ALLEN&HEATH

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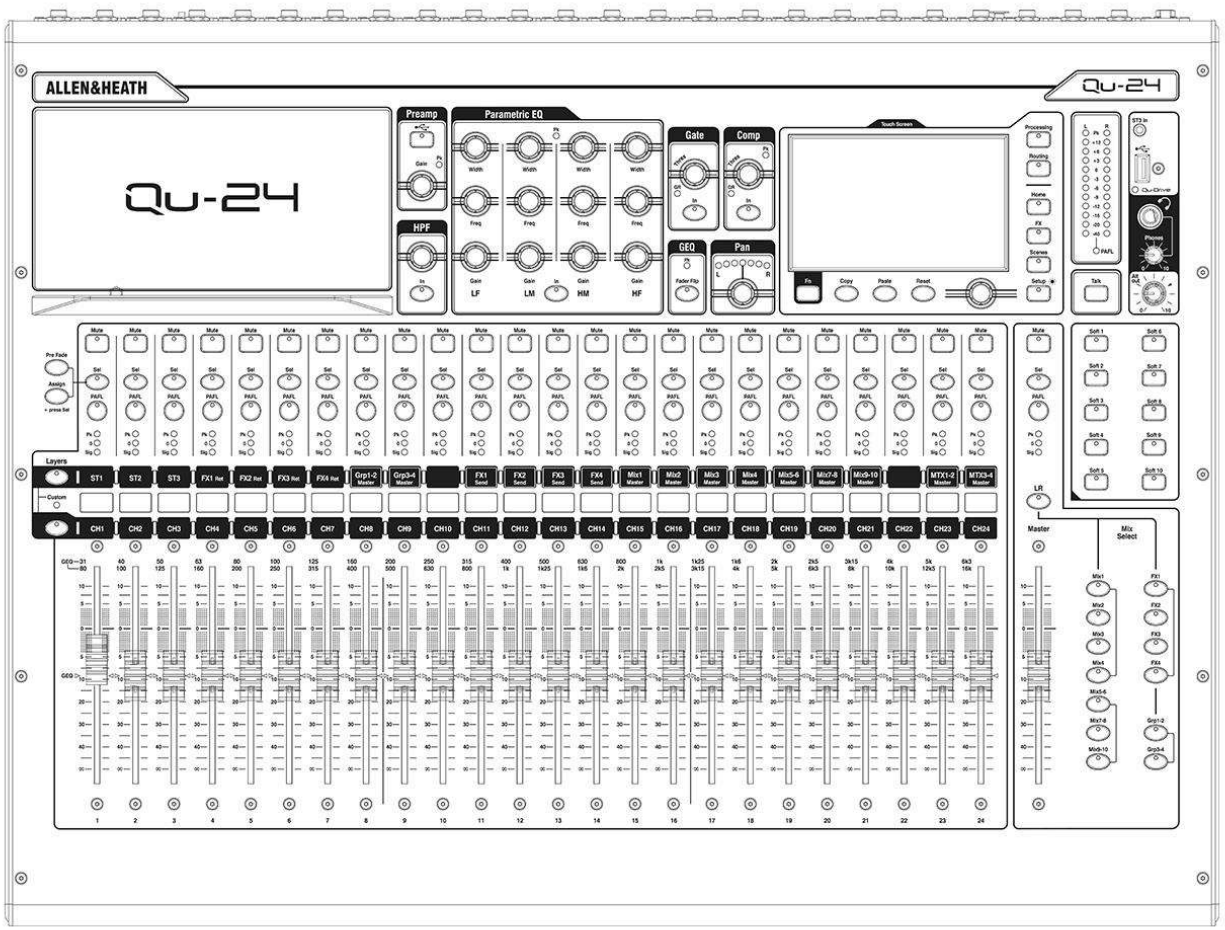
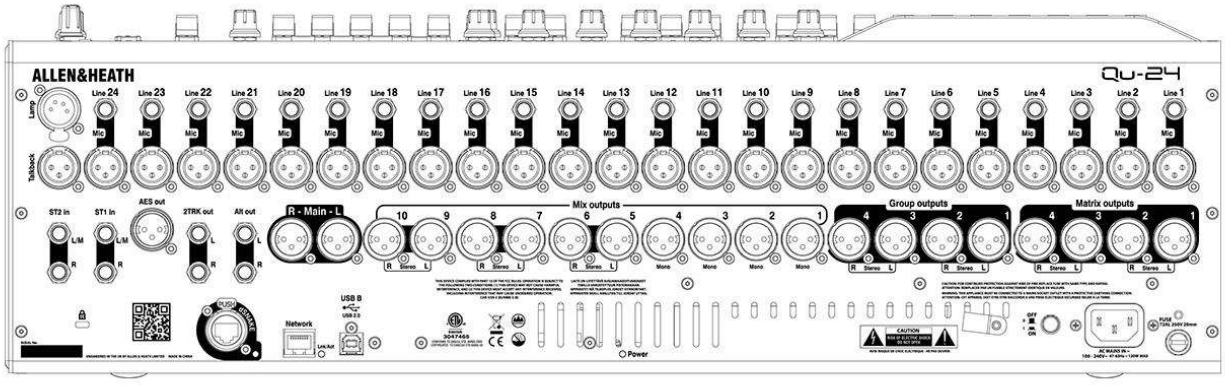
Qu-24

