ALLEN&HEATH

Qu

User Guide

Firmware V1.1 Issue 1

Contents

1. Important Information

Safety

Before powering on the Qu, read the safety instructions sheet (004-1511-01) supplied with the unit. For your own safety and that of the operator, technical crew and performers, follow all instructions and heed all warnings included in these documents and those printed directly on the equipment.

Ventilation

Do not obstruct any of the air vents when in use. Adequate ventilation is especially required for the cooling fan found on the bottom panel of the mixer which draws in air from the sides.

Updates to this user guide

This user guide is intended to be used and distributed in a digital format; it may be up issued at any time. Always ensure you are referring to the latest version which matches the firmware version being used and avoid printing a hard copy wherever possible.

Registration

To be kept informed of updates, the latest firmware and new releases for the Qu range, register your Qu at www.allen-heath.com/myQu

Support

For further support with Qu, please visit support.allen-heath.com, or contact your local distributor.

Trademarks and Logos

SD and SDHC are trademarks of SD-3C LLC.

Firmware updates and apps

Visit www.allen-heath.com/myQu to obtain the latest version of firmware and ensure you are registered to receive notifications on future updates.

The firmware on the Qu and all app versions must have the same major release number. This is the first two digits of each release number.

For example:

Firmware V**1**.**0**.3 and App V**1**.**0**.5 = compatible
Firmware V**1**.**0**.3 and App V**1**.**1**.3 = not compatible

2. Introduction

Welcome to the Qu User Guide.

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 and 3 stereo channels, 12 mixes, 4 matrices, 6 FX engines, plus an SLink port for connection to the Everything I/O ecosystem of remote expanders.

Different Models

There are 3 frame sizes in the range, each with a different number of channel fader strips and local input/output sockets.

Each frame size has a Dante enabled variant indicated by a '**D**' suffix, for a total of 6 models.

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

Dante variants

The **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 16x16 channels of 48kHz or 96kHz audio.

3. Updating Firmware

There are two methods for updating Qu firmware, either with the Qu-MixPad app or by using a USB drive connected to the Qu Drive/USB-A port.

Updating firmware (from V1.1.0 onward) will not clear or delete data, but it is best practice to store a show before carrying out an update if possible.

3.1 Update firmware using the Qu-MixPad app

1. Download the latest version of the app.
2. Connect Qu-MixPad to the Qu (see the App Control section)
3. If an update is required, the app will provide details and instructions on screen, with an option to begin the update process.
4. Confirm the update on the Qu.
5. Restart the Qu.
6. Check that the new version has installed correctly by looking at the version shown in the bottom left of the **Home** screen (displayed on startup, or when no channel is selected, and **PROCESSING** or **ROUTING** screen keys have been selected).

3.2 Update firmware using a USB drive

1. Insert a USB drive formatted to FAT32 into the Qu's USB-A port.
2. Press the **UTILITY** screen key and select **USB Utility** then the **Status/Format** tab.
3. In the USB Status section on the left, it should read **Ready**. If not, use a computer to format the drive to 'FAT' with a 32KB cluster size (Windows) or to 'MS-DOS' (Mac) and try again.
4. Press the **Format** button in the USB Status section and follow the on-screen instructions to format the drive, this will clear all data and set up any necessary folder structure for use with Qu.
5. Once formatted remove the drive and connect to a Windows or Mac computer.
6. Download the latest version of firmware from www.allen-heath.com/resources ensure that the correct version of firmware is downloaded for the model being updated. Dante variants use the same firmware file as the non-Dante models. i.e. The firmware file for the Qu-5 and Qu-5D is the same.
7. Unzip/expand the downloaded ZIP file and copy the firmware file (which has a .bin suffix) to the root of the USB drive, do not place it in any of the folders.
8. Ensure there is only one version of firmware on the USB drive at any one time. Delete all old versions before copying new ones.
9. Safely eject the drive and re-insert into the Qu.
10. Go to the Qu's **UTILITY** screen, select **USB Utility** and then the **Firmware Update** tab.
11. This screen will display the firmware found on the connected USB drive at the top. Touch the **Update** button to begin the update process.
12. Follow the on-screen instructions and touch the **Restart** button when prompted to reboot the Qu and complete the firmware update.
13. Check that the new firmware has installed correctly by checking the current firmware version at the bottom left of the **Home** screen (displayed on startup, or when no channel is selected, and **PROCESSING** or **ROUTING** screen keys have been selected).

4. Connections

4.1 Power

IEC connection

Main power connection with power on/off switch.

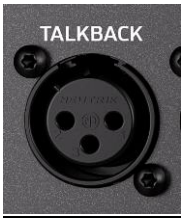
Use the 'P-Clip' to secure mains power cable where required.

4.2 Local Inputs

Combi Inputs

Balanced XLR (1-Ground, 2-Hot/Positive, 3-Cold/Negative)
Or ¼" TRS Jack (Tip-Hot/Positive, Ring-Cold/Negative, Sleeve-Ground)

Recallable preamp with +60dB gain, fixed -20dB pad on TRS input, phantom power supplied to XLR connection only.



Talkback

Balanced XLR (1-Ground, 2-Hot/Positive, 3-Cold/Negative)

Recallable preamp with +60dB gain and phantom power.

Patchable to input processing channels.

Stereo Line Inputs

2x ¼" TRS Jack (Tip-Hot/Positive, Ring-Cold/Negative, Sleeve-Ground)

Normalled (L/M, R), connect mono signals to left socket only. Digital trim available in processing channel.

4.3 Local Outputs

XLR Line Outputs

Balanced XLR (1-Ground, 2-Hot/Positive, 3-Cold/Negative)

Nominal +4dBu output (when output meter displays 0dB)

TRS Line Outputs

Balanced ¼" TRS Jack (Tip-Hot/Positive, Ring-Cold/Negative, Sleeve-Ground)

Nominal +4dBu output (when output meter displays 0dB)

AES Digital Output

Stereo digital output on XLR for use with 110-ohm balanced cables.

Headphone

Stereo ¼" TRS Jack (Tip-Left, Ring-Right, Sleeve-Ground).

Recallable digital trim control.

4.4 SLink

SLink multichannel audio networking port

etherCON RJ45 port for expanding the Qu using the Allen & Heath **Everything I/O** range of expanders. Mode automatically switches between dSnake/ME, DX and gigaACE/GX protocols.

Protocol	Sample Rate	Max Input Sockets	Max Output Sockets
dSnake/ME	48kHz	40	20 (+40 ME)
DX	96kHz	32	32
gigaACE/GX	96kHz	128	128

ⓘ **SLink** does not support multiple protocols on a single connection.

ⓘ Connecting expanders increases the number of available input and output sockets in the system, it does not change the number of input or mix processing channels available.

4.5 Dante (Qu-5D, Qu-6D, Qu-7D only)

Dante multichannel audio networking port

etherCON RJ45 port for connecting the Qu to a Dante network, or directly to other Dante enabled equipment.
Includes preamp control when used with Allen & Heath **DT** expanders.
16x16 channels of audio at 48kHz or 96kHz.

4.6 USB and SD Card

USB-A

(Qu as host, for audio and data storage and recall)
Conforms to USB 2.0 standard. Use FAT32 formatted drives.

USB-C

(Qu as client, for audio and MIDI).
Conforms to USB 2.0 standard. Class compliant USB and MIDI interface.
Driver for Windows available from www.allen-heath.com/resources

SDHC

Full size SD card slot.
Use **SDHC**, up to **32GB**, **UHS-I**, **Class 10**.

4.7 Network

RJ45 Network port

This is used to connect the Qu to a wireless router, access point, local area network or directly to a device, allowing the Qu to transmit and receive control data. For use with Allen & Heath Qu apps, and for MIDI over TCP/IP.

4.8 Footswitch

Mono (TS) or Dual (TRS) ¼" Jack

Can be calibrated for use with momentary or latching switches.

5. Operation and Workflow

5.1 Powering on and off

Powering on

1) Connect mains power IEC.
2) Power on the Qu using the power switch.
3) Turn down output levels on the Qu.
4) Connect outputs to external equipment e.g. amplifiers or powered speakers.
5) Power on any external equipment and set their input levels correctly e.g. amplifiers, powered speakers, IEM transmitters.
6) Turn up output levels on the Qu.

Powering off

1) Turn down output levels on the Qu.
2) Stop any Qu Drive recordings to USB-A or SD Card.
3) Power down or disconnect any external equipment e.g. amplifiers, powered speakers, IEM transmitters.
4) Touch the **Shut Down** button in the **Home** screen (Press the **PROCESSING** or **ROUTING** screen key multiple times to deselect any channel and display the **Home** screen).
5) When prompted, turn off the power using the power switch.

5.2 The basic concept

- Input signals, such as microphones or line level signals, are connected to **Input sockets**.
- **Input sockets** are patched to **Input channels**.
- **Input channels** are used to process and adjust individual signals.
- **Input channels** are summed together and routed to **Mix channels**.
- **Input** and **FX Return channels** can be routed to **Group Mix channels** or **FX** for further processing of the summed signal.
- **Input**, **Group** and **FX Return channels** can be routed to a **Main Mix** or **Aux Mix channels** for further processing of the summed signal.
- **Group**, **Aux** and **Main Mix channels** can be routed to **Matrix Mix channels** for further processing.
- **Input Direct Out, FX Return** and **Mix channels** can be patched to **Output sockets**.
- **Output sockets** are connected to external equipment, such as amplifiers.

5.3 Channel Types

Mono Inputs – 32 input processing channels. These can be sourced from local, remote or digital connections, and sent at different levels to any mix.

Stereo Inputs – 2 stereo line level inputs (ST1 and ST2) are always sourced directly from the local stereo line input sockets. The stereo USB input is always sourced from USB inputs 1&2, whether using USB-A, USB-C or playing back from an SD Card.

Main LR – This is the main mix. All post-fader modes and options follow this mix.

Mixes –6 mono mix channels (Mixes 1-6) that can be paired for up to 3 stereo mixes. 6 stereo mix channels (Mixes 7-12) that can be switched to mono. Mix channels can be used as **Auxes** (independent outputs with pre/post fader options) or as **Groups** (combine multiple input channels into a single group channel for processing and routing).

FX Sends – 4 FX send buses are included for use with internal FX engines.

FX Returns – 6 dedicated stereo return channels with PEQ sourced from any FX unit being used in a 'Mix->Return' configuration. These can be sent to mixes at different levels in the same way as input processing channels.

Matrix –4 mono matrix mixes that can be paired for up to 2 stereo matrix mixes, fed from a combination of other mixes.

DCA – 8 'Digitally Controlled Amplifier's for adjusting the level and mutes of multiple channels with one set of controls.

MIDI – 32 channels strips are available which send MIDI control data using MIDI over USB and TCP/IP.

ⓘ MIDI channel strips only send and respond to MIDI messages; their state is not stored with Scenes or Shows.

5.4 Physical Controls

Keys

All keys are labelled, and most illuminate to show when they are active. All perform specific functions, aside from **Soft Keys** which are user assignable.

Fader Strips

There are 4 layers of freely assignable channel fader strips. For all inputs and FX returns the fader controls the send level of this channel to the selected mix. FX Send, Main LR, Group, Aux and Matrix mix faders control output levels. DCA faders affect the level of the DCA members, and MIDI faders send MIDI level messages. Fader strips are also used by the GEQ **Fader Flip** feature.

Dedicated rotary controls

Used to control the most common processing parameters for the currently selected channel.

Touchscreen and touchscreen rotary control

The touchscreen allows simple user interaction through on-screen buttons and menus. Parameters can also be selected on-screen and adjusted using the touchscreen rotary. With a parameter selected, the touchscreen rotary will illuminate to indicate it can be used.

Screen keys

PROCESSING – Select any input or output channel using a green **SEL** key and the Processing screen will show all audio processing for that channel. Press multiple times to deselect any channel and return to the **Home** screen.

ROUTING - Select any input or output channel using a green **SEL** key and the Routing screen will show all routing options for that channel, including send levels and assignments. Press multiple times to deselect any channel and return to the **Home** screen.

METERS – View all Input, FX and Mix meters. Configure the Chromatic Channel Metering.

FX – Adjust parameters and settings for the 6 internal FX units.

SCENES – Store and recall different mix states. Set recall filters and manage the Cue List.

SETUP – Includes audio, surface, mixer config, network and user setup options.

UTILITY – Includes recording/playback, data transfer, AMM and Gain Assistant tools.

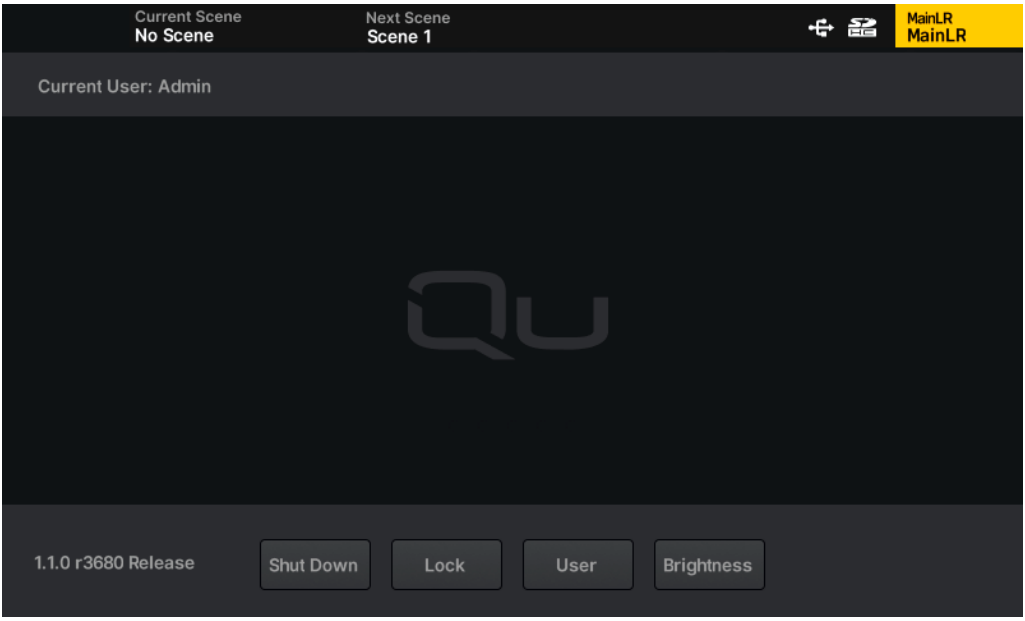
I/O – All input and output patching.

5.5 Workflow

The Qu UI has been designed for fast operation during mixing - the most important parameters have dedicated controls and there are shortcuts available on the physical surface to avoid menu diving wherever possible.

- Press a blue **LR**, **MIX** or **FX** key on the right-hand side of the surface to display and adjust send levels from each channel to the selected Mix on faders. Use layer keys to move through the 4 layers of faders.
  The **MIX** strip controls the overall send level of the selected Mix/FX send.
- Press Mute to completely mute a channel. Mute keys are illuminated or flash when a channel is muted.
- Select a channel by pressing a **SEL** key. The physical controls to the left of the screen can now be used to adjust parameters for the selected channel.
- Go to the **PROCESSING** screen to see an overview of the processing for the selected strip. Touch on any processing 'block' at the top to see a detailed view, then touch a parameter on-screen and use the touchscreen rotary to adjust.
- Use **PAFL** (**P**re/**A**fter **F**ade **L**isten) keys to route a channel to the PAFL bus/Headphone output.
- Mix sends set to **POST-FADE** follow the LR send levels. To toggle channels between **PRE-FADE** and **POST-FADE** for the currently selected Mix, hold the **PRE FADE** key and use **SEL** keys.
- To assign or un-assign a channel from the currently selected mix completely, hold the **ASSIGN** key and use **SEL** keys.
- Pressing and holding the **CH TO ALL MIX** key will display the send levels for the currently selected channel to all mixes across fader strips.
- Press the **FX** screen key to view and adjust the FX engines.
  Use the **LIBRARY** key to recall FX types and presets - change parameters by selecting them on-screen and using the touchscreen rotary.
  FX buses 1 to 4 send to FX engines 1 to 4 by default.
  FX Return channels are routed to Mixes in the same way as input channels.
- Hold the **COPY** key and press an **IN** key, a **SEL** key or a **MIX** key to copy parameters or sends.
  Hold the **PASTE** key and press a **SEL** key or **MIX** key to paste the processing or send assignments to another channel.
  Hold the **RESET** key and press an **IN** key, a **SEL** key or a **MIX** key to reset parameters or send levels and assignments.
- Press the **VIEW** key to cycle through channel and socket information on the channel strip displays as well as see Soft Key assignments on screen.

5.6 Home Screen



This is the first screen shown when powering on the Qu. It is also shown when no channels are selected, and **PROCESSING** or **ROUTING** screen keys are active. Press the **PROCESSING** or **ROUTING** screen key multiple times to return to the **Home** screen.

Shut Down – Touch to shut down the Qu.

Lock – Touch to lock the Qu surface and prevent adjustments.

User – Touch to change to another active user.

Brightness – Touch to go directly to the touchscreen and LED brightness settings screen.

Screen north bar

The north bar is always visible at the top of the screen, from left to right it can display the following information:

- The currently selected channel.
- The current (last recalled) and next (selected) scene.
- Errors (tap on these for more information).
- Whether any remote-control apps are connected.
- SLink/Dante connection status.
- Qu Drive symbols for USB-A and SD card availability and recording/playback status.
- The currently selected mix.

6. App control

Qu-MixPad app provides full remote control of the Qu for the engineer.

Qu4You is an easy-to-use personal monitoring app, which also works over a network, and controls the send levels to just one of the outputs.

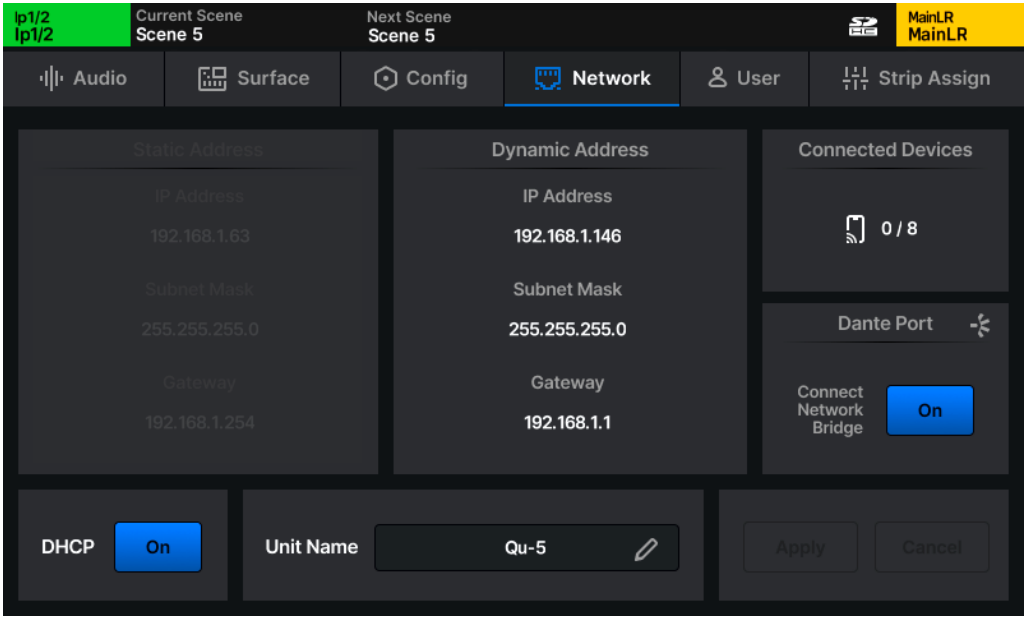
Up to 8 app instances can be connected to a Qu at once, with up to 2 of these being Qu-MixPad and any remainder being Qu4You.

