

GR¹

Zone Mixer

W H E N Y O U ' R E M I X I N G W I T H P R O F E S S I O N A L S



6 channels configurable from 24 inputs.

3 zone outputs. Expandable via Sys-Link™

Built-in comp/limiter, ducking and alarm functions

ALLEN
&
HEATH

INTRODUCTION

GR1 IS THE CONTRACTING ENGINEER'S DREAM OF A ZONE MIXER. BUILT TO THE EXACTING STANDARDS OF ALLEN AND HEATH, PACKED WITH CONFIGURABLE FACILITIES, YET SIMPLE FOR THE OPERATOR TO USE.

THOUGHTFULLY DESIGNED FOR SOUND DISTRIBUTION IN CLUBS AND PUBS, HOTELS AND CONFERENCE CENTRES, CIVIC BUILDINGS AND LEISURE COMPLEXES, GR1 HAS THE FLEXIBILITY AND POWER TO BE TAILORED NEATLY TO SUIT ITS LOCATION.

AUDIO SIGNALS TO ITS 6 INPUT CHANNELS CAN BE SELECTED FROM UP TO 24 SEPARATE SOURCES. GR1 ALSO ACCEPTS ALARM AND EMERGENCY INPUT SIGNALS; CAN RESPOND TO REMOTE VOLUME CONTROL ON EACH OF ITS 6 INPUT CHANNELS AND THREE OUTPUT BUSES; INCLUDES PRIORITY DUCKING CIRCUITS, BUILT-IN COMPRESSOR/LIMITERS AND PHANTOM POWER FOR MICS.

THREE CHANNELS HANDLE STEREO LINE SIGNALS. OTHER FACILITIES INCLUDE CHANNEL INPUT TRIMMERS, LO-CUT FILTERS, DIRECT OUTS AND PEAK LEDS; 3 OUTPUT LEVEL METERS AND STEREO/MONO MONITORING. IT ACCEPTS EXTERNAL EMERGENCY POWER BACKUP AND REMOTE LEVEL CONTROL, AND CAN BE EXTENDED THROUGH SYS-LINK TO IDENTICAL UNITS TO HANDLE MORE CHANNEL INPUTS OR ZONE OUTPUTS.

GR¹ Zone Mixer

INTERNAL CONFIGURATION

The GR1's configuration is done internally. The only external controls are those needed for day-to-day operation, so the configuration cannot be changed by operators' errors or experiments.

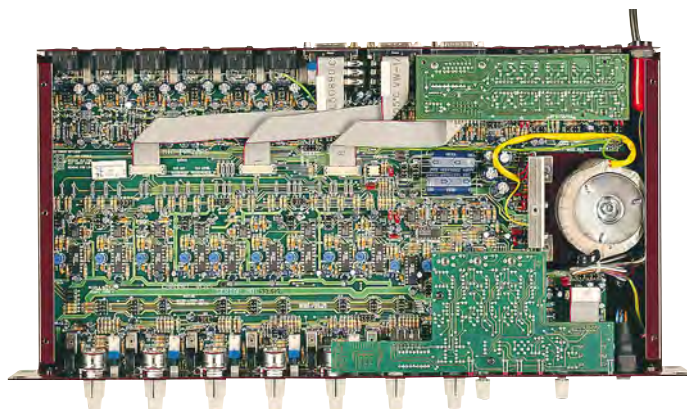
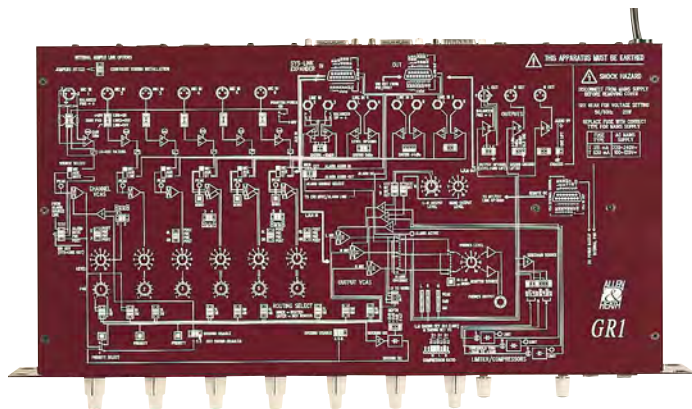
Routings, ducking, limiter and compressor characteristics, phantom power, alarm source, remote control and other functions are set by jumpers and trimmers accessible clearly and easily beneath the top cover.