Technical Datasheet

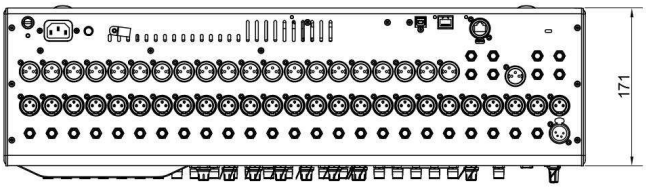
Overview

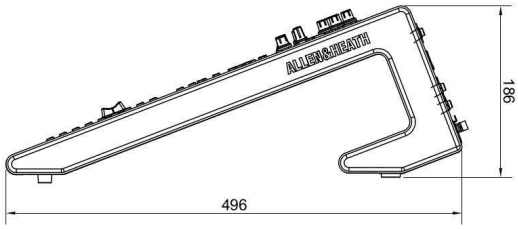
- 30 In / 24 Out Digital Mixer
- 5" colour touchscreen
- 24 Mono Inputs (TRS + XLR)
- 25 Motor Faders
- 3 Stereo Inputs (TRS)
- 4 Stereo FX with dedicated Sends and Returns
- 20 Mix Outputs (XLR)
- 2 Stereo Groups
- 2 Stereo Matrix Outs
- 10 SoftKeys
- Extra stereo outputs – AES digital, Alt Out, 2TRK out
- Talkback mic input
- dSNAKE Cat5 snake for remote audio using AR2412, AR84 or AB168
- 4 Mute Groups
- 4 DCA Groups
- AnaLOGIQ™ total recall analogue preamps
- Effects ported from the flagship iLive console
- Dedicated stereo FX return channels
- Master strip for quick access to mix levels and processing
- Input channel linking for stereo sources
- Input processing – Preamp, HPF, Gate, PEQ, Compressor, Delay
- Automatic Mic Mixing
- Output processing – PEQ, Graphic EQ, Compressor, Delay
- 31 Band Real Time Analysis and Spectrogram
- 5” (800x480 pixel) colour touch screen for quick control
- Motorised faders for sends on faders, GEQ fader flip and mix recall
- Quick copy and reset of processing, mixes and scenes
- 100 Scene memories
- Channel Safes, Global and per Scene Recall Filters
- FX, processing and channel User Libraries
- Qu-Drive for stereo and 18-track recording/playback to USB hard drive
- USB streaming to/from an Apple® Mac or Windows™ PC computer
- MIDI DAW Control driver for Mac (converts to HUI or Mackie Control)
- USB transfer of Scenes, Libraries, Shows
- User assignable Custom Layer
- Qu-Pad engineer’s mixing wireless remote app for iPad
- Qu-You personal monitoring app for iPhone, iPad, iPod Touch
- Compatible with the Allen & Heath ME personal mixing system
- User Permissions to restrict operator access
- Optimised fan-less airflow design for silent operation