Note that only control messaging is shared over the network connection between the Qu and any connected app, no audio is transmitted or received.

The firmware on the Qu and all app versions must have the same major release number. This is the first two digits of each release number. For example:

Firmware V**1**.**0**.3 and App V**1**.**0**.5 = compatible
Firmware V**1**.**0**.3 and App V**1**.**1**.3 = not compatible

6.1 Connecting Apps



|| SETUP | Network

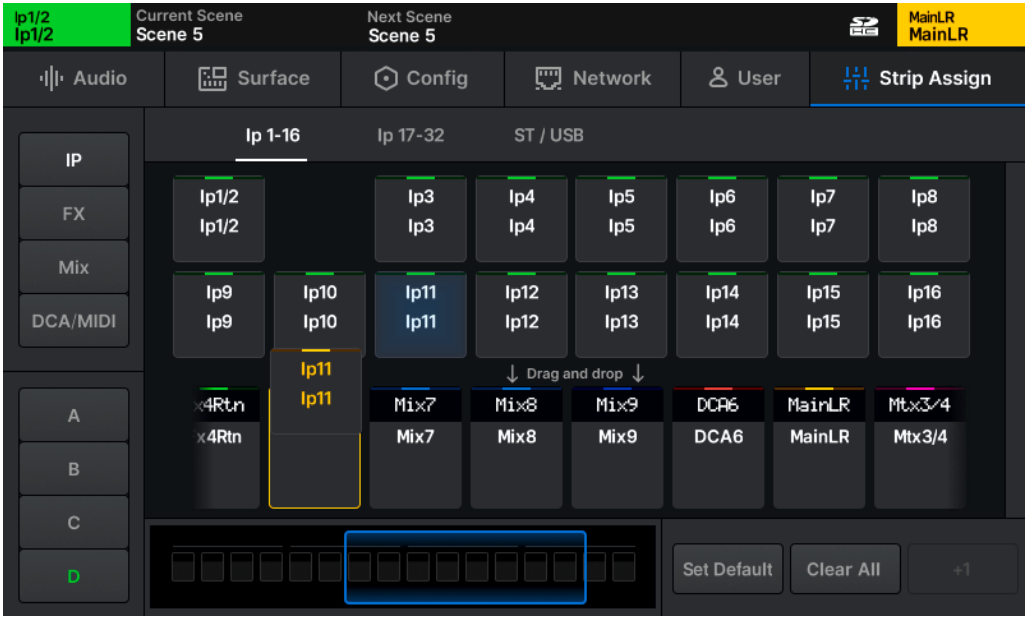
1) Connect the Qu to the external router or network as a client, using a network cable connected to the network port. Follow instructions on any router or access point as if the Qu were a computer (e.g. connect to a LAN port).
2) Navigate to **SETUP** > **Network**
3) Setup the network. It is recommended that **DHCP** is set to **On**, to allow automatic address assignment via DHCP where possible. Setting **DHCP** to **Off** should only be required where a DHCP host is not available, or for setups where an IT or networking team needs to allow access.

ⓘ When DHCP is turned On and no IP address is provided to the Qu, it will auto-assign itself an address. This is noted by a (*) appearing after the address in the network config and system information screens.

4) Connect a device to the same router, access point or network. It is also possible to connect a device directly.
5) Run Qu-MixPad or Qu4You and connect to the Qu from the Choose Unit list.

7. Mixer setup

7.1 Strip Assign



|| SETUP | Strip Assign

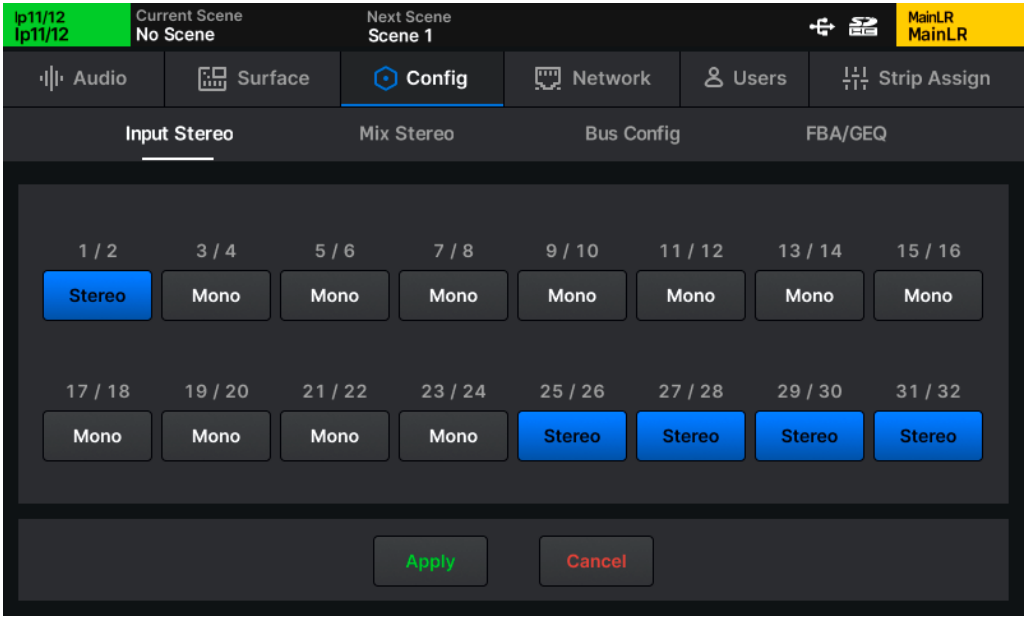
All fader strips of Qu are freely assignable across 4 layers.

- Qu channels are displayed in the top half of the screen. View different channel types by touching buttons on the left and use the tabs at the top to view all available channels.
- Fader strips are displayed in the bottom half of the screen. Select layers by touching the buttons on the left or switching layers on the surface, then touch and drag left or right or use the blue navigation slider to view all available fader strip slots.
- To assign channels to fader strips, touch and drag them from the top row to a fader strip in the bottom row.
- To move channels left or right, touch and hold for a second to 'pick them up' again.
- To remove assignments, touch and drag them out of the fader strip at the bottom towards the top of the screen.
- Use **Set Default** or **Clear All** buttons to replace or clear all strips in the current layer.
- Use the **+1** button to assign the next logical channel to the next strip

ⓘ FX return channels can be assigned to fader strips but will not be visible unless they are routed from the output of the FX engine (i.e. set as **Mix -> Return** on the back panel).

7.2 Mixer Config

Input Stereo



|| SETUP | Config | Input Stereo

To use input channels as stereo channels throughout the mixer, they must first be switched into stereo mode.

- Odd/even pairs of input channels can be switched between mono and stereo mode by touching the **Mono/Stereo** button.
- Touch the **Apply** button to apply any changes.
- Touch the **Cancel** button to undo changes and display the current state again.

ⓘ By default, changes to Input and Mix mono/stereo state on scene recall are blocked by Global Filters.

Mix Stereo

|| SETUP | Config | Mix Stereo

Mixes 1-6 are mono and can be paired to create up to 3 stereo mixes.

Mixes 7-12 can be used as mono or stereo channels throughout the mixer.

Matrix (**Mtx**) mixes are mono and can be paired to create 1 or 2 stereo matrix mixes.

When set to stereo, signals sent from mono input channels can be panned and stereo signals are passed through in stereo with balance control. When mixes are set to mono, stereo input and group signals are summed.

- Any mix or pair of mixes can be switched between mono and stereo modes by touching the **Mono/Stereo** button.
- Touch the **Apply** button to apply any changes.
- Touch the **Cancel** button to undo changes and display the current state.

ⓘ By default, changes to Input and Mix mono/stereo state on scene recall are blocked by Global Filters.

Bus Config

|| SETUP | Config | Bus Config

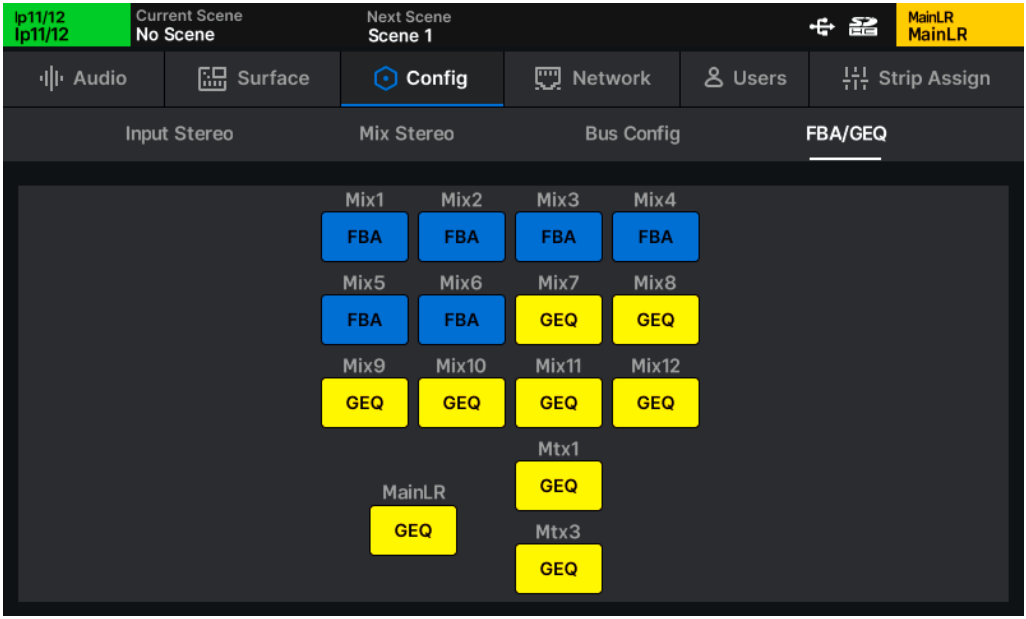
The 12 mixes can be switched between group and auxiliary modes under the **Bus Config** tab.

- Any mix or pair of mixes can be switched between Aux and Group mode by touching the **Grp/Aux** button.
- Touch the **Apply** button to apply any changes.
- Touch the **Cancel** button to undo changes and display the current state.

ⓘ Mixes 1-6 must be switched in pairs to allow them to then also be switched between mono and stereo.

ⓘ Mix keys for auxes illuminate blue when active, and mix keys for groups illuminate magenta.

FBA/GEQ



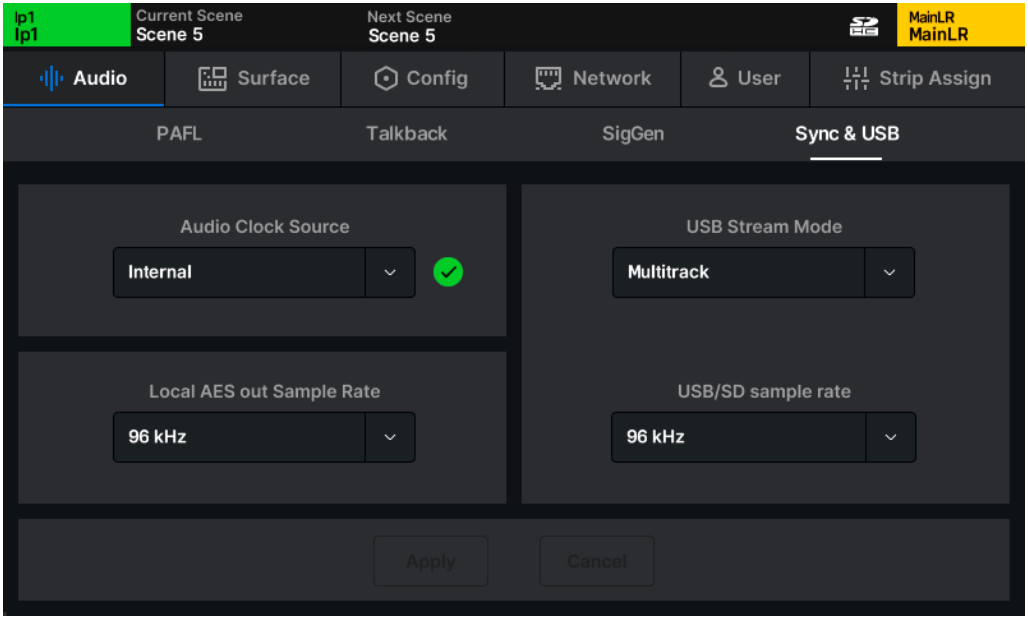
|| SETUP | Config | FBA/GEQ

The **FBA/GEQ** tab displays whether each mix is using the Feedback Assistant or GEQ.

- Touch any **FBA**/**GEQ** button to switch between use of the **FBA** or **GEQ**
- Switching to **FBA** will recall the default/reset FBA
- Switching to **GEQ** will recall a flat/reset Constant-Q GEQ

ⓘ Note that switching from FBA to GEQ could cause instant feedback if FBA filters have been applied!

7.3 Audio Clock Sync and Digital I/O options



|| SETUP | Audio | Sync & USB

Audio Clock Source

- Touch the **Audio Clock Source** value to select a source.

Internal - Sync to the internal audio clock.
SLink - Sync to a digital clock signal being received by the SLink port.
Dante - Sync to the Dante module (Qu-5D, Qu-6D and Qu-7D only)

- Touch the **Apply** button to apply changes.

When successfully synchronised, a green tick will be shown to the right of the source selection. When there is no suitable clock being received, a red cross is shown to the right of the source selection, and the Qu will 'fall back' to using the internal audio clock.

- When using the Qu as a standalone system with or without expansion units, **Internal** should be selected as the clock source.
- When connecting to another system or a Dante network, a single clock source should be determined and all other devices should be synced to it, either directly or via cascaded devices.

ⓘ The Qu will always run at 96kHz internally, even if the clock source it is synchronised to is running at 48kHz.

ⓘ Issues with clocking can result in audible clicks and pops in the audio.

Local AES out Sample Rate

The sample rate of the digital AES output can be changed if required.

- Touch the current sample rate value, then select an option.

AES Output Sample Rate - 44.1kHz, 48kHz, 88.2kHz, 96kHz

- Touch the **Apply** button to apply any changes.

USB Stream Mode

Select between a Stereo or Multitrack output for the USB-C connection. When set to Stereo, only USB input and output sockets 1&2 are used, which is recommended for simple recording and playback or for streaming or recording with mobile devices that do not support multichannel audio.

Set to Multitrack for multichannel recording to and from a DAW.

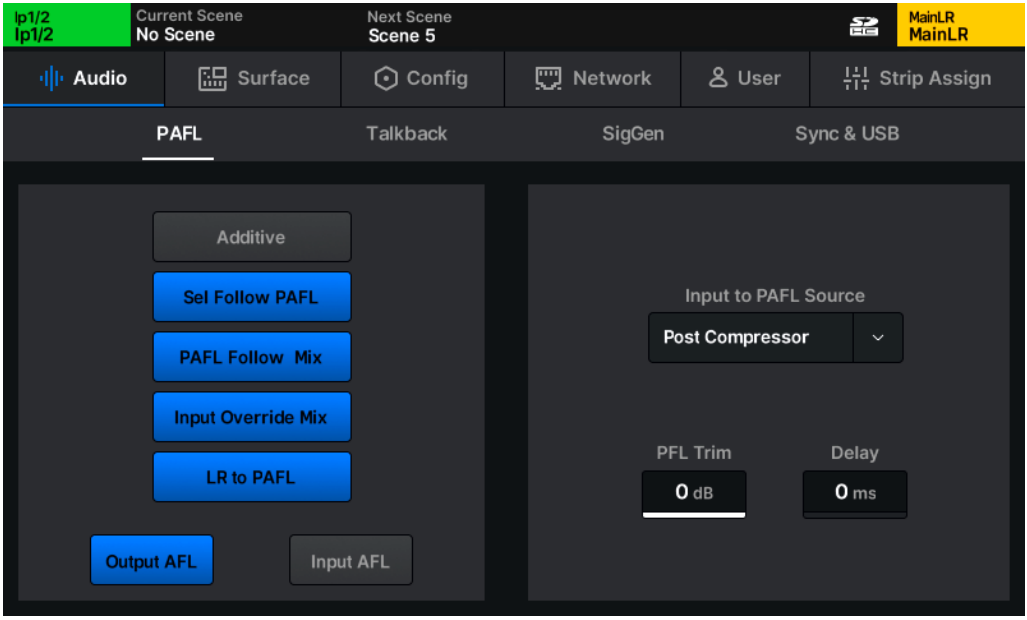
USB Sample Rate

The sample rate setting applies to both USB-C and Qu Drive (USB-A and SD card) and can be switched between 96kHz (no sample rate conversion) and 48kHz (sample rate conversion enabled).

Conversion takes place between the core and USB-C or Qu Drive connection so the Qu will continue to run all processing at 96kHz whichever mode is selected.

ⓘ Selecting 48kHz mode will allow recording and playback of up to 32 channels to and from Qu Drive. For more information, see the Qu Drive Multitrack Recording/Playback section of this guide.

7.4 PAFL



|| SETUP | Audio | PAFL

The **P**re/**A**fter **F**ade **L**isten settings affect the behaviour of the PAFL bus which is routed to the Qu headphone output and displayed on the 12 segment LED meter.

- Touch any button on the left of the screen to turn an option on or off.

Additive - Allows multiple channel strips to be routed to the PAFL bus at once.

Sel Follow PAFL - Pressing a PAFL key will also select (**SEL**) a channel.

PAFL Follow Mix - When PAFL is active on the mix channel strip, the mix channel being routed to PAFL will follow mix selection.

Input Override Mix - Pressing the PAFL key of an input channel unassigns any mix channels from the PAFL bus. Unassigning all input channels from the PAFL bus then reassigns the previously assigned mixes.

LR to PAFL - When no other PAFL routing is active, the main LR mix is routed to the PAFL bus.

