ALLEN & HEATH

GL4

MIXING CONSOLE

THE BENEFITS OF USING SYS-LINK

The **GL4** SYS-LINK option allows console to console interconnection by means of just one or two cables. By connecting two **GL4** consoles together the number of input channels may be increased. One console acts as a channel expander (slave) of the second (master). Up to 3 consoles may be 'daisy-chained' in this way. The system is also directly compatable with the A&H **GL2** rack mount console allowing it to be connected to the **GL4** with a single cable.

Plugging consoles together using SYS-LINK connects the signals directly to the console busses so avoiding the use of the main console outputs and channel inputs for the master / slave connection. All the console channels are available to the user for input sources.

SYS-LINK CONNECTIONS

SYS-LINK connects all the console main busses including L, R, 8 Groups, 10 Aux sends, and 2 matrix. The PFL/AFL system is also interconnected such that operating PFL/AFL on the slave console activates the master console monitor system. Operating PFL/AFL on the master does not activate the slave monitor system which may be used for 'local' monitoring if required. SYS-LINK connects the PFL/AFL audio mix and DC control buss.

SYS-LINK outputs are taken **pre-fader** so that the slave console output connectors may be used for sub-mix or 'zone' feeds if required. All output signals are unbalanced, low impedance and operate at a line level of -2dBu to prevent problems with audio interference and to maintain the console headroom of 23dB.

SYS-LINK inputs are buffered, presented to the console mix busses, are unbalanced line level at -2dBu, and are high impedance to prevent loading the connected source.

SYS-LINK is presented on two pairs of 25way female D-type connectors, one for the console buss inputs and the other for the outputs. Several pins are provided for audio 0V earth.

USING SYS-LINK

Connect consoles using two standard 25way male to male D-type cables, available from electronic suppliers or computer shops (25line male to male). It is advised that this cable is a screened type if longer than 1 metre, no longer than 10 metres in total, and that professional quality locking connectors are used. Connect all pins one to one with the screen to 0V.

Connect the slave console SYS-LINK output to the master console SYS-LINK input.

SYS-LINK may also be used to connect the **GL4** to other audio equipment. Make sure that all unused inputs (except the P/AFL DC inputs) are linked to 0V earth at the SYS-LINK input to prevent audible interference from connected audio signals. Connect line level signals of around -2dBu. The **GL4** PFL/AFL system may be activated by switching the P/AFL DC input to 0V earth through a 15k ohm resistor.

For information on fitting SYS-LINK please refer to FITTING INSTRUCTIONS AP2128

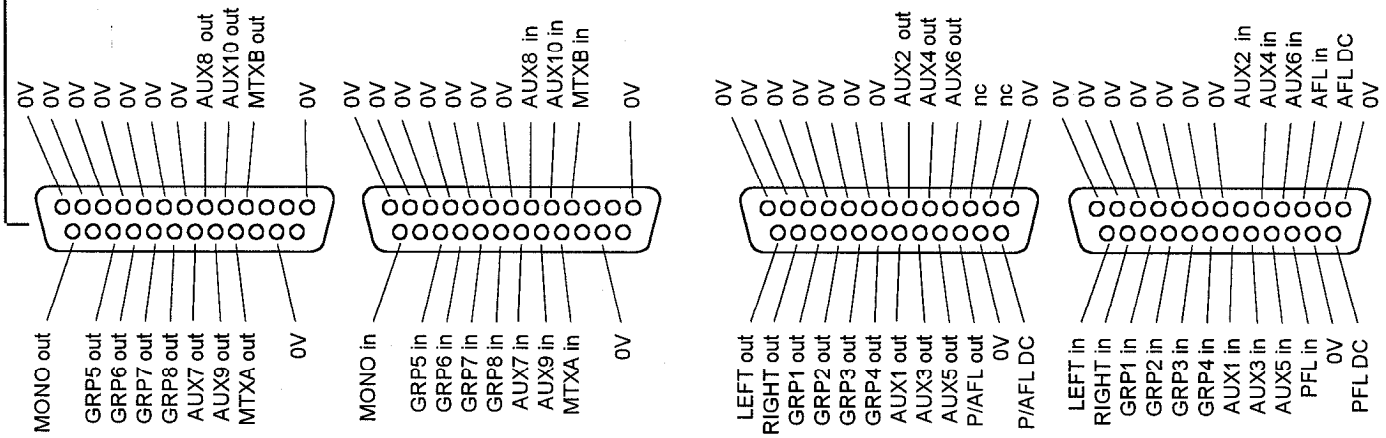
SYS-LINK APPLICATIONS NOTE

Publication AP2129

Issue 1 Jan 95

CONSOLE TO CONSOLE CONNECTION USING SYS-LINK

SYS-LINK connectors are 25way D-type female.
Use 25way D-type male to male connector cable.
Use screened cable, connect all pins.

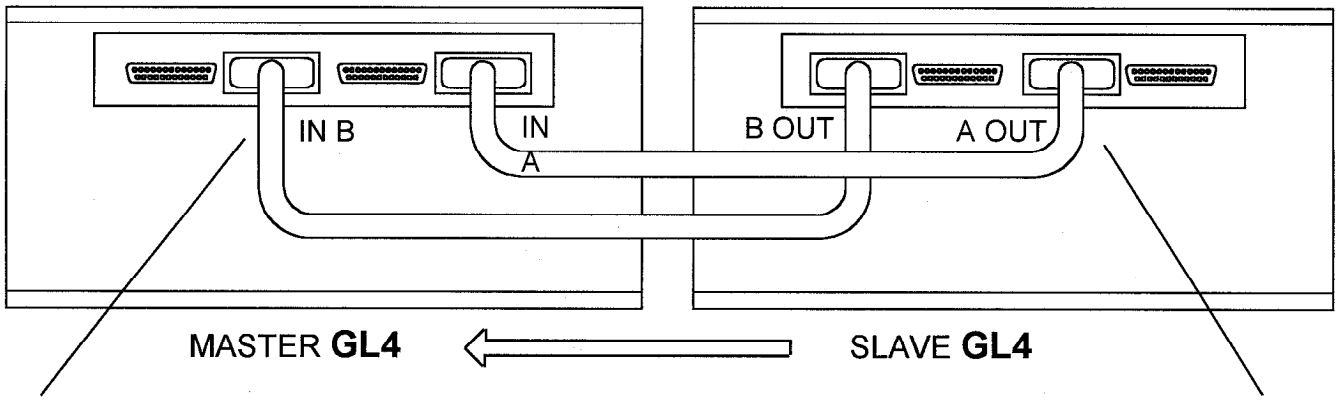


OUT B IN

Line level output at -2dBu
Unbalanced, in-phase
Low impedance <75 ohm
P/AFL DC output is open collector sink to 0V through 15k.
All outputs are **pre-fader**

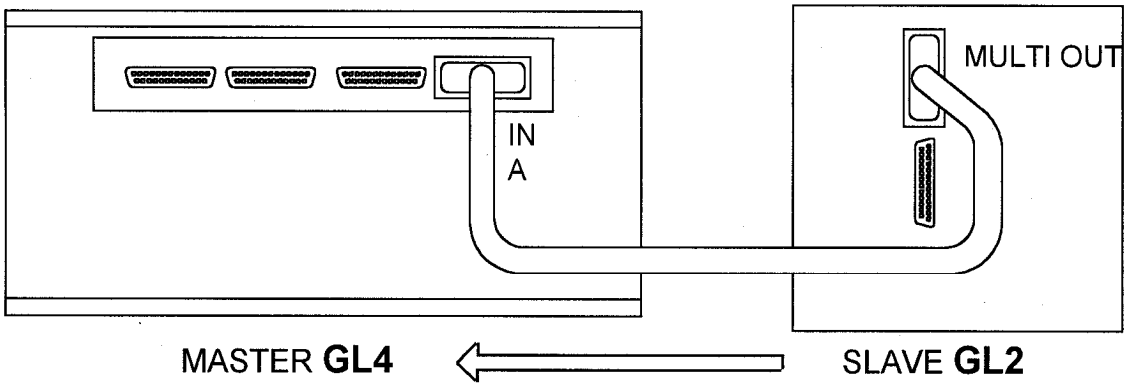
OUT A IN

Line level input at -2dBu
Unbalanced, buffered, in-phase
High impedance = 10k ohm
P/AFL DC input for pulldown to 0V through 15k resistor.
When connecting to equipment other than GL Series link all unused audio inputs to 0V earth at the SYS-LINK input.

