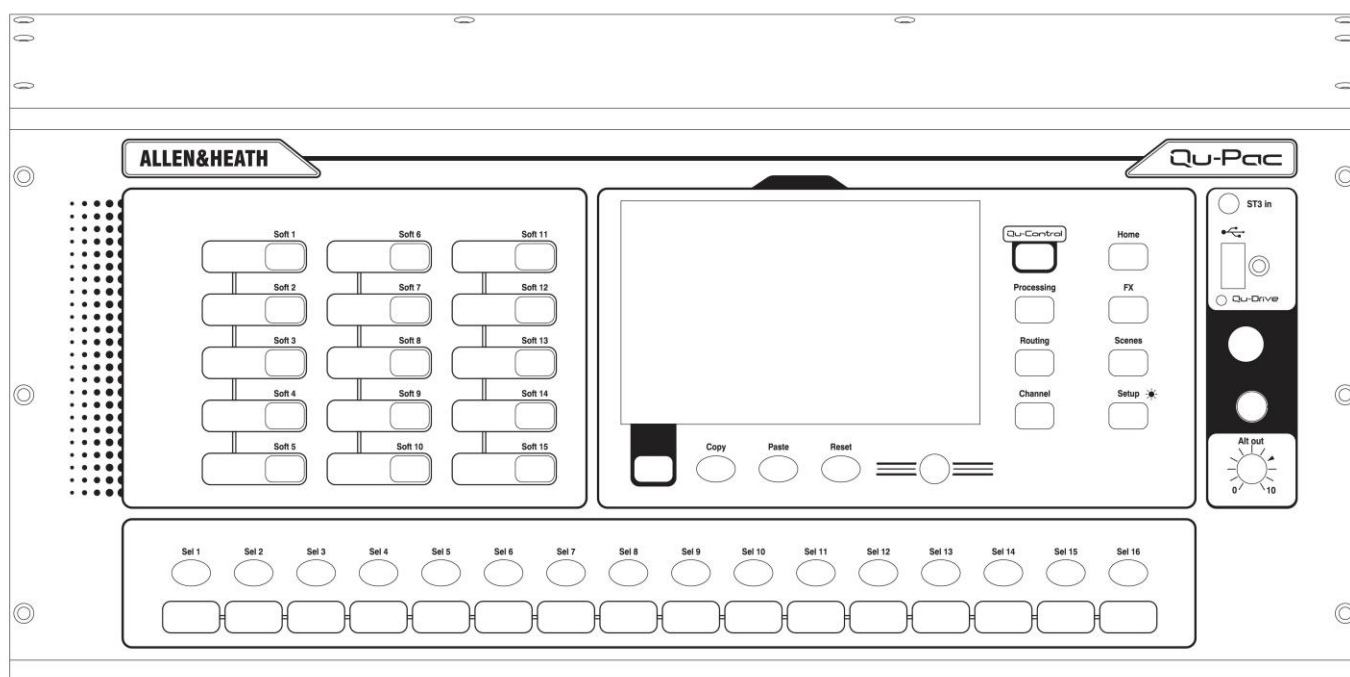
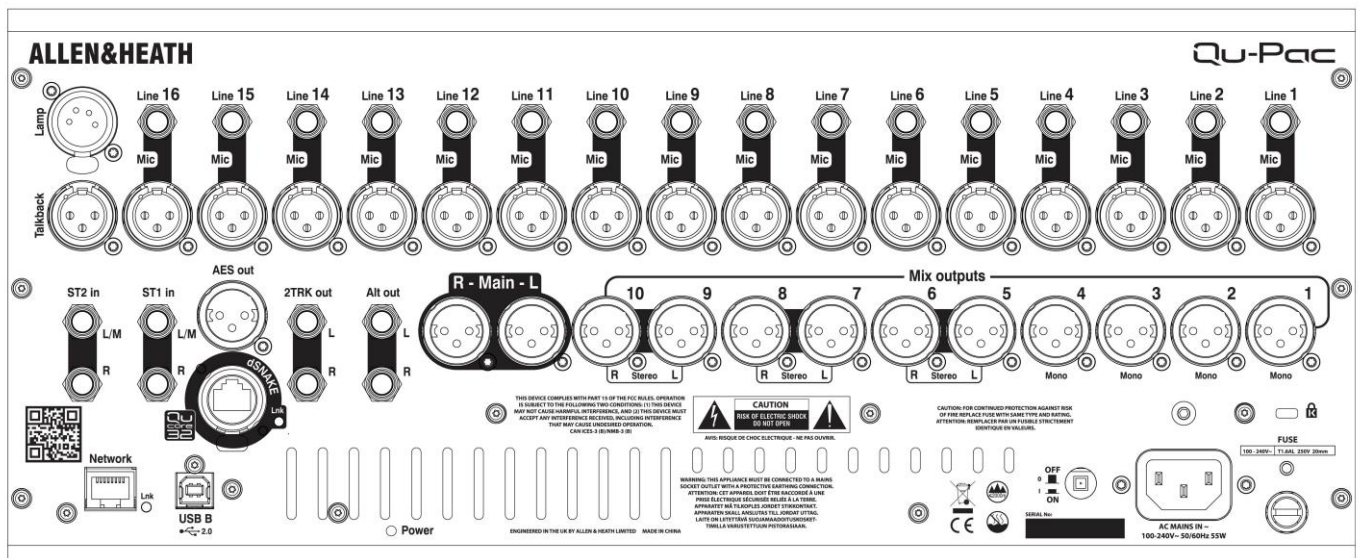


