ALLEN&HEATH

GS R24

USER GUIDE

Publication AP7784

Limited One Year Manufacturers Warranty

This product is warranted to be free from defects in materials or workmanship for period of one year from the date of purchase by the original owner.
To ensure a high level of performance and reliability for which this equipment has been designed and manufactured, read this User Guide before operating.
In the event of a failure, notify and return the defective unit to the place of purchase.
If this is not possible then please contact the authorised ALLEN & HEATH distributor or agent in your country as soon as possible for repair under warranty subject to the following conditions.

Conditions of Warranty

The equipment has been installed and operated in accordance with the instructions in this User Guide.
The equipment has not been subject to misuse either intended or accidental, neglect, or alteration other than as described in the User Guide or Service Manual, or approved by ALLEN & HEATH.
Any necessary adjustment, alteration or repair has been carried out by an authorised ALLEN & HEATH distributor or agent.
This warranty does not cover fader wear and tear.
The defective unit is to be returned carriage prepaid to the place of purchase, an authorised ALLEN & HEATH distributor or agent with proof of purchase.
Please discuss this with the distributor or the agent before shipping.
If the unit is to be repaired in a different country to that of its purchase the repair may take longer than normal, whilst the warranty is confirmed and parts are sourced.
Units returned should be packed to avoid transit damage.
In certain territories the terms may vary. Check with your ALLEN & HEATH distributor or agent for any additional warranty which may apply.

If further assistance is required please contact Allen & Heath Ltd.

IMPORTANT- PLEASE READ CAREFULLY:

By using this Allen & Heath product and the software within it, you agree to be bound by the terms of the relevant End User Licence Agreement (EULA), a copy of which can be found on the Allen & Heath website in the product's pages. You agree to be bound by the terms of the EULA by installing, copying, or otherwise using the software.

This product complies with the European Electromagnetic Compatibility directive 2004/108/EC and the European Low Voltage Directive 2006/95/EC.

This product has been tested to EN55103 Parts 1 & 2 1996 for use in Environments E1, E2, E3, and E4 to demonstrate compliance with the protection requirements in the European EMC directive 2004/108/EC. During some tests the specified performance figures of the product were affected. This is considered permissible and the product has been passed as acceptable for its intended use. Allen & Heath has a strict policy of ensuring all products are tested to the latest safety and EMC standards. Customers requiring more information about EMC and safety issues can contact Allen & Heath.

NOTE: Any changes or modifications to the console not approved by Allen & Heath could void the compliance of the console and therefore the users authority to operate it.

GS-R24 User Guide AP7784 Issue 1

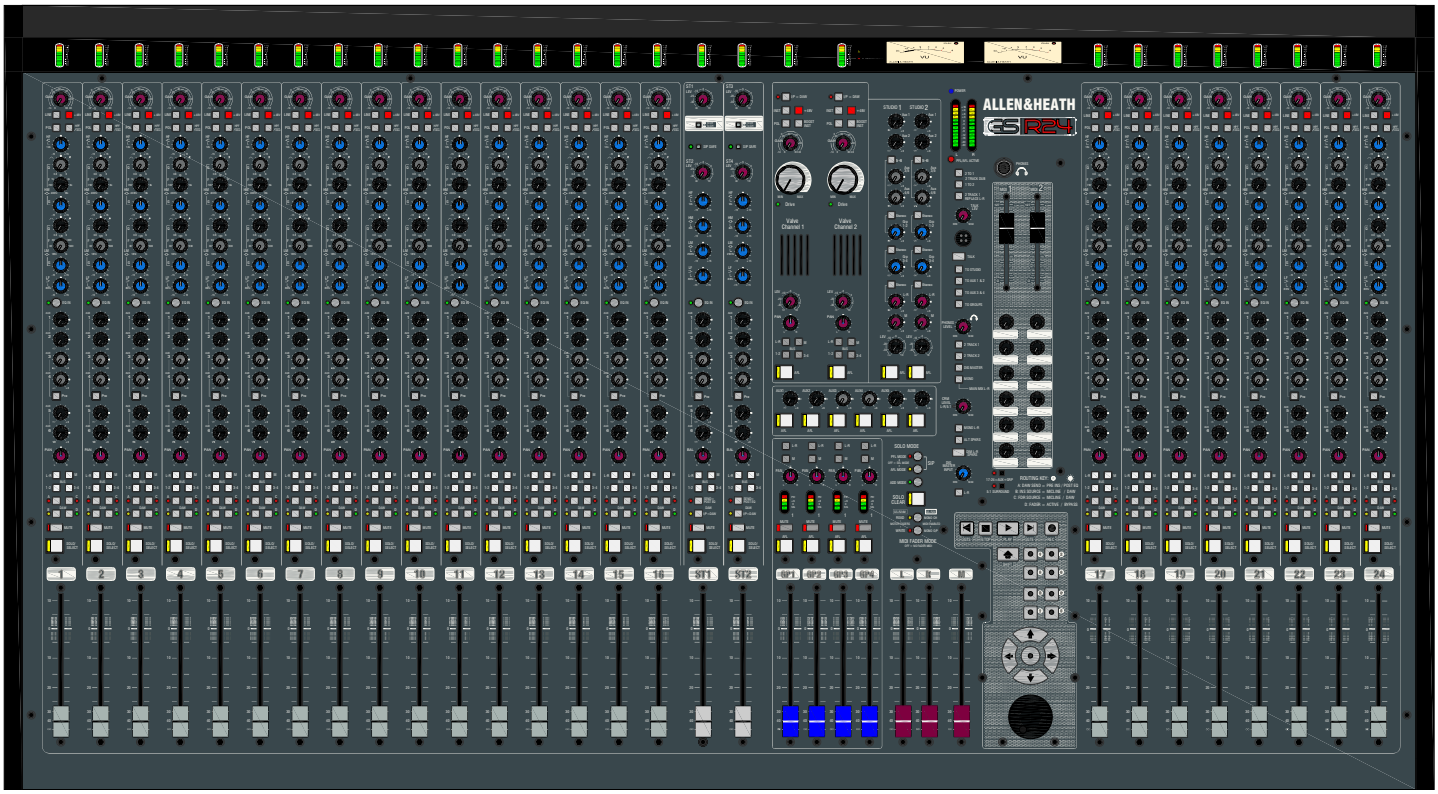
Allen & Heath Limited

Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK

http://www.allen-heath.com

PACKED ITEMS

Check that you have received the following:



GS-R24 MIXER

Also Packed in the box

- Safety Instructions—English
- Safety Instructions—French
- Addendum note ROHS
- Sticker
- This User Guide

PACKED SEPARATELY ARE THE POWER SUPPLY AND INTERFACE MODULE

CONTENTS

Thank you for purchasing your Allen & Heath GS-R24. To ensure that you get the maximum benefit from the unit please spare a few minutes familiarizing yourself with the controls and setup procedures outlined in this user guide. For further information please refer to the additional information available on our web site, or contact our technical support team.

http://www.allen-heath.com

This User Guide does not cover the interface modules available for the GS-R24. The varied modules will have their own User Guide and details of software drivers, digital connectivity and computer related issues. Also see the website for details.

INTRODUCTION TO THE GS-R24

A Technical Overview:

The Allen & Heath GS-R24 mixer has been carefully and lovingly designed in the beautiful county of Cornwall in the UK and is manufactured alongside a wide range of professional audio mixing consoles.
Allen & Heath has a long history of making classic recording mixers such as the Sigma, Syncon, System 8, Saber and the GS3000, but for a few years have concentrated on the live sound, installation and pro DJ markets. The GS-R24 resurrects the GS product line and stands as a classic recording console for the modern age of Digital Audio Workstation software.
We spent a long time examining how modern recording methods, equipment and software applications have changed the way musicians and sound engineers work and listening to ideas and requests on forums such as Gearslutz, we have created a product which offers more than a sum of its parts—a combination of not just different technology, but different methods and philosophies.

GS-R24 is designed to fulfil the needs of musicians, sound engineers and producers and is adaptable to different workflow methods. Briefly, some of the capabilities of the GS-R24 include:

- Multi-track recording to the digital domain with easy interfacing to a computer DAW with zero latency monitoring of live sources.
- Multi-track recording to the digital domain with monitoring sourced from the recorded track in the DAW.
- Over-dubbing a recorded track whilst monitoring the track and/or live source.
- Multi-track mixdown using state-of-the-art analogue summing techniques.
- Multi-track mixing performed in the DAW using the GS-R24 as a controller.
- Patching, routing and monitoring a comprehensive matrix of signals in a studio environment—artists monitors, effects processors, external devices and studio control room monitors.
- Surround sound mixes can be created in a DAW and conveniently monitored through a single level control.
- Automating a mix using the motorised faders on GSR-24M to either create an automated mix in the digital domain or create an automated analogue summing mix using the faders for channel level control as well as parameter control.

Our claim that the GS-R24 is a modern classic recording console is not without foundation. It is a progression of our in-line recording mixers, many regarded as "classics" but with interfacing to each channel provided by a Digital Audio Workstation.
Actually, the GS-R24 isn't just designed for modern times—it is built with the future in mind, with the interfacing hardware housed in a removable module which can be swapped and updated over time. This means that you won't have to change your lovely console when you need to upgrade your digital interfacing technology years from now.

The GS-R24 is built utilising individual vertically mounted channel circuit boards with each rotary control fixed with a metal nut to the front panel. This provides a very robust product that will resist damage and give years of reliable use. It also makes servicing easier should it be required. The motor fader system can be removed separately to the rest of the system and faders can be changed individually if the are damaged (from top impact for example).

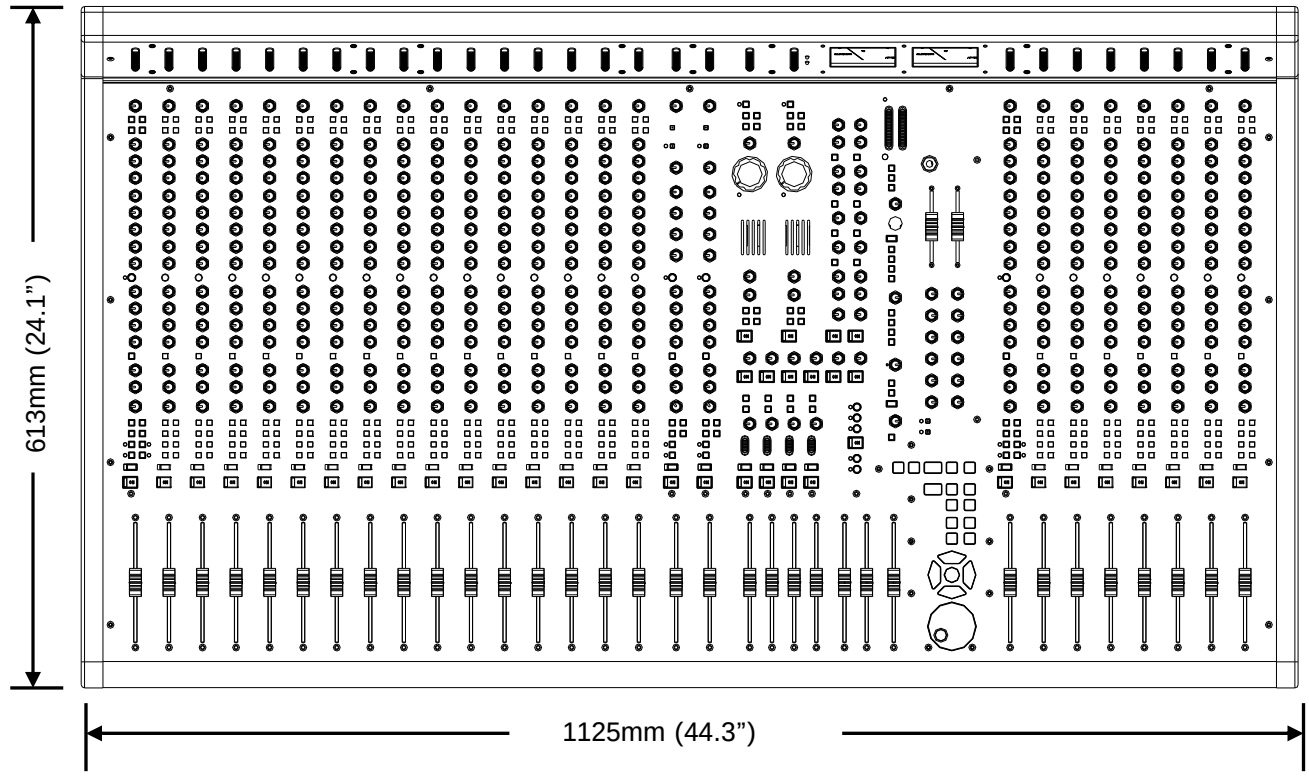
Mic/Line Pre-amps:
The ultimate performing pre-amps are fitted to GS-R24. Similar in topology to those used in the renowned ZED-R16, they comprise a symmetrical circuit with individual linearising feedback to both phases, along with the lowest noise transistors available, providing very low distortion over a wide bandwidth and extremely low noise which translates to superior clarity and dynamic range.

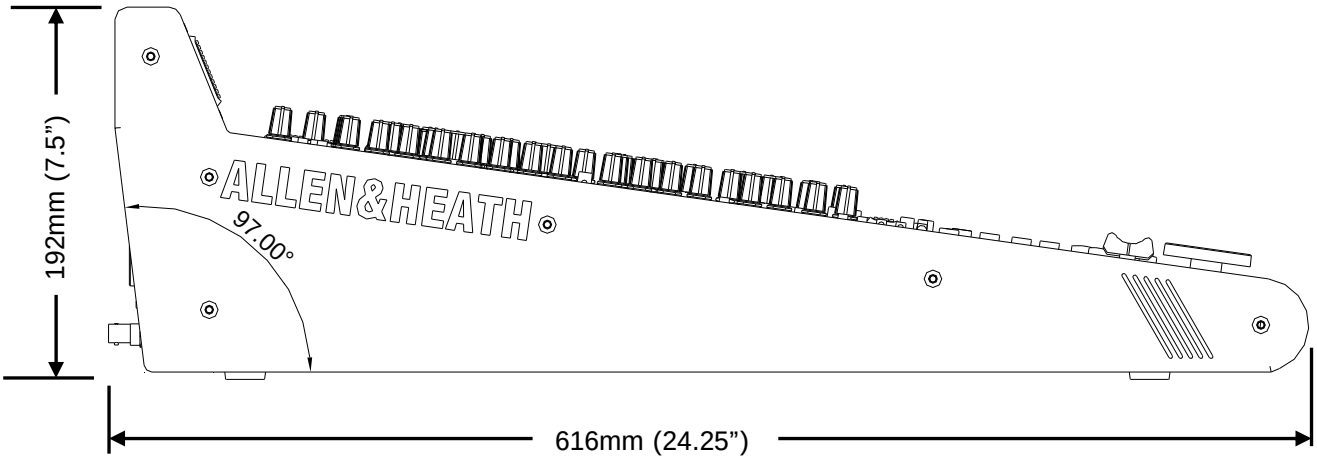
EQ:
Extremely powerful, flexible and fully implemented mono channel EQ. Parametric mid sections with extended frequency range and controllable Q- factor allow a huge range of corrective and creative possibilities.

MIDI Control:
We have developed the control aspect on GS-R24 to give an intuitive, flexible, easy way to control multiple parameters in a variety of DAWs. Each of the mono channel faders has MIDI capability and are motorised on GS-R24M. In addition there is a MIDI Select switch on each channel and in the MIDI controller section 2 x 60mm faders, 12 x rotaries, 14 switches plus transport controls and a jogwheel.

Interface Modules:
The interface module fits in the rear panel of the console. It handles 32 channels in and 32 channels out plus the control protocol. This manual does not cover the details of the modules as the variety of modules available will change in the future. Please consult the A&H website for details and the User Guide for the individual modules.