Output AFL – The level of output channels routed to the PAFL bus is post-fader.

Input AFL – The level of input channels routed to the PAFL bus is post-fader.

ⓘ Pre and Post fade (Pre and After Fade) describes whether the level of the signal is affected by the send level to the Main LR mix (input channels and groups) or the main mix output fader (all other mixes). It does not change the monitoring source point in the signal path.

Input to PAFL Source Point –Select where in an input channel the PAFL signal is sourced from.

Post Preamp - Signal is affected by preamp, trim and polarity only
Post PEQ - Also includes DEEP Preamp, HPF, Gate, Insert and PEQ
Post Compressor - Also includes Compressor
Post Delay/AMM - Also includes Channel Delay and AMM

ⓘ Note that the **Post Preamp** setting does not include DEEP Preamp processing.

ⓘ This setting determines the behaviour of the 12 segment LED meter when an input is being monitored. It may be different to Chromatic Channel Metering depending on the Input Meter Source setting.

PFL Trim – Attenuates the level of PFL signal routed to the PAFL bus. Does not affect AFL.

Delay – The PAFL delay can be used to align the PAFL bus when, in a live sound environment, the naturally delayed sound from a sound system can be heard at the same time as the otherwise instant signal fed to headphones or monitors, causing phase issues or an audible delay.

7.5 Talkback

|| SETUP | Audio | Talkback

Talkback allows the engineer to 'talk back' to the stage or performers. When the **Talk** key is pressed on the mixer surface, the talkback source is routed to all assigned mixes.

- Source, preamp and trim settings are the same as those used in the **PROCESSING** > **Source** screen and can be adjusted in exactly the same way.
- Similarly, HPF works in the same way as for any input channel as found in the **PROCESSING** > **EQ** screen.
- Touch any mix assign button to switch the talkback feed on or off for that mix.

Momentary + Latch - When this mode is on, a quick single press of the **Talk** key toggles talkback on or off, though the key will continue to work as in momentary mode if held.

ⓘ Note that the local **Talkbk** socket can be used as an extra input socket. When **Talkbk** is assigned to an input channel, changing preamp settings in the **PROCESSING** > **Source** screen for that channel will also change settings in the Talkback setup and vice versa. The same logic applies when a source other than the local **Talkbk** socket is assigned as the Talkback source. The HPF and Trim however, are independent.

ⓘ The talkback output can also be routed to any output from the **I/O** screen and appears in the **Monitor Out** source options. This output respects the **Talk** switch and is useful for a dedicated talkback speaker or when using an ME system.

ⓘ Talkback has priority over SigGen when both are routed to a Mix.

7.6 Signal Generator

|| SETUP | Audio | SigGen

The signal generator can be used to send a signal to a mix for level configuration, or can be used in conjunction with an RTA and a measurement microphone to check the frequency response of a system.

The signal generator can also be used by any input channel and is available as an option in the input source selection pop-up.

Signal Type – Select Sine, White noise, Pink noise or Band-pass noise.

Freq – Adjust the frequency of a sine wave or the centre frequency of the band pass filter.

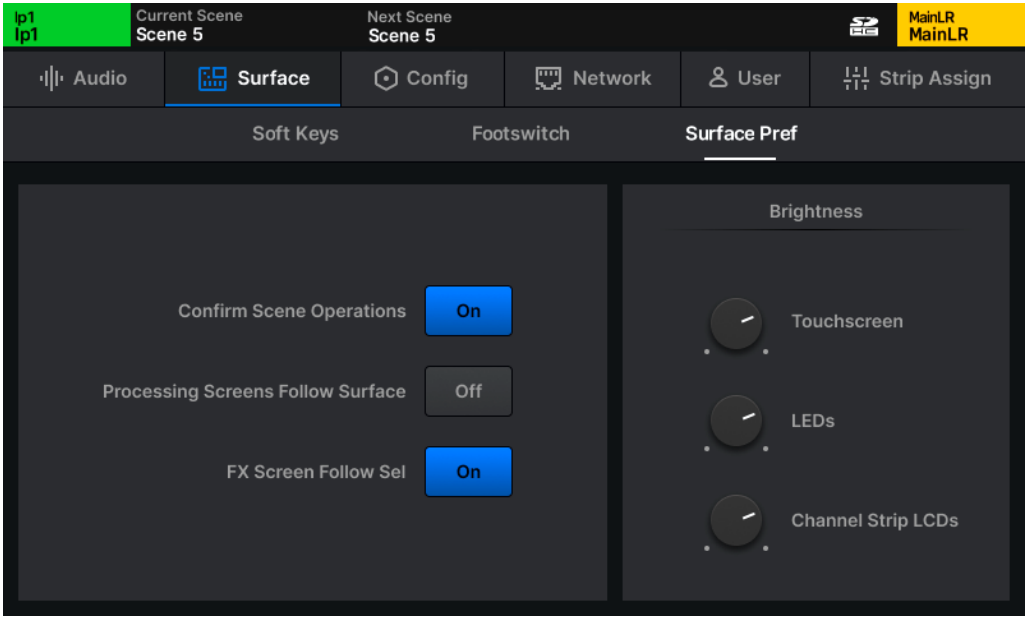
Level – Adjust the signal level, before it is sent to a channel.

Mute - Mute or unmute the signal completely.

- Touch any mix assign button on the right of the screen to assign or unassign the signal generator to or from a mix.

ⓘ Talkback has priority over SigGen when both are routed to a Mix.

7.7 Surface Preferences



|| SETUP | Surface | Surface Pref

ⓘ This screen can also be accessed by pressing the Brightness button on the Home page.

Confirm Scene Operations - Enable confirmation pop-ups when performing scene overwrite, recall or delete operations.

Processing Screens Follow Surface – When adjustments are made to surface controls, the **PROCESSING** screen will jump to that processing 'block'.

FX Screen Follow Sel - The FX unit selected in the **FX** screen will follow the selection of FX send and return channels, as well as any channel where an FX unit has been inserted.

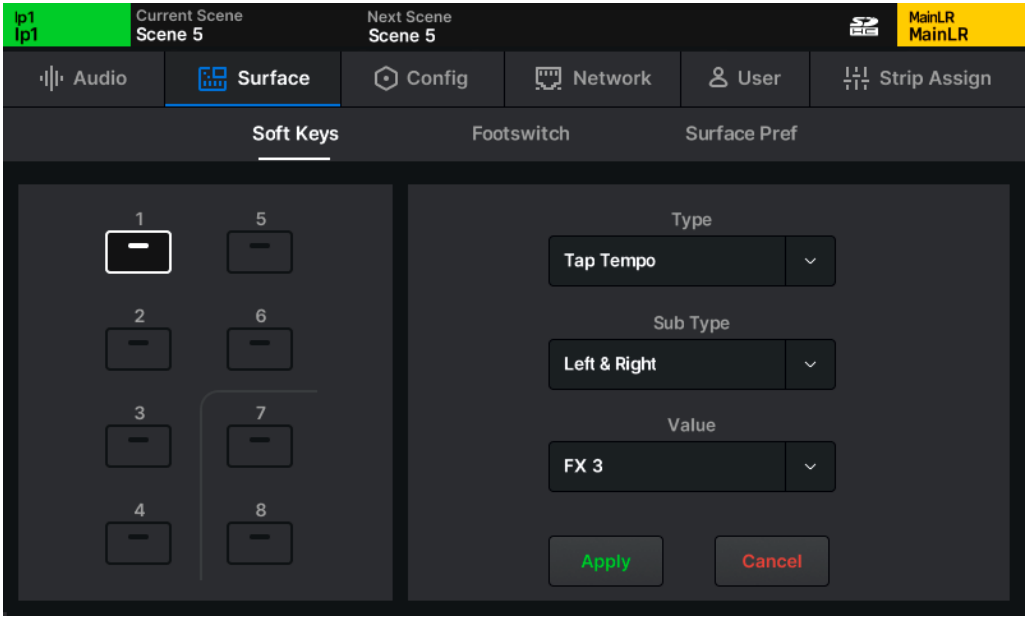
Touchscreen – The brightness of the main screen.

LEDs – The brightness of all surface LED's including keys, channel and PAFL metering.

Channel Strip LCDs – The brightness of channel strip LCD display backlights.

7.8 Soft Keys/Footswitch

Soft Keys



|| SETUP | Surface | Soft Keys

Soft Keys allow you to customise surface controls of the Qu.

To change the function of a Soft Key:

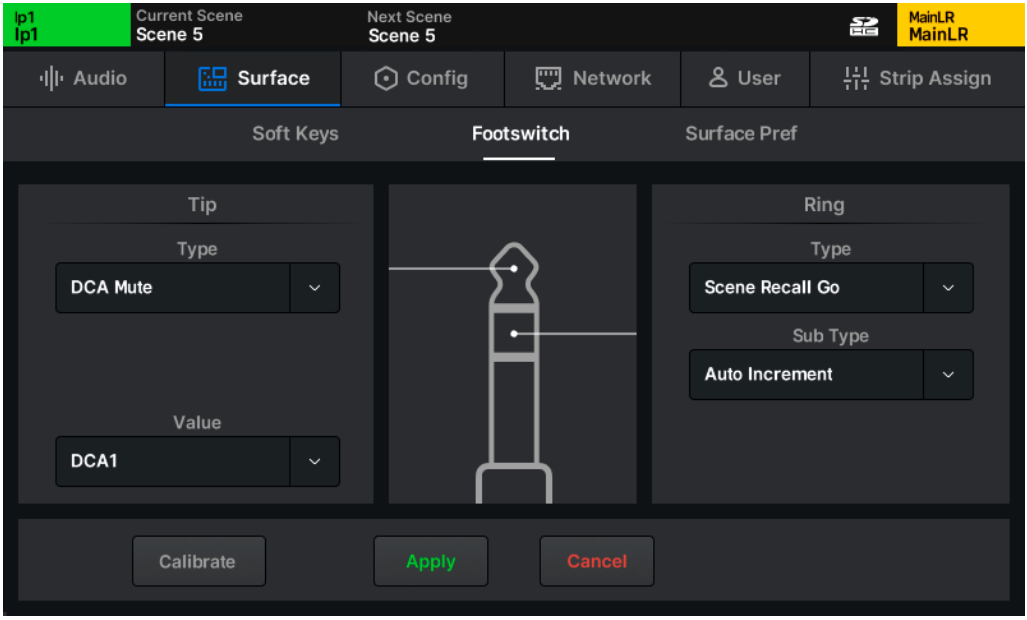
1) Touch a numbered Soft Key button on the left-hand side, these match the labelling on the surface of the Qu.
2) Touch the **Type** and select a type.
3) Touch the **Sub Type** (where available) and select an sub type.
4) Touch the **Value** (where available) and select an option.
5) Touch the **Apply** or **Cancel** button to apply or disregard any changes.

Soft Keys illuminate with different colours depending on function. When assigned to a Tap Tempo, they flash to display the current tempo.

Soft Keys can have different functions assigned per-scene, though by default any change is blocked by the Soft Key Global Filter.

ⓘ Press and hold the **View** key on the surface to display the current Soft Key assignments on the touchscreen.

Footswitch



|| SETUP | Surface | Footswitch

A single footswitch using a TS (Tip, Sleeve) connection or a dual footswitch using a TRS (Tip, Ring, Sleeve) connection can be used with Qu.

Each switch can be set for independently for Latching, Momentary or Soft Latch (momentary acting as latching) operation.

Calibrate – Follow steps to set up a connected footswitch.

Tip/Ring – Assign the function to be performed by each footswitch. If using a single TS footswitch, assign only Tip.

Once functions have been selected, press the **Apply** button to apply the changes or press the **Cancel** button to clear any changes and display the current assignments again.

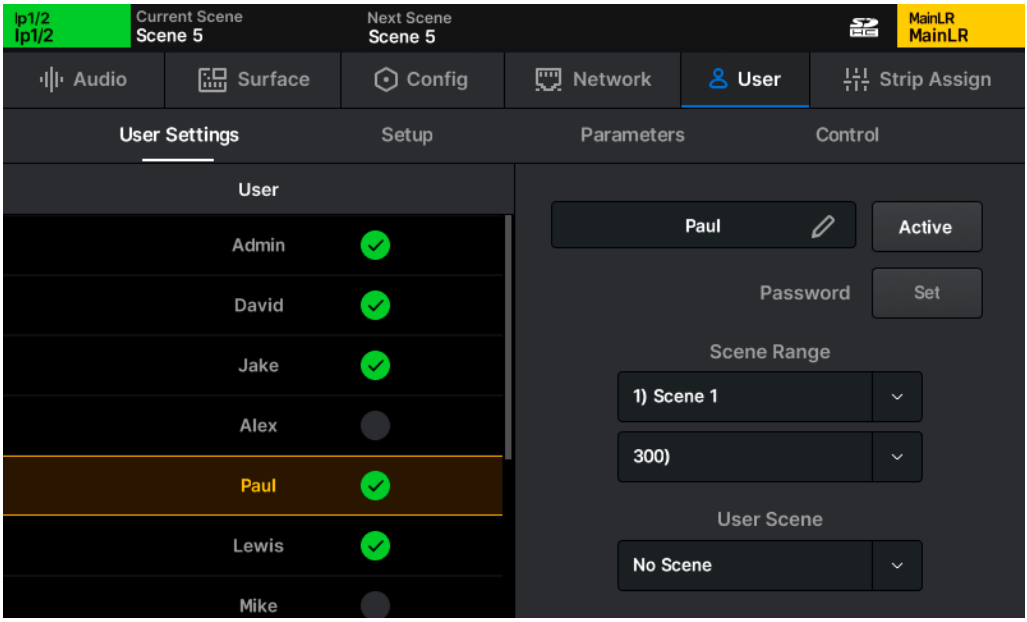
Possible SoftKey / Footswitch assignments			
Type	**Sub Type**	**Value**	**Key Colour**
Unassigned	N/A	N/A	N/A
AMM Channel On/Off	N/A	All mono input channels	Blue
AMM In/Out	N/A	N/A	Green
Channel Mute	N/A	All audio channels	Red
Channel PAFL	N/A	All audio channels	Yellow
DAW Control	N/A	Bank Up, Bank Down	Red (flash)
DCA Mute	N/A	DCA's 1 to 8	Red
DCA PAFL	N/A	DCA's 1 to 8	Yellow
MIDI note On/Off	MIDI Channel	Note	Red (flash)
MIDI Program change	MIDI Channel	Program 0 - 127	Red (flash)
Mix Select	N/A	All mixes	Blue/Magenta
MMC	N/A	Rewind, Play, Pause, Stop, FFwd, Record	Red (flash)
Mute Group	N/A	Mute Groups 1 to 8	Red
PAFL Clear	N/A	N/A	Red (PAFL On)
Recall Scene	N/A	All saved scenes	Red (flash)
Scene Next	N/A	N/A	Red (flash)
Scene Previous	N/A	N/A	Red (flash)
Scene Recall Go	None, Auto Increment	N/A	Red (flash)
Scene Store Current	N/A	N/A	Red (flash)
Qu Drive Multitrack	N/A	Previous, Stop, Play/Pause, Record, Next, Rec/Stop	Blue/Red/ Green
Qu Drive Stereo Play	N/A	Previous, Stop, Play/Pause, Next	Blue/Red/ Green
Qu Drive Stereo Record	N/A	Rec, Stop	Red
Talk	N/A	N/A	Green
Tap Tempo	Left, Right, Left & Right	FX engines 1 to 6	Yellow (flashing)
Global Tap Tempo	N/A	N/A	Yellow (flashing)

7.9 Users

Along with the Admin user, Qu can have 10 other users, each with individual passwords, permissions, scene access and a user scene (recalled on login).

These users can log in on the Qu itself as well as with any client connected to the Qu remotely, such as the Qu-MixPad and Qu4You remote apps. Meaning multiple users can be logged in on different devices at the same time.

Users



|| SETUP | Users | User Settings

- ⓘ User setup and permissions can only be carried out when logged in as Admin.
- ⓘ The Admin user is always active and has unrestricted access to all settings of the Qu.

To change user settings and permissions, first select a user from the list on the left. You are now making changes for this user only, so the user list is visible in all tabs, allowing you to quickly compare users and change permissions at any time.

User Settings

User name - Touch the user name text box to change the name of the user.

Active/Inactive – Inactive users cannot log in, but all settings and permissions remain stored.

Password Set - Set or change a password for the user. This password is used when logging in as well as when locking the desk from the **Home** screen.

ⓘ To remove a password, just set a blank password for the user.

Scene Range - Select a range of scenes that the user has access to (the default range is all 300 scenes).

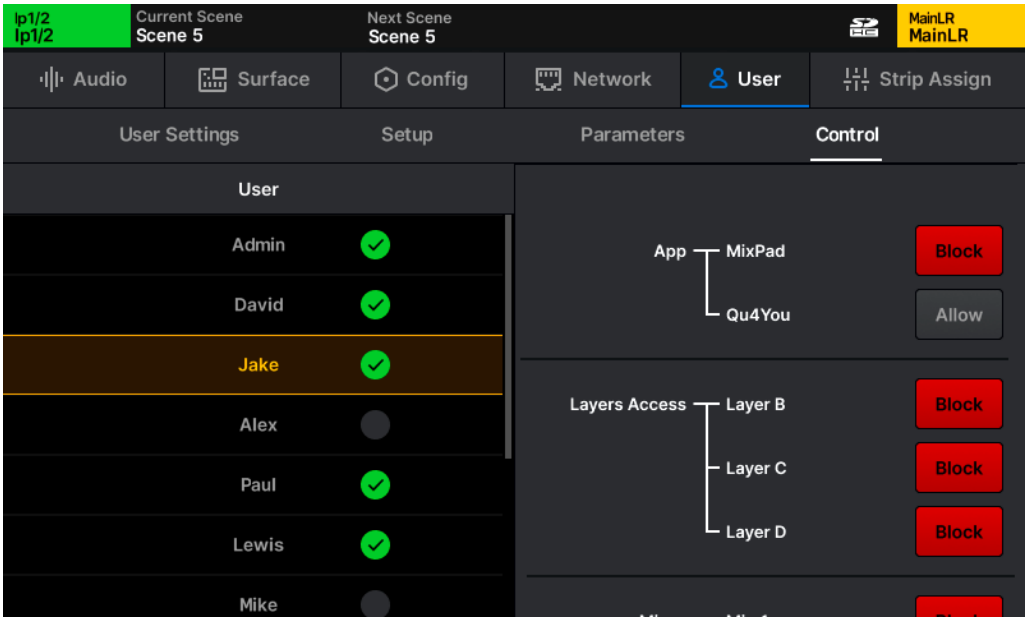
User Scene - Select a scene to load when this user logs in.

User Permissions Library

With one of the ten users selected, pressing the **Library** key will display the user permissions library. Factory presets are included as starting points and for quick setup, but you can also store and recall user presets.