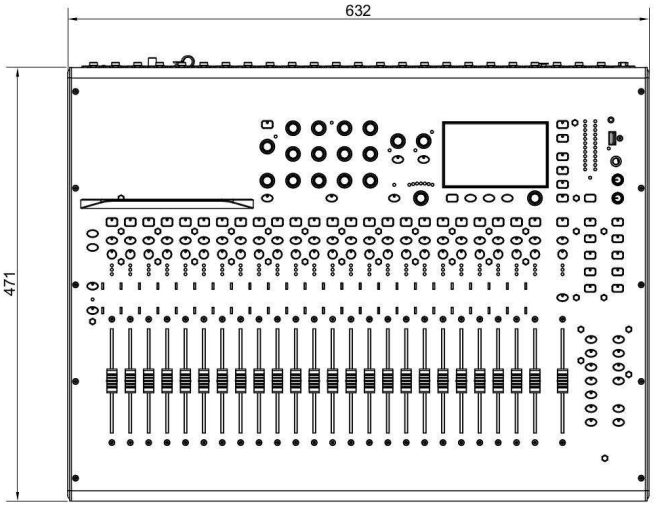

ALLEN&HEATH
Qu-24
Preamp
Parametric EQ
Gate
Comp
HPF
GEQ
Pan
Touch Screen
Processing
Routing
Home
FX
Scenes
Setup
Talk
Layers
ST1
ST2
ST3
FX1 Ret
FX2 Ret
FX3 Ret
FX4 Ret
Grp1-2
Grp3-4
FX1 Send
FX2 Send
FX3 Send
FX4 Send
Mix1 Master
Mix2 Master
Mix3 Master
Mix4 Master
Mix5-6 Master
Mix7-8 Master
Mix9-10 Master
MTX1-2 Master
MTX3-4 Master
LR Master
Mix Select

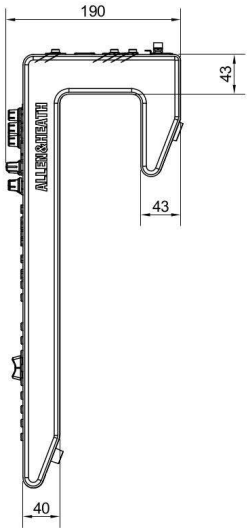

ALLEN&HEATH
Qu-24
Talkback
AES out
ST2 in
ST1 in
2TRK out
Alt out
R - Main - L
Mix outputs
Group outputs
Matrix outputs
USB B
Network
Power

Dimensions









A&E Specifications

The mixer shall be a desktop digital mixer with 24 mono and 3 stereo line input channels mixing to 20 mix outputs.

The surface shall include 25 moving faders with 3 layers, each layer having dedicated keys and indicators, giving access to input channels, output channel mixes, FX sends, FX returns, Main mix, and a customisable layer giving access to DCA masters and MIDI control as well as user-defined overview of channels.

Each fader strip shall have a dedicated PAFL, Mix, Select, and Mute button with indicators, a 3-LED multi-point meter, and coloured LED indicating fader assignment.

The mixer shall have a physical control per function following the select button for the input and output channels allowing for fast access to all key processing parameters.

The fader and rotary controls shall be of a high contrast colour to the mixer surface for excellent visibility during operation in low light conditions

Ability to assign channel on/off status to the current mix using the channel 'Mix' keys shall be provided.

All processing, Pre/Post fade routing and assignments of signals to mix send, FX send and Audio, DCA and Mute Groups shall be accessed and adjusted via a 5-inch colour touchscreen provided on the mixing surface.

A Channel Ducker shall be provided to reduce the level of selected channels when a designated channel is in use. This channel priority shall be available across all mono and stereo input channels and also channel groups.