DIMENSIONS & WEIGHTS





Weight kg (lb)		
	Unpacked	Packed
GS-R24	30 (66)	38 (84)
GS-R24M	38 (84)	40 (88)

GS-R24 SPECIFICATIONS

Operating Levels	
Inputs	
Mono channel (XLR) Input	-6 to –60dBu for nominal (+14dBu in max)
Mono channel Line Input (Jack socket)	+14 to –40dBu (+34dBu maximum)
Insert point (TRS Jack socket)	0dBu nominal +21dBu maximum
Stereo Input (Jack sockets)	0dBu nominal (control = Off to +10dB)
Stereo input (phono sockets)	0dBu nominal (control = Off to +15dB)
Valve channel (XLR)	-10 to –60dBu for nominal (+10dBu max)
Valve channel (Line)	+10 to –40dBu for nominal (+30dBu maximum)
Valve channel (Inst gain boosted)	-16 to –66dBu for nominal (122mV to 0.388mV rms)
2 Track Input (phono or TRS jack sockets)	0dBu nominal +21dBu maximum
Outputs	
Main (2 Track 1) L-R (XLR) & Groups 1-4 (TRS Jack)	+4dBu nominal. +27dBu maximum.
L-R Insert & Group Inserts (TRS Jack socket)	0dBu nominal +21dBu maximum
2 Track 2 Outputs (Jack sockets)	0dBu nominal. +21dBu maximum.
All other analogue outputs	0 nominal +21dBu maximum

Headroom	
Analogue headroom from nominal (0Vu)	21dB
Analogue headroom at Mix summing amplifier	23dB

Frequency Response	
Mic in to Mix L/R Out, 10dB gain	+/-1dB 10Hz to 130kHz.
Mic in to Mix L/R Out, 30dB gain	+/-0.5dB 20Hz to 80kHz.
Mic in to Mix L/R Out, 50dB gain	+/-1dB 20Hz to 80kHz.
Line in to Mix L/R out 0dB gain	+/-0.5dB 20Hz to 20kHz
Stereo in to Mix L/R out	+/-0.5dB 20Hz to 40kHz

THD+n	
Mic in to Mix L/R Out, 10dB gain 1kHz +10dBu out (DC to 22kHz)	0.0015%
Mic in to Mix L/R Out, 30dB gain 1kHz (DC to 22kHz)	0.0025%
Mic in to Mix L/R Out, 50dB gain 1kHz (DC to 22kHz)	0.0035%
Mic in to Mix L/R Out, 30dB gain 10kHz (DC to 30kHz)	0.0025%
Line in to Mix L/R out 0dB gain +10dBu 1kHz (DC to 22kHz)	0.002%
Stereo in to Mix L/R out 0dB gain +10dBu 1kHz (DC to 22kHz)	0.002%

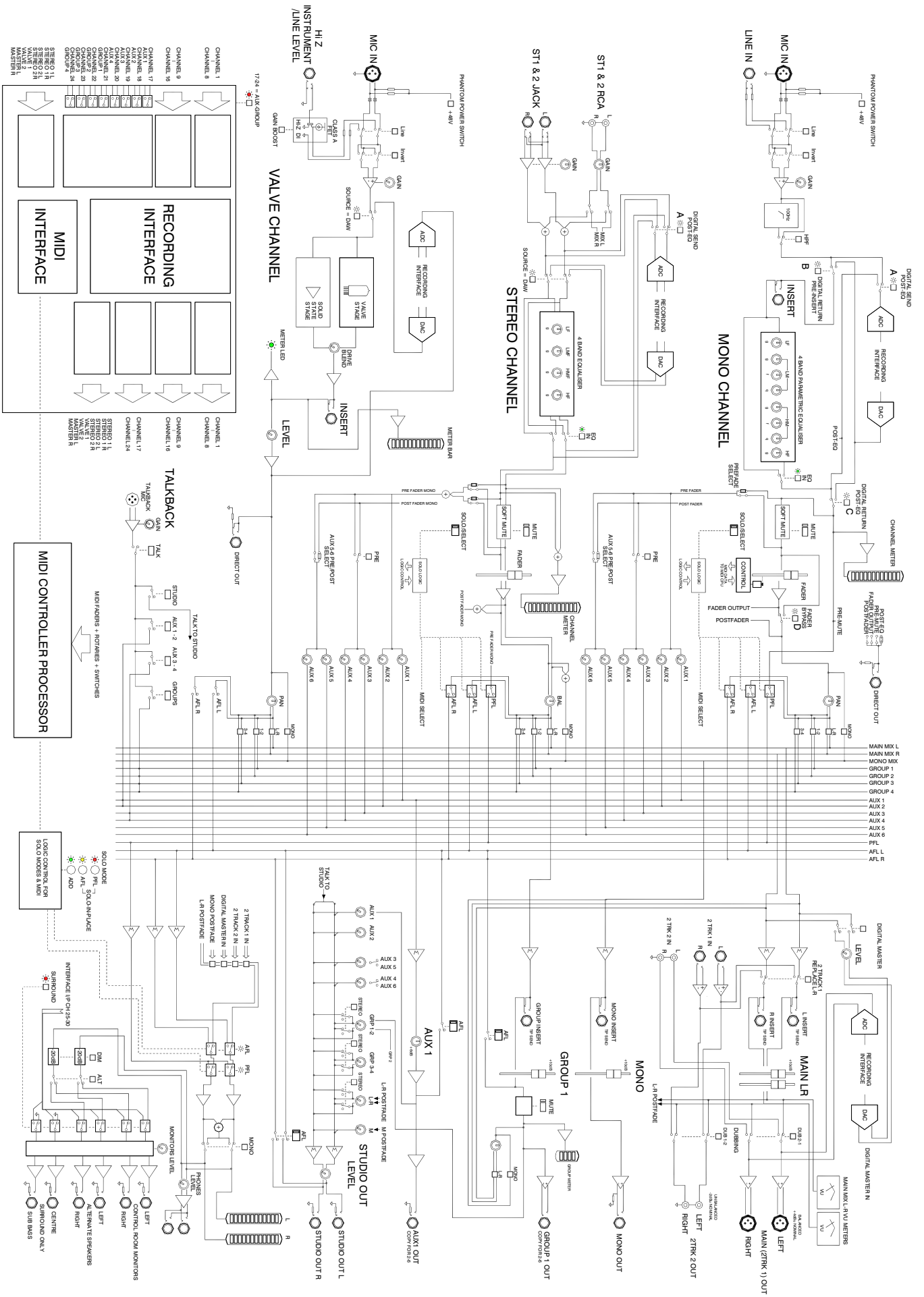
GS-R24 SPECIFICATIONS

Noise	
Mono ch Mic Pre EIN @ 60dB gain 150R input Z 22-22kHz	-128.5dBu
Mono ch Mic Pre EIN @ 30dB gain 150R input Z 22-22kHz	-124dBu
Mix Noise, LR out, 0 channels routed, Ref +4dBu, 22-22kHz	-97dB (-93dBu)
Mix Noise, LR out, 12 channels routed, Ref +4dBu, 22-22kHz	-90dB (-86dBu)
Mix Noise, LR out, 24 channels routed, Ref +4dBu, 22-22kHz	-89dB (-85dBu)
Mix Noise, Aux 1-4 out, sends minimum, masters at unity 22-22kHz	-84dBu
Mix Noise, Groups 1-4, 24 channels routed, Ref +4dBu, 22-22kHz	-89dB (-85dBu)

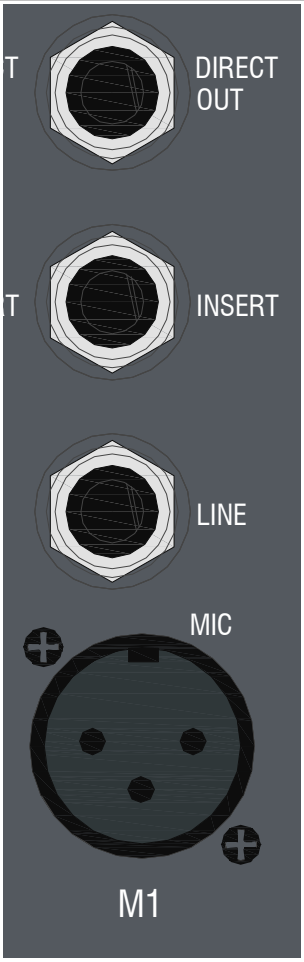
Power consumption Motorised Fader model	170W Nominal 300W Max
Power consumption non-Motorised Fader model	170W

Weight GS-R24 unpacked/packed	30/38kg
Weight GS-R24m unpacked/packed	32/40kg

BLOCK DIAGRAM



MONO INPUT CHANNEL



REAR PANEL CONNECTIONS

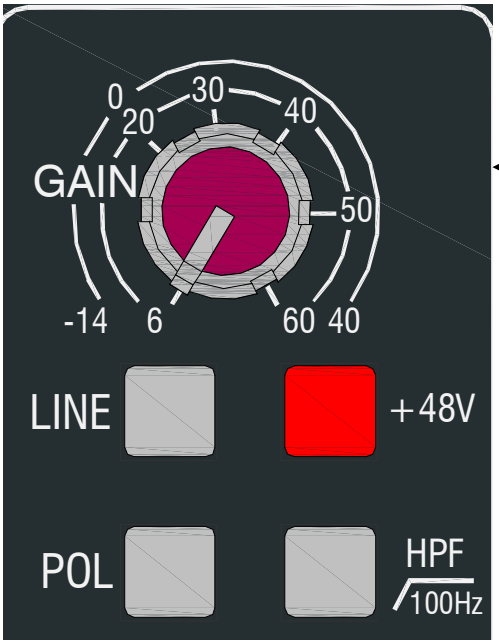
Direct Output Jack Socket
Standard 1/4" (6.25mm) Jack socket for Channel output signal. Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu. The source for the Direct Output is selectable by option jumpers internally, factory set to Pre-Fade.

Insert Jack Socket
Standard 1/4" (6.25mm) Jack socket for unbalanced insert send and return signals. Wired Tip=send, Ring=return, Sleeve=Chassis. Nominal level is 0dBu. The insert point is after the 100Hz filter and before the EQ.

Line Input Jack Socket
Standard 1/4" (6.25mm) Jack socket for balanced or unbalanced line level signals. Wired Tip=Hot(+), Ring=cold (-), Sleeve=Chassis.

Microphone Input Socket
Standard 3-Pin XLR socket wired as Pin 1=Chassis, Pin 2=hot (+), Pin 3=Cold (-).

FRONT PANEL CONTROLS



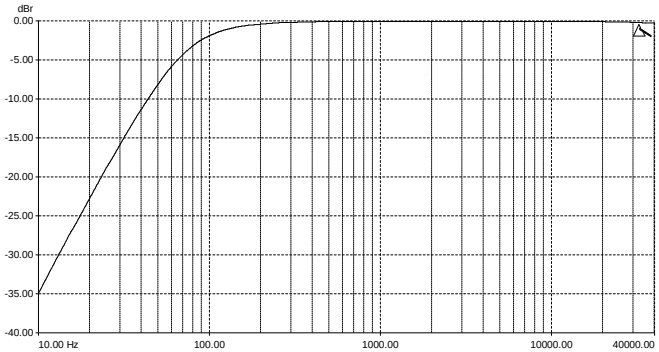
Gain Control
This adjusts the gain of the input amplifier to match the signal level of the input. The gain is varied from +6dB to +60dB for signals plugged in to the xlr socket (Mic Input) and –14dB to +40dB for signals plugged into the Line input jack.

Line Input Switch
Selects the source for the pre-amp from XLR to Line input jack. The balanced input signal is padded by 20dB but noise and distortion are kept to a minimum in order to make it transparent when connecting external devices.

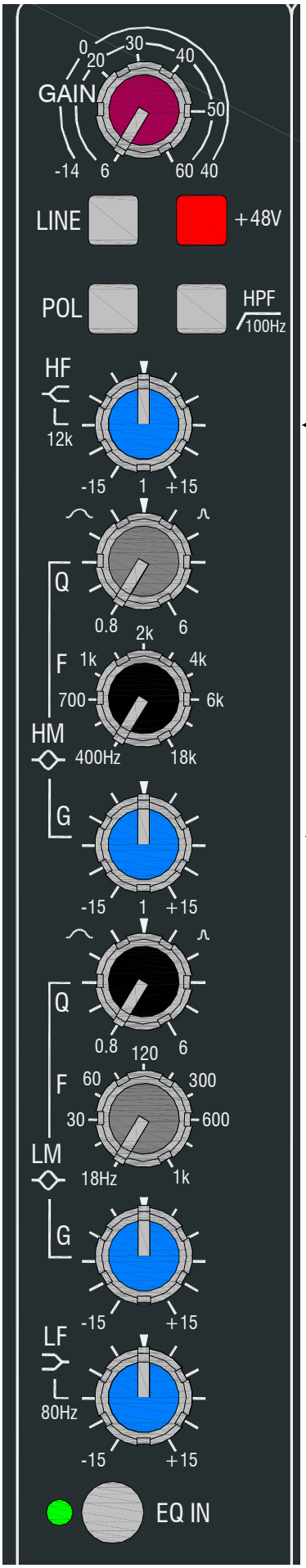
48V Phantom Power Switch
Applies +48V to pins 2 and 3 of the XLR input though 6k8 resistors for phantom powered condenser microphones.

Polarity (phase) reverse switch
Reverses the polarity of the balanced input signal phases for both mic XLR and Line jack inputs.

100Hz Hi-pass Filter
The Hi-pass filter is used for reducing pop noise and rumble from microphone signals. It is a 2-pole (12dB per octave) filter with a corner frequency set at just below 100Hz.
The filter affects signals from both Mic XLR and Line jack socket.

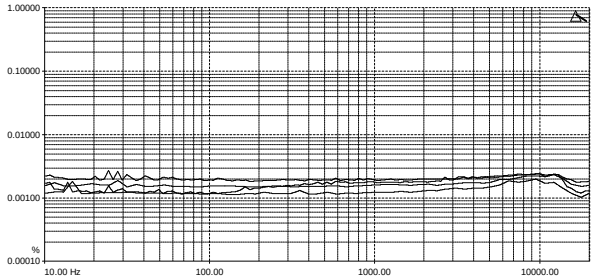


MONO INPUT CHANNEL



Pre-Amp performance notes

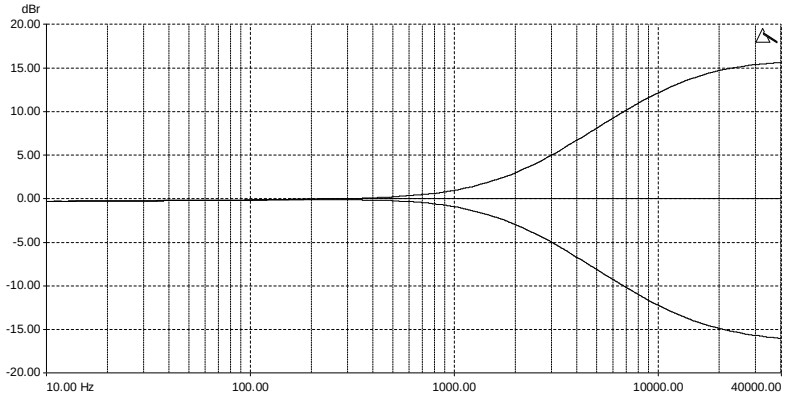
The GS-R24 pre-amp is a highly developed and proven design. Originally evolved from a balanced summing amplifier circuit originally designed back in the late 1980s for the Focusrite Forte console whilst working for industry legend Rupert Neve. Very low noise transistors are employed in a symmetrical topology with local phase compensation resulting in an inherently stable but wide bandwidth, low distortion, very low noise design.



THD+n plots of pre-amp at 10, 20, 30 and 40dB gain showing uniformity of distortion performance over a wide range of gain settings.

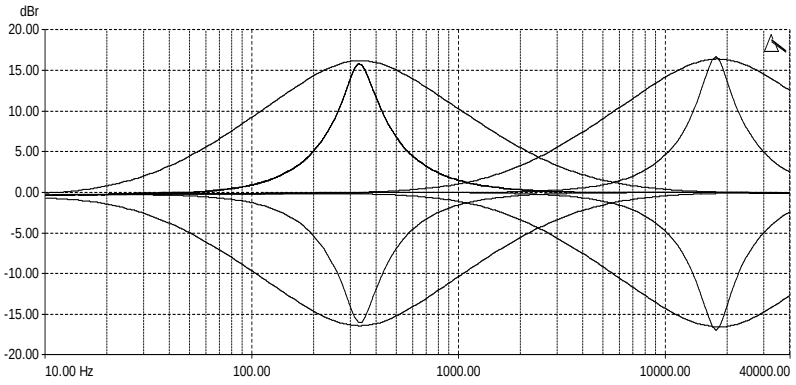
HF EQ

The HF (High Frequency) equaliser affects the frequency response of the higher audible frequencies. The corner frequency of 12kHz is around 3dB from the maximum cut or boost of the circuit.

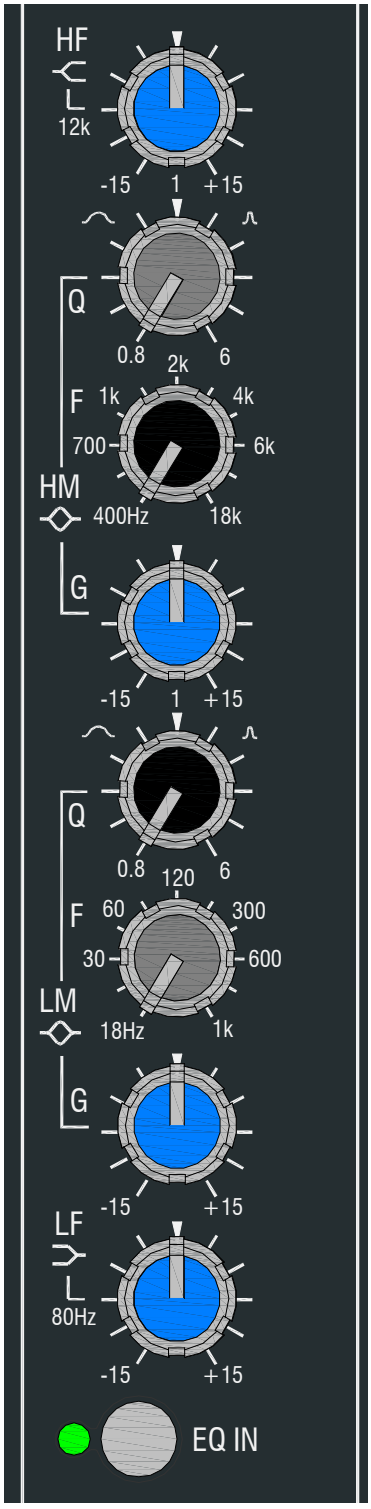


HMF EQ

The HMF (High Mid Frequency) equaliser affects the upper middle of the audible frequency range. The frequency graduations on the sweep control are the centre frequencies of the EQ. The Q factor is the width of the equaliser curve and is variable from a wide 0.8 to a sharp 6.

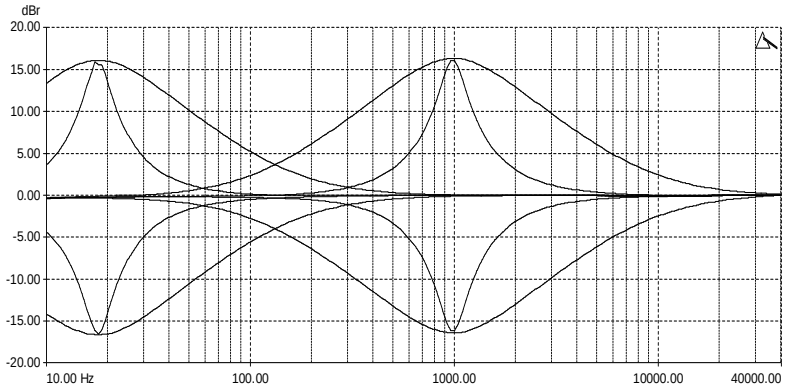


MONO INPUT CHANNEL



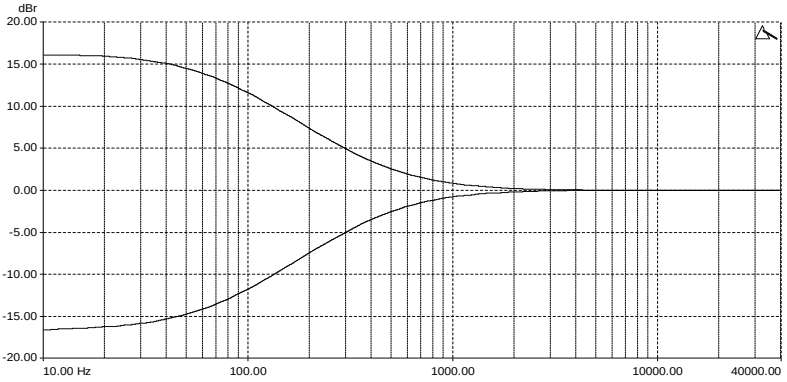
LMF EQ

The LMF (Low Mid Frequency) equaliser affects the lower middle of the audible frequency range. The frequency graduations on the sweep control are the centre frequencies of the EQ. As with the HMF section, the Q factor is variable from 0.8 to 6. The graph shows the Q setting in the minimum, and maximum positions, and the extents of the frequency range.