- Select a preset and touch **Recall** to apply permission settings to the currently selected user.
- Touch **User** to access the user library where you can manage your own presets.

User Permissions



|| SETUP | Users | Control

Touching the **Setup**, **Parameters** or **Control** tabs will display lists of parameters and features that can be set to **Allow** or **Block** on a per-user basis.

- Touch the **Allow**/**Block** button on the right to toggle permission.

Available User Permissions

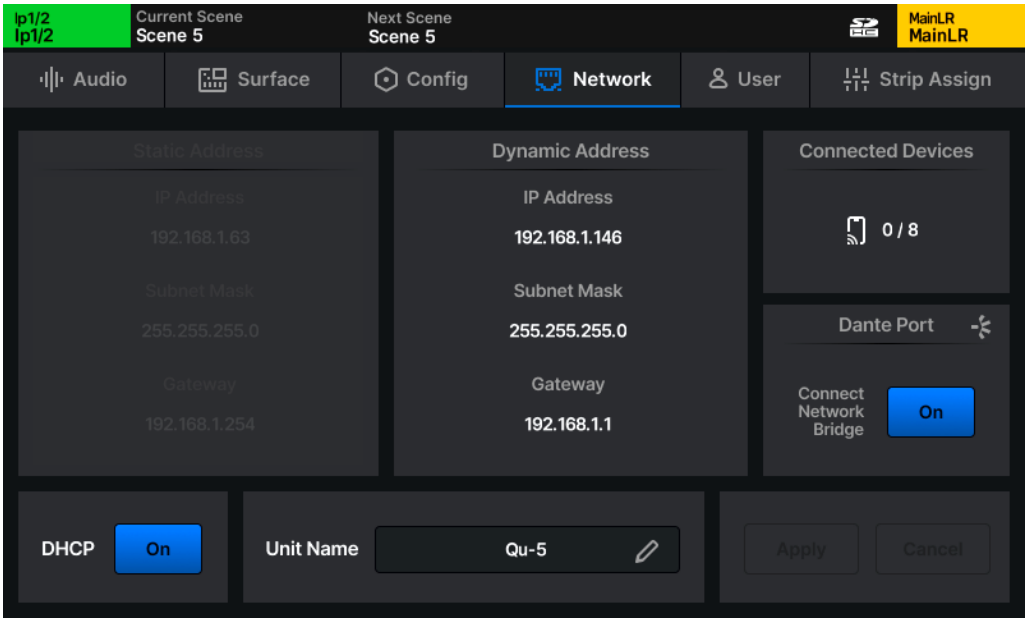
Setup
USB Data Recall
USB Data Store
USB Data Modify
Scenes Recall
Scenes Store
Scenes Modify
Cue List Modify
Global Filter
Channel Safes
Scenes Preferences
Library Recall
Library Store
Library Modify
FX Library Recall
FX Library Store
FX Library Modify
Input Stereo
Mix Stereo
Bus Config
PAFL/Talkback Settings
Signal Generator
Audio Sync Options
USB
Strip Assign
Soft Control Setup
Meter Settings
MIDI Settings
Network Settings
USB Format

Parameters
Name/Colour
Input Preamp
Input/Group EQ
Input/Group Other Processing
Mix EQ
Mix Other Processing
FX Parameters
Direct Out and Mix Settings
Mix Assign and Pre/Post
DCA/Mute Group Assign
Input Patching/Library
Output/Insert/FX Patching
AMM Setup/Assign
AMM Parameters

Control
Qu MixPad App Access
Qu4You App Access
Qu Control App Access
Layers B-D*
Mixes 1-12*
FX Sends 1-4*
Matrices 1-4*
Qu Drive Playback
Qu Drive Stereo Record
Qu Drive Multitrack Record

*Assignable per layer/mix

7.10 Network



|| SETUP | Network

For use with any control over Ethernet, such as remote app control or use with MIDI over TCP/IP, the Qu must be connected as a device on a network via the **Network** port.

ⓘ When using a wireless router or access point, be sure to connect the Qu **Network** port to an available LAN port. The network port **Lnk** LED on the Qu will illuminate to show network activity.

With default settings, the Qu will automatically connect to any network which uses DHCP to assign IP addresses and will be seen by any apps running on devices connected to the same network and in the same sub domain.

In some situations, it is necessary or preferable to use a static IP address. It is not recommended to use the static settings unless you fully understand the network you are connecting to.

DHCP - Switch DHCP mode on or off. Dynamic address values are displayed when DHCP is enabled and the Qu has been assigned an address. If an address is not assigned via DHCP, the Qu will auto assign itself an address. In this case, an asterisk ('*') will be displayed.

Static Address - Can be set if **DHCP** mode is off. Touch any of the static network values to enter new values.

Unit Name - Change the name of the Qu as seen by other devices on the network including apps.

Connected Devices – Displays the number of app instances currently connected to the mixer. A total of 8 instances can be connected at once, with up to two of these being Qu-MixPad.

- Touch **Apply** or **Cancel** button to apply or disregard any changes.

7.11 Dante (Qu-5D, Qu-6D, Qu-7D only)

The Dante port on the Qu-5D, Qu-6D and Qu-7D provides a 16x16 channel connection to a Dante network running at either 96kHz or 48kHz. This can be used to send audio between the Qu and any other Dante enabled equipment.

Visit the Audinate website (www.audinate.com) to learn more about Dante, and to download software including **Dante Controller**, which is required for setup and patching between Dante devices on a network.

Clock/Sync

There should be only one clock leader on a multi device system sharing audio. The Dante port/module should be considered as a separate device to the Qu core when it comes to clock/sync and patching. This means there are two options regarding clock source setup:

Qu as clock leader – Set Qu Audio Clock Source to **Internal**, turn on 'Enable Sync To External' for the device using Dante Controller.

Dante as clock leader – Set Qu Audio Clock Source to **Dante**. Then using Dante Controller, turn off 'Enable Sync To External' for the device and allow the Dante network to select a leader automatically or select a preferred leader.

Patching

When patching to/from Dante sockets in the system, you are patching between the Qu core and the Dante module/port. You must then use Dante controller to carry out further patching between the module and any other Dante modules or devices on the network.

Control Network Bridge

On the Qu-5D, Qu-6D and Qu-7D, the **Network** screen also contains the **Control Network Bridge** switch.

When the Control Network Bridge is on, the Dante port is internally connected (bridged) to the Qu Network port. This allows a computer connected to the Dante network to also control the Qu using remote apps or MIDI over TCP/IP, or for a computer connected to the Qu's Network port to run Dante Controller and adjust patching or device settings.

ⓘ The Control Network Bridge is for control messaging only, the Qu's Network port cannot be used for audio connections.

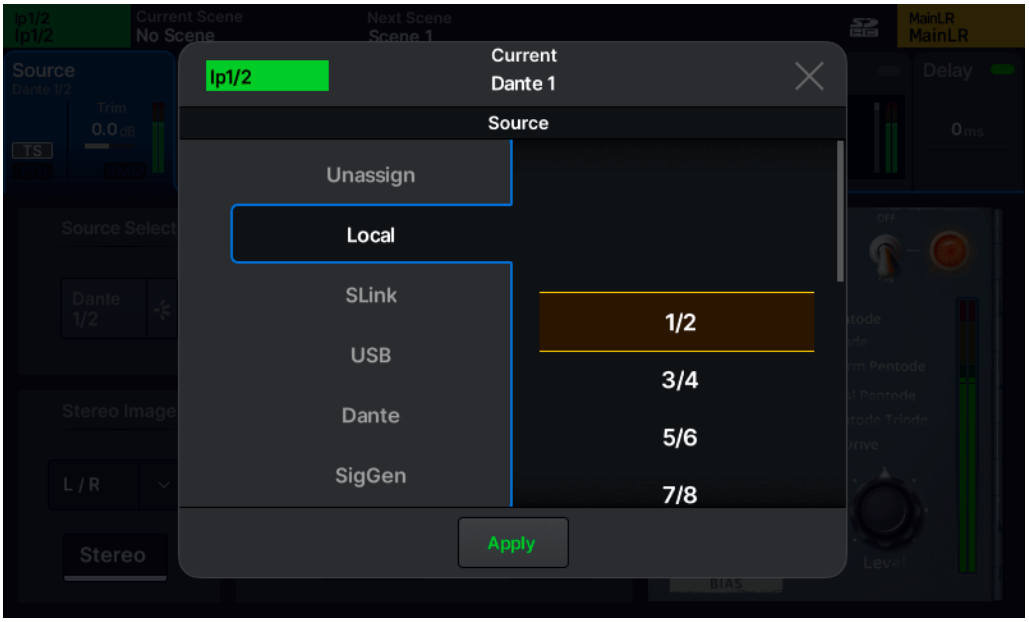
8. Patching

8.1 Input Patching

Any of the Qu's 32 mono/linkable input processing **channels** can be sourced from any one of the available input **sockets**. This includes all Local, Remote and Digital input sockets and the Signal Generator.

Each channel can only be sourced from a single socket, but it is possible to patch one input socket to multiple input processing channels. Note that socket preamp controls (preamp Gain, 48V and Pad) will be shared when patching the same socket to multiple channels as these 'belong' to the socket, but all processing and send levels are independent as these 'belong' to the channel.

From the PROCESSING > Input > Source screen



|| PROCESSING | Source | Source Selection (pop-up)

- Touch the source in the **Source Select** section to open the source select pop-up.
- Select a socket type on the left-hand side.
- Select a socket number on the right-hand side, touch and drag or use the touchscreen rotary to scroll through all available options.
- Touch the **Apply** button to patch the socket to the channel, or close the pop-up to cancel.

From the I/O > Inputs screen

|| I/O | Inputs

With Inputs selected at the top of the **I/O** screen, all 32 patchable input channels are displayed along with the socket they are currently sourced from.

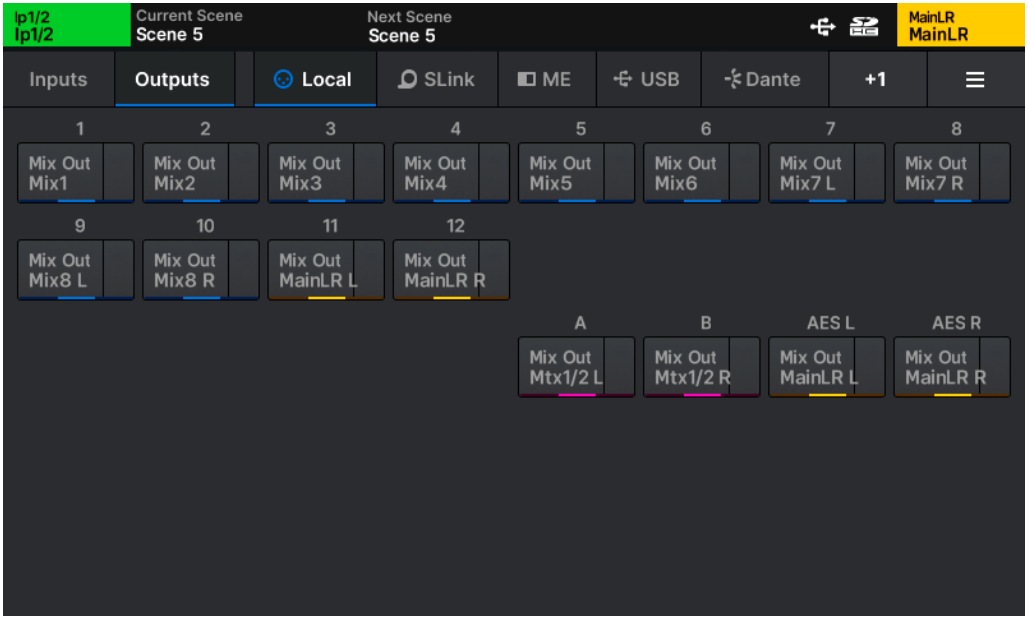
- Touch the source of any input channel to open the source select pop-up.
- Select a socket type on the left-hand side.
- Select a socket number on the right-hand side, touch and drag or use the touchscreen rotary to scroll through all available options.
- Touch the **Apply** button to patch the socket to the channel, or close the pop-up to cancel.

8.2 Output Patching

Any of the Qu's available output **sockets** can be sourced from any Qu XCVI core output, including Mix Outputs, FX Returns and Input Direct Outputs.

Each output socket can only be fed by a single source, but any source (XCVI core output) can be patched to multiple output sockets.

Local



|| I/O | Outputs | Local

With Outputs selected at the top of the **I/O** screen, touch **Local** to see all Local output sockets (the analogue sockets on the rear of the mixer) along with the channel, mix or other core output they are currently sourced from.

- Touch the source of any output socket to open the source select pop-up.
- Select a channel, mix or other output type on the left-hand side.
- Select a specific channel, mix or other output on the right-hand side, touch and drag or use the touchscreen rotary to scroll through all available options.
- Touch the **Apply** button to patch the Qu output to the output socket, or close the pop-up to cancel.

USB

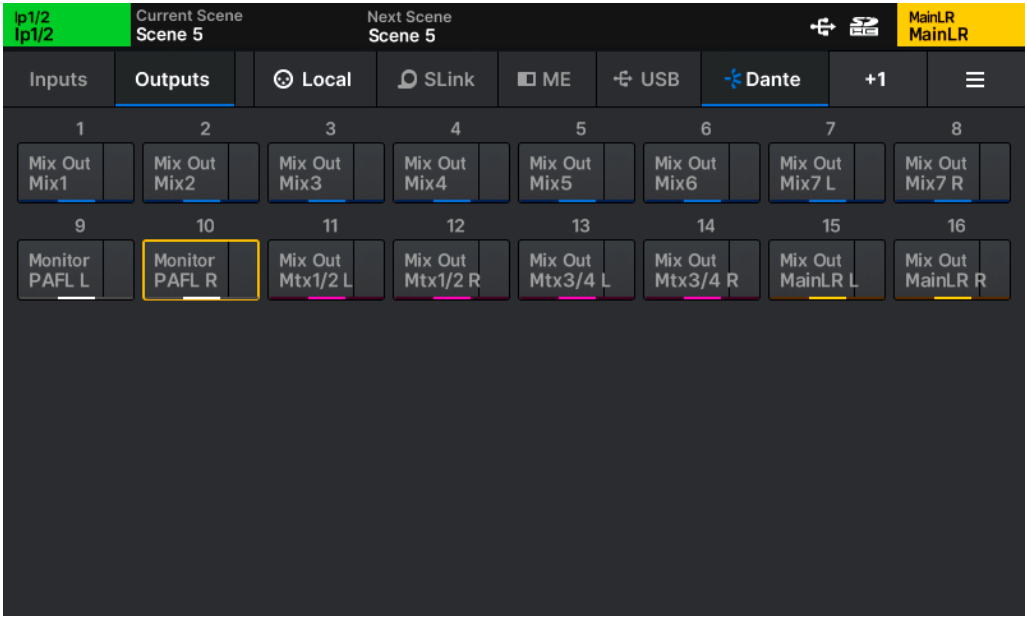
|| I/O | Outputs | USB

There are 32 USB output sockets available to patch to. These feed the USB-C connection to a computer or device, as well as the USB-A and SD Card for Qu Drive recording.

The output sockets being used depend on what is being sent to, along with the settings in Audio Clock Sync and Digital I/O options

Output to	USB Stream Mode	USB/SD Sample Rate	USB output sockets used
USB-C	Stereo	48kHz or 96kHz	1-2
USB-C	Multitrack	48kHz or 96kHz	1-32
USB-A	N/A	48kHz or 96kHz	1-2
SD Card	N/A	48kHz	Up to 32 (patched only)
SD Card	N/A	96kHz	Up to 16 (first 16 patched)

Dante Patching (Qu-5D, Qu-6D and Qu-7D only)



|| I/O | Outputs | Dante

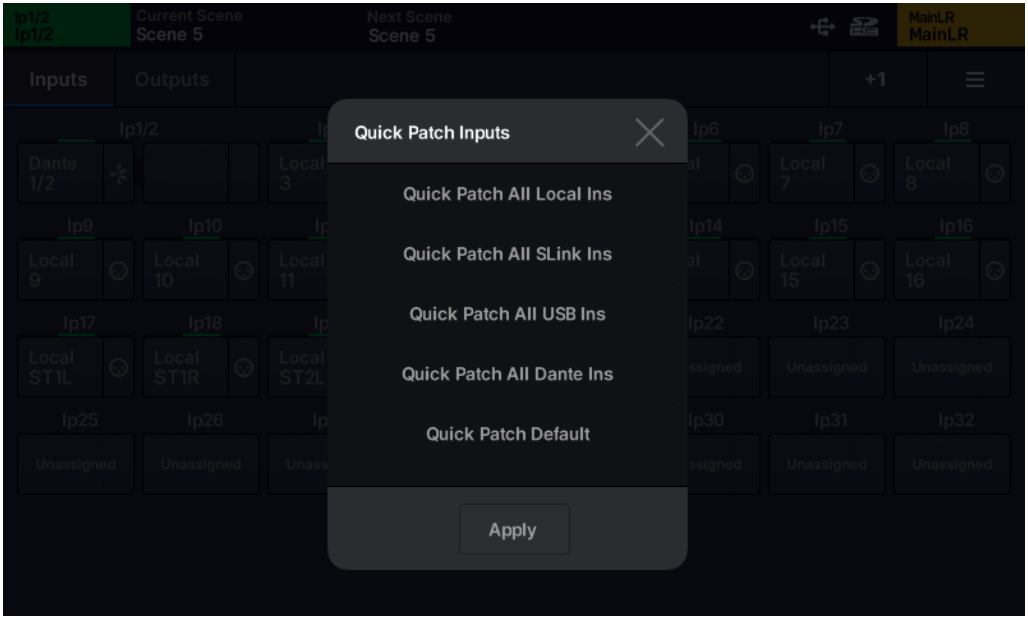
Dante sockets show up alongside other socket options when patching inputs, and have their own Outputs tab.

Patching is carried out in the same way as with any other socket type, though note that the patch is being made between the mixer core and the Dante module/port.

Further patching must then be carried out between the module and any other Dante modules or devices on the network using the Dante Controller application.

Visit the Audinate website (www.audinate.com) to learn more about Dante, and to download software including Dante Controller.

8.3 Quick Patching and +1



|| I/O | Inputs | Quick Patch Inputs (pop-up)

Quick Patching

Quick Patching is available for Input and Outputs and quickly patches many or all of the channels or sockets currently being viewed.

- Open the Quick Patch pop-up by touching the three line 'menu' button at the top right of the screen.
- Select an option.
- Press **Apply** to apply the patching or close the pop-up to cancel.

Inputs also have an Input Channel Patch Library available and accessed by pressing the **Library** key when viewing the **I/O** > **Inputs** screen. This can be used to store and recall all input channel patching.