Removal of the cover, which is printed with a big schematic diagram to guide configuration, reveals the

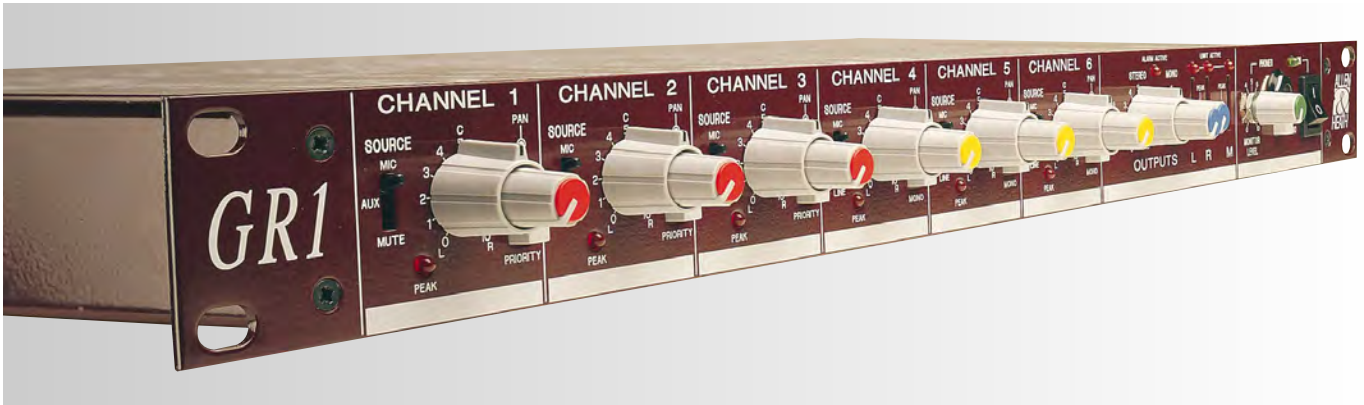
orderly layout and high-quality construction of this British built mixer.

GR1 is designed to BS5839 installation standards and meets Health and Safety requirements for emergency equipment. The all-metal 1U high rack mount chassis has a steel front panel and top cover. Internal links permit grounding configuration changes to avoid loops in specific installations.

When the Channel 1 source switch is in its mute position, internal connection is made to the alarm input for diagnostic and installation setup.



GR1 channel functionality



The operator's front panel is clean and simple: 6 channels, each with a source selector switch, concentric pan and level controls and a peak indicator; an output section with 3 level controls and meters; and monitor output. Power supply and alarm active leds indicate status, and push-button switches control ducking and stereo functions.

Its simplicity belies the true sophistication and flexibility of this professional mixer.

Zones

Balanced outputs are provided on three XLR connectors, configured as one split stereo buss and one independent mono buss. GR1 can therefore feed mono to three independent zones, or stereo to one zone and mono to a second.

Internal routing of each input channel may be set to one or any combination of the mono, L and R busses. Channel direct outs on the Sys-Link-out D-connector may be used (pre or post level) to feed further zones, recorders or other devices, or to extend zone capacity through linked GR1s.

Mic inputs

All six channels have XLR balanced mic inputs which can be selected from the front panel *source* switch. Phantom power may be configured globally or individually and gain trimmers match mics to the input preamps. Level setting is aided by channel peak leds and 70Hz lo-cut filters on each channel can be selected internally to reduce mic thumps and rumble.

The mic inputs may be used for line sources if the XLR connector is preferred to the line jacks: internally selected 20dB pads enable level matching.