## Technical Datasheet

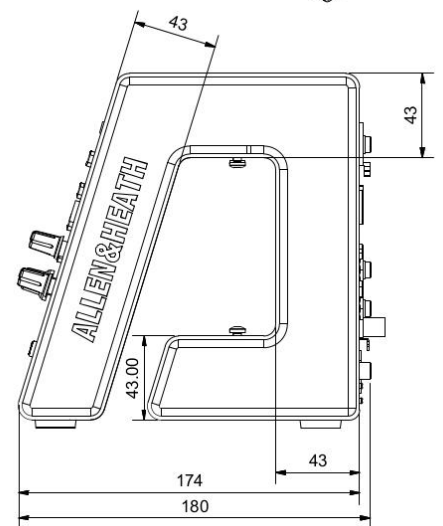
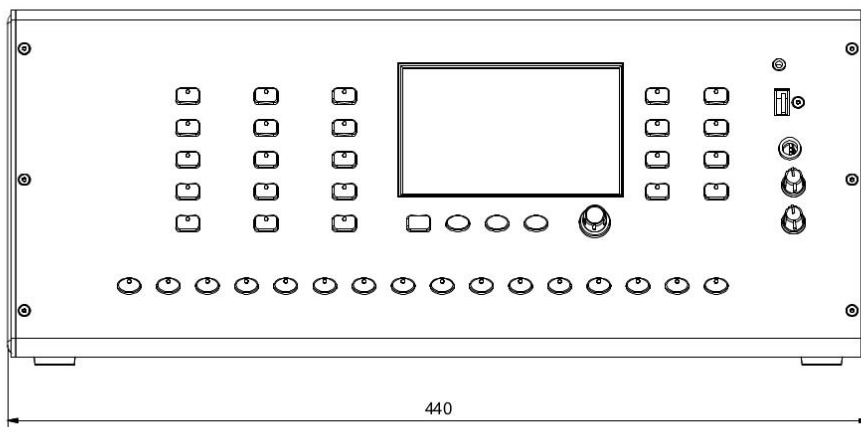
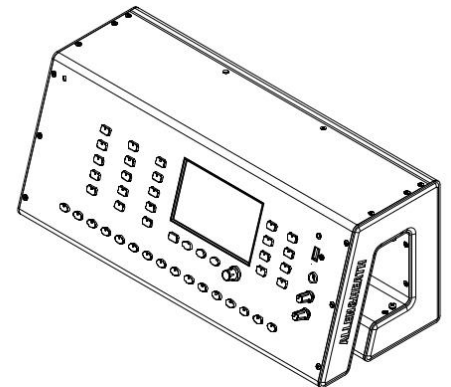
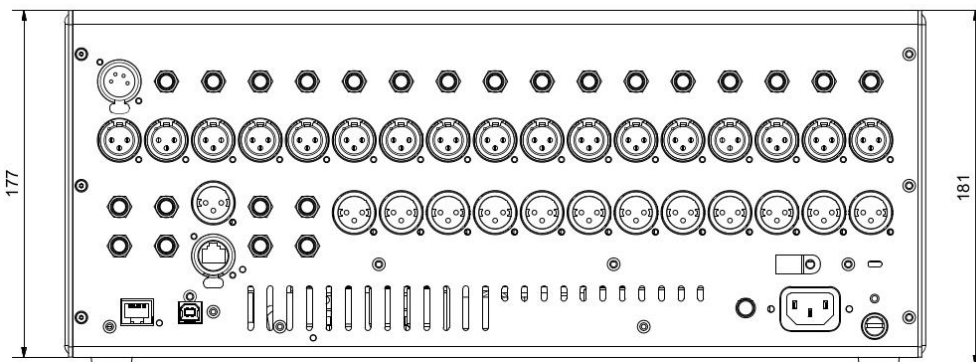
### Overview

