
SOUNDCRAFT



USER GUIDE





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1. Introduction

Introduction

K3 Standard Console

The **K3 Standard** Console is designed to offer value for money, and versatility that allows the desk to perform to a high standard in a wide range of applications, from touring rigs and medium sized band PA to fixed installations in medium sized theatres and concert halls, conference halls and so on.

The K3 is available in five different frame sizes **16, 24, 32, 40** and **48** channels. The choice of frames and modules means that the desk can be configured to match your needs and budget. Good ergonomics, plus an advanced mute system and MIDI control module, make the K3 easy for any operator to get to grips with, and exploit its range of facilities to the full.

K3 Theatre Console

The **K3 Theatre** is designed to offer the ultimate in control and quality from a mid-range PA console. Based on the K3 Standard, the K3 Theatre is a modular 8-bus console with a special mono input module featuring enhanced EQ plus refinements such as individual routing to groups. Along with all the other K3 options, such as choice of group modules, stereo input modules, and a slimline matrix module, the K3 Theatre makes it easier than you ever thought possible to mix a large number of varied mono and stereo sources in a range of sound reinforcement situations- band FOH or FOH and monitor mixing, installed or theatre sound with a multi-speaker rig -all with the benefits of MIDI mute control, and the K3's exceptional ease of use.

The K3 Theatre is available in **16, 24, 32, 40** and **48**-channel frame sizes, with an optional VU meter overbridge.

Module Options

Each frame includes:

- Either **Standard** or **Theatre** Inputs.
- 4 X Dual group/EQ or group/FX output modules.
- 1 X MIDI scene set module.
- 1 X Main module.
- 1 X Blank module
- 1 X CPS275 Power supply (*48ch Theatre version needs two*).

Optional fittings include:

- Quad matrix modules.
- Stereo input modules.
- VU Overbridge (Factory fitted).
- Additional CPS275 for backup supply, links to main supply with short cable.
- Dual Group/EQ or FX modules.
- Mic I/P transformer options.

Metering

A VU output overbridge is available for all K3 frames, except for 16ch. The VU meters provide metering of the Group and Mix signals and monitor the Mono bus output.

Additionally, the 8 VUs which normally monitor the group signals can be switched from the front panel to read the Matrix outputs or the Aux outputs.

Power Supplies

The K3 requires the CPS275 power supply unit. The CPS275 has built-in diodes in the output. This allows a second power supply to be connected in "parallel" with the main supply such that if any rail on either supply fails, the other CPS275 will immediately supply the power.

Note: Although the supplies are "in parallel", they will not necessarily share the current because the rail voltages will not be exactly equal.

When you order a spare CPS275, this comes with a short link cable which connects from the spare supply's "link" output into the "link" connector on the main supply.

Warranty

- 1 **Soundcraft** is a trading division of Harman International Industries Ltd.

End User means the person who first puts the equipment into regular operation.

Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.

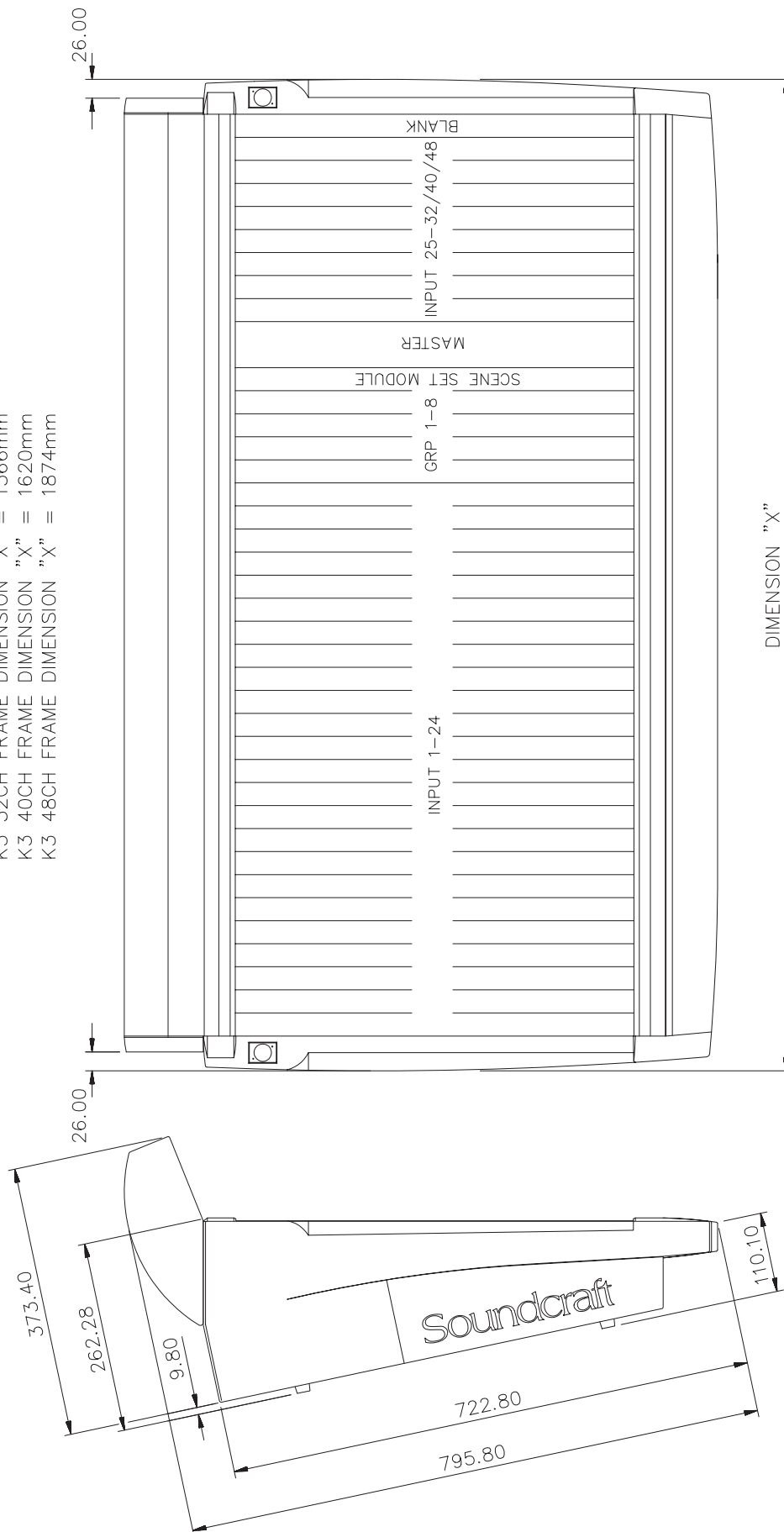
Equipment means the equipment supplied with this manual.

- 2 If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.
- 3 Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.
- 4 This warranty shall only be available if:
 - a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
 - b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
 - c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and
 - d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.
- 5 Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.
- 6 The benefit of this Warranty may not be assigned by the End User.
- 7 End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

2. Installation

Dimensions

K3 16CH	FRAME	DIMENSION	"X"	=	858mm
K3 24CH	FRAME	DIMENSION	"X"	=	1112mm
K3 32CH	FRAME	DIMENSION	"X"	=	1366mm
K3 40CH	FRAME	DIMENSION	"X"	=	1620mm
K3 48CH	FRAME	DIMENSION	"X"	=	1874mm



Precautions and Safety Instructions

General Precautions

Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust or moisture. Do not use any liquids to clean the fascia of the unit: a soft dry brush is ideal. Use only water or ethyl alcohol to clean the trim and scribble strips. Other solvents may cause damage to paint or plastic parts.

Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high-power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis. For the same reason, always site the power supply away from the unit.

Caution! In all cases, refer servicing to qualified personnel.

Handling and Transport

The console is supplied in a strong carton. If it is necessary to move it any distance after installation it is recommended that this packing is used to protect it. Be sure to disconnect all cabling before moving. If the console is to be regularly moved we recommend that it is installed in a foam lined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors.

Power Supplies & cables

Always use the power supply and cable supplied with the mixer: the use of alternative supplies may cause damage and voids the warranty; the extension of power cables may result in malfunction of the mixing console.

Warning! Always switch the power supply off before connecting or disconnecting the mixer power cable, removing or installing modules, and servicing. In the event of an electrical storm, or large mains voltage fluctuations, immediately switch off the PSU and unplug from the mains.

Always ensure that you use the correct PSU for your mixer. The K3 normally requires **1 X CPS275** supply for the 16 to 40 input frames and the 48 channel input Standard.

The 48 input **Theatre** frame uses **2 X CPS275**

On 32 to 40 plus 48 input standard frames fitted with the optional VU overbridge an additional CPS275 is required. (*CPS275 supplied with the overbridge*).

Note: Each CPS275 can have a backup supply connected to it.

Signal Levels

It is important to supply the correct input levels to the console, otherwise signal to noise ratio or distortion performance may be degraded; and in extreme cases, damage to the internal circuitry may result. Likewise, on all balanced inputs avoid sources with large common mode DC, AC or RF voltages, as these will reduce the available signal range on the inputs. Note that 0dBu = 0.775V RMS.

Refer to the Specifications section for details of input and output levels.

Mains Installation

The CPS275 is a linear power supply which produces the required DC voltages used by the K3.

This unit has four nominal input voltages:

230V AC rms

115V AC rms

100V AC rms

85V AC rms.

Warning! Do not replace the fuse with any other type, as this could become a safety hazard and will void the warranty. Use only the correct fuse (which depends upon the nominal input voltage selected: see CPS275 manual).

General Wiring Procedures

To take full advantage of the excellent signal to noise ratio and low distortion of Soundcraft consoles care must be taken to ensure that incorrect installation and wiring does not degrade the performance of the desk. Hum, buzz, instability and Radio Frequency interference can usually be traced to earth loops and inferior earthing systems. In some areas, especially heavily industrial areas, the incoming mains earth will not be adequate and a separate technical earth for all the audio equipment must be supplied. However, check with your local electricity supply company to ensure that safety regulations are not infringed or negated.

The successful, hum free, installation of a system requires forethought, and the establishment of a set of ground rules, which must be consistently adhered to at all stages of installation.

Initial Wiring Considerations

- For optimum performance, it is essential for the earthing system to be clean and noise free, as all signals are referenced to this earth. A central point should be decided on for the main earth point system, and all earths should be 'star fed' from this point. It is common electrical practice to 'daisy chain' the earths to all electrical outlets but this method is unsuitable for audio installations. The preferred method is to run an individual earth wire from each outlet, back to the system star point to provide a safety earth screen reference for each piece of equipment.

A separate earth wire should also be run from each equipment rack and area, to the star point. This may or may not be used depending on circumstances, but it is easier to install in the first place, than later when problems arise.

The location of the star point should be a convenient, easily accessible place, preferably at the rear of the console or in the main equipment rack.

- Install separate 'clean' and 'dirty' mains outlets, wired individually back to the incoming mains distribution box. Use the 'clean' supply for all audio equipment and the 'dirty' supply for all lighting, vending machines etc. Never mix the two systems.
- If necessary, to provide sufficient isolation from mains borne interference, install an isolating transformer. This should be provided with a Faraday Shield which must be connected with earth.
- Never locate the incoming mains distribution box near audio equipment, especially tape recorders, which are very sensitive to electro-magnetic fields.
- Ensure that all equipment racks are connected to earth, via a separate wire back to the star point.
- Equipment which has unbalanced inputs and outputs may need to be isolated from the rack to prevent earth loops.

Audio Wiring

Having provided all equipment with power and earthing connections, consideration must be given to the method of providing audio interconnection and adequate screening of those interconnections. This must be done in a logical sequence to avoid problems and assist in the localisation of problem equipment.

- Connect the Monitor system to the console and check for any hum, buzz, or RFI. Only when you are satisfied with the quietness of the console and the monitor system should you proceed with the next step.
- Connect stereo tape recorders, echo and foldback sends one at a time, checking and isolating any connection which degrades performance.
- Connect all other peripheral devices.
- Connect all microphone lines.

By following this sequence much time and future trouble will be saved, and the result will be a quiet, stable system.

Shielding

Audio equipment is supplied with a variety of input and output configurations, which must be taken into consideration when deciding where the screen connections should be made. There are three sources of unwanted signal being impressed on the screen, which are as follows:

- Extraneous electrostatic or electromagnetic fields.
- Noise and interference on the earth line.
- Capacitive coupling between the screen and signal wires.

To minimise the adverse affects of the unwanted coupling to the signal wires, it is important that the screen is connected at one end only, i.e. the screen must not carry any signal current. Any signal on the wires within the screen will be capacitively coupled to the screen. This current will ultimately be returned to the source of the signal, either directly, if the screen is connected at the signal source end, or indirectly via the earthing system, if the signal is connected at the signal destination end. The indirect connection will cause an increase in high frequency cross-talk, and should be avoided wherever possible.

Therefore, in general, always connect the shield only at the signal source end. In high RF areas, the screen can also be connected to earth via a 0.01 μ F capacitor. This will present a short circuit at RF frequencies, thus lowering the effective shield impedance to ground. However, at low audio frequencies the reactance of the capacitor will be sufficiently high not to cause an earth loop problem.

Points to Remember

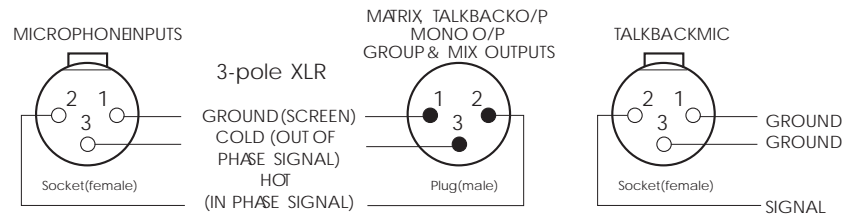
- In all cases, use good quality twin screened audio cable. Check for instability at the output.
- Always connect both conductors at both ends, and ensure that the screen is only connected at one end.
- Do not disconnect the mains earth from each piece of equipment. This is needed to provide both safety and screen returns to the system star point.
- Equipment which has balanced inputs and outputs may need to be electrically isolated from the equipment rack and/or other equipment, to avoid earth loops.

It is important to remember that all equipment which is connected to the mains is a potential source of hum and interference and may radiate both electrostatic or electromagnetic radiation. In addition, the mains will also act as a carrier for many forms of RF interference generated by electric motors, air-conditioning units, thyristor light dimmers etc. Unless the earth system is clean, all attempts to improve hum noise levels will be futile. In extreme cases there will be no alternative but to provide a completely separate and independent 'technical earth' to replace the incoming 'noisy earth'. However, always consult your local electricity supply authority to ensure that safety regulations are not being infringed.

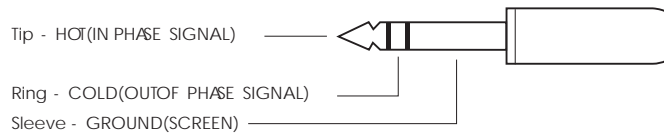
Connections

Wiring conventions

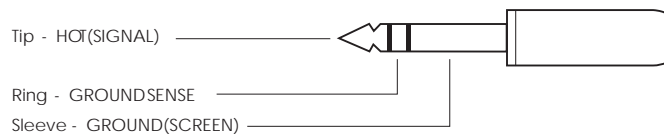
The K₃ uses two different types of audio connector: 3-pin XLR and 1/4" 3-pole jacks. This section describes how to connect external equipment to the console. Correctly-made cables of the proper type will ensure peak performance from your mixer.



