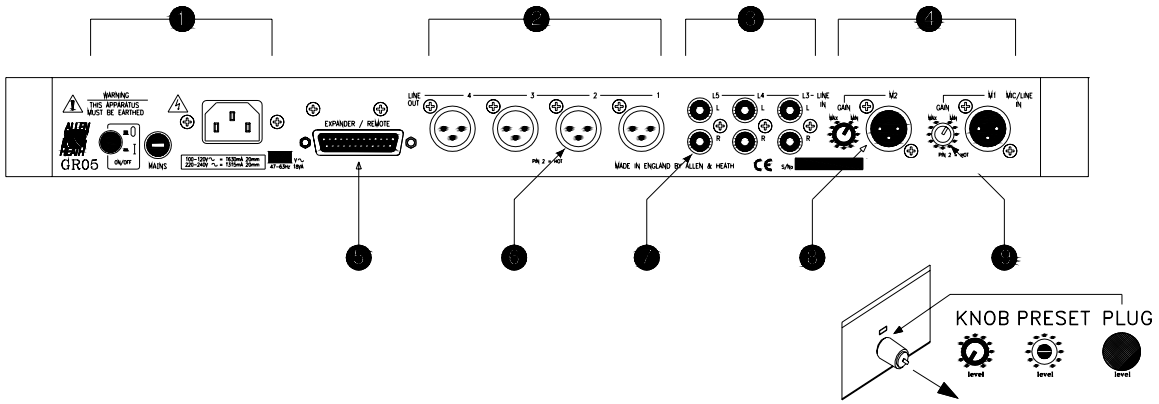
Off = No power applied
Green = Mains power on only
Red = Backup power on only
Yellow = Mains and backup power on

❾ CONTROL IDENT BLOCKS

These blocks can be marked or labelled for control identification.

REAR PANEL

The audio input and output connectors, expander/remote interface connector, and mains input connector, fuse and switch are located on the rear panel. All connections are pluggable to allow pre-wiring of the cables before the unit is installed. The microphone input gain trimmers are also located on the rear to allow easy readjustment of mic sensitivity by the installer but not the operator. The factory set mains voltage and unit serial number are marked on the rear panel.



❶ MAINS INPUT

Plug in the supplied IEC mains cable. Check that the local mains voltage matches the voltage marked on the rear panel. Press the switch to turn the power on or off. The mains input fuse is accessible here.

❷ OUTPUT CONNECTORS

Each of the 4 outputs has a 3-pin male XLR connector. This is impedance balanced to prevent interference pickup on long cable runs. The outputs can feed both balanced and unbalanced equipment. The operating level is set between low –10dBV and high +4dBu by adjusting internal trimmers.

❸ LINE INPUT 3,4,5 CONNECTORS

These are dual RCA phono sockets to accept the Left and Right signals of stereo sources. Most CD, tape and background music equipment uses RCA type connectors. Plug into either input for mono sources. Sensitivity is set to low –10dBV or high +4dBu using internal jumper links.

❹ MICROPHONE INPUT 1,2 CONNECTORS

These inputs are electronically balanced on 3-pin female XLR connectors wired pin2 hot. The input can be wired for unbalanced sources. Phantom power can be internally selected. For high output microphones or line level sources set the internal jumper links for pad selection. The sensitivity of the input stage is matched to the microphone by adjusting the rear gain trimmer for correct reading on the front signal meter.

❺ EXPANDER / REMOTE CONNECTOR

This 25-pin D-type female connector provides a set of inputs and outputs for system expansion and special functions such as alarm interface. Also accessible are the output level remote control inputs together with a +10V DC reference and the opto-isolated external ducking trigger input. The pin configuration is marked on the top cover.

❻ OUTPUT XLR CONNECTOR

3-pin male impedance balanced XLR connector.

Pin 1 = 0V ground
Pin 2 = Signal + (hot)
Pin 3 = Signal – (cold)

❼ LINE INPUT RCA CONNECTOR

Standard pin type RCA phono connector for unbalanced connection.

❽ INPUT XLR CONNECTOR

3-pin female electronically balanced XLR connector.

Pin 1 = 0V ground
Pin 2 = Signal + (hot)
Pin 3 = Signal – (cold)

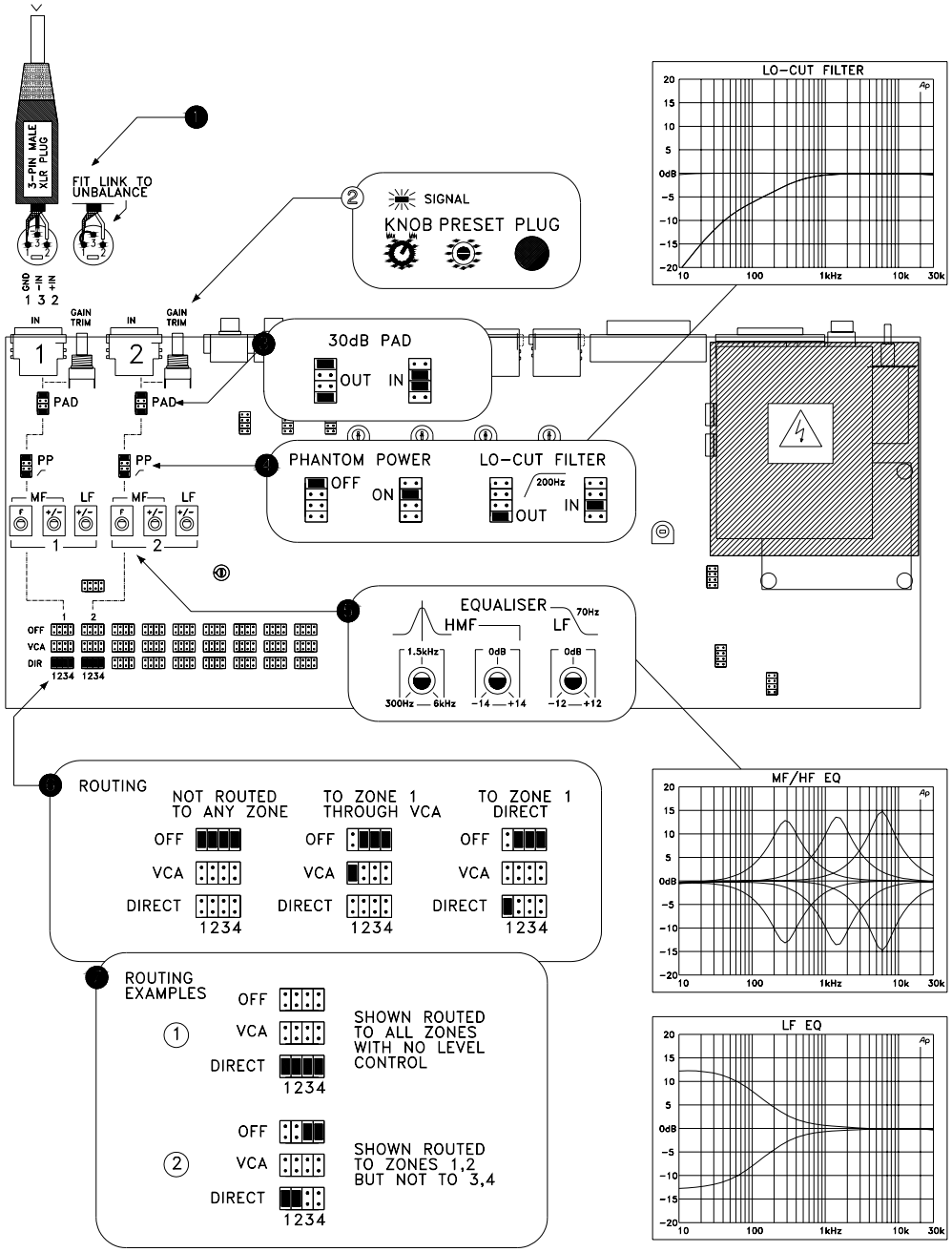
❾ MICROPHONE GAIN TRIMMER

Sets the gain of the microphone pre-amplifier. This control can be set as a preset or locked out after adjustment.