- Rack-mountable Digital Mixer for Live, Studio and Installation
- 5" (800x480 pixel) colour touch screen for quick control
- 16-32 Mono Inputs (TRS + XLR)
- 3 Stereo Inputs (TRS)
- 4 stereo FX with dedicated Sends and Returns
- 12-24 Mix Outputs (XLR)
- 4 Stereo Groups
- 2 Stereo Matrix Outs
- Customizable Qu-Control screen
- 15 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
- Output processing – PEQ, Graphic EQ, Compressor, Delay
- 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





## Dimensions



## A&E Specifications

The mixer shall be a compact, rack-mountable digital mixing solution without physical fader strips, but shall include 16 mono and 3 stereo line input channels mixing to 12 mix outputs and 4 stereo rack FX engines, 4 DCA groups and 4 Mute groups. All output mix channels shall contain Insert, Parametric EQ, Graphic EQ, Compressor, and Delay. Signal delays in the system shall be adjustable in Milliseconds.

Pre/Post fader routing and assignments, processing of signals, level sends, FX sends, DCA and Mute Groups shall be accessed and adjusted via a 5-inch colour touchscreen provided on front panel of the mixer or from Apple iOS touchscreen devices.

There shall be a Channel page on the touch screen replacing physical fader strips with different tabs providing access to Input Channels, FX, Groups, Mixes, DCA and Mute Groups and control of level, mute, pan and PAFL for the selected channel and a fully-customizable page giving access to channels and settings tailored to the user and the specified application. Several 'widgets' shall be assigned to this page, these shall include channel levels, mutes and assignment on/off switches and shall be arranged to suit the user requirement.

The front panel of the mixer shall include 16 custom select keys and indicators, giving access to any combination of user defined input channels, output channel mixes, FX sends, FX returns or Main mix and also 15 assignable SoftKeys giving access to DCA mute masters and MIDI control as well as Tap Tempo, Instant Scene Recall/Navigation or PAFL Clear.

There shall also be dedicated keys for quick Copy/Paste/Reset of mixes and processing parameters.

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

The mixing system shall include application software for Apple iOS touchscreen devices connecting via a wireless network router to an Ethernet LAN port.

The application shall allow control of functions including the preamp gain, phantom power, mix channel levels and shall have a graphical representation of physical controls and indicators including signal processing parameters and shall provide control of 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 and the application software shall provide signal metering and processing threshold indication when online including the Real Time Analyser.

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 monitoring 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 RTA metering shall be provided on-screen.

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.

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

A default Mains to PAFL sub-mix and a stereo 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/ 24 bit WAV. The mixer shall also play back stereo WAV files at 44.1 or 48 kHz and 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 / 32 in and MIDI DAW control between the mixer and a computer.

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 wireless router (access point) for MIDI over TCP/IP control of mixer parameters via Apple iOS touchscreen devices for live mixing control.

There shall be a local "dSNAKE" Cat5 Ethernet audio expansion port with locking Ethercon connector, providing up to 38 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.