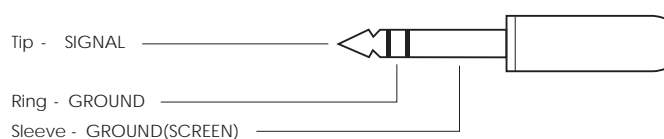
1/4" Stereo Jack Plug used as balanced Input/Output:
Hi-Z Input, Stereo Inputs, 2-Track Inputs, Oscillator
Insert return on Standard and Theatre Input.
Optional Insert sends on Standard and Theatre Inputs



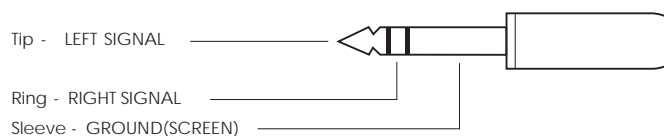
1/4" Stereo Jack Plug used as a ground compensated output:
Aux Outputs (Insert sends on Standard and Theatre Inputs)



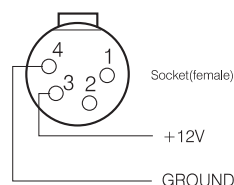
1/4" Stereo Jack Plug used as an unbalanced Output:
Direct Outputs



1/4" Stereo Jack Plug used as a Stereo Output:
Headphones

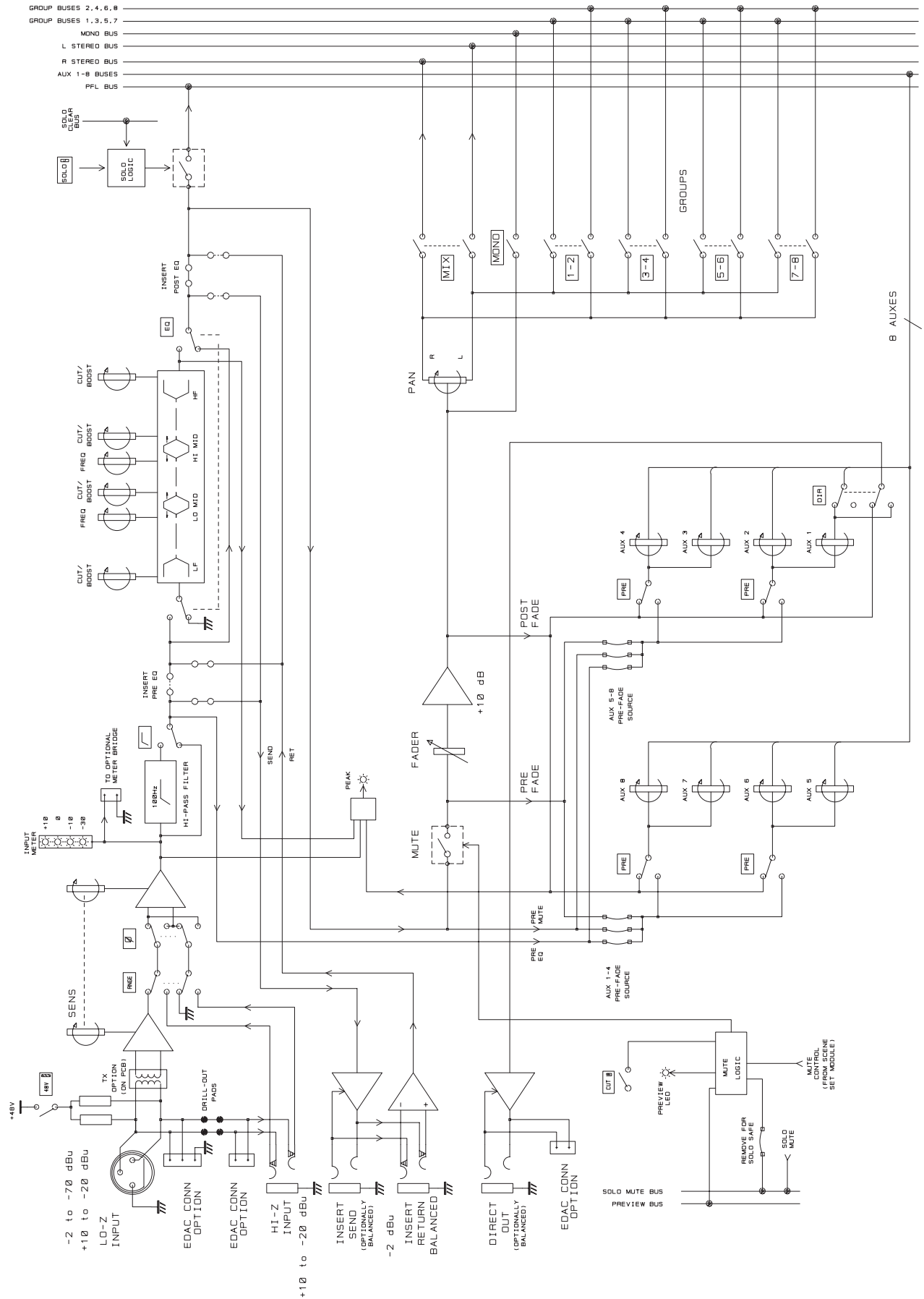


GOOSENECK LAMP SUPPLY

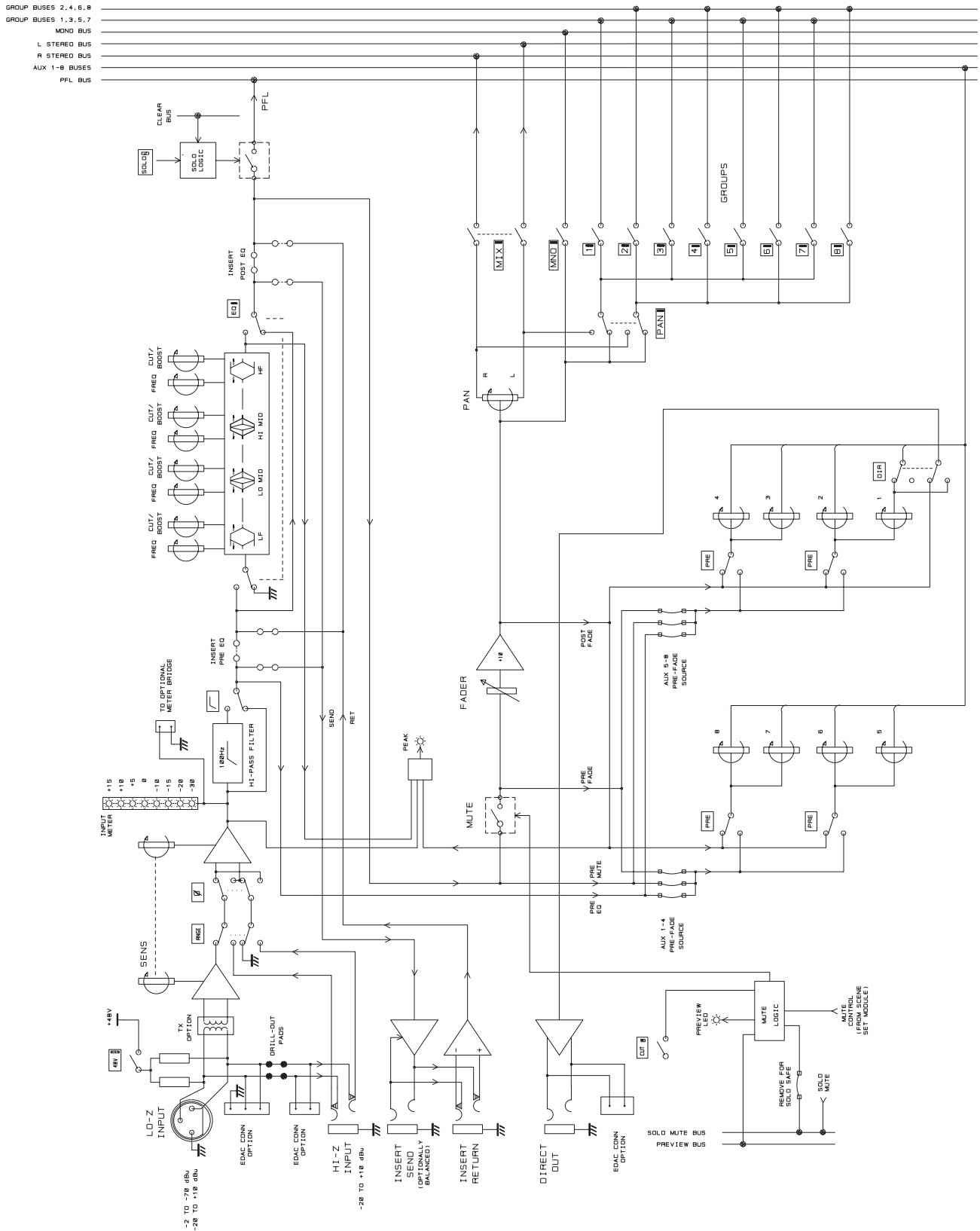


3. Block Diagrams

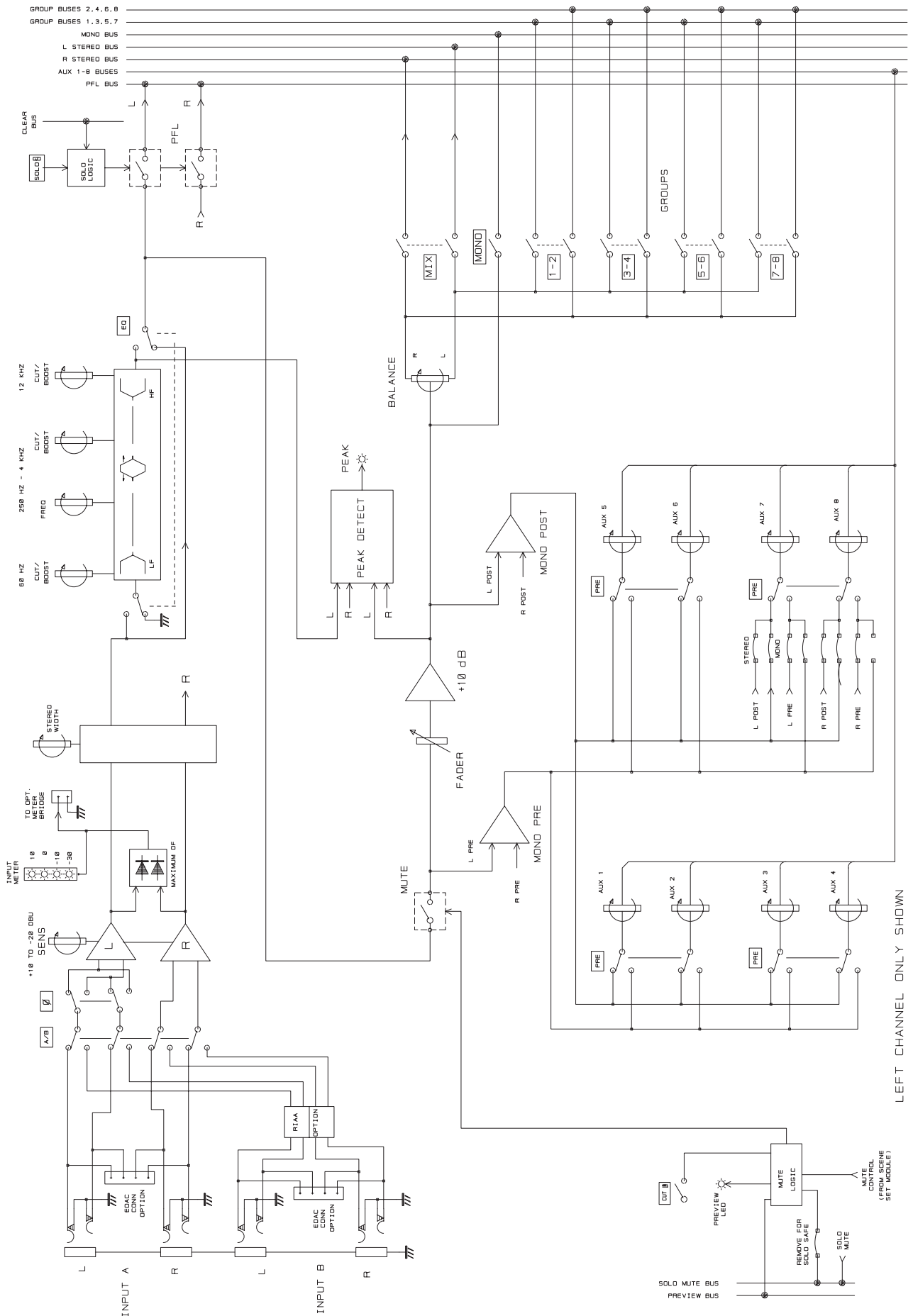
Standard Mono Input Module



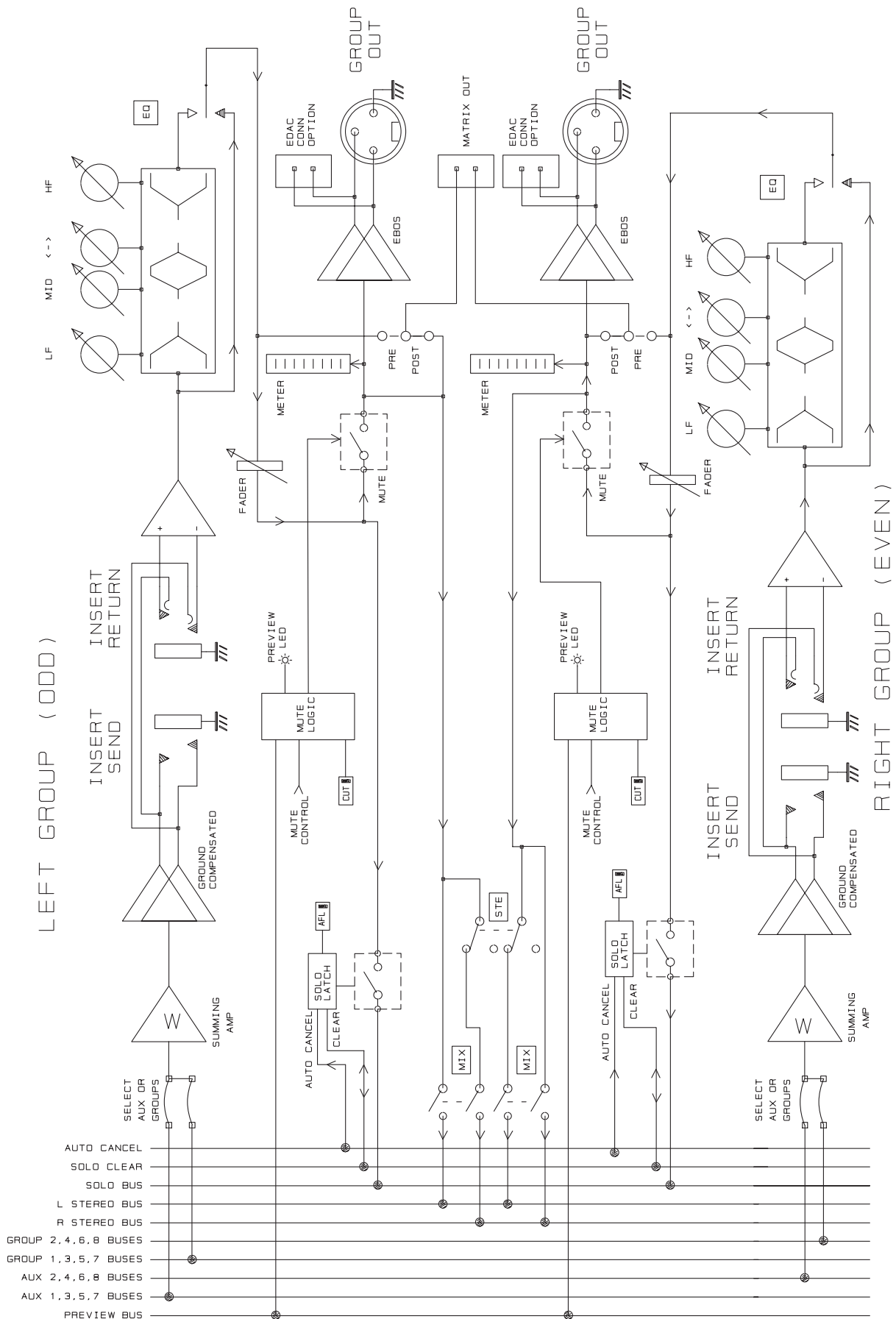
