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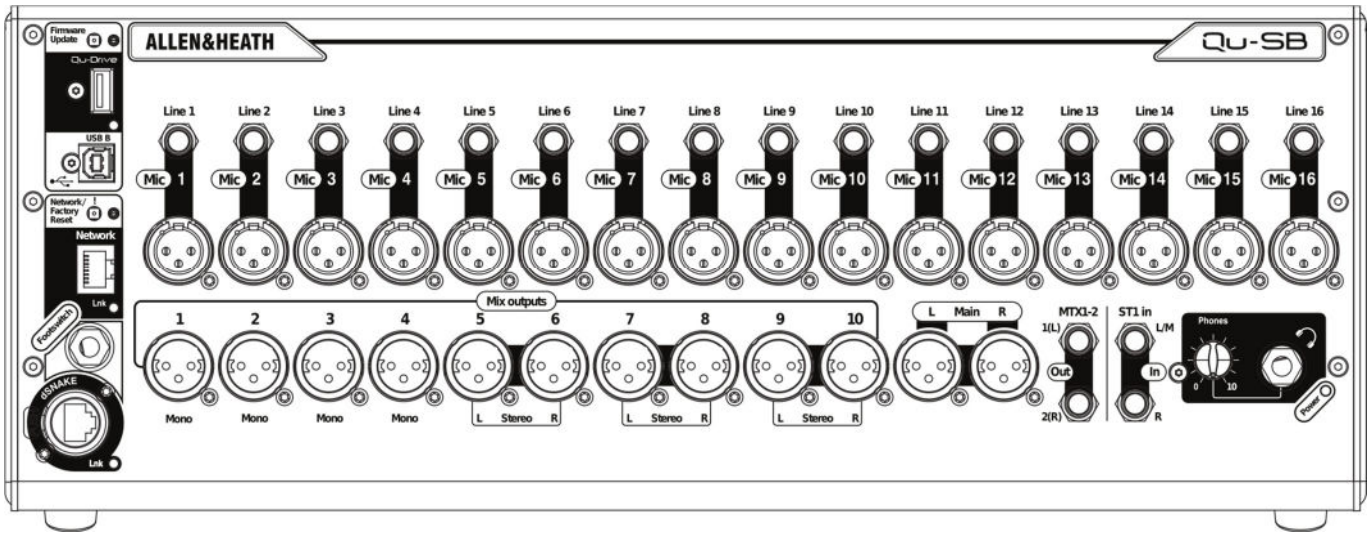
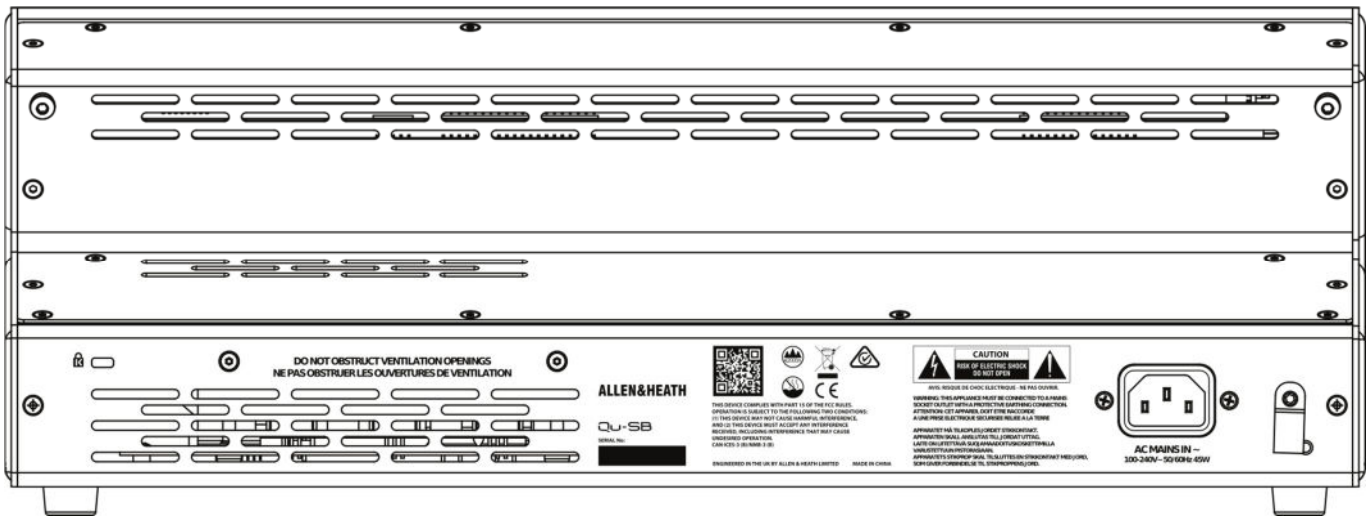
Qu-SB