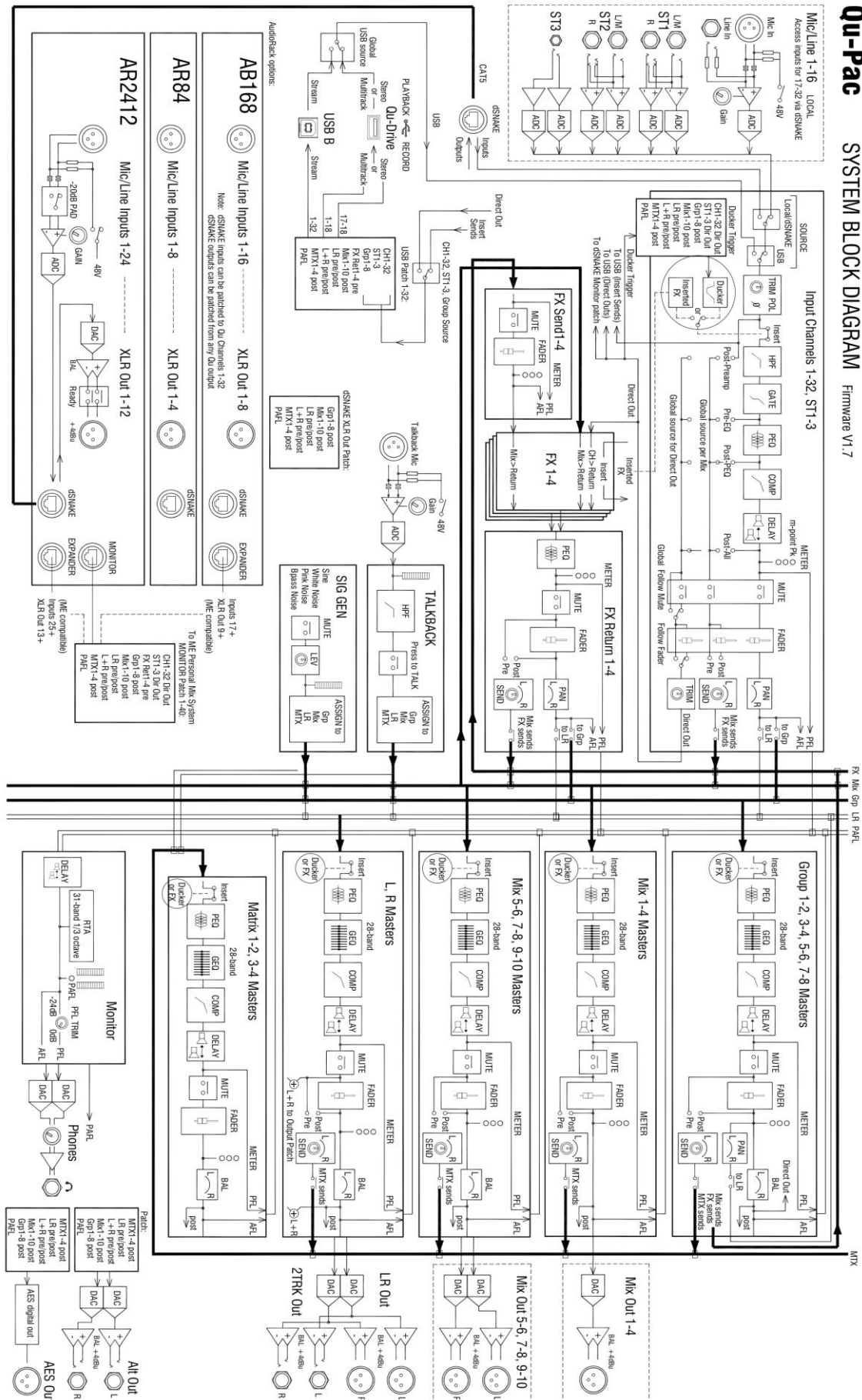
An option shall be provided for password protection for log-in of several users with different levels of system access and permissions. A particular scene may be chosen to be recalled per change of user-login if desired.

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

The mixer shall have a built in power supply accepting AC mains voltages of 100~240V, 50/60 Hz, 55W 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. Recommended operating temperature for the mixer shall be 5 to 35 degrees Celsius.

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

# **Qu-Pac** SYSTEM BLOCK DIAGRAM Firmware V1.7



## Mixer Specification

### Inputs

#### Mic/Line Inputs

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

#### Stereo Line Inputs

ST1, ST2 connector	Balanced, 1/4" TRS jack, half normalised
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	>7k $\Omega$

### Outputs

#### Mix1-10 and LR Out

Balanced, XLR

#### Group and Matrix Out

Output Impedance	<75 $\Omega$
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-90 dBu (muted, 20-20kHz)

#### Stereo Alt Out & 2Trk Out

Source (Alt Output / 2Trk Output)	Balanced, 1/4" TRS jack
	Patchable / LR post-fade
Output Impedance	<75 $\Omega$
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 110 $\Omega$

### 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

Dynamic Range	Measured balanced XLR in to XLR out, 0dB gain, 0dBu input
Frequency Response	112 dB
Headroom	+0/-0.5dB 20Hz to 20kHz
Internal operating Level	+18dB
dBFS Alignment	0dBu +18dBu = 0dBFS (+22dBu at XLR output) 0dB meter = -18dBFS (+4dBu at XLR out)
Meter Calibration	-3dBFS (+19dBu at XLR out), multi-point sensing
Meter Peak indication	-48dBFS (-26dBu at XLR out)
Meter Signal indication	