MICROPHONE/LINE INPUTS 1,2

This section describes the installer configuration of the microphone inputs 1 and 2. For each input you can select an attenuator pad, phantom power, lo-cut filter, adjust equalisation and configure the routing to the outputs. If microphones are not required you can still use these inputs for additional mono line sources.

To configure the unit switch off power, remove the top cover and adjust the links and trimmers as shown. Power may be applied for setting up the trimmers. Avoid the power supply components shown greyed out on the diagram.



❶ INPUT CONNECTOR

Plug in a standard microphone cable. Always use good quality 2-core screened cable. Use a 3-pin male XLR plug at the ***GR05*** input.

Pin 1 = 0V ground (screen)
Pin 2 = Signal + (cold)
Pin 3 = Signal – (cold)

For unbalanced line level sources connected with 2-wire cable link Pin 3 to Pin 1 in the XLR plug.

If you have problems with ground loop induced audible hum and buzz then first check that each piece of equipment has its own separate path to ground. If that is the case then operate ground lift switches on connected equipment in accordance with the instruction manuals. Alternatively disconnect the cable screen at the ***GR05*** input. **Do not remove the *GR05* mains earth connection.**

❷ GAIN TRIM

Adjust the rear panel gain trimmer for nominal 0dB meter reading on normal microphone speech or source signal. This is indicated by the front panel meter LED flashing between green and yellow. If the meter flashes red (peak) then back off the trimmer or select the attenuator pad.

Once adjusted the gain trim knob can be removed for preset control or locked out by fitting the hole plug.

❸ 30dB ATTENUATOR PAD

Set the two links as shown to the PAD IN position for high level input signals. Re-adjust the gain trim if necessary.

❹ PHANTOM POWER AND LO-CUT FILTER

For microphones that require phantom power set the PHANTOM POWER link to ON as shown. This feeds +15V DC via the signal + and – cables to the microphone. Most powered microphones will operate at this voltage. If you are using a studio type microphone that requires more than +15V then connect an external phantom power unit available from your microphone supplier.

To avoid damage to the microphone always use balanced cables when using phantom power. No harm will be done to non powered balanced microphones if phantom power is selected as long as balanced connections are used.

Selecting the LO-CUT FILTER attenuates frequencies below 200Hz to reduce microphone handling noise, desk noise, proximity popping and other low frequency interference. This is advisable when connecting paging and announcement microphones. To select the filter set the link to IN as shown.

❺ EQUALISER

There are 3 trimmers for each microphone input. Set to the mid position the frequency response is flat. Adjusting the controls clockwise boosts while anticlockwise cuts the selected frequencies.

The two left hand controls affect the mid to high frequencies providing a bell shaped response centred on the frequency which can be selected between 300Hz and 6kHz. Use this to tune out problem resonances associated with the microphone and room acoustics. You can also boost selected frequencies to enhance the clarity of speech, especially in difficult acoustic environments such as a swimming pool or sports hall.

The right hand control affects the low frequencies with a shelving response. Although the shelf peaks at 70Hz frequencies up to 600Hz can be affected. Use this in conjunction with the lo-cut filter to tailor the low end response.

We recommend you experiment with the EQ to achieve the best result for the application. For example, while you may wish to adjust for quality full frequency reproduction of speech in a conference room, a brighter bass cut sound may be more appropriate in a noisy meeting hall.

❻ ROUTING

Each input can be routed to any combination of outputs via two signal paths. Routed through the VCA path the signal is affected by the output level controls and ducking if selected. Routed DIRECT the signal is not affected by output level control or ducking.

Route via the DIRECT path for priority sources such as announcement microphones or where the source is to duck other signals such as paging overriding background music. Any source which is part of an alarm or evacuation announcement system should be routed DIRECT.

Note that sources routed DIRECT do not have to cause ducking. Ducking is assigned separately.

Make sure that each routing link is correctly fitted. If routing to a particular output is not required then set the link to the OFF position as shown.

❼ ROUTING EXAMPLES

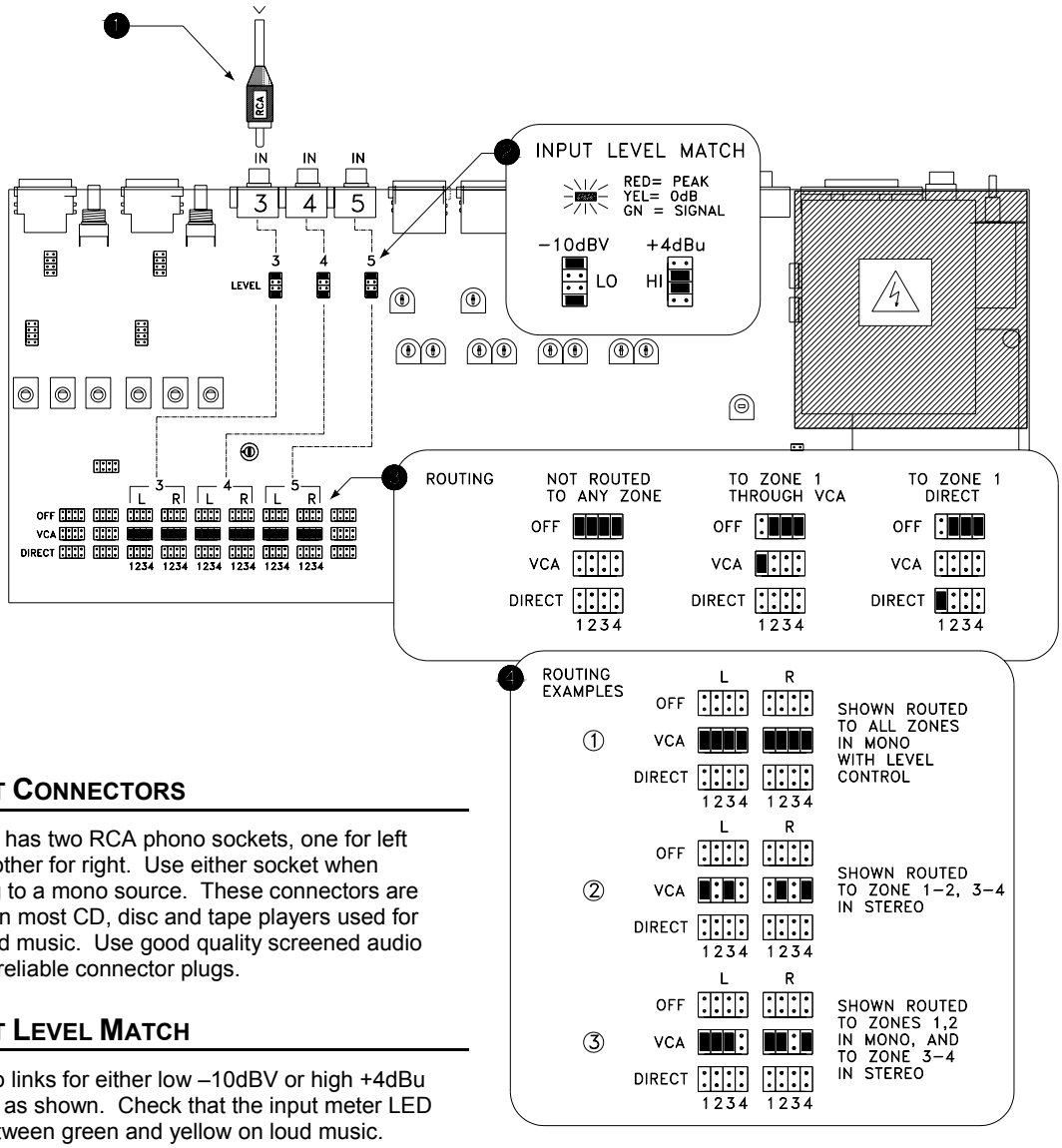
Example **1** shows the input routed to all 4 outputs via DIRECT. This is typical of a paging microphone which would also be set to cause ducking. Paging announcements would be heard in all zones.