An Automatic Mic Mixer shall be provided for automatic level control of up to 16 microphones using a constant gain sharing algorithm to dynamically adjust the gain for each mic in spoken word applications
10 user-assignable soft keys shall be provided for quick access to Mute Groups, DCA Mutes, Tap Tempo and Scene Recall. There shall also be dedicated keys for quick Copy/Paste/Reset of mixes and processing parameters.

The name and number of the current selected channel or mix shall be identified on screen when in the processing or routing pages.

Send levels to mixes shall be displayed and adjusted using the faders.

2 Stereo Audio Groups shall be available for sub mixing and the combined processing of selected input channels. These Audio Groups shall be switchable to function as additional Send Mixes when required.

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.

All signal delays in the system shall be adjustable in Milliseconds.

There shall be 4 stereo rack FX engines, 4 DCA groups and 4 Mute groups.

4 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.

A global source option for the direct out of each input channel shall be provided in the routing screen. The tap-off point shall 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 signal generator shall be provided 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.

Comprehensive input, output, and FX channel and Real Time Analysis metering shall be provided on-screen.

Real Time Analysis metering shall include a spectrogram to allow for accurate monitoring of audio energy across the frequency spectrum over time for the purpose of feedback detection and correction of room acoustics.

A default Mains to PAFL sub-mix shall be provided.

12-LED bar meters on the surface shall indicate the 3 Main mix buss levels, the PAFL signal shall override the LR meters accompanied by a PAFL-active indicator.

A Talkback facility shall be provided with the ability to send to any output mix with on screen status indication. An option to enable talkback latching and HPF shall be provided.

A quarter-inch jack socket for PAFL headphones output shall be provided, with an analogue output level control.

The mixer shall include stereo and 18-track recording/playback to optional USB hard drives. The format shall be 48 kHz/ 16 bit WAV.

The mixer shall play back stereo WAV files at 44.1 or 48 kHz and shall have a USB Type-A connector on the surface for recording, playback, data-transfer, archiving, and firmware updates to USB drive.

On the rear panel there shall be a Type-B USB connection following the high-speed USB 2.0 standard for multi-channel, bi-directional audio streaming of 32 out / 30 in and MIDI DAW control between the mixer and a computer.

A DAW transport control using popular DAW control protocols for computer shall be available via the touch-screen.

The mixer shall provide a Fast Ethernet (100 Mbit/s) port for Cat5 cable connection to a computer for MIDI over TCP/IP control of mixer parameters via a wireless router (access point) for live mixing control.

The mixing system shall include application software for Apple iOS touchscreen devices connected via a wireless network router to the LAN port and allow control of functions including the preamp gain, pad, and phantom power.

The application shall have a graphical representation of physical controls and indicators present on the surface including signal processing parameters and 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.

There shall be a local “dSNAKE” Ethernet audio expansion port with locking Ethercon connector, providing up to 30 input signals and 20 output signals, plus 40 personal mixing sends to be connected over a single cable ‘digital snake’ and allowing Remote Preamp control to an Allen & Heath AudioRack, or Allen & Heath ME Personal Mixing Systems.

Input and output channel processing and parameters in the mixer shall be saved on demand as a user library item for recall in other channels. Individual processing sections shall be save-able on demand as user library items for that type.

All library items shall be stored on board and archived with the show-file. Library items shall be transferrable to USB drive as portable data to be used in other systems.

The mixer shall provide the facility to save 100 scenes of the settings of the mixing system and these scenes shall be nameable.

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.

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.