Line inputs

Mono line inputs are provided for channels 2 and 3, and stereo for channels 4-6, each from one of two sources: rear panel TRS balanced *line* jacks; or *aux* (unbalanced) pins on the Sys-Link-in connector.

Channel 1 has an *aux* line input but no jack connection because its front panel *source* switch is given a *mute* position instead of *line* (used also for setup and testing).

Unbalanced inputs are acceptable on all lines, and internal settings allow individual input levels at +4dBu, 0dBu or -10dBV. Stereo sources can be mono summed using the front panel buttons, enabling L+R signals to be sent to both L and R busses as well as the mono buss. Left and right stereo inputs may be fed from separate mono sources, increasing the active mix to 9 inputs.



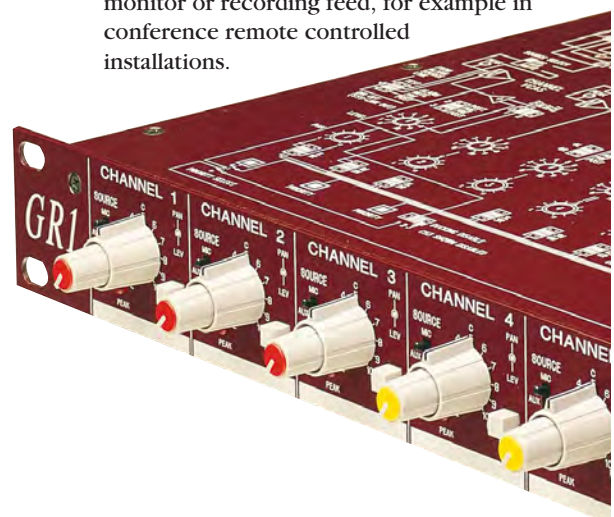
Masters and monitors

The three output levels are set by concentric controls for the L and R busses and a separate control for the Mono buss. Output level for each buss is shown on the peak signal led meters and three red leds show when the limiter is active on an output.



Each XLR output is balanced to enable long feeds to several amps without loss, and can be internally set to +4dBu, 0dBu or -10dBV operating levels.

Monitor level to the headphone output jack is adjustable, and a pushbutton selects either mono or L and R busses. This output can also be used for remote monitor or recording feed, for example in conference remote controlled installations.



GR1 built-in extras

Remote control

The gains of all of the high-performance channel and output amplifiers are voltage controlled by 0 to +10V d.c. signals; internal links enable each signal to be supplied either from its front panel level control, or from a remote source via the *remote dc* D-connector. Signals can be supplied from a computer system, for example in conference installations, or from conveniently mounted wall potentiometers in hotel and club venues (a reference +10V is available in the D-connector).

Alarm and emergency functions

Alarm override and automatic power backup combine to provide a complete and foolproof emergency system. GR1's alarm override allows automatic control of the system by an alarm recording or live announcement. The override is activated when the *alarm dc* pin in the Sys-Link-in connector is linked to 0V - either by a switch or an external logic system such as the venue's fire control unit.

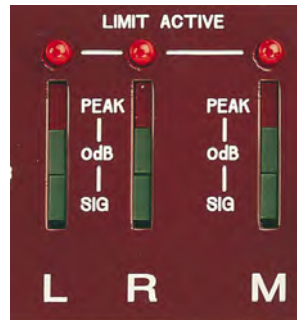
On activation, the *alarm active* panel led lights and all outputs switch to the *alarm source*. Internal links select the alarm source as either Channel 6 Mic (remember, this can have a line input connected if required) or an external alarm audio input.

Another internal link, in conjunction with the Channel 1 mute switch, enables diagnostic checking of the alarm audio source.

Emergency +/-12Vd.c. power backup may be supplied via the Sys-Link-in connector, and GR1 will automatically switch to this when the internal supply voltages fall below the backup voltage. The front panel *on* led shows whenever mains or backup power is available.

