GSR24

- Analogue Studio Console
- Multi-channel Interface
- DAW Control Surface

ALLEN&HEATH

*Model shown is GS-R24M

GS-R24 combines refined analogue quality with a choice of analogue or FireWire / ADAT interface modules and MIDI control for your preferred Digital Audio Workstation or recording device. Designed to sit at the heart of a busy project studio, GS-R24 has the flexibility and audio excellence to enhance the impact of your recordings, whatever your workflow.

Mike Griffin :: Designer

"The GS-R24 design was inspired by a mix of traditional and modern recording techniques and enables today's studio to have a truly versatile console centrepiece once again. We've combined super high quality analogue pre-amps, equalisers, summing amplifiers and valve channels, with a 32 channel bi-directional interface module in such a way that caters for many varied workflow methods. On top of that we've squeezed in as much DAW control hardware as we can to give you tactile control over your DAW, automated with motorised faders on the GS-R24M. We talked to project studio owners and engineers to find out what they wanted and what works best for them. The GS-R24 is the result – we love it!"

- Available with or without motorised faders*
- 24 mic/line input pre-amps
- 24 channels of 4 band EQ with fully parametric mids
- Choice of analogue or Firewire / ADAT interface modules
- 2 dual stereo inputs with EQ
- 2 additional valve inputs
- 6 auxes
- 4 subgroups
- Main Stereo + mono bus
- PFL, AFL + Solo in Place
- MIDI control
- 5.1 surround monitoring
- Integral meterbridge
- Separate linear power supply

Features in detail

PREAMP
The preamps used in GS-R24 are the best available from Allen & Heath. The circuit topology is based on a balanced mix summing amplifier originally designed in the 1980s for a very expensive studio console, customised and refined to give the best performance possible. Special low noise transistors are used in a symmetrical front-end with local feedback on each phase. This results in very low self noise (-128.5 EIN @ 60dB), and a highly linear low distortion circuit with huge bandwidth. These attributes mean that the GS-R24 pre-amps are highly transparent, controllable and accurate.

EQ
The mono channel EQ is 4 band with fully parametric mid sections, giving full control over frequency and bandwidth. The Q factor is adjustable from 0.8 to 6 and the frequency range is extended to cover a wider range than is usual. The low mid, for example, can sweep all the way down to 18Hz!

AUXES
6 Auxiliary buses can be used for a mixture of monitor and effects sends. Zero latency monitoring is possible using the sends fed from the preamps.

ROUTING
In addition to the main bus routing, configuration switches set up the workflow on a per-channel basis. The DAW send can be set pre or post EQ, and the DAW return can be inserted pre or post EQ. The channel fader can be bypassed if using it as an automated MIDI controller.

VALVE CHANNELS
Two valve (tube) channels provide ECC83 double triode valve tone and warmth. Source options are microphone, line, instrument or DAW track and the channel outs can be routed, patched or sent to the DAW interface.

MIDI CONTROL
Transport keys, rotary controls, buttons, switches and faders can be used to control software functions in your DAW. The GS-R24M has 24 motorised 100mm faders which will follow automation in your DAW mix, making complex mixing much more tactile and controllable.

INTERFACE MODULE
A 32 x 32 channel high quality interface is available in the format of your choice. The card slot means that new interface cards can be introduced - an important factor in keeping up to date.

Interface Modules

The interface module fits in the rear panel of the console and handles 32 channels in and 32 channels out plus the control protocol. It enables easy integration with your DAW of choice including Pro Tools, Logic, Cubase, Nuendo, Sonar, Reaper, and many others. Simply navigate our website for MIDI mapping templates, setup guides and how-to videos.

A recessed switch in the mixer master section swaps the interface sends on channels 17-24 from the mono input channels to the Aux 1-4 outputs and the four group outputs. Another recessed switch enables the interface return channels 25-30 to be used for 5.1 surround mix monitoring from the DAW to a single level control on the desk.