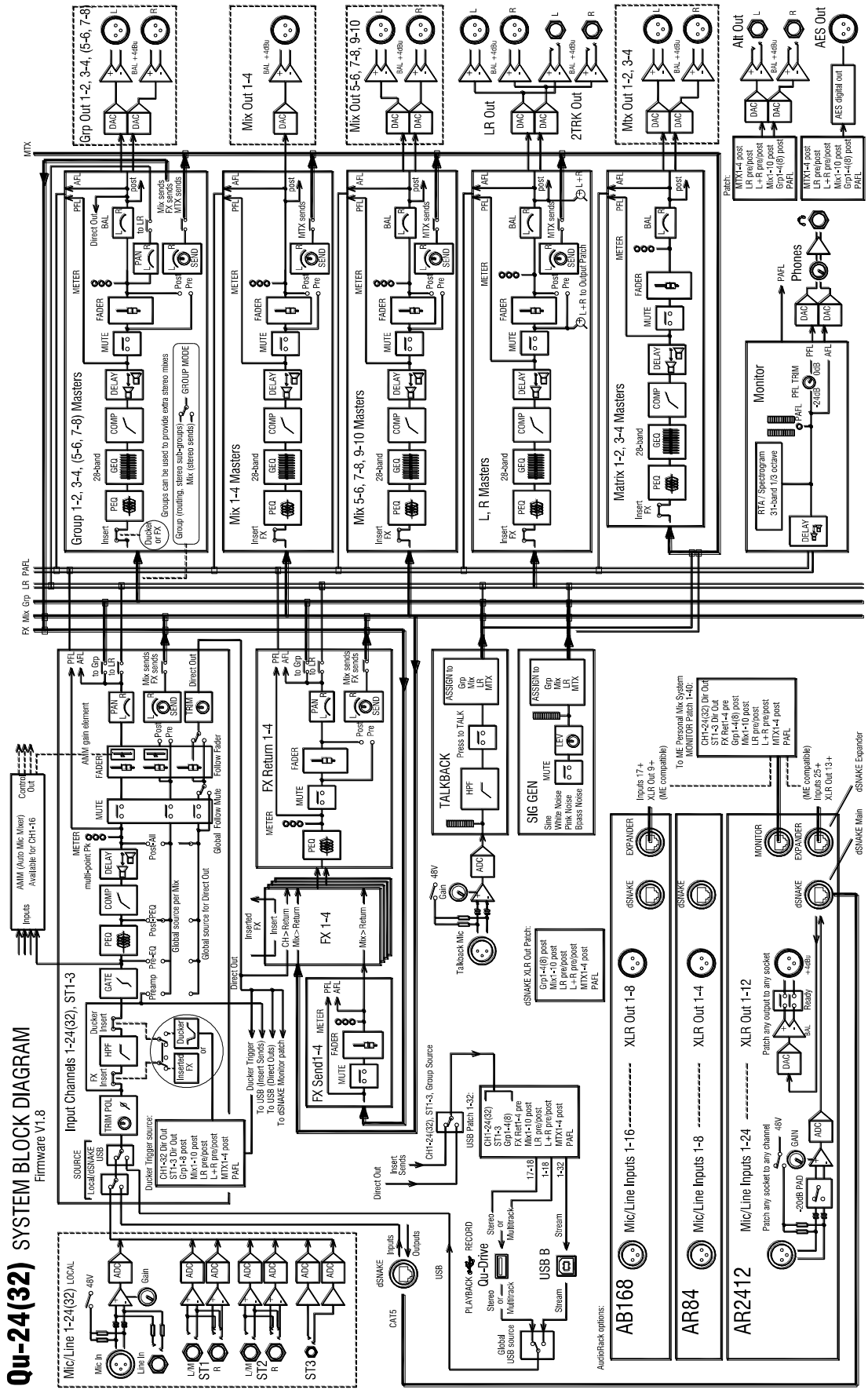
The mixing system shall periodically record all current settings and return the mixer to that state after reboot following a power-cycle.

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 Two Pole Push-Button switch shall be provided near the mains input.

The mixer shall have an optimised fan-less airflow design for silent operation.

Recommended operating temperature for the mixer shall be 5 to 35 degrees Celsius.

The mixer shall be the Allen&Heath Qu-24 Digital Mixer.


