

Technical Specifications

Inputs	Mic/Line Inputs 1-16 (Qu-16) 1-24 (Qu-24)	Balanced, XLR and 1/4" TRS jack, fully recallable Input Sensitivity (XLR / TRS) Analogue Gain Maximum Input Level (XLR / TRS) Input Impedance (XLR / TRS) THD+N, Unity gain 0dB THD+N, Mid gain +3dB	Control	Faders Touch Screen SoftKeys Mute Groups Network	100mm motorised 5" TFT, 800x480 resolution Qu-16: 4 Qu-24: 10 4 TCP/IP Ethernet for MIDI comms and iPad app
	Stereo Line Inputs: ST1, ST2 connector ST3 connector Input Sensitivity (ST1, ST2 / ST3) Trim Maximum Input Level (ST1, ST2 / ST3) Input Impedance	Balanced, 1/4" TRS jack, half normalled Unbalanced, 3.5mm Mini Jack Nominal +4dBu / 0dBu +/-24dB +22dBu / +18dBu +7kΩ	Input Processing	Source Qu-16: CH1-16 Qu-24: CH1-24 ST1, ST2 ST3	Local, dSNAKE or USB Local, dSNAKE or USB Local, dSNAKE or USB Local, dSNAKE or USB
Outputs	Qu-16: Mix1-10, LR Out. Qu-24: Mix1-10, GRP 1-4, MTX 1-4, LR Out.	Balanced, XLR Output Impedance <75Ω		Stereo Linking Parameters linked Link options	Odd/even input pairs EQ, dynamics, insert, delay, assignments, sends Preamp, polarity, sidechains, fader/mute, pan
	Nominal Output Maximum Output Level Residual Output Noise	+4dBu = 0dB meter reading +22dBu -90 C31dBu (muted, 20-20kHz)		Polarity High Pass Filter Insert Delay	Normal/Reverse 12dB/octave 20Hz – 2kHz Assign FX into Input channels Up to 85ms
	Stereo Alt Output & 2Trk Output Source (Alt Output / 2Trk Output) Output Impedance <75Ω	Balanced, 1/4" TRS jack Patchable / LR post-fade Nominal Output +4dBu = 0dB meter reading +22dBu -91 dBu (muted, 20-20kHz)		Gate Threshold / Depth PEQ Band 1 Band 2, Band 3 Band 4 Bell Width	Self key Sidechain -72dBu to +18dBu / 0 to 60dB 50ms to 300ms / 10ms to 5s / 10ms to 1s 4-Band fully parametric, 20-20kHz, +/-15dB Selectable LF Shelving (Baxandall), Bell Bell Selectable HF Shelving (Baxandall), Bell Non-constant Q, variable, 1.5 to 1/9th octave
	AES Digital Output	2 channel, 48kHz sampling rate, XLR output 2.5Vpp balanced terminated 110Ω		Compressor Threshold / Ratio Attack / Release Knee Types	Self key Sidechain -46dBu to 18dBu / 1:1 to infinity 300us – 300ms / 100ms - 2s Soft/Hard Peak Manual, RMS Manual, SlowOpto, PunchBag
dSNAKE	Inputs Outputs	Remote source for CH1-24, ST1, ST2, ST3 Remote outputs for Mix1-10, LR		Channel Direct Out to USB Source select (global)	Follow Fader, follow Mute (global options) Post-Preamp, Pre-EQ, Post-EQ, Post-Delay