Technical Datasheet

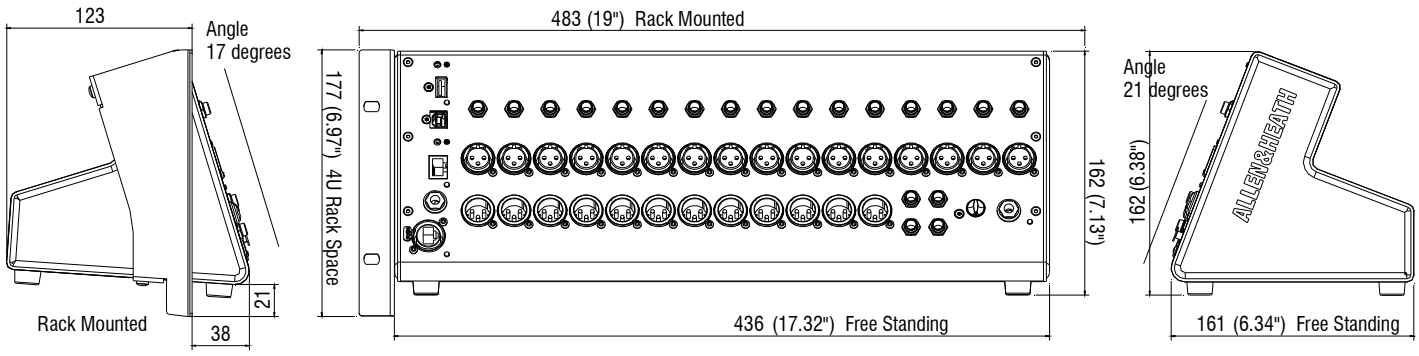
Overview

- Rack-mountable Digital Mixer for Live, Studio and Installation
- 16-32 Mono Inputs (TRS + XLR)
- AnaLOGIQ™ total recall analogue preamps
- 1 Stereo Input (TRS)
- 12-24 Mix Outputs (XLR)
- Stereo Matrix Out
- 4 stereo FX with dedicated Sends and Returns
- 4 Stereo Groups
- 4 Mute Groups
- 4 DCA Groups
- dSNAKE over Cat5 for remote audio
- Compatible with Allen & Heath ME personal mixing system
- Effects ported from the flagship iLive console
- Automatic Mic Mixing
- Qu-Pad engineer's mixing wireless remote app for iPad
- User Permissions to restrict operator access
- Master strip for quick access to mix levels and processing
- Input channel linking for stereo sources
- Input Preamp, HPF, Gate, PEQ, Compressor, Delay processing
- Output PEQ, Graphic EQ, Compressor, Delay processing
- 31 Band Real Time Analysis
- Quick copy and reset of processing, mixes and scenes
- Channel Safes, Global and per Scene Recall Filters
- FX, processing and channel User Libraries
- 100 Scene memories
- USB transfer of Scenes, Libraries, Shows
- Qu-Drive for stereo and 18-track recording/playback to USB devices
- USB streaming to/from an Apple® Mac or Windows™ PC computer
- MIDI DAW Control driver for Mac (converts to HUI or Mackie Control)
- Qu-You personal mixing app for iPhone, iPad, iPod Touch
- Optimised fan-less airflow design for silent operation





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 1 stereo line input channels mixing to 12 mix outputs, 4 stereo FX engines, 4 DCA groups and 4 Mute groups.

It shall provide a Fast Ethernet (100 Mbit/s) port for Cat5 connection to a wireless router or access point for MIDI over TCP/IP control of mixer parameters via Apple iOS touchscreen devices for live mixing control.

The entire mix system including Pre/Post fader routing assignments, Signal Processing, Mix and FX sends, DCA and Mute Groups shall be accessed and adjusted using application software on Apple touchscreen devices connecting via a wireless network router (access point) to the Ethernet LAN port.

There shall be a screen in the application software providing faders for Input Channels, FX, Groups, Mixes, DCA and Mute Groups and control of level, mute, pan and PAFL for the selected channel.

The application software shall allow control of functions including preamp gain, phantom power, mix buss levels and shall have a graphical representation of physical controls, indicators and signal processing parameters and provide control of channel processing including Parametric EQ, Graphic EQ, Compressor and Delay.

The application shall also provide Routing assignments and level adjustments of input signals to all output mix busses, processing and signal metering and indication including a Real Time Audio Analyser.

4 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.

The application software shall include select keys and indicators, giving access to any combination of user-defined input or output channels, FX sends and returns or Main mix and also assignable SoftKeys to access DCA mutes, MIDI control, Tap Tempo, Instant Scene Recall/Navigation or PAFL Clear.

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

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 selected from the following positions in the signal 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.

There shall be a local “dSNAKE” audio expansion port on the mixer with locking Ethercon connector, providing up to 38 input signals, 20 output signals and Remote Preamp control to an Allen & Heath AudioRacks, plus 40 dedicated sends to Allen & Heath ME Personal Mixing Systems to be connected via a single Cat5 ‘digital snake’ cable.

Direct outputs shall be assignable via the application’s soft patch bay to any physical output socket interface channel or ME monitoring channel.

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.

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 signal generator shall be available, with on-screen assignment and the ability to send a variable level signal of the following types to any output mix: 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.

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.

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.

There shall be a Type-B USB connection on the front panel 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 application software.