Theatre Mono Input Module



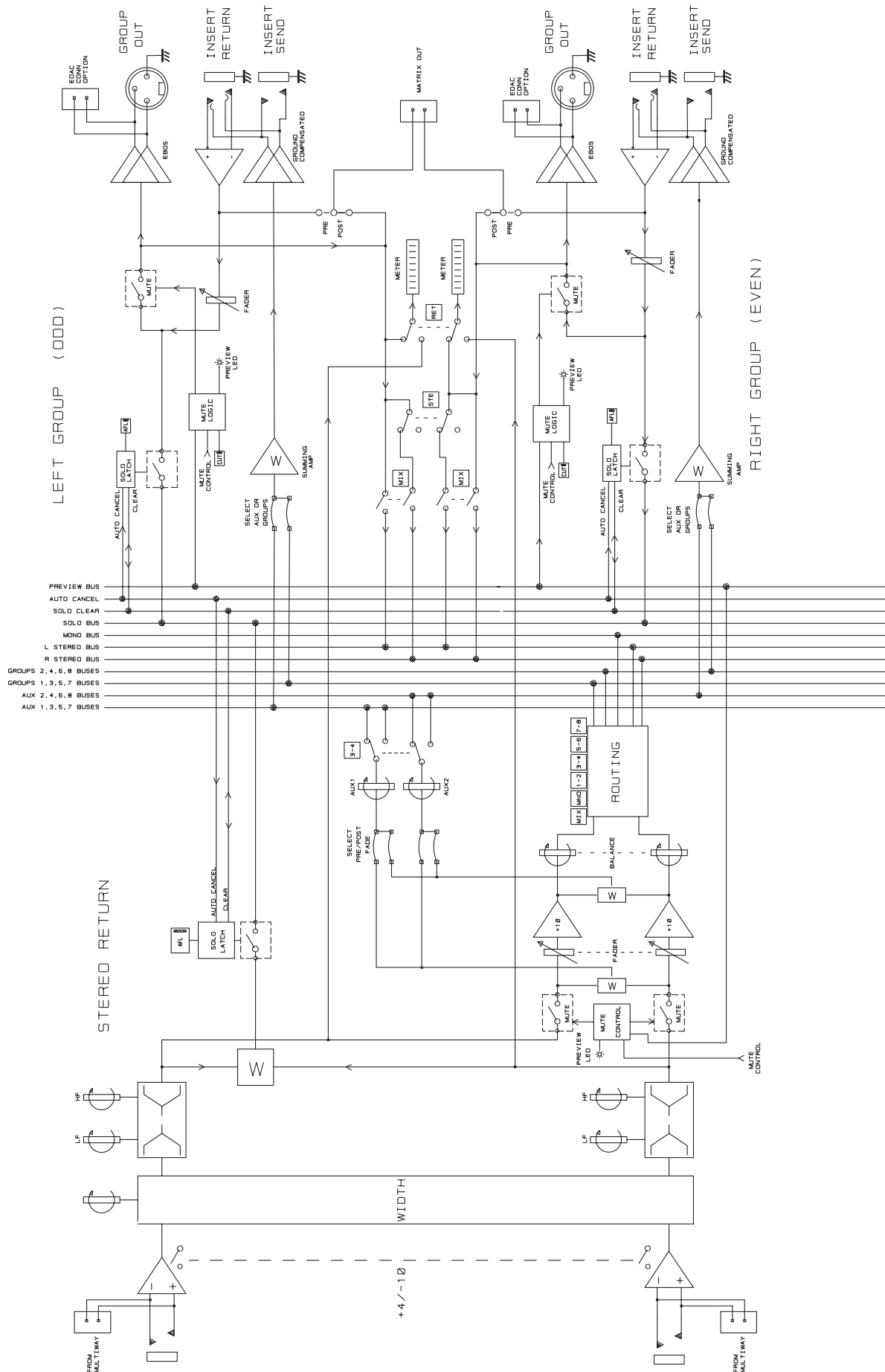
Stereo Input Module



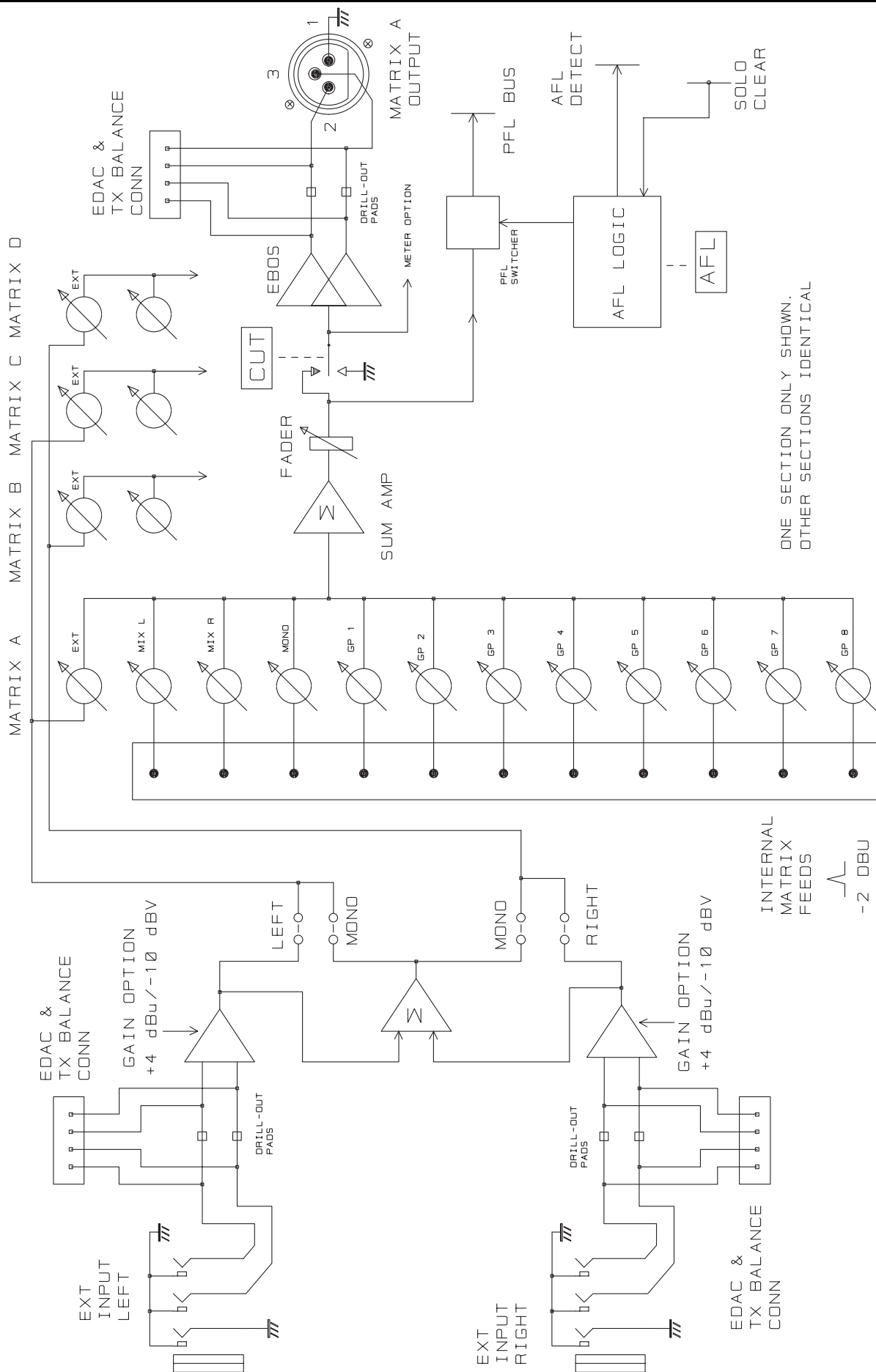
Dual Group/EQ Output Module



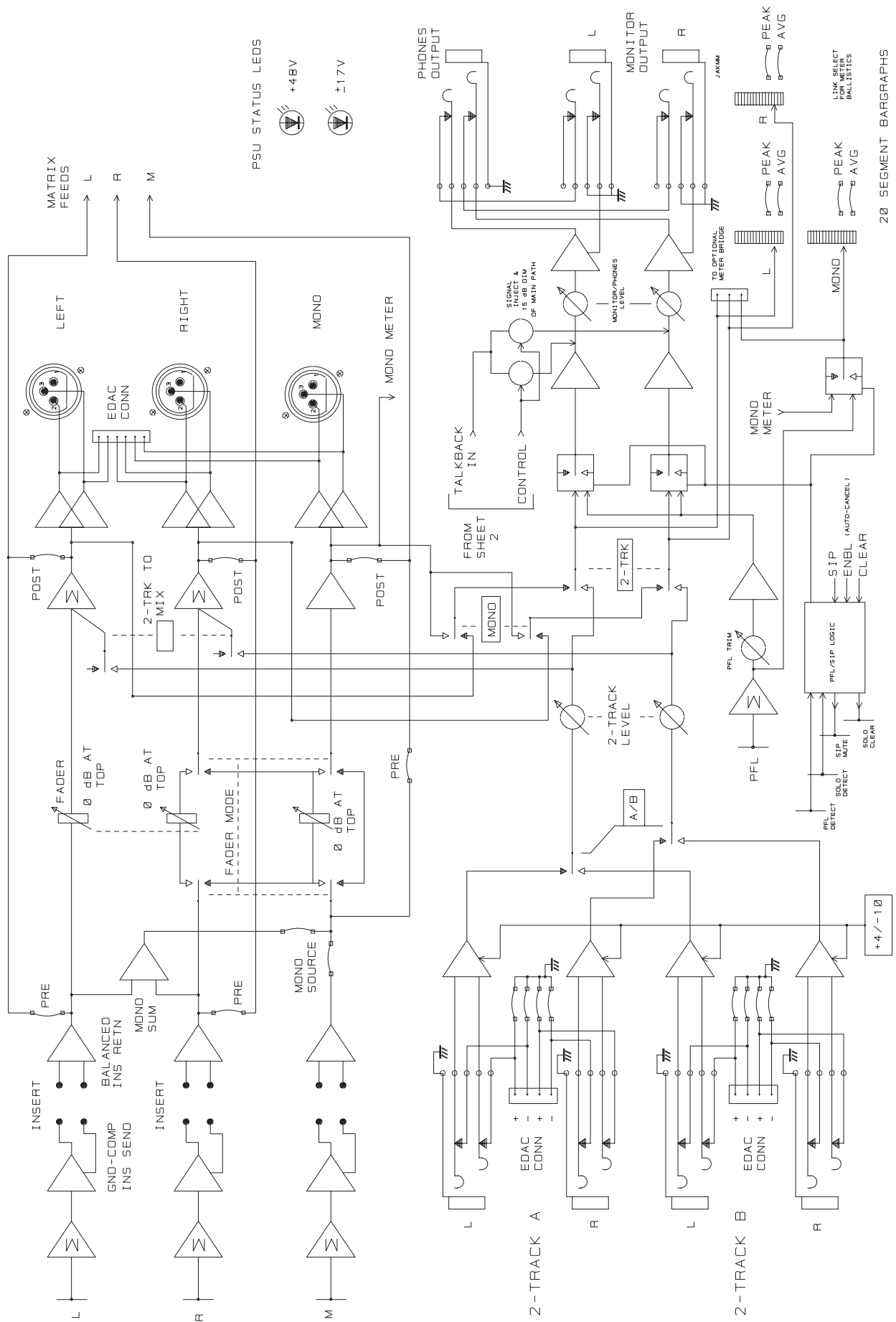
Dual Group/FX Return Module



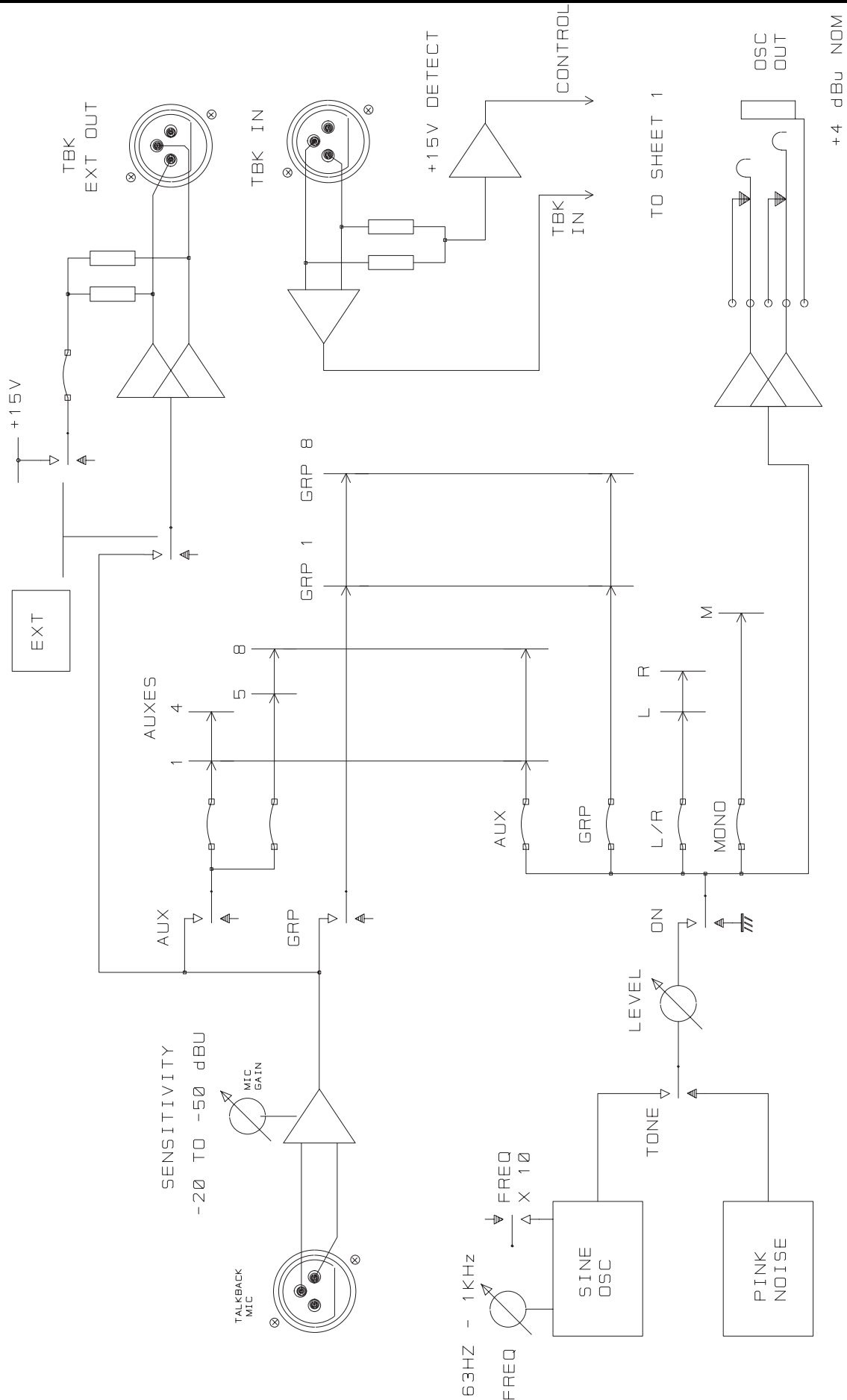
Quad Matrix Module



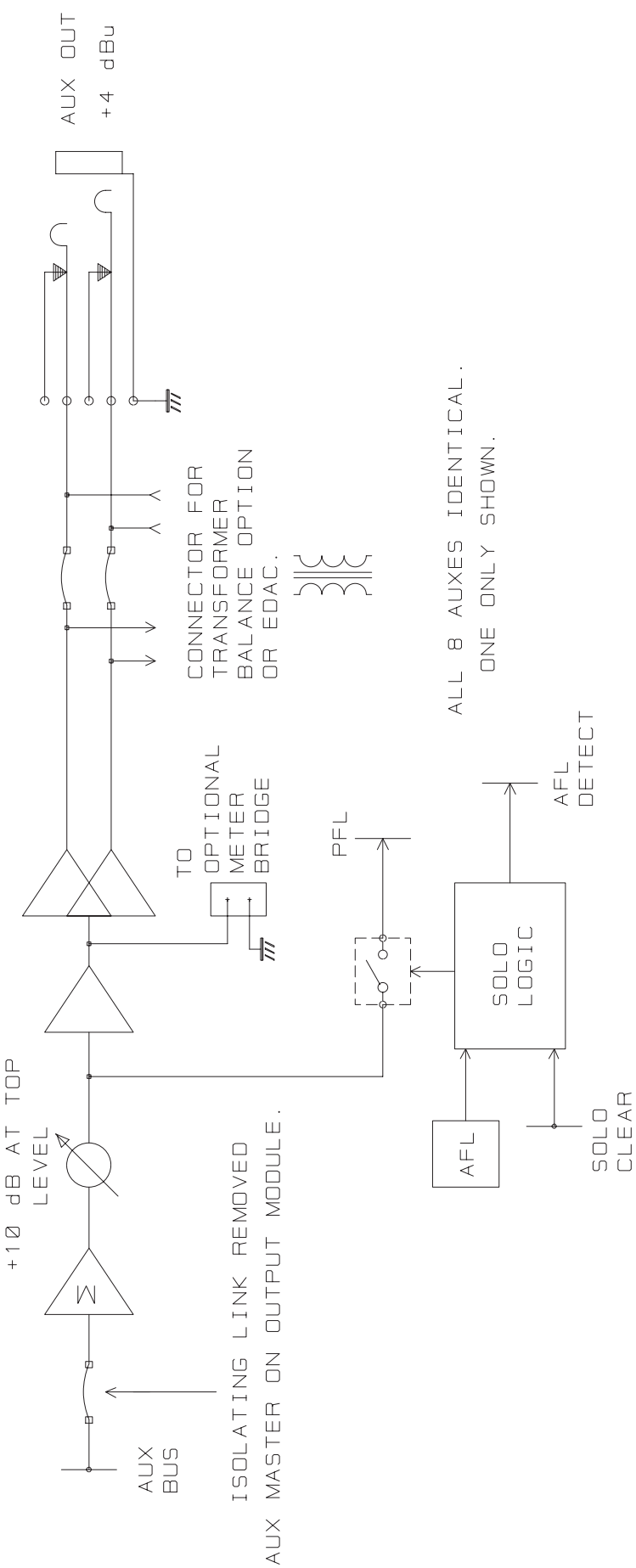
Main Module Sheet 1 of 3



Main Module Sheet 2 of 3

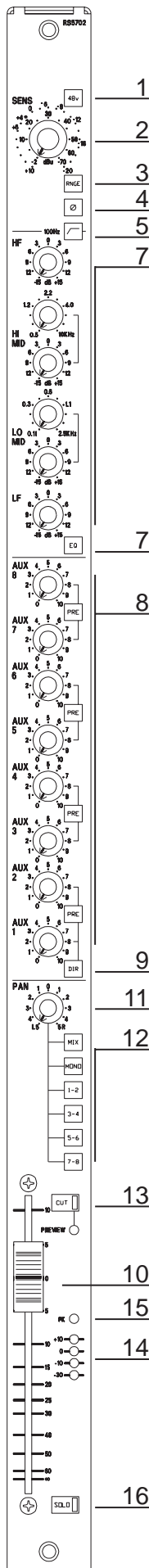


Main Module Sheet 3 of 3 (Aux Main)



4. Functional Description

Standard Mono Input Module



The standard mono input is provided with XLR and jack connectors, the XLR may be used for any level of input signal; inserting a jack automatically disconnects the XLR socket, and applies the jack signal (HI-Z I/P) to the input. The jack socket only operates on the lower sensitivity range.