System	Measured balanced XLR in to XLR out, 0dB gain, 0dB input 112dB +0/-0.5dB 20Hz to 20kHz Headroom +18dB Internal operating Level 0dBu dBS Alignment Meter Calibration Meter Peak indication Meter Signal indication Meter Type Fast (peak) response		Mix Processing	Insert Delay	Assign FX into Mix channels: Up to 170ms
	Sampling Rate ADC, DAC Latency 1.2 ms (local XLR in to XLR out) 0.7 ms (local XLR in to AES out)			GEO	Constant 1/3 oct, 28 bands 31Hz-16kHz, +/-12dB Gain
	Operating Temperature Range Mains Power 0 deg C to 35 deg C (32 deg F to 95 deg F) Qu-16: 100-240V AC, 50/60Hz, 82W max Qu-24: 100-240V AC, 50/60Hz, 120W max			PEQ Band 1 Band 2, Band 3 Band 4 Bell Width	4-Band fully parametric, 20-20kHz, +/-15dB Selectable LF Shelving (Baxandall), Bell Bell Selectable HF Shelving (Baxandall), Bell Non-constant Q, variable, 1.5 to 1/9th octave
				Compressor Threshold / Ratio Attack / Release Knee Types	Self key Sidechain -46dBu to 18dBu / 1:1 to infinity 300us – 300ms / 100ms - 2s Soft/Hard Peak Manual, RMS Manual, SlowOpto, PunchBag
USB Audio	Qu-Drive Device Stereo Record Stereo Playback Multitrack Record Multitrack Playback	USB A USB hard drive recommended for all recording USB hard drive must be used for Multitrack 2 channel, WAV, 48kHz, 24-bit, patchable 2 channel, WAV, 44.1 or 48kHz, 16 or 24-bit, to ST3 18 channel, WAV, 48kHz, 24-bit, patchable 18 channel, WAV, 48kHz, 24-bit, CH1-16, ST1		FX Internal FX Types 4 dedicated Stereo FX returns	4x RackFX engine, Send>Return or Inserted Reverbs, Delays, Gated Reverb, ADT Chorus, Symphonic Chorus, Phaser, Flanger Fader, Pan, Mute, Routing to Mix/LR, 4-Band PEQ
	USB Interface Send (upstream) Return (downstream)	USB B, Core Audio compliant Qu-16: 24CH. WAV, 48kHz, 24-bit Qu-24: 32CH. WAV, 48kHz, 24-bit Qu-16: 22CH. WAV, 48kHz, 24-bit Qu-24: 30CH. WAV, 48kHz, 24-bit	Audio Tools	PAFL Talkback Signal Generator RTA	PFL or stereo in-place AFL, 0 to -24dB Trim, 85ms Delay Assignable to any mix, 12dB/oct HPF Assignable to any mix, Sine / White/Pink/Bandpass Noise 31-Bands 1/3 octave 20-20kHz, follows PAFL source
Dimensions & Weights	Qu-16 Mixer Width x Depth x Height Desk mounted Rack mounted Packed in shipping box Unpacked weight Packed weight	Width x Depth x Height 440 x 500 x 186 mm (17.4" x 19.7" x 7.4") 11U, 483 x 486 x 190 mm (19" x 19.1" x 7.5") 610 x 680 x 350 mm (24" x 27" x 13.8") 10 kg (22 lbs) 13.5 kg (30 lbs)			
	Qu-24 Mixer Width x Depth x Height Desk mounted Packed in shipping box Unpacked weight Packed weight	Width x Depth x Height 632 x 500 x 186 mm (24.9" x 19.7" x 7.4") 670 x 790 x 350 mm (26.4" x 31.1" x 13.8") 14 kg (31 lbs) 18 kg (40 lbs)			

