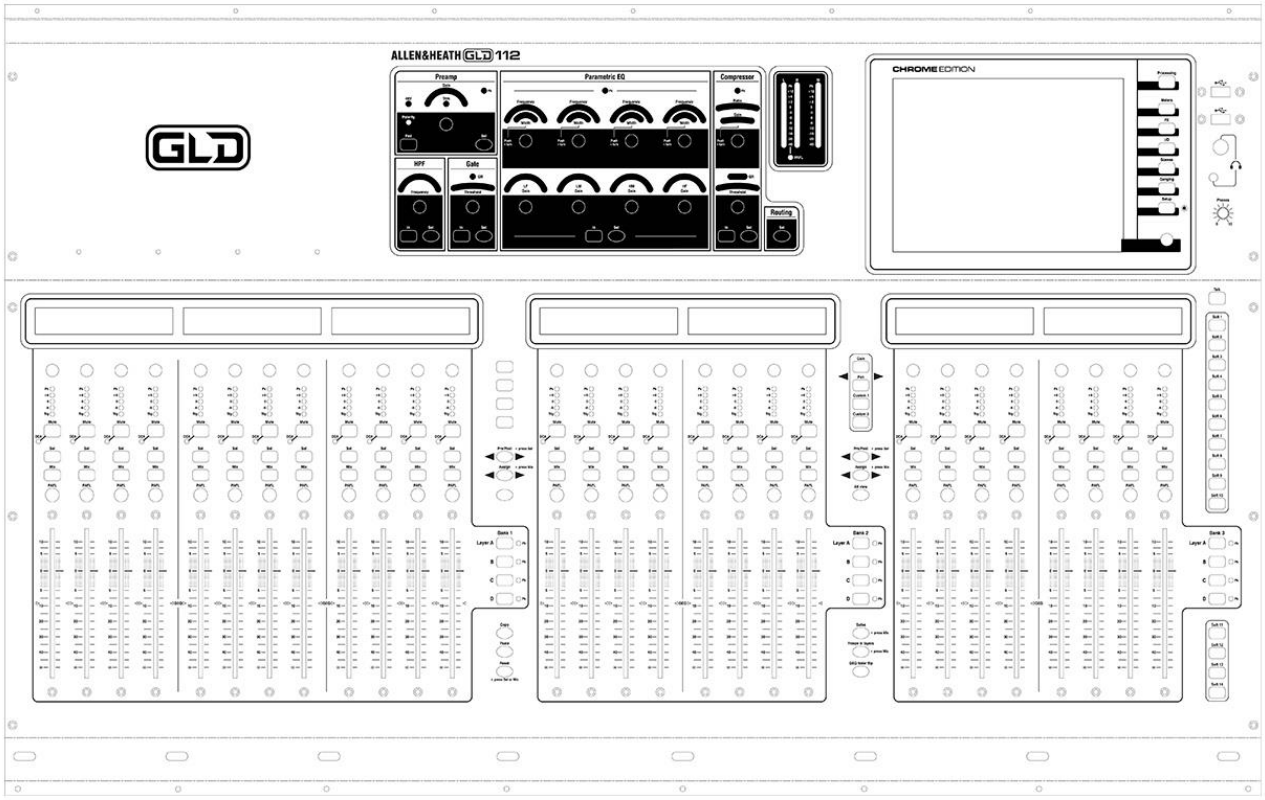
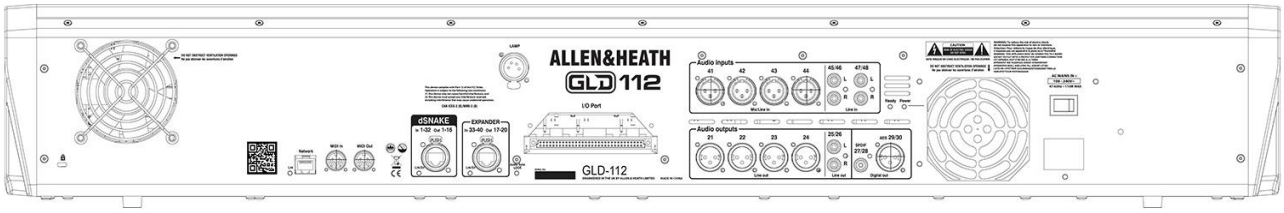
Allen & Heath Limited
Kernick Industrial Estate
Penryn, Cornwall,
TR10 9LU, UK
www.allen-heath.com