Compressor/Limiters

A high-performance compressor/limiter is available for each of the output busses to safeguard external amps and speakers from overload and to prevent wide-range dynamics running into distortion. Internal links define whether each compressor/limiter is in circuit, which outputs provide their control signals (sidechain source) and what compression ratios from 10:1 to 2:1 are to be used. Threshold levels can be trimmed from -30dB to +15dB and L and R busses can be linked for stereo compressor/limiter operation.



Ducking and dipping

GR1's priority ducking system dips background music or other programs for announcements and voiceovers. When a front panel *priority* button is pressed that channel takes precedence over all others (except one which also has its button depressed) causing the signal from the priority channel's microphone to dim all else.

Channels 1 to 3 may be selected as priority channels and channels 4 to 6 are normally set to be ducked.

Internal links can be used to disable any channel from ducking and further options allow selection of ducking depth from -6dB to -18dB and return time from slow to fast.

Sys-Link expansion

GR1 zone mixers may be cascaded via Allen & Heath's unique Sys-Link interconnection, to extend either the number of input channels or output channels.

The single screened cable between the 15-pin D-connectors on master and slave units carries all audio signals and alarm lines so one alarm source controls all units simultaneously. Backup power, if required, is fed to each mixer through its remote d.c. connector.

Used in input-expansion mode, the master GR1 has exclusive control of the three-buss output levels. Conversely, if coupled for output-expansion to extend the number of zone feeds, only the master unit controls input levels.