The channel is provided with an Insert Point using a Ground Compensated Send (optionally balanced) and Balanced Return. The Insert Point may be configured as pre or post-EQ (the factory default is pre-EQ).

1 The **48V** switch applies 48V phantom power to the input XLR. Note that the 48V is never applied to the jack socket

2 The **SENS** (sensitivity) control adjusts the sensitivity of both the XLR and jack inputs, and in combination with the **RNGE** switch gives two sensitivity ranges: -2dBu to -70dBu, and +10dBu to -20dBu.

3 The **RNGE** (Range) switch lowers the sensitivity of the input when pressed, allowing line level signals to be used.

4 The **Ø** (Phase) switch reverses the phase of the selected input when pressed. The switch should normally be released.

5 This switch inserts a second-order **HI-PASS FILTER** into the channel path. The frequency is fixed at 100Hz.

Equaliser

6 The EQ section has four bands. The HF and LF sections have a shelving response at a fixed frequency. The two MID sections have a peaking response at a variable frequency.

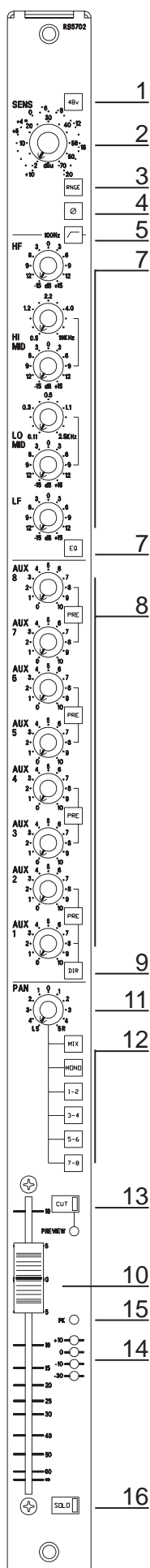
- The HF control gives 15dB of cut or boost at 12kHz.
- The LF control gives 15dB of cut or boost at 60Hz.
- The HI-MID control gives 15dB of cut or boost at 500Hz - 10kHz, selected by the HI-MID frequency control.
- The LO-MID control gives 15dB of cut or boost at 110Hz - 2.5kHz, selected by the LO-MID frequency control.

7 The EQ section is switched in by the **EQ** switch. Toggling this switch provides a simple method of hearing the effect of the equaliser settings.

Auxiliary Sends

8 Signal is sent to the Aux 1 - 8 busses via individual **Level Pots**. These have unity gain when fully clockwise, and are switched pre or post-fader in pairs by the **PRE** buttons.

The pre-fade signal may be sourced pre-fade & post-mute, pre-mute, or pre-EQ & pre-insert in two blocks of four sends, using push-on jumpers.



9 The **DIR** switch switches Aux 1 pot signal away from its bus and connects it to the Direct Output (ground compensated, 1/4" jack). When the DIR switch is not depressed, the Direct Output is fed with the post-fade signal.

Routing

10 The 100mm-travel **FADER** has 10dB of gain and is the main level control for the channel, enabling rapid and accurate control of the channel output level. When mixing, you will get optimum headroom and signal-to-noise ratios by keeping the fader at about the unity (0dB) mark. Avoid running the input sensitivity too high, and the fader resultingly low, since this gives very little headroom. Similarly, running the input sensitivity very low, and the fader fully up (10dB of gain) will increase noise levels, and does not allow any increase in gain on the fader should the signal source drop unexpectedly.

11 The **PAN** control determines the position of the signal within the stereo image. In the centre there is a 4.5dB drop. Pan left feeds the signal to odd-numbered busses and Mix Left, pan right feeds to even-numbered busses and Mix Right.

12 The signal is sent to the stereo mix bus, mono bus and 8 group busses using the **MIX**, **MNO**, **1-2**, **3-4**, **5-6**, **7-8** switches. The mono bus is fed directly from the post-fader signal.

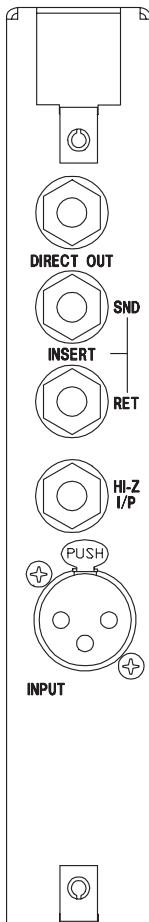
13 The signal in the module is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the module is muted by the MIDI system the CUT switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when PREVIEW mode is selected, to indicate that the channel is muted by the selected scene number.

14 The 4-LED meter next to the fader meters the signal at the input amplifier.

15 The 3-input **PEAK** LED monitors the input amp, the EQ output and the post-fade signals. It lights 6dB before clipping occurs.

Solo / Pre-Fade Listen

16 The electronically latching **SOLO** switch feeds the pre-fade, pre-mute signal to the monitor output and phones output. If Auto Cancel is enabled, then any previously active Solos or AFLs will be cancelled. The SOLO may be remotely cleared, either by the SOLO CLEAR button on the main, or by any other SOLO or AFL if Auto Cancel is active. If SIP mode is selected on the main module, the SOLO button functions as Solo-In-Place, muting all other channels. An internal jumper allows the module to be made safe from muting if another channel is soloed.



Rear Connector Panel

INPUT (3-pin female XLR)

Pin 1	Ground
Pin 2	Signal Hot
Pin 3	Signal Cold

HI-Z INPUT, INSERT RETURN (1/4" TSR Jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

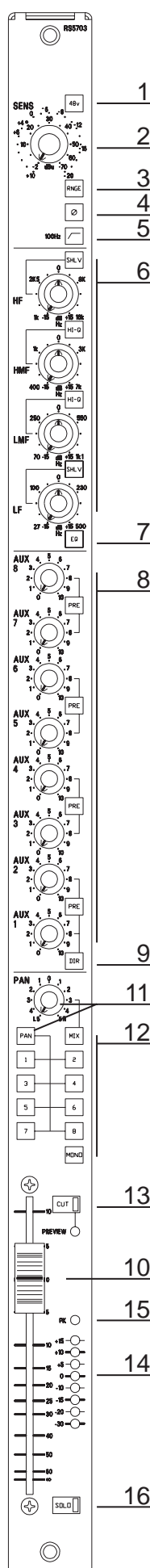
INSERT SEND (1/4" TSR Jack)

Tip	Signal Hot
Ring	Ground Sense (Signal Cold for balanced option)
Sleeve	Ground

DIRECT OUTPUT (1/4" TSR Jack)

Tip	Signal Hot
Ring	Ground Sense
Sleeve	Ground

Theatre Mono Input Module



The theatre mono input is provided with XLR and jack connectors, the XLR may be used for any level of input signal; inserting a jack automatically disconnects the XLR socket, and applies the jack signal (HI-Z I/P) to the input. The jack socket only operates on the lower sensitivity range.

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5 This switch inserts a second-order **HI-PASS FILTER** into the channel path. The frequency is fixed at 100Hz.

Equaliser

6 The EQ section has four bands, with sweep peak/dip on all four bands using four dual-concentric pots. In addition the HF and LF bands have switchable bell/shelving operation. The **SHLF** switch switches the response to shelving in each case when pressed. When in peak/dip mode the Q of the LF and HF bands is fixed at 1.5.

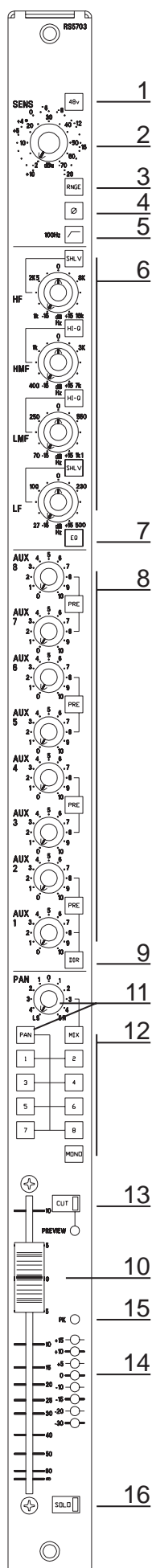
- The HF control gives 15dB of cut or boost from 1 to 16kHz.
- The LF control gives 15dB of cut or boost from 27 - 500 Hz.
- The HI-MID control gives 15dB of cut or boost from 400Hz - 7kHz.
- The LO-MID control gives 15dB of cut or boost from 70Hz - 1.1kHz.
- The Q of the two mid bands is switchable between 1.3 and 2.6 with the **HI-Q** buttons: when a button is depressed the Q value of 2.6 is selected, this gives a steeper notch in the response curve.

7 The EQ section is switched in by the **EQ** switch. Toggling this switch provides a simple method of hearing the effect of the equaliser settings.

Auxiliary Sends

8 Signal is sent to the Aux 1 - 8 busses via individual **Level Pots**. These have unity gain when fully clockwise, and are switched pre or post-fader in pairs by the **PRE** buttons.

The pre-fade signal may be sourced pre-fade & post-mute, pre-mute, or pre-EQ & pre-insert in two blocks of four sends, using push-on jumpers.



9 The **DIR** switch switches Aux 1 pot signal away from its bus and connects it to the Direct Output (electronically balanced, 1/4" jack). When the DIR switch is not depressed, the Direct Output is fed with the post-fade signal.

Routing

10 The 100mm-travel **FADER** has 10dB of gain and is the main level control for the channel, enabling rapid and accurate control of the channel output level. When mixing, you will get optimum headroom and signal-to-noise ratios by keeping the fader at about the unity (0dB) mark. Avoid running the input sensitivity too high, and the fader resultingly low, since this gives very little headroom. Similarly, running the input sensitivity very low, and the fader fully up (10dB of gain) will increase noise levels, and does not allow any increase in gain on the fader should the signal source drop unexpectedly.

11 The **PAN** pot determines the position of the signal within the stereo image. In the centre there is a 4.5dB drop. The PAN pot always operates on the Mix busses (via the MIX switch), but it may also be switched to control the 8 group busses in pairs by pressing the **PAN** switch (pan left feeds the signal to odd-numbered busses, pan right feeds to even-numbered busses). If the PAN switch is not depressed, each group bus receives the post-fade signal directly. The Mono bus is always fed with the post-fade signal.

12 The signal is sent to the stereo mix bus, mono bus and 8 group busses using the **MIX**, **MONO**, **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8** switches. The mono bus is fed directly from the post-fader signal.

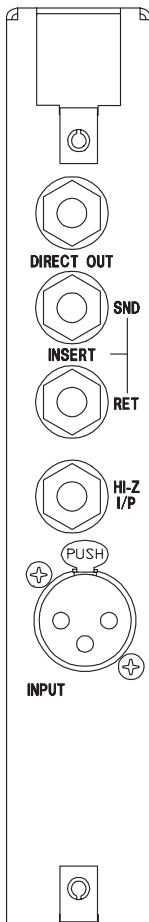
13 The signal in the module is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the module is muted by the MIDI system the CUT switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when PREVIEW mode is selected, to indicate that the channel is muted by the selected scene number.

14 The 8-LED meter next to the fader meters the signal at the input amplifier. The meter has a peak-type response.

15 The 3-input **PEAK** LED monitors the input amp, the EQ output and the post-fade signals. It lights 6dB before clipping occurs.

Solo / Pre-Fade Listen

16 The electronically latching **SOLO** switch feeds the pre-fade, pre-mute signal to the monitor output and pre-mute output. If Auto Cancel is enabled, then any previously active Solos or AFLs will be cancelled. The SOLO may be remotely cleared, either by the SOLO CLEAR button on the main, or by any other SOLO or AFL if Auto Cancel is active. If SIP mode is selected on the main module, the SOLO button functions as Solo-In-Place, muting all other channels. An internal jumper allows the module to be made safe from muting if another channel is soloed.



Rear Connector Panel

INPUT (3-pin female XLR)

Pin 1	Ground
Pin 2	Signal Hot
Pin 3	Signal Cold

HI-Z INPUT, INSERT RETURN (1/4" TSR Jack)

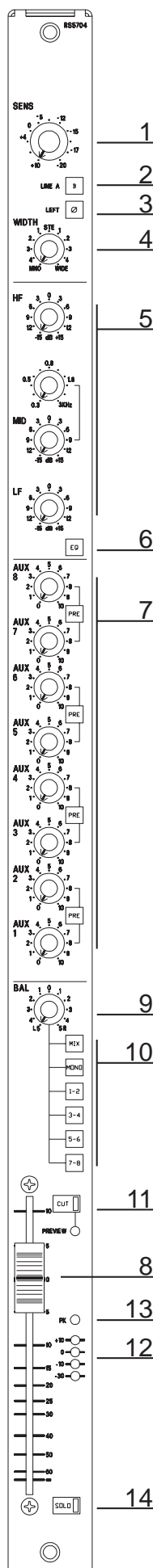
Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

INSERT SEND (1/4" TSR Jack)

Tip	Signal Hot
Ring	Ground Sense (Signal Cold for balanced option)
Sleeve	Ground

DIRECT OUTPUT (1/4" TSR Jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground



Stereo Input Module

- 1 The **SENS** control adjusts the sensitivity of the input from +10 to -20dBu.
- 2 The **LINE A/B** switch switches the input source from line A to line B. These are electronically balanced inputs via 1/4" jacks on the rear connector panel.
- 3 The **LEFT** \emptyset (Phase) button inverts the phase of the left channel.
- 4 The **WIDTH** control varies the width of the stereo image from mono, through normal stereo (centre detent) to phase-enhanced stereo (fully clockwise).

Equaliser

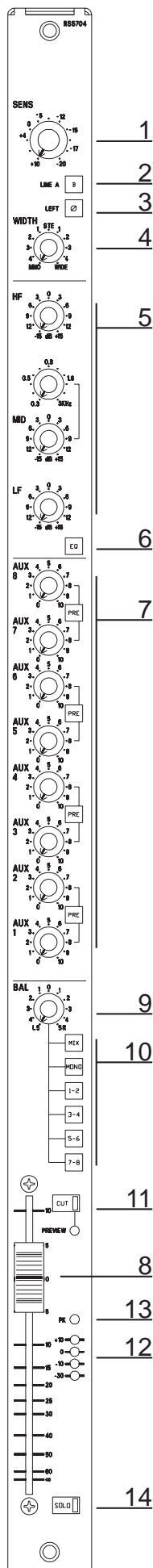
- 5 The EQ has three bands, with shelving high and low frequencies, and a sweepable peak/dip mid band.
 - The HF control gives 15dB of cut/boost at 12kHz.
 - The LF control gives 15dB of cut/boost at 60Hz.
 - The MID controls give 15dB of cut/boost at a centre frequency which is adjustable between 300 - 3kHz. The Q is 1.0.
- 6 The EQ section is switched in by the **EQ** switch. Toggling this switch provides a simple method of hearing the effect of the equaliser settings.

