Qu-16

RACKMOUNTABLE DIGITAL MIXER

FOR LIVE, STUDIO AND INSTALLATION

- 16 MONO INPUTS
- USB AUDIO STREAMING
- 3 STEREO INPUTS
- DAW MIDI CONTROL
- 4 STEREO FX RETURNS
- 4 MUTE GROUPS
- 16 BUSSES
- 4 FX ENGINES
- 12 MIX OUTPUTS
- 19" RACK MOUNTABLE
- AES DIGITAL OUT

TOTAL RECALL MOVING FADERS

AnaLOGIQ RECALLABLE PREAMP

MULTITRACK RECORD/PLAY Qu-Drive

800X480 TOUCHSCREEN TOUCH CONTROL

iLive FX

dSNAKE REMOTE AUDIO

ME PERSONAL MIXING SYSTEM

IPAD APP Qu-Pad

ALLEN&HEATH

Introducing the New Compact Digital Mixer from Allen & Heath

We have been creating high end mixing consoles for some of the most discerning ears in the business since 1969. We're not a software house, we don't make stomp boxes or cable testers – creating excellent mixers is, has been and always will be our great passion. Qu-16 has been designed by our in-house research and development team in Cornwall, Great Britain, and is a direct descendent of the GLD and iLive digital mixing systems that have earned the industry's respect night after night on tour and in live venues across the globe – so you can be confident that you're standing behind a premium mixer that looks, feels, and sounds like a pro.

Qu-16 harnesses the full potential of digital mixing technology, with total recall of settings (including the all-important fader position and preamp gain), convenient recording and playback solutions, iPad control, personal monitoring options and the choice of local or remote Cat5 I/O.

AnalogiQ™ Preamps

Qu-16's sixteen AnalogiQ™ total recall preamps feature zero crossing detection and an advanced padless 1dB step gain stage, closely allied to the DSP for optimal gain accuracy and audio transparency. The analogue signal is captured by high class, low latency 24bit analogue to digital converters matched to high quality 24bit digital to analogue converters to deliver the required outputs. The AnalogiQ™ design has been refined over many months to offer superb transparency, minimal distortion and an ultra-low noise floor, with a warm, musical sound that is missing from some digital consoles.

The Mixing Experience

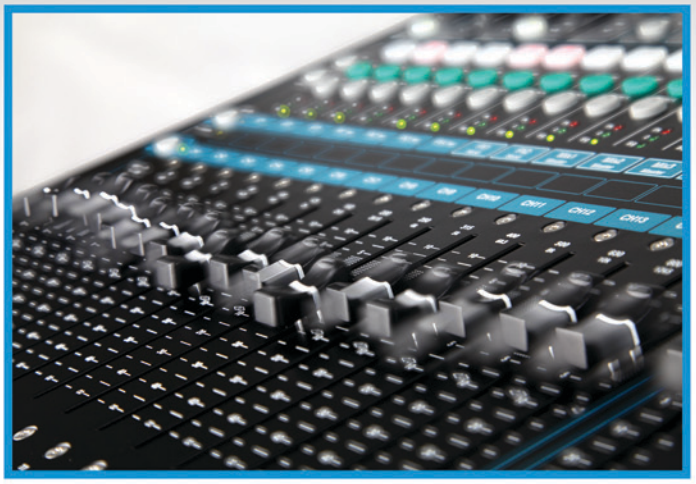
Having massive processing power and advanced functionality is great, but it counts for nothing if you can't access the controls you need in a heartbeat. Once you start using Qu-16 you'll sense the years of research into ergonomics and the hands-on mixing experience that our team has drawn upon to deliver a wonderfully natural layout and workflow. It's not about recreating an analogue interface, it's about creating an experience that's fluid, comfortable and intuitive for novices, digital natives and old school road warriors alike, making all the benefits of digital mixing technology readily accessible to all.

Touch Control

The 800 x 480, sixteen million colour Touchscreen and its dedicated data encoder form the heart of the Qu-16 interface, providing super-fast, easy access to all settings. The user-friendly interface has been designed with clarity in mind. Dedicated keys and screen tabs quickly guide you to meter and RTA views, FX racks, channel processing, USB audio control, scenes, setup menus and much more.

The SuperStrip

All your key processing tools are presented in a clean layout on the SuperStrip, with 1 function per physical control. The SuperStrip is complemented by an onscreen Touch Channel for intuitive access to full processing parameters without clutter or complex menu structures. Processing for Mono and Stereo inputs includes trim, polarity, HPF, gate, insert, 4 band PEQ, compressor and delay. The main LR and the Mono mixes have controls for Insert, 1/3 octave GEQ, compressor and delay. The Stereo mixes provide Insert, 4-band PEQ, compressor, delay and balance control.