Qu-24(32) SYSTEM BLOCK DIAGRAM
Firmware V1.8
Mic/Line 1-24(32) LOCAL
Input Channels 1-24(32), ST1-3
Group 1-2, 3-4, (5-6, 7-8) Masters
Mix 1-4 Masters
Mix 5-6, 7-8, 9-10 Masters
L, R Masters
Matrix 1-2, 3-4 Masters
FX Return 1-4
FX Send1-4
FX 1-4
TALKBACK
SIG GEN
Monitor
RTA / Spectrogram
31-band 1/3 octave
Grp Out 1-2, 3-4, (5-6, 7-8)
Mix Out 1-4
Mix Out 5-6, 7-8, 9-10
LR Out
2TRK Out
Mtx Out 1-2, 3-4
Alt Out
AES Out
Phones
AB168
AR84
AR2412
Mic/Line Inputs 1-16
Mic/Line Inputs 1-8
Mic/Line Inputs 1-24
XLR Out 1-8
XLR Out 1-4
XLR Out 1-12
Qu-Drive
USB B
dSNAKE
AudioRack options:

Mixer Specifications

Inputs

Mic/Line Inputs	Balanced, XLR and 1/4" TRS jack, fully recallable
Input Sensitivity (XLR / TRS)	-60 to +5dBu / -50 to +15dBu
Analogue Gain	-5 to +60dB, 1dB steps
Maximum Input Level (XLR / TRS)	+19dBu / +29dBu
Input Impedance (XLR / TRS)	>5kΩ / >10 kΩ
THD+N, Unity gain 0dB	0.0005% -89 dBu (20-20kHz, Direct Out @0dBu 1kHz)
THD+N, Mid gain +30dB	0.001% -83dBu (20-20kHz, Direct Out @0dBu 1kHz)

Stereo Line Inputs	
ST1, ST2 connector	Balanced, 1/4" TRS jack, half-normalled
ST3 connector	Unbalanced, stereo 3.5mm Mini Jack
Input Sensitivity (ST1, ST2 / ST3)	Nominal +4dBu / 0dBu
Trim	+/-24dB
Maximum Input Level (ST1,ST2 / ST3)	+22dBu / +18dBu
Input Impedance	>7kΩ

Outputs

Mix1-10 and LR Out	Balanced, XLR

Group and Matrix Out	
Output Impedance	<75Ω
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-90 dBu (muted, 20-20kHz)

Stereo Alt Out & 2Trk Out	Balanced, 1/4" TRS jack
Source (Alt Output / 2Trk Output)	Patchable / LR post-fade
Output Impedance	<75Ω
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-90 dBu (muted, 20-20kHz)

AES Digital Output	2 channel, 48kHz sampling rate, XLR 2.5Vpp balanced terminated 110Ω

dSNAKE	
Inputs	Remote source for CH1-32, ST1, ST2, ST3
Outputs	Patchable from Mix1-10, LR, Grp1-8, MTX1-4 Compatible with AudioRacks AR2412, AR84, AB168 Compatible with ME personal mixing system

System	Measured balanced XLR in to XLR out, 0dB gain, 0dBu input
Dynamic Range	112 dB
Frequency Response	+0/-0.5dB 20Hz to 20kHz
Headroom	+18dB
Internal operating Level	0dBu +18dBu = 0dBFS (+22dBu at XLR output)
dBFS Alignment	0dB meter = -18dBFS (+4dBu at XLR out)
Meter Calibration	-3dBFS (+19dBu at XLR out), multi-point sensing
Meter Peak indication	

Control

Faders	100mm motorised
Touch Screen	5" TFT, 800x480 resolution
SoftKeys	10
Mute Groups	4
DCA Groups	4
Network	TCP/IP Ethernet for MIDI and iPad app