Auxiliary Sends

- 7 The signal is routed to the 8 Aux busses by the **AUX 1 - 8** controls. These are fed from a combination of pre or post-fade mono signals. The pre or post-fade status is selected for each pair of auxes using the PRE switches. The pre and post-fade sources for the PRE switch controlling Aux7 and 8 may be either stereo (left feeds 7, right feeds 8) or a mono sum. These are selected by internal jumpers.

Routing

- 8 The 100mm-travel **FADER** has 10dB of gain. It is the main level control for the channel.
- 9 The **BAL** (Balance) control varies the relative levels of the left and right channels. When it is rotated fully in one direction from the centre position, the level of one channel is increased by 4.5dB, while the other channel is reduced to zero. Each channel has unity gain when the control is centred.
- 10 The post-fade signal is routed to the stereo mix, mono bus and 8 group busses via the **MIX, MONO, 1-2, 3-4, 5-6, 7-8** buttons. These switches (except MONO) are fed from the output of the balance control, with odd-numbered busses fed from the left channel, and even-numbered busses fed from the right. The MONO switch is fed from the post-fade mono sum signal.



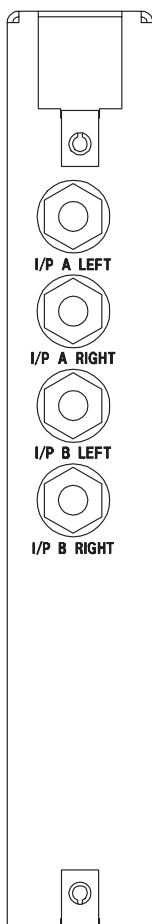
11 The signal in the module is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the module is muted by the MIDI system the CUT switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when PREVIEW mode is selected, to indicate that the channel is muted by the selected scene number.

12 The 4-LED meter next to the fader meters the highest of the left and right signals at the input amplifier's output.

13 The 4-input PEAK LED monitors the pre-fade and post-EQ left and right signals. It lights when any of these signals are 4dB below clipping.

Solo / Pre-Fade Listen

14 The electronically latching **SOLO** switch feeds the pre-fade, pre-mute signal to the monitor output and phones output. If Auto Cancel is enabled, then any previously active Solos or AFLs will be cancelled. The SOLO may be remotely cleared, either by the SOLO CLEAR button on the main, or by any other SOLO or AFL if Auto Cancel is active. If SIP mode is selected on the main module, the SOLO button functions as Solo-In-Place, muting all other channels. An internal jumper allows the module to be made safe from muting if another channel is soloed.

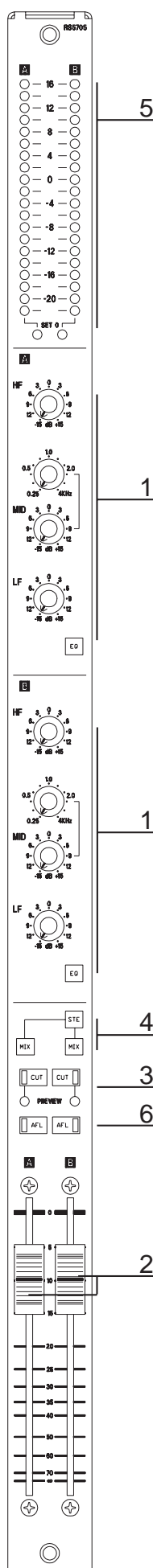


Rear Connector Panel

LINE A & B (Left and Right) (1/4" TSR Jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

Dual Group/EQ Output Module



The Dual Group/EQ Output Modules are optional inasmuch as either these modules or Dual Group/FX Output Modules will be fitted. Note that additional numbers of either of these Group Output Modules may be fitted to act as Aux Mains (the normal Aux main controls may be disconnected by removing jumpers on the Main Module).

Four Dual Output Modules are fitted to the left of the main module. The Dual Group/EQ Output Module contains two group output sections. The two sections have identical functions.

Each group has a summing amp, which is assigned to one of the eight group busses using jumpers, and feeds signal to the Insert Point. The insert point has a ground compensated Send and an electronically balanced Return, both on 1/4" jacks.

The insert return feeds the EQ section.

Equaliser

1 The EQ has 3 bands, with shelving HF and LF and a swept peak/dip mid band.

- The **HF** control gives 15dB of cut/boost at 12kHz.
- The **LF** control gives 15dB of cut/boost at 60Hz.
- The **MID** controls give 15dB of cut/boost at a settable frequency from 250 - 4kHz. The Q of the mid band is 1.0.

The EQ is switched in with the **EQ** switch.

Output

2 The 100mm-travel **Fader** controls the level of the signal which is fed to the Group Output. There is unity gain at the top of the fader.

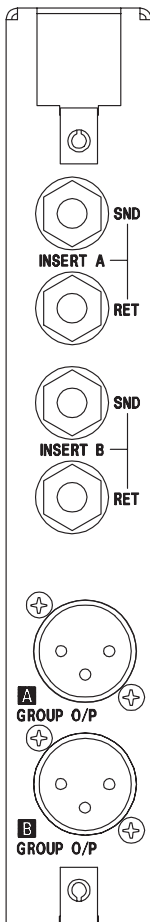
3 The signal in each group is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the group is muted by the MIDI system the CUT switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when PREVIEW mode is selected, to indicate that the group is muted by the selected scene number.

4 The **MIX** switch routes the post-fade group signal to the left and right stereo mix busses, depending on the setting of the **STE** switch. If STE is pressed, the odd-numbered group (labelled 'A') is sent to mix left, and the even-numbered group (labelled 'B') is sent to mix right. If STE is not pressed, both odd and even groups are sent in mono to mix left and right.

5 The Group output level is measured by a 20-LED meter. The meter is calibrated for 0 at +4dBu output. An internal jumper allows the meter response to be set to average instead of peak.

After-Fade Listen

6 The electronically-latching AFL switches feed each group's post-fade signal to the monitor outputs and phones output. If solo Auto Cancel is selected on the Main Module, then AFL will cancel any other active SOLOs or AFLs. The AFL may also be cleared with the main SOLO CLEAR function. AFL does not activate the SIP system even if SIP is selected on the main.



Rear Connector Panel

INSERT SEND (1/4" TSR Jack)

Tip	Signal Hot
Ring	Ground Sense
Sleeve	Ground

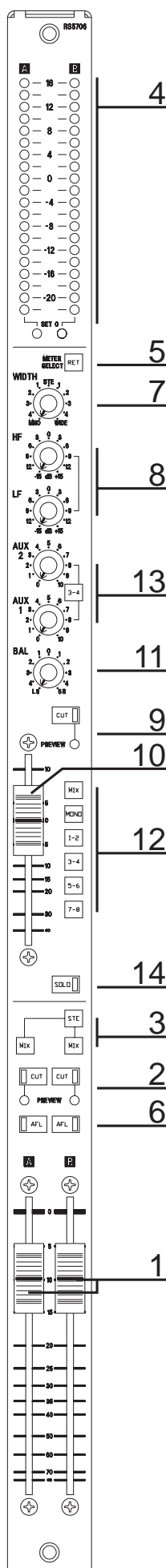
INSERT RETURN (1/4" TSR Jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

GROUP OUTPUTS (1/4" TSR Jack)

Pin 1	Ground
Pin 2	Signal Hot
Pin 3	Signal Cold

Dual Group/FX Output Module



The Dual Group/FX Output Modules are optional inasmuch as either these modules or Dual Group/EQ Output Modules will be fitted. Note that additional numbers of either of these Group Output Modules may be fitted to act as Aux Mains (the normal Aux main controls may be disconnected by removing jumpers on the Main Module).

Four Dual Output Modules are fitted to the left of the main module. The Dual Group/FX Output Module contains two group output sections and a stereo line-level input with a fader, 2-band EQ and 2 Auxiliary sends. The two group output sections have identical functions.

Each group has a summing amp, which is assigned to one of the eight group busses using jumpers, and feeds signal to the Insert Point. The insert point has a ground compensated Send and an electronically balanced Return, both on 1/4" jacks.

The insert return feeds the Fader.

Output

1 The 100mm-travel **Fader** controls the level of the signal which is fed to the Group Output. There is unity gain at the top of the fader.

2 The signal in each group is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the group is muted by the MIDI system the CUT switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when PREVIEW mode is selected, to indicate that the group is muted by the selected scene number.

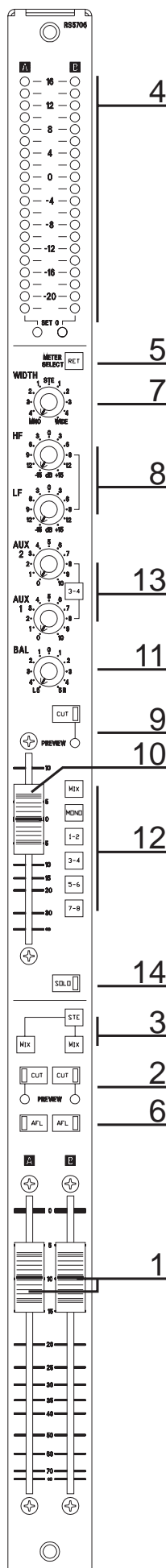
3 The **MIX** switch routes the post-fade group signal to the left and right stereo mix busses, depending on the setting of the **STE** switch. If STE is pressed, the odd-numbered group (labelled 'A') is sent to mix left, and the even-numbered group (labelled 'B') is sent to mix right. If STE is not pressed, both odd and even groups are sent in mono to mix left and right.

4 The Group output level is measured by a 20-LED meter. The meter is calibrated for 0 at +4dBu output. An internal jumper allows the meter response to be set to average instead of peak.

5 The RET switch allows both odd and even meters to read the stereo return Left and Right signals (post-EQ) instead of the Group outputs.

After-Fade Listen

6 The electronically-latching AFL switches feed each group's post-fade signal to the monitor outputs and phones output. If solo Auto Cancel is selected on the Main Module, then AFL will cancel any other active SOLOs or AFLs. The AFL may also be cleared with the main SOLO CLEAR function. AFL does not activate the SIP system even if SIP is selected on the main.



Stereo Return (FX) Section

The Stereo Return section is completely separate electronically from the group sections. The input sensitivity is switchable between -10dBV and +4dBu by means of a switch which is accessible via a screwdriver hole in the rear panel.

7 The signal then passes to the **WIDTH** control, which varies the image from mono (anticlockwise) through normal stereo (centre detent) to phase-enhanced wide stereo (clockwise).

8 The 2-band EQ gives a shelving response.

- The **HF** control gives 15dB of cut/boost at 12kHz.
- The **LF** control gives 15dB of cut/boost at 60Hz.

9 The signal in the return section is turned on and off by the **CUT** switch, which is linked to the MIDI muting system. When the section is muted by the MIDI system the **CUT** switch illuminates. The **PREVIEW** LED is illuminated by the MIDI system when **PREVIEW** mode is selected, to indicate that the section is muted by the selected scene number.

10 The Stereo Return level is controlled by the **Fader**, which has 10dB of gain when fully up.

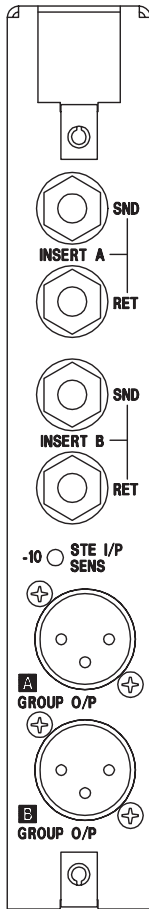
11 The fader output feeds the **BAL** (balance) control, which varies the relative levels of the left and right channels. When rotated fully in one direction from the centre position, the level of one channel is increased by 4.5dB, while the other channel is reduced to zero. Each channel has unity gain when the control is centred.

12 The output of the balance control is routed to the appropriate busses by the **MIX**, **MONO**, **1-2**, **3-4**, **5-6**, **7-8** buttons.

13 Two Aux send controls, **AUX 1** and **AUX 2**, route a mono sum of either the pre-fade(post cut) or post-fade signals (selectable for each Aux by internal jumpers) to the Aux 1 and Aux 2 busses. The **3-4** button switches the pots to feed Aux 3 and Aux 4 busses instead.

14 The electronically latching **SOLO** switch feeds the pre-fade, post-EQ mono sum of the signal to the monitor output and phones output. If Auto Cancel is enabled, then any previously active Solos or AFLs will be cancelled. The **SOLO** may be remotely cleared, either by the **SOLO CLEAR** button on the main, or by any other **SOLO** or **AFL** if Auto Cancel is active. If **SIP** mode is selected on the main module, the **SOLO** button functions as Solo-In-Place, muting all other channels. An internal jumper allows the module to be made safe from muting if another channel is soloed.

Rear Connector Panel



INSERT SEND (1/4" TSR Jack)

Tip	Signal Hot
Ring	Ground Sense
Sleeve	Ground

INSERT RETURN (1/4" TSR Jack)

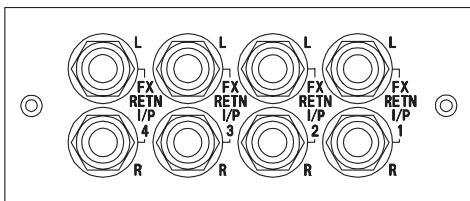
Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

GROUP OUTPUTS (1/4" TSR Jack)

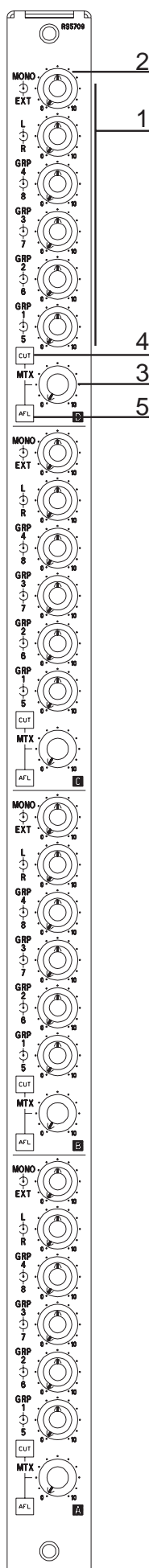
Pin 1	Ground
Pin 2	Signal Hot
Pin 3	Signal Cold

STEREO (FX) RETURN (1/4" TSR Jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground



Note: this panel serves four Group/FX Modules



Quad Matrix Module

The Quadruple matrix module incorporates four matrix outputs with level controls, with 12 receive controls on six dual concentric pots per output.

The 12 receive signals comprise:

- Mono/Ext input
- Mix L/R
- Group outputs 4/8
- Group outputs 3/7
- Group outputs 2/6
- Group outputs 1/5

Module Functions

Each module has 4 completely separate sections, each providing a mix of 12 sources into a single balanced output, with a main level control.

1 The receive pots (dual concentric) feed a mix of the groups, mix, mono and an 'external' line level signal to a summing amplifier.

2 The **EXT**ernal input left and right signals are shared by all four matrix sections and is electronically balanced from two 1/4" jacks on the integral rear-con. The sensitivity is normally +4dBu, but can be changed to -10dBV by moving internal jumpers. The signal from the input amps is fed one of two ways to the 'EXT' receive pots on the four matrix sections: Either a mono sum of the left and right external inputs is fed to each receive pot, or the left input is fed to matrix A and C receive pots, and the right input to matrix B and D receive pots. The feed to each receive pot is set by internal jumpers. This enables the external inputs to be used in stereo where 2 matrix outputs are used as a stereo pair.

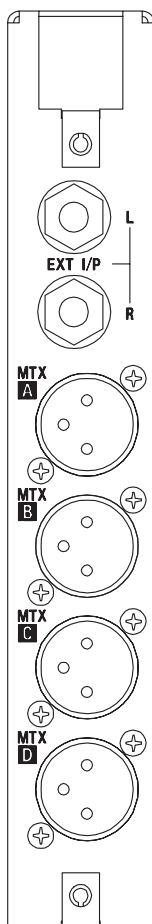
3 The summed signal from the receive pots is fed to the matrix main rotary **fader**, which has unity gain at the fully clockwise position .