Example **2** shows the input routed to outputs 1 and 2 but not to 3 and 4. An example is a local announcement microphone in the dining area. Here the announcements would be heard in the dining area itself and the nearby waiting area or bar. The announcements would not be heard in the reception area or corridors.

LINE INPUTS 3,4,5

This section describes the installer configuration of the stereo line inputs 3, 4 and 5. For each input you can set the input sensitivity and configure the routing to the outputs. You can choose whether the channel is stereo, mono or combines two inputs into mono.

To configure the unit switch off power, remove the top cover and adjust the links as shown. Avoid the power supply components shown greyed out on the diagram.



❶ INPUT CONNECTORS

Each input has two RCA phono sockets, one for left input, the other for right. Use either socket when connecting to a mono source. These connectors are standard on most CD, disc and tape players used for background music. Use good quality screened audio cable and reliable connector plugs.

❷ INPUT LEVEL MATCH

Set the two links for either low –10dBV or high +4dBu equipment as shown. Check that the input meter LED flashes between green and yellow on loud music. Reposition the links if the meter reads too low or if the red peak indicator flashes.

❸ ROUTING

Each input can be routed to any combination of outputs via the VCA or DIRECT signal paths. The left and right inputs each have their own routing links. This lets you route each to any combination of outputs so that you can create mono and stereo feeds as required. Make sure that all the routing links are fitted correctly. Set unrouted links to the OFF position.

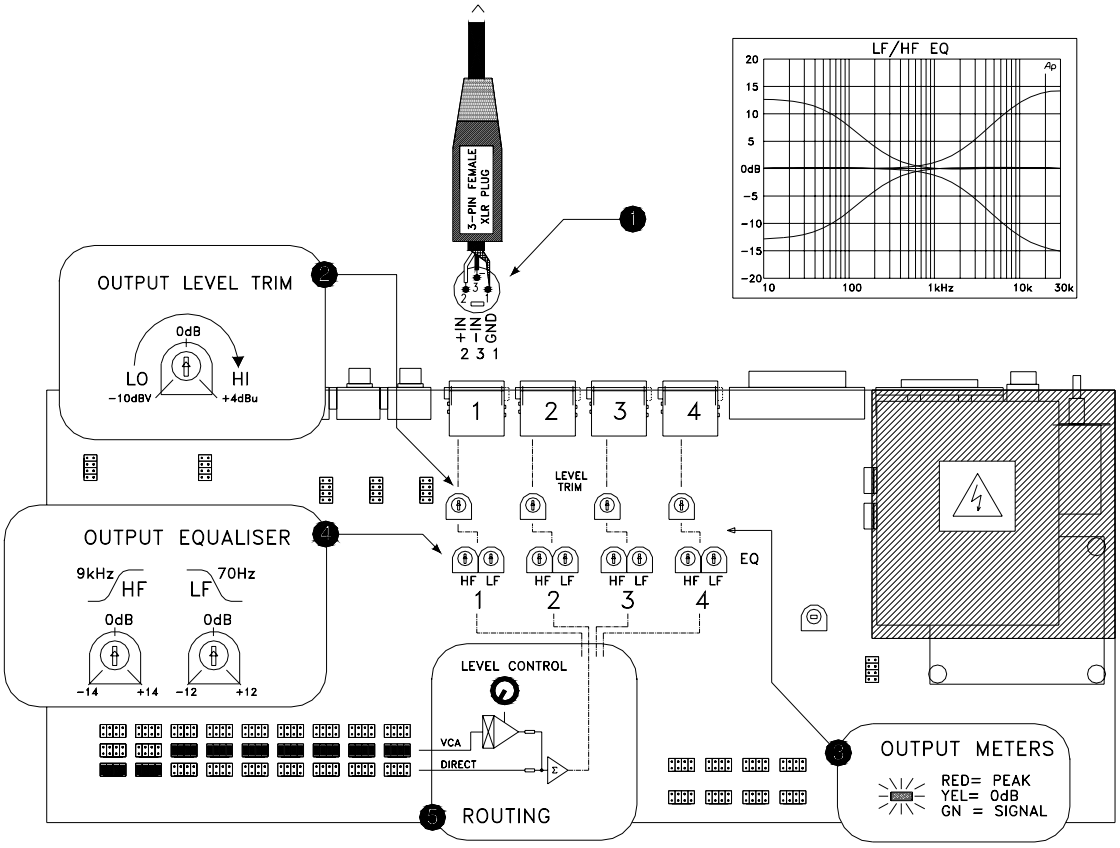
❹ ROUTING EXAMPLES

These examples show how the routing links can be assigned to provide combinations of mono and stereo zones. It is usual for background music sources to be routed via the VCA path so that they are affected by level control and ducking. One exception is the jukebox which would normally by routed direct so that it can duck or mute other music sources.

ZONE OUTPUTS 1,2,3,4

This section describes the installer configuration of the zone outputs 1,2,3,4. For each output you can adjust the level trim and equalisation. Front panel signal metering lets you keep a check on signal activity and warns of overload. The outputs provide line level signals which plug into the power amplifiers which drive the loudspeakers. Do not connect direct to speakers.

To configure the unit switch off power, remove the top cover and adjust the trimmers as shown. Power may be applied when setting up the trimmers. Avoid the power supply components shown greyed out on the diagram.



❶ OUTPUT CONNECTORS

These are 3-pin male XLR connectors. Use female XLR plugs and good quality 2-core screened cable. The outputs are impedance balanced which means they provide interference rejection on long cable runs when plugged into balanced equipment. They can also work with unbalanced equipment without problem as long as the cables are kept short (less than 10 metres.