+1

After making any Input or Output patch, the +1 button at the top right of the screen can be used to patch the next channel or socket with the next logical input socket or mixer output.

This is a quick method for patching blocks of sequential inputs or outputs.

9. Processing

9.1 Processing Overview

|| PROCESSING | Source (Input Channel)

Each Input and Mix channel in the Qu has independent processing and routing options.

One channel can be selected at any time by using the green **Sel** key on each channel fader strip.

That channel can then be controlled using dedicated surface controls, and the **PROCESSING** and **ROUTING** screens display all possible processing and routing options for that channel.

Navigation

There are multiple processing stages for each channel, and the available processing is slightly different for input and mix channels.

The top of the **PROCESSING** screen has tabs for each processing stage in the order signal is processed from left to right (with the exception of the Input High Pass Filter, shown in the EQ tab for convenience).

- Touch any processing stage in the top section of the screen to display and adjust all parameters for it in the lower section of the screen.

9.2 Input > Source

|| PROCESSING | Source (Input Channel)

Source Select –The current source for this input channel is displayed. Touch to select a different source for the channel. See Input Patching for more information.

Stereo Image – This section is visible only when a stereo input channel is selected. Touch the mode to select from the following options:

L/R - standard left/right.
R/L - switched left/right.
L-Pol/R - standard left/right with switched polarity on left.
R-Pol/L - switched left/right with switched polarity on right.
Mono - left and right fed to both channels.
L/L - left fed to both channels.
R/R - right fed to both channels.
M/S - for decoding a mid/side array (outputs M+S/M-S).

ⓘ For normal M/S use, the mid signal/microphone should be patched to the odd channel and the side signal/microphone should be patched to the even channel.

The width control can be adjusted in 1% increments from Mono (0%) to Stereo (100%).

48V - Touch and hold to activate phantom power on the XLR input (required for condenser microphones and active DI boxes).

> ⓘ Phantom Power is only provided via an XLR connection. It is not sent to the ¼" TRS Jack connection of a Combi socket.

Pad - Switch the socket pad on or off. This reduces the incoming level of signal by a set amount before it reaches the preamp and is used to prevent overloading.

> ⓘ Qu has a fixed -20dB pad on the TRS connection of the local combi input sockets.

Gain - Adjust preamp gain manually for the incoming signal.

Auto Set – Starts the Gain Assistant **Auto Set** process to set optimum preamp gain for the source/socket based on the level of signal detected at the input.

Auto Gain – When turned On, the Gain Assistant automatically reduces the preamp gain if high levels are detected to prevent clipping.

> ⓘ Gain Assistant functions are only available when the input channel is sourced from a local or SLink socket with a preamp available to control.

> ⓘ Gain Assistant features can be used on a per-channel basis or on multiple channels at once. See the Gain Assistant section for more information.

Trim – Digital ±24dB level adjustment.

Pol – Invert the polarity of the signal. Often used where multiple microphones are used on the same source (e.g. snare top and snare bottom).

Tube Stage

|| PROCESSING | Source (Input Channel)

Preamps in the Qu itself and those in Remote Audio Units are accurate and transparent, with fast transients and low THD. However, there are situations where the harmonic distortion, frequency and dynamics response of vintage preamps are desirable. Using a DEEP preamp model like Tube Stage allows you to add these characteristics with complete control, and none of the associated limitations or reliability concerns of esoteric equipment.

Note that, like the electronics it's modelled on, Tube Stage reacts differently depending on the incoming signal level. So it's important to setup the preamp before making any adjustments to Tube Stage.

- When in the channel **Preamp** screen, touch **+Tube Stage** or press the **Library** key and recall **Tube Stage** from the Factory Preamp Library.
- Tube Stage settings can also be stored and recalled from the User Preamp Library.

ⓘ Tube Stage is a Qu Add-on available from shop.allen-heath.com

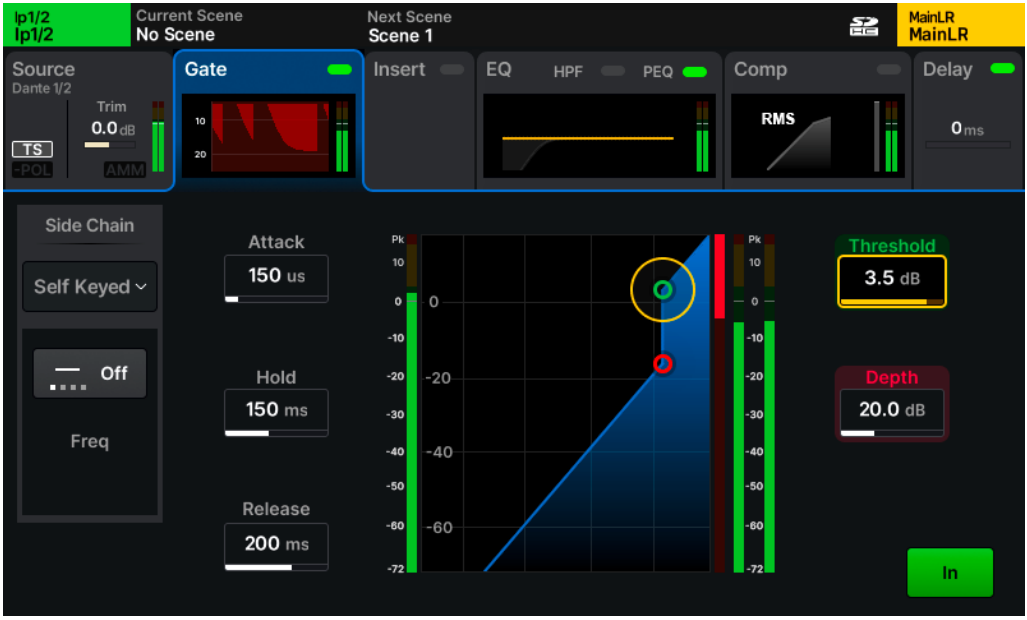
On/Off - Switch Tube Stage on or off.

Mode – Select from different valve/tube preamp topologies.

Fine Adj. – Adjusts different parameters depending on the selected mode.

Level – A trim control to be used for attenuation or makeup gain.

9.3 Input > Gate



|| PROCESSING | Gate (Input Channel)

The Gate allows wanted signal through and attenuates unwanted signal. It has many uses including removal of hum from an idle instrument or avoiding hearing the snare drum through a tom microphone when only the snare is being played.

Attack – Adjust time it takes for the Gate to open once signal has reached threshold.

Hold – Adjust time the Gate remains open after signal has dropped below threshold.

Release – Adjust time it takes for the Gate to fully close once signal has fallen under the threshold and hold time has expired.

Threshold – Adjust the level at which the Gate is triggered to open.

Depth – Adjust the amount the signal is reduced by when the gate is fully closed.

In/Out – Enable or disable the Gate.

Side Chain

- Select either **Self Keyed** or select another channel to trigger the gate.
- Touch the filter type to switch between **Off**/**HPF**/**BPF**/**LPF** modes.
- Touch the frequency value to select it, then adjust with the touchscreen rotary.

9.4 Input > Insert

|| PROCESSING | Insert (Input Channel)

The Insert point allows the post-Gate signal to be processed before being returned directly into the channel before the PEQ. It is commonly used for EQ or dynamics processing but can also be used to insert FX.

Send – Select a destination for the signal. This can be any available output socket or FX unit.

Return – Select a source for the returning signal. This can be any available input socket or FX unit.

ⓘ Send and Return will always automatically match when inserting an FX unit.

Operating Level – Select from line level options to match insert socket being used.

Digital - Uncompensated, for use with digital I/O.
Analogue - For use with +4dBu outboard equipment.
-10 dBV - For use with -10dBV outboard equipment.

Unassign – Unassign and clear Send and Return socket selections.

In/Out – Switch the insert in or out, without affecting the assigned sockets.

ⓘ If the socket is in use elsewhere in the system, this is noted. A **+** symbol is shown when a Return socket is being used in multiple places.

9.5 Input > EQ

|| PROCESSING | EQ (Input Channel)

The 4-band Parametric Equaliser enables adjustments to the tone of the signal by cutting or boosting around different frequencies.

- Touch one of the bands on the graph to display settings and values at the bottom of the screen.
- Adjust using dedicated surface controls, by touching and dragging on the graph or by selecting a parameter and using the touchscreen rotary.

Type – LF and HF bands include options for Shelf, Bell or HPF/LPF.

Width – Adjust the amount that frequencies around the centre frequency are affected.

Freq – Select the centre frequency for adjustment.

Gain – Cut or boost the selected centre frequency by up to +/- 15dB.

RTA – Display Real Time Analyser behind PEQ.

In/Out – Enable or disable the PEQ.

HPF

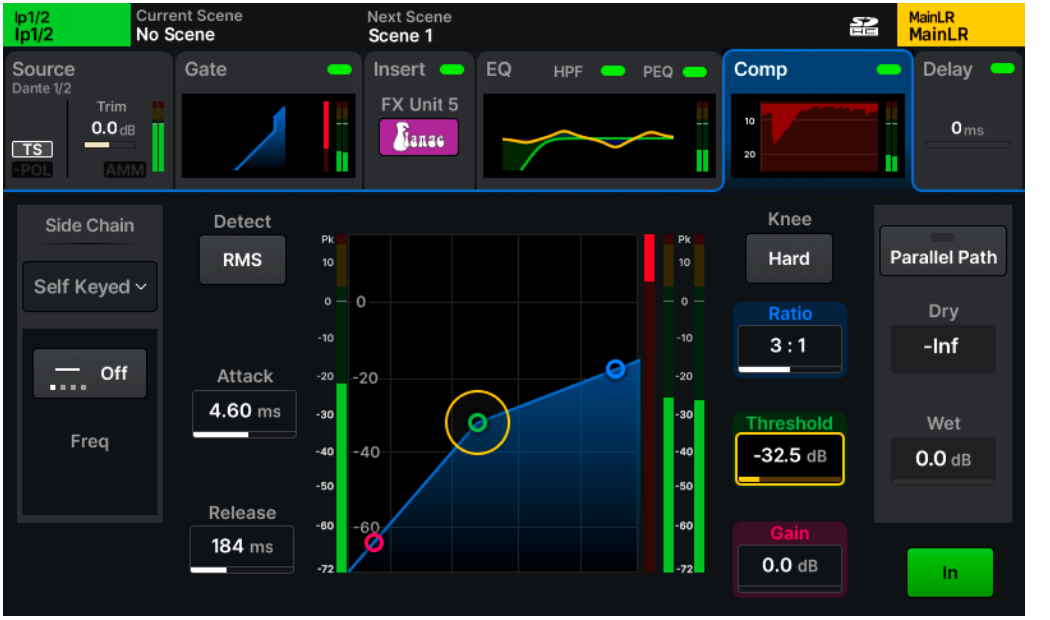
The High Pass Filter lets audio above a set frequency pass, whilst cutting out lower frequencies. It's commonly used wherever the low frequencies are undesirable (e.g. microphone handling noise, traffic rumble or low background humming) or when it is not adding anything to the mix (e.g. on predominantly mid or high frequency sources like voice, guitar or cymbals).

Note that the High Pass Filter is shown in this screen for convenience but exists before the Gate in the channel signal path.

Freq – Adjust the High Pass Filter frequency. When HPF is In, all frequencies above this setting will pass whilst those below will be attenuated.

In/Out – Switch the HPF In or Out.

9.6 Input > Compressor



|| PROCESSING | Comp (Input Channel)

The Compressor is used to control and reduce the dynamic range of the signal.

RMS/Peak – Compression is either triggered by RMS (short average) or Peak (instant) signal level.

Hard/Soft Knee – With a hard knee, compression begins to take effect only when the threshold is reached. With a soft knee, the compression begins to take effect earlier but in a more gradual way.

Attack – Adjust the time it takes for compression to take effect once the signal has reached the threshold. Set a longer time to allow transients through and compress only the body of the sound, set a shorter time to flatten the signal and tame peaks.

Release – Adjust the time that it takes for the compressor to stop compressing after signal has fallen below the threshold.

Ratio – The ratio of the incoming signal to compressed signal when compression is active. E.g. when set to 3:1 and when compressing, every 3dB increase in level at the input will result in only a 1dB increase of level at the output.

Threshold – Adjust the input level at which compression will be active.

Gain – Use to compensate for the resulting attenuation of the signal.

In/Out – Enable or disable the compressor.

Side Chain

- Select either **Self Keyed** or select another channel to trigger the compression.
- Touch the filter type to switch between **Off**/**HPF**/**BPF**/**LPF** modes.
- Touch the frequency value to select it, then adjust with the touchscreen rotary.

Parallel Path

This allows you to blend the compressed signal with the uncompressed signal. Due to the XCVI core, these signals are coherent, and no comb filtering is introduced.

- Touch the **Parallel Path** button to switch in or out.
- Touch the Dry/Wet values and adjust using the touchscreen rotary.

DEEP Compressors

DEEP compressors are available as optional Add-ons for the Qu mixer.

Modelled on classic hardware units with unique tonal and behavioural characteristics, they can be used in place of the standard compressor on every input and mix processing channel without adding latency.

- Press the **Library** key to see the Compressor Library.
- Different DEEP Compressor models can be recalled from the **Factory** library.

9.7 Input > Delay

|| PROCESSING | Delay (Input Channel)

The Input channel Delay can be used to time align channels that may be offset, when using multiple microphones at different distances from a source for example.

Delay – Set the amount of delay by the selected delay unit.

Delay Units – Select how the delay should be displayed and adjusted.

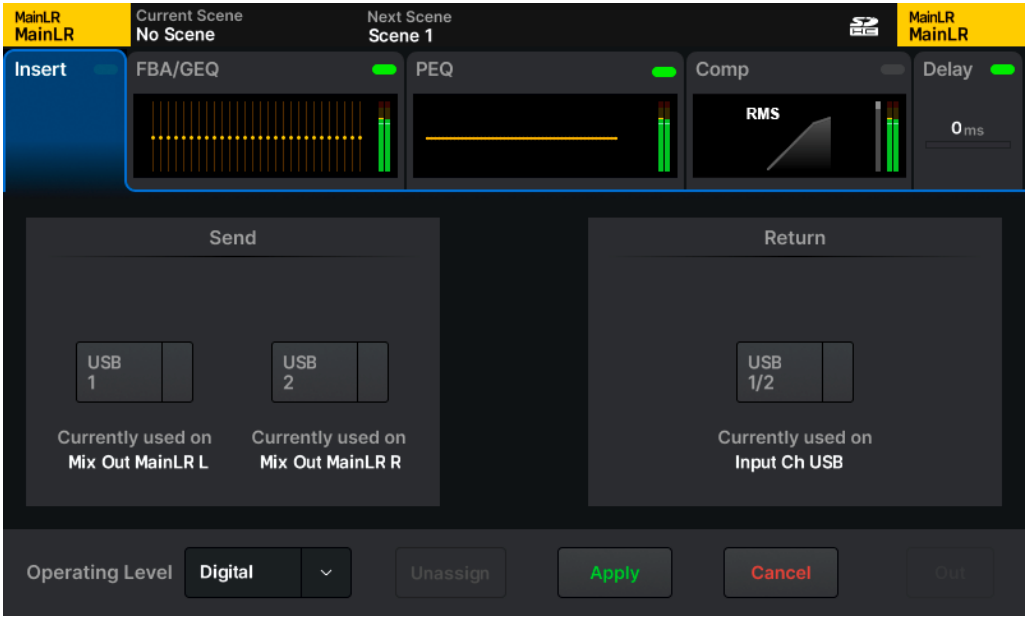
ms - Millisecond
m - Meters
ft - Feet
Samples – Processing samples (Qu runs at 96,000 samples per second)

As the speed of sound through air depends on the temperature of the air, the Temperature value should be set to match ambient temperature for accurate calculation of delay shown as distance.

Temperature - -20°C to +40°C
-4°F to +104°F

ⓘ Note that these values extend outside the operating temperature range of the Qu.

9.8 Mix > Insert



|| PROCESSING | Insert (Mix Channel)

The Mix Insert point allows the summed signal to be processed before being returned directly into the channel before the FBA/GEQ. It is commonly used for EQ or dynamics processing but can also be used to insert FX.

Send – Select a destination for the signal. This can be any available output socket or FX unit.

Return – Select a source for the returning signal. This can be any available input socket or FX unit.

ⓘ Send and Return will always automatically match when inserting an FX unit.

Operating Level – Select from line level options to match insert socket being used.

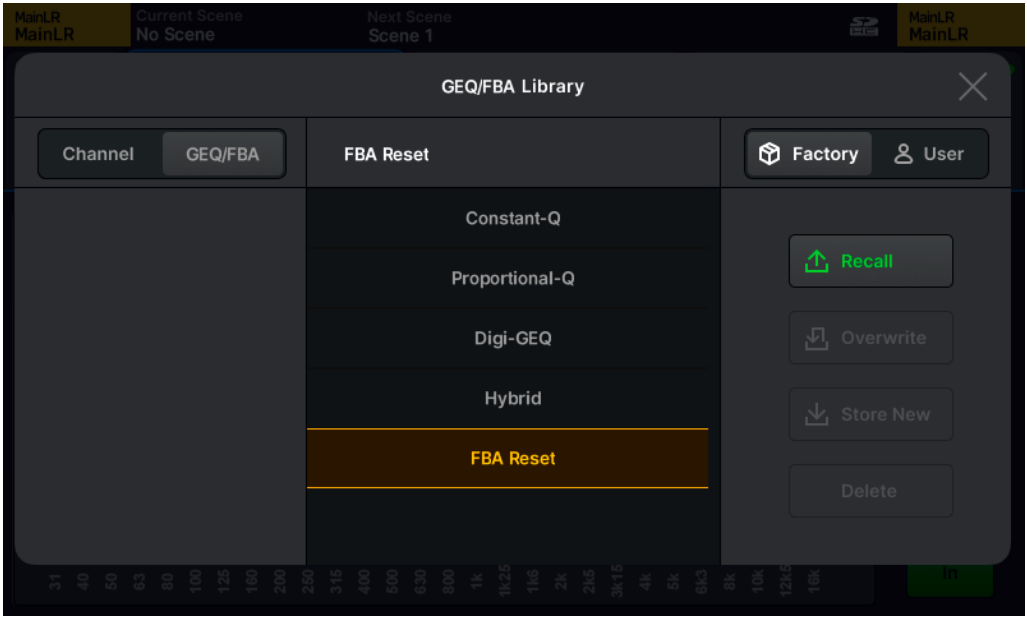
Digital - Uncompensated, for use with digital I/O.
Analogue - For use with +4dBu outboard equipment.
-10 dBV - For use with -10dBV outboard equipment.

Unassign – Unassign and clear Send and Return socket selections.

In/Out – Switch the insert in or out, without affecting the assigned sockets.