LF EQ

The LF (Low Frequency) equaliser affects the frequency response of the lower audible (bass) frequencies. The corner frequency of 60Hz is around 3dB from the maximum cut or boost of the circuit.



EQ IN

The EQ IN switch enables the equaliser when pushed in. The EQ is bypassed when the switch is in its up position.

MONO INPUT CHANNEL

Auxiliary sends 1 & 2

Each of these controls sends a signal to an Aux bus. The signal is sourced pre-fade which means that the level is independent of, and unaffected by the fader. Auxes 1 & 2 are primarily used for foldback monitoring purposes, as the fader does not affect the level.

These sends are affected by the Mute switch by default, so muting the channel will also mute the Aux sends but they can be selected to be independent of the mute status.

The control varies the signal level to the bus from off (fully attenuated) to +6dB, with unity gain at the arrow.

There are master level controls for all of the Auxiliary outputs situated in the master section of the mixer.

Auxes 3 & 4

The source for Aux sends 3 & 4 is normally post-fader but can be selected pre-fader by pressing the Pre switch.

Auxes 5 & 6

The source for Aux sends 5 & 6 is post-fader by default. They are also muted by the Mute switch. Auxes 5 & 6 are primarily used for effects sends. However, an internal jumper option can be altered to select them to be sourced pre-fader, for example if more monitor sends are required.

PAN

The pan control adjusts how the signal from the mono input channel is shared between the left and right buses and between odd and even group buses.

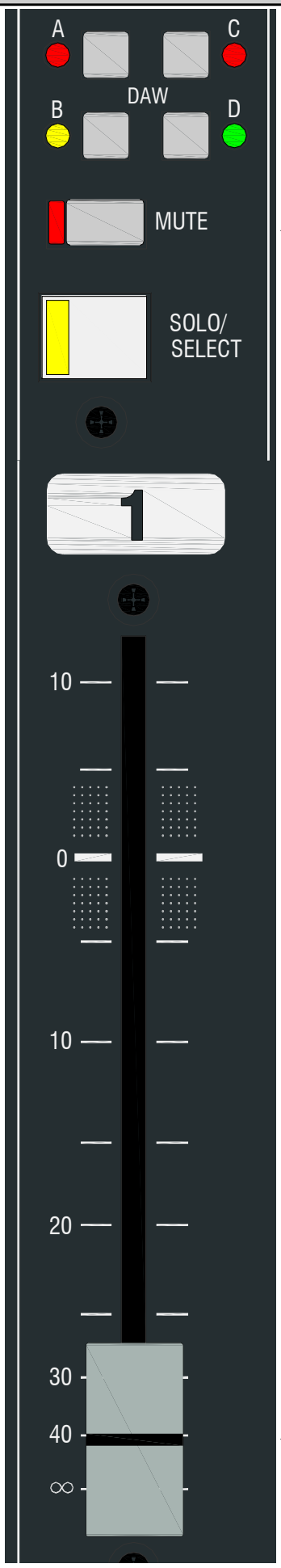
Bus Routing Switches

The L-R switch connects the post-fade signal to the main L-R mix bus via the pan control. For minimum noise from the mix bus summing amplifier, leave the switches in their up positions if the channel signal is not required on the bus.

The M switch routes the post-fade signal to a mono mix bus which is independent of the pan control.

The 1-2 and 3-4 switches are for routing the post-pan signal to pairs of audio sub-groups which have independent insert points, master faders, outputs and sub routing to the main mix buses if required.

MONO INPUT CHANNEL



INTERFACE CONFIGURATION SWITCHES

A

DAW send source switch

Switch A determines the source for the interface send for each channel. In the up position the source is just after the pre-amp and Hi pass filter. If pressed in, then the source is from after the EQ IN switch. One or the other signal will always be sent to the interface.

B

DAW return to channel (Pre Insert) switch

Switch B selects the source for the channel to be the interface return, which is switched in at just before the channel insert point. In other words the pre-amp signal is replaced by the interface return for that channel just before the insert point.

C

DAW return to channel (Post EQ) switch

Switch C selects the source for the channel at a point after the EQ. So if pressed, the channel signal from the EQ is replaced with the interface return for that channel which then feeds the fader and also the pre-fade sends.

D

Fader Bypass switch

Switch D allows the channel level control element of the fader to be by-passed at unity gain. This is useful when using the fader purely as a MIDI control device when also utilising the channel audio path for mixing or monitoring but not wanting fader movements to affect the channel signal level.

For a graphical explanation of the interface configuration switches, and interface routing options please refer to page 39.

Mute Switch

This mutes or cuts the signal to the mix buses, the post-fade Auxes and the pre-fade Auxes (where muting is enabled). A rectangular LED illuminates to show the Mute switch is pressed. The "soft" mute circuit has a time constant of 30mS for minimum Fourier clicks caused by sharp edges, and can be triggered by soloing another channel in Solo in Place mode.

Solo/Select Switch

The channel solo/select switch is multi-functional switch that operates as a channel solo switch or a MIDI select switch to control DAW parameters, The modes are set by selector switches in the master section and are as follows:

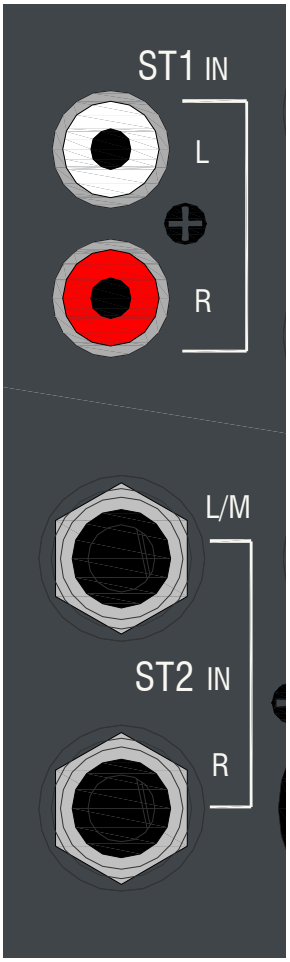
1) PFL: Sends a pre-fade (also pre-mute) signal from the channel to the monitoring system.
2) AFL: Sends an after-fade (also post pan) signal to the monitoring system.
3) Solo in Place: Any pressed solo switches will mute other mono input or stereo input channels (unless SiP safed) unless their solo switches are pressed also (in ADD mode).
4) Select: The channel monitoring is disabled and the switch sends a MIDI message. The LED illumination can be tallied internally or can be tallied by the DAW in order to maintain synchronisation of status.

Fader

A 100mm fader controls the level of the channel signal path to mix buses and post-fade auxes. The mono channel faders can also be used as MIDI controllers for parameters in DAW software. On the GS-R24M the faders are motorised, further information on page 32.

STEREO INPUT CHANNEL

REAR PANEL CONNECTIONS



ST1 (& ST3) Phono sockets

Standard RCA phono sockets for unbalanced stereo inputs.
Nominal level = 0dBu

ST2 (& ST4) Jack sockets

Standard 1/4" (6.25mm) Jack socket for balanced or unbalanced line level signals. Wired Tip=Hot(+), Ring=cold (-), Sleeve=Chassis.
The left channel input is connected to the break contacts of the right channel input socket so a mono source can feed both left & right channels if required.
Nominal level = 0dBu

FRONT PANEL CONTROLS

ST1 Level

The input level control varies the level of the signal from off (fully attenuated) to +10dB of gain at the maximum position.

ST1 input routing switch

ST1 (& ST3) can be routed directly to the main L-R mix bus (switch up) or to the corresponding stereo channel section where the signals will sum with the ST2 (& ST3) inputs from the jack sockets.

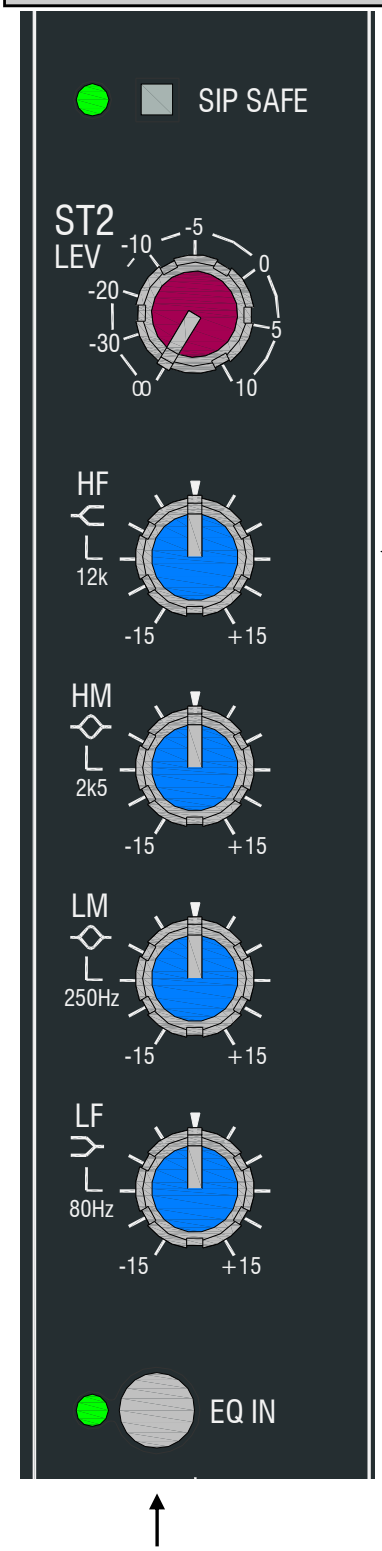
ST Channel SiP Safe switch

The Solo in Place Safe switch isolates the stereo channel from the muting function of the Solo in Place system. Designed so that if effects are returned to one or both stereo channels, they can be safe from muting by the SiP system thereby allowing any soloed channels to be heard with effects intact.

ST2 Level

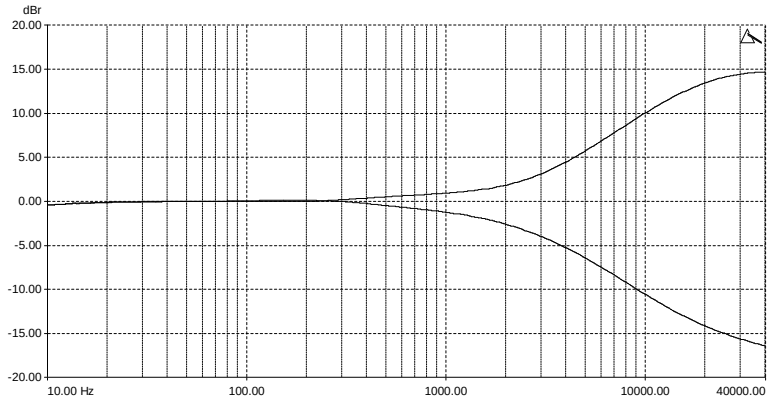
The input level control varies the level of the signal from off (fully attenuated) to +10dB of gain at the maximum position.

STEREO INPUT CHANNEL



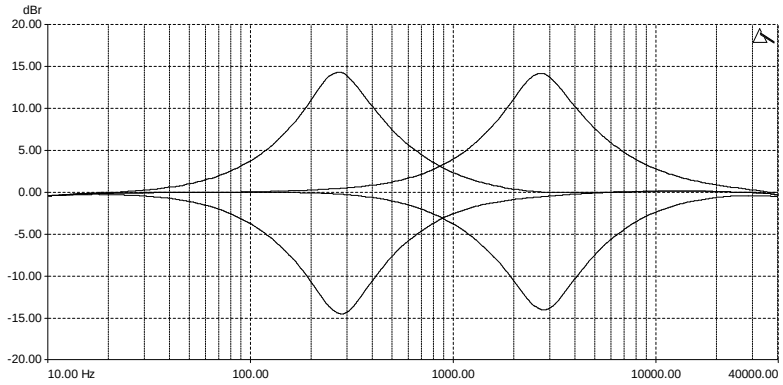
Stereo HF EQ

With a 3dB corner frequency of 12kHz and maximum cut & boost of 15dB, the HF EQ is tuned to the upper range of the audio spectrum.



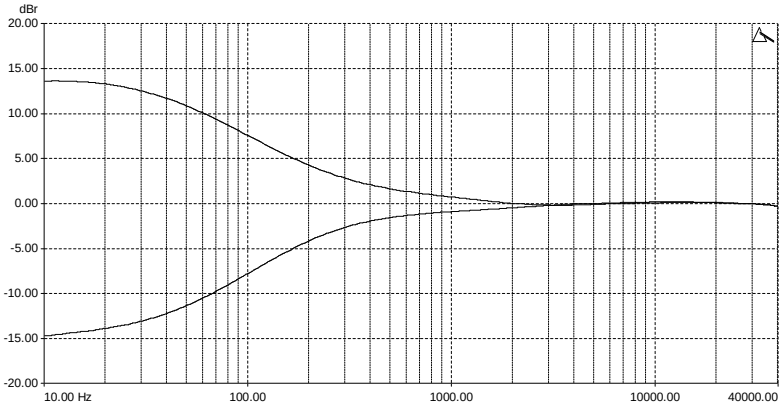
Stereo HM & LM EQ

Fixed bandpass equaliser sections set at 2.5kHz and 250Hz and with a maximum cut & boost of 15dB.



Stereo LF EQ

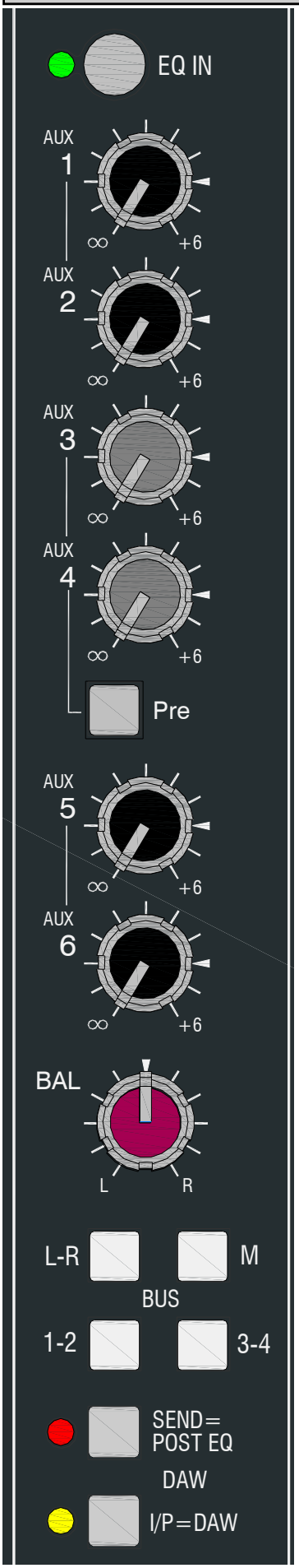
A shelving equaliser with a 3dB corner frequency of 60Hz and with a maximum cut & boost of 15dB.



EQ IN

The EQ IN switch enables the equaliser when pushed in. The EQ is bypassed when the switch is in its up position.

STEREO INPUT CHANNEL



Auxiliary sends 1 & 2

Each of these controls sends a signal to an Aux bus. The signal is sourced pre-fade which means that the level is independent of, and unaffected by the fader. Auxes 1 & 2 are mono buses so the stereo pre-fade signals are summed together to provide the source for the send.

These sends are not affected by the Mute switch by default, so muting the channel does not mute the Aux sends but they can be selected to be post-mute where they will follow the mute status (internal jumper links).

The control varies the signal level to the bus from off (fully attenuated) to +6dB, with unity gain at the arrow.

There are master level controls for all of the Auxiliary outputs situated in the master section of the mixer.

Auxes 3 & 4

The source for Aux sends 3 & 4 is normally post-fader but can be selected pre-fader by pressing the Pre switch.

Auxes 5 & 6

The source for Aux sends 5 & 6 is post-fader by default. They are muted by the Mute status. Auxes 5 & 6 are primarily used for effects sends. However, an internal jumper option can be altered to select them to be sourced pre-fader, for example if more monitor sends are required.

Balance

The balance control adjusts how the stereo left and right channels are balanced when routed to the stereo L-R mix bus or the pairs of group buses.

Unity gain is in the middle, the opposite signal is attenuated when set left or right.

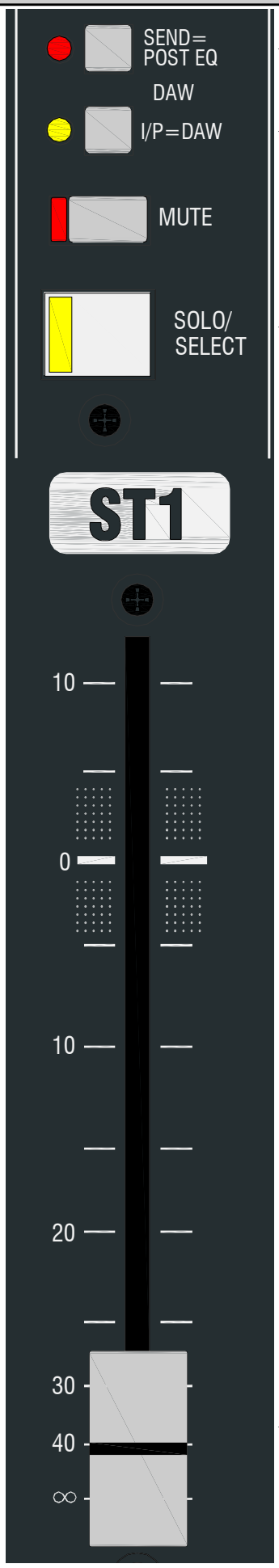
Bus Routing Switches

The L-R switch connects the post-fade left & right signals to the main L-R mix bus via the balance control. For minimum noise from the mix bus summing amplifier, leave the switches in their up positions if the channel signal is not required on the bus.

The M switch routes the post-fade mono sum of left & right to a mono mix bus which is independent of the balance control.

The 1-2 and 3-4 switches are for routing the post-balance signal to pairs of audio sub-groups which have independent insert points, master faders, outputs and sub routing to the main mix buses if required.