QU

THE SHAPE OF THINGS TO COME



Introducing the New Compact Digital Mixers 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 and Qu-24 have been designed by our in-house research and development team in Cornwall, Great Britain, and are directly descended from 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

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

Qu-24

24 MIC INPUTS	3 STEREO INPUTS	20 MIX OUTPUTS
25 MOTOR FADERS	2 STEREO MATRIX OUTS	2 STEREO GROUPS
4 FX ENGINES	4 FX SENDS / RETURNS	4 MUTE GROUPS
USB AUDIO STREAMING	DAW MIDI CONTROL	10 SOFT KEYS

Qu-16 and Qu-24 harness 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

Our 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 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 a Qu 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 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. All mixes including LR provide Insert, 4 band PEQ, 1/3 octave GEQ, compressor and delay.



Fader Automation

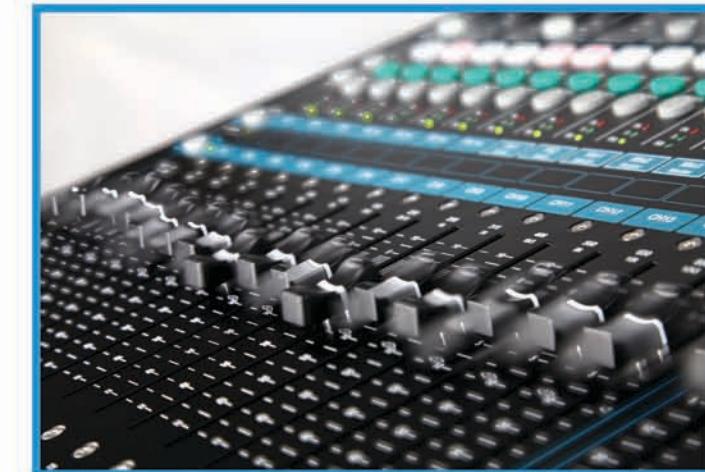
Moving faders started as an expensive option in the studio desks of the 80s, and later became the norm with the advent of digital technology. Nevertheless some entry-level digital mixers lack this precious commodity which is a fundamental part of the Total Recall approach. Fader automation is essential 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 and Qu-24 feature 16 and 24 motorized ALPS faders respectively, 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, Mix masters and MIDI strips can be assigned.

iLive FX



Qu'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. All Qu models boast 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.



Total Recall

True digital mixing is about being able to save and recall scenes (snapshots) at the press of a button. Qu-16 and Qu-24 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 a 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 or channel can be saved as Library presets. This lets you store your tried and tested setting for your favourite vocal mic 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 mixer.

Qu-Drive

Forget soundcard drivers and software setup, Qu-16 and Qu-24 have 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. Mixes and FX returns can be recorded alongside channels, and multitrack audio can be played back to the mixer for virtual sound-check applications.



An independent set of controls is provided for quick stereo recording of the main LR or other mix outputs, and a 2-track USB return can be routed to ST3 for playback of stereo WAV files such as walk-in music.

USB Audio Streaming

Qu's built-in interface streams multitrack audio to your Mac via a flexible patching system: all Input channels and the Main LR can be recorded at the same time, or you may choose to record something different such as FX returns or a pair of mixes.



The returns from the Mac can be assigned to the Input channels. 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.

The Custom layer can be populated with MIDI strips for direct assignment or 'learning' of faders and Mute, Sel and PAFL keys in the DAW. Users can also download the free DAW Control app for Mac OS X, which translates the MIDI messages to popular HUI or Mackie Control protocols, for easier setup and bi-directional integration with the mixer.

Qu-16

RACKMOUNTABLE DIGITAL MIXER
FOR LIVE, STUDIO AND INSTALLATION

With 24 sources to the mix including stereo inputs and returns, Qu-16 is the equivalent of a 30 channel analogue console with extensive outboard equipment (22 gates, 35 compressors, 12 graphic equalizers and 4 stereo effects)! Add the unique Qu-Drive recording facilities, dSNAKE connectivity and Total Recall scene system and you get a true powerhouse in just 19 inches.



Quickly access preamp gain, HPF frequency, PEQ settings, gate & compressor threshold, and PAN.

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.

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

ST3 Mini-jack stereo input for portable devices.

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

Access mix sends on faders with the dedicated Mix keys.

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

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



All 12 Mix outputs on XLR
2TRK Out
Patchable Alt Out
AES digital stereo output
Dedicated Talkback preamp



TOTAL RECALL MOVING FADERS

Motorised faders provide total recall of mix levels, giving full benefit from the scene recall system and ensuring the fader is always in the right position even when swapping between the layers.