Pin 1 = 0V ground (screen)
Pin 2 = Signal + (cold)
Pin 3 = Signal – (cold)

❷ OUTPUT LEVEL TRIM

The output level can be set between low –10dBV and high +4dBu by adjusting internal trimmers. Mid position provides 0dBu output. You can also use these trimmers to adjust the balance between the outputs.

❸ OUTPUT METERS

3-colour LED meters display the output signal level after the level controls but before the level trimmers. For best performance the connected amplifier sensitivity should be adjusted for the louder signals flashing between green and yellow on the meters. Red warns 5dB before signal overload.

❹ OUTPUT EQUALISER

Use the internal trimmers to adjust the low frequency and high frequency response of each output. Centre position gives a flat response. Boosting the EQ can compensate for the loudness effect of low level background music.

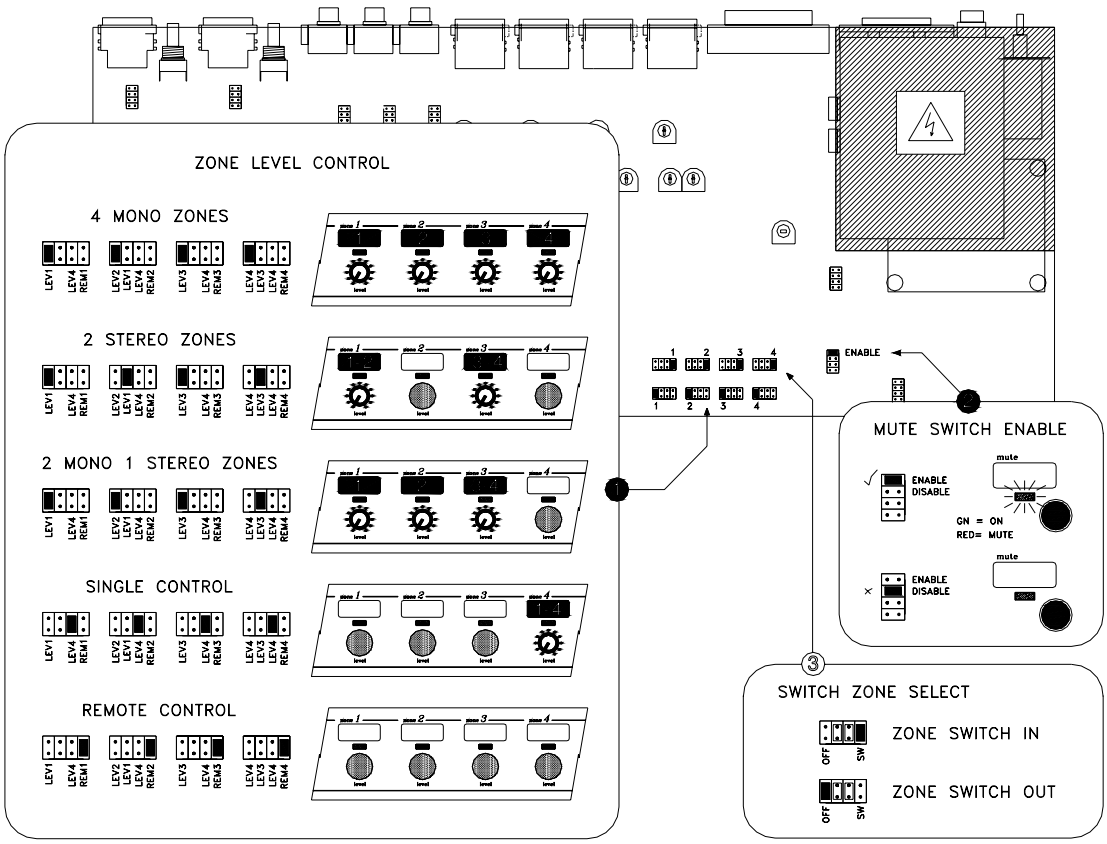
❺ ROUTING

This shows the two paths each input signal can take to each output, VCA or DIRECT.

LEVEL CONTROL

This section describes the installer configuration of the VCA path level control. For each output you can select which front panel control affects the level. This lets you control stereo zones or groups of outputs with a single level control. You can also assign which outputs will be turned on or off by the front panel switch. The switch function can be disabled if required.

To configure the unit switch off power, remove the top cover and adjust the jumper links as shown. Avoid the power supply components shown greyed out on the diagram.



❶ LEVEL CONTROL CONFIGURATION

Each output has a 4 position link which determines how the VCA level is controlled. Three positions set which front panel control affects the level. The fourth position selects remote control. If remote is selected the front panel controls will have no effect. Fit the link in one of the available positions.

The examples show how the unit can be configured for individual or grouped level control. Use the hole plugs provided to blank out the controls which are not used. This system avoids operator confusion by locking away redundant controls.

❷ MUTE SWITCH ENABLE

The front panel on/off (mute) switch is enabled or disabled by setting this link as shown. When disabled the switch LED is off. When enabled the LED is either green (on) or red (off). Depending on the installation you may wish to turn all outputs, or just selected outputs, on or off with this switch.