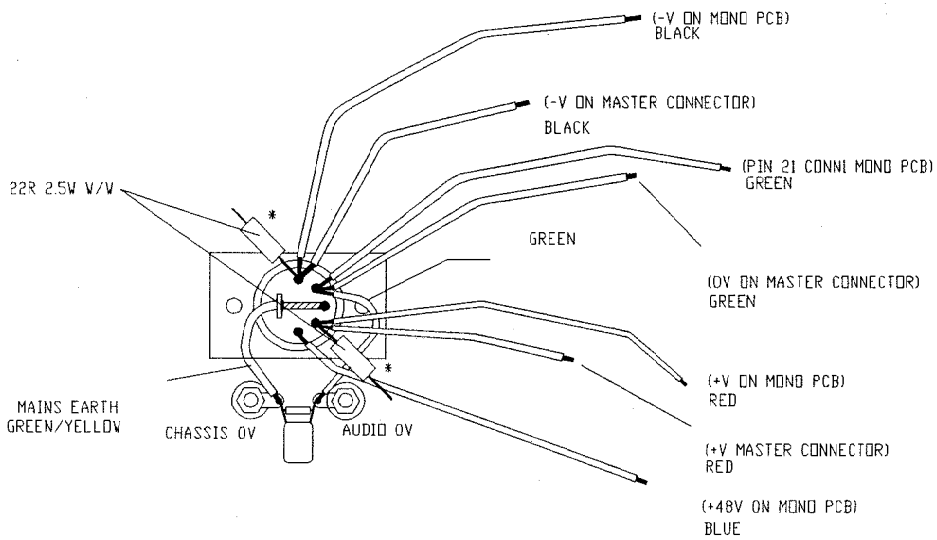


B to link GRP 5-8, AUX 7-10, MTX A-B, MONO

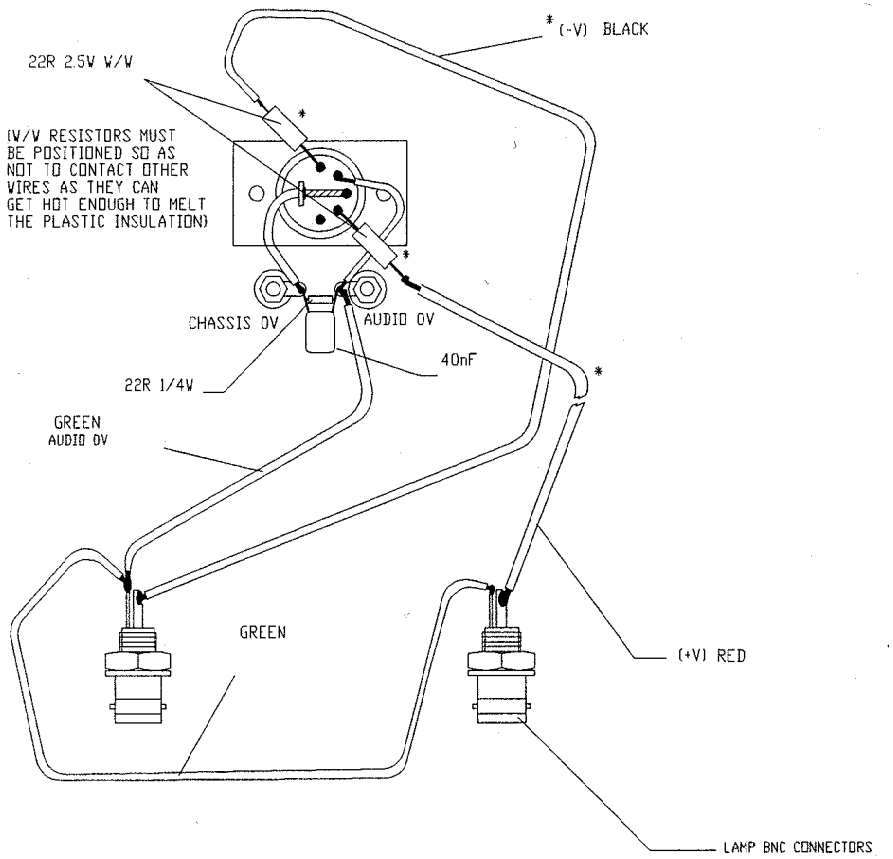
A to link GRP 1-4, AUX 1-6, L, R, P/AFL



CONSOLE POWER WIRING



BNC LAMP CONNECTOR WIRING



* COMPONENTS NOT FITTED FROM CONSOLE SERIAL No: 621233

BNC WIRING REVISED FROM CONSOLE SERIAL No: 621233

22R RESISTORS NOW FITTED ONTO MONO PCB ASSEMBLY R210 & R238.

BNC WIRING CONNECTS TO MONO PCB:
BROWN (+V) P17 ON MONO PCB CONNECTS TO LEFT BNC.
GREY (-V) P18 ON MONO PCB CONNECTS TO RIGHT BNC.

ISSUE	REVISION	BY DATE
1	ORIGIN	ARJ 17-11-94
2	BNC WIRING CHANGED	IMcB 7-8-95

NOTES:

DRAWING TITLE

GL4 POWER XLR WIRING

ALLEN & HEATH LTD.
KERNICK INDUSTRIAL ESTATE.
PENRYN. CORNWALL TR10 9LU.
TEL. 01326 372070
FAX. 01326 377097

DRAWING No. M002-026C 2

GL4
MULTI-FUNCTION LIVE CONSOLE

MUTE GROUP SYSTEM
USER MANUAL

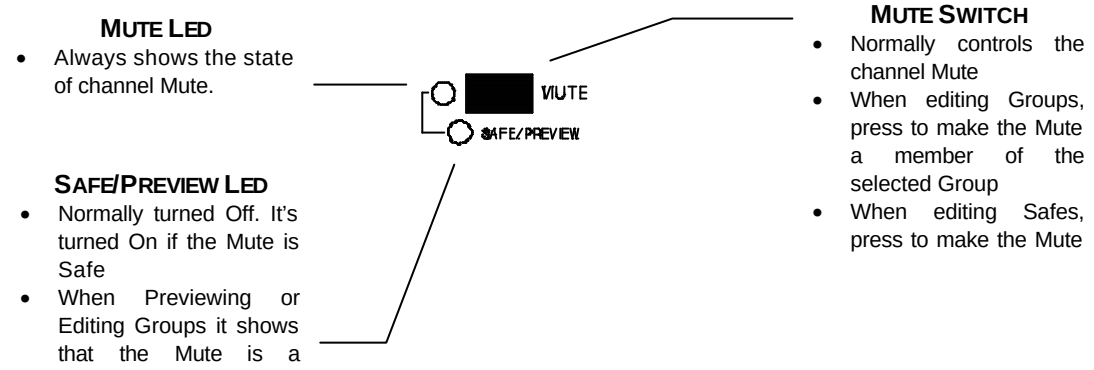
INTRODUCTION

The GL4's Mute Group System allows all channel Mutes, including Group, Aux, Left, Right & Mono Mutes, to be assigned to 8 Mute Groups. Multiple Mutes can then turned on or off using a single switch. Mute Groups can be Previewed before activating them, and Mutes can also be made Safe. A Safe Mute can only be turned on or off by pressing the Mute switch, it cannot be turned on or off using either a Mute Group or MIDI.

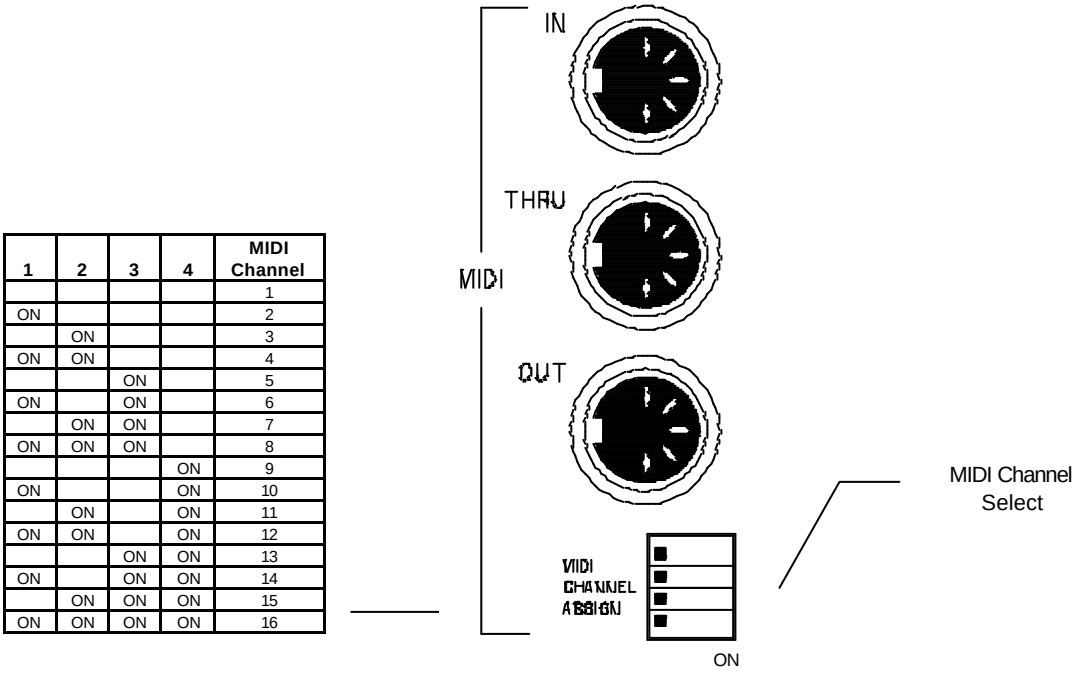
MIDI can be used to control Mutes and Mute Groups, and Mute Groups can be used to control Effects devices. The Mute Group Systems of two GL4s can also be linked using MIDI.

All Group & Safe settings, including the Mute settings are saved in the console when the GL4 is turned off.