Input Processing	
Source	
CH1-32	Local, dSNAKE, or USB
ST1, ST2	Local, dSNAKE, or USB
ST3	Local, dSNAKE, or USB Stereo
USB Global Source	Qu-Drive or USB B Streaming
Stereo Linking	Odd/even input pairs
Parameters linked	EQ, dynamics, insert, delay, assignments, sends
Link options	Preamp, polarity, sidechains, fader/mute, pan
Polarity	Normal/Reverse
High Pass Filter	12dB/octave 20Hz – 2kHz
Insert	Assign FX1-4 into Input channels
Delay	Up to 85ms
Gate	Self-key Sidechain
Threshold / Depth	-72dBu to +18dBu / 0 to 60dB
Attack / Hold / Release	50us to 300ms / 10ms to 5s / 10ms to 1s
PEQ	4-Band fully parametric, 20-20kHz, +/-15dB
Band 1	Selectable LF Shelving (Baxandall), Bell
Band 2, Band 3	Bell
Band 4	Selectable HF Shelving (Baxandall), Bell
Bell Width	Non-constant Q, variable, 1.5 to 1/9th octave
Compressor	Self-key Sidechain
Threshold / Ratio	-46dBu to 18dBu / 1:1 to infinity
Attack / Release	300us – 300ms / 100ms - 2s
Knee	Soft/Hard
Types	Peak Manual, RMS Manual, SlowOpto, PunchBag

Mix Processing	
Channel Direct Out to USB	Follow Fader, follow Mute (global options)
Source select (global)	Post-Preamp, Pre-EQ, Post-EQ, Post-Delay
Insert	Assign FX into Mix channels
Delay	Up to 170ms

Meter Signal indication	-48dBFS (-26dBu at XLR out)
Meter Type	Fast (peak) response
Sampling Rate	48kHz +/-100PPM
ADC, DAC	24-bit Delta-Sigma
Latency	1.2 ms (local XLR in to XLR out)
	0.7 ms (local XLR in to AES out)
Operating Temperature Range	0 deg C to 35 deg C (32 deg F to 95 deg F)
Mains Power	100-240V AC, 50/60Hz
Maximum Power Consumption	120W

USB Audio

Qu-Drive	USB A
Stereo Record	2 channel, WAV, 48kHz, 24-bit, patchable
Stereo Playback	2 channel, WAV, 44.1 or 48kHz, 16 or 24-bit, to ST3
Multitrack Record	18 channel, WAV, 48kHz, 24-bit, patchable
Multitrack Playback	18 channel, WAV, 48kHz, 24-bit
USB Audio Streaming	USB B, Core Audio compliant
Send (upstream)	32 channel, WAV, 48kHz, 24-bit
Return (downstream)	30 channel, WAV, 48kHz, 24-bit

Dimensions & Weights

Qu-24 Mixer	Width x Depth x Height
Desk mounted	632 x 500 x 186 mm (24.9" x 19.7" x 7.4")
Packed in shipping box	670 x 790 x 350 mm (26.4" x 31.1" x 13.8")
Unpacked weight	14 kg (31 lbs)
Packed weight	18 kg (40 lbs)

GEQ	Constant 1/3 oct, 28 bands 31Hz-16kHz, +/-12dB Gain
PEQ	4-Band fully parametric, 20-20kHz, +/-15dB
Band 1	Selectable LF Shelving (Baxandall), Bell
Band 2, Band 3	Bell
Band 4	Selectable HF Shelving (Baxandall), Bell
Bell Width	Non-constant Q, variable, 1.5 to 1/9th octave
Compressor	Self-key Sidechain
Threshold / Ratio	-46dBu to 18dBu / 1:1 to infinity
Attack / Release	300us – 300ms / 100ms - 2s
Knee	Soft/Hard
Types	Peak Manual, RMS Manual, SlowOpto, PunchBag
FX	
Internal FX	4x RackFX engine, Send>Return or Inserted
Audio Tools	
Types	Reverbs, Delays, Gated Reverb, ADT Chorus, Symphonic Chorus, Phaser, Flanger
4 dedicated Stereo FX returns	Fader, Pan, Mute, Routing to Mix/LR, 4-Band PEQ
PAFL	PFL or stereo in-place AFL, 0 to -24dB Trim, 85ms Delay
Talkback	Assignable to any mix, 12dB/oct HPF
Signal Generator	Assignable to any mix, Sine / White/Pink/Band-pass Noise
RTA	31-Bands 1/3 octave 20-20kHz, follows PAFL source