Technical Datasheet

Overview

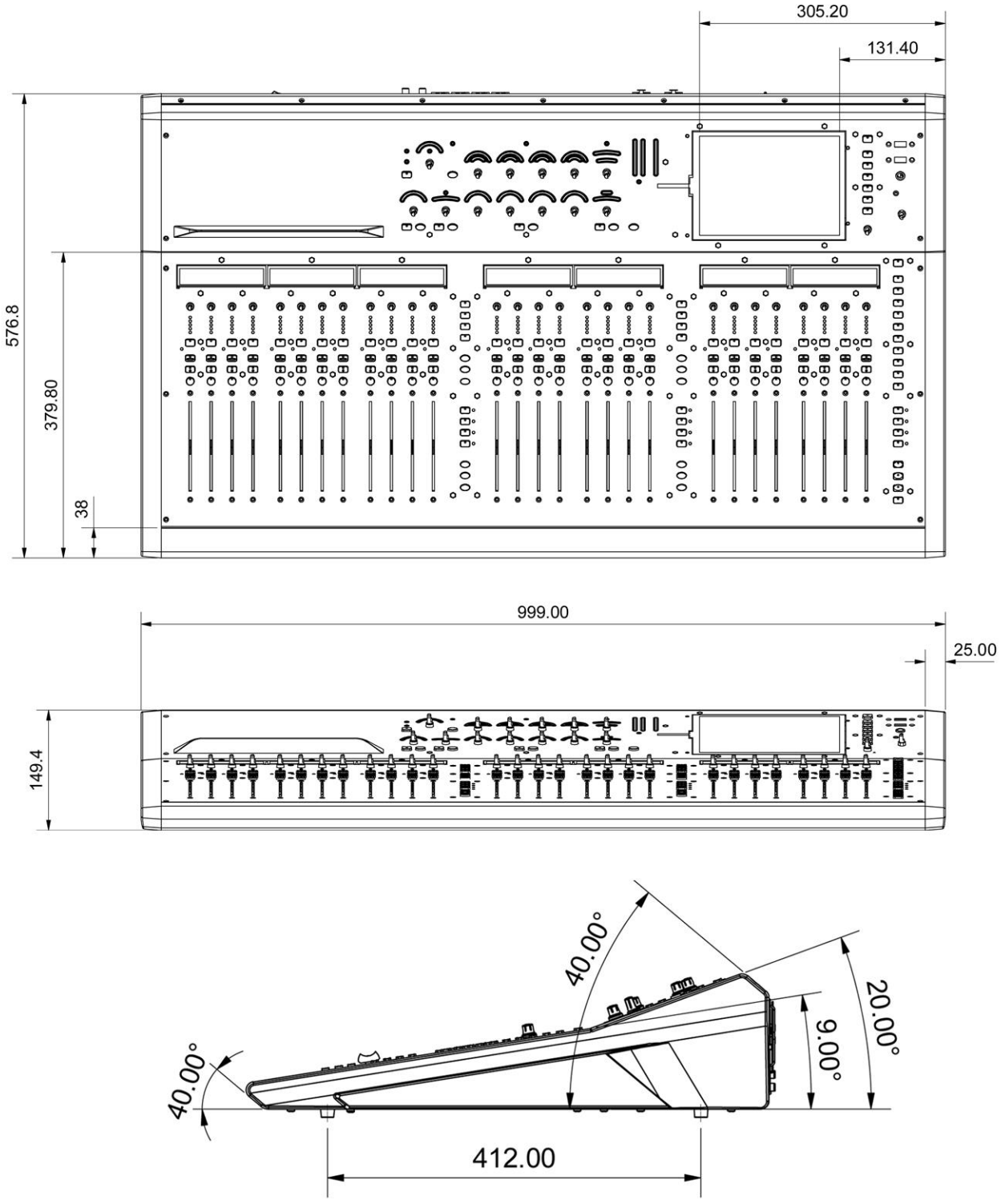
- Compact digital mixer with scalable, remote I/O
- Systems from 4 to 44 mics
- Easy to use, quick to access, analogue style interface
- dSNAKE Cat5 digital snake
- 8.4 inch colour touchscreen
- 28 faders, 4 layers, 80 channel strips in a freely customizable layout
- 48 Input Channels into 30 assignable buses into 20 Mix Outputs
- 8 stereo RackFX engines with dedicated FX returns
- 16 DCAs / mute groups
- 10 user assignable SoftKeys
- Dante, Waves SG, MADI, EtherSound and ACE options for FoH / Mon split, multitrack recording and more
- AMM Automatic Mic Mixing