CHANNEL MUTE

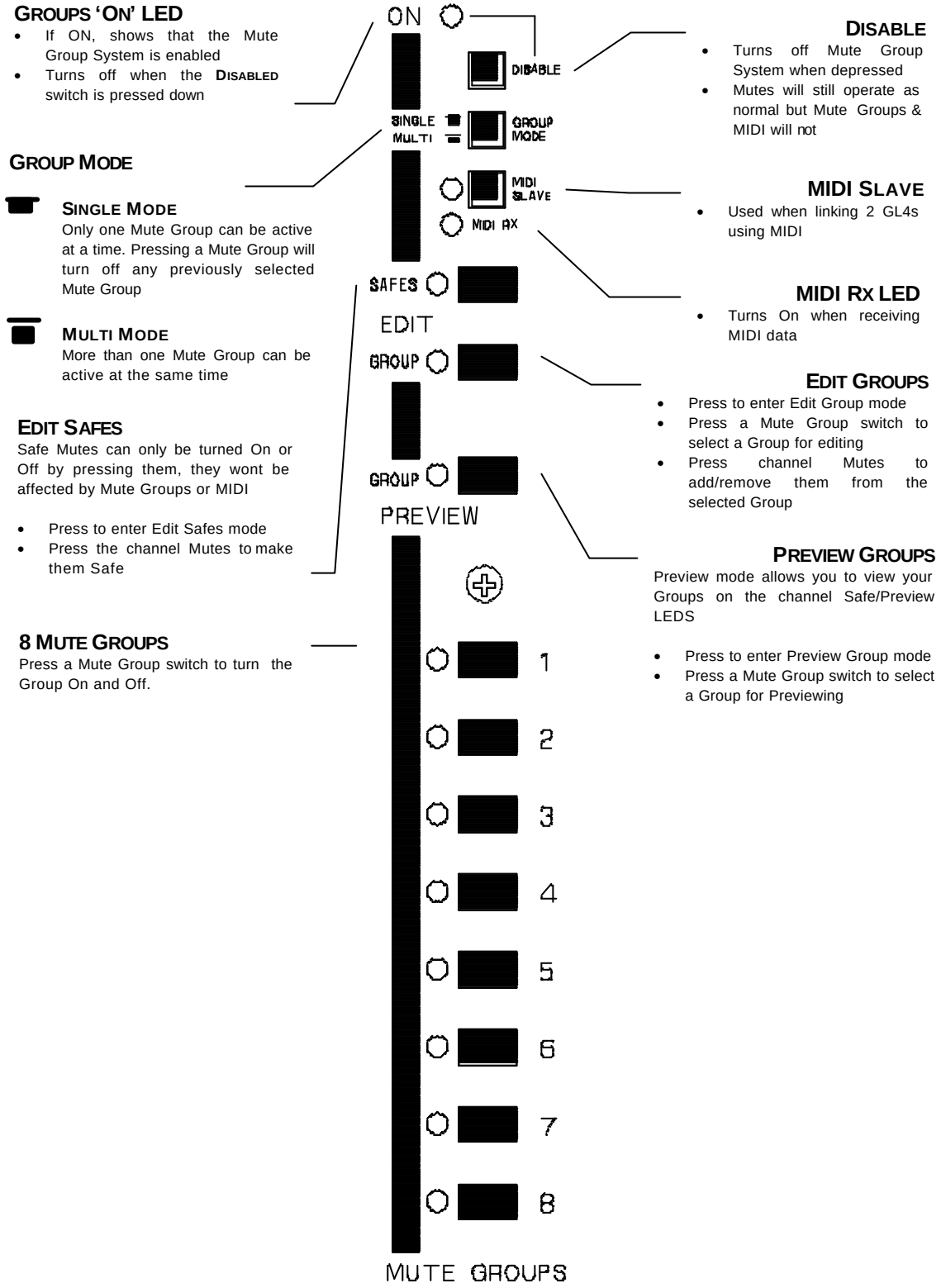


REAR PANEL



1	2	3	4	MIDI Channel
				1
ON				2
	ON			3
ON	ON			4
		ON		5
ON		ON		6
	ON	ON		7
ON	ON	ON		8
			ON	9
ON			ON	10
	ON		ON	11
ON	ON		ON	12
		ON	ON	13
ON		ON	ON	14
	ON	ON	ON	15
ON	ON	ON	ON	16

CONTROL SECTION



GROUPS 'ON' LED

- If ON, shows that the Mute Group System is enabled
- Turns off when the **DISABLED** switch is pressed down

GROUP MODE

SINGLE MODE
Only one Mute Group can be active at a time. Pressing a Mute Group will turn off any previously selected Mute Group

MULTI MODE
More than one Mute Group can be active at the same time

EDIT SAFES

Safe Mutes can only be turned On or Off by pressing them, they wont be affected by Mute Groups or MIDI

- Press to enter Edit Safes mode
- Press the channel Mutes to make them Safe

8 MUTE GROUPS

Press a Mute Group switch to turn the Group On and Off.

DISABLE

- Turns off Mute Group System when depressed
- Mutes will still operate as normal but Mute Groups & MIDI will not

MIDI SLAVE

- Used when linking 2 GL4s using MIDI

MIDI RX LED

- Turns On when receiving MIDI data

EDIT GROUPS

- Press to enter Edit Group mode
- Press a Mute Group switch to select a Group for editing
- Press channel Mutes to add/remove them from the selected Group

PREVIEW GROUPS

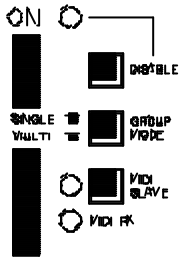
Preview mode allows you to view your Groups on the channel Safe/Preview LEDS

- Press to enter Preview Group mode
- Press a Mute Group switch to select a Group for Previewing

USING THE MUTE GROUP SYSTEM

SETTING UP

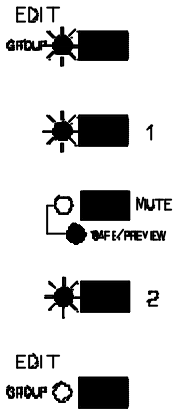
Before using the Mute Group system check the following:



- The **Disable** switch is UP & the **Groups On** LED is On
- The **Group Mode** switch is in the desired position for Multi or Single Group Mode
- The **MIDI Slave** switch is UP (unless you are linking 2 GL4s together - see 'Linking two GL4s')
- If you are using MIDI, check that the **MIDI Channel** is as required (see Rear Panel above)

If you do not want to use the Mute Group system you can turn it OFF by pressing the Disable switch DOWN, the Groups On LED will turn Off.

EDITING MUTE GROUPS



- Press the **Edit Group** switch, the LED will start flashing
- Press a **Mute Group** switch to select it for editing, it's LED will start flashing. The Mutes that are part of the selected Group will turn ON their Safe/Preview LEDs
- Press the channel **Mute** switches to add or remove Mutes from the selected Group
- To edit another Group, press another **Mute Group** switch. The settings of the old Group will automatically be stored
- Press the **Edit Group** switch again to return to normal operation, the LED will stop flashing

NOTE:

In Edit Group Mode a channel Mute **is not** affected when the Mute switch is pressed.

USING MUTE GROUPS

To turn On a Group press a **Mute Group** key, it's LED will turn On
When turning On a Group, Mutes that are OFF will only turn ON if:

- they are in the Group being activated, *and*
- they are not Safe Mutes

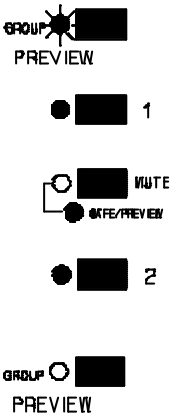
To turn Off a Group press the Mute Group switch again.
When turning Off a Group, Mutes that are ON will only turn OFF if:

- they were not turned ON by a manual press, *and*
- they are in the Group being deactivated, *and*
- they are not in another active Group, *and*
- they are not Safe Mutes

If the **Group Mode** switch is UP, multiple Groups can be activated. If the **Group Mode** switch is DOWN then the Groups are interlocked, e.g. if Group 1 was active, activating Group 4 would deactivate Group 1.

PREVIEWING MUTE GROUPS

The GL4 Mute Group system allows you to view your Group settings on the channel Safe/Preview LEDs before activating them.



- Press the **Preview Group** switch, the LED will start flashing
- Press a **Mute Group** switch to select it for preview, it's LED will turn On. The Mutes that are part of the selected Group will turn on their Safe/Preview LEDs
- To preview another Group, press another **Mute Group** switch.
- Press the **Preview Group** switch again to return to normal operation, the LED will stop flashing

EDITING SAFE MUTES

The Gl4 Mute Group system lets you make any of the channel Mutes Safe. A Safe Mute can only be turned on & off by manual presses. It cannot be controlled by a Mute Group or by MIDI.

- Press the **Edit Safes** switch, the LED will start flashing
- Press the channel **Mute** switches to make Mutes Safe. The Safe/Preview LEDs of channels that are Safe will turn ON.
- Press the **Edit Safes** switch again to return to normal operation, the LED will stop flashing
- The Safe channels will now have their Safe/Preview LEDs turned On.

NOTE:

In Edit Safes Mode a channel Mute **is not** affected when the Mute switch is pressed.

USING MIDI

NOTE:
If the GL4 Mute System is Disabled, the GL4s MIDI capability is also disabled.

MUTES

Pressing a channel Mute will transmit a MIDI Note On message on the current channel. Similarly, if the GL4 receives a MIDI Note On message, the appropriate channel mute will be turned On & Off.

See the **MIDI Implementation** section for the Mute to MIDI Note translation chart.

MUTE GROUPS

Pressing a Mute Group switch will transmit a MIDI Program Change message on the current MIDI channel. This can be used, for example, to change the patch no. of an effects device connected via MIDI. Also, if the GL4 receives valid MIDI Program Change messages Mute Groups can be activated & de-activated.
See the **MIDI Implementation** section for Mute Group to Program Change translation chart

LINKING 2 GL4S USING MIDI

You can link the Mute Group Systems of 2 GL4 consoles using MIDI. To do this simply select one the GL4s to be a **MIDI Slave** by pressing DOWN it's MIDI Slave switch. Then connect the MIDI OUT of the *master* GL4 to the MIDI IN of the *slave* GL4. The Control section of the Slave GL4 is now disabled, it's Control LEDs, however, will follow the status of the Master GL4s control section.

Both GL4s must be on the same MIDI channel.

MIDI IMPLEMENTATION

MIDI NOTE TO CHANNEL MUTE

Console Channel No.	MIDI Note Master			MIDI Note Slave		
	Dec	Hex	Note	Dec	Hex	Note
Left	3	03		67	43	G4
Right	4	04		68	44	G#4
Mono	5	05		69	45	A4
Aux Send 9	6	06		70	46	A#4
Aux Send 10	7	07		71	47	B4
Aux Send 1 - 6	8 - 15	08 - 0F	C0 - D#0	72 - 79	48 - 4F	C5 - G5
Group 1 - 8	16 - 23	10 - 17	E0 - B0	80 - 87	50 - 57	G#5 - D#6
Channel 1 - 8	24 - 31	18 - 1F	C1 - G1	88 - 95	58 - 5F	E6 - B6
Channel 9 - 16	32 - 39	20 - 27	G#1 - D#2	32 - 39	20 - 27	
Channel 17 - 24	40 - 47	28 - 2F	E2 - B2	40 - 47	28 - 2F	
Channel 25 - 31	48 - 55	30 - 37	C3 - G3	48 - 55	30 - 37	
Channel 32 - 40	56 - 63	38 - 3F	G#3 - G#4	56 - 63	38 - 3F	

MIDI PROGRAM CHANGE TO MUTE GROUP

Mute Group No.	Program No.	
	Group On	Group Off
1 - 8	0 - 7	64 - 71

TECHNICAL SUPPORT - ADDITIONAL INFORMATION

HARD RESET

A console hard reset can be performed by holding down the **Edit Groups** & **Edit Safes** switches on power-up. A hard reset will clear all group safe settings .

SOFTWARE VERSION NO.