STEREO INPUT CHANNEL



INTERFACE CONFIGURATION SWITCHES

DAW send source switch

This switch determines the source for the interface send for the stereo channel. In the up position the source is taken from the post-level input signals. If the switch is pressed then the source is taken from after the stereo EQ. One or the other signal will always be sent to the interface.

Stereo input channel source = DAW

The I/P=DAW switch swaps the source for the stereo channel from the Jack socket/RCA phono connectors to the interface returns for that channel.

Mute Switch

This mutes or cuts the signal to the mix buses, the post-fade Auxes and the pre-fade Auxes (where muting is enabled). A rectangular LED illuminates to show the Mute switch is pressed. The "soft" mute circuit has a time constant of 30mS for minimum Fourier clicks caused by sharp edges, and can be triggered by soloing another channel in Solo in Place mode.

Solo/Select Switch

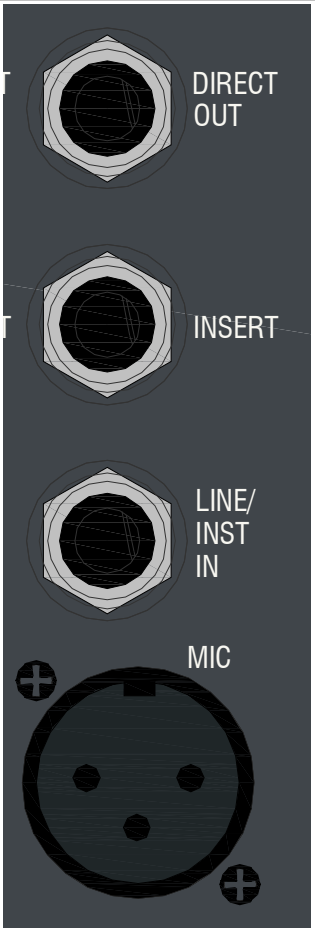
The channel solo/select switch is multi-functional switch that operates as a channel solo switch or a MIDI select switch to control DAW parameters, The modes are set by selector switches in the master section and are as follows:

1) PFL: Sends a pre-fade (also pre-mute) mono sum of left & right signals from the stereo channel to the monitoring system.
2) AFL: Sends an after-fade (also post Bal) stereo signal to the monitoring system.
3) Solo in Place: Any pressed solo switches will mute other mono input or stereo input channels (unless SiP safed) unless their solo switches are pressed also (in ADD mode).
4) Select: The channel monitoring is disabled and the switch sends a MIDI message. The LED illumination can be tallied internally or can be tallied by the DAW in order to maintain synchronisation of status.

Fader

A 100mm stereo fader controls the level of the left & right channel signals to mix buses and post-fade auxes. The stereo channel faders are not MIDI enabled and cannot be motorised or automated.

VALVE INPUT CHANNEL



REAR PANEL CONNECTIONS

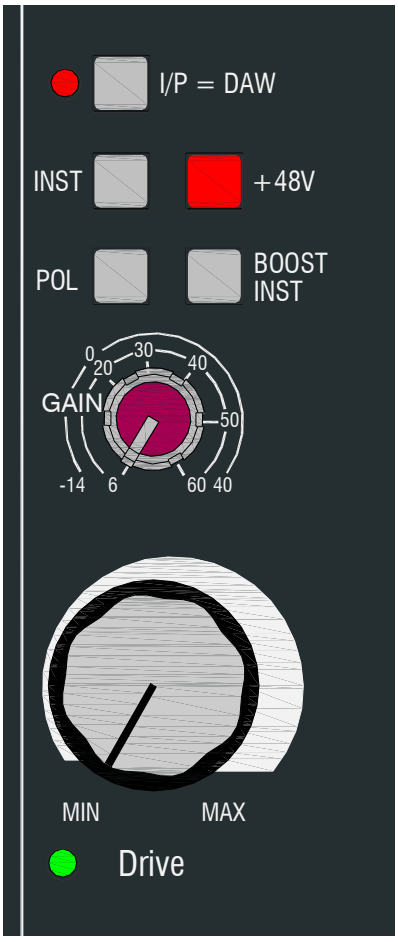
Direct Output Jack Socket
Standard 1/4" (6.25mm) Jack socket for Valve channel output signal. Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu. The source for the Direct Output is taken from pre the master level control and is impedance balanced which means that the source resistance to the Tip(+) and Ring(0v) contacts are matched in order to maintain common-mode interference rejection.

Insert Jack Socket
Standard 1/4" (6.25mm) Jack socket for unbalanced insert send and return signals. Wired Tip=send, Ring=return, Sleeve=Chassis. Nominal level is 0dBu. The insert point is after the valve pre-amp stage.

Line/Instrument Input Jack Socket
Standard 1/4" (6.25mm) Jack socket. This is an unbalanced input designed so that it can be used for instruments with either line level (active) outputs or low level magnetic or piezo pickups.
Wired Tip=Hot(+), Ring=cold (0V), Sleeve=Chassis.

Microphone Input Socket
Standard 3-Pin XLR socket wired as Pin 1=Chassis, Pin 2=hot (+), Pin 3=Cold (-).

FRONT PANEL CONTROLS



I/P=DAW switch
This swaps the source for the valve stage from the Mic/Line/Inst sockets to the interface return for that channel (channels 29 & 30 on the interface). The pre-amp Gain control will not affect the return level when sourced from the interface, but the Drive control will.

Line/Instrument Input Switch
Selects the source for the pre-amp from XLR to Line/Instrument input jack. The jack input is extremely high impedance (10MΩ) and utilises a class A FET circuit as a front end to the pre-amp. This in itself emulates a thermionic valve input stage in its tonal quality and saturation characteristics.

48V Phantom Power Switch
Applies +48V to pins 2 and 3 of the XLR input though 6k8 resistors for phantom powered condenser microphones.

Boost Instrument level switch
Increases the gain of the FET pre-amp by 26dB when pressed. Useful for low output pickups of when the saturation characteristics of the pre-amp circuit are utilised.

Important! This switch is liable to cause clicks or thumps when pressed—turn down your master level to avoid unwanted clicks.

Polarity (phase) reverse switch
Reverses the polarity of the balanced input signal phases for both mic XLR and Line jack inputs.

VALVE INPUT CHANNEL

Gain Control

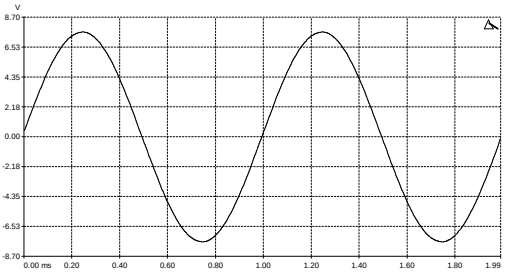
This adjusts the gain of the input amplifier to match the signal level of the input. The gain is varied from +6dB to +60dB for signals plugged in to the xlr socket (Mic Input) and –14dB to +40dB for signals plugged into the Line/Inst input jack (without Boost being pressed).

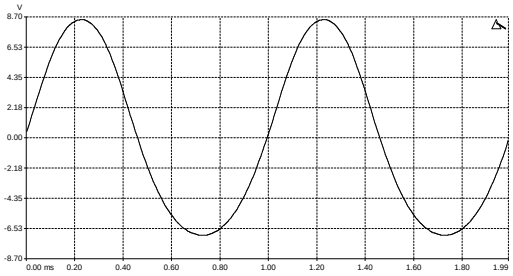
The Gain control does not affect the signal if the input is sourced from the DAW interface.

Drive control

The Drive control determines the amount of signal that passes through the valve stage and therefore the amount of signal with thermionic valve pre-amp characteristic. In addition to increasing the amount of even harmonic content, the volume level may also be increased when swept towards the MAX setting.

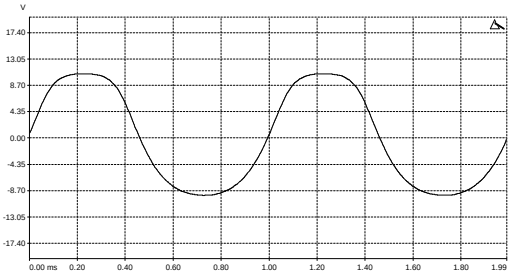
A 3 colour LED indicator illuminates green, orange then red to show the signal level after the valve stage.





Drive control characteristics at around +10dBu. Two graphs show MIN then MAX

The third graph shows extreme overload characteristics of the combined instrument input and valve stage with maximum drive. Note the asymmetric soft clipping on each half-cycle.



Level control

Effectively the fader for the valve channel (or master volume). Adjusts the level from fully attenuated to +10dB of gain.

PAN

The pan control adjusts how the signal from the mono input channel is shared between the left and right buses and between odd and even group buses.

Bus Routing Switches

The routing switches connect the channel signal to the mix buses in a similar way to the mono input channel.

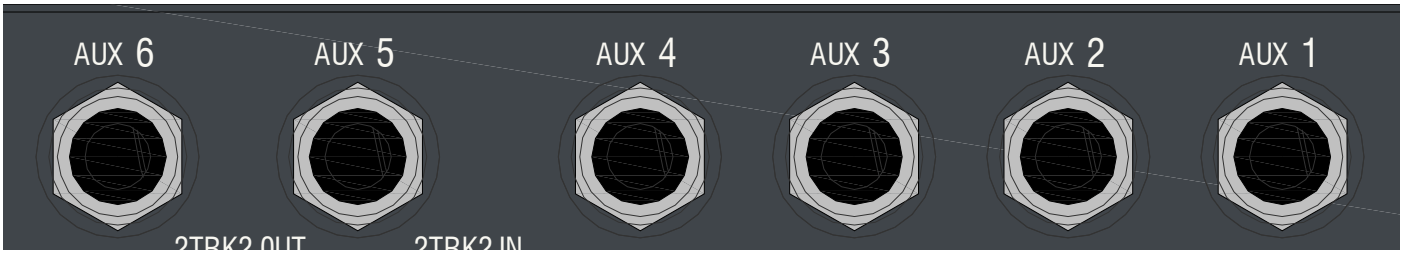
After Fade Listen switch

Connects the post level control signal in mono to the AFL monitoring system.

A full description of the console monitoring system is given on page 29.

AUXILIARY MASTER OUTPUTS & CONTROLS

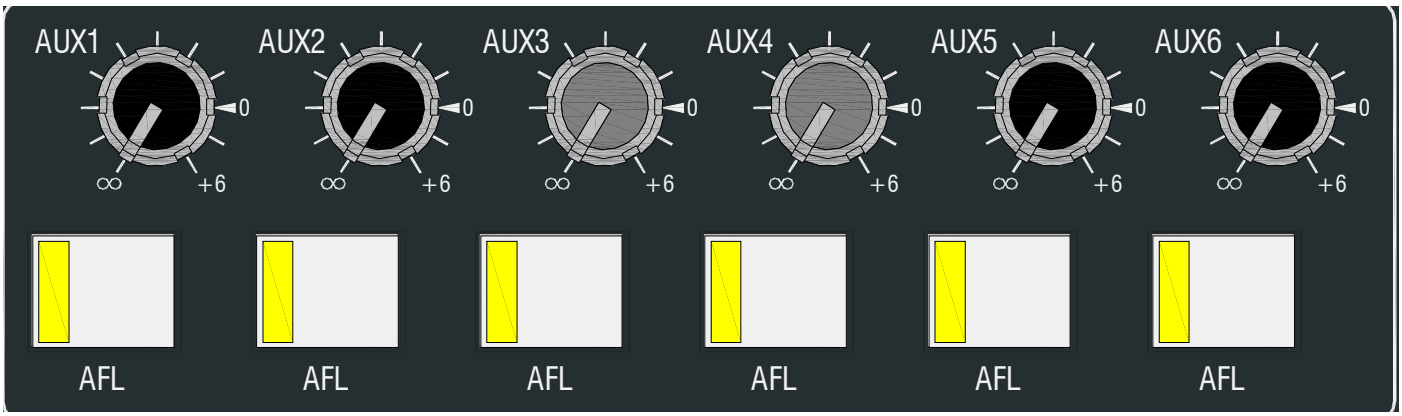
REAR PANEL CONNECTIONS



Aux bus Output Jack Socket

Standard 1/4" (6.25mm) Jack sockets for Aux bus output signals. Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu.

FRONT PANEL CONTROLS



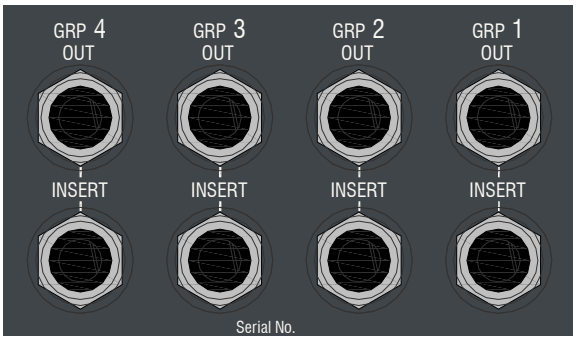
Aux master level control

Each of the 6 auxiliary buses has a master level control to adjust the overall level of the aux summed mix to the output. The range is from fully attenuated to +6dB gain.

Aux master AFL

An After Fade Listen switch is provided to switch the post level control aux signal to the AFL monitoring system.
A full description of the monitoring system is given on page 29.

GROUP BUS OUTPUTS & MASTER CONTROLS.



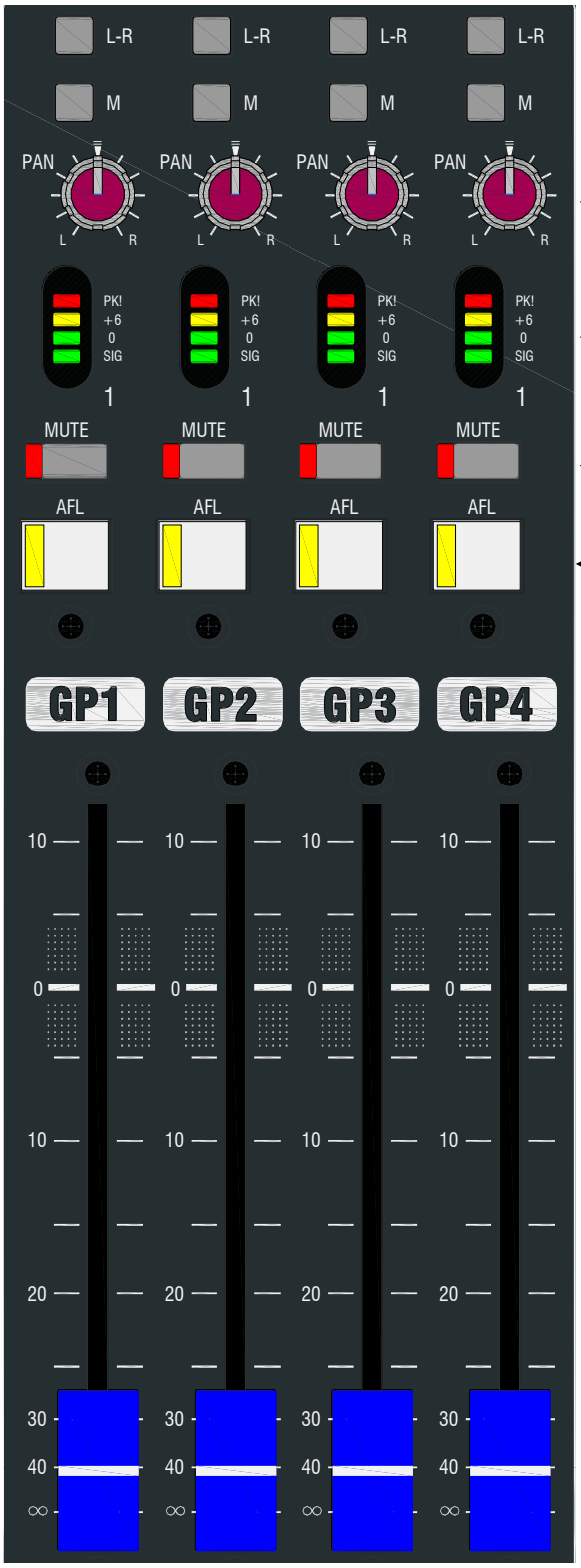
REAR PANEL CONNECTIONS

Group bus Output Jack Socket

Standard 1/4" (6.25mm) Jack sockets for Aux bus output signals. Wired Tip=Hot(+), Ring=Cold(-), Sleeve=Chassis. Nominal level is +4dBu. Electronically balanced.

Insert Jack Socket

Standard 1/4" (6.25mm) Jack socket for unbalanced insert send and return signals. Wired Tip=send, Ring=return, Sleeve=Chassis. Nominal level is –2dBu.



FRONT PANEL CONTROLS

Group bus sub routing to L-R switch

Routes the post fade group signal to the main L-R mix bus via the pan control.

Group bus sub routing to M switch

Routes the post fade group signal to the main mono mix bus.

Group pan control

Adjusts the amount of level that is shared between the left & right mix buses.

Group meter

Shows the level of the audio signal post-fade.

Group mute

A direct switched mute for the group output and sub routing.

Group AFL

An After Fade Listen switch to select the post fade (pre-mute) group signal to the AFL monitoring system.
A full description of the monitoring system is given on page 29.

Group Fader

A 100mm fader positioned after the insert point in the signal path, controls the overall level of the group signal to the output, sub routing, and monitor signal. The fader has 10dB gain at the top of its travel.

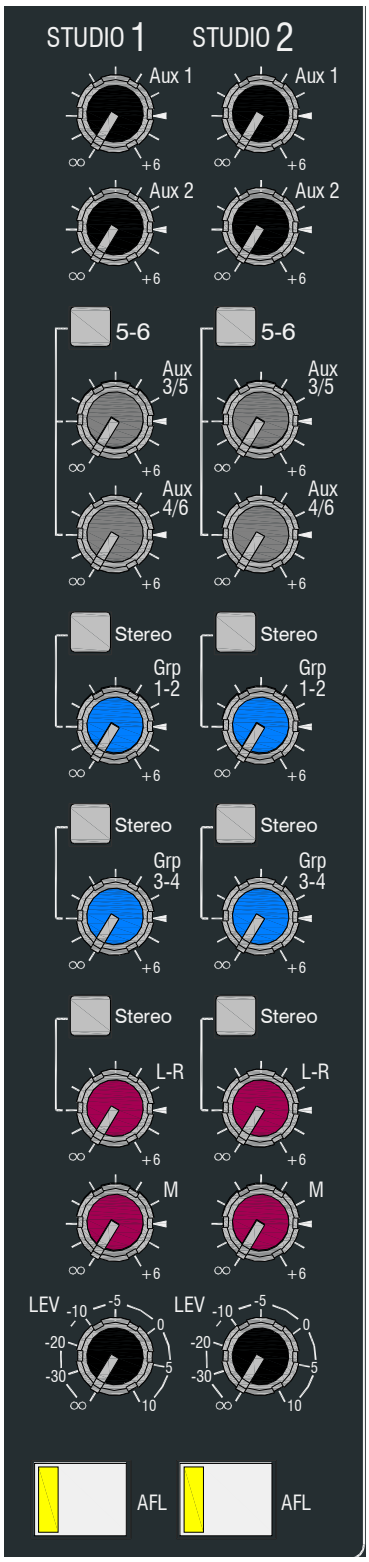
STUDIO OUTPUTS (ARTISTS FEEDS)

REAR PANEL CONNECTIONS

Studio feed Output Jack Socket

Standard 1/4" (6.25mm) Jack sockets for Studio artists feed output signals. Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu. Each Studio Output pair can be used as a stereo feed or two mono outputs.