Dimensions

GLD-112



A&E Specifications

The mixer shall be a digital mixer providing 48 input channels mixing to 30 configurable buses with 20 mix outputs. There shall be 8 stereo rack FX engines and 16 DCA/Mute groups. The surface shall contain the DSP mix-engine, and include 28 moving faders in three banks; the left-hand being 12 faders and then 2 banks in the centre and on the right-hand, each being 8 faders. Each bank has 4 layers accessed by dedicated keys with indicators. Any fader strip can be configured to be an input channel, output channel mix, FX send, FX return, Main mix, DCA master, or Midi control. Each fader strip shall have a dedicated PAFL, Mix, Select, and Mute button with indicators, 5-LED multi-point meter, Rotary encoder, and coloured LCD display with name, mode, status, and level indicating. 4 buttons with indicators shall provide global mode for the rotary controls being Gain, Pan, Custom 1, and Custom 2. The options for the custom modes for the rotary control shall be: Direct out, Send level, HPF frequency, Compressor threshold.

All processing, routing, and assignments of signals to mixes can be accessed and adjusted via an 8.4" colour touchscreen provided on the mixing surface. A button to access Pre/Post fade send assignments for the channels via the 'Select' keys shall be provided. A button to assign channel on/off status to the current mix using the channel 'Mix' keys shall be provided. Send levels to mixes can be displayed and adjusted using the faders. The name, type and number of the current selected mix shall be displayed in the south bar of the screen in all modes, and the currently selected channel shall also be named and identified numerically in the north bar of the screen in processing mode. Additional hardware controls are provided for adjustment of frequently-used parameters of one selected input or output channel. 10 user assignable soft keys shall be provided, as shall be dedicated keys for quick Copy/Paste/Reset of mixes and processing parameters. There shall be three dedicated buttons on the surface for Scene-safe, Freeze-in-layers, and GEQ fader flip. An ALT View button shall provide additional information in the channel LCD display to the default. The options are: DSP channel (number), dB Value (fader), Socket ID. 12-LED bar meters shall indicate the 3 Main mix buss levels, the PAFL signal shall override the LR meters accompanied by a PAFL-active indicator. ¼" and 3.5mm jacks for the surface PAFL headphones output shall be provided, plus an analogue output level control. The mixer shall include a 2-track record system for optional USB drives. The format shall be 48 kHz/ 16 bit WAV. The mixer can play back stereo WAV or FLAC files at 44.1 or 48 kHz. The surface shall have 2 USB ports for recording, playback, data-transfer, archiving, and firmware updates.

44 mono channels and 2 stereo input channels shall have access to any hardware input on the console, or remote input via the dSnake Ethernet audio expansion hardware options. A 64-way port for optional digital interface modules shall also be accessible via the source patch-bay to any input. 20 output channels can be configured as any combination of auxiliary sends, group buses, or matrices, each as mono or stereo. A choice of main mix bus mode is included in the 20 output channels and these shall be; None, LR, LR+M sum, LR+M, LCR. All output channels can be routed to any to any hardware output on the console, or remote output via the dSnake Ethernet audio expansion hardware options and the 64-way port for optional digital interface modules. The 8 internal FX send buses are in addition to the output channel mixes and can be configured as mono or stereo. All input channels shall contain the following processing: Trim, Polarity, High Pass Filter, Insert, Gate, Parametric EQ, Compressor, Delay, and channel direct out. All output mix channels shall contain the following processing: External input, Trim, Polarity, Insert, Parametric EQ, and Graphic EQ with RTA and fader-flip mode, Compressor, Delay. 8 user-assignable effect racks shall be provided with a library of factory preset FX emulations. The FX racks shall be individually configurable as send/return from a channel or FX/Mix, or inserted into input or output channels. The mixing system shall provide the options of FX racks processed signals to be returned to other mixes via dedicated FX input channels with PEQ, assigned as sources to input channels, daisy-chained to another FX rack by internal patching, or routed to an output socket or interface channel. A global source option for input channel direct outs shall be provided in the routing screen. The tap-off point can be adjusted to the following positions in the processing path: post Preamp, post HPF, post Gate, post Insert return, post PEQ, post Compressor, and post Delay. There shall be further global options for Follow Fader, and Follow Mute. Direct outputs shall be assignable via the mixer soft patch bay to any physical output socket interface channel or ME channel. A 64ch 2-way option port shall be provided on the surface rear and shall be compatible with the range of digital interface modules available from Allen&Heath including: ACE, MADI, EtherSound, Dante, Waves, and Mini-Multi-out (outputs-only ADAT, iDR, Aviom).