Analogue Module

- Analogue Input & Output 37 pin D-Sub type connector
- Standard 5 pin DIN MIDI Input and Output connectors

Firewire Module

- 2 x standard IEEE 1394 6 pin FireWire ports
  - allow daisy-chaining of a ZED-R16 mixer
- State of the art, 24 bit 96kHz AD and DA converters.

- Word Clock input and output BNC connectors
- 4 x ADAT Input and 4x ADAT Output ports
- Standard 5 pin DIN MIDI Input and Output connectors - MIDI data is also incorporated on the FireWire bus for convenience.

ASIO / Core Audio Allen&Heath FireWire driver and Control Panel for configuration and diagnostics - Windows version includes DPC Latency Checker and a FireWire chipset compatibility tool

Mode switches to configure the module as FireWire only, ADAT only or a mix of FireWire + ADAT

In ADAT mode, the audio clocks can be synchronised to either the internal clocks or ADAT input and the sample rate can be set either to 44.1kHz or 48kHz. Mono Input Channels 1 to 24, the Stereo Input Channels, the Valve Channels and the Master LR can all be sourced from / routed to the ADAT ports.

In FireWire mode, Mono Input Channels 1 to 24, the Stereo Input Channels, the Valve Channels and the Master LR can all be sourced from / routed to FW bus.

In FireWire + ADAT mode, Mono Input Channels 1 to 24 and ADAT I/O channels 1 to 8 can be sourced from / routed to the FW bus.

RPS15 Power Supply

The slimline RPS15 power supply unit is a high performance, low noise linear power supply producing DC voltages by rectifying, smoothing and regulating AC voltages from the secondary windings of a mains transformer. Allen & Heath mixing consoles employ a number of DC voltage supply levels in their operation and these are provided at the output of the power supply unit. Full protection and thermal sensing fan cooling ensures the power supply unit will operate consistently.

Console Options

GSR-24 – non-motorised faders
GSR-24M – motorised faders

Workflow

Using the configuration switches the GS-R24 can be set up to send a non-EQ'd signal straight from the preamp, providing zero latency monitoring with a fully analogue channel path. Alternatively, the record send can be EQ'd with the DAW return switched to the fader - a similar configuration to a traditional 'in-line' channel path, providing a monitor mix on faders sourced from the equivalent of the tape machine replay head. Or the DAW can play straight into the insert point and EQ for equalisation during mixdown.

This connectivity allows for different workflows, from dry multi-tracking to mixdown, dubbing, processing effects or even using the GS-R24 circuitry as analogue plugins in your DAW.

Recording direct from the preamp, direct monitoring/mixing

GS-R24 Mono Input Channel Path

Recording direct from the EQ, direct monitoring/mixing

Insert processing by DAW, or direct recording with EQ on monitor path

Recording direct from the EQ, DAW track monitoring/mixing

Mixing in DAW using fader as controller, monitor via bypassed fader

Analogue summing mixdown from DAW track using automated fades

Over-dubbing / Recording direct from preamp, monitoring DAW track output

Using analogue insert & EQ on a digital track (feedback loop possible)

A Technical Overview

Allen & Heath has a long history of making classic recording mixers such as the Sigma, Syncon, System 8, Saber and GS3000. 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 we have created a product which offers more than the sum of its parts—a combination not just of different technologies, but of 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:

- 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.