The software version can be determined

a) by looking at the label on the EPROM on the Mono PCB

b) by inspecting the MIDI System Exclusive message header which is transmitted by the GL4 on power-up.

The System Exclusive message header for GL4 is:

{header} = F0 00 00 1A 50 04 ss 0n

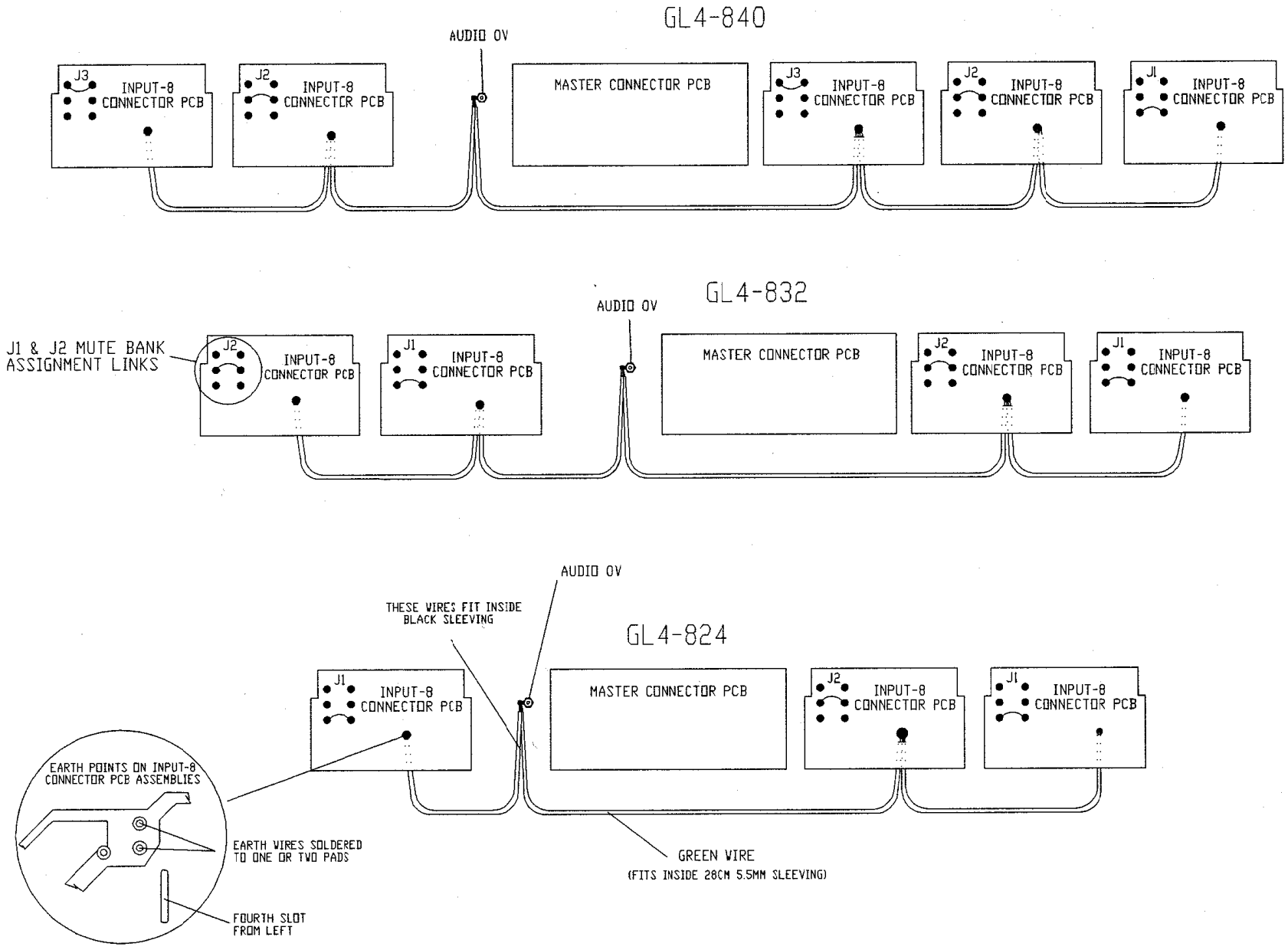
n = MIDI channel

software version: 00 => v1.00/0

The software version number is coded as:

bit	7	6	5	4	3	2	1	0
	0	maintenance version			minor version			

REAR CONNECTOR PCB EARTHING & MUTE BANK ASSIGNMENT



GL4 EXPANDER

8 CHANNEL MONO MODULE

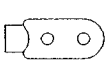
PART NO: GL4-8MX 8 CHANNEL MONO MODULE

FITTING INSTRUCTIONS

INTRODUCTION

The GL4-8MX is an 8 channel mono input module for fitting to the GL4 series of consoles. This expander module allows a GL4 console to be expanded up to a maximum of 40 channels, i.e. 824 to 832 or an 832 to 840.
Please use drawings M2695 or M2696 to drill 2 x 4.2mm diameter holes for fastener fixing holes at the end of the extrusion that the expander module is to be fitted.
Please use drawings M002-027B or M002-028B to reassign back panels.
Use GL4000 fitting instructions as an assistance for the GL4 upgrade.
Please read the instructions carefully before attempting to fit the module.

1 Check contents of pack to ensure all parts have been supplied.
Prints of M2695, M2696, M002-027B, M002-028B, AP2794.



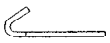
C

PART NO. AB2421
QUANTITY 2
SCREW M6X8 SKT HEX

D

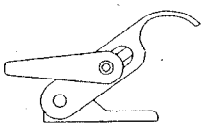
PART NO. AB2813
QUANTITY 3
SCREW M3X6 HEX

A



PART NO. AB0336
QUANTITY 1
CATCHPLATE

B



PART NO. AB0335
QUANTITY 1
AJUSTABLE FASTENER

E

PART NO. AB2084
QUANTITY 40
SCREW 6BX5/16

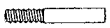
F

PART NO. AB0271
QUANTITY 4
SCREW M4X10

G

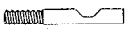
PART NO. AB0188
QUANTITY 4
NUT LOCK M4

H



PART NO. AB0325
QUANTITY 5
STUD M6X38.5

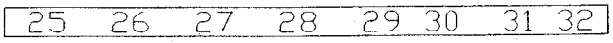
J

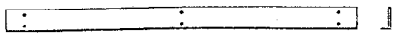


PART NO. AB2406
QUANTITY 2
STUD SLOTTED

K

PART NO. AB2085
QUANTITY 6
SCREW 8BX3/8 CSK

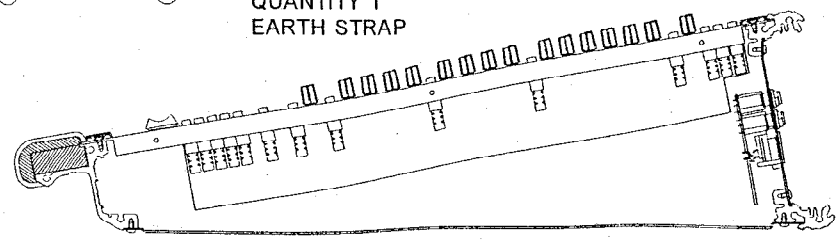




L PART NO.s AK2105 AK2106 AK2107
QUANTITY 1
IDENT STRIP

M
PART NO. AA2191
QUANTITY 1
BASE BRACKET

N PART NO. 002-237
QUANTITY 1
EARTH STRAP



PART NO.s 002-262
QUANTITY 1

P

PART NO. AC0335
QUANTITY 5
0R LINK

Q

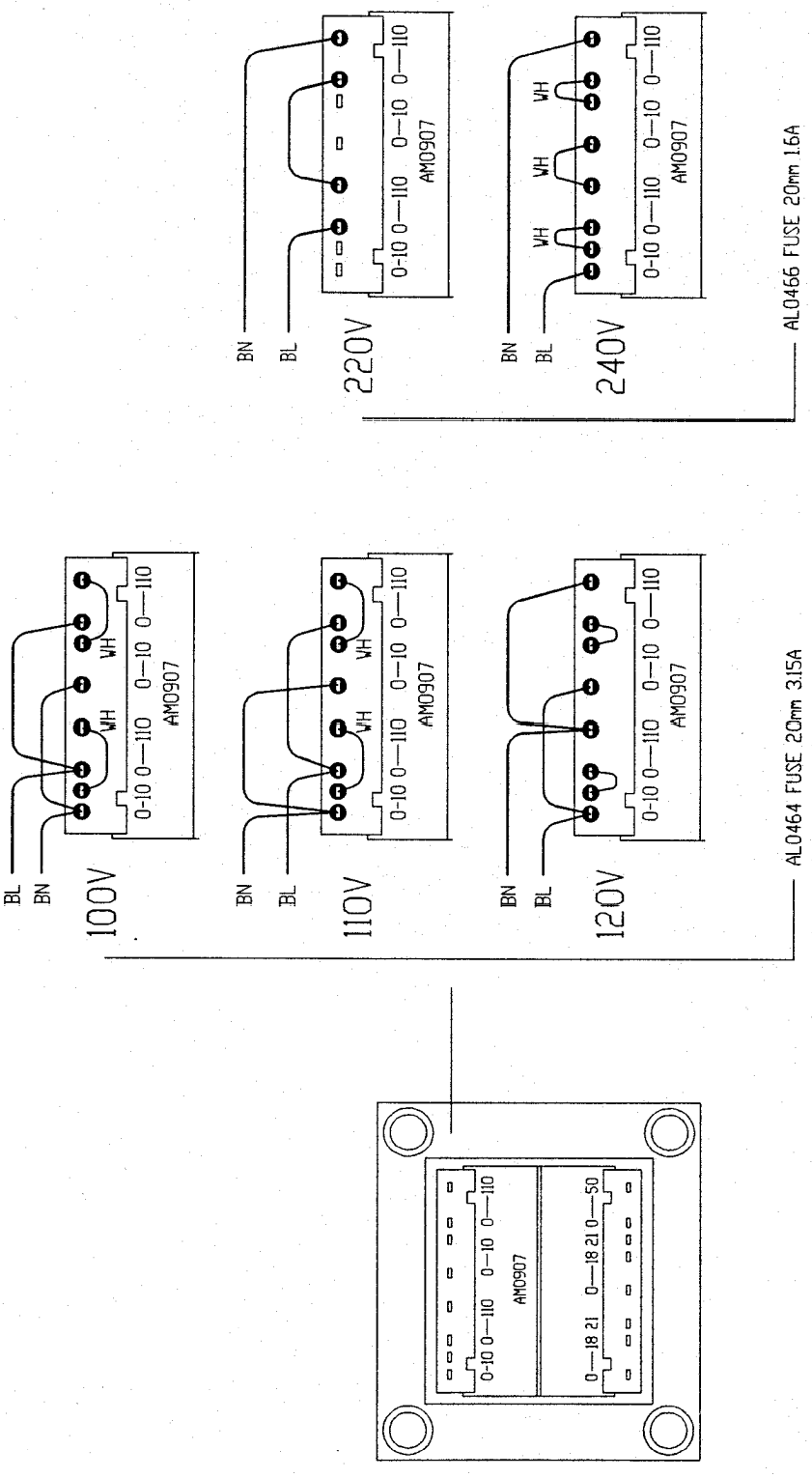
PART NO. AB0244
QUANTITY 3
SHAKEPROOF
WASHER