The ability to restrict access to the analogue preamp gain controls shall be provided on the surface. When active, the surface channel physical gain control shall then control the channel digital trim. This is often used when sharing preamp signals with an external system which can remain unaffected by processing and level changes in the original system unless an optional warning prompt is overridden by a temporary switch back to analogue gain control is made. There shall be an on-screen utility to set the surface audio clock source from the default Internal, to the Slave Option Card for external clock. Status of Audio Sync Lock shall be provided on-screen. A signal generator shall be provided on-screen with the ability to send a variable level signal to any output mix with visual assignment status on-screen. The following types of signals shall be available: Sine, White Noise, Pink Noise, and Band-Pass Noise. A Talkback facility shall be provided on-screen with the ability to send any selected source from the system soft-patch to any output mix with on screen status indication. An option for 'Enable Latching' and an option to 'Enable Dim PAFL on Talkback' shall be provided. If an XLR input is selected as a source then the Talkback utility shall provide the preamp control parameters including HPF. An on-screen utility to set up the following on/off options for the PAFL system shall be provided, Additive mode, IEM Mix to headphones, Mix follows Mix PAFL, Mix follows Input PAFL, Sel follows PAFL, Disable PFL on Sel, Output AFL, Input AFL. An adjustable delay time and trim shall be settable for the PAFL buses. A default Mains to PAFL sub-mix shall be provided with variable input levels. An external input from the mixer soft-patch shall be assignable to the PAFL buses with signal metering and source level controls, including preamp parameters. All delay points in the system shall be made adjustable as Milliseconds, Meters, Feet, and Samples. An ambient temperature offset shall be provided to allow a manually set temperature value to relatively compensate all the delay points when distance is chosen as the unit. Comprehensive input, output, and FX channel metering shall be provided on-screen with 4 custom layouts available to be configured by the user. Input metering shall have the following source point options: post Digital Attenuation, post Gate/PEQ, post Compressor, and post Delay. Mix channel metering shall be fixed post fader.

The mixer shall have an Automatic Microphone Mixer (AMM) or Automixer to automatically control the levels of multiple

channels of audio where a number of microphones are open at the same time.