ⓘ If the socket is in use elsewhere in the system, this is noted. A **+** symbol is shown when a Return socket is being used in multiple places.

9.9 Mix > Switching between FBA and GEQ



|| PROCESSING | FBA/GEQ Library (Mix Channel, pop-up)

Every Mix channel has the option of using either the Feedback Assistant (FBA) or a Graphic Equaliser (GEQ). These use the same processing 'block' in different ways.

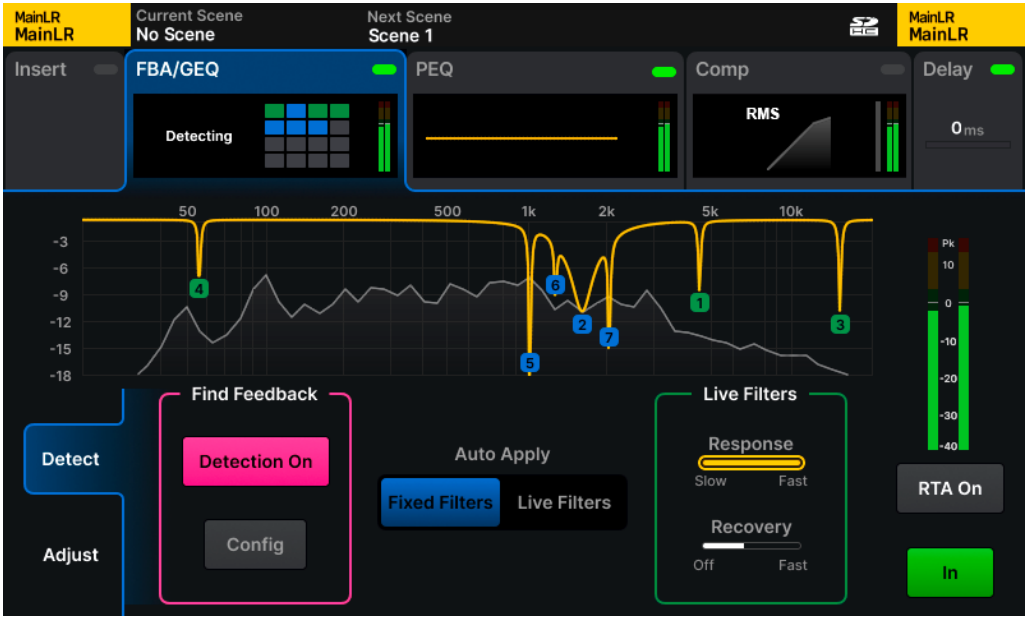
To choose which is in use on any individual Mix:

- Press the **Library** key while viewing the **FBA/GEQ** for the selected Mix channel in the **PROCESSING** screen.
- Select a **GEQ** type from the **Factory** library to recall a flat/reset GEQ.
- Select **FBA Reset** from the **Factory** library to recall the default Feedback Assistant state with no filters in use.
- Select any GEQ or FBA data which has been stored in the **User** library.
- Press **Recall** to recall, or close the library pop-up to cancel.

Alternatively, the **SETUP** > **Config** > FBA/GEQ screen displays whether FBA or GEQ is being used on every Mix channel and allows toggling between the two.

ⓘ Note that switching from FBA to GEQ may cause instant feedback if FBA filters have been applied.

Detect



|| PROCESSING | FBA | Detect (Mix Channel)

The Feedback Assistant detects feedback and automatically applies narrow filters to prevent it.

Detection On/Off – When turned on, feedback frequencies will be detected, and filters will be automatically applied.

ⓘ Detection can be active on up to 8 FBA instances at once.

Config – Opens a pop-up showing all mixes and allows detectors to be turned on and off per-FBA instance.

Auto Apply – Select whether the next filter to be added (when feedback is detected) will be **Fixed** or **Live**.

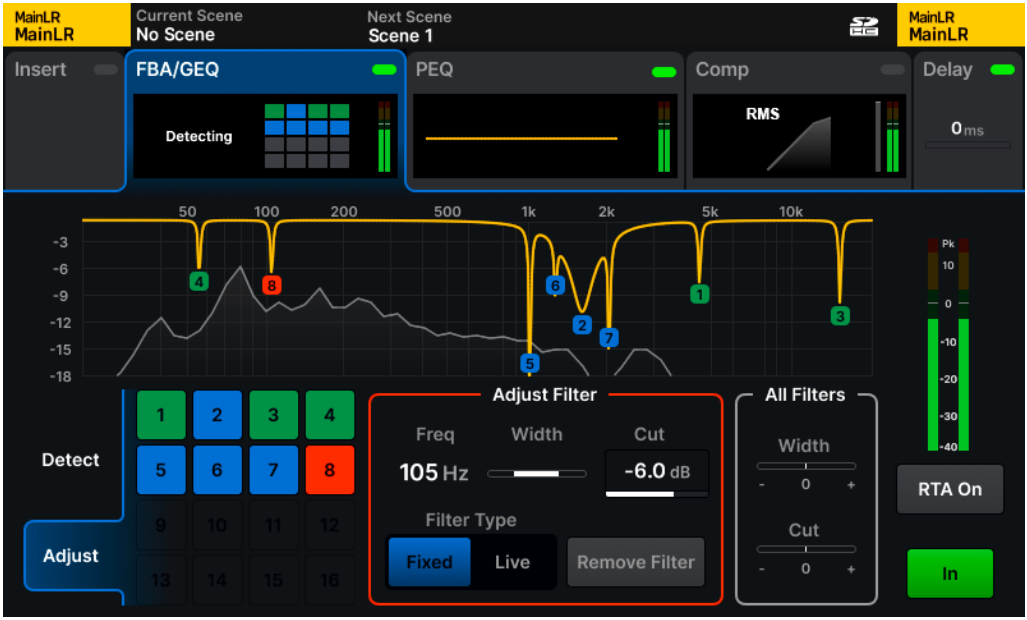
Live Response – Adjust the speed at which Live filters are applied.

Live Recovery – Adjust the speed at which Live filters are currently recovering. Can be set to **Off** to pause live filter recovery.

RTA – Enable this option to see a Real Time Analyser in the FBA graph.

In/Out – Select to enable or disable the Feedback Assistant.

Adjust



|| PROCESSING | FBA | Adjust (Mix Channel)

Touch the **Adjust** tab at the bottom left to make adjustments to individual or all filters. Each numbered box at the lower left of the screen represents one of the 16 available filters.

Blue – Fixed mode filters.
Green – Live mode filters.
Orange – Currently selected filter.

Touch a box or a point on the graph to select a single filter for adjustment.

(Adjust Filter) Width – Adjust the width of the selected filter.

(Adjust Filter) Cut – Adjust the cut of the selected filter.

Filter Type – Toggle the mode of the filter between Fixed and Live.

Remove Filter - Remove the filter completely and make it available for use again.

(All Filters) Width – Adjust relative width of all active filters at once.

(All Filters) Cut - Adjust relative cut of all active filters at once.

> ⓘ To reset all filters, recall **FBA Reset** from the Library, or hold the **Reset** key and press the **GEQ Fader Flip** key.

Number of Feedback Detectors

Feedback detection can be active on up to 8 instances of the FBA at once.

Filter Modes

Fixed filters - Remain in place until they are manually deleted, the FBA is completely reset, or if the Feedback Assistant 'steals' them. These are designed to be used during setup to 'ring out' the system and notch out problematic frequencies that are due to the frequency response of the microphones, speakers and environment.

Live filters - Recover over time and once fully recovered, will switch back to being unused filters. They can be deleted individually or with a complete FBA reset. These are intended for use during a performance, where temporary changes in the system may cause feedback (e.g. position of microphones relative to speakers), meaning filters need only be applied temporarily.

Automatic re-use of filters

When all filters are already in use, but a new feedback frequency is detected, the Feedback Assistant can re-use or 'steal' an existing filter, using logic to decide the best possible outcome i.e. the least amount of feedback.

Note that **Live filters** can only 'steal' other **Live filters**, but **Fixed filters** can steal any filters.

On power up

Every time the Qu is powered on or restarted; all Feedback Assistant instances are set to a 'pre-show' state. **Fixed filters**, the **Live Response** and **Recovery** settings, **All Filters** settings and **In/Out** state are recalled from last power down. Any **Live filters** will have been removed, and detection will be turned off.

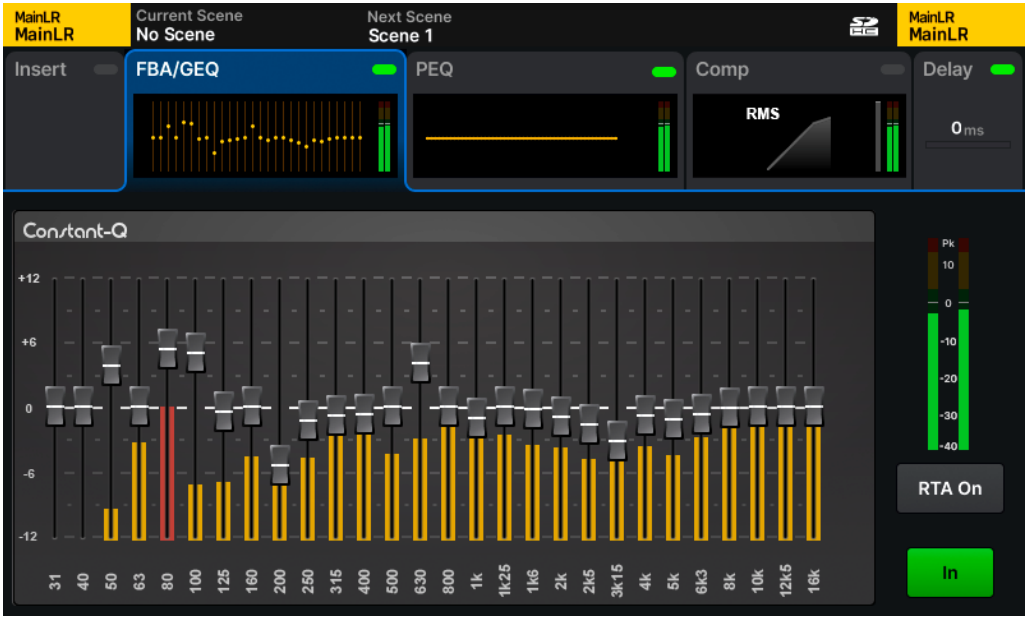
Copy/Paste and Library Store/Recall

Copying and pasting of the FBA can be carried out by holding **COPY** or **PASTE** keys and pressing the **GEQ FADER FLIP** key. It is also possible to store and recall FBA states using the FBA/GEQ library. Note that Fixed filters and settings (including Live Filter settings) are copied, but Live filters are ignored.

Scene changes

By default, the FBA/GEQ Global Filter is set to **Block**, preventing changes to the FBA/GEQ when changing scenes.

9.11 Mix > GEQ



|| PROCESSING | GEQ (Mix Channel)

The GEQ is used to cut or boost specific frequencies in the signal.

Fader – Touch and drag or select a band and use the touchscreen rotary to cut or boost by ±12dB.

RTA – Enable this option to see a Real Time Analyser on the GEQ. The most prominent frequency is displayed red.

In/Out – Enable or disable the GEQ.

DEEP GEQ's

DEEP GEQ models are available as optional Add-ons for the Qu mixer.

These offer different bandwidth/Q options to the standard **Constant-Q** GEQ and can be used in place of the FBA/GEQ on any mix processing channel without adding latency.

- Press the **Library** key to see the GEQ Library.
- Different DEEP GEQ models can be recalled from the **Factory** library.

9.12 Mix > PEQ

|| PROCESSING | PEQ (Mix Channel)

The 4-band Parametric Equaliser enables adjustments to the tone of the mix by cutting or boosting around different frequencies.

- Touch one of the bands on the graph to display settings and values at the bottom of the screen.
- Adjust using dedicated surface controls, by touching and dragging on the graph or by selecting a parameter and using the touchscreen rotary.

Type – LF and HF bands include options for Shelf, Bell or HPF/LPF.

Width – Adjust the amount that frequencies around the centre frequency are affected.

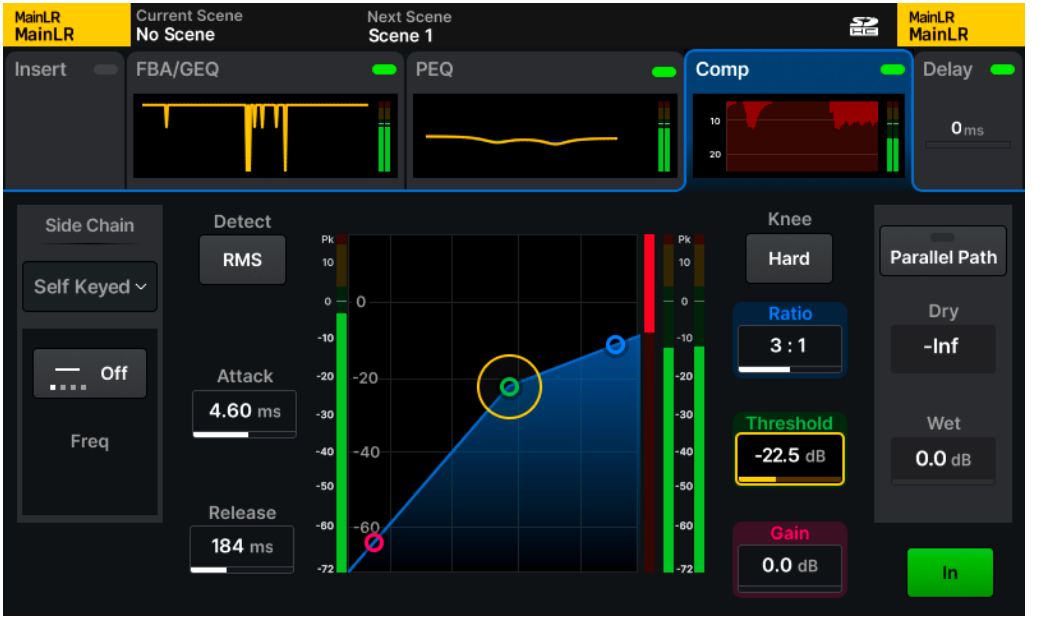
Freq – Select the centre frequency for adjustment.

Gain – Cut or boost the selected centre frequency by up to +/- 15dB.

RTA – Display Real Time Analyser behind PEQ.

In/Out – Enable or disable the PEQ.

9.13 Mix > Compressor



|| PROCESSING | Comp (Mix Channel)

The Compressor is used to control and reduce the dynamic range of the signal.

RMS/Peak – Compression is either triggered by RMS (short average) or Peak (instant) signal level.

Hard/Soft Knee – With hard knee, compression begins to take effect only when the threshold is reached. With soft knee, the compression begins to take effect earlier but in a more gradual way.

Attack – Adjust the time it takes for compression to take effect once the signal has reached the threshold. Set a longer time to allow transients through and compress only the body of the sound, set a shorter time to flatten the signal and tame peaks.

Release – Adjust the time that it takes for the compressor to stop compressing after signal has fallen below the threshold.

Ratio – The ratio of the incoming signal to compressed signal when compression is active. E.g. when set to 3:1 and when compressing, every 3dB increase in level at the input will result in only a 1dB increase of level at the output.

Threshold – Adjust the input level at which compression will be active.

Gain – Use to compensate for the resulting attenuation of the signal.

In/Out – Enable or disable the compressor.

Side Chain

- Select either **Self Keyed** or select another channel to trigger the compression.
- Touch the filter type to switch between **Off**/**HPF**/**BPF**/**LPF** modes.
- Touch the frequency value to select it, then adjust with the touchscreen rotary.

Parallel Path

This allows you to blend the compressed signal with the uncompressed signal. Due to the XCVI core, these signals are coherent, and no comb filtering is introduced.

- Touch the **Parallel Path** button to switch in or out.
- Touch the Dry/Wet values and adjust using the touchscreen rotary.

DEEP Compressors

DEEP compressors are available as optional Add-ons for the Qu mixer.

Modelled on classic hardware units with unique tonal and behavioural characteristics, they can be used in place of the standard compressor on every Input and Mix processing channel without adding latency.

- Press the **Library** key to see the Compressor Library.
- Different DEEP Compressor models can be recalled from the **Factory** library.

|| PROCESSING | DEEP Compressor (Mix Channel)

9.14 Mix > Delay

|| PROCESSING | Delay (Mix Channel)

The Mix channel Delay can be used to time align outputs, when synchronising audio to video for example. Another common use is when feeding fill or delay speakers that should be time aligned to main speakers, so the sound from all speakers reaches the listener at the same time.

Delay – Set the amount of delay by the selected delay unit.

Delay Units – Select how the delay should be displayed and adjusted.

ms - Millisecond
m - Meters
ft - Feet
Samples – Processing samples (Qu runs at 96,000 samples per second)

As the speed of sound through air depends on the temperature of the air, the Temperature value should be set to match ambient temperature for accurate calculation of delay shown as distance.

Temperature - -20°C to +40°C
-4°F to +104°F

Note that these values extend outside the operating temperature range of the Qu.

10. Using Assistants and Tools

10.1 Gain Assistant

Gain Assistant can be used on any Input processing channel which is sourced from either a Local or SLink analogue input socket with a digitally controlled preamp.

It carries out two functions to speed up setup and prevent issues with gain staging during use;

Auto Set – Automatically sets preamp gain to an optimal level for the incoming signal.

Auto Gain – Monitors the incoming signal level and reduce preamp gain to prevent clipping.

Both functions are available in the **PROCESSING** > **Source** screen of an input channel, when the channel is sourced from a Local or SLink preamp socket.

|| PROCESSING | Source (Input Channel)

Alternatively, these functions can be actioned on multiple channels at the same time from the **UTILITY** > **Gain Assist** screen.

|| UTILITY | Gain Assist

Selecting Multiple channels in the Gain Assist screen

- Touch any channel sourced from a Local or SLink socket with a preamp to toggle selection. Selected channels are highlighted. Channels sourced from input sockets without a preamp cannot be selected.
- Use the Select **All** or **None** buttons at the top right to quickly select all possible channels or deselect any selected channels.

Auto Set Process

- Connect the input source and turn on 48V phantom power or activate any Pad as required.
- Generate signal at the expected level e.g. make noise into a microphone or DI box.
- Press the Auto Set button to begin the process
- Gain Assistant will start with the preamp gain set to 0dB and gradually raise it until the optimum amount of gain has been applied and the input signal sits at around 0dB on the meters.
- Success or failure of the process is displayed per channel.

Auto Gain On/Off

This can be used independently of Auto Set and turned on or off at any time. Auto Gain constantly checks the input signal level in the background and if the preamp gain is set too high (e.g. an instrument or voice get louder than they were during sound check), it will automatically and gradually reduce the preamp gain.