R

PART NO.AB0102
QUANTITY 3

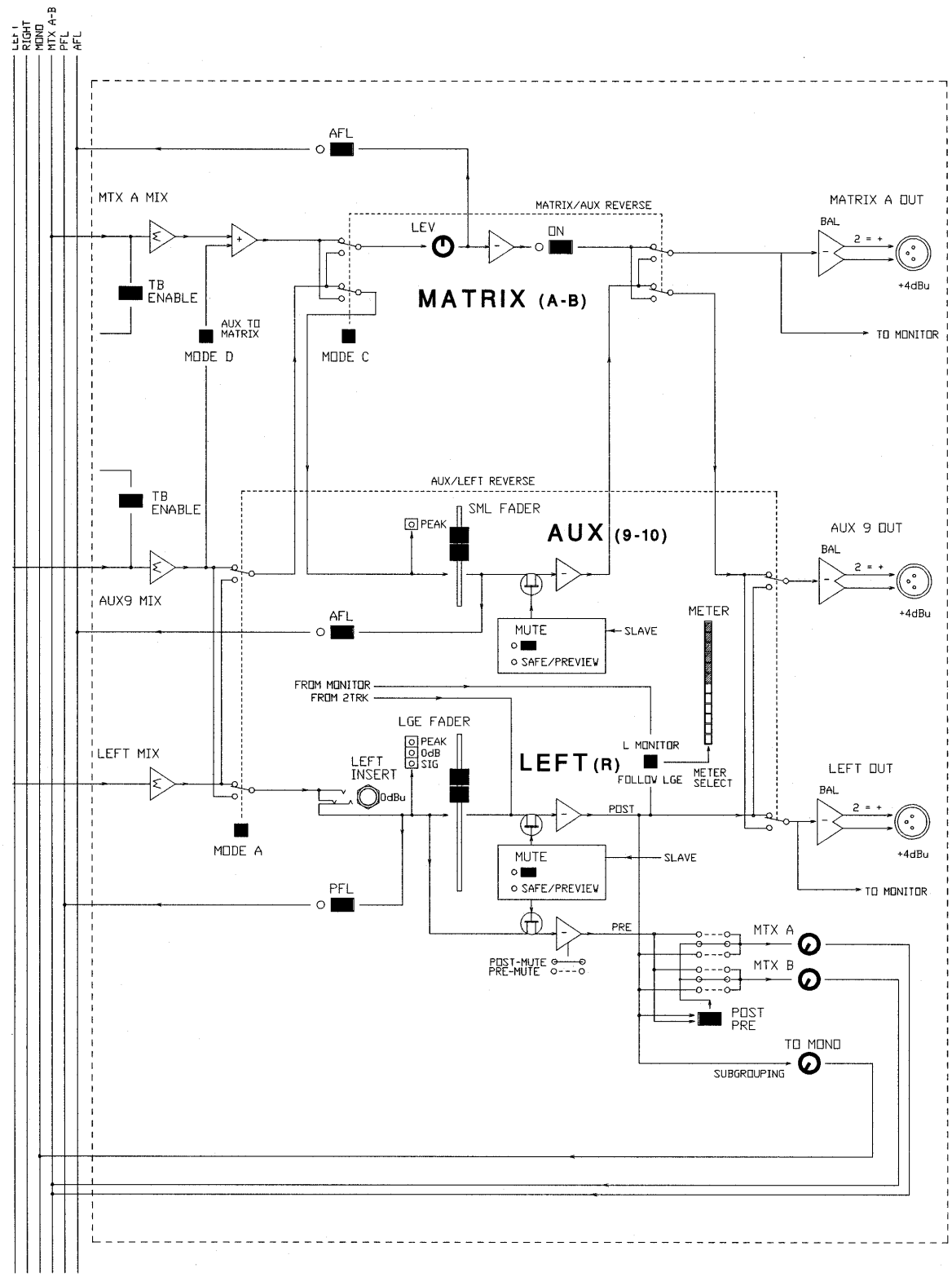
MAINS VOLTAGE SETTING

The setting of the AC mains input voltage of the power supply must match the local mains supply in your area. To alter the setting you will require a soldering iron and some solder. Reconnect the terminals on the transformer according to the diagrams below. Remember to check the fuse for the correct type and rating .