FRONT PANEL CONTROLS



Studio feed submix Aux 1 level control

Sends signal from the Aux 1 mix master (post Aux 1 master level) to the Studio L & R outputs. The control adjusts the level from fully attenuated to +6dB gain.

Studio feed submix Aux 2 level control

Sends signal from the Aux 2 mix master (post Aux 2 master level) to the Studio L & R outputs.

Studio feed submix Aux 3/5 level control & 5-6 switch

Sends signal from the Aux 3 mix master (post Aux 3 master level) to the Studio L & R outputs. If the 5-6 switch is pressed then this becomes a send from Aux 5.

Studio feed submix Aux 4/6 level control & 5-6 switch

Sends signal from the Aux 4 mix master (post Aux 4 master level) to the Studio L & R outputs. If the 5-6 switch is pressed then this becomes a send from Aux 6.

Studio feed Grp 1-2 level control & Stereo switch

Sends signals from the Group 1 & 2 mix (post group faders) to the Studio L & R outputs. Normally both groups 1 & 2 are sent to both L & R studio outputs, but if the Stereo switch is pressed group 1 feeds the left output only and group 2 feeds only the right.

Studio feed Grp 3-4 level control & Stereo switch

Sends signals from the Group 3 & 4 mix (post group faders) to the Studio L & R outputs. Normally both groups 3 & 4 are sent to both L & R studio outputs, but if the Stereo switch is pressed group 3 feeds the left output only and group 4 feeds only the right.

Studio feed L-R level control & Stereo switch

Sends signals from the main L-R mix (post main faders) to the Studio L & R outputs. Normally both L & R are sent to both L & R studio outputs, but if the Stereo switch is pressed mix Left feeds the left output only and mix Right feeds only the right output.

Studio feed submix Mono mix level control

Sends signal from the master Mono mix (post master fader) to the Studio L & R outputs.

Studio feed submix master level control

Controls the overall level of the Studio Output submix from off (fully attenuated) to +10db gain.

Studio Output AFL

An After Fade Listen switch to select the post Level control left & right Studio outputs to the AFL monitoring system in stereo.
A full description of the monitoring system is given on page 29.

MAIN & MONITOR OUTPUTS & 2-TRACK INPUTS

REAR PANEL CONNECTIONS

2TRACK 2 IN/OUT Phono sockets

Standard RCA phono sockets for unbalanced stereo (2Track) inputs and outputs.
Nominal level = 0dBu

2TRACK 1 input jack sockets

Standard 1/4" (6.25mm) Jack sockets for stereo (2Track) Wired Tip=Hot(+), Ring=Cold (0V), Sleeve=Chassis. Nominal level is 0dBu.

Main L & R mix Insert Jack Socket

Standard 1/4" (6.25mm) Jack socket for unbalanced insert send and return signals. Wired Tip=send, Ring=return, Sleeve=Chassis. Nominal level is –2dBu.

Main Mix L & R Output xlr connectors (2Track1)

Standard 3-pin xlr connector for main Left & Right mix outputs. Electronically balanced. Wired Pin2=Hot(+), Pin3=Cold(-), Pin1=Chassis. Nominal level is +4dBu.

Monitor headphones Output jack socket

Standard 1/4" (6.25mm) Jack sockets for Headphones output.
Wired Tip=Left, Ring=Right, Sleeve=Chassis.

Main Mono Mix Output jack socket

Standard 1/4" (6.25mm) Jack sockets for Mono mix output. Ground compensated.
Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu.

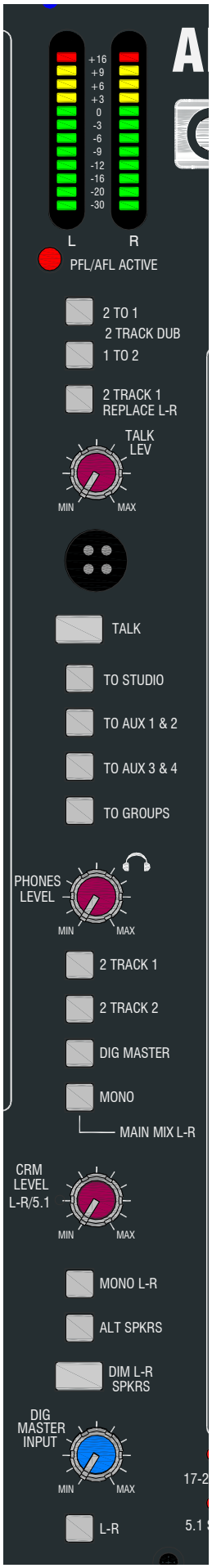
Main Mono mix Insert Jack Socket

Standard 1/4" (6.25mm) Jack socket for unbalanced insert send and return signals.
Wired Tip=send, Ring=return, Sleeve=Chassis. Nominal level is –2dBu.

Control room/Surround monitor output jack socket

Standard 1/4" (6.25mm) Jack sockets for line level output connections to powered speakers or speaker amplifiers.
Wired Tip=Hot(+), Ring=Cold(0V), Sleeve=Chassis. Nominal level is 0dBu.
For a full description of the monitor speaker combinations please refer to pages 29 & 30.

MASTER SECTION



L-R Monitor meters

12 segment LED meters sourced from the monitor section of the console. 0VU = Nominal working level (+4dBu at main L-R mix outputs).

PFL/AFL Active LED

Illuminates when the PFL or AFL system is activated by pressing a channel solo switch in PFL or AFL mode, or any AFL switch in the master section. The meters will show the signal level from selected sources.

2 Track Dubbing switches

These allow easy copying from one 2 Track recording machine to another without unplugging the equipment from the console. 2 TO 1 connects the 2Track 2 inputs to the 2Track 1 outputs (main xlr), and likewise 1 TO 2 connects the 2Track 1 input jacks to the 2Track 2 RCA Phono output connectors.

2 Track 1 Replace L-R switch

Pressing this switch disconnects the main L-R mix from the main outputs and replaces it with the stereo 2Track 1 inputs. This can be useful for exclusive playback, or background music where signals from the main mix are not desired.

Talkback microphone, level and routing switches

A built-in electret microphone is provided for talkback communication. The Talk Lev control varies the level from the microphone and the routing switches allow the user to select between the Studio Outputs, Pairs of Auxes, or all four Group outputs.

The signal from the microphone will not be active unless the TALK switch is pressed, which is a non-latching switch so you have to keep your finger on it.

Headphones Level control

Adjusts the level to the headphones jack sockets (one on the front panel and a second on the rear).

Monitor system source default selection switches

These select the default source for the headphones and speaker monitors. The switches work on a priority method with one source selected at a time.

For example if all the switches were pressed, only the 2Track 1 would be monitored. This source is overridden by any pressed AFL sources, which in turn is overridden by any PFL sources.

CRM Level (L-R or 5.1 surround)

Adjusts the level to the main control room speakers, alternate speakers or the surround sound speakers if the console monitoring is in 5.1 Surround mode.

Mono L-R switch

Selects a mono sum of the L-R monitor outputs to headphones, CRM L-R and ALT L-R for checking phase and stereo aspects of a mix. This switch does not affect any of the channels in 5.1 surround monitoring mode.

Alternative speakers switch

Swaps the control room L-R outputs to the Alternative Speaker output jacks in order to use a second pair of monitoring or nearfield speakers.

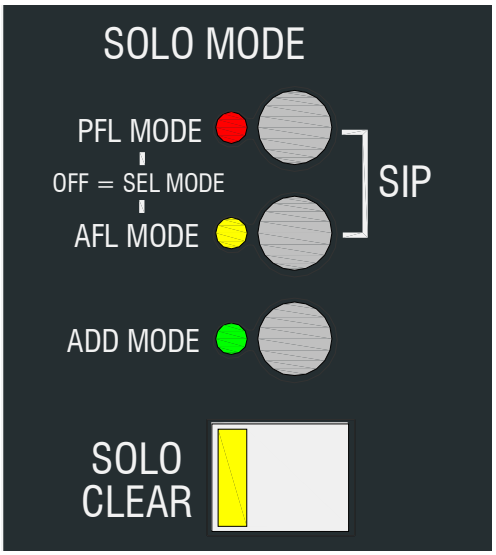
Dim L-R speakers switch

Dims the control room or alternate speakers by 20dB when the phone rings. Does not affect the surround monitor channels.

Digital Master return level control and routing switch

The interface return channels 31 & 32 can be routed to the main L-R mix bus using this switch for playback or monitoring a master DAW track.

MONITORING MODES



PFL MODE switch

In PFL mode (PFL MODE switch pressed, AFL MODE not pressed), pressing an input channel Solo switch will send a pre-fade (pre-mute) signal to the PFL bus and trigger the PFL monitoring in the master section. This will override any AFL monitoring from the master section AFL switches.

AFL MODE switch

In AFL mode (AFL MODE switch pressed, PFL MODE not pressed), an input channel Solo switch will send a post fade, post pan signal to the stereo AFL bus and trigger the AFL monitoring in the master section. This will sum with any AFL monitoring signals selected in the master section.

Solo in Place MODE

If both PFL and AFL mode switches are pressed then the monitoring system is set for Solo in Place. If a Solo switch is pressed on any input channel (mono or stereo input), all other un-pressed input channels will be muted. There is a SiP Safe switch on each stereo input channel to inhibit the muting function.

The SiP system does not activate the monitoring circuitry in the master section, so will not illuminate the PFL/AFL active LED by the monitor meters, instead there are indicator LEDs in the meterbridge.

Select MODE

If neither PFL or AFL mode switches are pressed, the mono and stereo input channel Solo switches operate as MIDI select buttons. Further information about the MIDI functionality can be found on page 32.

ADD MODE switch

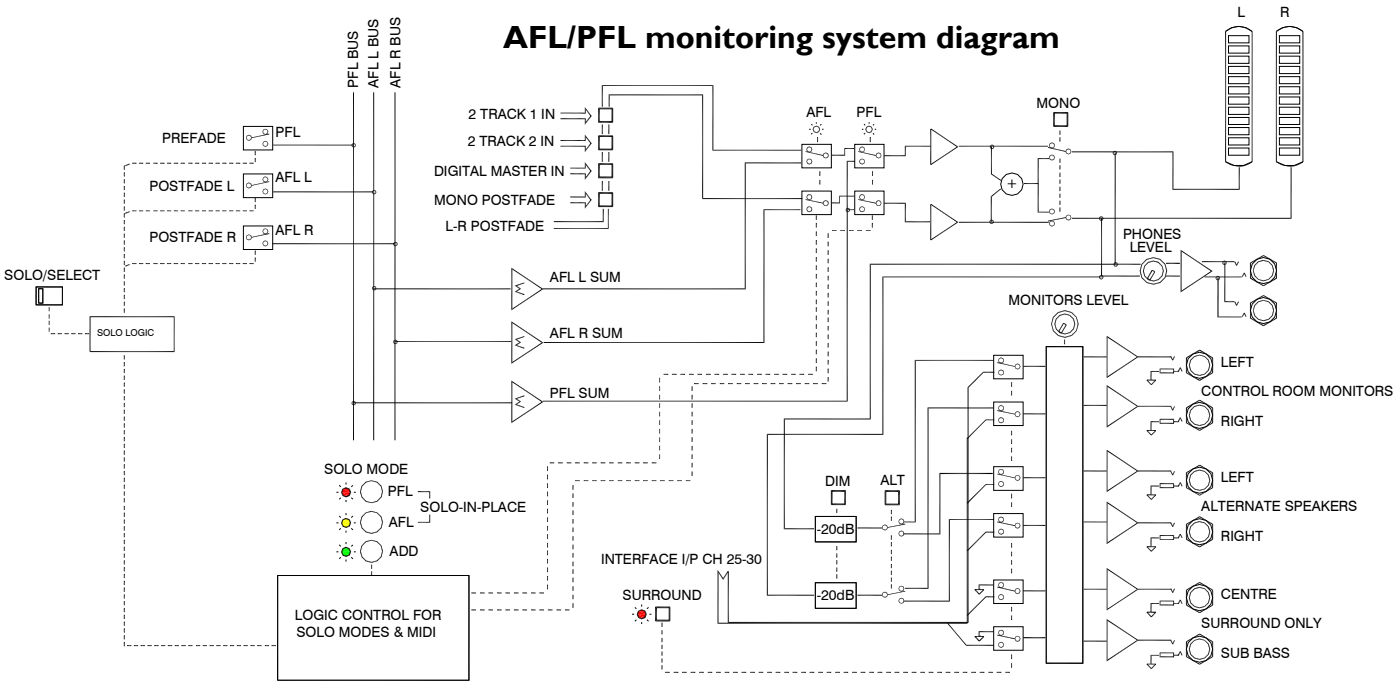
Normally the channel Solo switches are exclusive—so they cancel any previously selected Solo switch. In Add mode they do not cancel so more than one can be selected at a time.

SOLO CLEAR switch

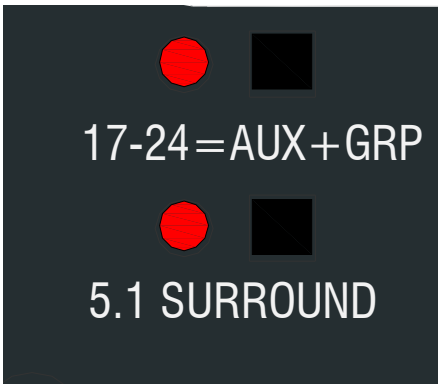
Clears any active Solo switch. Illuminates when any Solo switches are active.

It is good practise to clear any Solo/Select switches before changing Solo MODE. This will avoid any confusing selection if different switches are active in different modes.

AFL/PFL monitoring system diagram



17-24=AUX/GRP & 5.1 SURROUND SWITCHES



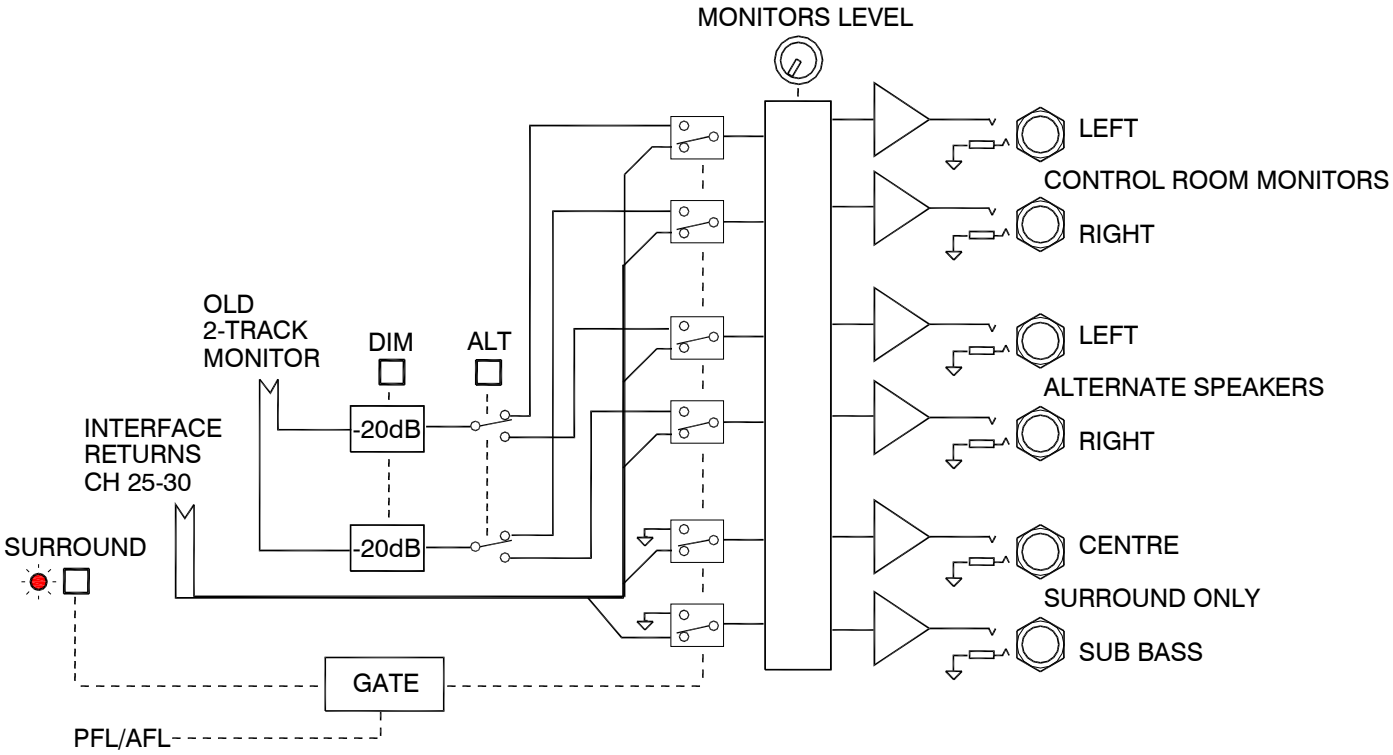
17-24=AUX+GRP

This recessed switch swaps the interface sends on channels 17-24 from the mono input channels to the Aux 1-4 outputs and the four group outputs. Useful when it is required to send groups of channels to a DAW for recording or processing.

