ALLEN&HEATH

Qu-3 Getting Started Guide

IMPORTANT - Read before starting

Safety instructions

Before starting, read the **Important Safety Instructions** supplied with the equipment. For your own safety and that of the operator, technical crew and performers, follow all instructions and heed all warnings printed on the sheet and on the equipment panels.

System operating firmware

The function of this product is determined by the firmware (operating software) that runs it. Firmware is updated regularly as new features are added and improvements made.

ⓘ Check www.allen-heath.com/resources for the latest version of firmware.

Software licence agreement

By using this Allen & Heath product and the software within it you agree to be bound by the terms of the relevant **End User Licence Agreement** (EULA), a copy of which can be found at www.allen-heath.com/legal. You agree to be bound by the terms of the EULA by installing, copying, or using the software.

General precautions

- Protect the equipment from damage through liquid or dust contamination.
- If the equipment has been stored in sub-zero temperatures allow time for it to reach normal operating temperature before use at the venue.
- Avoid using the equipment in extreme heat and direct sunlight. Make sure the ventilation slots are not obstructed and that there is adequate air movement around the equipment.
- Clean the equipment with a soft brush and dry lint-free cloth. Do not use chemicals, abrasives or solvents.
- It is recommended that servicing is carried out only by an authorised Allen & Heath agent. Contact details for your local distributor can be found on the Allen & Heath

website. Allen & Heath do not accept liability for damage caused by maintenance, repair or modification by unauthorised personnel.

Powering on and off

It is important to always power the **mixer on first**, before powering on any connected equipment such as amplifiers or powered speakers.

When shutting down, turn off amplifiers or speakers, ensure you have stopped any recording and finished any transferring of data, then shutdown the mixer from the Home screen before turning the **mixer off last**.

Register your product

Register your product online via www.allen-heath.com/register.

Further information and support

The Allen&Heath support team can be contacted directly via support.allen-heath.com

Packed items

Check you have received the following items:

- Qu Digital Audio Mixer
- IEC mains lead
- Safety booklet

Introduction

The Qu range of 96kHz digital audio mixers are designed to combine ease-of-use with powerful processing, making them ideal for a wide range of applications and suitable for technical and non-technical users alike.

All Qu models feature the same XCVI core, providing 32 mono plus dedicated stereo line and USB channels, 12 mixes, 4 matrices, 6 FX engines, plus an SLink port for connection to the Everything I/O ecosystem of remote expanders.

There are 4 frame sizes in the range, each with a different number of fader strips and local input/output sockets.

Each frame size has a Dante enabled variant indicated by a 'D' suffix, for a total of 8 models.

	Qu-3 Qu-3D	Qu-5 Qu-5D	Qu-6 Qu-6D	Qu-7 Qu-7D
Faders	8 + 1	16 + 1	24 + 1	32 + 1
Fader Layers	6	4	4	4
Mic/Line Combi Inputs	16	16	24	32
Stereo Line	1	2	2	2
Talkback	-	1	1	1
XLR Outputs	8	12	16	20
AES Outputs	1	1	1	1
19" Rackmount	Rack kit available	Rack kit available	-	-

Dante variants

The **Qu-3D**, **Qu-5D**, **Qu-6D** and **Qu-7D** all include a dedicated Dante etherCON port alongside the SLink port. This can be connected to a Dante network or to any other Dante enabled device for 16×16 channels of 48kHz or 96kHz audio.

If more channels are required, a **32×32 Dante Upgrade** Add-On is available to purchase from shop.allen-heath.com which doubles the channel count of the Dante port.