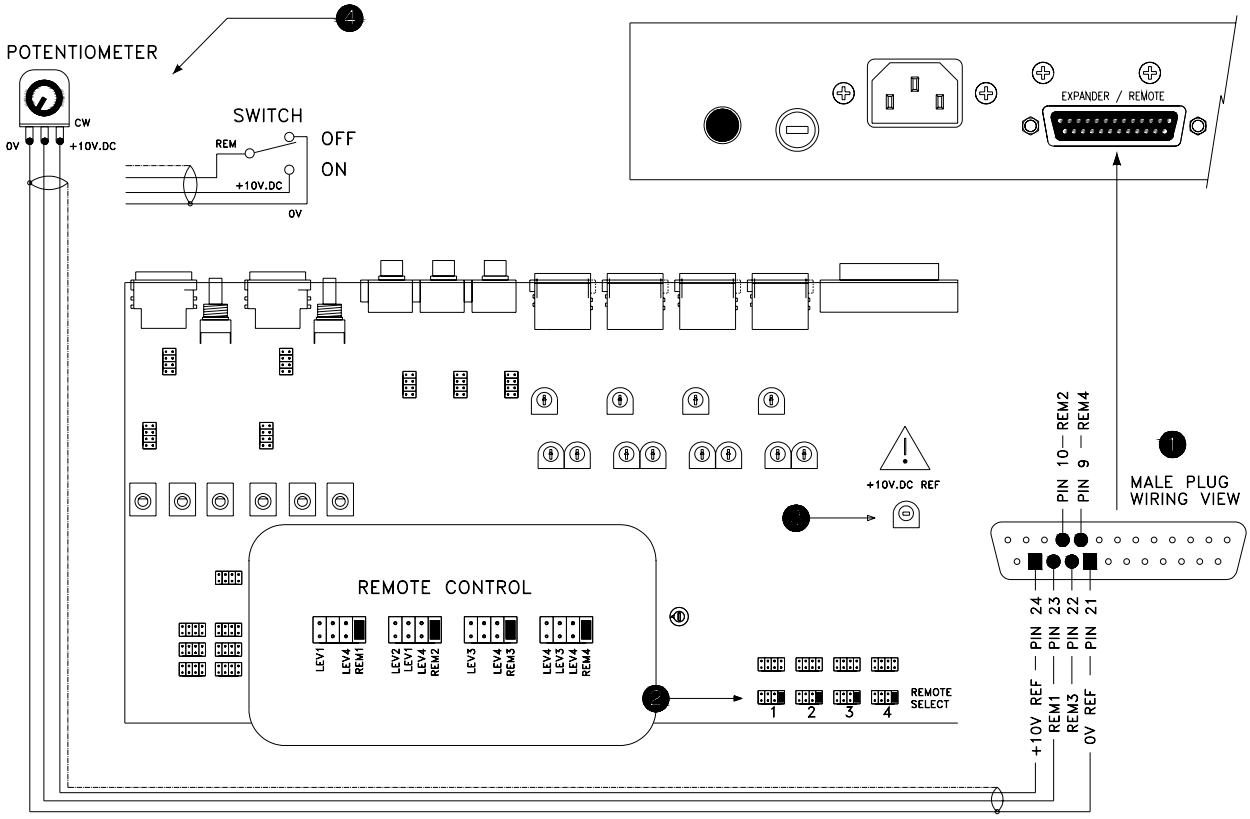
❸ SWITCH ZONE SELECT

For each output select whether or not the mute switch will affect the signal. Set the link to SW or OFF as shown. Note that the switch will have no effect if it has been disabled as described previously.

REMOTE CONTROL

This section describes the installer configuration of the VCA path remote level control. For each output you can select whether the level is controlled by the front panel control or by remote DC voltage. Note that this does not affect signals which are routed through the DIRECT path to the outputs.

To configure the unit switch off power, remove the top cover and adjust the jumper links as shown. Avoid the power supply components shown greyed out on the diagram.



❶ THE REMOTE CONNECTOR

The expander / remote 25-pin D-type female connector includes a remote DC input for each of the 4 outputs to control the level. A buffered +10V.DC reference voltage and 0V ground is provided so that external potentiometers or switches may be used to remotely control the levels. Use screened wire to shield these control signals from interference.

Pin 24 = +10V.DC reference
Pin 21 = 0V ground
Pin 23 = Remote input 1
Pin 10 = Remote input 2
Pin 22 = Remote input 3
Pin 9 = Remote input 4

❷ REMOTE SELECT

For each output to be remote controlled set the link to REM(1,2,3,4) as shown. Note that signals routed to the output via the DIRECT path will not be affected by the remote control.

❸ +10V.DC REFERENCE

This internal trimmer sets the reference voltage. This has been factory set and should not normally need to be adjusted.

❹ THE REMOTE CONTROLLER

The simplest form of remote controller is a potentiometer or switch wired from the reference +10V and 0V ground. The recommended potentiometer is 10k ohm with a reverse logarithmic law. Connect with screened cable.

Signal off = 0V (ground)
Signal on max = +10V.DC

Alternatively you can connect any external system controller that provides a 0 to +10V.DC control line.

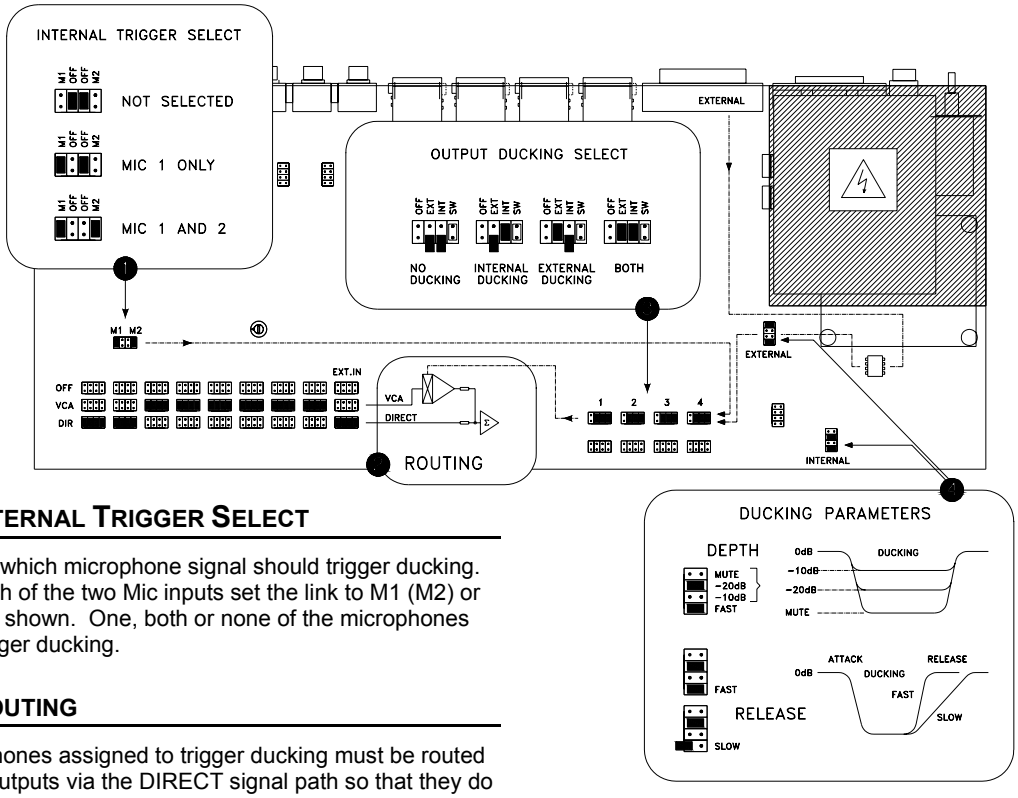
Do not connect any signal or voltage other than the specified 0 to +10V.DC to these inputs.

DUCKING

Ducking provides an automatic voiceover or muting facility. Ducking is triggered by a 'priority' signal, for example a paging microphone. The level of the background music is reduced by a pre-determined amount when a priority audio signal is detected. When the priority audio signal is removed the 'ducked' music returns to normal level. In this way simply talking into the paging microphone automatically overrides the music. When you stop talking the music returns smoothly to normal level.

This section describes the installer configuration of the ducking facility. Both internal and external ducking are separately available. Internal ducking can be triggered by the Mic1 and/or Mic2 signals. External ducking is triggered by a remote switch. For each the depth of ducking and release time can be assigned. Ducking can mute the signals if required. You can enable or disable internal and/or external ducking on each of the outputs. Only signals routed through the VCA path can be ducked. Plan carefully how the ducking facility is to be configured before attempting to set the jumper links.

To configure the unit switch off power, remove the top cover and adjust the jumper links as shown. Power can be re-applied to test the configuration settings. Avoid the power supply components shown greyed out on the diagram.



❶ INTERNAL TRIGGER SELECT

Decide which microphone signal should trigger ducking. For each of the two Mic inputs set the link to M1 (M2) or OFF as shown. One, both or none of the microphones can trigger ducking.

❷ ROUTING

Microphones assigned to trigger ducking must be routed to the outputs via the DIRECT signal path so that they do not attempt to duck themselves. Signals to be ducked should be routed via the VCA path.

❸ OUTPUT DUCKING SELECT

For each output select whether internal ducking, external ducking or both should apply. Set the links as shown. If ducking is not required the link should be fitted on one pin only as shown.

❹ DUCKING PARAMETERS

The depth and release time can be separately set for internal and external ducking. Depth can be set relatively shallow (-10dB), normal (-20dB) or to turn off the signal (MUTE). Release time is either fast or slow. Set the links as shown.