10.2 Feedback Assistant

The Feedback Assistant (**FBA**) is available for use on any Mix processing channel. It detects the prominent and persistent frequencies caused by feedback, then precisely applies narrow filters to reduce the levels of those frequencies whilst changing the overall sound as little as possible.

It can be used in any situation where the input source can 'hear' an output it is being sent to. Most commonly, a microphone being used in the same space as monitor speakers and PA system.

The **FBA** is intended to be used during setup to apply **Fixed Filters** and then to look out for feedback during the show or event and apply **Live Filters**. For best results always run through the setup steps again whenever the setup or venue is changed.

ⓘ See the Mix > Switching between FBA and GEQ section in this guide for information on how to load the Feedback Assistant into a Mix channel.

False Positives and best practices

False positives can occur with any feedback-like sound being played (e.g. guitar feedback, keyboard and synth sounds, flute, operatic vocals etc…). The **FBA** cannot know if this is a desired feedback-like sound or not. The FBA on any Mix will always boot with **Detection Off** to prevent unnecessary filters being added. It is best not to leave any **FBA** actively detecting and adding fixed filters. Instead, if being left unattended, it is best to leave Auto Apply set to Live Filters, which will recover and then simply be re-applied if the feedback returns.

Number of simultaneous detectors

FBA can be used on any or all Mix channels, but there are 8 available detectors in the Qu, meaning detection can only be active, and automatically applying filters on up to 8 Mix channels at once. Touch the Config button in the **FBA** to view and select where detectors are in use.

Before using the FBA

Some Feedback must occur for the FBA to detect and filter it. Therefore, before doing anything, ensure that:

- All microphones to be used are connected and have preamp gain set.
- All Input processing has been set to an approximate starting point.
- All outputs have been connected and any speakers powered on.
- A rough mix should be set for monitors and other outputs (though with the output level lower than needed if feedback is already an issue).
- FBA has been recalled in the **FBA/GEQ** processing 'block' for any Mix channel where it's needed.

Apply Fixed filters during setup/soundcheck

This is the most important stage to prevent feedback during a show or event. Feedback can also be detected more accurately and quickly during setup/soundcheck and there is less chance of false positives.

|| PROCESSING | FBA | Detect (Mix Channel)

1) Select the Mix to 'ring out' using a blue **MIX** key on the surface.
2) Select the Mix channel itself with the green **SEL** key on the main **MIX** channel strip.
3) Navigate to the **PROCESSING** > **FBA/GEQ** screen.
4) At the bottom left of the screen, select the **Detect** tab (if not already selected)
5) Set **Auto Apply** to **Fixed Filters**. This will mean any detected feedback frequencies will have a fixed filter applied which will remain in place until manually deleted.
6) Turn **Detection On** in the **Find Feedback** section. Turn it **Off** at any time to pause detection.
7) Gently raise the Mix level fader (the **MIX** channel strip fader). As the output level increases, feedback will occur, and the **FBA** will be able to detect this and add fixed filters. Raise the fader to a higher level that it will be used at during the show or event to generate and detect as much potential feedback as possible and allow for changes to the mix (e.g. extra vocal being added later).
8) When feedback no longer occurs, lower the level again.
9) With setup detection complete, turn Detection Off or switch filter Mode to Live.
10) Repeat for any other outputs as required.

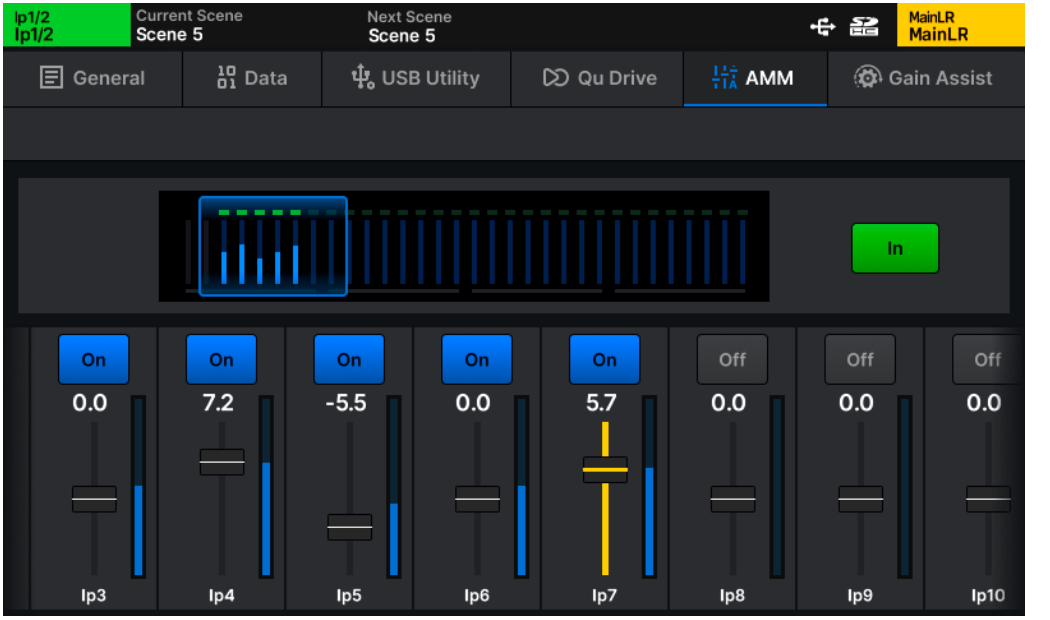
Apply Live filters during a show or event

Live filters are intended to temporarily filter out feedback frequencies, for example a wireless microphone may usually be positioned behind speakers where there is less chance of feedback but might be occasionally moved in front of speakers where feedback is far more likely.

Add **Fixed Filters** during setup whenever possible. This gives the best starting point for the system and avoids persistent feedback issues due to the system or space.

1) Select the Mix where feedback may occur using a blue **MIX** key on the surface.
2) Select the Mix channel itself with the green **SEL** key on the main **MIX** channel strip.
3) Navigate to the **PROCESSING** > **FBA/GEQ** screen.
4) At the bottom left of the screen, select the **Detect** tab (if not already selected)
5) Set **Auto Apply** to **Live Filters**. This will mean any detected feedback frequencies will have a live filter applied, which will recover over time.
6) Set the **Response** for the **Live Filters**. A faster response will mean filters are applied faster but the **FBA** is more prone to false positives. A slower response means the detector is less likely to be triggered by false positives, but it takes longer for filters to be applied.
7) Set the **Recovery** rate for all **Live Filters**. This can be adjusted at any time to speed up, slow down or even pause the recovery of all **Live Filters**. It does not affect fixed filters.
8) Turn **Detection On** in the **Find Feedback** section. Turn it **Off** at any time to pause detection.
9) Repeat for any other Mixes as required.

10.3 AMM (Automatic Mic Mixer)



Qu's **A**utomatic **M**icrophone **M**ixer uses a gain sharing algorithm, designed for use in multi-microphone speech applications like conferences, meetings, broadcasting and podcasts. It can be used on every mono input channel of the Qu.

The AMM algorithm looks at the incoming signal level, the priority setting and the fader level, then adds gain (level) to any channel in use, while reducing gain on the other channels. This reduces background noise and the chance of feedback while improving intelligibility.

- Touch and drag the blue navigation box in the overview at the top to view and adjust all channels.

In/Out – Switch the whole AMM on or off.

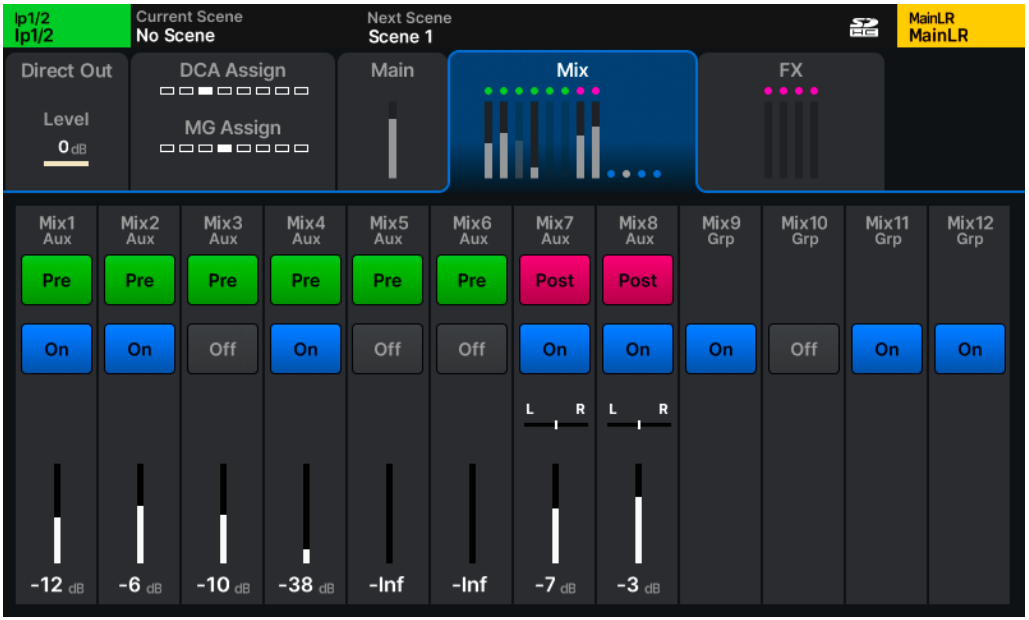
On/Off – Enable or disable AMM on each channel individually.

Priority Faders – Adjust priority of each channel in the calculation.

ⓘ Only mono channels will be displayed.

11. Routing

11.1 Routing Overview



|| ROUTING | Mix (Input Channel)

Each Input and Mix channel in the Qu has independent processing and routing options.

One channel can be selected at any time by using the green **Sel** key on each fader strip.

That channel can then be controlled using dedicated surface controls, and the **PROCESSING** and **ROUTING** screens display all possible processing and routing options for that channel.

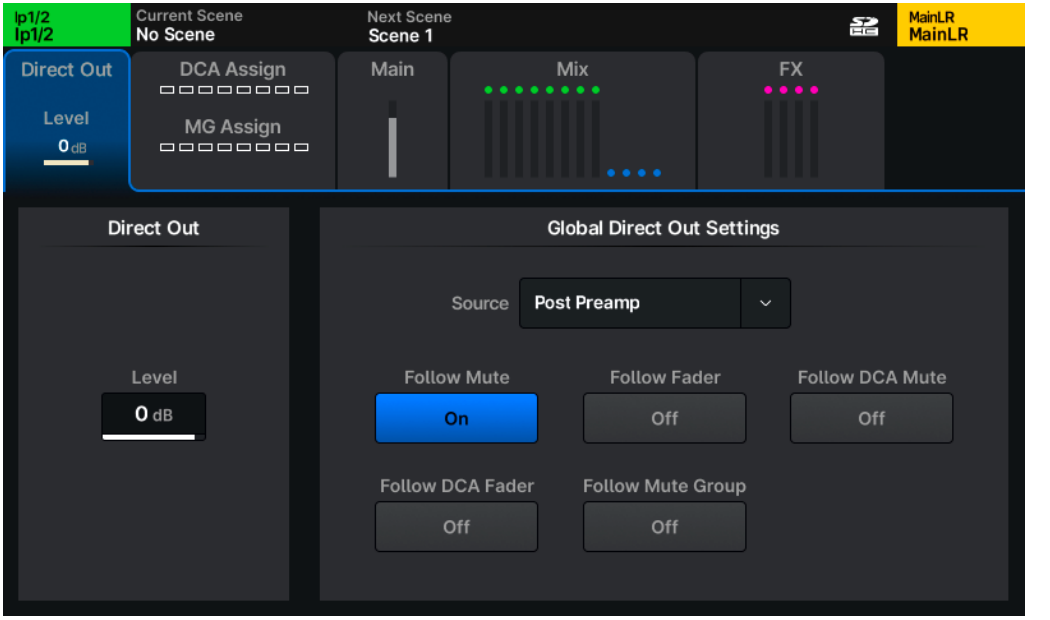
Navigation

There are different routing options and destinations or sources depending on the selected channel type.

The top of the **ROUTING** screen has tabs for channel settings, control options and routing destinations or sources.

Touch any tab in the top section of the screen to display more detail and make adjustment in the lower section of the screen.

11.2 Direct Out (Input Channels)



|| ROUTING | Direct Out (Input Channel)

With an Input channel selected, the first tab in the **ROUTING** screen shows **Direct Out** settings.

A Direct Output routes the signal directly from the Input channel without it passing through a Mix channel. Direct outputs can be used for recording, sending to personal monitoring systems, feeding internal FX units or sending individual channels to any output socket in the system.

Level – This controls the direct output level on a per-channel basis

Global Direct Out Settings

These settings affect all Input Direct Out signals.

Source – Select the point in the input channel signal path that Direct Outputs are sourced from. Note that each source point includes all preceding processing.

Follow Mute – Muting a channel will also mute its Direct Out.

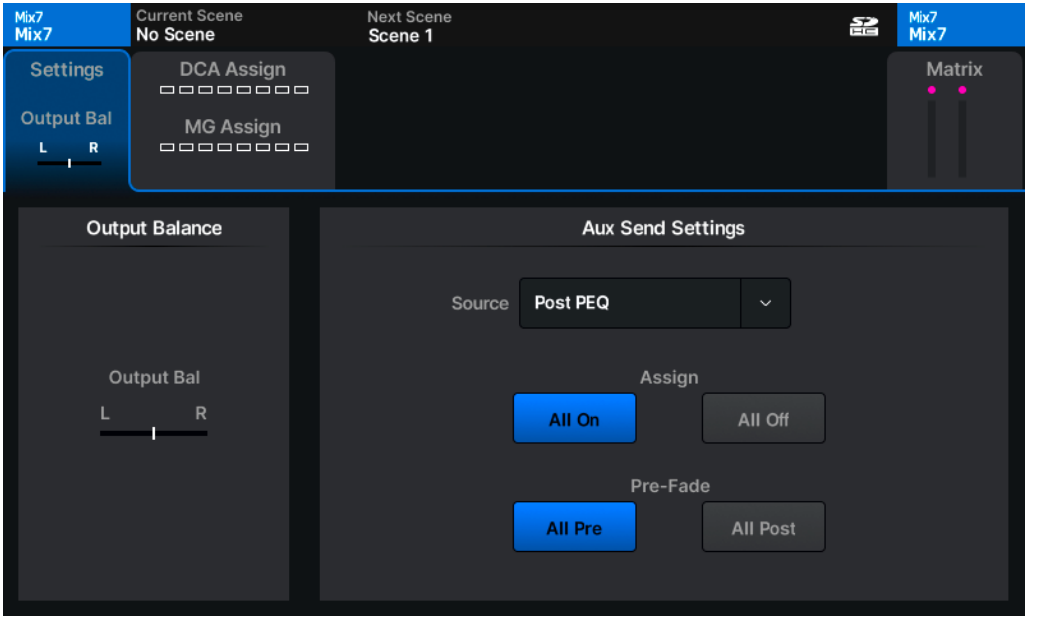
Follow Fader – The level of the Direct Out respects the main channel fader level.

Follow DCA Mute – If a channel is muted using a DCA, the Direct Out is also muted.

Follow DCA Fader – The level of the Direct Out respects the fader of any DCA the channel is a member of.

Follow Mute Group - If a channel is muted using a Mute Group, the Direct Out is also muted.

11.3 Settings (Mix Channels)



|| ROUTING | Settings (Aux Channel)

With a Mix channel selected, the first tab in the **ROUTING** screen shows different settings depending on the Mix type.

Main LR and all Stereo Mixes

Output Bal – Adjust the balance of left/right output level.

Group, Aux and FX Send Mixes

(Assign) All On – Assign all possible sources to the Mix.

(Assign) All Off – Unassign all sources from the Mix.

Aux and FX Send Mixes

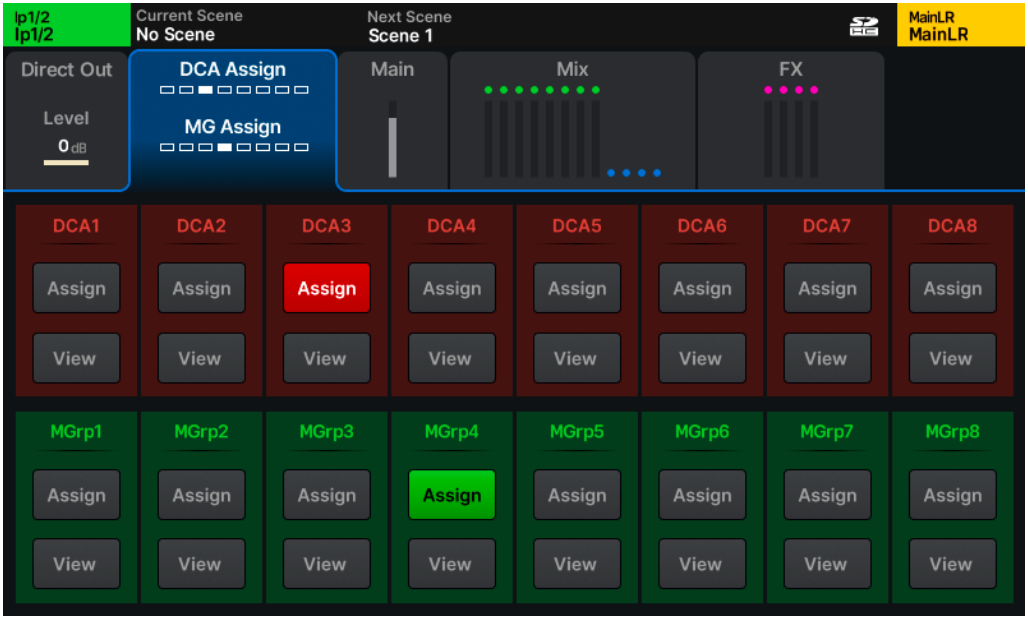
Source - Choose where the Mix takes channel signal from. Each source point is presented in order, and is affected by all preceding processing that is switched in.

(Pre-Fade) All Pre – Switch all sources to the Mix to pre-fader for independent send level control.

(Pre-Fade) All Pre – Switch all sources to the Mix to post-fader, meaning their send level to the Mix also respects the main channel fader (send level to Main LR).

ⓘ Post-fade send level = send level to mix + send level to Main LR.

11.4 DCA/Mute Group assignments



|| ROUTING | DCA/MG Assign (Input Channel)

DCA's and Mute Groups can be thought of as remote controls for the main channel fader and mute key of any Input or Mix.

DCA's (**D**igitally **C**ontrolled **A**mplifiers) control the main send levels (send level to Main LR mix or a mix output fader) and mutes of multiple channels using a single fader strip.

Mute groups are used to mute/unmute multiple channels with a single Soft Key.