### Control

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

Parameters linked	Odd/even input pairs EQ, dynamics, insert, delay, assignments, sends Preamp, polarity, sidechains, fader/mute, pan
Link options	

### Polarity

Normal/Reverse

### High Pass Filter

12dB/octave 20Hz – 2kHz

### Insert

Assign FX1-4 into Input channels

### Delay

Up to 85ms

### Gate

Threshold / Depth	Self-key Sidechain -72dBu to +18dBu / 0 to 60dB
Attack / Hold / Release	50us to 300ms / 10ms to 5s / 10ms to 1s

### PEQ

Band 1	4-Band fully parametric, 20-20kHz, +/- 15dB
Band 2, Band 3	Selectable LF Shelving (Baxandall), Bell
Band 4	Selectable HF Shelving (Baxandall), Bell
Bell Width	Non-constant Q, variable, 1.5 to 1/9th octave

### Compressor

Threshold / Ratio	Self-key Sidechain -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

Source select (global)	Follow Fader, follow Mute (global options) Post-Preamp, Pre-EQ, Post-EQ, Post-Delay
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### Insert

Assign FX into Mix channels

### Delay

Up to 170ms

### GEQ

Constant 1/3 oct, 28 bands 31Hz-16kHz, +/-12dB Gain

Meter Type	Fast (peak) response	<b>PEQ</b>	4-Band fully parametric, 20-20kHz, +/- 15dB
Sampling Rate	48kHz +/-100PPM	Band 1	Selectable LF Shelving (Baxandall), Bell
ADC, DAC	24-bit Delta-Sigma	Band 2, Band 3	Bell
Latency	1.2 ms (local XLR in to XLR out) 0.7 ms (local XLR in to AES out)	Band 4	Selectable HF Shelving (Baxandall), Bell
		Bell Width	Non-constant Q, variable, 1.5 to 1/9th octave
		<b>Compressor</b>	Self-key Sidechain
Operating Temperature Range	0 deg C to 35 deg C (32 deg F to 95 deg F)	Threshold / Ratio	-46dBu to 18dBu / 1:1 to infinity
Mains Power	100-240V AC, 50/60Hz	Attack / Release	300us – 300ms / 100ms - 2s
Maximum Power Consumption	150W	Knee	Soft/Hard
		Types	Peak Manual, RMS Manual, SlowOpto, PunchBag
<b>USB Audio</b>			
<b>Qu-Drive</b>	USB A		
Stereo Record	2 channel, WAV, 48kHz, 24-bit, patchable	<b>FX</b>	
Stereo Playback	2 channel, WAV, 44.1 or 48kHz, 16 or 24-bit, to ST3	Internal FX	4x RackFX engine, Send>Return or Inserted
Multitrack Record	18 channel, WAV, 48kHz, 24-bit, patchable		
Multitrack Playback	18 channel, WAV, 48kHz, 24-bit	<b>Audio Tools</b>	
		Types	Reverbs, Delays, Gated Reverb, ADT Chorus, Symphonic Chorus, Phaser, Flanger
<b>USB Audio Streaming</b>	USB B, Core Audio compliant	4 dedicated Stereo FX returns	Fader, Pan, Mute, Routing to Mix/LR, 4-Band PEQ
Send (upstream)	32 channel, WAV, 48kHz, 24-bit		
Return (downstream)	32 channel, WAV, 48kHz, 24-bit		
		<b>PAFL</b>	PFL or stereo in-place AFL, 0 to -24dB Trim, 85ms Delay
<b>Dimensions &amp; Weights</b>		<b>Talkback</b>	Assignable to any mix, 12dB/oct HPF
	Width x Depth x Height	<b>Signal Generator</b>	Assignable to any mix, Sine / White/Pink/Band-pass Noise
Desk mounted	440 x 174 x 181 mm (17.3" x 6.9" x 7.1")	<b>RTA</b>	31-Bands 1/3 octave 20-20kHz, follows PAFL source
Rack mounted	483 x 174 x 177 mm (19" x 18.6" x 7") 4U		
Packed in shipping box	620 x 310 x 310 mm (24.4" x 12.2" x 12.2")		
Unpacked weight	6.6 kg (14.5 lbs)		