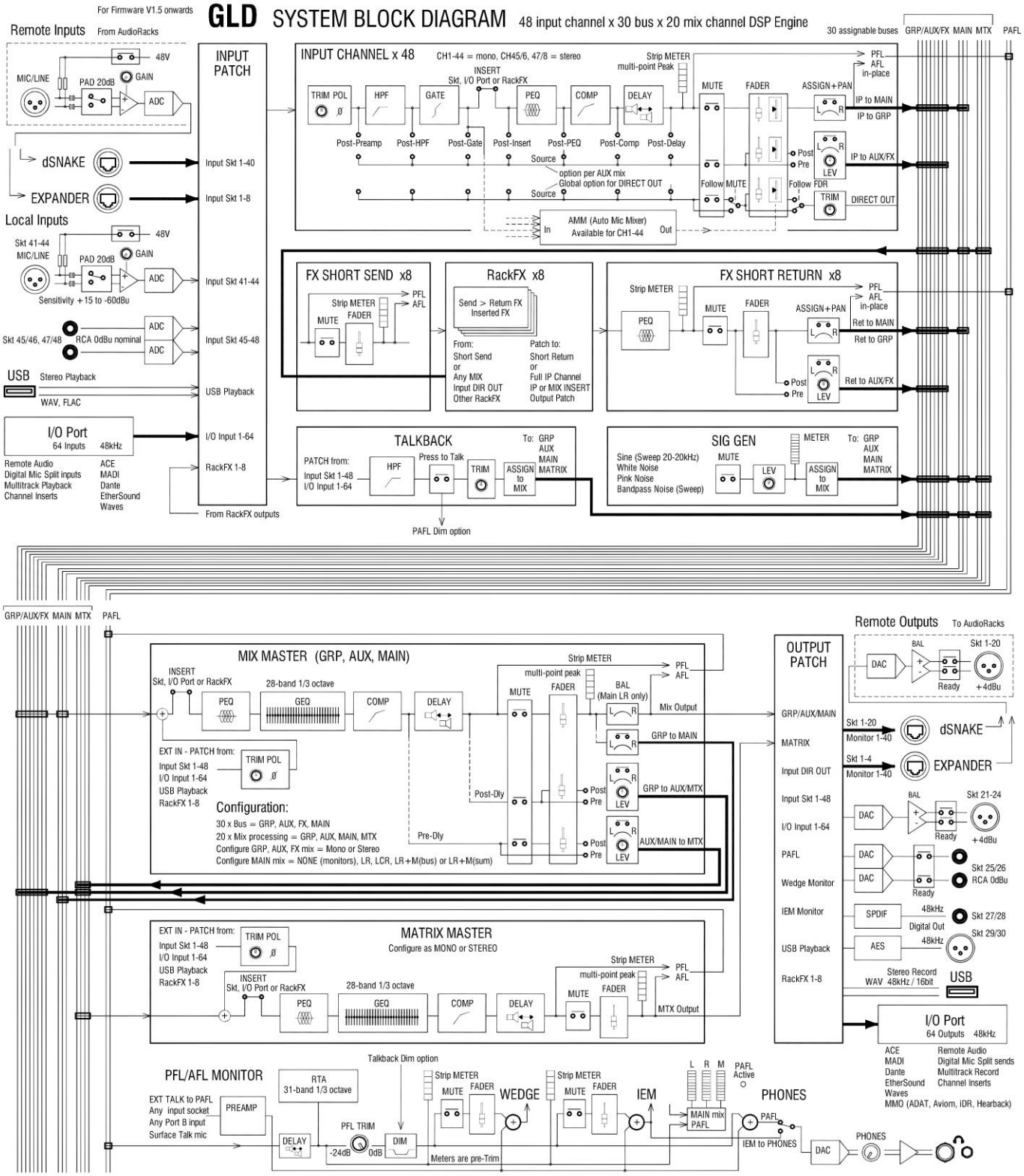
The mixing control surface shall have a built in power supply accepting AC mains voltages of 100~240V, 50/60 Hz, 95W max via an earthed 3-pin IEC male connector mounted on the rear chassis. A rocker switch shall be provided near the mains inlet to isolate the mixer from the incoming mains supply. Recommended operating temperature for the mixer is 5 to 35 degrees Celsius. A 4-pin XLR lamp connector shall be provided on the rear panel, it is compatible with the Allen&Heath right-angled LedLamp with dimmer.