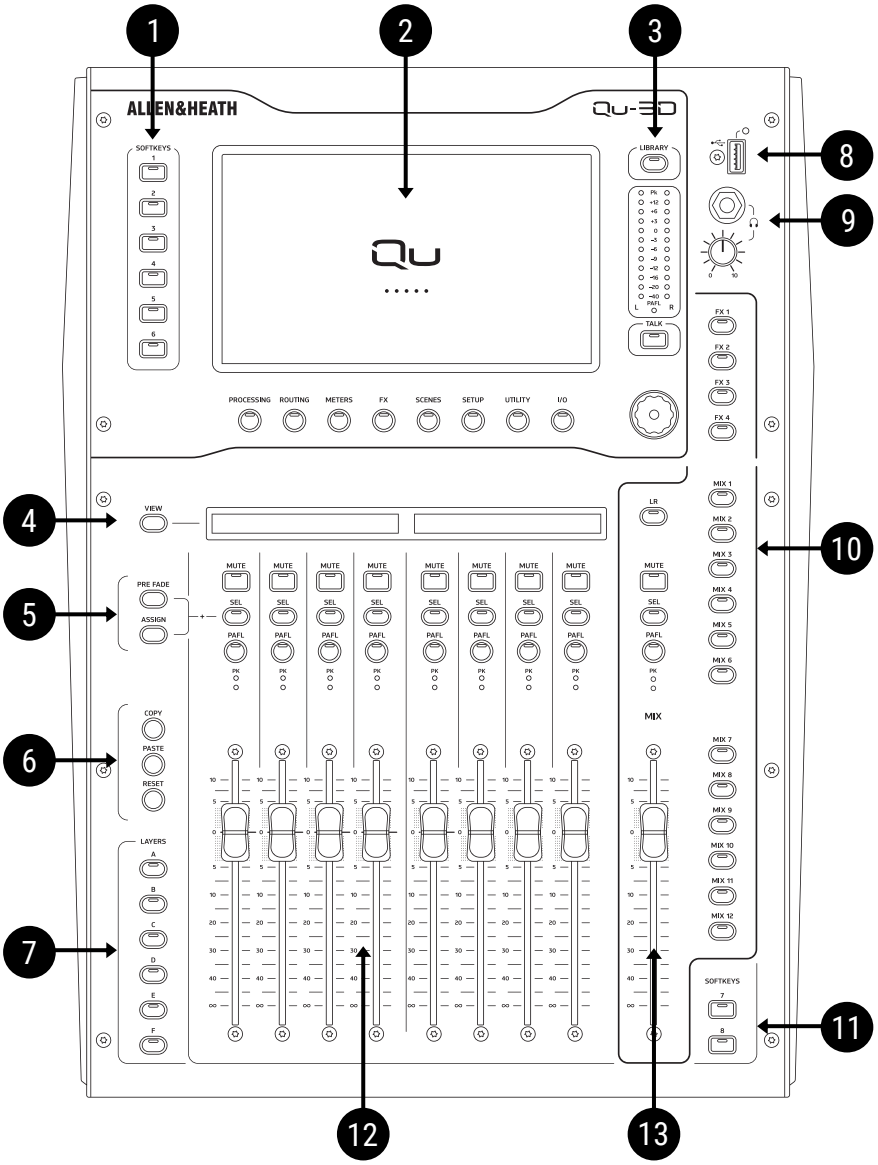
Features

- 96kHz XCVI Core variable bit-depth up to 96bit, <0.7ms latency

- 36x Inputs to Mix (32x Mono/Linkable, 2x Stereo)
- Stereo Main LR Output
- 12x Mixes (6x Mono/Linkable Aux/Group, 6x Stereo Aux/Group)
- 4x FX Sends
- 4x Mono/Linkable Matrix Mixes
- 16x XLR/Jack ‘Combi’ Mic/Line Input Sockets
- 1x Stereo Line Input Sockets (2x TRS)
- 8x XLR Output Sockets
- 1x AES3 Stereo Digital Output Socket
- 128×128 SLink Port for Everything I/O expansion and system connections
- 16×16 (with optional 32×32 Upgrade) 48/96 kHz Dante interface (Qu-3D)
- Stereo Headphone Output
- 7″ Capacitive Touchscreen
- 9× 100mm Motorised Faders
- 6x Customisable Channel Strip Layers
- 8x SoftKeys
- Configurable single/dual Footswitch Connection
- Configurable Chromatic Channel Meter LED’s
- IEC Mains Connection with Worldwide PSU
- RJ45 Network Socket
- USB-A For stereo audio record/playback and data (2 Channels @48/96kHz, 24bit)
- USB-C Audio interface for multichannel record/playback (32×32 @48/96kHz, 16/24bit)
- SD Card Slot for multichannel audio record/playback (16 Channels @96kHz, 32 Channels @48kHz, 24bit)
- Input processing – Trim, HPF, Gate/Expander, Parametric EQ, Compressor, Channel Delay
- Mix processing – Graphic EQ, Feedback Assistant, PEQ, Compressor, Channel Delay
- Fully patchable Insert points
- 6x Multi-FX Engines with dedicated Stereo Return Channels and PEQ
- 32 Channel, zero latency, DEEP Automatic Mic Mixer
- 31/61 Band Real Time Analyser
- Feedback Assistant with 8 simultaneous detectors
- Gain Assistant
- 300 Scene memories per Show
- Channel Safes, Global/Per-Scene Recall Filters
- FX, Processing and Channel Libraries
- User Permissions to restrict operator access
- DAW Control emulation via USB or TCP/IP
- Compatible with ME personal monitoring range
- Remote control via free apps – Windows/MacOS/iOS/Android