5.1 Surround monitor switch

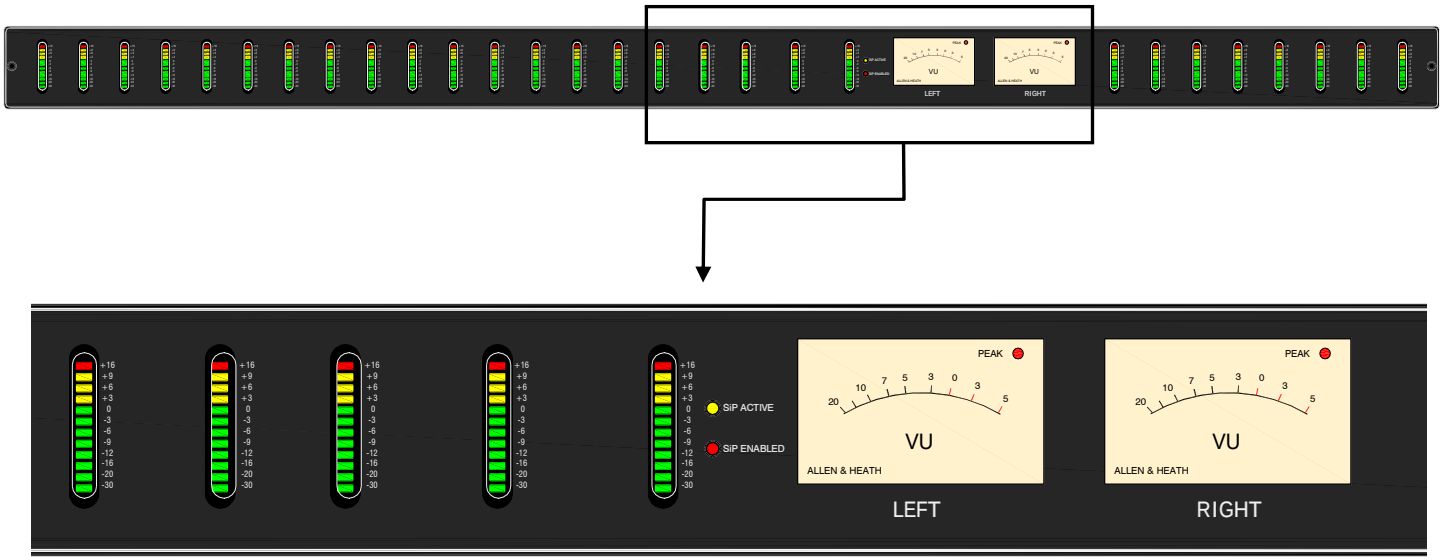
Another recessed switch (to prevent accidental operation). This switch enables 6 channels from the interface return (25-30) to be used for 5.1 surround mix monitoring from a DAW. The interface return signals are routed through a single level control to six jack sockets on the rear panel.

The selected stereo monitor source will be disconnected from the monitoring system, but if the AFL or PFL system is activated, this will override the 5.1 Surround monitoring present the PFL/AFL signals on the control room or alternate speakers.



Control Room Stereo/5.1 Surround monitoring system diagram

METERBRIDGE



Master L-R bus meters

Two moving coil VU meters show the post-fade level of the master stereo bus.
0VU = Nominal level (+4dBu) at the L-R output xlr connectors.
The Peak LED illuminates when the level is within 5dB of clipping.
The meters are illuminated with LEDs for long service illumination.

SiP status LEDs

Two LEDs indicate the status of the Solo in Place system. The SiP active LED indicates whether the Solo in Place system has been selected as the monitoring mode (more info on page 29). The SiP Enabled LED illuminates when any mono or stereo input channel Solo switch has been pressed and is active.

Valve input channel meter

Twelve segment LED meter with peak type response fed from the corresponding valve input channel pre-fade signal.

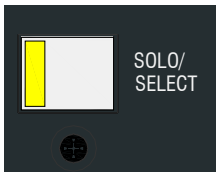
Stereo input channel meter

Twelve segment LED meter with peak type response fed from the corresponding stereo input channel pre-fade signal. The signal is a mono sum of left & right channels.

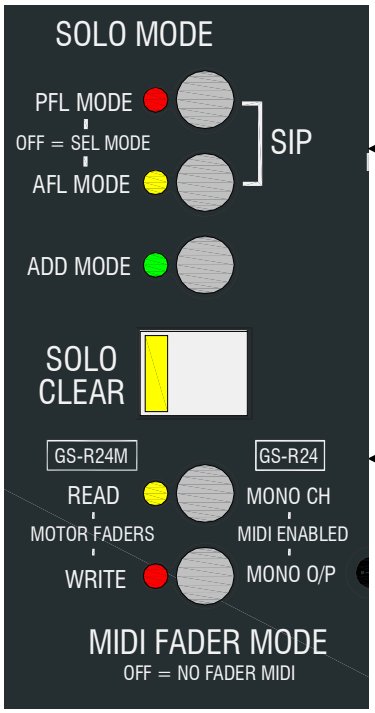
Mono input channel meter

Twelve segment LED meter with peak type response fed from the corresponding mono input channel pre-fade signal.

MIDI CONTROL MODES OF OPERATION



Channel Solo/Select switch



Master section Mode switches

Fader Touch Sensor

SOLO/SELECT switches in SEL mode

If the Solo mode is set to SEL (both PFL and AFL mode switches set to their up position, then the channel Solo switches function as MIDI select switches primarily designed to map to DAW functions such as track solo, track mute or record arm.

Pressing the switch will send a MIDI message via the MIDI out on the interface module which can either be mapped, learned or translated by the DAW or computer software.

The LED illumination of the switch can be set to either follow the switch press only (internal tally) or to follow the status of the function mapped in software by responding to MIDI input (external tally). This is set by the console mode configuration on power up described on page 37.

The Select switches can work in the same fashion as the PFL/AFL system where in ADD mode more than one can be selected simultaneously, otherwise pressing a Select switch will cancel any previously selected. Also, the Solo Clear switch illuminates when any are active, and will clear any selected.

MIDI FADER MODE switches

The fader mode switches configure the operation of the MIDI enabled channel faders. The switches function differently depending on whether you have the GS-R24M with motorised faders or the GS-R24 without motorised faders.

Read/Mono Channel Fader enable switch

GS-R24M: When this switch is pressed the 24 mono input channel faders will read MIDI data from the MIDI input on the interface module and if valid commands are received the motors will engage and move the fader to the position required by the received data.

GS-R24: Enables MIDI data to be sent from the 24 mono input channel faders to the MIDI output on the interface module. If not pressed then no MIDI data will be sent from the mono input channel faders.

Write/Mono Master Fader enable switch

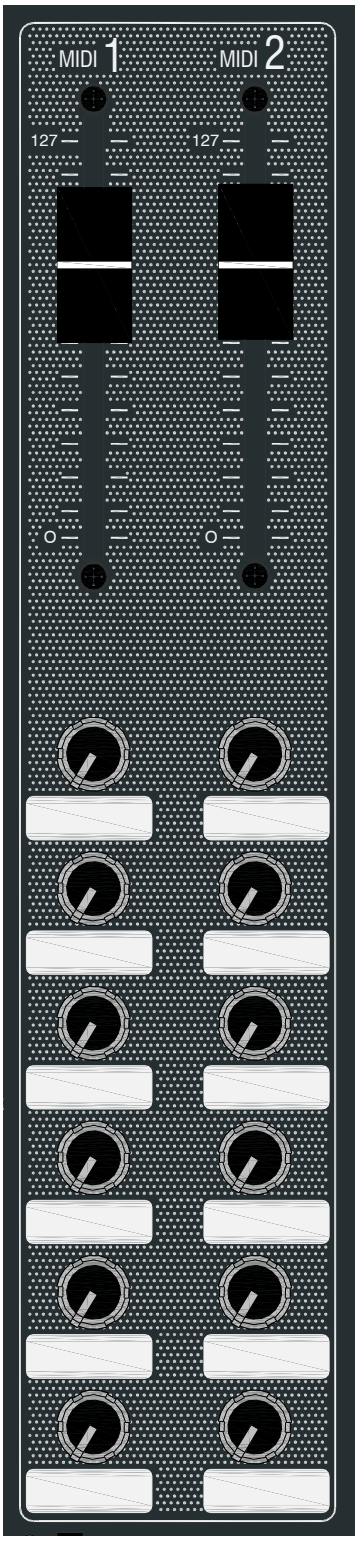
GS-R24M: This switch enables MIDI data to be sent from the 24 mono input channel faders to the MIDI output on the interface module. If not pressed then no MIDI data will be sent from the mono input channel faders.

GS-R24: Enables MIDI data to be sent from the Mono bus master fader to the MIDI output on the interface module. This allows a single 100mm fader to be used to control MIDI parameters. The fade function on the Mono output signal is bypassed at unity gain when this switch is engaged.

GS-R24M: The motor faders are equipped with a metallised fader knob which senses touch and turns off the motor if the motor is moving the fader, and activates the MIDI signal send from the fader if the fader is in WRITE Enabled mode. The fader will send the MIDI data for fader position whether moved or not as soon as it is touched. Multiple faders can be touched and will send MIDI data simultaneously.

The Touch Sensor works in two ways: a) by conducting a tiny amount of electrical current through the fader knob to the operator if the operator has contact with another fader or the console front panel, or b) by signal pickup through the operator originating from an electrical field in the vicinity. The touch threshold is set so as not to be triggered by the fader itself when moved so in some insulated and low electrical field situations it may be necessary to increase the sensitivity when touching a single fader. This can be done simply by routing a mains electrical lead in the proximity of the operating position for the console, or by the user touching a metal object on the console front panel (such as one of the fader screws) before touching the fader.

MIDI CONTROLLERS



60mm MIDI faders

Two 60mm faders are provided for assigning to parameters in your DAW that can be controlled by MIDI. They are permanently enabled so will send MIDI data via the MIDI output on the interface module whenever they are moved.

Rotary MIDI controls

Twelve rotary MIDI potentiometers are provided to control rotary type parameters in your DAW such as track Pans, Send levels or processing controls. These are purely one way MIDI controllers—there is no bi-direction tally or feedback, so DAW features such as MIDI pick-up mode may be implemented when controlling multiple parameters with one control.

Transport control switches

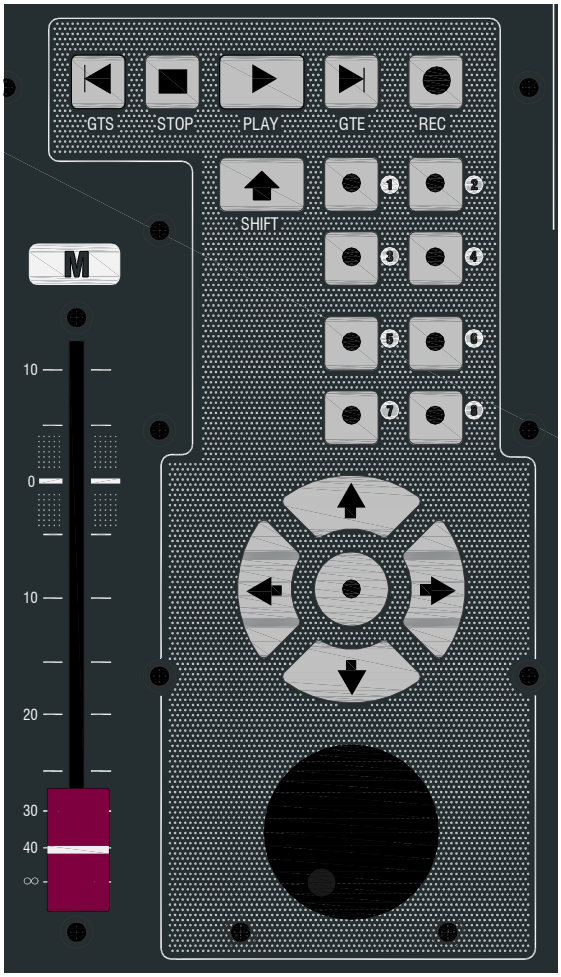
Five switches primarily used for transport control of a recording system—either in a DAW or a hardware device such as a tape machine.
The default standard in MIDI Machine Control (MMC) but can be configured to send MIDI note on/off data.
The Stop, Play and Record switches can be configured so that the illumination either tallies internally or externally via MIDI message feedback.

MIDI switches

Fourteen switches send MIDI data for assigning and controlling parameters in your DAW. The switched labelled 1 to 8 have illumination that can be tallied either internally or via MIDI feedback from a DAW. The Shift button sends MIDI data and also modifies certain data from other switches—see MIDI implementation table.

Jogwheel

A rotary controller which sends MIDI data for scrolling or increment/decrement functions.



Mono Master fader

On the GS-R24 (not GS-R24M) the mono master fader can be used as a MIDI control fader. When enabled the mono bus fade function is bypassed at unity gain.

MIDI IMPLEMENTATION

MIDI Implementation

There are two implementation modes for GS-R24:

1) The default set of MIDI data messages that is unique to GS-R24 which can be mapped, learned or translated by DAW application software or MIDI translator software.
2) An emulation of the US 2400 MIDI control surface made by TASCAM.

MIDI Default data: ch = MIDI channel

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2
FADER CH1	0xB(ch)	0x01	0x(0-7F)
FADER CH2	0xB(ch)	0x02	0x(0-7F)
FADER CH3	0xB(ch)	0x03	0x(0-7F)
FADER CH4	0xB(ch)	0x04	0x(0-7F)
FADER CH5	0xB(ch)	0x05	0x(0-7F)
FADER CH6	0xB(ch)	0x06	0x(0-7F)
FADER CH7	0xB(ch)	0x07	0x(0-7F)
FADER CH8	0xB(ch)	0x08	0x(0-7F)
FADER CH9	0xB(ch)	0x09	0x(0-7F)
FADER CH10	0xB(ch)	0x0A	0x(0-7F)
FADER CH11	0xB(ch)	0x0B	0x(0-7F)
FADER CH12	0xB(ch)	0x0C	0x(0-7F)
FADER CH13	0xB(ch)	0x0D	0x(0-7F)
FADER CH14	0xB(ch)	0x0E	0x(0-7F)
FADER CH15	0xB(ch)	0x0F	0x(0-7F)
FADER CH16	0xB(ch)	0x10	0x(0-7F)
FADER CH17	0xB(ch)	0x11	0x(0-7F)
FADER CH18	0xB(ch)	0x12	0x(0-7F)
FADER CH19	0xB(ch)	0x13	0x(0-7F)
FADER CH20	0xB(ch)	0x14	0x(0-7F)
FADER CH21	0xB(ch)	0x15	0x(0-7F)
FADER CH22	0xB(ch)	0x16	0x(0-7F)
FADER CH23	0xB(ch)	0x17	0x(0-7F)
FADER CH24	0xB(ch)	0x18	0x(0-7F)
FADER Mono M	0xB(ch)	0x21	0x(0-7F)

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	SHIFT DATA 1
ROTARY 1	0xB(ch)	0x40	0x(0-7F)	0x4E
ROTARY 2	0xB(ch)	0x41	0x(0-7F)	0x4F
ROTARY 2	0xB(ch)	0x42	0x(0-7F)	0x50
ROTARY 4	0xB(ch)	0x43	0x(0-7F)	0x51
ROTARY 5	0xB(ch)	0x44	0x(0-7F)	0x52
ROTARY 6	0xB(ch)	0x45	0x(0-7F)	0x53
ROTARY 7	0xB(ch)	0x46	0x(0-7F)	0x54
ROTARY 8	0xB(ch)	0x47	0x(0-7F)	0x55
ROTARY 9	0xB(ch)	0x48	0x(0-7F)	0x56
ROTARY 10	0xB(ch)	0x49	0x(0-7F)	0x57
ROTARY 11	0xB(ch)	0x4A	0x(0-7F)	0x58
ROTARY 12	0xB(ch)	0x4B	0x(0-7F)	0x59
FADER 1	0xB(ch)	0x4C	0x(0-7F)	0x5A
FADER 2	0xB(ch)	0x4D	0x(0-7F)	0x5B

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	DATA 3	DATA 4	DATA5	DATA 6
REW	MMC	0xF0	0x7F	0x7F	0x06	0x05	0xF7
STOP	MMC	0xF0	0x7F	0x7F	0x06	0x01	0xF7
PLAY	MMC	0xF0	0x7F	0x7F	0x06	0x02	0xF7
FFW	MMC	0xF0	0x7F	0x7F	0x06	0x04	0xF7
REC	MMC	0xF0	0x7F	0x7F	0x06	0x06	0xF7

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	ON/OFF
REW	0x9(ch)	0x67	0x7F	ON
REW	0x8(ch)	0x67	0x00	OFF
STOP	0x9(ch)	0x68	0x7F	ON
STOP	0x8(ch)	0x68	0x00	OFF
PLAY	0x9(ch)	0x69	0x7F	ON
PLAY	0x8(ch)	0x69	0x00	OFF
FFW	0x9(ch)	0x6A	0x7F	ON
FFW	0x8(ch)	0x6A	0x00	OFF
REC	0x9(ch)	0x6B	0x7F	ON
REC	0x8(ch)	0x6B	0x00	OFF

MIDI IMPLEMENTATION

MIDI Default data: ch = MIDI channel

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	ON/OFF
SHIFT	0x9(ch)	0x6C	0x7F	ON
SHIFT	0x8(ch)	0x6C	0x00	OFF
BUTTON 1	0x9(ch)	0x6D	0x7F	ON
BUTTON 1	0x8(ch)	0x6D	0x00	OFF
BUTTON 2	0x9(ch)	0x6E	0x7F	ON
BUTTON 2	0x8(ch)	0x6E	0x00	OFF
BUTTON 3	0x9(ch)	0x6F	0x7F	ON
BUTTON 3	0x8(ch)	0x6F	0x00	OFF
BUTTON 4	0x9(ch)	0x70	0x7F	ON
BUTTON 4	0x8(ch)	0x70	0x00	OFF
BUTTON 5	0x9(ch)	0x71	0x7F	ON
BUTTON 5	0x8(ch)	0x71	0x00	OFF
BUTTON 6	0x9(ch)	0x72	0x7F	ON
BUTTON 6	0x8(ch)	0x72	0x00	OFF
BUTTON 7	0x9(ch)	0x73	0x7F	ON
BUTTON 7	0x8(ch)	0x73	0x00	OFF
BUTTON 8	0x9(ch)	0x74	0x7F	ON
BUTTON 8	0x8(ch)	0x74	0x00	OFF
UP ARROW	0x9(ch)	0x75	0x7F	ON
UP ARROW	0x8(ch)	0x75	0x00	OFF
LEFT ARROW	0x9(ch)	0x76	0x7F	ON
LEFT ARROW	0x8(ch)	0x76	0x00	OFF
CENTRE	0x9(ch)	0x77	0x7F	ON
CENTRE	0x8(ch)	0x77	0x00	OFF
RIGHT ARROW	0x9(ch)	0x78	0x7F	ON
RIGHT ARROW	0x8(ch)	0x78	0x00	OFF
DOWN ARROW	0x9(ch)	0x79	0x7F	ON
DOWN ARROW	0x8(ch)	0x79	0x00	OFF