GS-R24 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 console when you need to upgrade your digital interfacing technology years from now.
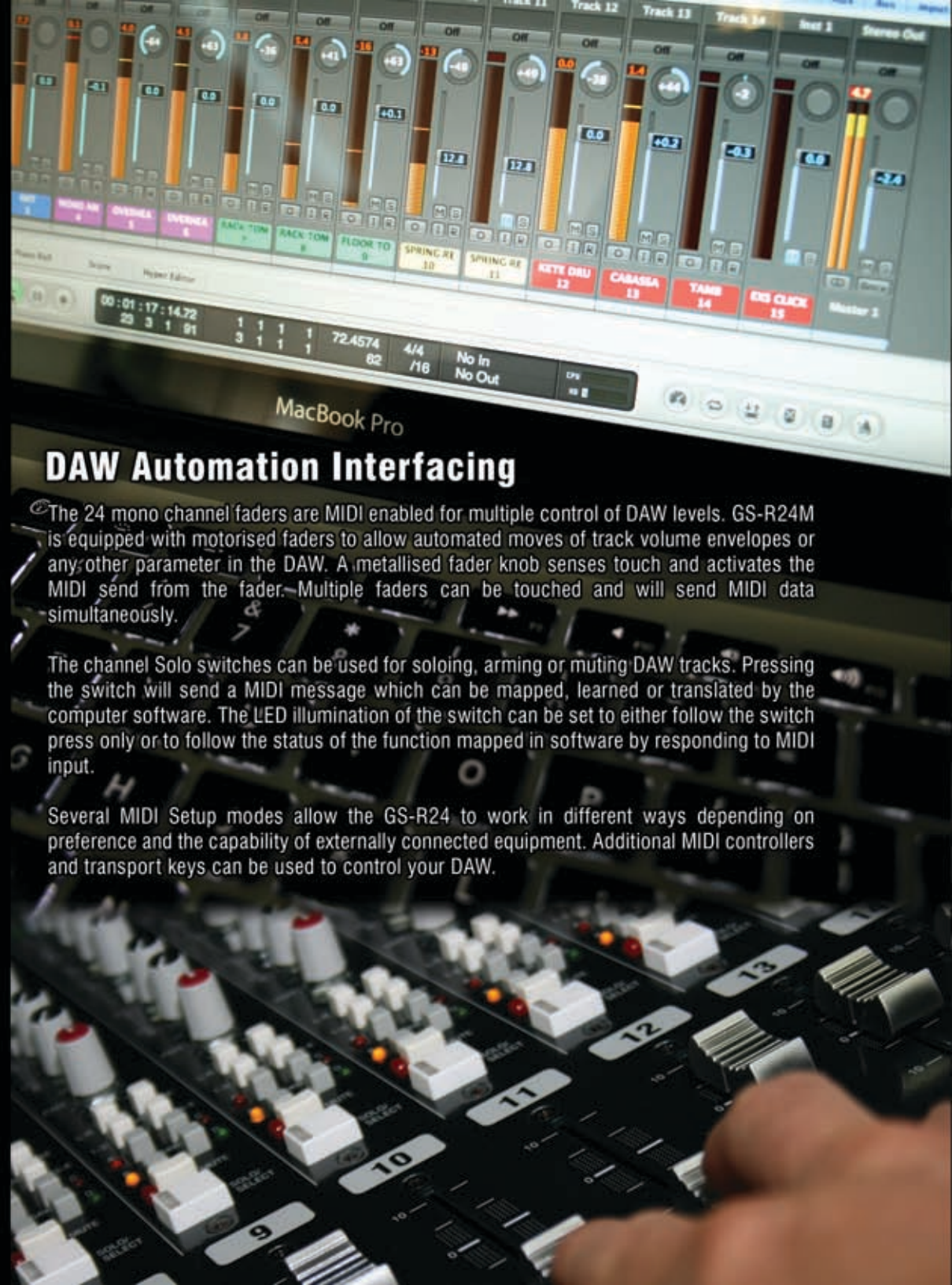
DAW Automation Interfacing

The 24 mono channel faders are MIDI enabled for multiple control of DAW levels. GS-R24M is equipped with motorised faders to allow automated moves of track volume envelopes or any other parameter in the DAW. A metallised fader knob senses touch and activates the MIDI send from the fader. Multiple faders can be touched and will send MIDI data simultaneously.

The channel Solo switches can be used for soloing, arming or muting DAW tracks. Pressing the switch will send a MIDI message which can be mapped, learned or translated by the computer software. The LED illumination of the switch can be set to either follow the switch press only or to follow the status of the function mapped in software by responding to MIDI input.

Several MIDI Setup modes allow the GS-R24 to work in different ways depending on preference and the capability of externally connected equipment. Additional MIDI controllers and transport keys can be used to control your DAW.