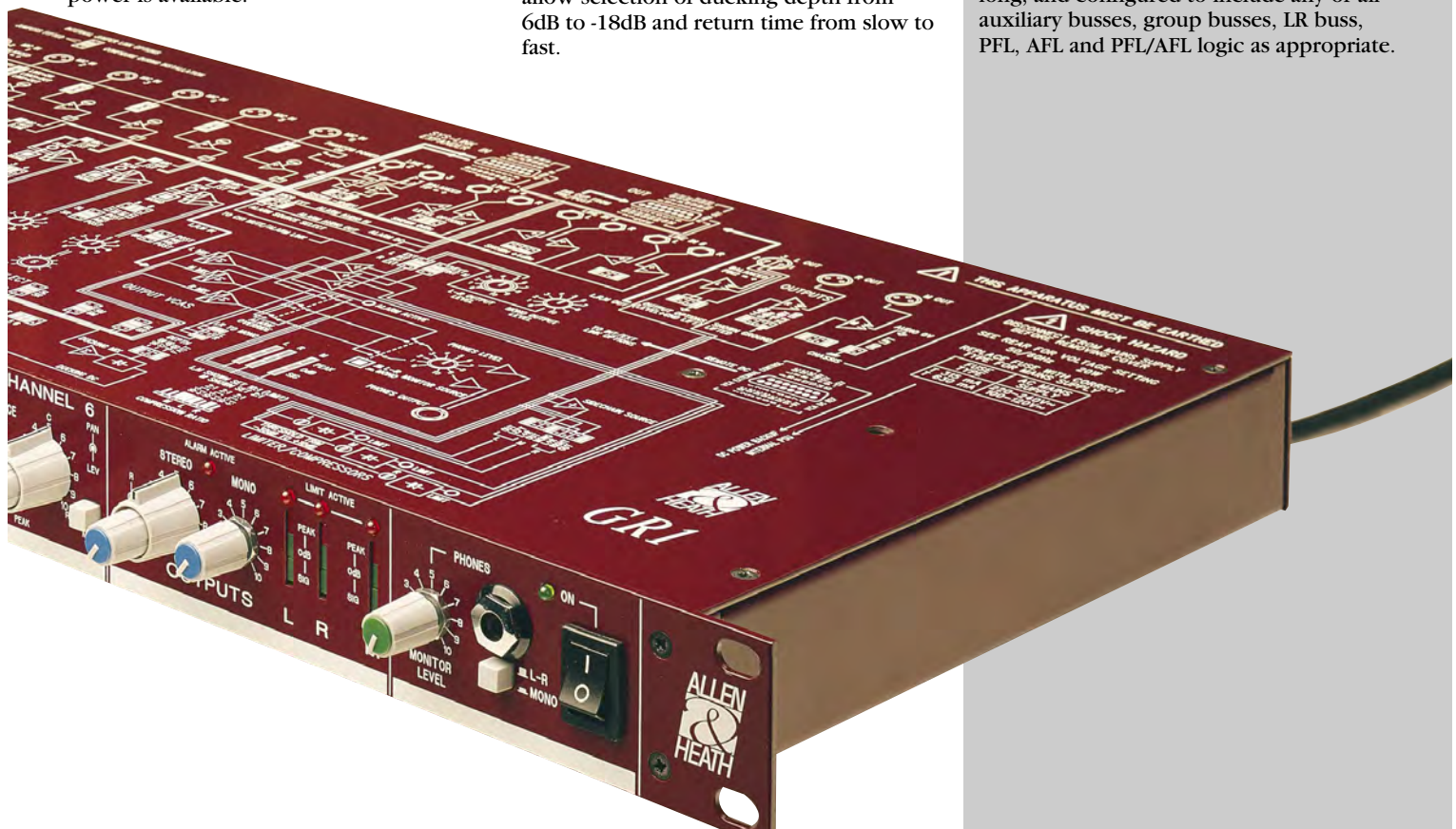
No limits



Unlimited slaves can be added.

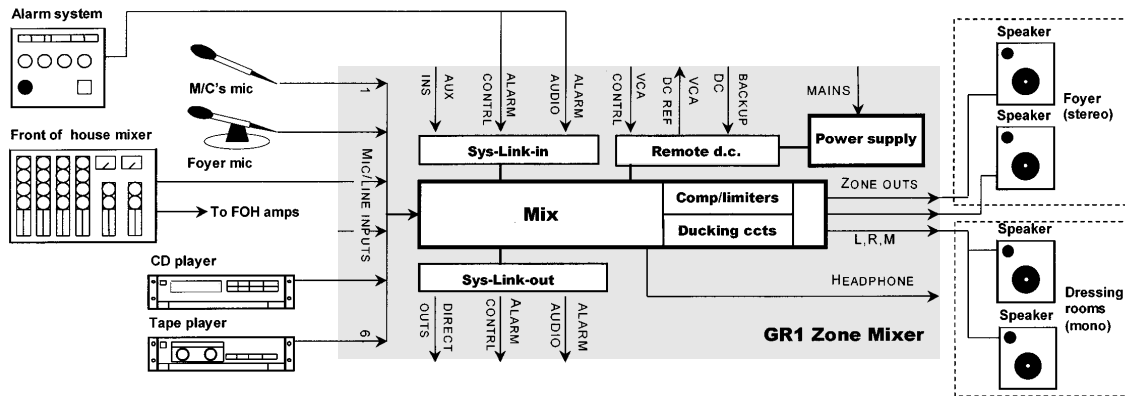
GR1 may also be daisy-chained via the Sys-Link system to other mixers in the Allen & Heath range; for example, a live desk or DJ mixer. This versatile and convenient method of interconnection can be made in either direction, and leaves all outputs from the slave mixer still available for normal feeds.

Sys-Link cables may be up to 10 metres long, and configured to include any or all auxiliary busses, group busses, LR buss, PFL, AFL and PFL/AFL logic as appropriate.