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

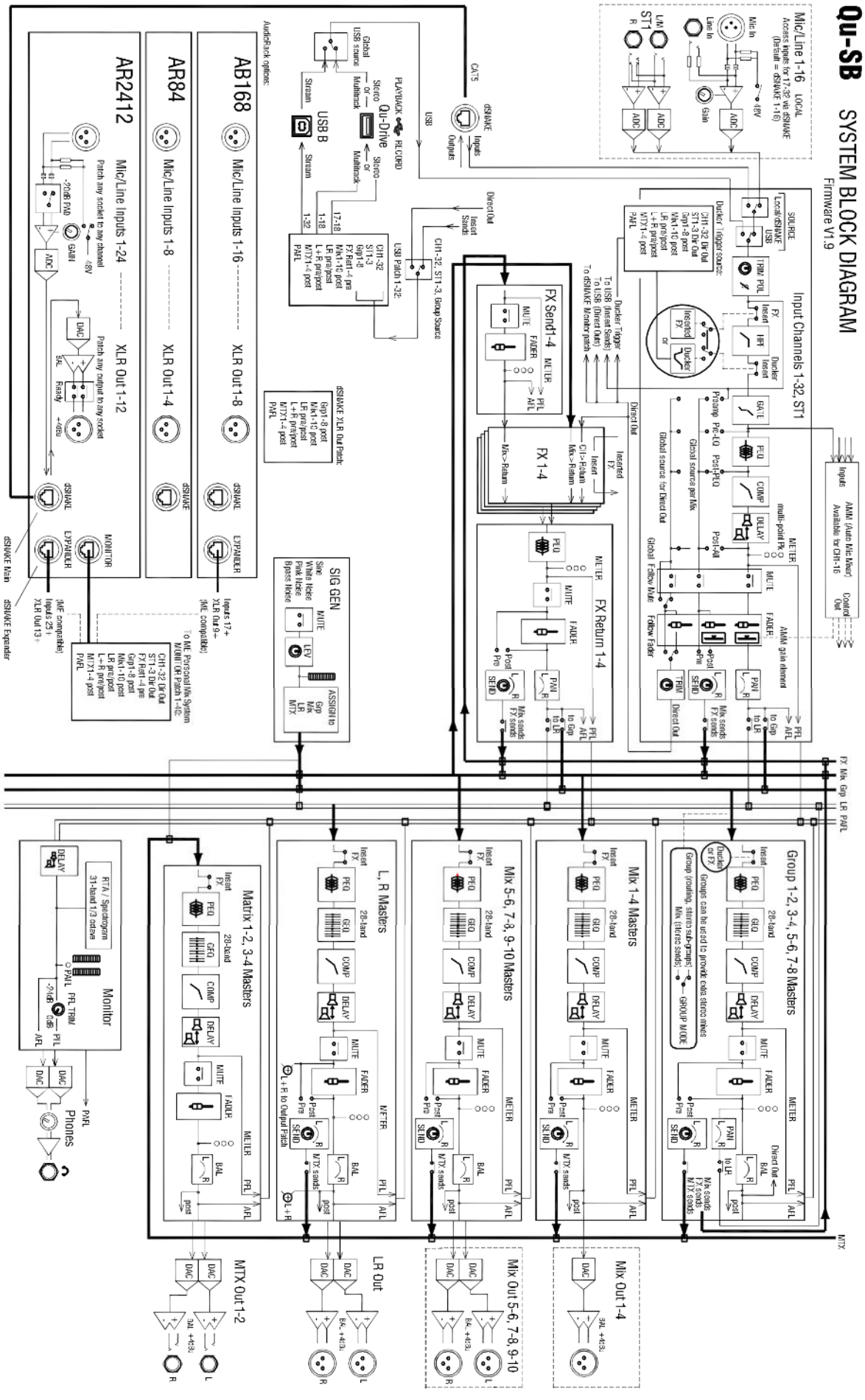
The mixer shall have a built in power supply accepting AC mains voltages of 100~240V, 50/60 Hz, 55W max via an earthed 3-pin IEC male connector mounted on the rear chassis.

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-SB Digital Mixer.

Block Diagram



Mixer Specification

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, connector	Balanced, 1/4" TRS jack, half normalled
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
Output Impedance	<75Ω
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-90 dBu (muted, 20-20kHz)

Mtx 1-2	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)

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	-48dBFS (-26dBu at XLR out)
Meter Signal indication	Fast (peak) response
Meter Type	48kHz +/-100PPM
Sampling Rate	24-bit Delta-Sigma
ADC, DAC	

Control

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	Local, dSNAKE, or USB
ST2, ST3	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
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

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	150W

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)	32 channel, WAV, 48kHz, 24-bit

Dimensions & Weights

	Width x Depth x Height
Desk mounted/stagebox use	435.5 x 174.5 x 161 mm (17.2" x 6.9" x 6.4")
Rack mounted	483 x 135.4 x 177 mm (19" x 6.9" x 7") 4U
Packed in shipping box	550 x 270 x 270 mm (21.7" x 10.6" x 10.6")
Unpacked weight	5.7 kg (12.7 lbs)

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