Fader Automation

Moving faders started as an expensive option in the studio desks of the 80s, and later became the norm with the advent of digital technology. Nevertheless some entry-level digital mixers lack this precious commodity which is a fundamental part of the Total Recall approach. Fader automation is essential for rapid mixing, especially when you're dealing with multiple monitor mixes – just press a mix key and the faders immediately fly to the send levels for that mix.

Qu-16 features 17 motorized ALPS faders, 16 arranged over 2 layers, allowing instant access to all channels and masters in a compact space, plus a dedicated master fader which dynamically follows the mix selection. A third, Custom layer is available for ad-hoc user strip layout, where any combination of Inputs, FX Sends, FX Returns and Mix masters can be assigned.

iLive FX

Qu-16's dynamics and FX algorithms are derived from the FX used in our iLive pro touring series. Some of the world's most respected audio engineers have chosen to use iLive's FX on tour in preference to top-end plug-ins and external FX units. Qu-16 boasts 4 stereo iLive FX engines, featuring lovingly crafted emulations of legendary classic reverbs, gated reverbs, delays, modulators, flangers and more. The FX library has the ability to grow with future firmware releases. FX are returned to the mix on dedicated return channels, so you're not tying up your mono and stereo input channels. Each Stereo FX Return has a dedicated 4 band PEQ.

Qu-Pad

Add the Qu-Pad iPad app to your Qu-16 setup and you're free to adjust the monitors on stage, roam around the venue whilst tweaking the PA, and then mix the show from the heart of the audience. Qu-Pad connects to the mixer over Wi-Fi* and gives instant access to all live mixing parameters and settings.

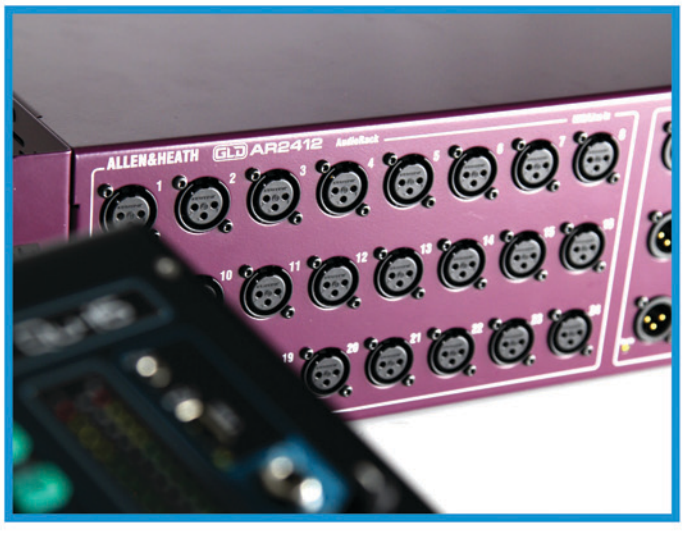
*Requires the connection of a Wi-Fi router or access point to the Qu-16 Network port.

ME Personal Mixing System

Qu-16 is fully compatible with our ME Personal Mixing System. Any number of ME-1 personal mixers can be chained from the dSNAKE port (or from an AR2412 Stagebox if you've got one connected to the dSNAKE port). Each performer can be given tailored control over their own mix, leaving the engineer free to focus on the audience experience. Find out more at allen-heath.com/ME

dSNAKE

Qu-16 is a self-contained mixer, so if you've already got the analogue cables you're good to go. If you're thinking of trading in the copper multicore for a Cat5 digital snake, Qu-16's dSNAKE port has you future-proofed, allowing connection to a remote AR2412 or AR84 Stagebox. dSNAKE is our proprietary networking solution, boasting a transport latency of only 105us over cable runs of up to 120m / 390'. So if you're mixing FoH you can place your I/O on the stage and run a single Cat5 cable back to the Qu-16 in the mix position.



Accessories

AR2412 – 24 inputs, 12 outputs AudioRack with dSNAKE connection and expansion port for personal monitoring.
AR84 – 8 inputs, 4 outputs AudioRack with dSNAKE connection.
AH7000 – 80m drum of Neutrik EtherFlex Cat5 with locking connectors.
AH8721 – 120m drum of Klotz Cat5 with locking connectors.
LEDLamp – variable brightness 18" gooseneck lamp.
QU-16-RK19 – Rack mounting kit.