Surface

(Qu-3D Shown)



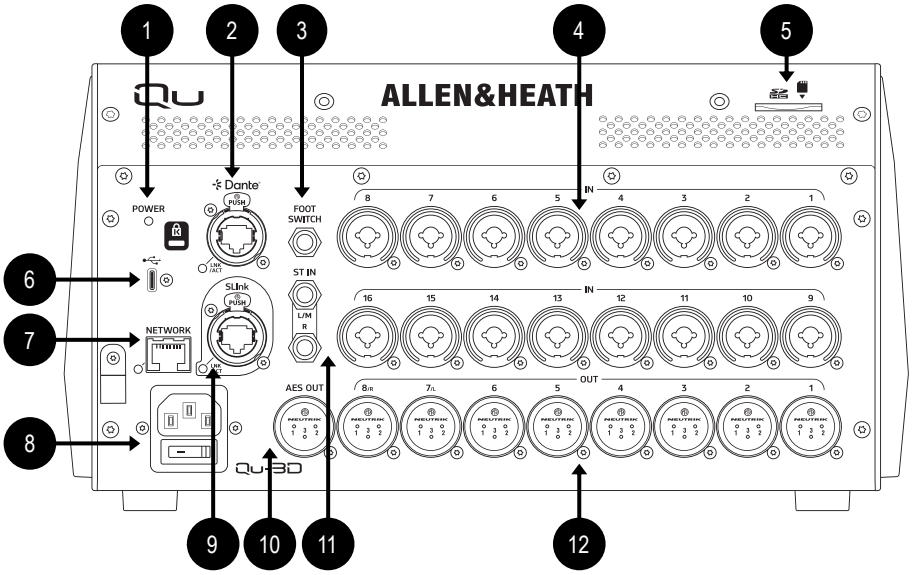
1. **SoftKeys 1-6**
   SoftKeys can be assigned custom functions by the user and their function can be changed on a scene-by-scene basis. For the full list of available functions, refer to the user guide.
2. **Screen keys, Touchscreen and Touchscreen rotary control**
   The touchscreen displays and allows adjustment of all mixer settings and parameters. Use the Screen Keys and on-screen tabs to navigate, then touch to select parameters and use the touchscreen rotary control to adjust them.
3. **Library, PAFL meter and Talk key**
   The Library Key illuminates when a library is available for the screen being viewed and is used to store or recall settings and parameters.
   The 12 segment PAFL meter displays the level of the signal being sent to

headphones, which by default with no PAFL keys pressed is the Main LR mix.
The Talk key is used to activate talkback to a mix or output.

4. **View Key**
   Press to cycle through the information displayed on the fader strip LCD displays and show the current SoftKey assignments on screen.
5. **Routing Keys**
   Hold Pre Fade or Assign keys and use Sel keys on the fader strips to toggle pre/post fade send level and assignment to the currently selected mix.
   Press and hold the Ch To All Mix key to show and adjust all destinations for the currently selected channel across the fader strips.
   Hold both the Ch To All Mix key and either the Pre Fade or Assign keys, then use the Sel keys on fader strips to toggle pre/post fade send levels and assignments to any mix from the currently selected channel.
6. **Copy/Paste/Reset Keys**
   Press and hold the Copy key then press a processing In key, channel Sel key or Mix key to copy processing parameters or sends to a mix.
   Press and hold the Paste key then press a channel Sel key or Mix key to past processing parameters or sends to a mix.
   Press and hold the Reset key then press a processing In key, channel Sel key, Mix key or push a fader towards 0dB or -inf to reset parameters or sends.
7. **Layer keys**
   There are 6 layers of fader strips which are all freely assignable.
8. **Qu-Drive port**
   The Qu-Drive (USB-A) port can be used to record/play stereo audio direct to/from a USB drive, transfer Show/Scene/Library data and update firmware.
9. **Headphone output and headphone level control**
10. **Mix Select Keys**
    Press a Mix select key to display send levels to that mix on the faders.
11. **SoftKeys 7-8**
    SoftKeys can be assigned custom functions by the user and their function can be changed on a Scene-by-scene basis. For the full list of available functions, refer to the user guide.
12. **Fader Strips**
    Freely assignable fader strips, each with LCD display, Mute/Sel/PAFL key and 100mm motorised fader.
13. **Mix Fader Strip**
    The Mix fader strip always controls the currently selected mix and includes Mute/Sel/PAFL keys and a 100mm motorised fader.