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	ON/OFF
JOG WHEEL SW	0x9(ch)	0x7A	0x7F	ON
JOG WHEEL SW	0x8(ch)	0x7A	0x00	OFF
JOG WH RIGHT	0xB(ch)	0x7B	0x(0-3E)	
JOG WH LEFT	0xB(ch)	0x7B	0x(3F-7F)	

MIDI IMPLEMENTATION

MIDI Default data: ch = MIDI channel

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	ON/OFF	SHIFT DATA 1
SEL 1	0x9(ch)	0x01	0x7F	ON	0x23
SEL 1	0x8(ch)	0x01	0x00	OFF	0x23
SEL 2	0x9(ch)	0x02	0x7F	ON	0x24
SEL 2	0x8(ch)	0x02	0x00	OFF	0x24
SEL 3	0x9(ch)	0x03	0x7F	ON	0x25
SEL 3	0x8(ch)	0x03	0x00	OFF	0x25
SEL 4	0x9(ch)	0x04	0x7F	ON	0x26
SEL 4	0x8(ch)	0x04	0x00	OFF	0x26
SEL 5	0x9(ch)	0x05	0x7F	ON	0x27
SEL 5	0x8(ch)	0x05	0x00	OFF	0x27
SEL 6	0x9(ch)	0x06	0x7F	ON	0x28
SEL 6	0x8(ch)	0x06	0x00	OFF	0x28
SEL 7	0x9(ch)	0x07	0x7F	ON	0x29
SEL 7	0x8(ch)	0x07	0x00	OFF	0x29
SEL 8	0x9(ch)	0x08	0x7F	ON	0x2A
SEL 8	0x8(ch)	0x08	0x00	OFF	0x2A
SEL 9	0x9(ch)	0x09	0x7F	ON	0x2B
SEL 9	0x8(ch)	0x09	0x00	OFF	0x2B
SEL 10	0x9(ch)	0x0A	0x7F	ON	0x2C
SEL 10	0x8(ch)	0x0A	0x00	OFF	0x2C
SEL 11	0x9(ch)	0x0B	0x7F	ON	0x2D
SEL 11	0x8(ch)	0x0B	0x00	OFF	0x2D
SEL 12	0x9(ch)	0x0C	0x7F	ON	0x2E
SEL 12	0x8(ch)	0x0C	0x00	OFF	0x2E

MIDI CONTROLLER	MESSAGE TYPE	DATA 1	DATA 2	ON/OFF	SHIFT DATA 1
SEL 13	0x9(ch)	0x0D	0x7F	ON	0x2F
SEL 13	0x8(ch)	0x0D	0x00	OFF	0x2F
SEL 14	0x9(ch)	0x0E	0x7F	ON	0x30
SEL 14	0x8(ch)	0x0E	0x00	OFF	0x30
SEL 15	0x9(ch)	0x0F	0x7F	ON	0x31
SEL 15	0x8(ch)	0x0F	0x00	OFF	0x31
SEL 16	0x9(ch)	0x10	0x7F	ON	0x32
SEL 16	0x8(ch)	0x10	0x00	OFF	0x32
SEL 17	0x9(ch)	0x11	0x7F	ON	0x33
SEL 17	0x8(ch)	0x11	0x00	OFF	0x33
SEL 18	0x9(ch)	0x12	0x7F	ON	0x34
SEL 18	0x8(ch)	0x12	0x00	OFF	0x34
SEL 19	0x9(ch)	0x13	0x7F	ON	0x35
SEL 19	0x8(ch)	0x13	0x00	OFF	0x35
SEL 20	0x9(ch)	0x14	0x7F	ON	0x36
SEL 20	0x8(ch)	0x14	0x00	OFF	0x36
SEL 21	0x9(ch)	0x15	0x7F	ON	0x37
SEL 21	0x8(ch)	0x15	0x00	OFF	0x37
SEL 22	0x9(ch)	0x16	0x7F	ON	0x38
SEL 22	0x8(ch)	0x16	0x00	OFF	0x38
SEL 23	0x9(ch)	0x17	0x7F	ON	0x39
SEL 23	0x8(ch)	0x17	0x00	OFF	0x39
SEL 24	0x9(ch)	0x18	0x7F	ON	0x3A
SEL 24	0x8(ch)	0x18	0x00	OFF	0x3A
SEL ST1	0x9(ch)	0x21	0x7F	ON	0x43
SEL ST1	0x8(ch)	0x21	0x00	OFF	0x43
SEL ST2	0x9(ch)	0x22	0x7F	ON	0x44
SEL ST2	0x8(ch)	0x22	0x00	OFF	0x44

POWER-UP CONFIGURATION MODES

MIDI Operation modes

It is possible to set GS-R24 to work in different ways depending on preference and the capability of externally connected equipment. These modes are primarily concerned with setting up the illumination of the Solo Select switch LEDs so that they tally entirely from the console function or from external MIDI messages received by the console. The modes can also set a tick message which is required when translating the GS-R24 default MIDI code into the HUI protocol, change the transport from MMC to note on/off, and set the console into self test or demo mode.

To Set the configuration mode:

Power the console ON whilst holding down PLAY

Release PLAY and press one of the following Solo/SEL buttons

At this stage the Solo/Select switch LEDs will display the current mode status.

SEL switch	Mode
1	Default MIDI, Internal tally, press/release = note on/off
2	Default MIDI, Internal tally, press once for note on, press again for note off
3	Default MIDI, External tally, press/release = note on/off
4	Default MIDI, External tally, press once for note on, press again for note off
5	REAPER Mode (Pending Controller plug-in becoming available)
6	Default MIDI, External tally, HUI tick ON. For translating to HUI protocol.
7	US 2400 Emulation
8	Test & Demo mode.
17	On = Transport=Note On/Off. Off = Transport=MMC

Press STOP and the configuration mode is set

To Set the MIDI Channel number:

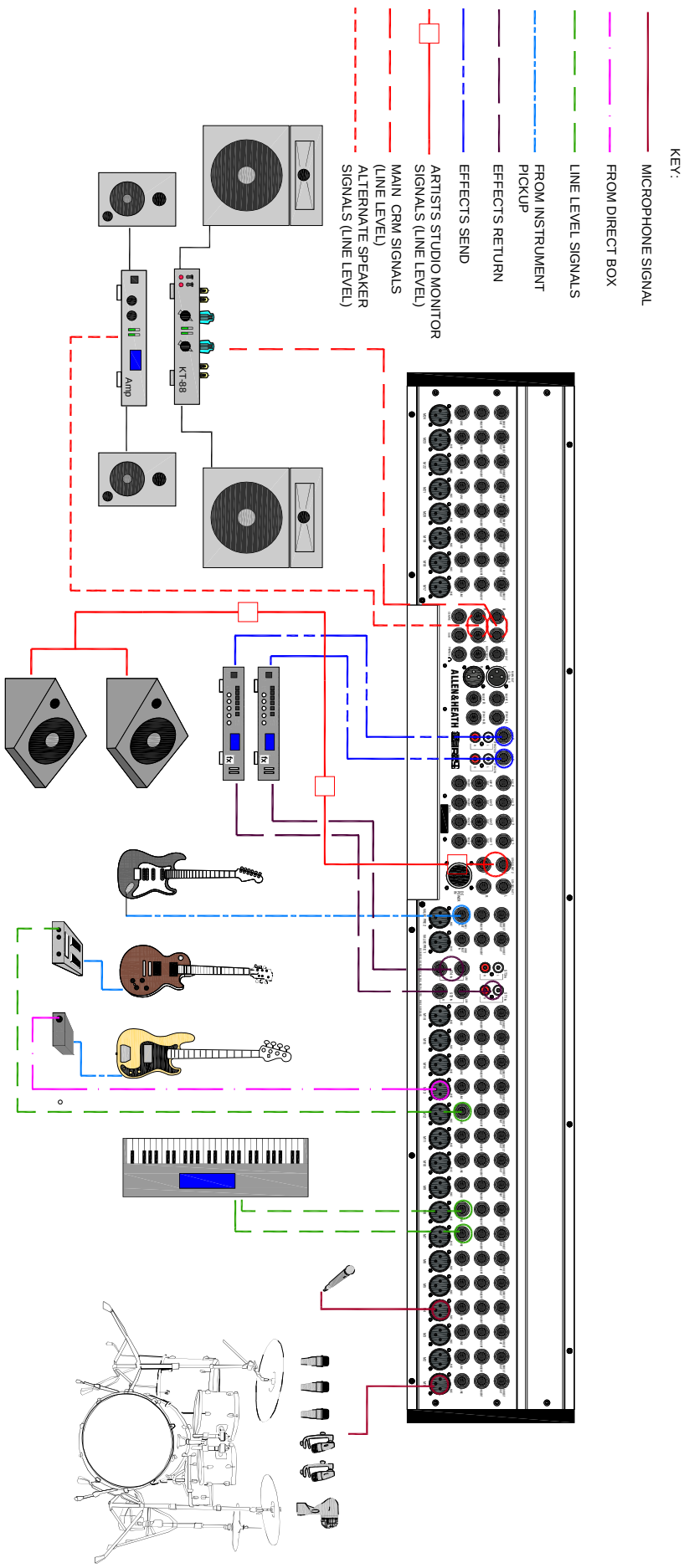
Power the console ON whilst holding down REC

Release REC and press one of the following Solo/SEL buttons

SEL switch	Mode
1	MIDI channel 1
2	MIDI channel 2
3	MIDI channel 3
4	MIDI channel 4
5	MIDI channel 5
6	MIDI channel 6
7	MIDI channel 7
8	MIDI channel 8
9	MIDI channel 9
10	MIDI channel 10
11	MIDI channel 11
12	MIDI channel 12
13	MIDI channel 13
14	MIDI channel 14
15	MIDI channel 15
16	MIDI channel 16

Press STOP and the MIDI channel number is set

CONNECTION DIAGRAM (BASIC)