4 The signal is fed via the **CUT** button to the matrix (balanced) output connector (male XLR) on the integral rear con. The CUT button is not controllable from the MIDI/Scene Set module.

5 The **AFL** button (electronically latching) feeds the post-fade, pre-Cut signal to the PFL/AFL bus. This switch is part of the solo clear/ intercancel system, but not the SIP system.

Metering

Meter outputs are available post-fade & post-cut on each matrix output, for connection to the optional VU meterbridge.



Rear Connectors

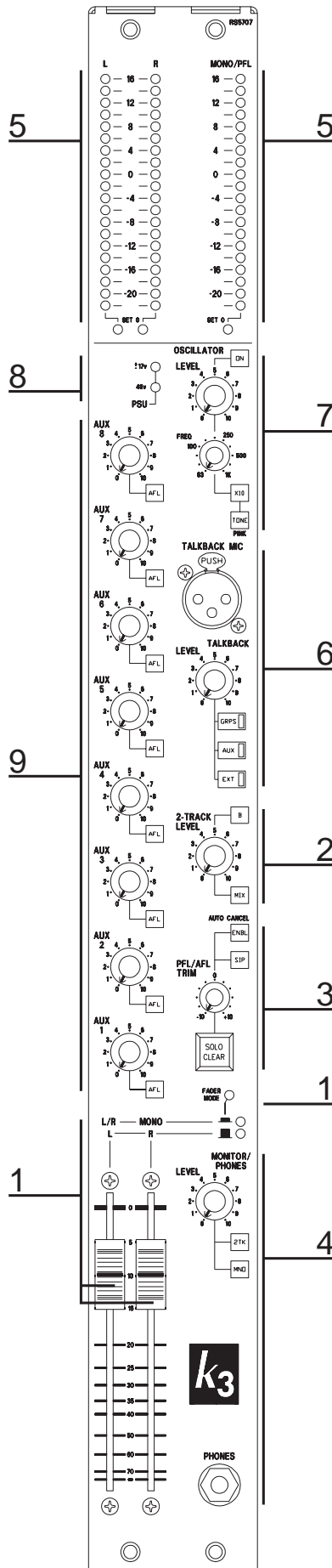
Matrix Outputs (3 pin male XLR)

Pin 1	Ground
Pin 2	Signal Hot
Pin 3	Signal Cold

External Inputs (1/4" TSR jack)

Tip	Signal Hot
Ring	Signal Cold
Sleeve	Ground

Master Module



The double width main module, typically situated near the right hand side of the console, contains the stereo mix output, the operator's headphones and wedge speaker outputs, a noise or sine wave test oscillator, the solo mode controls and main solo clear function, internal/external talkback functions, main mute switches and PSU status indicator LEDs.

Main outputs

1 The Stereo Mix Left and Right signals are controlled by the L and R 100mm-travel **Faders**. Unity gain is at the top of the fader. The left and right outputs are electronically balanced and appear on male XLR connectors on the rear panel. The mix left and right insert points are pre-fade using a ground compensated send and balanced return. The send and return appear on separate 1/4" jacks on the rear panel.

The Right main fader can be switched, via a switch which is accessible via the hole marked **FADER MODE**, to control the output level of the mono bus signal (also unity gain at the top). The mono output is electronically balanced and appears on an XLR on the rear panel. The mono insert point is ground compensated send and balanced return, and send and return appear as separate 1/4" jacks on the rear panel. When the fader mode switch is set so the mono output is being controlled by the Right fader, the Right output is controlled by the other half of the Left fader.

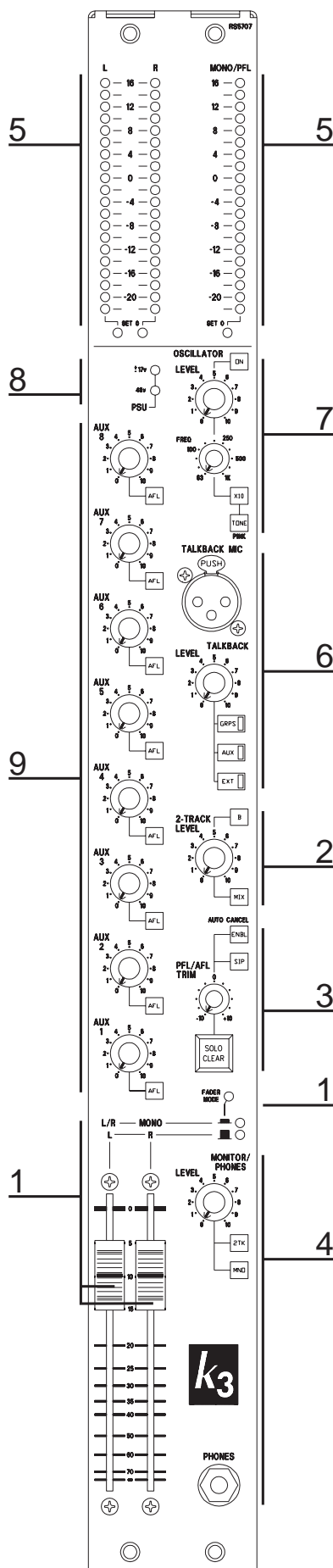
When the Left and Right faders are both controlling the stereo output, the mono output is switched to operate at a fixed level (unity gain).

2 The source of the mono fader is normally the mono bus itself, but internal jumpers allow this to be changed to be a derived mono sum of the pre-fade (post insert) left and right signals. The left/right sum is fed to the mono output after the mono insert return, which is then disconnected. The mono insert send thus can still function as a pre-fade output from the mono bus even when the main output has been jumpered to L/R sum.

2-Track returns

2 There are two 2-track return inputs, electronically balanced, from 1/4" jacks on the rear con. A switch mounted internally on the PCB allows the sensitivity of both inputs to be set to either +4dBu or -10dBV. The A/B button selects one or the other and feeds the signal to the **2-TRACK LEVEL** control. The **MIX** button routes the signal to the stereo mix outputs, post the main faders.

The selected 2-track input can be monitored on the monitor/phones outputs before it is routed to mix, by pressing the 2TRK button on the monitor output section.



Solo System

3 A solo system of pre-fade (inputs) and post-fade (outputs) feeds the monitor and phones outputs. Normally, all active AFL and PFL signals are summed together and fed to the monitor and phones outputs. This overrides the stereo mix or 2-track signal which is normally fed to the monitor/phones output. The **PFL/AFL TRIM** control gives $\pm 10\text{dB}$ of level trim for PFL/AFL signals. The **SOLO CLEAR** button lights when any PFL, or AFL is active -pressing it will clear all PFLs or AFLs. When **AUTO CANCEL** is activated by the **ENBL** button, any AFL or PFL will cancel any other currently active solo, so only one AFL or PFL can be active at once.

The **SIP** button disables the automatic switching of the monitor/phones outputs to the PFL/AFL signal, and causes a solo mute bus to be activated when any mono or stereo input or stereo return has its SOLO button pressed. The solo mute bus then mutes all other channels except those which have either been jumper-programmed to be 'SAFE', or have their own SOLO buttons pressed. The Group and Aux output AFLs should not trigger the solo in place system, but should continue to be audible on the monitor/phones outputs, even if SIP mode is selected.

The current solo signal is metered by the mono bargraph meter.

Monitor and Headphones Outputs

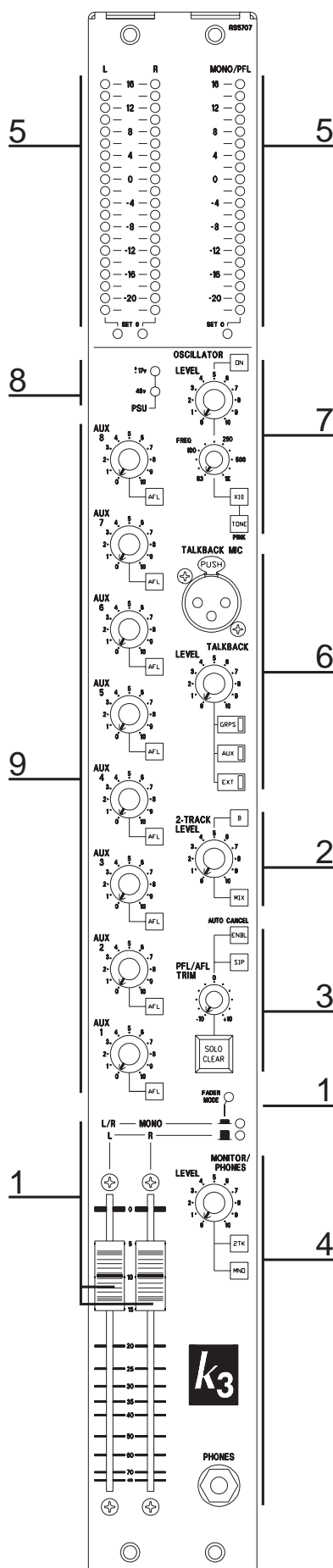
4 The Monitor Outputs and Headphones output share a common signal source and are controlled by the **MONITOR/PHONES LEVEL** control. The monitor outputs are via Left and Right 1/4" jacks on the rear panel with ground compensated output. The **PHONES** output socket is a stereo 1/4" jack on the main module front panel.

The signal source for these outputs is selected using the **2TRK** and **MONO** buttons. If neither are pressed, the post-fade stereo mix signal is fed to the monitor outputs. If 2TRK is pressed, the post-fade signal from the 2-Track return section is fed to the monitor outputs. Any PFL/AFL operation will override the mix or 2-track signal. If MONO is pressed, the post-fade signal from the Mono Output is fed to the monitor outputs.

Metering

5 Two 20-segment LED bargraph meters at the top of the module read the post-fade stereo mix or 2-track return levels. A third 20-segment meter reads the post-fade mono level. If a PFL/AFL is operated, the mono meter switches to display the PFL/AFL level (pre the solo trim control). The meters normally have a peak-type response, but internal jumpers allow this to be changed to average.

A remote meter connector is fitted to allow a parallel feed of the L/R/mono meter signals to be connected to an optional LED or VU meterbridge.



Talkback

6 The talkback system allows communication by the operator to the Group and Aux outputs, and to and from the monitor console. The **TALKBACK LEVEL** pot controls the level of the talkback mic input, from a **3-pin XLR** on the main module front panel. The sensitivity of the mic input is variable between -20dBu and -50dBu.

The **EXT** button initiates talkback to the monitor console using a Soundcraft proprietary system. The talkback mic signal is switched to the T/BACK OUT XLR, with a +15v DC common-mode voltage to signal the Monitor console (an SM12, 16, 24 or Delta Monitor) that talkback is occurring. An internal jumper disables the common-mode DC voltage, to allow use with non-Soundcraft desks. If a 15v common-mode voltage is detected on the TB IN XLR, indicating talkback from the monitor console, then the TB IN signal is switched to the 'phones output, dimming the existing signal by 15dB. The EXT switch also lights.

The **AUX** button routes the talkback microphone signal to the 8 Auxiliary busses. Internal jumpers allow selection of TB routing to Aux 1-4, 5-8 or all.

The **GRPS** button routes the talkback mic signal to the 8 group busses.

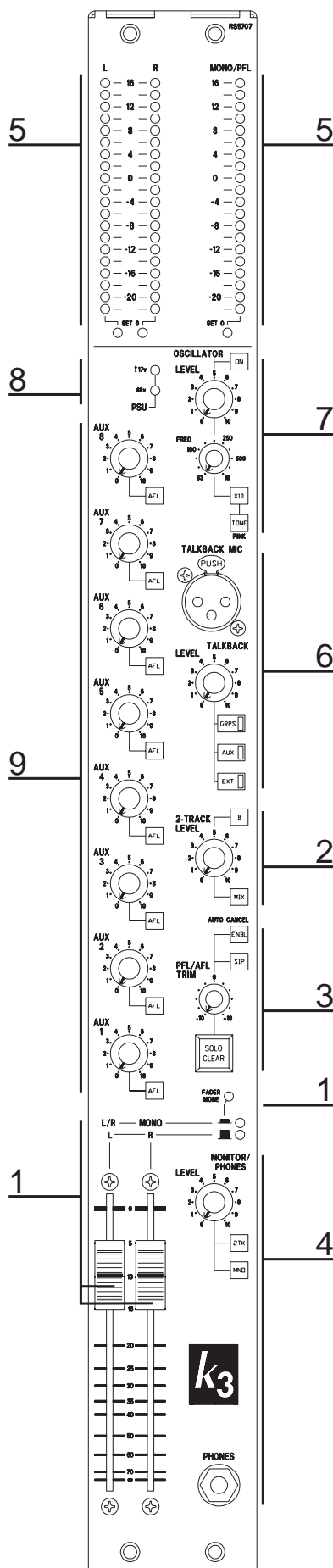
Oscillator

7 The oscillator, activated by the **ON** switch, produces pink noise; the **TONE** button switches the signal from pink noise to sine wave, with frequency variable between 63Hz and 1kHz by the **FREQ** pot. The **X10** button increases the frequency up to 630Hz and 10kHz.

The oscillator signal is fed to the group, aux, stereo and mono mix busses; any of these can be disabled using internal jumpers. The oscillator output is also available, balanced at a nominal level of +4dBu, on a 1/4" jack on the rear connector panel. The **LEVEL** pot adjusts the level from off to 10dB above nominal.

PSU Status Indicators

8 The two PSU Status Indicator LEDs show that the PSU rails +48v, and +/-17v (both sets of rails) are working.



Auxiliary Main Section

The Aux main houses the summing amplifiers and output controls for the 8 Auxiliary outputs. Each of the eight sections is identical.

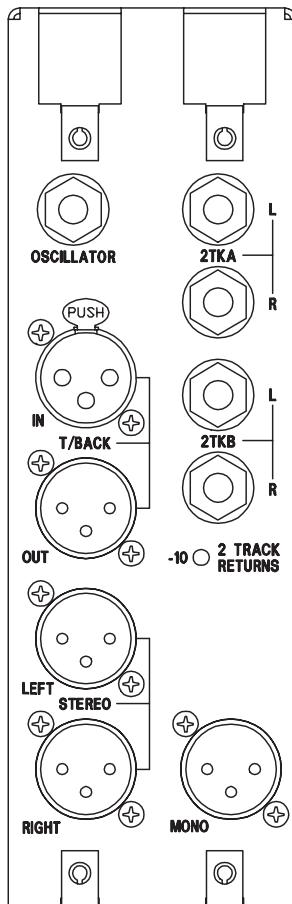
The aux busses are connected to their summing amps via jumpers which enable the bus connection to be broken, in the situation where the user wishes to fit additional Dual Group/EQ modules for use as Aux mains.

9 The output level is controlled by the **AUX** level control. The gain is 10dB gain when fully clockwise, i.e. unity gain = 7.

The **AFL** button (electronically latching) switches the post fader signal to the monitor/phones output. The switch is part of the autocancel and solo clear system, but is not part of the SIP system.

The Auxiliary output is electronically balanced at +4dBu to a 1/4" Jack on the rear panel.

A 0.1" connector is fitted to take the post-fade, unbalanced auxiliary output signals to an optional VU meterbridge.