Rear Panel

(Qu-3D Shown)



1. **Power LED**
   Illuminated only when powered on and all voltage rails are good.
2. **Dante port (Qu-3D only)**
   For connection to a 48kHz or 96kHz Dante network or other Dante enabled devices. A ‘Control Network Bridge’ option allows the Dante port and the Network port to be bridged for control messaging.
3. **Dual footswitch connection**
   For connection of a single or dual footswitch. Can be assigned custom functions. For the full list of available functions, refer to the user guide.
4. **Local Inputs – XLR mic/line level**
5. **SD Card slot**
   For multichannel recording or playback using SDHC memory cards.
6. **USB-C port**
   Class compliant USB audio/MIDI interface for multichannel recording and playback and MIDI communication.
7. **Network port**
   For connection to a dedicated (recommended) or existing network for remote wired or wireless control of the mixer.
8. **Mains power inlet and switch**
9. **SLink port**
   Intelligent digital audio port with up to 128×128 channels supported. Enables connection to the Allen & Heath ‘Everything I/O’ ecosystem of 48kHz or 96kHz expanders, system-to-system connections and personal monitoring devices.
10. **AES3 digital stereo output**
11. **Local Stereo Input – TRS line level**
12. **Local Outputs – XLR line level**

Audio I/O and Expansion

The Qu has built-in 'local' input and output sockets. Local inputs include mic/line inputs on XLR with associated preamp and ADC and line level TRS connections with ADC. Local outputs include XLR line level analogue outputs with associated DAC, as well as a stereo digital AES output on XLR.

In addition to the Local I/O, Qu features multiple digital I/O connections. These are presented to the user in the same way as the local sockets and can also be used in the same way, as sources for input channels and destinations for outputs, or for channel insert points.

USB-C and Qu-Drive (SD Card and USB-A)

Qu features a built-in, class compliant audio/MIDI USB-C interface which can be used without drivers on any device/OS that supports class compliant audio/MIDI devices.

For improved performance, software compatibility and enhanced system options, a Windows driver can be downloaded from www.allen-heath.com/resources.

The USB-C audio interface is bidirectional with 32 inputs and 32 outputs running at either 48kHz or 96kHz. It can be used with all leading DAW's and professional audio software for multichannel recording and playback.

Qu-Drive can record or playback up to 16 channels at 96kHz or up to 32 channels at 48kHz directly to or from an SD Card.

Use SDHC Cards, Class 10, UHS 1, up to 32GB for best results.

Alternatively, Qu-Drive can record or playback stereo audio directly to or from a USB storage device connected to the USB-A port.

ⓘ Record and playback patching for USB-C and Qu-Drive is presented as simply 'USB' in the Qu. Playback can only be from either USB-C *or* Qu-Drive at any one time, with Qu-Drive taking priority.

SLink Port

The SLink Port is used to connect to the Everything I/O range of A&H digital stageboxes/expanders (https://www.allen-heath.com/everything-i-o/) for bidirectional multichannel audio and, where possible, control preamp and SRC options. It can also be

used to connect directly to another SLink port or gigaACE option card in a mixer to transmit and receive multichannel audio.

SLink is not a protocol itself, but an intelligent port which switches mode depending on the first device connected and can run one of three protocols at one time. It carries out Sample Rate Conversion when required as the Qu always runs at 96kHz internally for all processing and mixing.

For more information and examples of possible SLink configurations, please refer to the SLink Connections article.

Protocol	**Sample Rate**	**Total Possible Inputs**	**Total Possible Outputs**
dSnake (+ME)	48kHz	40	20 (+40 ME)
DX	96kHz	32	32
gigaACE/GX	96kHz	128	128

ⓘ Expanders do not alter the number of processing channels available in the mixer core but increase the number of input and output sockets available for use in the system.