❺ EXTERNAL DUCKING TRIGGER

External ducking is triggered by linking Pin 11 of the expander / remote connector to Pin 8 (0V ground). Wire these pins to a switch or relay. Closing the switch contacts triggers ducking.

Equipment such as alarm and jukebox systems often provide trigger outputs suitable for direct connection to these pins.

❻ OPTO-ISOLATED INPUT

The external ducking trigger input is opto-isolated (coupled) to avoid interference from external controllers.

❼ EXTERNAL DUCKING PARAMETERS

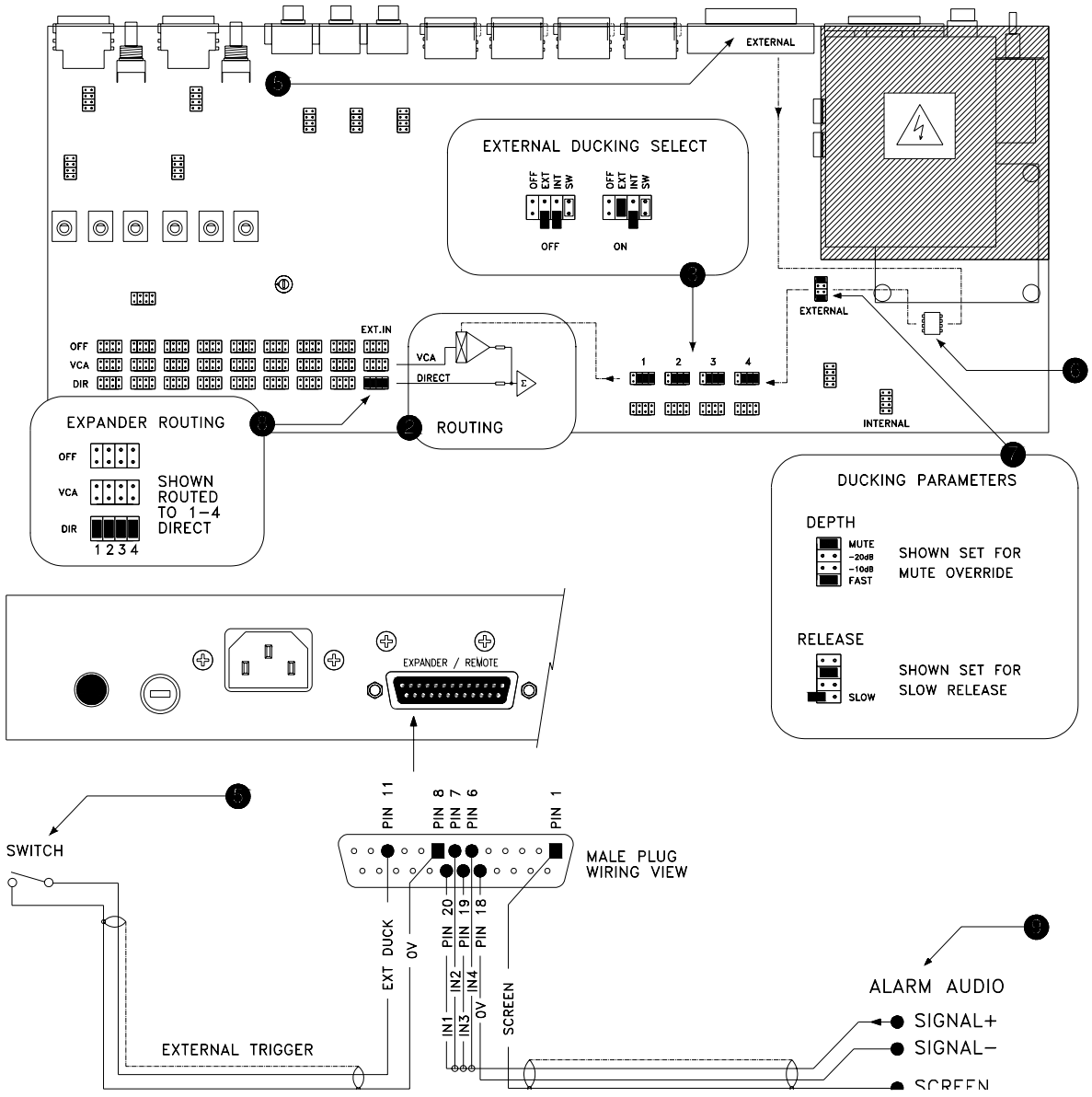
Set the depth and release link options as shown. For alarm override and jukebox replay the recommended settings are depth = MUTE (off), release = SLOW.

❽ EXPANDER ROUTING

The expander input provides an additional input to each of the outputs via either the VCA or DIRECT signal paths. To interface to an alarm system set the routing to DIRECT so that the alarm signal is not affected by level control or ducking. You could route a different evacuation message to each zone if required. Use the external ducking input to mute the music when the alarm is triggered.

❾ EXPANDER CONNECTOR

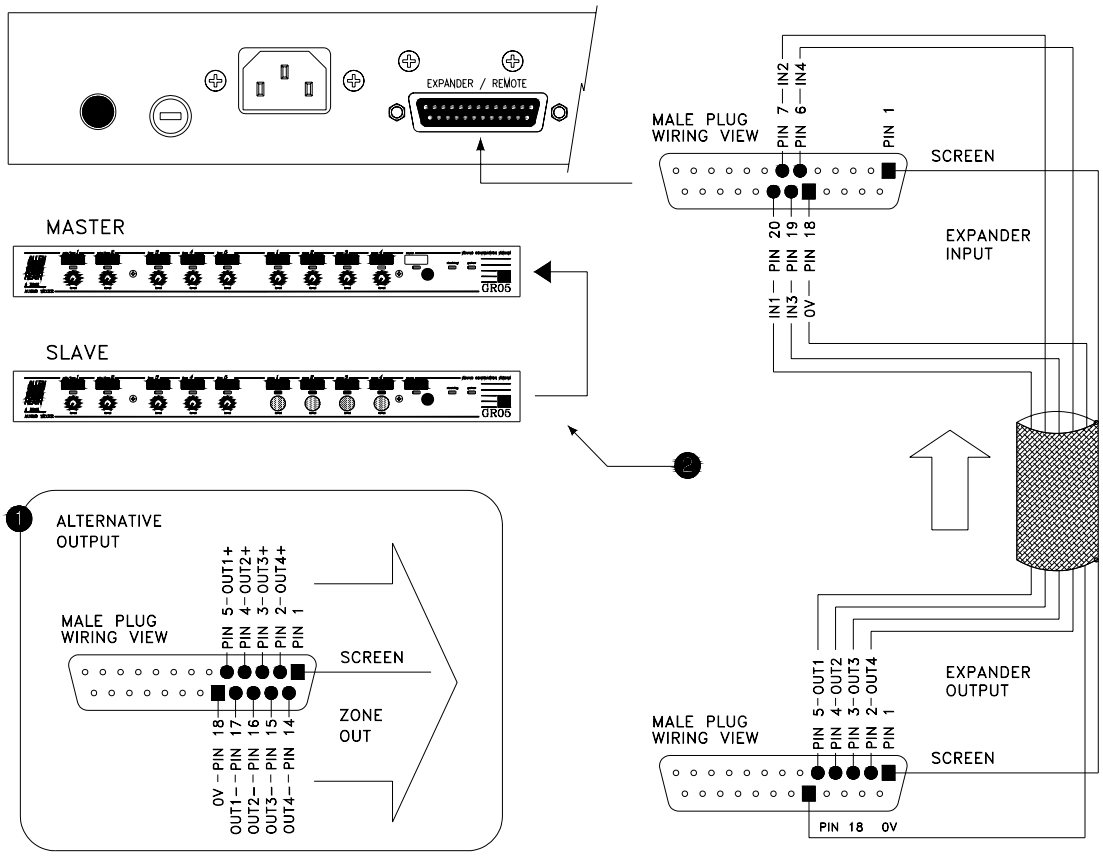
The wiring example shows the alarm signal connected to expander inputs 1 to 4. Shield the audio signal by connecting the cable screen to Pin 1 as shown.