Rear Connectors

EXTERNAL TALKBACK IN, TALKBACK MIC IN (3 pin female XLR)

- Pin 1 Ground
- Pin 2 Signal Hot
- Pin 3 Signal Cold

INSERT RETURNS (1/4" TSR Jack)

- Tip Signal Hot
- Ring Signal Cold
- Sleeve Ground

INSERT SENDS (1/4" TSR Jack)

- Tip Signal Hot
- Ring Ground sense
- Sleeve Ground

2-TRACK RETURNS (1/4" TSR Jack)

- Tip Signal Hot
- Ring Signal Cold
- Sleeve Ground

MONITOR, MONO OUTPUTS (1/4" TSR Jack)

- Tip Signal Hot
- Ring Ground Sense
- Sleeve Ground

MIX OUTPUTS (3-pin male XLR)

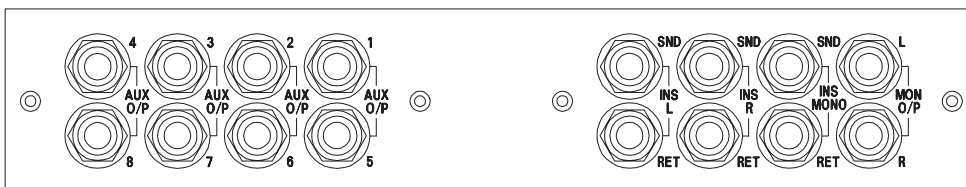
- Pin 1 Ground
- Pin 2 Signal Hot
- Pin 3 Signal Cold

PHONES OUTPUT (1/4" TSR Jack) (Front-panel mounted)

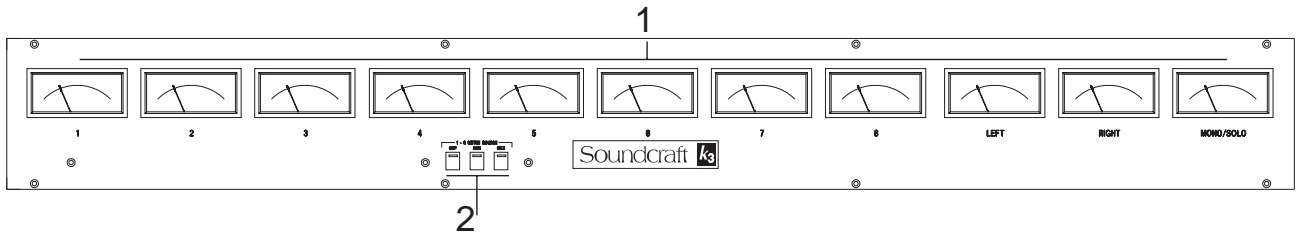
- Tip Left Signal
- Ring Right Signal
- Sleeve Ground

AUXILIARY OUTPUT (1/4" TSR Jack)

- Tip Signal Hot
- Ring Signal Cold
- Sleeve Ground



Optional Meterbridge



1 The optional meterbridge has 11 VU meters: 8 (marked 1 - 8) which may be switched to monitor the Group Outputs, the Auxilliary Outputs, or the Matrix Outputs. The remaining 3 meters monitor the Left, Right and Mono Outputs. The Mono Output Meter also monitors the Solo signal when any Solo/PFL button is active.

2 The Meter Source Select Switches allow you to switch the meters, which are marked 1 - 8, to monitor the Group Outputs or the Auxilliary Outputs or the Matrix Outputs. The switches are electronically latching and also mutually cancelling. An integral LED indicates which of the three switches is selected.

Mute Scenes/Mute Groups & MIDI Module

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Introduction

The MIDI/ Scene Set module provides two main functions: the **Mute Scenes Controller/Mute Groups Controller**, and the **MIDI Controller (DataFader)**

Mute Scenes Controller/Mute Groups Controller

This allows the status of all the input and output cut switches to be memorised, and stored, in battery-backed memory within the console, as one or more 'snapshots' or Mute Scenes. Up to 128 scenes are possible internally, more are possible if a MIDI SysEx data fader device is used to off-load the console's internal memory.

This scene-set automation replaces the electro-mechanical mute groups found on live consoles up to now.

MIDI Controller

The integration of **MIDI** within the system further extends the power of the 'Scene Set' automation, because MIDI program changes can be sent out automatically as a Mute Scene is selected (or 'Recalled') and these can be used to select relevant patches on outboard FX devices, etc. Alternatively, by only storing program change messages and leaving the console mutes the same in each scene, the system can be used simply to change FX programs from the console.

The system will also respond to incoming program change messages, so the console can be stepped through its mute scenes by remote control, or automatically by a MIDI sequencer if necessary.

The MIDI capabilities also include the sending and receiving of MIDI Note-On and Note-Off messages from each mute switch on the console, so that muting a channel will send out a Note-Off command and un-muting will send a Note-On. (Or, working in reverse, channels can be turned on and off by sending Note messages into the console). A useful application of this facility would be to trigger an outboard sampler by un-muting the input channel to which it is connected. Pressing the mute switch on the console would then have the dual function of turning on the audio input from the sampler, and playing the actual sound effect.

The possibilities are almost endless with MIDI control, as more and more equipment includes a MIDI interface.

The DataFader is a further extension of the K3's MIDI capabilities, giving even more control of outboard equipment from the console's control surface. The DataFader is a real time control which generates MIDI Continuous Controller data as it is moved, and sends it out via the console's MIDI output. Continuous Controller data can be used to adjust volume levels, delay times, dry/fx mixes etc. of many outboard fx units, as well as almost any MIDI controlled device. Even lighting consoles, for example, can be remotely controlled with Continuous Controller data. This opens up a whole range of possibilities for integrated show control, and is a facility not available on any other console of this type.

When the DataFader is used in conjunction with the Mute Scenes controller, it becomes even more powerful:

The particular parameter being controlled (the MIDI Controller 'number'), as well as the MIDI channel on which the data is sent, can be saved with each mute scene, so for example, in one scene the DataFader could be used to crossfade a lighting scene, and in the next it might be controlling the decay time of a reverb. All this can be preprogrammed so that the engineer only has to recall each scene and move the DataFader; the actual information about what the fader is doing when it is moved is automatically recalled with each scene.

The following pages give more detailed information about actually using the MIDI/Scene Set module.

Mute Scenes/Mute Groups & MIDI Module

This module has two distinct functional areas: The Mute Scenes/Mute Groups Controller and the MIDI Controller (some controls are shared by these two areas).

Mute Scenes Controller

The Mute Scenes controller is able to store the Cuts (mutes) for up to 128 different scenes (1 to 128). There is a further, non-standard, scene called ALL which appears on the display between 128 and 1. This allows you to store the same cuts in all of the scenes 1 to 128 (see page 4.32). In addition, MIDI Program Change with channel, and MIDI Controller Number with channel may be stored for each scene.

1 The 3-digit 7-segment display. This primarily displays the current scene number, information relating to the scene number, and information relating to the MIDI controls. It is also used to display the preview scene number, indicate when changes to the cuts have been made (by flashing the decimal points), and it is used to prompt the user for confirmation that changes are to be stored.

2 The Up key is used to increment the scene number as shown in the 7-segment display. It is also used as a 'Yes' button to confirm that you wish to store changes.

3 The Down key is used to decrement the scene number as shown in the 7-segment display. It is also used as a 'No' button to allow you not to store changes.

4 Whenever the Up or Down key is pressed the scene number will change. However the Cuts for that scene number will not be activated until you press **RECALL**. Note that until you press **RECALL**, the numbers in the display will flash to remind you that the Scene number which is displayed is not active on the desk.

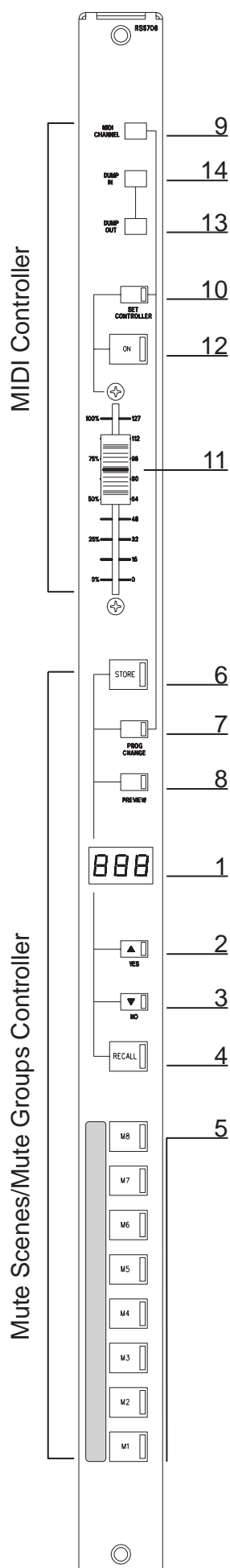
5 The 8 Mute Group or Mute Scene buttons. See pages 4.33 to 4.36 for details.

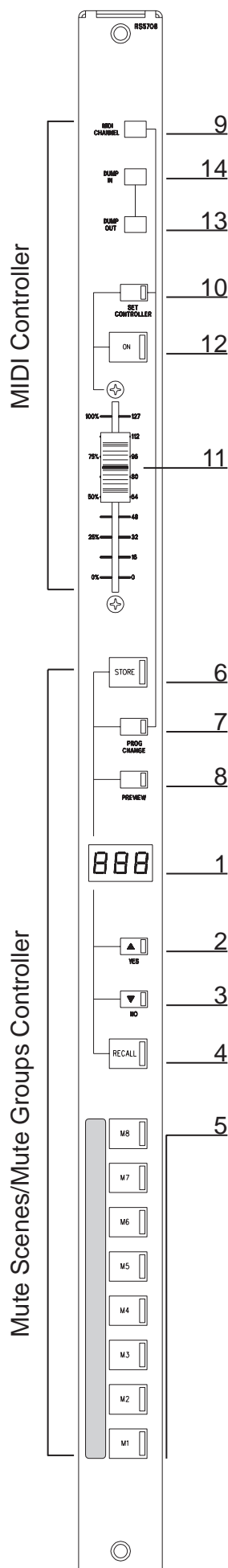
6 The **STORE** button is used to store changes made to scenes. For each scene number it also stores the MIDI Global Channel Number, The MIDI program-change value and channel, and the MIDI controller number and channel. (Note: **STORE** and **RECALL** are illuminated if any parameter (cuts or MIDI) is different from the recalled scene)

7 The **PROG CHANGE** button allows you to view and change the MIDI program change number and the MIDI channel used for sending and receiving program changes. After you have pressed the **PROG CHANGE** button, which latches electronically, the change number is displayed. The program change message value (1 to 128) may be changed using the Up/Down buttons (note: the actual MIDI number which is sent is in the range 0 - 127, i.e one less than the displayed value). As changes are made, the appropriate program change is sent. The MIDI channel number may be viewed by pressing and holding the **MIDI CHANNEL** button. The channel number may be changed by using the Up/Down buttons.

8 The **PREVIEW** button allows you to preview and change any values in a scene without affecting the current status of the console. This is a useful function during live performances. Pressing the **PREVIEW** button toggles the console between 'Preview' mode and 'Active' mode. The console is always in one of these two modes.

9 Pressing the **MIDI CHANNEL** button causes the Global MIDI Channel Number to be displayed. This may be set to one of 1 to 16 or ANY. This is done by using the Up and/or Down buttons. This channel will receive Note On and Note Off





information which will turn the appropriate cuts on and off, it will also receive Program change information to select mute scenes. This channel will also transmit Note On and Note Off data from the cut switches: note that if the MIDI CHANNEL is set to ANY no Note On or Note Off data will be sent.

MIDI Controller

The MIDI Controller section is completely separate from the Mute Scenes controller, although it shares the controls and display of the latter for the purpose of adjusting its various parameters. These parameters are also stored along with the mute information in each scene.

The purpose of the MIDI Controller section is to send continuous controller data from the DataFader directly to the MIDI Out socket on the rear of the module. This may be used to control parameters on remote devices, e.g. FX units, samplers etc.

The type of data sent (e.g. volume, pitch bend, etc) may be selected, and a MIDI channel, which may be different to that used for program changes, may also be selected.

10 The MIDI controller number and channel is viewed and changed by pressing the **SET CONTROLLER** button which latches electronically. At this point the continuous controller number is displayed, and you may change it using the Up/Down buttons (see table 1 showing standard controller numbers and their functions).

You may then view the controller channel number by pressing and holding the MIDI CHANNEL button. The MIDI controller channel number is displayed, and you may change it using the Up/Down buttons.

11 The DataFader allows you to send data values between 0 and 127 on the designated controller number and channel. Note that data values are only sent when the fader is moved: as soon as you stop moving the fader the data stream stops. The exception to this is when you activate the ON switch: the current value of the fader is sent once. The DataFader is marked with two scales: 0 - 127, which indicates the MIDI Controller value being sent; and 0 - 100%, which gives an indication of volume or depth of the parameter in question.

12 The DataFader is only active when the **ON** switch is active, as indicated by the switch's internal LED. The ON switch allows you to 'punch in' a preselected controller value to create a sudden control change.

Saving and Loading The Memory

The module's internal battery-backed RAM holds all the data for up to 128 scenes. This memory data may be 'dumped' in to an external storage device, so that another set of scenes may be programmed in whilst retaining a backup of the original set of scenes. This is done by using the MIDI System universal bulk dump method. Various devices are available on which to store the dumped data; these include stand-alone MIDI bulk-dump recorders, and many sequencer packages or keyboards.

13 Pressing the **DUMP OUT** button triggers a system universal bulk dump of the console's Random Access Memory (RAM) via the MIDI output. The 7-segment display indicates three continuously illuminated bars to show the duration of the outgoing MIDI data.

14 Pressing the **DUMP IN** button primes the console to accept a system universal bulk dump of the RAM into the MIDI input. When the DUMP IN button has not been pressed, the RAM is protected, and cannot be overwritten by an incoming bulk

Storing Mute Scenes

Mute Scenes may be stored using two alternative methods:

Active Mode

This is the default mode, but it is also a 'live' mode, that is, any cuts which you select will affect their channels immediately. We do not recommend using this mode during a performance.

So assuming that you are not in a live performance, you may set mute scenes in this mode as follows:

Press the required cut buttons on any of the input channels, group EQ or group/stereo modules. At this point the 7-segment display will show 3 flashing dots (this indicates that a change to the cuts has taken place), and the STORE and RECALL buttons will also illuminate. Next, select a Scene number by pressing the Up or Down buttons. There are 128 scenes(+ ALL);note that the UP and DOWN buttons will wrap around, i.e. if scene 128 is displayed and you press UP, the display will show scene ALL, when you press UP again the display will show scene 1. When the scene number is correct press the Store Button. The display will cycle through 'YES', 'no' and the scene number which is about to be overwritten. Press YES to confirm that you wish to store this Scene. If you press NO the scene number will revert to the number which was shown prior to the changes, and the changes will not be stored.

Preview Mode

Preview Mode is selected by pressing PREVIEW. This mode is not 'live', that is, any cuts which you select will not cut the audio signal, but they will be shown on the Preview LEDs adjacent to the CUT switches in question. We recommend using this mode when editing scenes during a live performance. The procedure for storing the mutes is the same as for the Active Mode described above.

Recalling Mute Scenes

There are two ways of recalling scenes:

Active Mode

This is the default mode, it is also the 'live' mode and is therefore the one which is used during a live performance.

Suppose that you wish to recall scene 1. You change the display to scene 1 by use of the Up/Down switches. Note that the Scene number is flashing. This is to alert you to the fact that the cuts which are active are not the ones for the displayed scene, in this case scene 1. As soon as you press RECALL the cuts stored for that scene will be activated. The Program Change Number will also be transmitted on the stored channel number via the MIDI Output.

At this stage, during scene 1, you may wish to get ready to activate scene 2. To do this select scene 2 using the UP button. Once again the scene number will flash to warn you that the cuts have not yet been activated. At the appropriate time in the performance you will press RECALL again and the cuts for scene 2 will be activated and, of course, the stored MIDI Program change number will be transmitted on the stored channel number.

The Scene number display acts as a pre-select for the mute scenes. This allows you to select scenes which are not in numerical order without having to activate every scene in between them. Alternatively you may choose to hold down the RECALL button as you step through the scenes with the Up/Down buttons. In this case the cuts are activated each time you change to the next scene number.

Preview Mode

Preview mode is entered by pressing the PREVIEW button. If a scene number is selected and the RECALL button is pressed the selected mute scene will be illustrated by illumination of the Preview LEDs on the inputs in question. The actual cuts on the inputs will not be affected, and will still be set to the scene number which was displayed prior to pressing the PREVIEW button. In this way any scene may have its mute status inspected without disturbing the active scene's mutes.

To exit Preview mode you have to press PREVIEW again. The display will return to the currently-active scene.

The 'ALL' Scene

The ALL scene allows selected data to be copied uniformly across all 128 scenes, to facilitate 'global' setting of the console (eg changing the DataFader to Controller #7 on all scenes). The currently displayed mute status or parameter value will be copied to all scenes when store is pressed.

Example 1

To copy a setup of mutes to all scenes, for use as a starting point when programming:

1. Select either Active or Preview mode, using the Preview button.
2. Use the Up/Down and Recall buttons to select and recall the 'ALL' scene.
3. Set up the required combination of input or output mutes by pressing the console's mute buttons.
4. Press STORE. The display scrolls the message 'COPY TO ALL -YES-NO'.
5. Confirm the Store by pressing the 'Yes' button. The display scrolls the message YES-NO-ALL. Press the Yes button again to double confirm the Store. The mute setup will be copied into all scenes, overriding any previously stored mute scenes.