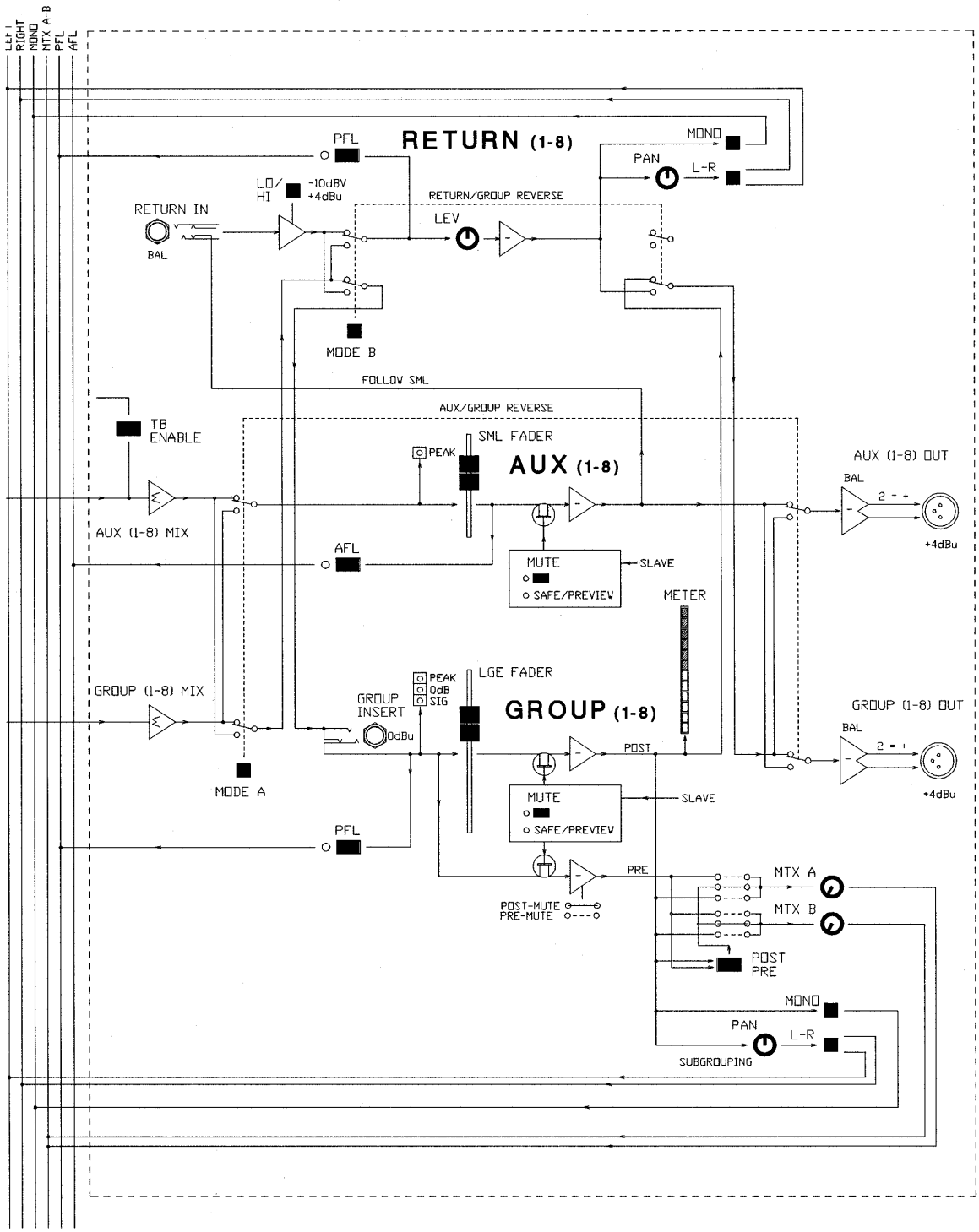
AUX / MATRIX SECTION

SHEET 3 OF 5



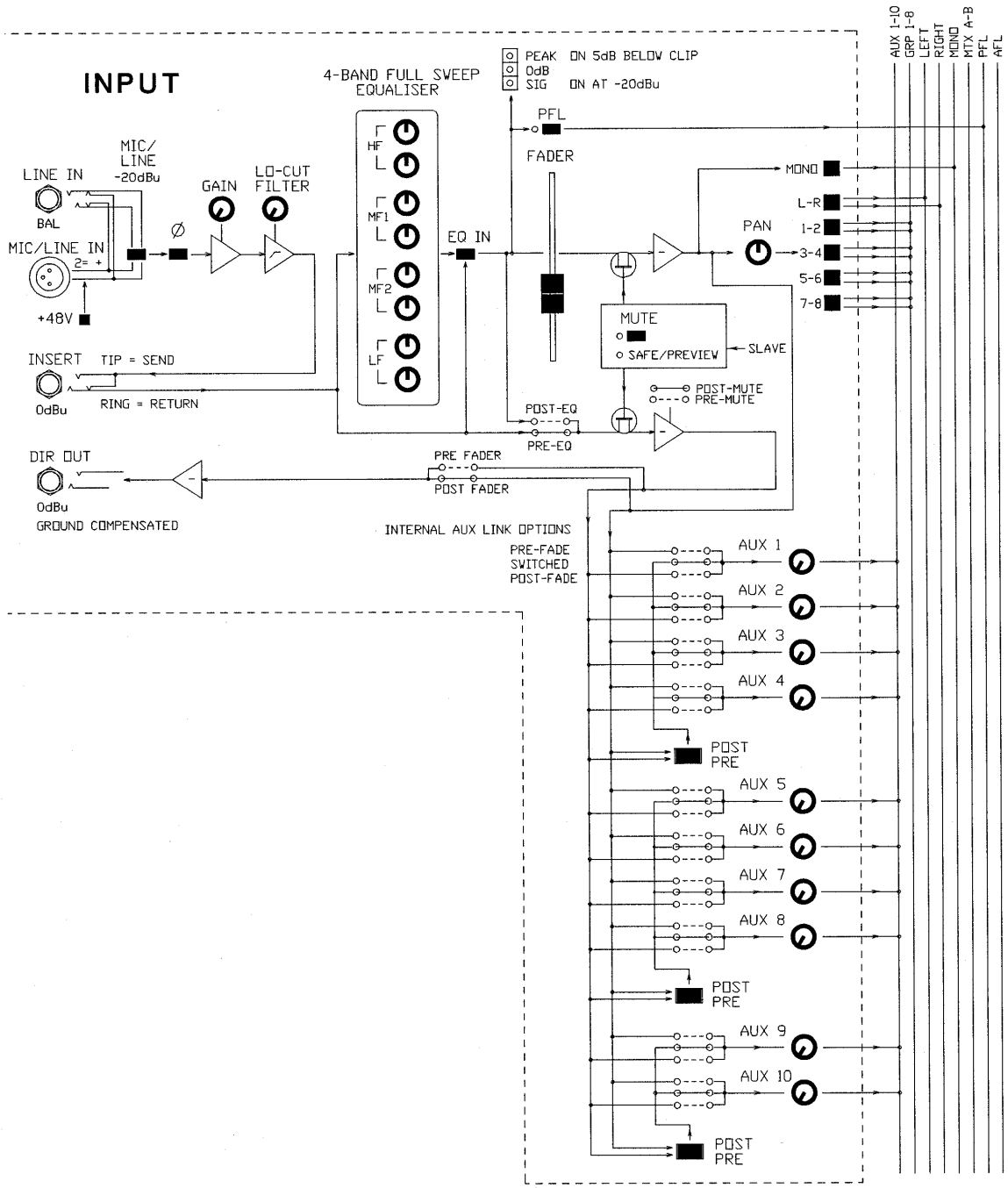
GROUP / AUX SECTION

SHEET 2 OF 5



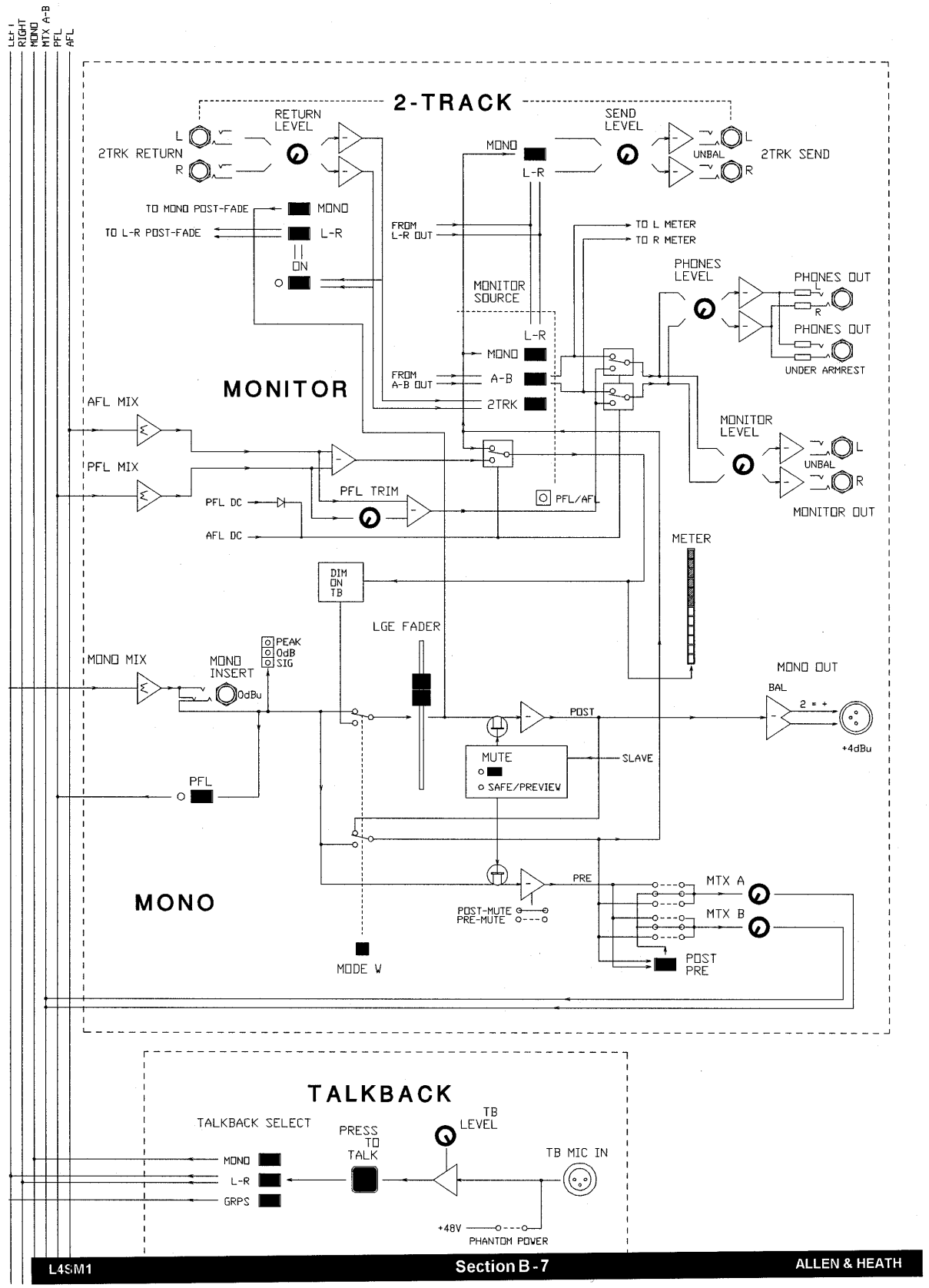
INPUT SECTION

SHEET 1 OF 5



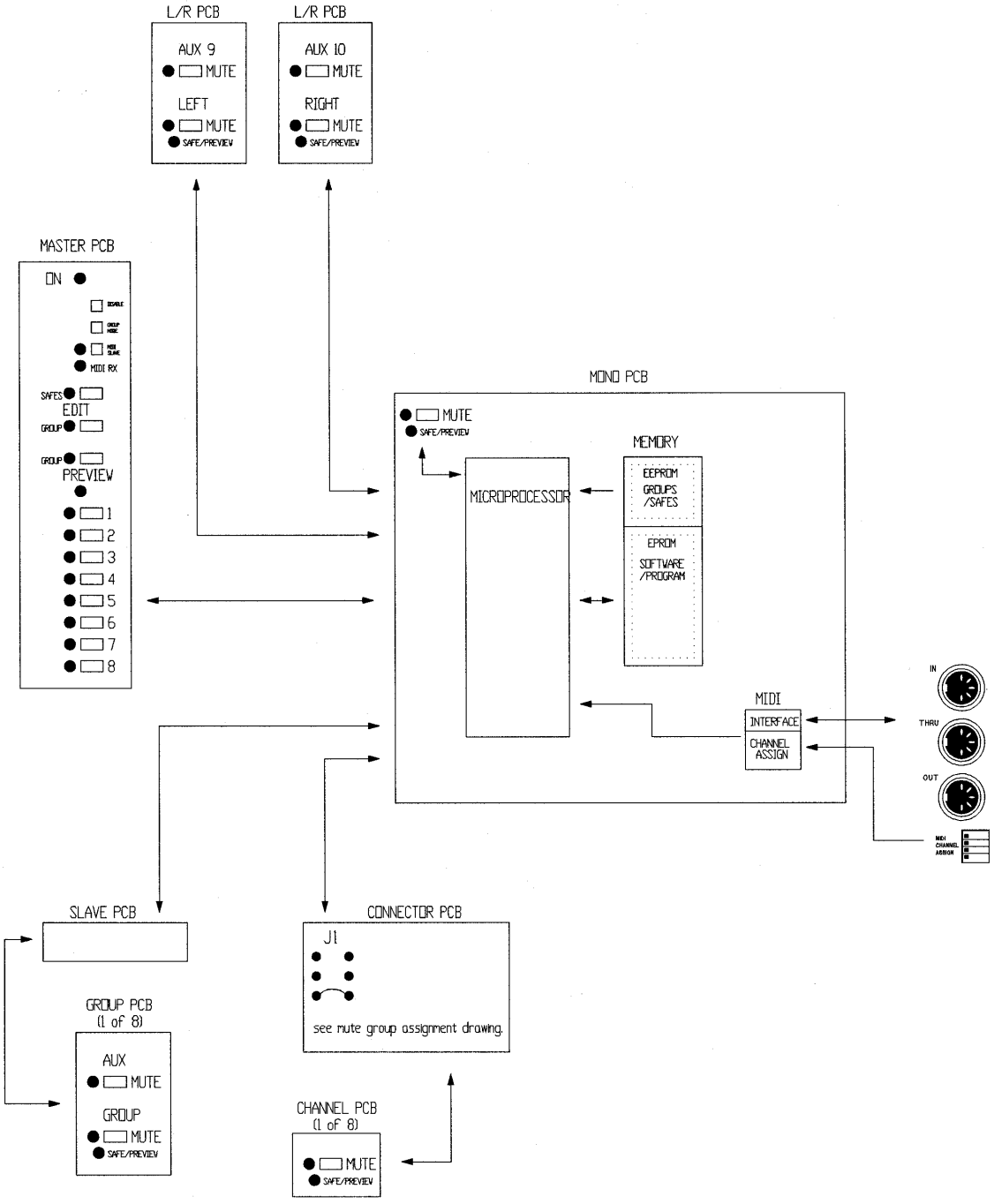
MONITOR / TALKBACK SECTION

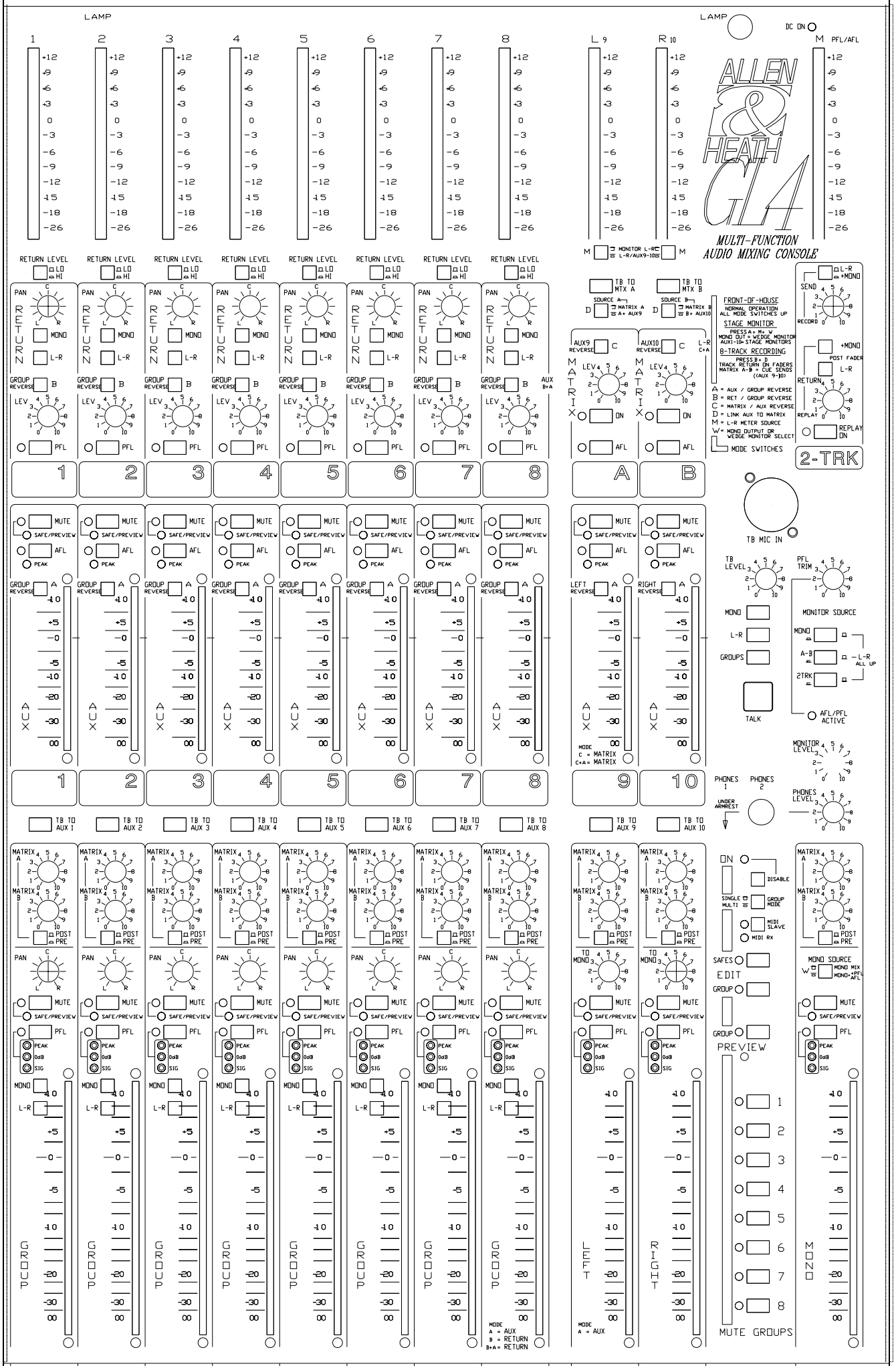
SHEET 4 OF 5

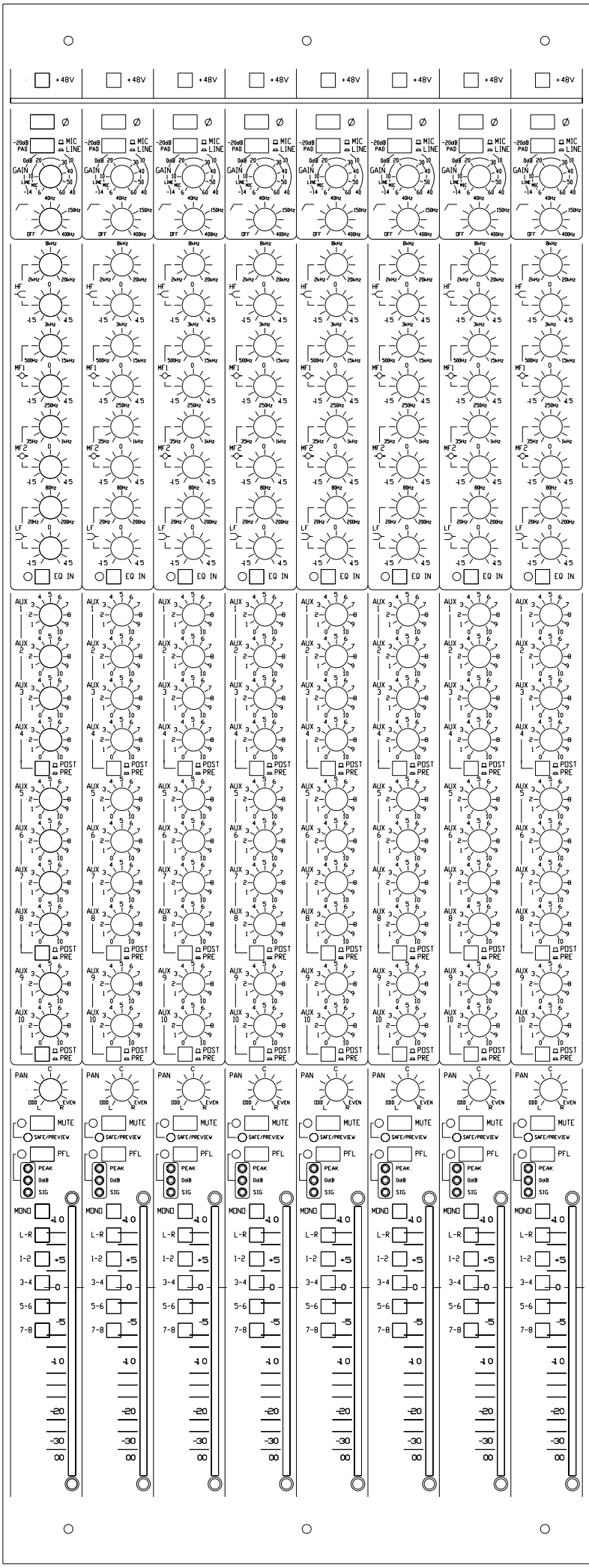


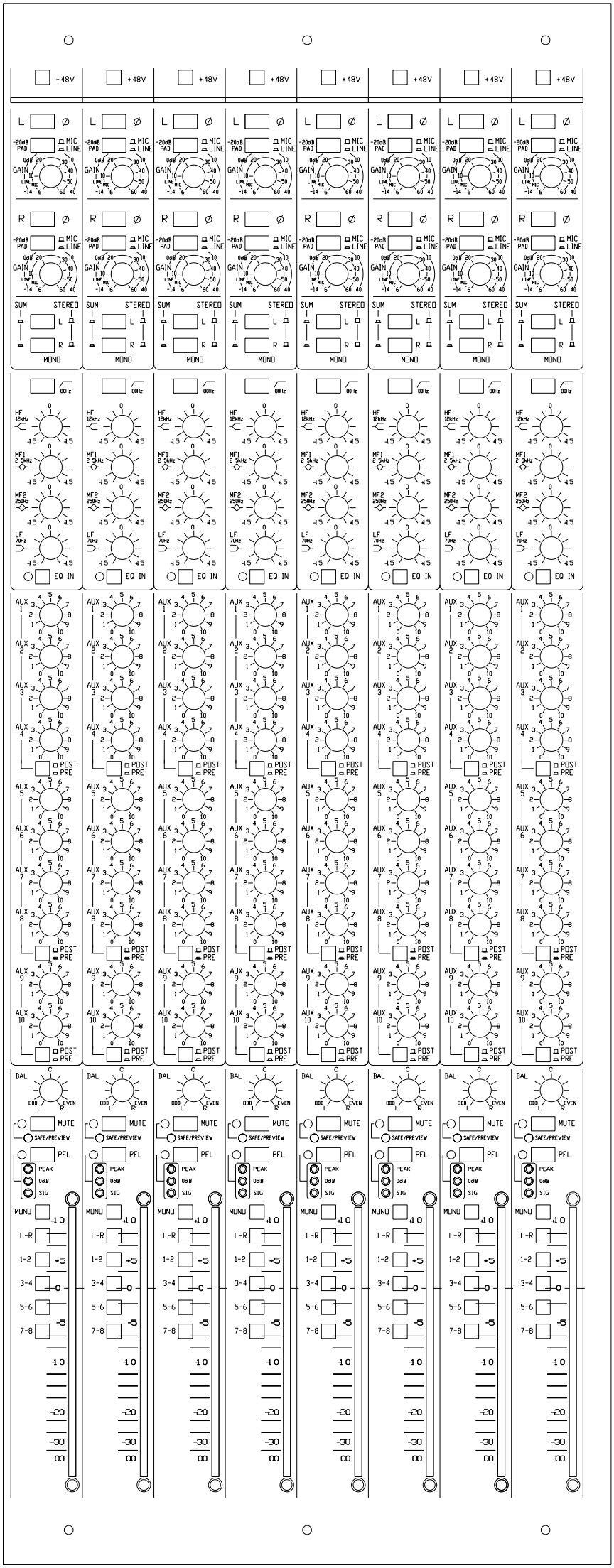
MUTE PROCESSOR SECTION

SHEET 5 OF 5



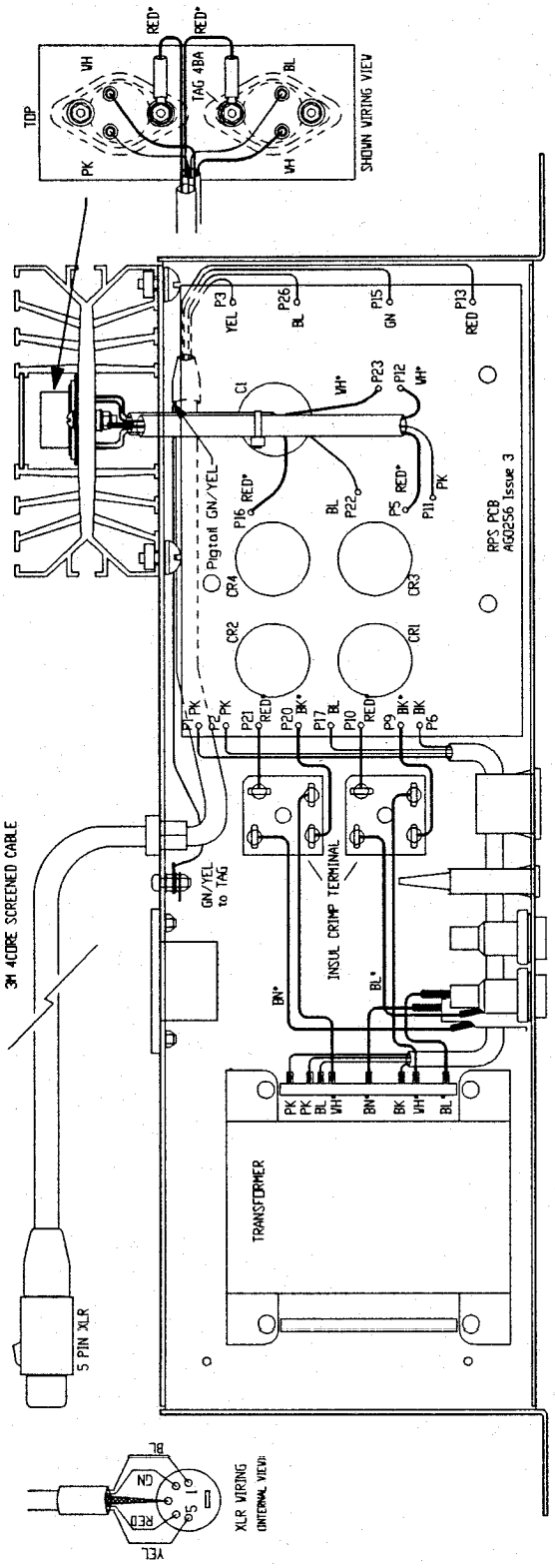

LAMP
1
2
3
4
5
6
7
8
L 9
R 10
M PFL/AFL
+12
+9
+6
+3
0
-3
-6
-9
-12
-15
-18
-26
LAMP
DC ON
ALLEN & HEATH GL4
MULTI-FUNCTION AUDIO MIXING CONSOLE
RETURN LEVEL
LO
HI
PAN
MONO
L-R
GROUP REVERSE
B
AUX B+A
LEV
PFL
MUTE
SAFE/PREVIEW
AFL
PEAK
GROUP REVERSE
A
LEFT REVERSE
RIGHT REVERSE
VCA
TB TO MTX A
TB TO MTX B
SOURCE A
SOURCE B
MATRIX A
MATRIX B
AUX9 REVERSE
AUX10 REVERSE
C
ON
FRONT-OF-HOUSE
NORMAL OPERATION