ⓘ Control of preamps in an expander is always from the mixer the expander is connected to. Unless using Dante DT expanders with a Qu-3D, where multiple mixers can control the same preamp.

ⓘ For dSnake and DX connections, use CAT5e (or higher specification) STP cables up to 100m long.

ⓘ For gigaACE/GX connections, use CAT6a (or higher specification) STP cables up to 80m long.

ⓘ Refer to https://www.allen-heath.com/ for cable requirements, recommendations, and a list of CAT cables available to order.

Control of the mixer

The audio processing core of the Qu is controlled by the ‘control layer’ comprising local ‘surface’ control, network control and MIDI control.

With all Allen & Heath digital mixers, the audio core and control layer are kept somewhat separate to prevent any issue with the control network from having an impact on audio.

Changes to the core are made from the control layer and any changes to the core are reflected back to the control layer. In this way the current state of the mixer core is always visible and accurate.

Local ‘Surface’ control

The Qu has two main operational concepts;

1. Press the green **Sel** key of a fader strip to select a channel and adjust its processing using the dedicated surface controls or through the Processing screen.
2. Press a blue **Mix** key to display send levels to that mix across the fader strips.

The touchscreen area includes screen selection keys and a dedicated rotary control. Select a screen using the screen keys, then touch on screen to navigate and action any on screen buttons. Select a value parameter on screen, and the touchscreen rotary will illuminate to show it can be used for adjustment.

Copy, Paste and Reset keys are provided which can be held when touching channels, processing parameters or scenes on the screen for easy duplication or resetting of parameters and data.

The dedicated Library key illuminates whenever viewing a screen that has an accompanying Library. This allows storing of user data and recall of factory and user data.

SoftKeys can be set to control specific functions and parameters and their functions can be changed on a scene-by-scene basis if required.

The headphone level is an analogue control for the headphone amplifier.

ⓘ Refer to the relevant firmware reference guide for more information on the navigation and features of the installed firmware.

Network control

There are 2 remote control apps available for the Qu series:

1. **Qu-MixPad** – for the engineer
   Provides control over almost all parameters and settings of the mixer, including many setup functions.
2. **Qu4You** – for the performer
   Provides easy to use control over a single mix, allowing control of monitoring levels without the risk of affecting other performers’ mixes.

These require that the device running the app and the Qu itself are clients on the same network and in the same address range.

The Qu's network port can be connected to a LAN port on a router, access point or switch, or directly to the device. By default, the Qu is set to receive an address via DHCP. If no address is assigned, it will assign itself an address automatically. It is also possible to set a static address for the Qu.

Devices running apps can then be connected to the same network and their addresses set within the same range.

ⓘ A total of 8 remote apps can be connected to an Qu at one time, with up to 2 of these being Qu-MixPad.

ⓘ All Qu Network settings and the number of currently connected devices can be found in the **Setup > Network** screen.

ⓘ For more information on app connection and functionality, please refer to the in-app help document and firmware user guide for the mixer.

MIDI control

MIDI (**M**usical **I**nstrument **D**igital **I**nterface) is a standardised communication protocol that enables digital devices to communicate and allows one piece of equipment to control another.

The Qu sends and receives MIDI over USB (via the USB-C port) as well as over ethernet (using MIDI over TCP/IP via the network port).

Messaging can be broken down into two sets of bi-directional messages. Those that are used with Qu mixing parameters (i.e. level control of Qu audio channels), and those used to control external software or equipment (i.e. to control a DAW).

When connected to a device using the USB-C port, the Qu will appear as a class compliant MIDI input and output device. This can be used with software directly or through use of the Allen & Heath MIDI Control application.

To connect a device to the Qu over a network, Allen & Heath MIDI Control can be used. All other clients used for network communication should be configured to send messages to the Qu's IP address and use port **51325**.

Refer to the Qu MIDI Protocol available from www.allen-heath.com/resources for details on MIDI messaging for the Qu series.

Download the most recent version of the Allen & Heath MIDI Control app from www.allen-heath.com/resources and refer to the associated help document for information on

installation, setup and use.