Example 2

To change the DataFader to Controller #7 on all scenes:

1. Select either Active or Preview mode, using the Preview button.
2. Use the Up/Down and Recall buttons to select and recall the 'ALL' scene.
3. Press the Set Controller button -the 7-segment display changes to show the currently stored MIDI Controller number.
4. Use the Up/Down buttons to select Controller number 7 on the display.
5. Press STORE. The display scrolls the message 'COPY TO ALL -YES-NO'.
6. Confirm the Store by pressing the 'Yes' button. The display scrolls the message YES-NO-ALL. Press the Yes button again to double confirm the Store. The Controller 7 will be copied into all scenes, overriding the previous setting.

Note that care is needed when using ALL due to the effect it has on scenes which are not currently selected. (This is the reason for the double-confirm). Once the 'Copy to All' message has been double confirmed, it cannot be reversed. The only way to restore the previous setup is to either go through each scene and manually change the parameters, storing each change, or reload the console's RAM memory, if this has been backed up using the bulk dump facility.

Introduction to the M1 - M8 Buttons

The M1 - M8 buttons can be used in two ways, depending on the application.

Mute Scenes

In this mode the M1 - M8 buttons simply act as instant recall buttons for any of the 128 scenes which have already been stored using the 7-segment display and STORE button. This is useful in a theatre environment where a certain number of scenes need to be recalled often: finding the number on the 7-segment display could be laborious.

Only one scene at a time can be recalled with this mode.

Mute Groups

This mode may be thought of as the software version of the traditional 'mute groups'.

This mode provides the facility to use the M1 - M8 buttons on the bottom of the midi module as conventional Mute Groups. This facility simplifies the creation of mute groups, and is well suited to live music applications where the engineer does not wish to get involved with programming mute scenes using the 7-segment display. This facility also allows mute groups to be toggled on and off and to be 'layered' in the same way as with a conventional mute group system.

The Mute Groups mode separates the M1 - M8 buttons from the 128 scenes, giving in effect an extra 8 'special' scenes which are used for mute grouping. Thus the M1 - M8 buttons can now be used independently of the rest of the midi module, simplifying operation.

Switching between Mute Scenes mode and Mute Groups mode

The user only has to decide once which mode is preferred: the console remembers which mode is in use every time it is powered up, unless you want to change mode for any reason.

Swapping between Mute Group mode and Mute Scenes mode is done at power up. To change from one mode to the other you must hold down the M8 button during the power-up sequence. The new mode will then remain active during each mixing session thereafter, until the M8/power-up operation is performed again to swap to the other mode.

The default mode when leaving the factory is Mute Group Mode.

Using The M1 - M8 Buttons In Mute Groups Mode

The following instructions only apply to 'Mute Group' mode.

How To Set Up A Mute Group

Make sure that the console is in 'Mute Group' mode (see 'Switching between Mute Scenes Mode and Mute Groups Mode' on page 4.33).

To set up a Mute Group you must be in **PREVIEW** mode. (Press the Preview button on the Midi module). Once in PREVIEW mode, you can select the mutes required in the mute group by pressing the appropriate CUT switches. This will cause the red Preview LED to start flashing as an indication of selection. (The channel audio will not be affected, as you are in PREVIEW mode).

To store these mutes as Mute Group 1 you should hold down the STORE button and press the M1 button. The Store operation does not need to be confirmed. Similarly if you want to assign the active mutes as Mute Group 8 you should hold down the STORE button and press the M8 button. This principal applies to assigning mutes to any of the buttons M1-M8.

N.B. Each individual mute may belong to one or more Mute Groups. Alternatively you may choose not to assign a particular mute to any groups at all.

Using The Mute Groups

Once mute groups have been assigned as described above, they can be checked if required by pressing the M1 - M8 buttons whilst still in PREVIEW mode. The Preview LEDs will flash to confirm which channels are assigned to the selected mute group. To use the mute groups during the performance, PREVIEW mode must be exited (press the Preview button).

Operating the M1 - M8 buttons now will cause the selected channels to CUT. (Preview mode can be re-entered at any time during the performance, for checking purposes).

How Mute Groups Behave In Practice

Each of the buttons M1-M8 will be illuminated when that group is active. Pressing one of the buttons M1-M8 to select a Mute Group will mute all channels assigned to that group. Pressing M1-M8 to deactivate the group will un-mute the assigned channels. If more than one mute Group is selected at a time, the result will be a 'layering' or 'additive' effect.

In addition, channel CUTs can still be unmuted locally after they have been cut by a Mute Group.

Mute Groups & Scene Recall

The Scene-set system (if used) takes priority over the Mute Group system. When a Mute Scene is recalled by selecting one of the 128 scenes and pressing the RECALL button, any Mute Groups which are active at the time are deactivated. This also applies if the Mute Scene is recalled by an incoming MIDI Program Change message.

Once a scene has been recalled however, Mute Groups can then be activated and will appear to 'layer' on top of the existing scene.

Mute Groups and Program Change Messages

Note that program changes cannot be stored or recalled from the M1 - M8 buttons when in Mute Group Mode. If program changes are required, a scene must be recalled using the 7-segment display, or the M1 - M8 buttons must be switched to Mute Scenes mode.

Mute Groups Tutorial

Example 1: Setting up and using a Mute Group

- 1) In Preview mode, assign a set of mutes to Mute Group 1 (M1), by pressing CUT on the channels you want to assign, holding STORE and pressing M1.
- 2) Press Preview to exit Preview mode.
- 3) Start from a state in which NO channels are muted and NO Mute Groups are active.
- 4) Press M1 to activate Mute Group 1. All the channels belonging to the Mute group are CUT.
- 5) Press one of the CUT buttons directly, unmuting the channel.
- 6) Press M1 again to de-activate the Mute Group. All the rest of the channels unmute.
- 7) Now press M1 again to activate Mute Group 1 once again. Same result as 4).

Example 2: Layering behaviour of multiple Mute Groups

Repeat the above example, setting up several Mute Groups each with different combinations of channels stored. Experiment with activating the Mute Groups one at a time and together and observe how the layering effect works, exactly as with a conventional Mute Group system.

Example 3: Manual operation of CUT switches whilst Mute Groups in operation

- 1) In Preview mode, assign a set of mutes to Mute Group 2 (M2).
- 2) Press Preview to exit Preview mode.
- 3) Start from a state in which NO channels are muted and NO Mute Groups are active.
- 4) Choose one of the channels which you assigned to Mute Group 2, and press its mute ON directly.
- 5) Press M2 to activate Mute Group 2.
- 6) Press M2 again to deactivate Mute Group 2. Notice that steps 5) and 6) had no effect on the channel which was muted in step 4).

This demonstrates that Mute Groups do not affect any channels which are already CUT before a Mute Group is activated, even if that channel is assigned to the Mute Group.

Using The M1 - M8 Buttons In Mute Scenes Mode

When the console is in Mute Scenes mode (see 'Switching between Mute Scenes Mode and Mute Groups Mode' on page 4.33), the M1 - M8 buttons are designed to allow 'instant' recall of any mute scene, without having to use the Up/Down buttons and 7-segment display to find the scene and then recall it with the 'Recall' button..

When Mute Scenes mode is first selected, the M1 - M8 buttons are pre-programmed to select and recall scenes 1-8, so all that is necessary to use them is to store required mute settings into each scene of 1-8. (See 'Storing Mute Scenes' on page 4.31). The various combinations of mutes can then be recalled at will by simply pressing the M1 - M8 buttons. The buttons have an 'interlocking' action, i.e. you can only select one at a time, any selection cancels the previous one. (Note: if overlapping Mute Scenes are required use Mute Group mode - see page 4.34)

Once scenes have been stored, the effect of pressing the M1 - M8 buttons is then to instantly select and recall the corresponding scene, in one operation. Any program changes or controllers stored with the scene will also be recalled exactly as if the scene had been recalled using Up/Down and Recall.

For more advanced use, the M1 - M8 buttons can be reassigned from their factory set defaults of scenes 1-8, to any other scene numbers. The only restriction is that you cannot assign a given M1 - M8 button to more than one scene at the same time, and you cannot assign more than one M1 - M8 button to a given scene number.

This would be useful in a theatre production to provide fast access to given scenes which need to be recalled frequently, for example during rehearsals.

To reassign the M1 - M8 buttons to any scene number:

- 1 Select and recall the required scene using the Up/Down and Recall buttons.
- 2 Press and hold down the Store button, and then momentarily press the required M1 - M8 button.
- 3 Release the Store button. The M1 - M8 button has now been assigned to the current scene.

Note that if the above operation is repeated with the same M1 - M8 button, the button will be deassigned and will not be assigned to any scene. The M1 - M8 buttons can all be set to 'no scene' in this way if required.

Storing MIDI Parameters with Mute Scenes

At the same time as creating a mute scene, a number of other parameters can be stored.

These are:

- Program change number for the scene
- MIDI channel number for program change messages
- Controller number for DataFader
- MIDI channel for Controller messages
- Global receive channel for incoming MIDI Note on/off messages

All these parameters can be stored at the same time, or edited individually without changing the others. Storing/editing of these parameters can be carried out in either Active Mode or Preview mode, as for the mutes.

Example

Suppose for scene number 12 you want to store the following configuration:

Program change **40**, on MIDI channel **3**

DataFader controller number **7**, on MIDI channel **8**

1. Select either Active or Preview mode by pressing the PREVIEW button.
2. Select and recall the Scene 12, using the up/down buttons and RECALL button.
3. Press the PROG CHANGE button, which will illuminate. The 7-segment display now shows the currently stored program change number for scene 12. (If the console is new, the program change numbers will be factory-set to be the same as scene numbers, until altered)
4. Use the up/down buttons to change the program number to **40**. Note that if you are in Active mode, Program Change messages will be sent out as you increment the display, enabling you to observe the change happening on the outboard equipment. This does not happen if you are in Preview mode.
5. Press and hold the MIDI CHANNEL button at the top of the module. The 7-segment display now shows the currently stored Program Change MIDI channel for scene 12.
6. Use the Up/Down buttons to set the MIDI channel to channel **3**. When 3 is shown in the display, release the MIDI Channel button.
7. Press the SET CONTROLLER button. (The Prog Change button will turn off, and the Set Controller button will illuminate). The 7-segment display now shows the currently stored Controller Number for scene 12.
8. Use the Up/down buttons to change the Controller Number to **7**.

9. Press and hold the MIDI CHANNEL button at the top of the module. The 7-segment display now shows the currently stored DataFader MIDI channel for scene 12. Use the Up/Down buttons to set the MIDI channel to channel **8**. When 8 is shown in the display, release the MIDI Channel button. Press the Set Controller button again to turn it off. The 7-segment display now returns to showing the current scene number (12).

10. Press the STORE button to save the changes you have made into scene 12's memory location. You are prompted by the display to confirm or abort the store operation, by pressing the Yes or No buttons.

Note: The order in which program change and controller numbers are set is not important -in the above example the program change was done first, but this is not essential.

Editing MIDI Parameters in Mute Scenes

If you want to change any of the MIDI parameters individually within a scene, follow the instructions in the example on the previous page, but omit the steps which refer to parameters you do not wish to change. You can change the value of just one parameter if you wish, and then press store. The scene will then be updated with just the changed information. (The other parameters will be updated as well, but as you haven't changed them, this won't make any difference).

You can also make changes to the console mutes while editing MIDI parameters, and these will be stored along with the MIDI parameters when the Store button is pressed.

If editing is required during a performance for any reason, Preview mode should be selected, so that the required scene can be recalled for editing without disturbing the existing status of the console.

Setting the Global MIDI Receive/Note On/Off channel

As described above, the MIDI channels for Program change *transmit* and DataFader transmit are set and stored for each scene.

The MIDI channel for the *receiving* of Program Changes and both the *transmitting* and *receiving* of Note On and Note Off messages can also be set and stored in the same way.

To set the Global Receive/Note On/Off channel:

1. Make sure that neither Program Change nor Set Controller switches are illuminated.
2. Press and hold the MIDI channel switch at the top of the module.
3. Use the Up/Down buttons to select a channel between 1 and 16, or select 'ANY', which means that the console will 'listen' on all MIDI channels, but will not transmit on any channel.
4. Release the MIDI Channel button, and press the STORE button. The display scrolls the message YES-NO-Scene Number. Press the Yes button to confirm the Store.

The channel is factory set to channel 1 on all scenes.

Table of MIDI Note Numbers sent/received by K3 mute switches

Table 2

MIDI Note Number	K3 Mute switch
0	Input 1
1	Input 2
2	Input3
„	„
etc	etc
47	Input 48
48	FX Ret 1 (if fitted)
49	FX Ret 2 (if fitted)
50	FX Ret 3 (if fitted)
51	FX Ret 4 (if fitted)
52	Group 1
53	Group 2
54	Group 3
55	Group 4
56	Group 5
57	Group 6
58	Group 7
59	Group 8



MIDI Implementation Chart

Function		Transmitted	Recognised	Remarks
Basic Channel	Default	1	1	
	Changed	1-16	1-16	
Mode	Default	MODE3	MODE3	
	Messages	X	X	
	Altered	X	X	
Note Number:		0-59	0-59	See Note 1
	True Voice	X	X	
Velocity	Note On	X	X	Note ON. Velocity 1-27 = Channel not muted Note ON. Velocity 0 = Channel muted Note Off. Velocity 1-27 = Channel muted
	Note Off	X	X	
After Touch	Keys	X	X	
	Chs	X	X	
Pitch Bend		X	X	
Control Change		O	X	As programmed when the data fader is moved
Program Change		0 - 127	0 - 127	
	True#	X	X	See Note 2
System Exclusive		O	O	See Note 3
System Common	Song Position	X	X	
	Song Select	X	X	
	Tune	X	X	
System Real Time	Clock	X	X	
	Command	X	X	
Aux Messages	Local On/Off	X	X	
	All Notes Off	X	X	
	Active Sense	X	X	
	Reset	X	X	

Notes

Note 1. Note Numbers
Note Numbers 0 - 47 correspond to the mutes on channels 1 - 48.
Note Numbers 48 - 51 correspond to the mutes on stereo returns 1 - 4
Note Numbers 52 - 59 correspond to the mutes on groups 1 - 8

Note 2. Program Change
Program Change Numbers 0 - 127 are transmitted when scenes 1 - 128 are recalled.
When Program change Numbers 0 - 127 are received, scenes 1 - 128 are recalled.

Note 3. System Exclusive. The system exclusive file format used to dump the scenes to an external computer for backup purposes is as follows:
Header: f0 39 7f 07 01 39 'MIDI' 00 00 03 04 f7
Start Packet: f0 39 7f 07 02 00 17 'Soundcraft K3' <Version no> f7
Data packets containing scenes: f0 39 7f 07 02 <Packet count><data size><data><checksum> f7
End of file: f0 39 7f 7b 00 f7
(Where '...' indicates ASCII code for text, & <...> indicates hexadecimal data)

Mode 1: OMNI ON, POLY	Mode 2: OMNI ON, MONO	O: Yes
Mode 3: OMNI OFF, POLY	Mode 4: OMNI OFF, MONO	X: No

5. Specifications

Specifications

Frequency Response

Any input to any output	20Hz - 20kHz, +0/-0.5dB
Mic. input at over +50dB gain to any output	20Hz - 20kHz, +0/-3dB

Total Harmonic Distortion

(All measurements at +20dBu)

Hi-Z In to Group or Mix out	Less than 0.005% @ 1kHz
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Noise

(22Hz - 22kHz bandwidth, unweighted)

Mic input Equivalent Input Noise	Less than -127.5dBu (150Ω source)
Mix bus output noise (24ch routed)	Greater than -81dBu

Input and Output Impedances

Microphone Input	Greater than 1.6kΩ balanced
Line Inputs	Greater than 10kΩ balanced
Outputs	75Ω

Input and Output Levels

Lo-Z input sensitivity	-2 to -70dBu, variable
Hi-Z input sensitivity	+10 to -20dBu, variable
Stereo return, 2-track return and Matrix external input	+4dBu or -10dBV switchable
Theatre direct, Group, Mix, Aux and Matrix outputs	+4dBu
Standard Direct outputs and Inserts	-2dBu

Output Capability

Group, Mix, Aux and Matrix outputs	+26dBu into 1kΩ
Standard Direct output and Insert sends	+20dBu into 2kΩ
Theatre Direct output	+26dBu into 5kΩ

Crosstalk

(All measurements at 1kHz)

Channel muting	Greater than 90dB
Channel fader attenuation	Greater than 90dB
Channel routing	Greater than 85dB
Channel AUX send attenuation	Greater than 80dB

Note: These figures are typical of performance in a normal electromagnetic environment. Performance may be degraded in severe conditions.