INPUT / OUTPUT EXPANDER

This section describes the installer connection and configuration of expander inputs and outputs. These may be configured to provide additional inputs or outputs, or wiring of special functions such as an alarm system interface. These connections are part of the 25-pin D-type female connector which also includes the remote control and battery backup connections. You can also use the expander outputs as an alternative connector system instead of the XLR outputs. This may be more convenient in some fixed installations.

Solder the cables to a 25-pin D-type male connector plug. Check the pin numbering carefully to avoid errors. Use professional grade screened cable and check that all soldered joints are reliable.



❶ ALTERNATIVE OUTPUT CONNECTIONS

The four zone output signals that appear on the XLR connectors are duplicated on the expander/remote D-type connector. The output level is the same as set on the internal trimmers for the XLR outputs. For connection to unbalanced equipment connect only the output + signals. For connection to balanced equipment connect both the + and – signals. Balanced interconnection reduces the interference that may be induced into long cables running near power units and computers. Connect the cable screen to pin 1. Connect the audio 0V to pin 21.

You can use the XLR and expander outputs at the same time to feed more than one piece of equipment. For example, amplifiers and recording system.

❷ ADDING MORE INPUTS

This example shows a 'slave' ***GR05*** connected to a 'master' unit to provide more inputs. In this case the additional mic/line and stereo line inputs are routed via the DIRECT signal path to the slave output. The master expander input is configured for VCA path routing. This lets the master level controls and ducking affect the additional inputs. Slave level and ducking has no effect. The slave output level controls are locked out.

There are many alternative ways to use the expander system. Plan your application carefully before wiring and configuring the interconnection.

SPECIFICATION

SYSTEM

Output level control	High performance VCA system Front panel or remote DC control, assignable mute
Ducking	Internal triggered by Mic1 and/or Mic2 External triggered by opto-isolated remote input Selectable -10dB, -20dB, mute, fast, slow
Routing	Assignable 9 x 4 x 2 crosspoint matrix OFF, DIRECT or VCA paths to each output
Signal meters	3-colour LED for each input and output Green = signal (–12dB), yellow = 0dB, red = peak (+15dB)
Mic1,2 equalisers	LF ±12dB 70Hz shelf, H/MF ±14dB @ 300Hz to 6kHz
Output equalisers	LF ±12dB 70Hz shelf, HF ±14dB 9kHz shelf

INPUTS

Mic/Line 1,2	Balanced XLR pin2 = hot 2kohm Phantom power = +15V Pad 10kohm	-58 to –22dBu -28 to +8dBu
Stereo Line 3,4,5	Dual RCA phono 10kohm	-10dBV or +4dBu
Expander In 1,2,3,4	Part of 25way D female 10kohm	0dBu
Remote DC 1,2,3,4	Part of 25way D female	0V = off, +10V.DC = max
Ext. duck DC	Part of 25way D female	opto-isolated switch to 0V
Backup DC	Part of 25way D female	min +/-12V, max +/-15V.DC 300mA per rail
Mains Power Input	3pin IEC male socket 47-63Hz 18VA max Internally wired for country mains AC voltage: 100V, 115V (110-120V), 230V (220-240V) Fuse T630mA 20mm T315mA 20mm	

OUTPUTS

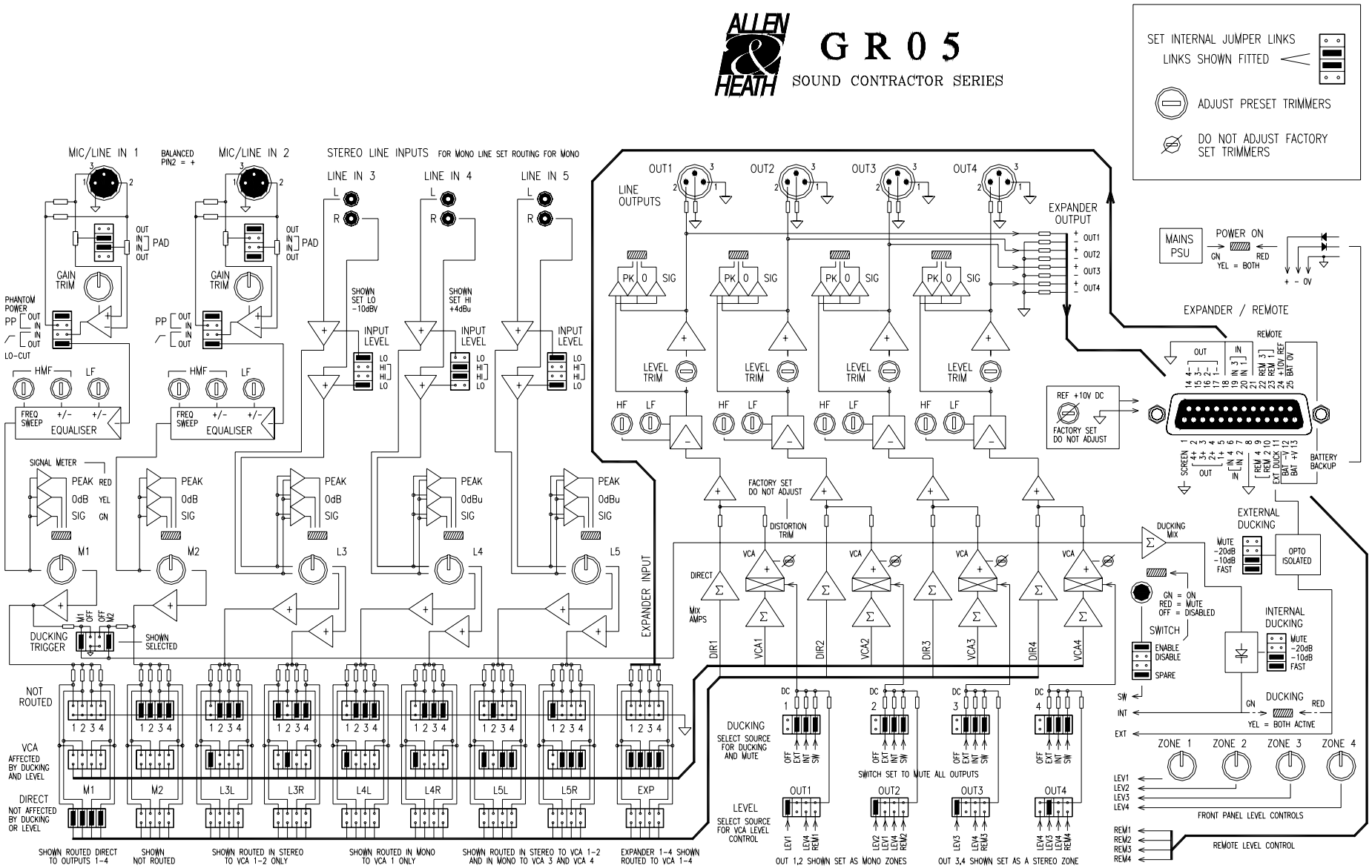
Zone out 1,2,3,4	Impedance balanced XLR pin2 = hot <75ohm Trim adjustable –10dBV to +4dBu
Expander Out 1-4	Part of 25way D female as Zone 1,2,3,4 out
Remote DC ref	Part of 25way D female +10V.DC 5mA max