ANALOGIQ RECALLABLE PREAMPS

Qu features crystal clear AnalOGIQ total recall pad-less preamps, optimised for transparency and low harmonic distortion.



MULTITRACK RECORD/PLAY QU-DRIVE

Qu-Drive is an integrated USB recorder, allowing multitrack recording and playback to/from an external USB drive.



Qu's high resolution, full colour Touchscreen and the intuitive Touch Channel interface provide easy access to channel processing, the FX racks and all setup and system management controls.



ILIVE FX

Qu features a library of FX emulations taken from the iLive pro touring series, including classic reverbs, gated reverbs, delays and modulators.



DSNAKE REMOTE AUDIO

Allen & Heath's proprietary dSNAKE low latency audio connection enables Cat5 connection to a remote audio rack, or to the ME personal mixing system.



ME PERSONAL MIXING SYSTEM QU-PAD

A free iPad app gives instant wireless control of the mixer, so you can tweak the PA, adjust the monitors on stage, and even mix the show from the audience.

iPad Shelf.

Groups 1-4 are typically used as subgroups to LR for level masters and/or processing, for example to compress a drum kit or to tame multiple lavalier microphones with a single graphic equalizer.

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

Welcome to the Matrix – 2 additional stereo outputs equipped with full processing add to the extensive I/O of the Qu-24. It is a 'mixer within a mixer' fed from any combination of Group 1-4, Mix 1-10, and main LR. It can be used to provide a broadcast feed, a recording mix, or duplicate the main outputs for delay stacks and fill / zone speakers where independent GEQ and delay is applied.

ST3 Mini-jack stereo input for portable devices.



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.

24 faders in 3 layers give access to all channels and masters in a compact space.

Assign any combination of Inputs, FX sends, FX returns, Groups, Mix and Matrix masters to the Custom layer.

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.

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

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

Access mix sends on faders with the dedicated Mix keys.

Qu-24 packs 10 SoftKeys for more user assignable functions such as Mute Groups, Tap Tempo, Scene navigation or PAFL Clear.

24	MIC INPUTS	3	STEREO INPUTS	20	MIX OUTPUTS
25	MOTOR FADERS	2	STEREO MATRIX OUTS	4	MUTE GROUPS
4	FX ENGINES	4	FX SENDS / RETURNS	10	SOFT KEYS
	USB AUDIO STREAMING	DAW MIDI CONTROL	AES DIGITAL OUT		

Qu-24

COMPACT DIGITAL MIXER
FOR LIVE, STUDIO AND INSTALLATION

With 32 sources to the mix including stereo inputs and returns, Qu-24 is the equivalent of a 38 channel analogue console with extensive outboard equipment (30 gates, 50 compressors, 20 graphic equalizers and 4 stereo effects)! On top of this Qu-24 adds extra SoftKeys, a complete Matrix system and two stereo Groups.



Motorised faders provide total recall of mix levels, giving full benefit from the scene recall system and ensuring the fader is always in the right position even when swapping between the layers.



Qu features crystal clear AnalOGIQ total recall pad-less preamps, optimised for transparency and low harmonic distortion.



Qu-Drive is an integrated USB recorder, allowing multitrack recording and playback to/from an external USB drive.



Qu's high resolution, full colour Touchscreen and the intuitive Touch Channel interface provide easy access to channel processing, the FX racks and all setup and system management controls.



A free iPad app gives instant wireless control of the mixer, so you can tweak the PA, adjust the monitors on stage, and even mix the show from the audience.



- 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 20 Mix outputs on XLR
- 6 2TRK Out
- 7 Patchable Alt Out
- 8 AES digital stereo output
- 9 Dedicated Talkback preamp



Qu-Pad

Add the Qu-Pad iPad app to your Qu 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 or Qu-24 Network port..



ME Personal Mixing System

Qu-16 and Qu-24 are 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 and Qu-24 are self-contained mixers, 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's dSNAKE™ port has you future-proofed, allowing connection to a remote AR2412 or AR84 AudioRack.