Total Recall

True digital mixing is about being able to save and recall scenes (snapshots) at the press of a button. Qu-16 can store up to 100 full Scenes for recall at will. Channels and mixes can be made Safe from Scene recall. For example, if an instrument or mic gets swapped out after the soundcheck, the channel can be made safe to avoid settings being overridden by Scene recalls. Or if a broadcast feed or walk-in iPod is added last-minute before the show kicks off, that mix or channel can be made safe from any scene change. In addition, single parameter updates can be blocked using per scene Recall Filters or a Global Recall Filter. So if you tweak the graphic EQ to reflect the room response when the audience gets in, you can block this to prevent any overwriting at scene change.

Custom settings for each EQ, compressor, channel or FX can be saved as Library presets. This lets you store your tried and tested SM58 EQ or reverb pattern and apply it to other channels or shows. Libraries, Scenes and the complete Show configuration can be saved to a USB key, so you can carry the show with you, ready to use on another Qu-16.

Qu-Drive

Forget soundcard drivers and software setup, Qu-16 has an integrated multitrack USB recorder, providing 18 channels of 48kHz 24bit recording and playback straight to / from your USB hard drive. Capturing multitrack recordings of your shows has never been so easy.

A selectable stereo pair can be recorded alongside the 16 Mono channels, and multitrack audio can be played back to the 16 Mono channels plus ST1.

On top of this, Qu-Drive also provides stereo recording, patchable from any pair of Mix outputs, the Main LR (pre, post, or summed to mono) or even the PAFL bus, with 2-track stereo playback to ST3.

USB Audio Streaming

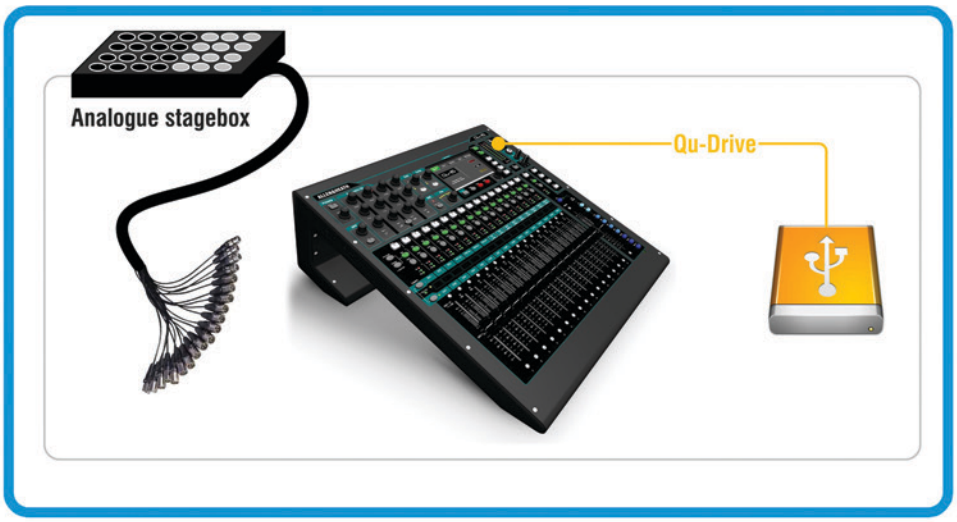
Qu-16's built-in interface streams multitrack audio to your Mac channel 1 to 16, the Main LR mix and 3 selectable stereo pairs.

The returns from the Mac can be assigned to the 16 Mono channels plus stereos.

The interface is class-compliant on Mac OS X – which means it's truly plug 'n play, with no need to install a driver. It will be recognized straightaway by any DAW supporting Core Audio, including Logic, Cubase, Reaper, and Pro Tools.

Standard MIDI control is tunnelled over the USB connection so you can easily map the faders to the tracks of your favourite DAW. Alternatively, a MIDI driver is available for use with the Ethernet port.