ALL MODE SWITCHES UP
STAGE MONITOR
PRESS A+ M+ W
MONO OUT = WEDGE MONITOR
AUX1-10= STAGE MONITORS
8-TRACK RECORDING
PRESS B+ D
TRACK RETURN ON FADERS
MATRIX A-B = CUE SENDS
((AUX 9-10))
A = AUX / GROUP REVERSE
B = RET / GROUP REVERSE
C = MATRIX / AUX REVERSE
D = LINK AUX TO MATRIX
M = L-R METER SOURCE
W = MONO OUTPUT OR WEDGE MONITOR SELECT
MODE SWITCHES
SEND
L-R
+MONO
RECORD
POST FADER
RETURN
REPLAY
REPLAY ON
2-TRK
TB MIC IN
TB LEVEL
PFL TRIM
MONO
L-R
GROUPS
TALK
MONITOR SOURCE
A-B
2TRK
ALL UP
AFL/PFL ACTIVE
MONITOR LEVEL
PHONES 1
PHONES 2
UNDER ARMREST
PHONES LEVEL
TB TO AUX 1
TB TO AUX 2
TB TO AUX 3
TB TO AUX 4
TB TO AUX 5
TB TO AUX 6
TB TO AUX 7
TB TO AUX 8
TB TO AUX 9
TB TO AUX 10
MATRIX A
MATRIX B
POST
PRE
TO MONO
0dB
SIG
MODE
C = MATRIX
C+A = MATRIX
A = AUX
B = RETURN
B+A = RETURN
ON
DISABLE
SINGLE
MULTI
GROUP MODE
MIDI SLAVE
MIDI RX
SAFES
EDIT
GROUP
PREVIEW
MUTE GROUPS
MONO SOURCE
MONO MIX
MONO+AFL
GROUP
LEFT
RIGHT
MONO
1
2