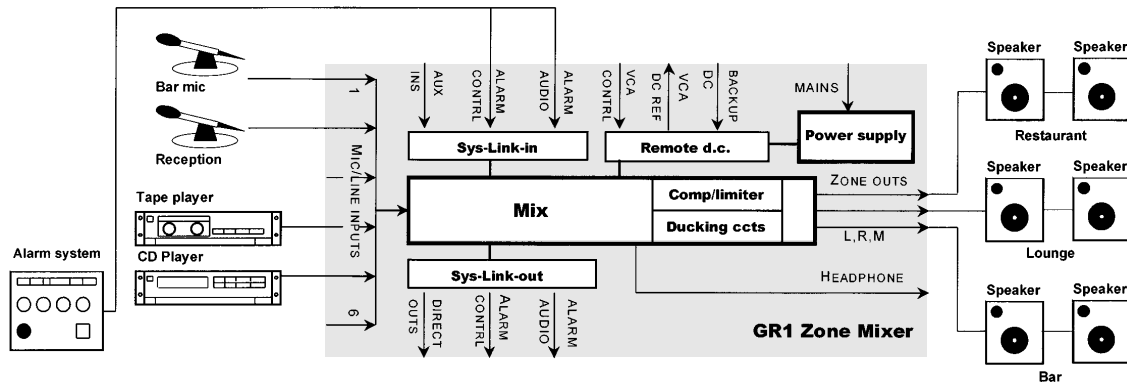


GR1 example applications

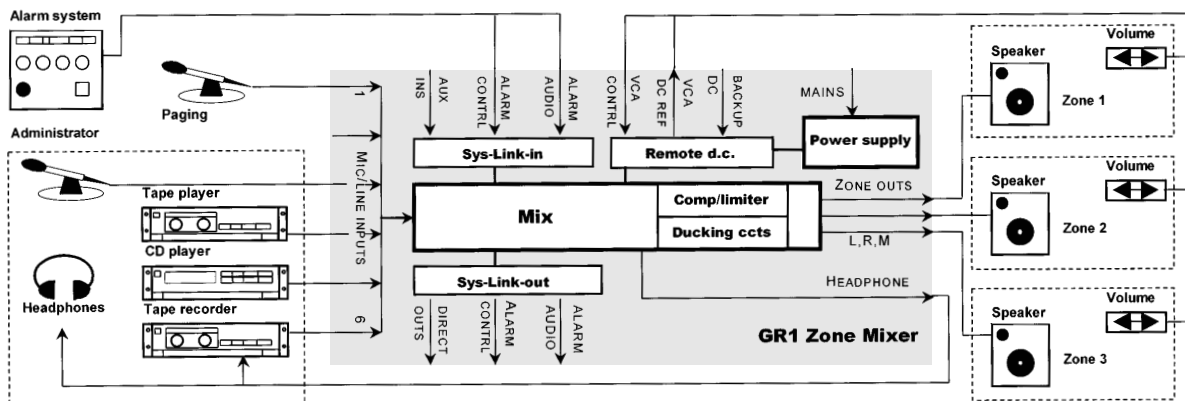
VENUE



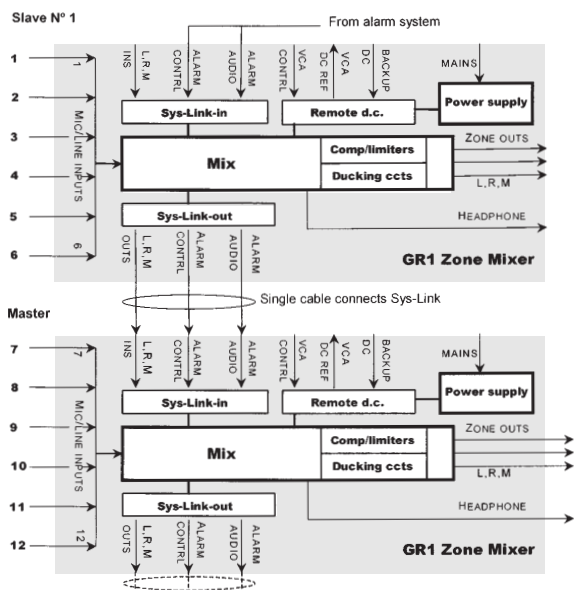
PUB/INN



CONFERENCE

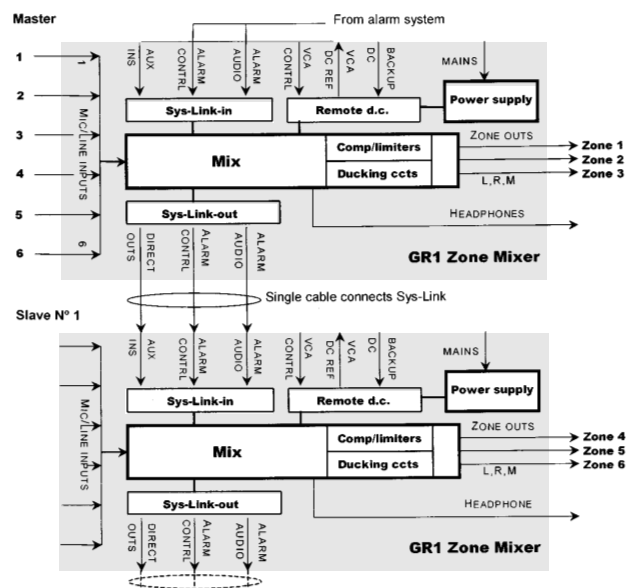


INPUT EXPANSION



More slaves can be added as required. Alarm source controls all units simultaneously. Disable internal links on source for output control on Master unit only.

OUTPUT EXPANSION



More slaves can be added as required. Alarm source controls all units simultaneously. Switch inputs to Aux on slaves. Set links to pre-fade on Direct Outs.