All XLR inputs in the system shall be of high quality and capable of handling microphone or line signals and shall have remote controlled analogue gain adjustable in 1dB steps, a 20 dB PAD, and phantom power. 4 XLR inputs shall be located on the rear panel, these can be routed via the soft-patch system. 2 pairs of RCA connectors shall be provided on the rear panel, these can be routed via the soft-patch system. Input sockets can be assigned as the Talkback source. 4 XLR line outputs and 1 pair of RCA outputs shall be provided on the rear panel these can be assigned using the soft-patch system. An RCA SDPIF format output shall be provided on the rear panel, plus 1 AES/EBU format output. These can be assigned using the soft-patch system. An RJ45 connector with Ethercon locking ring shall be provided on the rear panel labelled 'dSnake'. This is a proprietary interface protocol using low-latency, point-to-point Ethernet technology to facilitate optional remote XLR input and output socket hardware, compatible also with Allen&Heath proprietary ME personal monitoring solution. This dSnake port shall provide access to 40 remote XLR inputs and 20 XLR outputs located on the range of AR and AB rack units, plus 40 output channels to the ME system components. All inputs and outputs can be assigned in the system soft-patch. A default mapping of remote inputs shall be provided, so that mic/line XLR inputs on the AR and AB rack units shall appear in numerical sequence as the sources to the input channels starting from ch1. An RJ45 connector with Ethercon locking ring shall be provided on the rear panel labelled 'EXPANDER'. This is a proprietary interface protocol using low-latency, point-to-point Ethernet technology to facilitate optional remote XLR input and output socket hardware, compatible also with Allen&Heath proprietary ME personal monitoring solution. This port shall provide access to 8 remote XLR inputs and 4 XLR outputs located on a remote rack unit, plus 40 output channels to the ME system components. All inputs and outputs can be assigned in the system soft-patch. 5-pin MIDI In and Out connectors shall be provided on the rear panel to allow parameters of the mixing system to be controlled by an external device or system, and for control elements of the system to operate external devices or systems. A DAW control driver that converts MIDI to popular HUI or Mackie Control protocols for Mac computer shall be available. The mixer shall also provide a LAN port to provide TCP/IP network control using the MIDI messages formatted to this protocol. The mixing system shall include application software for computers and touch screen tablet devices connected to the LAN port to control the mixing functions of the mixer. This shall include control of the preamp gain, pad, and phantom power. The input channel processing parameters including, HPF, Gate, Parametric EQ, Compressor, and Delay. The application shall provide control of output channel processing including Parametric EQ, Graphic Eq, Compressor and Delay. Routing assignments and level adjustments of input signals to all mixes and bus shall be provided. The application software shall provide signal metering and processing threshold indication when online including the Real Time Analyser. The software application for PC and Mac shall provide access to the scene manager, library and show data, it shall provide a facility to adjust and emulate the layout of the fader strips on the mixing surface, plus a graphical representation of the physical controls and indicators present on the surface. This shall include the facility to open and display mixer data files offline and make adjustments, and to be able to archive data files to a USB drive operable with other mixing systems.

Input and output channel processing in the mixer and its Editor application shall be save-able on demand as a user library item for recall in other channels. The option to include preamp parameters shall be included. Individual processing sections shall be save-able on demand as user library items for that type. All library items shall be stored on board the surface or offline editor computer and shall be archived with the show-file. Library items shall be transferrable to USB drive as portable data to be used in other systems. The mixing system shall periodically record all current settings and return the mixer to that state after reboot following a power-cycle. The mixer shall provide the facility to save 500 scenes of the settings of the mixing system. The scenes shall be name-able and a descriptive text entry per scene provided. A comprehensive table of Scene Safes shall be provided to prevent selected items from being changed from their state when the safe was enabled. A comprehensive scene filter shall be provided per scene to Allow / Block each parameter saved in a scene from being changed as that scene is recalled. A Cue List of scenes shall be provided to facilitate a running order of scenes from the master list. A crossfade of up to 20 seconds shall be adjustable per scene. Scene recall may be embedded into a scene with the option to delay the start of the embedded scene recall by up to 4 minutes. An embedded scene may be one of the 500 in the list on the mixer or in another Allen&Heath digital mixer connected on the network via the mixer LAN port. An option shall be provided for password protection for log-in of several users with different levels of system access and permissions. A particular scene may be chosen to be recalled per change of user-login if desired.

The mixer shall be the Allen&Heath GLD-112 Digital Mixing System.

Block Diagram



System Specifications

Inputs

XLR Mic/Line Inputs	Balanced
Mic/Line Preamp	Fully recallable
Input Sensitivity	-60 to +15dBu
Analogue Gain	+5 to +60dB, 1dB steps
Pad	-20dB
Maximum Input Level	+32dBu
Input Impedance	>4kΩ (Pad out), >10kΩ (Pad in)
Mic/Line Channel noise	20-20kHz, Direct Out @ unbalanced out
Mic EIN	-127dB with 150Ω source
Unity gain (Pad in)	-90dBu
Low gain (5dB, Pad out)	-93dBu
Mid gain (30dB, Pad out)	-89dBu
Mic/Line Channel THD+N	20-20kHz, Direct Out @ unbalanced out
Unity gain (Pad in)	0.005% -86dBu @ 1kHz, 0dBu output
Low gain (5dB, Pad out)	0.003% -89dBu @ 1kHz, 0dBu output
Mid gain (30dB, Pad out)	0.004% -88dBu @ 1kHz, 0dBu output
RCA Line Inputs	Unbalanced
Input Sensitivity	-24 to +24dBu, nominal 0dBu
Trim	+/-24dB, recallable
Maximum Input Level	+18dBu
Input Impedance	>10kΩ
RCA channel Noise	-92dBu 20-20kHz
RCA channel THD+N	0.0035% -90dBu @ 1kHz, 0dBu output