Block Diagram
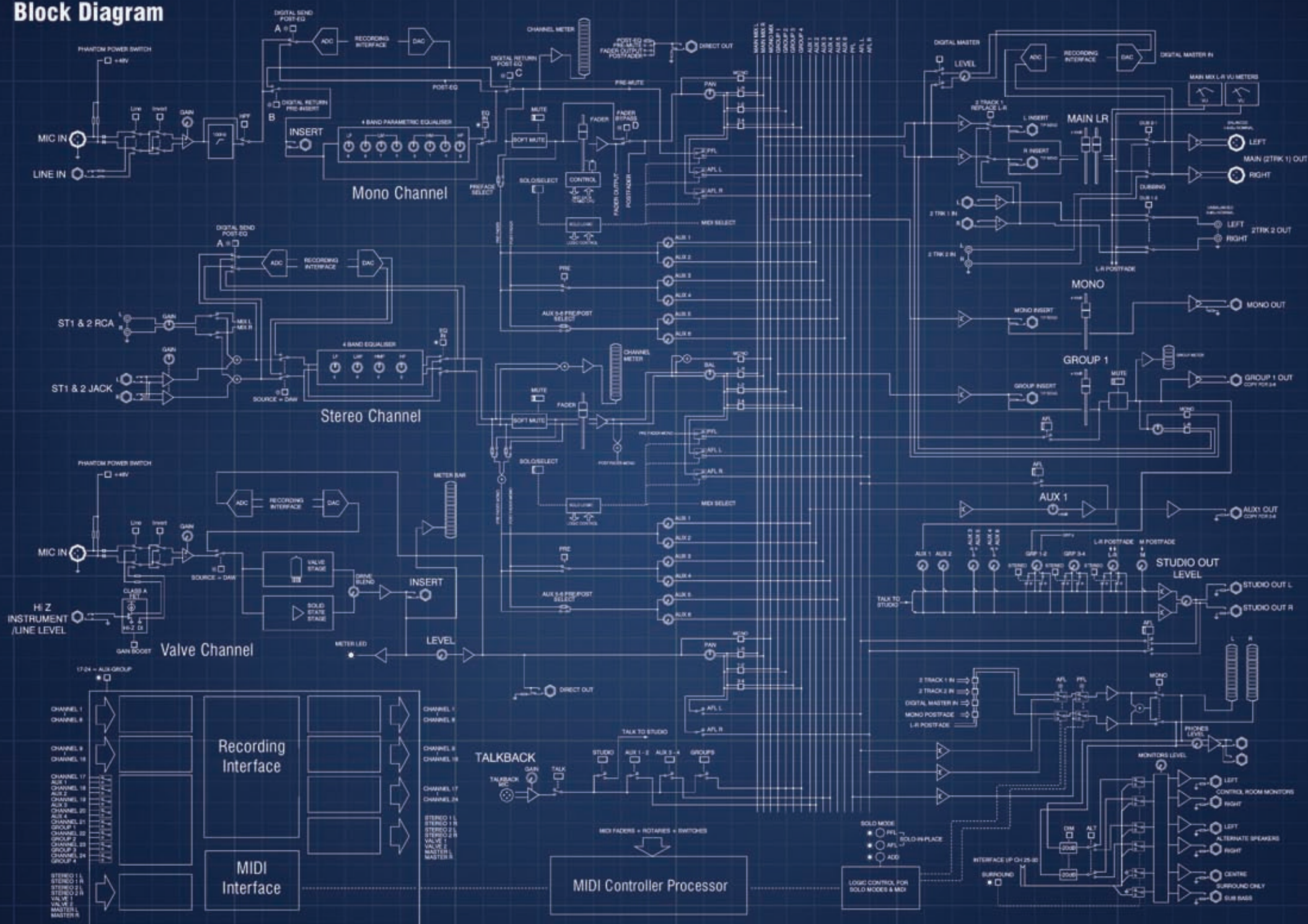
Operating Levels

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%

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

Dimensions	H:192 mm(7.5") W: 1125 mm(44.3") D: 616 mm(24.25")

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