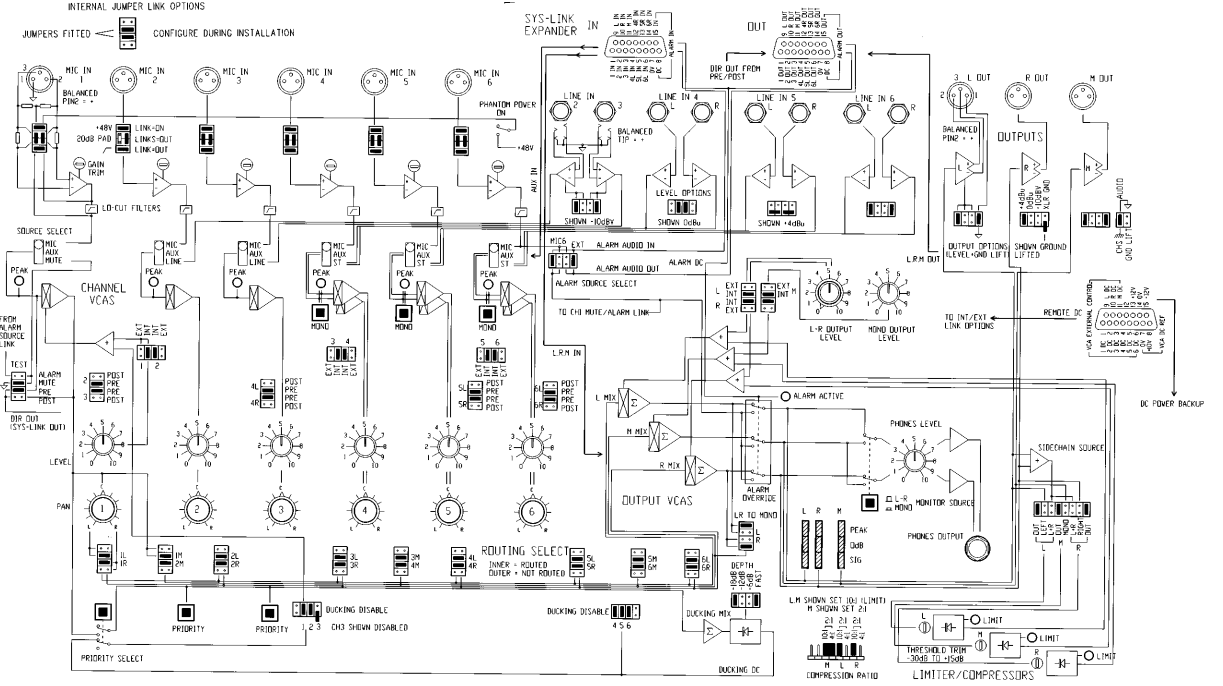
GR1 connections and circuits



Inputs	Connector	Impedance	Level
Mic, ch 1-6	x6 XLR	pin2+, 3- balanced pad selected 2k ohm	-55 to +12 dBu
Mono Line In	x2 TRS jack	balanced 10k ohm	-35 to +8 dBu
Stereo Line in	x3 TRS jack	balanced 10k ohms	-10dBV, 0dBu, +4dBu
Aux in (Sys-Link)	6 pins	unbalanced 10k ohm	-2dBu
L,R,M in (Sys-Link)	3 pins	unbalanced 10k ohm	-2dBu
Alarm & d.c In (Sys-Link)	3 pins	unbalanced 10k ohm	-2dBu
Remote VCA d.c. In	9 pins	0V=off, 10V d.c.= max	
Backup d.c.in	4 pins	max +16V, -16V, +48V d.c.; min +12V, -12V, +12V d.c.	
Outputs			
L,R,M Out	x3 XLR	pin2+, 3- balanced 50 ohm	-10dBV, 0dBu, +4dBu
L,R,M Out (Sys-Link)	3 pins	unbalanced 50 ohm	-10dBV, 0dBu, +4dBu
Direct Out (Sys-Link)	6 pins	unbalanced 50 ohm	-2dBu
Phones Out	x1 TRS Jack	tip L, ring R 8 to 400 ohm stereo headphones recommended	
Remote VCA d.c.ref	2 pins	10V, 0V d.c. reference voltage for remote VCA control	
Alarm & d.c.Out (Sys-Link)	3 pins	15way D female unbalanced	50
Mains power inlet	x1	Standard IEC 3 pin L,N,E. IEC to moulded plug supplied (country-dependent), internally wired for required worldwide voltage	

POWER SUPPLY	Internally regulated +/- 16V +48V d.c. phantom power
MAINS POWER	Internal unit AC mains input 100 to 240V a.c. @ 50/60Hz Internally wired to country voltage
Power consumption	25VA max
Mains fuse rating	
100-120V a.c. use	T315mA 20mm