Outputs

XLR Outputs	Balanced, Relay protected
Output Impedance	<75Ω
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-91dBu (muted, 20-20kHz)
RCA Line Outputs	Balanced, Relay protected
Output Impedance	<75Ω
Nominal Output	0dBu = 0dB meter reading
Maximum Output Level	+18dBu
Residual Output Noise	-94dBu (muted, 20-20kHz)
Digital Outputs	48kHz sampling rate
SPDIF	RCA, 600mV, coax terminated input 75Ω
AES3 2 ch XLR output	XLR, 2.5Vpp balanced terminated 110 Ω

System

Measured balanced XLR in to XLR out, 20-20kHz, minimum Gain, Pad out	
Dynamic Range	
System Signal to Noise	112dB
Frequency Response	-90dB
System peak level THD+N	0/-0.25dB @ 20Hz, 0/-0.5dB @ 20kHz
System Line level THD+ N	0.0055% -68dBu @ +17dBu output, 1kHz
	0.0022%, -84dBu @ +9dBu output, 1kHz
Headroom	
Internal operating Level	+18dB
dBFS Alignment	0dBu
Meter Calibration	+18dBu = 0dBFS (+22dBu at XLR output)
Meter Peak indication	0dB meter = -18dBFS (+4dBu at XLR out)
Meter Type	-3dBFS (+19dBu at XLR out) Fast (peak) response
Sampling Rate	
ADC	48kHz +/-100PPM
DAC	24-bit Delta-Sigma
Latency	24-bit Delta-Sigma
	1.49ms (local XLR in to XLR out)
	0.68ms (local XLR in to digital out)
USB Playback	
USB Record	2 channel, WAV, FLAC 44.1/48kHz
	2 channel, 44.1kHz / 16bit - WAV
I/O Port	
Card Options	64 channel bi-directional A&H ACE, MADI, Dante, ES, Waves, MMO
Operating Temperature	
	0 deg C to 35 deg C (32 deg F to 95 deg F)

Mains Power

GLD-112

100-240V AC, 50/60Hz, 110W max

Dimensions and Weights

GLD-112 Mixer

Unpacked	Width x Depth x Height
Packed in shipping box	999 x 577 x 159mm (39.4" x 22.7" x 6.2")
Unpacked weight	1193 x 730 x 290mm (47" x 28.6" x 11.4")
Packed weight	21Kg (46.3lbs)
	27Kg (59.5lbs)

Control

Touch Screen	
Faders	8.4" TFT, 800x600 resolution
GLD-112 Fader Strips	100mm motorised
Strip Display	3 Banks (12,8,8), 4 Layers = 112x strips
SoftKeys	LCD per strip, assignable backlight colours
MIDI	10 assignable
Network	MIDI In and Out
	TCP/IP Ethernet

Input Processing

48 Processing Channels

Mono = 1-44, Stereo = 45/46, 47/48

Trim	
Polarity	+/-24dB digital trim
High Pass Filter	Normal/Reverse
	12dB/octave 20Hz – 2kHz

Insert

Assign to any sockets, In/Out, +4dBu/-10dBV level

Delay

Up to 85ms, Bypass switch

Gate

Input global setting - ms, feet, meters, samples

Sidechain	
Sidechain Lo-Cut Filter	Self-key, In/Out, Sel 'listen'
Sidechain Hi-Cut Filter	12dB/octave, Freq 20Hz – 5kHz
Threshold	12dB/octave, Freq 120Hz – 20kHz
Depth	-72dBu to +12dBu
Attack	0 to 60 dB
Hold	50us to 300ms
Release	10ms to 5s
	10ms to 1s