Applications

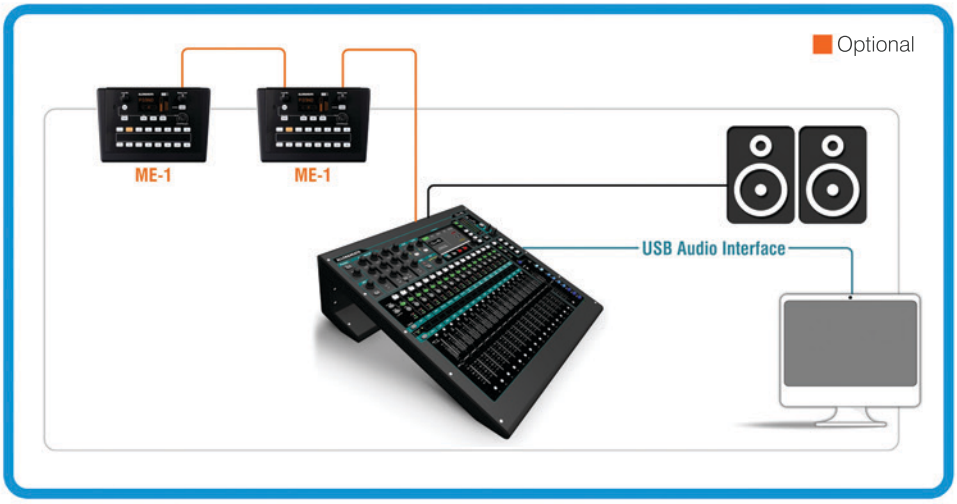


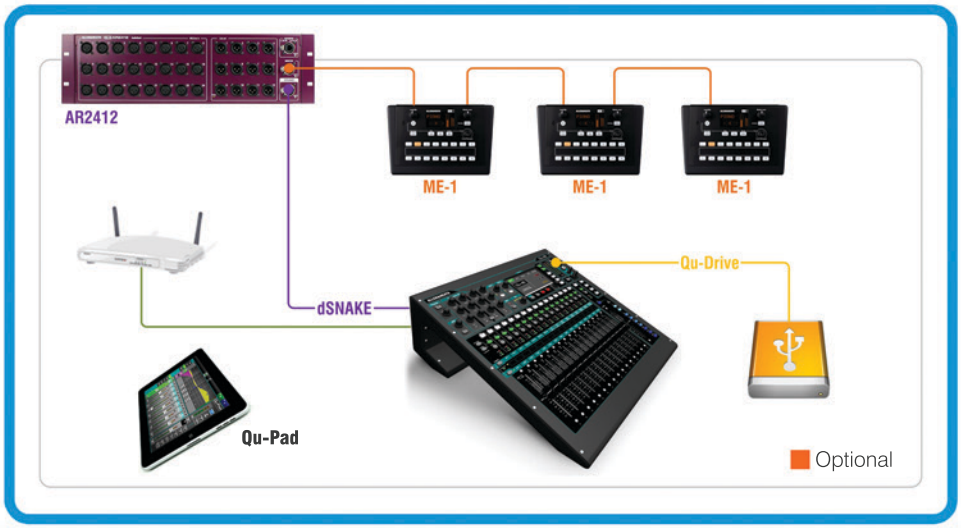
Live

Qu-16 with traditional analogue multicore from stage and direct recording on USB media.

Studio

Qu-16 as tracking mixer, soundcard, DAW controller and monitor router, plus optional ME-1s for personal cue foldback to recording room.





Live with Remote Audio

Qu-16 with dSNAKE Cat5 digital snake connection to an AR2412 Audio Rack, direct recording on USB media, iPad wireless control and optional ME-1s for personal monitoring on stage.

ARMed to the Hilt

Qu-16 is equipped with 5 cores of high efficiency ARM core processing, with dedicated ARM cores running the touchscreen display and surface, USB streaming, Qu-Drive multi-channel USB recording / playback, Ethernet and fader automation. Between them the ARM cores provide state-of-the-art processing, working in parallel to deliver extensive control, instant-on operation, and lightning-fast response.

The mixer's DSP farm exploits next-generation dual core DSPs, giving 10 DSP cores, with 8 dedicated to the channel and mix processing alone. With so much DSP power under the hood the channel processing is only using a fraction of capacity, so Qu-16 is future-proofed, with ample room for updates and extra functionality.

The Qu-16 DSP architecture employs varied bit depths, tailored to specific algorithms, with 48 bits on critical EQ functions and a 56 bit accumulator on the mix bus where it really counts, allowing every nuance of the audio to be captured in the final mix.

The Shape of Things to Come

Made from 18 gauge, cold-rolled Zintec steel, Qu-16's distinctive frame is designed for strength, rigidity and ease of rack mounting. We've done unspeakable things to that chassis in the lab and it's taken everything we've thrown at it – even being stomped on by our resident ex-tank crewman.

Silence is a precious commodity in the live or studio environment, which is why nobody wants those moments of stillness ruined by the whirring of fans coming from the mix position. Qu-16's sleek profile generates optimal airflow through the mixer, eliminating the need for any fans.

The shape has some unexpected benefits too. When we started taking Qu-16 out to gigs we soon found the space beneath it incredibly useful for keeping our USB drive, talkback mic, cue sheet and other clutter tucked out of the way. We've even had engineers hanging the mixer from a handy scaffold bar and mixing vertically.