220-240V a.c. use	T630mA 20mm
DC POWER BACKUP	External d.c. power supply or batteries +/-12V to 16V d.c. @ 300mA +12V to +48V d.c. for phantom power
MECHANICAL SPECIFICATIONS	
Width	483(19")
Height	44(1.75")1U
Depth	262(10.3")
	Unpacked Packed
Weight	4.5kg 5kg

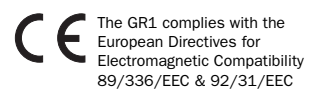
GR1 BLOCK DIAGRAM



MAXIMUM OUTPUT LEVEL	Balanced +28dBu into 600 ohm Unbalanced +21dBu into 2k ohm	FREQUENCY RESPONSE 20Hz to 30kHz: +/- 1dB	DUCKING Depth -6, -12 or -18dB links Release fast or slow links Control from channel 1, 2 & 3 Priority switches Individual channel ducking disable links
INTERNAL HEADROOM +23dB	PEAK LED Turns on 5dB before clipping	TOTAL HARMONIC DISTORTION < 0.04%	COMPRESSOR/LIMITERS L, R, M, individually controlled Ratio 2:1 soft compression link 4:1 hard compression link
METERS Individual bargraphs for L, R, M outputs: Peak: on 5dB before clipping 0dB Signal: dynamic indication from -20dB	NOISE measured r.m.s. 22Hz to 22kHz Mic EIN referred to 150 ohm source -128dB Line preamp at 0dB gain -90dBu Mix noise (all routed) < -80dBu	CROSSTALK measured at 1kHz Channel shutoff < -90dB Channel pan < -75dB Interchannel < -80dB	OdBu = 0.775 Volts rms OdBV = 1 Volt rms



ALLEN & HEATH
Kernick Industrial Estate, Penryn, Cornwall TR10 9LU.
Tel: (+44) 01326 372070 Fax: (+44) 01326 377097
http://www.allen-heath.com



H A Harman International Company