PEQ

Type	
Frequency Range	4-Band fully parametric, +/-15dB
Analogue Ranges	Global setting for Inputs = 20-20kHz or 'Analogue'
Band 1	20-200Hz, 35-1kHz, 500-15kHz, 2k-20kHz

Band 2	Selectable LF Shelving, Bell, Hi-Pass
Band 3	Bell
Band 4	Bell
Bell Width	Selectable HF Shelving, Bell, Lo-Pass
Shelving Type	Non-constant Q, variable, 1.5 to 1/9th octave
Hi-Pass, Lo-Pass Filter	Classic Baxandall 12dB/octave

Compressor

Sidechain	
Sidechain Lo-Cut Filter	Self-key, In/Out, Sel 'listen'
Sidechain Hi-Cut Filter	12dB/octave, Freq 20Hz – 5kHz
Threshold	12dB/octave, Freq 120Hz – 20kHz
Ratio	-46dBu to 18dBu
Attack	1:1 to infinity
Release	300us – 300ms
Knee	100ms – 2s
Manual Types	Soft/Hard
Auto Types	Peak Manual, RMS Manual VocalAuto, OptoAuto, PunchBag

Channel Direct Out

Options	Individual Trim (per channel) Source, follow Fader, follow Mute (global for all)

Mix Processing

20 Mix Channels	
	Configure as mono/stereo Groups, Aux, Main, Matrix Mains = None, LR, LCR. LR+M(bus), LR+M(sum)

External Input

Trim	Assignable source
Polarity	+/-24dB digital trim Normal/Reverse

Insert

	Assign to any sockets, In/Out, +4dBu/-10dBV level

Delay

	Up to 170ms, Bypass switch Mix global setting - ms, feet, meters, samples

GEQ

Type	
Gain	28 bands 31Hz -16kHz
GEQ Fader Flip Mode	+/-12dB 2 overlapping frequency banks on strip faders

PEQ

Type	
Frequency Range	4-Band fully parametric, +/-15dB
Analogue Ranges	Global setting for Mixes = 20-20kHz or 'Analogue'
Band 1	20-200Hz, 35-1kHz, 500-15kHz, 2k-20kHz
Band 2	Selectable LF Shelving, Bell, Hi-Pass
Band 3	Bell
Band 4	Bell
Bell Width	Selectable HF Shelving, Bell, Lo-Pass
Shelving Type	Non-constant Q, variable, 1.5 to 1/9th octave
Hi-Pass, Lo-Pass Filter	Classic Baxandall 12dB/octave

Compressor

Sidechain	
Sidechain Lo-Cut Filter	Self-key, In/Out, Sel 'listen'
Sidechain Hi-Cut Filter	12dB/octave, Freq 20Hz – 5kHz
Threshold	12dB/octave, Freq 120Hz – 20kHz
Ratio	-46dBu to 18dBu
Attack	1:1 to infinity
Release	300us – 300ms
Knee	100ms – 2s
Manual Types	Soft/Hard
Auto Types	Peak Manual, RMS Manual VocalAuto, OptoAuto, PunchBag filter in/out with Sel ‘listen’

FX Processing

Internal FX	
Types	8x RackFX engine Reverbs, Delays, Modulators, Sub-harmonics,
Mode	Pitch Shift, Rotary Speaker, De-Esser Send>Return, Inserted, Daisy Chain FX

FX 'Short' Return Channels

8 Stereo dedicated returns	
Controls	Adds to inputs for up to 56 sources to the mix
FX Return PEQ	Fader, Pan, Mute, Routing to Grp, Aux, FX, Main Same as Input Channel PEQ

Talkback

Mode	Assignable source
High Pass Filter	Latched/Momentary, PAFL Dim option
Routing	12dB/octave, 20Hz-2kHz
Level Trim	To Groups, Aux, Main, Matrix +/-24dB

Signal Generator

Sine, Band-pass sweep	Sine, White Noise, Pink Noise, Band-pass Noise
Controls	20-20kHz
Routing	Level, Mute To Groups, Aux, Main, Matrix

RTA

Source	31-Bands 1/3 octave 20-20kHz
Peak Band Indication	Follows selected PAFL source Option to display dominant frequency