Technical Specifications

Inputs	**Mic/Line Inputs 1-16**	Balanced, XLR and 1/4" TRS jack, fully recallable
	Input Sensitivity (XLR / TRS)	-60 to +10dBu / -50 to +20dBu
	Analogue Gain	-10 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, 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 Outputs**	Balanced, XLR
	Output Impedance	<75Ω
	Nominal Output	+4dBu = 0dB meter reading
	Maximum Output Level	+22dBu
	Residual Output Noise	-91 dBu (muted, 20-20kHz)
	Stereo Alt Output & 2Trk Output	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	-91 dBu (muted, 20-20kHz)
	AES Digital Output	2 channel, 48kHz sampling rate, XLR
	Output	2.5Vpp balanced terminated 110Ω
dSNAKE	**Inputs**	Remote source for CH1-16, ST1, ST2, ST3
	Outputs	Remote outputs for Mix1-10, LR Compatible with AudioRacks AR2412, AR84 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
	dBFS Alignment	+18dBu = 0dBFS (+22dBu at XLR output)
	Meter Calibration	0dB meter = -18dBFS (+4dBu at XLR out)
	Meter Peak indication	-3dBFS (+19dBu at XLR out), multi-point sensing
	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, 82W max
USB Audio	**Qu-Drive**	USB A
	Device	USB hard drive recommended for recording USB hard drive must be used for Multitrack
	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, CH1-16 + patchable pair
	Multitrack Playback	18 channel, WAV, 48kHz, 24-bit, CH1-16, ST1
	USB Interface	USB B, Core Audio compliant
	Send (upstream)	Multi channel, WAV, 48kHz, 24-bit
	Return (downstream)	Multi channel, WAV, 48kHz, 24-bit
Dimensions & Weights	**Qu-16 Mixer**	Width x Depth x Height
	Desk mounted	440 x 500 x 186 mm (17.4" x 19.7" x 7.4")
	Rack mounted	11U, 483 x 486 x 190 mm (19" x 19.1" x 7.5")
	Packed in shipping box	610 x 680 x 380 mm (24" x 27" x 15")
	Packed weight	13.5 kg (30 lbs)
	Unpacked weight	10 kg (22 lbs)

Control	Faders	100mm motorised
	Touch Screen	5" TFT, 800x480 resolution
	SoftKeys	4
	Mute Groups	4
	Network	TCP/IP Ethernet for iPad app
Input Processing	**Source**	
	CH1-16	Local, Remote, USB
	ST1, ST2	Local, Remote, USB
	ST3	Local, Remote, USB
	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 FX 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
	Channel Direct Out to USB	Follow Fader, follow Mute (global options)
	Source select (global)	Post-Preamp, Pre-EQ, Post-EQ, Post-Delay
Mix Processing	**Insert**	Assign FX into Mix channels
	Delay	Up to 170ms
	GEQ (Mix 1-4, LR)	Constant 1/3 oct, 28 bands 31Hz-16kHz, +/-12dB Gain
	PEQ (Stereo Mix 1-3)	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
	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
Audio Tools	**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/Bandpass Noise
	RTA	31-Bands 1/3 octave 20-20kHz, follows PAFL source

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Quickly access preamp gain, HPF frequency, PEQ settings, gate & compressor threshold, and PAN. The Source key toggles between analogue inputs or USB.

GEQ Flip toggles the faders to Graphic EQ sliders.

Copy, Paste or Reset any section of processing or a whole channel or mix. The Fn (Function) key brings up a popup page relevant to the current screen.

Fader strips with Mute, Select, PAFL switches, signal meter, and 100mm motorised fader. Access all the processing for each strip with Sel. The Peak indicators are multi-point – they are triggered by any signal clip in the channel path.

16 faders in 3 layers give access to all channels and masters in a compact space. Assign any combination of Inputs, FX sends, FX returns and Mix masters to the Custom layer.

ST3 Mini-jack stereo input for portable devices.

Qu-Drive multitrack / stereo recording and playback, data transfer, archiving and firmware update.

5" 800x480 colour touchscreen with dedicated navigation keys and rotary encoder.

4 user-assignable SoftKeys for scene recall, mutes, tap tempo and more.

Access mix sends on faders with the dedicated Mix keys.

1. Balanced Stereo Inputs
2. Ethernet network port for remote / wi-fi control
3. dSNAKE™ Remote Audio port for digital snake and personal monitoring
4. USB audio streaming, class-compliant on Mac

5. All 12 Mix outputs on XLR
6. 2TRK Out
7. Patchable Alt Out
8. AES digital stereo output
9. Dedicated Talkback preamp

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