Technical Specifications

Inputs	**Mic/Line Inputs**	Balanced Combi XLR/Jack, fully recallable preamp
	Input Sensitivity	-60 to +0dBu
	TRS Inputs	-20dB Pad (Fixed)
	Preamp Gain	0dB to +60dB, 1dB steps
	Maximum Input Level (XLR/Jack)	+16dBu Mic input / +30dBu TRS pad input
	Input Impedance	>1.5kΩ MIC / >20kΩ TRS
	THD+N, Unity gain 0dB	0.002% -92dB (20Hz-20kHz, AES Direct Out, @0dBu 1kHz)
	THD+N, Mid gain +30dB	0.004% -88dB (20Hz-20kHz, AES Direct Out, @-30dBu 1kHz)
	Phantom Power	+48V (+3V / -2V)
	Stereo Line Inputs	Balanced, 2× 1/4" TRS jack
	Input Sensitivity	Nominal +4dBu
	Trim	+/-24dB
	Maximum Input Level	+21dBu
	Input Impedance	>6kΩ
Outputs	**XLR Outputs**	Balanced, XLR
	Source	Fully patchable
	Output Impedance	<75Ω
	Nominal Output	+4dBu = 0dB meter reading
	Maximum Output Level	+22dBu
	Residual Output Noise	-91dBu (muted, 20Hz-20kHz)

	AES Digital Output	Balanced XLR 2 channel,
		96kHz sampling rate (Default with SRC Bypassed)
		Switchable output sample rates, 44.1/48/88.2/96kHz
		2.5Vpp balanced terminated 110Ω
SLink	**Connection**	Neutrik EtherCON (RJ45)
	dSnake mode	40 input, 20+40(ME) output channels, 48kHz
	DX mode	32 input, 32 output channels, 96kHz
	gigaACE/GX	128 input, 128 output channels, 96kHz
	Inputs	Fully patchable
	Outputs	Fully patchable
	Sync/SRC	Assignable as audio clock source, 48kHz<>96kHz SRC
Dante	(Qu-3D only)	16/32 input, 16/32 output channels, 48/96kHz operation
	Inputs	Fully patchable
	Outputs	Fully patchable
	Sync/SRC	Assignable as audio clock source, 48kHz<>96kHz SRC
USB Audio	**Qu-Drive**	USB-A or SD Card, recording or playback
	Stereo Record (USB-A)	2 channel, WAV, 48/96kHz, 24-bit, fully patchable
	Stereo Playback (USB-A)	1/2 channel, WAV, 44.1/48/96kHz 16/24-bit, fully patchable
	Multitrack Record (SDHC)	16 channels 96kHz, 32 channels 48kHz, 24-bit, WAV, fully patchable
	Multitrack Playback (SDHC)	16 channels 96kHz, 32 channels 48kHz, 24-bit, WAV, fully patchable

	SD Card	SDHC, 32GB, UHS-I, Class 10 for maximum channels, 48/96 kHz, 24-bit
	USB Audio Streaming	USB-C connection, USB 2.0 Core Audio compliant, ASIO/WDM for Windows
	Send (upstream)	32 channels, 48/96kHz, 24-bit
	Return (downstream)	32 channels, 48/96kHz, 24-bit
Control	Touch Screen	7" Capacitive, 800 × 480 resolution, 24-bit RGB, 1000nit
	SoftKeys	8
	Mute Groups / DCA Groups	8 / 8
	Network	TCP/IP Ethernet for Control and MIDI
	MIDI	USB-C and TCP/IP
	Footswitch	Single or Dual, Momentary or Latching
System	36 input, 28 bus, XCVI Core	Measured balanced XLR in to XLR out, 0dB gain, 0dBu input
	Dynamic Range	110 dB
	Frequency Response	+0/-0.5dB 20Hz to 20kHz
	Headroom	+18dB
	Internal operating Level	0dBu
	THD+N, Mic/Line routed to Main L/R Out	Unity gain, 0.003%, -91dB (20Hz-20kHz)
	dBFS Alignment	+18dBu = 0dBFS (+22dBu at XLR output)
	Meter Calibration	0dB meter = -18dBFS (+4dBu at XLR out)
	Main Meter Type	2× 12 segment, fast (peak) response, follows PAFL
	Channel Meter Type	Chromatic Channel Metering, fully programmable colour/brightness
	Peak Indication	-3dBFS (+19dBu at XLR out), Multi-point sensing