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 mixer 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.

LEDLamp – Variable brightness 18" gooseneck lamp.

QU-16-RK19 – Rack mounting kit for Qu-16.

AP9262 – Dust cover for Qu-16.

AP9458 – Dust cover for Qu-24.

ARMed to the Hilt

Qu mixers are 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. With plenty of DSP power under the hood the channel processing is only using a fraction of capacity, so Qu is future-proofed, with ample room for updates and extra functionality.

The 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's distinctive frame is designed for strength and rigidity. 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 commander.

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'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 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.



Example Applications



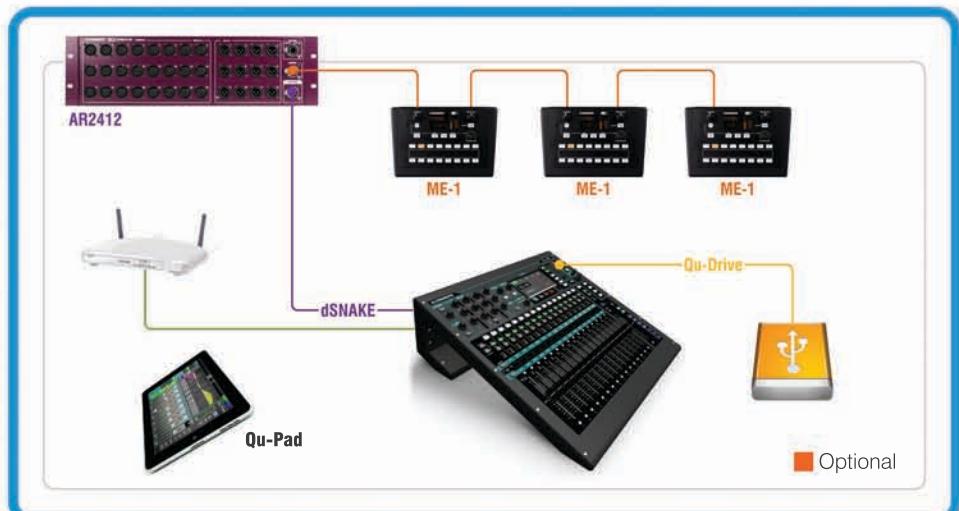
Live

Qu-24 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.