PERFORMANCE

Maximum output	+20dBu into 2kohm
Internal headroom	+20dB
Frequency response	20Hz to 50kHz +0/-1dB
Distortion	< 0.005% THD+noise at +12dBu 1kHz
Crosstalk	Better than 90dB shutoff, 80dB interchannel
Noise	Mic EIN -128dB referred to 150ohm source Line preamp -91dBu Mix noise all routed < -86dB

MECHANICAL

Width 483mm (19”)	Height 44/49mm (1.75”) 1U	Depth 260mm (10.3”)
Weight	Unpacked 4kg (9lb)	Packed 5kg (11lb)


ALLEN & HEATH
GR05
SOUND CONTRACTOR SERIES
SET INTERNAL JUMPER LINKS
LINKS SHOWN FITTED
ADJUST PRESET TRIMMERS
DO NOT ADJUST FACTORY SET TRIMMERS
MIC/LINE IN 1
BALANCED PIN2 = +
MIC/LINE IN 2
STEREO LINE INPUTS FOR MONO LINE SET ROUTING FOR MONO
LINE IN 3
LINE IN 4
LINE IN 5
LINE OUTPUTS
OUT1
OUT2
OUT3
OUT4
EXPANDER OUTPUT
MAINS PSU
POWER ON
GN
YEL = BOTH
RED
+ - 0V
EXPANDER / REMOTE
REMOTE
PHANTOM POWER
PP
LO-CUT
GAIN TRIM
PAD
HMF
LF
FREQ SWEEP
+/-
EQUALISER
SHOWN SET LO -10dBV
SHOWN SET HI +4dBu
INPUT LEVEL
LO
HI
SIGNAL METER
PEAK
0dB
SIG
RED
YEL
GN
0dBu
M1
M2
L3
L4
L5
DUCKING TRIGGER
SHOWN SELECTED
EXPANDER INPUT
PK
SIG
LEVEL TRIM
HF
REF +10V DC
FACTORY SET DO NOT ADJUST
BATTERY BACKUP
DISTORTION TRIM
VCA
DIRECT
MIX AMPS
DIR1
VCA1
DIR2
VCA2
DIR3
VCA3
DIR4
VCA4
DUCKING MIX
EXTERNAL DUCKING
MUTE -20dB -10dB FAST
OPTO ISOLATED
GN = ON
RED = MUTE
OFF = DISABLED
SWITCH
ENABLE
DISABLE
SPARE
INTERNAL DUCKING
NOT ROUTED
VCA AFFECTED BY DUCKING AND LEVEL
DIRECT NOT AFFECTED BY DUCKING OR LEVEL
1 2 3 4
EXP
DUCKING SELECT SOURCE FOR DUCKING AND MUTE
OFF
EXT
INT
SW
SWITCH SET TO MUTE ALL OUTPUTS
LEVEL SELECT SOURCE FOR VCA LEVEL CONTROL
LEV1
LEV4
REM1
LEV2
REM2
LEV3
REM3
REM4
SW
INT
EXT
YEL = BOTH ACTIVE
ZONE 1
ZONE 2
ZONE 3
ZONE 4
FRONT PANEL LEVEL CONTROLS
REMOTE LEVEL CONTROL
SHOWN ROUTED DIRECT TO OUTPUTS 1-4
SHOWN NOT ROUTED
SHOWN ROUTED IN STEREO TO VCA 1-2 ONLY
SHOWN ROUTED IN MONO TO VCA 1 ONLY
SHOWN ROUTED IN STEREO TO VCA 1-2 AND IN MONO TO VCA 3 AND VCA 4
EXPANDER 1-4 SHOWN ROUTED TO VCA 1-4
OUT 1,2 SHOWN SET AS MONO ZONES
OUT 3,4 SHOWN SET AS A STEREO ZONE

GR05

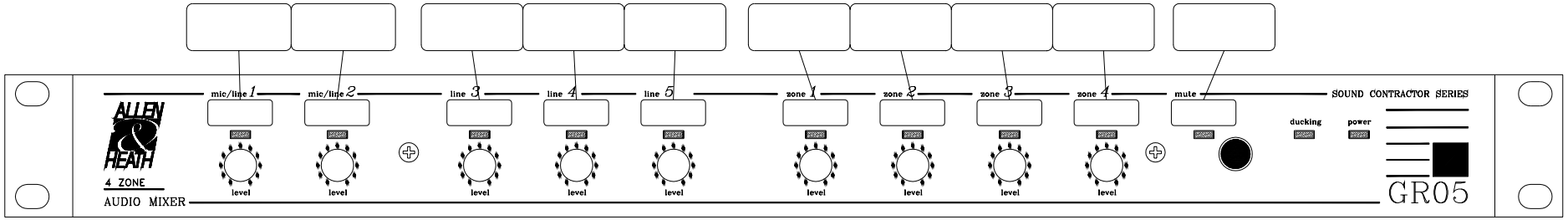
SOUND CONTRACTOR SERIES

CONFIGURATION SHEET 1

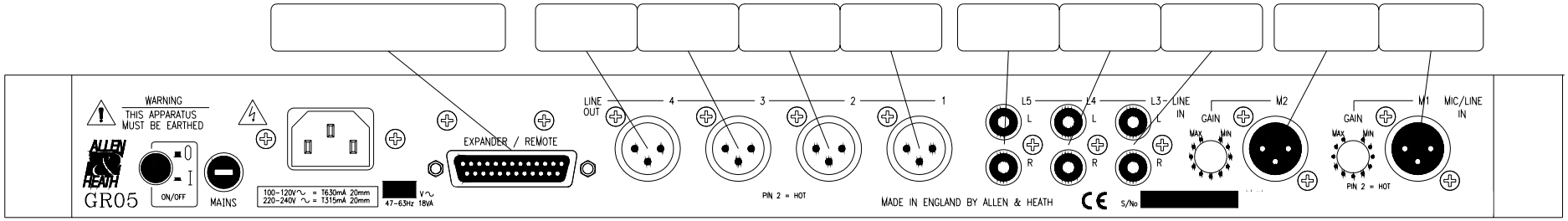
CONTACT

SERIAL NUMBER

MAINS VOLTAGE V.AC



USER NOTES



GR05

SOUND CONTRACTOR SERIES

CONFIGURATION SHEET 1

CONTACT

SERIAL NUMBER

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