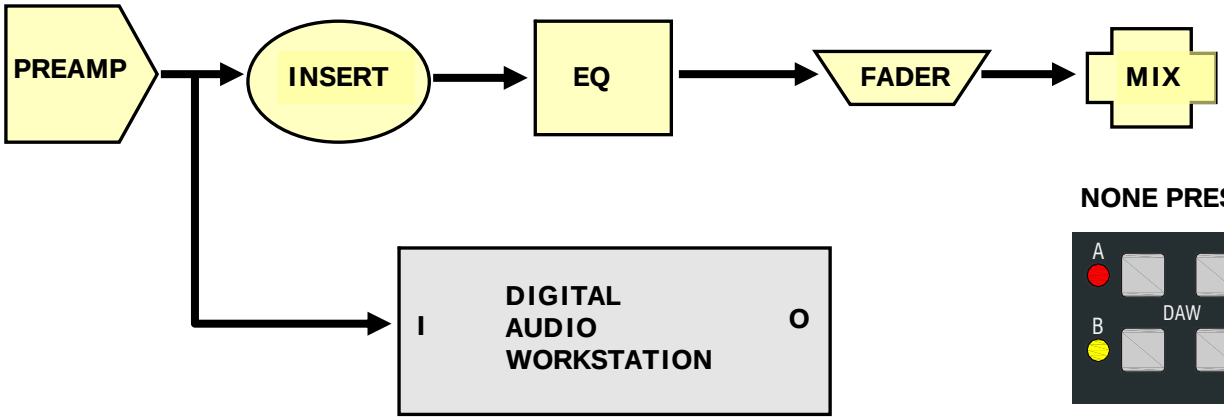


Basic guide for console connections

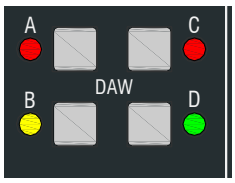
MONO CHANNEL WORKFLOW ROUTING OPTIONS

1) RECORDING DIRECT FROM THE PRE-AMP, DIRECT MONITORING/MIXING

GS-R24 MONO INPUT CHANNEL PATH

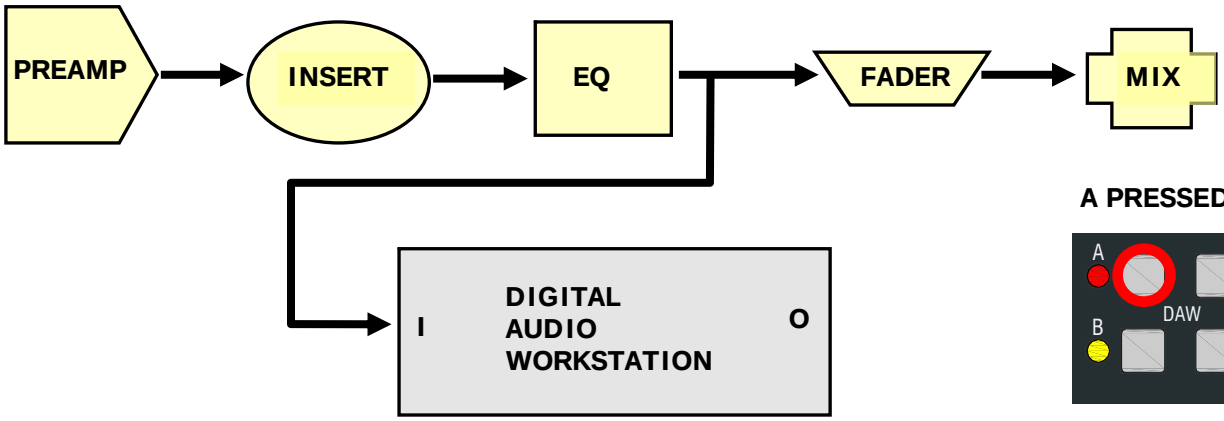


NONE PRESSED

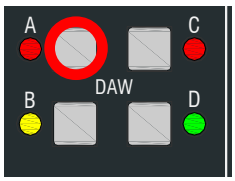


2) RECORDING DIRECT FROM THE EQ, DIRECT MONITORING/MIXING

GS-R24 MONO INPUT CHANNEL PATH

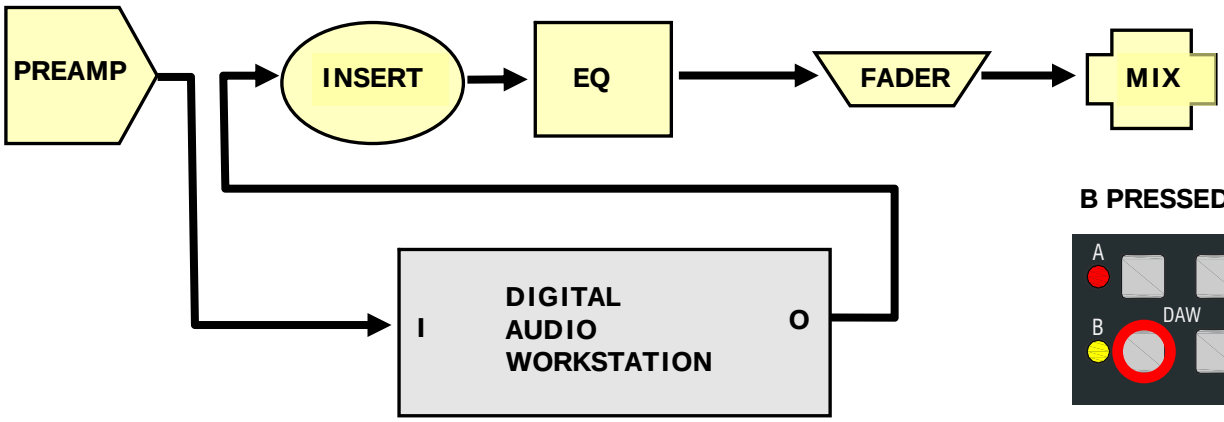


A PRESSED

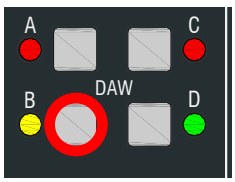


3) INSERT PROCESSING BY DAW, OR DIRECT RECORDING WITH EQ ON MONITOR PATH

GS-R24 MONO INPUT CHANNEL PATH



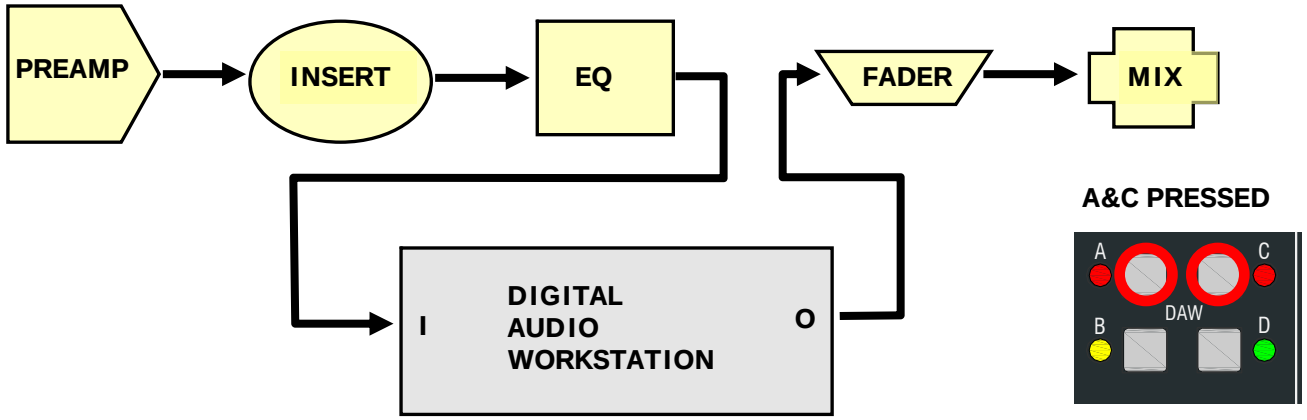
B PRESSED



MONO CHANNEL WORKFLOW ROUTING OPTIONS

4) RECORDING DIRECT FROM THE EQ, DAW TRACK MONITORING/MIXING

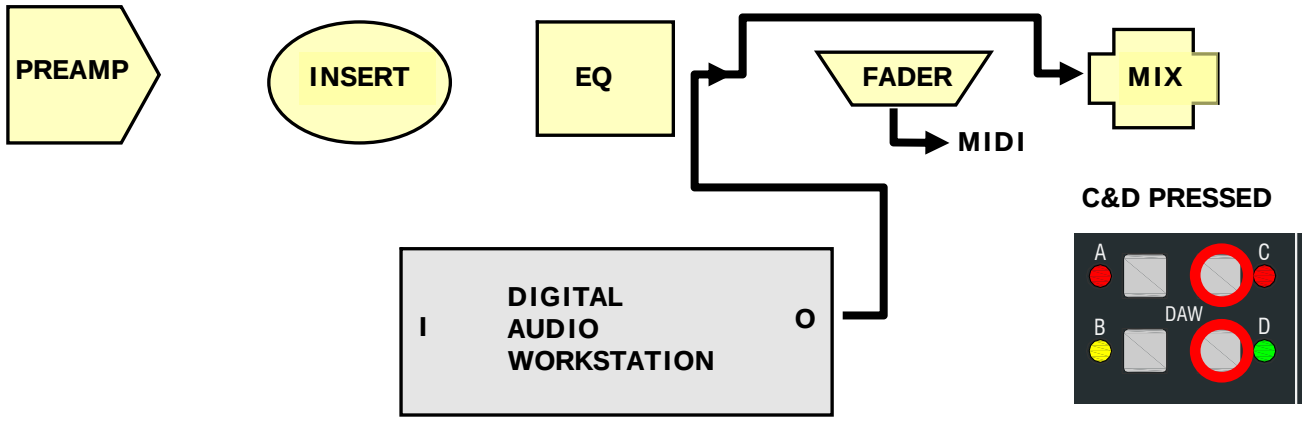
GS-R24 MONO INPUT CHANNEL PATH



A&C PRESSED

5) MIXING IN DAW USING FADER AS CONTROLLER, MONITOR VIA BYPASSED FADER

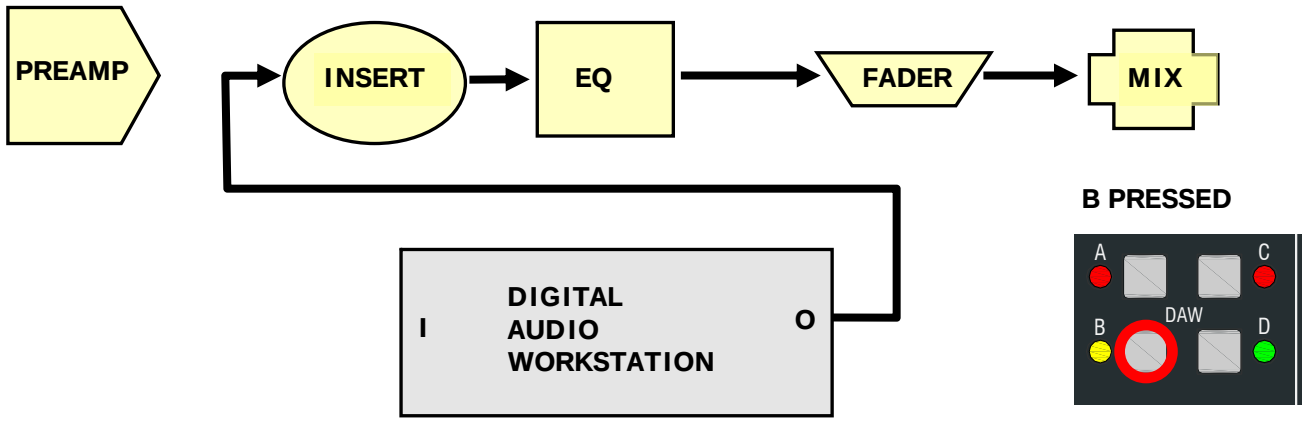
GS-R24 MONO INPUT CHANNEL PATH



C&D PRESSED

6) ANALOGUE SUMMING MIXDOWN FROM DAW TRACK USING AUTOMATED FADES

GS-R24 MONO INPUT CHANNEL PATH

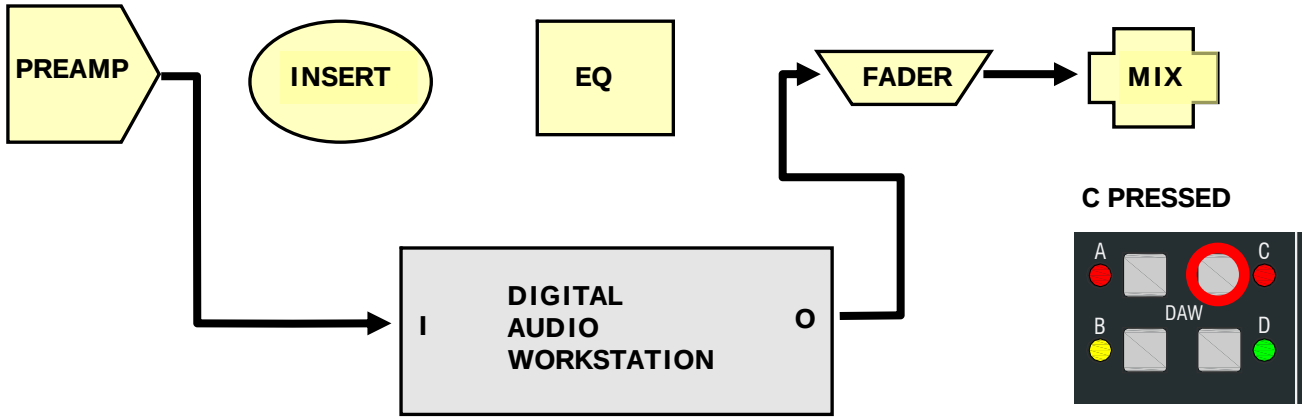


B PRESSED

MONO CHANNEL WORKFLOW ROUTING OPTIONS

7) OVER-DUBBING/RECORDING DIRECT FROM PRE-AMP, MONITORING DAW TRACK OUTPUT

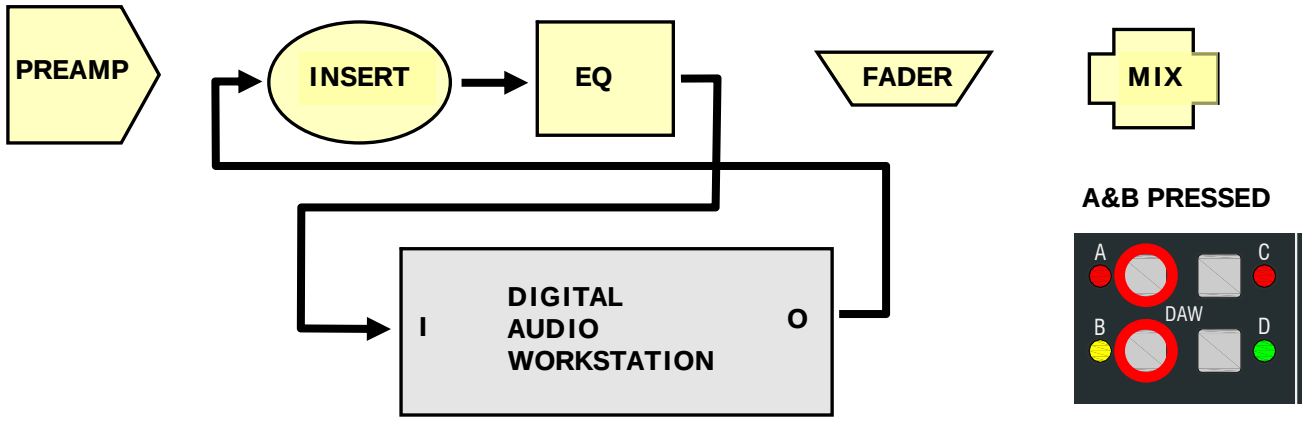
GS-R24 MONO INPUT CHANNEL PATH



C PRESSED

8) USING ANALOGUE INSERT & EQ ON A DIGITAL TRACK (FEEDBACK LOOP POSSIBLE!)

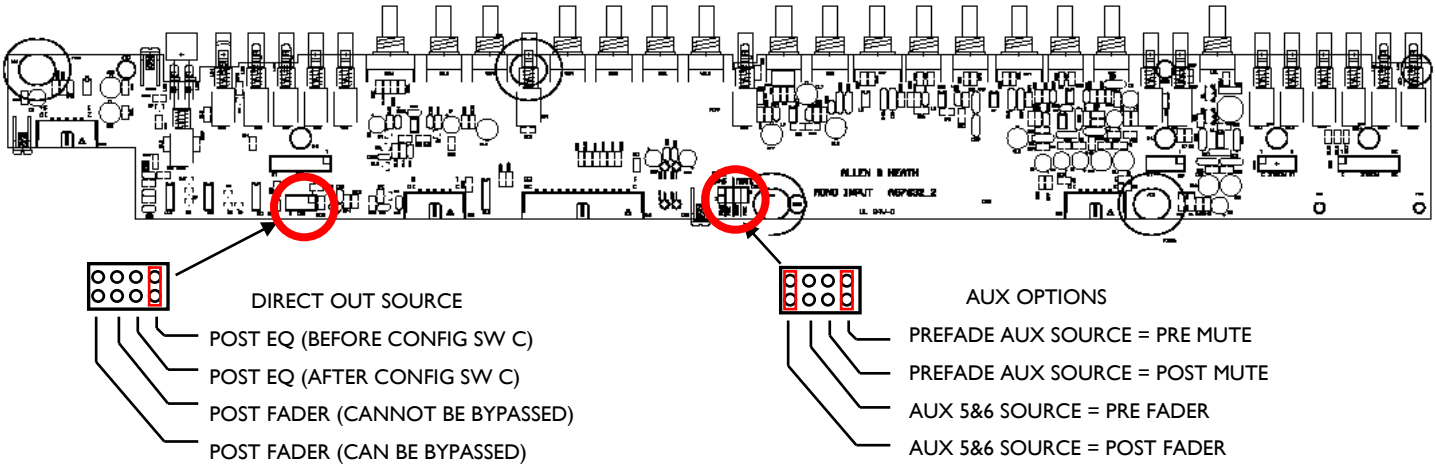
GS-R24 MONO INPUT CHANNEL PATH



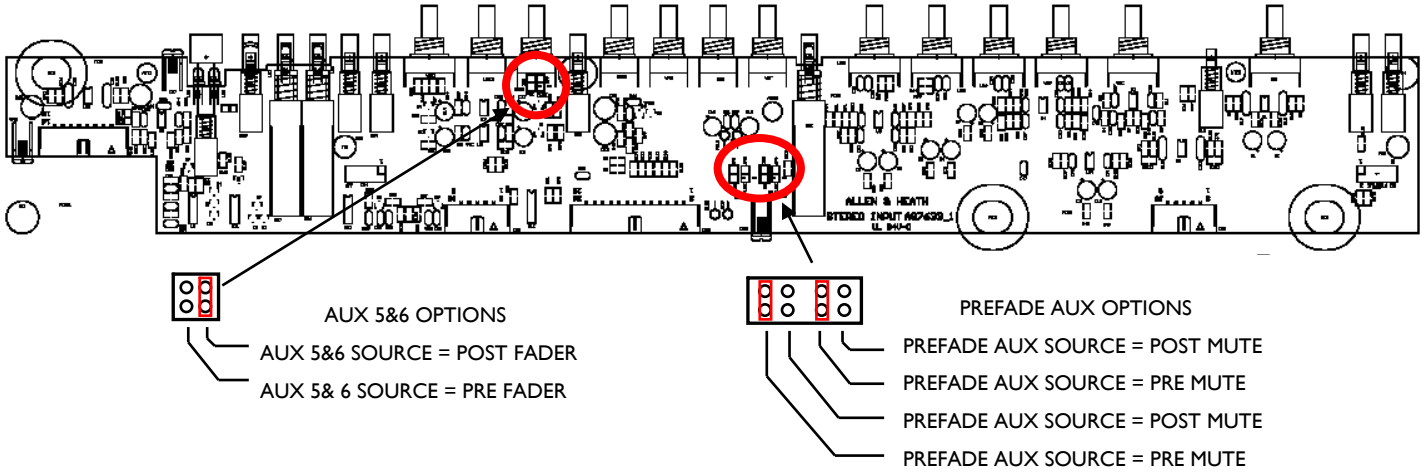
A&B PRESSED

INTERNALLY SET OPTION JUMPER LINKS

Mono Input channel option links.

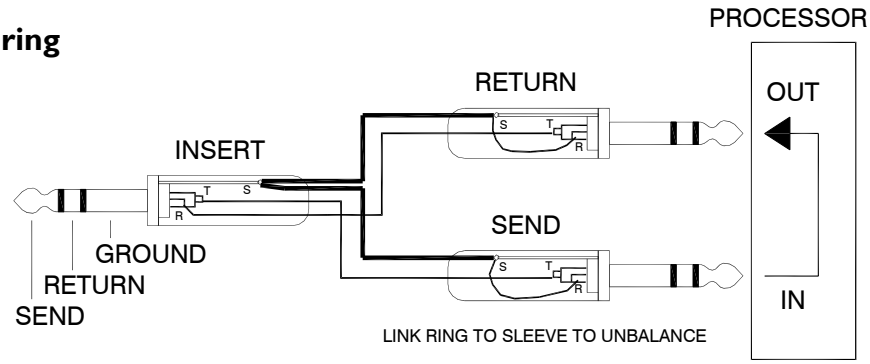


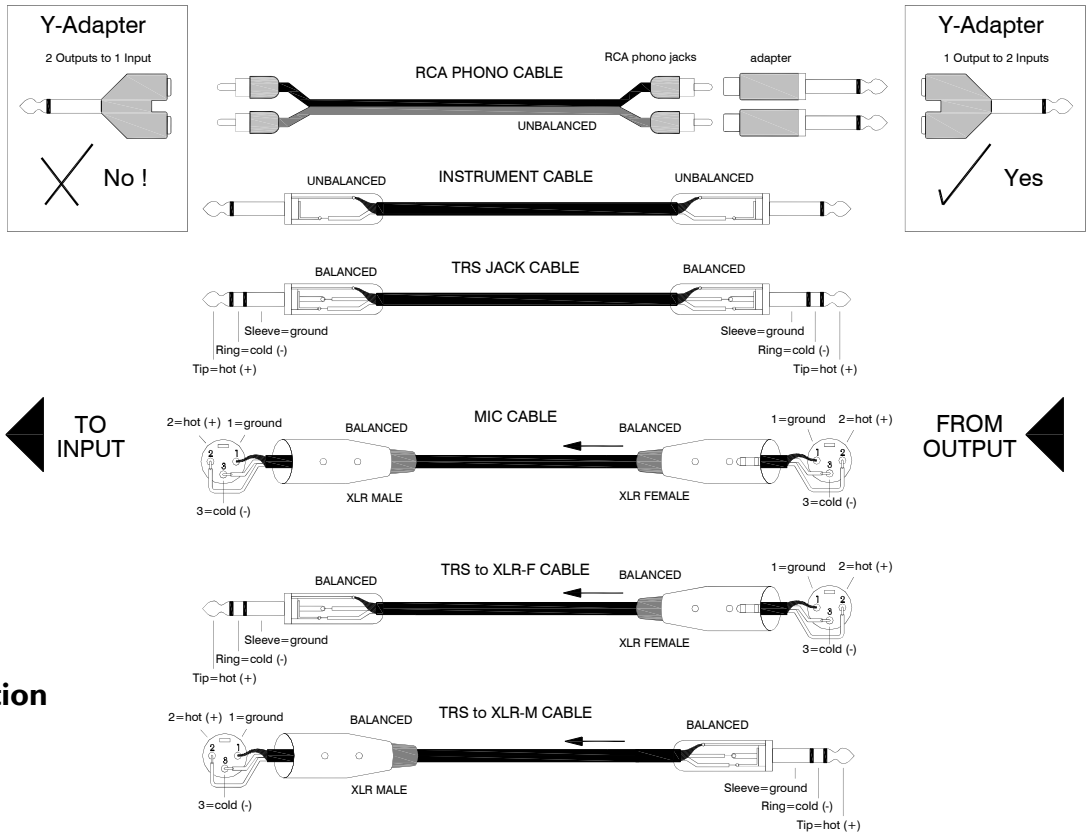
Stereo Input channel option links.



WIRING NOTES

Insert cable wiring





General Wiring Information

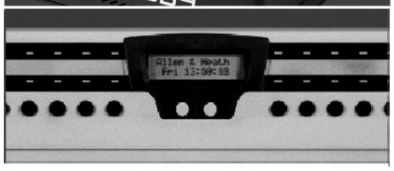
PRODUCT SUPPORT

Investigate ALLEN & HEATH's other ranges at www.allen-heath.com

Large Live Sound mixers — iLive digital, and GL Series

Small Format Live Sound mixers — ZED, MixWizards and PA Series

DJ products — Xone Series



Sound Management, Broadcast and Recording —
iDR, XB and ZED-R Series

Registering your product

Thank you for buying the Allen & Heath GS-R24 mixer. We hope that you are happy with it and that you enjoy many years of faithful service with it, and record and mix some great music.

Please go to www.allen-heath.com/register now and register your product's serial number and your details. By registering with us and becoming an official Registered User, you will ensure that any warranty claim you might make is actioned quickly and with the minimum delay.

Alternatively, you may either copy or cut off this section of the page, fill in the details, and return it by mail to:
Allen & Heath Ltd, Kernick Industrial Estate, Penryn, Cornwall TR10 9LU, UK

Product Support: You can access Allen & Heath Tech Support by logging onto http://allen-heath.helpserve.com

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ALLEN&HEATH PRODUCT REGISTRATION

Thankyou for buying an Allen & Heath product. We hope that you're happy with it and that you enjoy many years of faithful service with it.

SERIAL NUMBER

Please return this section of the card by mail and retain the other part for your records. You can also register online at www.allen-heath.com. Thanks for your help.

Your Name:

Company Name:

Address 1:

Address 2:

Town/City: County/State:

Country: Postcode/Zip:

Telephone:

Email:

Why did you choose this console?

Which other products did you you consider before choosing A&H?

Is there any thing you would like to improve on this mixer?

What audio magazines do you read?

If you were going to design a mixer for your work, what are the 6 most important features it should have (in order of importance)

1 2

3 4

5 6

We may use the information you provide to inform you of future product developments. We will not give or sell this data to third parties. Please indicate with an 'x' if you do not wish to receive any further communications from us. ☐