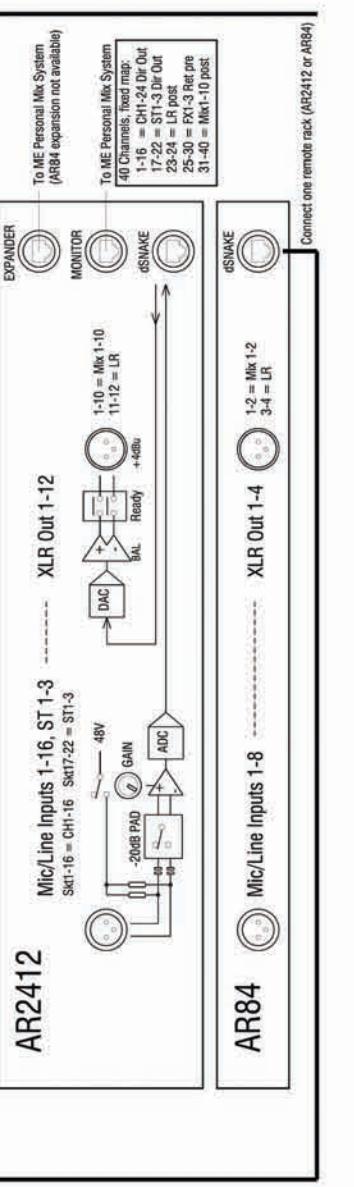
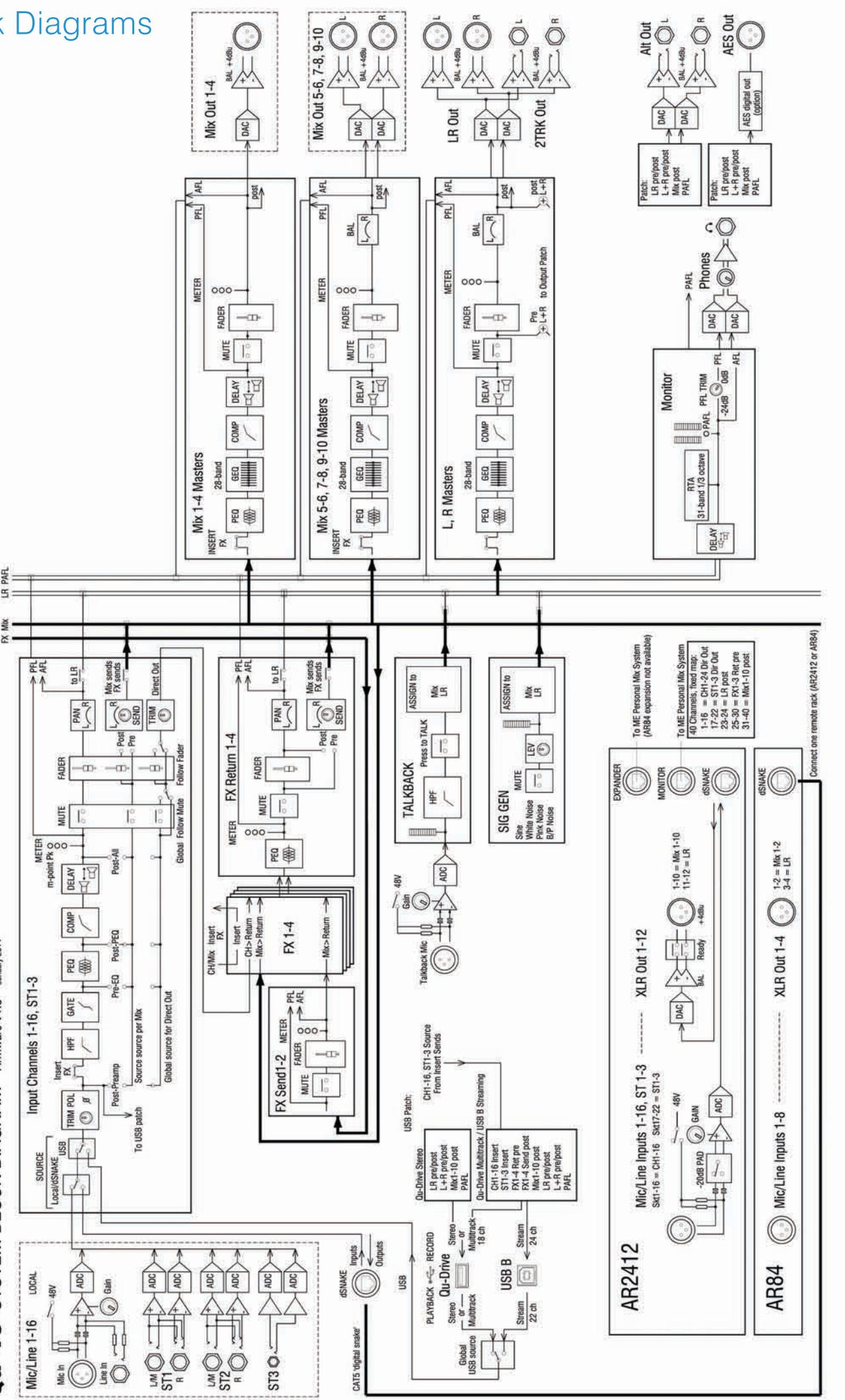
Live with Remote Audio

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.



Block Diagrams

Qu-16 SYSTEM BLOCK DIAGRAM Firmware V1.3 January 2014



Qu-24 SYSTEM BLOCK DIAGRAM Firmware V1.3 January 2014