3
4
5
6
7
8
A
B
9
10
L
R
MONO


+48V
Ø
-20dB PAD
MIC LINE
GAIN
40Hz 150Hz OFF 400Hz
8kHz 2kHz 20kHz HF
3kHz 500Hz 15kHz MF1
250Hz 35Hz 1kHz MF2
80Hz 20Hz 200Hz LF
EQ IN
AUX 1 AUX 2 AUX 3 AUX 4 AUX 5 AUX 6 AUX 7 AUX 8 AUX 9 AUX 10
POST PRE
PAN C ODD L EVEN R
MUTE
SAFE/PREVIEW
PFL
PEAK 0dB SIG
MONO L-R 1-2 3-4 5-6 7-8
+10 +5 0 -5 -10 -20 -30 oo


+48V
L
Ø
-20dB PAD
MIC
LINE
GAIN
R
SUM
STEREO
MONO
80Hz
HF 12kHz
MF1 2.5kHz
MF2 250Hz
LF 70Hz
EQ IN
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
AUX 7
AUX 8
AUX 9
AUX 10
POST
PRE
BAL
ODD L
EVEN R
MUTE
SAFE/PREVIEW
PFL
PEAK
0dB
SIG
L-R
1-2
3-4
5-6
7-8

INTERNAL WIRING

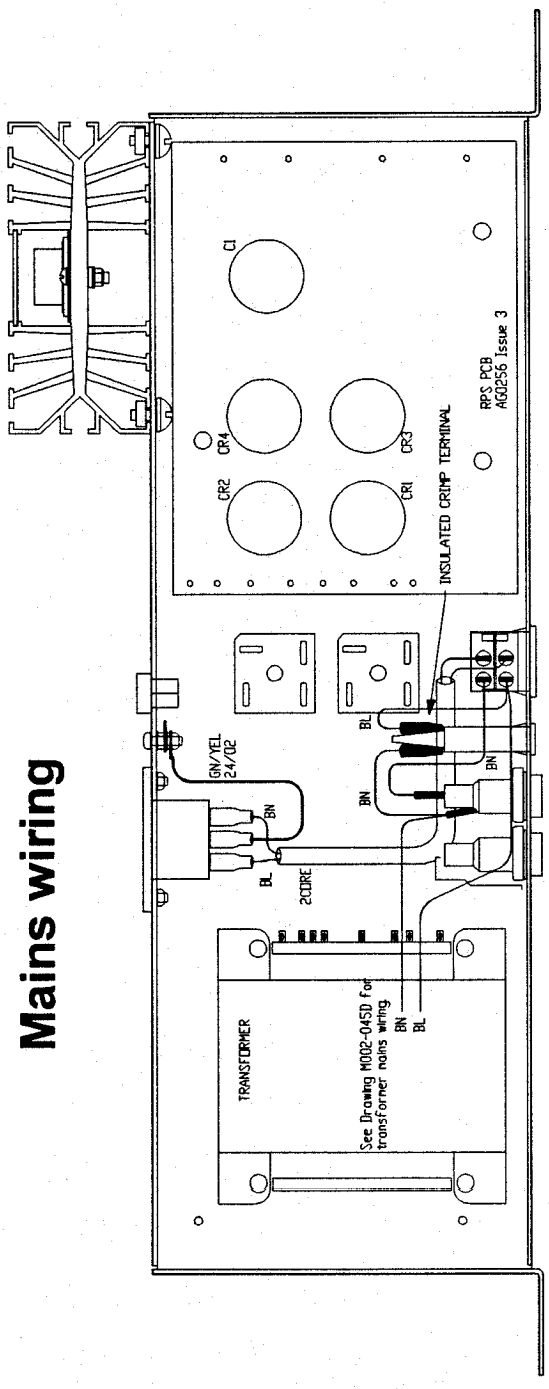
DC wiring



ALL WIRES ARE 16/02 UNLESS MARKED WITH * (eg. BL*).

WIRES MARKED WITH * (eg. BL*) ARE 30/0.25.

Mains wiring



ALL WIRES 16/02 UNLESS OTHERWISE MARKED

DIMENSIONS

The diagrams below give the dimensions for flightcasing the console and power supply unit.