	Sampling Rate	96kHz
	Bit Depth	XCVI custom bit depths, up to 96-bit
	Latency	<0.7ms, Local Mic Input to Main L/R
	Operating Temperature Range	0 deg C to 40 deg C (32 deg F to 104 deg F)
	Mains Power	100-240V AC, 50/60Hz
	Max Power Consumption (Qu-3 / Qu-3D)	67W / 70W
Input	**Source**	
Processing	Channels 1-32	Fully patchable
	ST1 / USB Channels	Fixed patch, ST IN / USB1&2
	USB Global Source	Qu-Drive or USB-C Streaming (Auto Switching)
	Polarity	Normal/Invert
	Trim	-24 to +24dB
	High Pass Filter	12/18/24dB per octave 20Hz – 2kHz
	Insert	Fully Patchable (Digital/Analogue/-10dBV level)
	Delay	Up to 341ms
	Gate/Expander	Patchable Sidechain
	Sidechain filter	Hi-pass (20-5k), band-pass (120-10k), Lo-pass (120-20k), Q=1
	Threshold / Depth	-72dBu to +18dBu / 0 to 60dB
	Attack / Hold / Release	50µs to 300ms / 10ms to 5s / 10ms to 1s
	Expander Ratios	1:2, 1:3, 1:4
	PEQ	4-Band fully parametric, 20Hz-20kHz, +/-15dB
	Band 1, Band 4	Selectable Shelving (Baxandall), Bell, HPF/LPF 12dB/octave
	Band 2, Band 3	Bell

	Bell Width	Variable, 1.5 Q to 1/9th octave
	Compressor	Patchable Sidechain, Ducker mode, DEEP options, +18dB Makeup gain
	Sidechain filter	Hi-pass (20Hz-5kHz), band-pass (120Hz-10kHz, Q=1), Lo-pass (120-20kHz)
	Threshold / Ratio	-46dBu to 18dBu / 1:1 to infinity
	Attack / Release	30µs to 300ms / 50ms to 2s
	Knee	Soft/Hard
	Detector response	Peak/RMS switchable
	Parallel Path Compression	dry/wet -inf to 0dB
	Channel Direct Out	Follow Fader/Mute/Mute Group/DCA (Global)
	Direct Out Source	Post-Preamp, Post-HPF, Post-Gate, Insert Return, Post-PEQ, Post-Comp, Post-Delay
	Direct Out Level	trim -inf to 10dB (per channel)
Mix	**Insert**	Fully Patchable (Digital/Analogue/-10dBV level)
Processing	**Delay**	Up to 682ms
	Feedback Assistant	Automatic feedback suppression, 16 filters per mix, 8 concurrent detectors
	Filter Cut	0dB to 18dB
	Automatic Filter Width	18 to 116 Q
	Manual Filter Width	6 to 640 Q
	GEQ	28 bands 31Hz-16kHz, +/-12dB Gain, Constant 1/3 oct, DEEP options
	PEQ	As Input PEQ
	Compressor	As Input Compressor
FX	Internal FX	6x FX engines, Send>Return (4 dedicated FX send) or Inserted (with Wet/Dry)

	Types	SMR Reverb, Stereo Tap Delay, Gated Reverb, ADT, Blue Chorus, Symphonic Chorus, Flanger, Phaser
	6x Dedicated Stereo FX returns	Fader, Pan, Mute, Routing to LR/Mix, 4-Band PEQ
Audio Tools	**PAFL**	PFL or stereo in-place AFL, 0 to -24dB Trim, PAFL Delay Up to 682ms
	Talkback	Dedicated input, Assignable to any mix, Preamp/Trim Control, 20Hz-20kHz 12dB/oct HPF
	Signal Generator	Assignable to any input or mix, Sine/White/Pink/Bandpass Noise
	RTA	2× 31-Band 1/3 oct (Stereo) or 61-Band 1/6 octave (Mono), 20Hz-20kHz
AMM	Type	32 Channel, Gain Sharing Algorithm
	Sidechain Filter HPF / LPF	250Hz / 5kHz (12dB/octave)
	Priority	-15dB to +15dB per channel
Dimensions & Weights	**Qu-3 / Qu-3D**	Width x Depth x Height
	Unit only	445 × 321 × 170 mm (17.5" x 12.7" x 6.7")
	Packed in shipping box	430 × 269 × 585 mm (16.9" x 12.5" x 23")
	Unpacked weight	6.91 kg (15.23 lbs) / 7.01 kg (15.45 lbs)
	Packed weight	8.73 kg (19.25 lbs) / 8.83 kg (19.47 lbs)