- Touch **Assign** buttons to assign or unassign the selected channel to DCA's or Mute Groups.
- Touch a **View** button to see and adjust all channels currently assigned to that DCA or Mute Group.

ⓘ In both **Processing** and **Routing** screens, selecting a DCA fader strip will display and allow toggling of channel DCA membership.

ⓘ DCA's are for control only, and do not sum or carry signal, and therefore do not have any processing or metering functionality.

ⓘ Pressing the **PAFL** key on a DCA fader strip is the equivalent of using additive PAFL on every member of the DCA. When engaged, **PAFL** keys of the DCA members will flash.

ⓘ When muting DCA's or Mute Groups, the mute keys of the assigned channels will flash. If a channel is also muted independently, the duration of illumination will change to indicate this.

11.5 Send levels and assignments

|| ROUTING | Mix (Input Channel)

Different send level and assignment tabs are available depending on the selected channel type.

In each tab, the available settings depend on the source and destination channels being routed.

> ⓘ Select whether Mixes are used as Groups or Auxes, and all Input and Mix channel stereo pairings in the **SETUP** > **Config** screen.

- Touch any button to toggle its state.
- Touch any pan/bal or send level to select and use the touchscreen rotary to adjust.

Pre/Post – Send levels to a mix a mix are either Pre-fader (independent send level) or Post-fader (send level respects the main fader level e.g. The send level to the Main LR Mix).

On/Off - Assign or unassign the channel to a mix/send or matrix entirely.

Pan/Bal – The pan or balance from a source to a stereo destination.

Level – The send level from the selected channel to any mix.

11.6 Matrix Mixes

|| ROUTING | Matrix (Matrix Channel)

Matrix Mixes are a 'mix of mixes' and are sourced from other mixes.

They are useful when needing to add a futher stage of processing to a signal and often used for recording and streaming, or when feeding delay or fill speakers.

Unlike the other Mix channels, they do not have dedicated Mix keys on the surface to quickly display contributions to that mix across channel fader strips.

Instead, with a Matrix Mix selected, an extra tab is provided in the **ROUTING** screen which displays and allows adjustment of sends to the selected Matrix (as opposed to sends from the selected channel).

11.7 Surface routing shortcuts

Most of Qu's routing can be accessed through surface controls, without needing to use the **ROUTING** screen.

Send levels

- Press a blue **LR**, **MIX** or **FX** key on the right-hand side of the surface to select a mix and display and adjust send levels from each channel to that mix on the channel fader strips. The **MIX** strip controls the overall send level of the selected Mix/FX send.
- Select any channel then press and hold the blue **CH TO ALL MIX** key on the left-hand side to temporarily display and adjust the send levels from that channel to all possible destinations across channel fader strips.

Assignments

- Hold the **ASSIGN** key on the mixer surface and press the **SEL** key of a channel to assign or unassign that channel to the currently selected mix.
- Hold the **ASSIGN** key on the mixer surface and press the **SEL** key of a mix channel fader strip to assign or unassign all channels to that mix.
- Select a channel, then hold the **CH TO ALL MIX KEY** and the **ASSIGN** keys, then press the **SEL** key of any displayed mix to assign or unassign the currently selected channel to that mix.

Pre/Post Fade Sends

- Hold the **PRE FADE** key on the mixer surface and press the **SEL** key of a channel to toggle between pre and post fade send from that channel to the currently selected mix.
- Hold the **PRE FADE** key on the mixer surface and press the **SEL** key of a mix to toggle all channel sends to that mix to either pre or post fade send.
- Select a channel, then hold the **CH TO ALL MIX KEY** and the **PRE FADE** keys, then press the **SEL** key of any displayed mix to toggle the send level from the currently selected channel to that mix between pre or post fade sent.

Copy/Paste/Reset

- Hold the **COPY** key and press a blue **MIX** key to copy send levels and assignments to that mix.
- Hold the **PASTE** key and press blue **MIX** key to paste any copied send levels and assignments to another mix.
- Hold the **RESET** key and press a blue **MIX** key to reset all send levels and assignments for that mix.

12. Meters

12.1 Surface Metering

Main LED meter

The 12 segment LED metering on the surface of the Qu to the right of the touchscreen displays level metering for the PAFL bus, so will always show metering for what is being sent to the headphone output.

By default, with no PAFL keys active, this displays the Main LR Mix level.

ⓘ The **PAFL** LED indicator below the 12 segment LED illuminates when a PAFL routing key or button is active anywhere in the mixer.

Channel Metering

Each channel strip includes a Chromatic Channel Meter to show level, and a Peak LED to indicate that the signal is peaking somewhere in the signal path.

Peak Metering

As long as a peaking channel has been assigned to a channel strip, there is always visibility of any peaking on the Qu surface to allow potentially destructive peaking anywhere within a channel to be found as follows:

- If a channel is peaking on a channel strip on an inactive layer, the **Layer** selection key will illuminate red.
- With the layer selected, the red peak (**Pk**) LED on each channel strip uses multi-point sensing to display peaking anywhere in that channel's processing path.
- With the channel selected, the red peak (**Pk**) LED's next to dedicated processing controls (Preamp, PEQ, GEQ, Compressor) will illuminate when signal reaches -3dBFS at the meter directly following that processing 'block'. 0dBFS is absolute maximum, so the Pk LED indicates the signal is close to digital clipping at that point.

GEQ 'Fader Flip'

When in GEQ Fader Flip mode, if the RTA is assigned to the channel (e.g. visible in the **PROCESSING** screen), the **Chromatic Channel Meters** will display the level of each frequency band above the fader that controls it. The most prominent frequency is also displayed using the **Pk** LED's.

If the RTA is being used on a different channel to the one selected, by the Qu-MixPad app for example, the Chromatic Channel Meters and Pk LED's will not illuminate.

12.2 Meters Screen

|| METERS | Overview

Throughout the meters screens:

- The main channel level meters display signal from -40dB to +10dB.
- Gain reduction meters on the right of each channel meter show level reduction from 0dB to -30dB, these are red/bright red when the compressor is switched in and dark/light grey when it is switched out.
- Gate active indicators are red/bright red when the gate is switched in and dark/light grey when the gate is switched out.

Overview

The Meters overview displays all **Input**, **FX** Send and Return and **Mix** meters, along with the meters for the currently selected fader **Layer** on a single screen.

- Touch any tab at the top of the screen to view larger meters for each channel type.
- Touch any section of meters to jump to the relevant tab.
- Use the surface Layer keys to select which layer is currently selected and displayed.

Inputs

- Touch the **Input Meter Source** to choose the metering point for all Input channels. Note this also applies to the **Chromatic Channel Metering** on the surface.

- The top section displays larger meters with channel name and colour.
- The lower section displays all input meters and can be used for navigation.
- Touch and drag left and right on the top or bottom sections to view all input meters.

FX

Displays all FX Send and FX Return channel meters.

Mixes

Displays all Mix channel meters.

- Touch the **Mix Meter Source** to choose the metering point for all Mix channels. Note this also applies to the **Chromatic Channel Metering** on the surface.

USB/SD

USB input meters show signal from either USB-C or Qu Drive playback, with Qu Drive playback having priority.

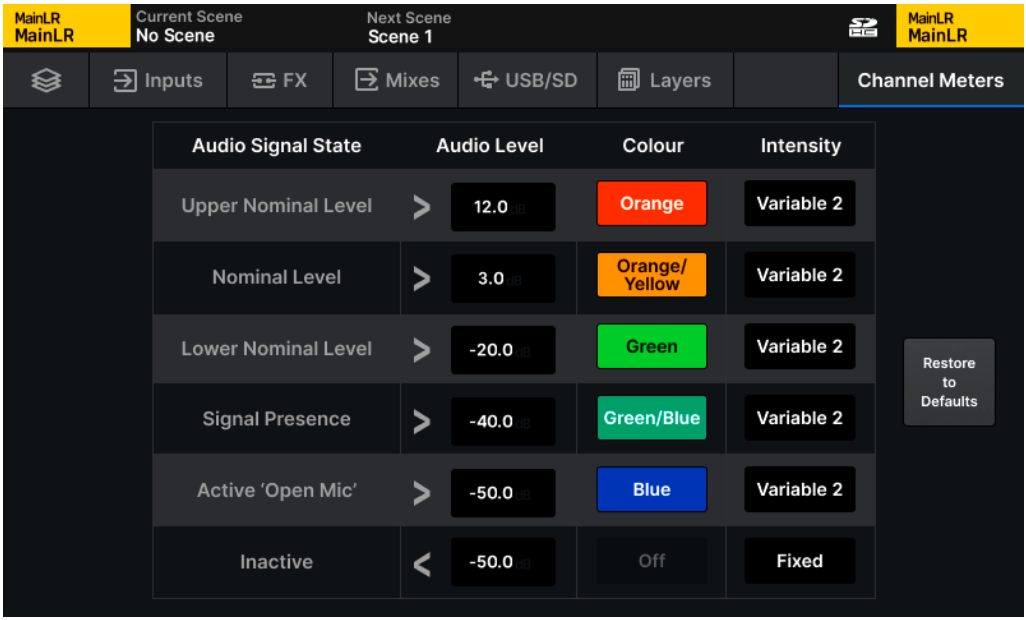
USB output meters show the output signal from channels that have been patched to USB output sockets in the **I/O** screen.

Layers

Displays all the meters for all fader strips of the currently selected fader strip layer.

- Use the surface Layer keys to select which layer is currently selected and displayed.

12.3 Chromatic Channel Metering



|| METERS | Channel Meters

The Chromatic Channel Metering displays the information of a high-resolution meter in the space of a single LED on each channel strip. It can depict a much greater range of levels than a traditional meter and behaviour is customisable in the **Channel Meters** tab.

- Touch an **Audio Level** value and adjust using the touchscreen rotary.
- Touch a colour for an **Audio Signal State** and use the touchscreen rotary to adjust the colour/s for this level range.
- Touch the **Intensity** value to choose the behaviour of the meters.

Fixed - Meter switches instantly between states.
Variable 1 - Meter changes close to the endpoints of its range.
Variable 2 - Meter changes across its whole range.

- Touch the **Restore to Defaults** button to restore settings:

ⓘ The Chromatic Channel Meter source matches the meter source point selected for Input and Mix Meters.

ⓘ **Audio Level** values are bound by the level setting of states above and below.

13. FX

13.1 FX Overview

|| FX | FX3 | Front Panel (Stereo Tap Delay)

The Qu has 6 FX units which can be used for any available FX type, meaning any combination of 6 FX types can be used at any one time.

Signals from multiple channels can be sent at various levels, pre or post fade to an FX Unit using a dedicated FX send (for FX units 1-4) or any other Mix.

Each unit then has its own dedicated stereo return channel with PEQ for routing back out to Mixes in the same way as any Input channel. Which gives full control over the amount of each channel being sent to each FX unit, as well as the amount of 'wet' FX sound being sent to each mix.

Input/Group/FXRet channel ➔ FX Send ➔ FX Unit ➔ FX Return ➔ Mix channel

Alternatively, any FX unit can be Inserted directly into any Input or Mix processing channel.

FX units can be controlled from the **FX** screen, or from the **PROCESSING** screen with an FX Send or Return channel selected.

ⓘ To always show the relevant FX unit when viewing the **FX** screen, enable **FX Screen Follow Sel** in Surface Preferences.

|| FX | FX2 | Front Panel (SMR)

Front/Back Panel – View either the front panel FX parameter controls, or back panel routing options for each FX unit.

FX Unit – Select from the 6 FX units at the top of the screen.

Global Tap – Set the Global Tap Tempo time by tapping on screen. This can then be used by multiple delay FX instances.

FX Parameter/Routing/PEQ Control - The main section of the screen includes FX parameter controls when **Front Panel** is selected and routing options when **Back Panel** is selected. It can also display the FX Return PEQ.

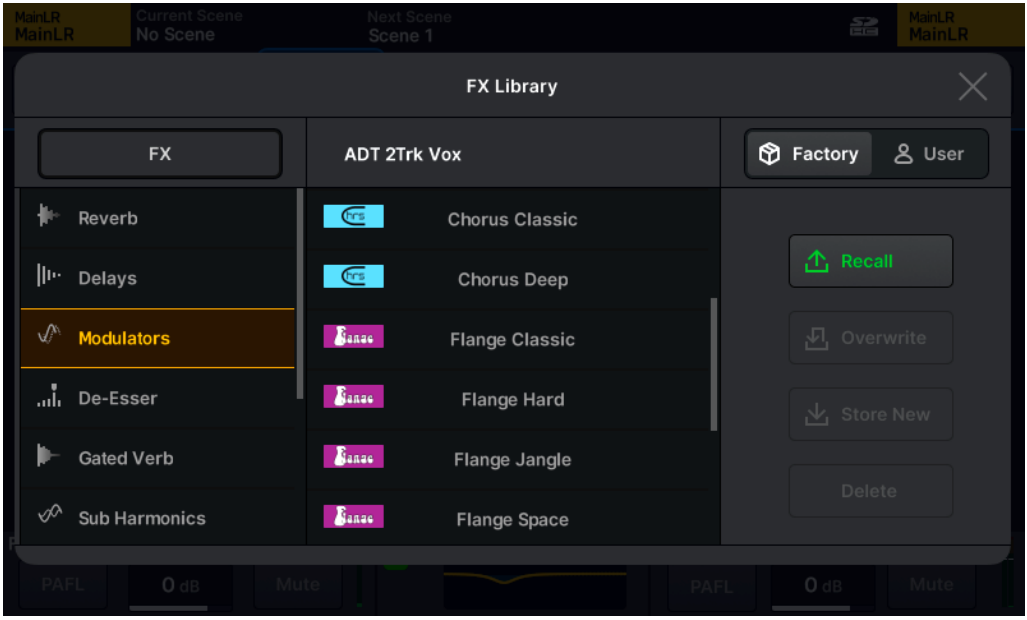
- Touch any switch or button to action.
- Touch any other control to select it and adjust using the touchscreen rotary.

PEQ/FX – Touch the **PEQ** at the bottom of the screen to display and adjust the FX Return channel PEQ. Touch the same area again to return to the **FX Parameter/Routing controls**.

> ⓘ This same PEQ can be adjusted in the **PROCESSING** screen and using dedicated controls when the FX Return channel is selected.

FX Send and Return Controls – These duplicate the **PAFL**, **Mute** and **Fader** (**Level**) controls found on the **FX Send** and **FX Return** channel strips.

13.2 Loading different FX types



|| FX | FX Library (pop-up)

- Select the FX unit you wish to use.
- Press the **Library** key on the surface to open the **FX Library** pop-up.
- Select an FX type on the left, then a **Factory** preset. Different presets use different FX types, so to load a different FX type, recall a preset which uses it.
- Touch the **Recall** button to recall the preset and FX type.

ⓘ User presets can be stored and recalled to and from the **User** section of the FX library.

ⓘ By default, the first four FX engine slots have been populated with useful FX presets, but all 6 slots are freely assignable.

SMR (Spacial Modelling Reverberator)

4 fully configurable complex spatial models: **Classic**, **Hall**, **Room** and **EMT**.

Stereo Tap Delay

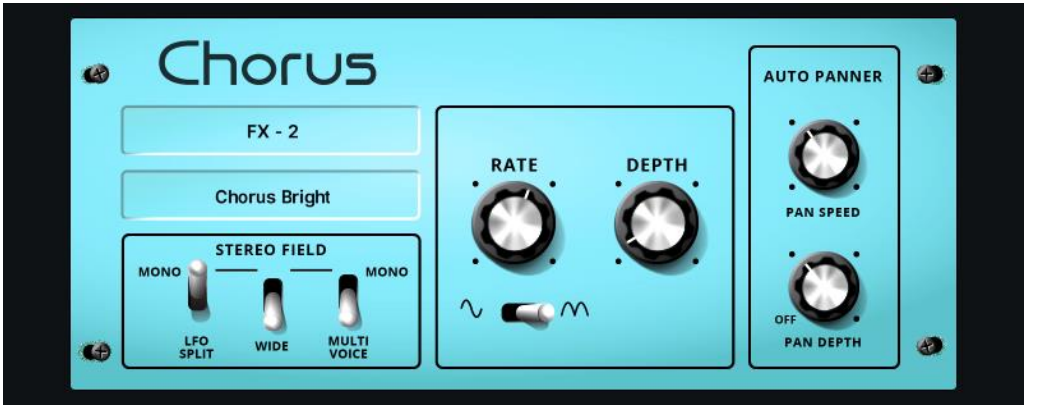
Clean digital delay with link, filters, tap tempo (global or local) and BPM or ms display options.

Gated Verb

Emulation of the 80's classic gated reverb, with in-depth control and 2 extra variants: **Panned** and **Powerbox**.

Automatic Double Tracker

Automatic double tracking unit with **Double Track** and **Quad Track** modes along with separation, thickness and autopanning.



Classic (Blue)

Versatile chorus unit with 3 stereo field options, rate, depth and LFO control, plus autopan option.

Symphonic Chorus

A faithful emulation of the 80's classic chorus effect with 2 very simple controls.

Electric Flange

3 classic flanger effects in one unit: **Ambient**, **Vintage** and **Wild** with multiple LFO and stereo options.

12 Stage Phaser

Accurate emulation of a 12-stage phaser, with rich, textured phasing and plenty of control.

13.4 FX Send and Return Channels

|| FX | FX2 | Front Panel (Gated Verb)

FX Send Channels

The Qu has four FX send mixes which are routed to the inputs of the first four FX units by default when using then in **Mix->Return** configuration with **FX Send** selected.

- Press an **FX** Mix key 1-4 to show and adjust the send levels on faders for each fader strip to that FX unit. Or with a channel selected, hold the **CH TO ALL MIX** key to show and adjust all FX sends from the selected channel (along with all other sends).
- The overall send level to the FX unit is controlled with the main Mix channel strip and also appears at the bottom left of the **FX** screen.

FX Return Channels

- The output from each FX unit is returned to the matching FX return channel for each FX engine slot. (i.e. the **FX Unit 1** output is routed to **Fx1Rtn**).
- All FX return channels are stereo and feature a PEQ.
- FX Returns can be assigned and sent to mixes in the same way as any input channel.

ⓘ FX return channels can be assigned to fader strips but will not be visible unless they are routed to from the output of the FX engine (i.e. set as **Mix -> Return** on the back panel).

13.5 Inserting FX

|| FX | FX2 | Back Panel | Insert Patching (pop-up)

Any FX unit can be inserted directly into any Input or Mix processing channel.

From the FX screen

- Select the FX unit to insert
- Touch the **Front/Back Panel** button in the top left to show the back panel
- Select **Insert** as the option in the top left
- Select a channel
- Press **Apply**

From an Insert point

- Select a channel
- Navigate to the **PROCESSING** > **Insert** screen
- Select the FX unit to insert as the input/output socket values
- Press **Apply**

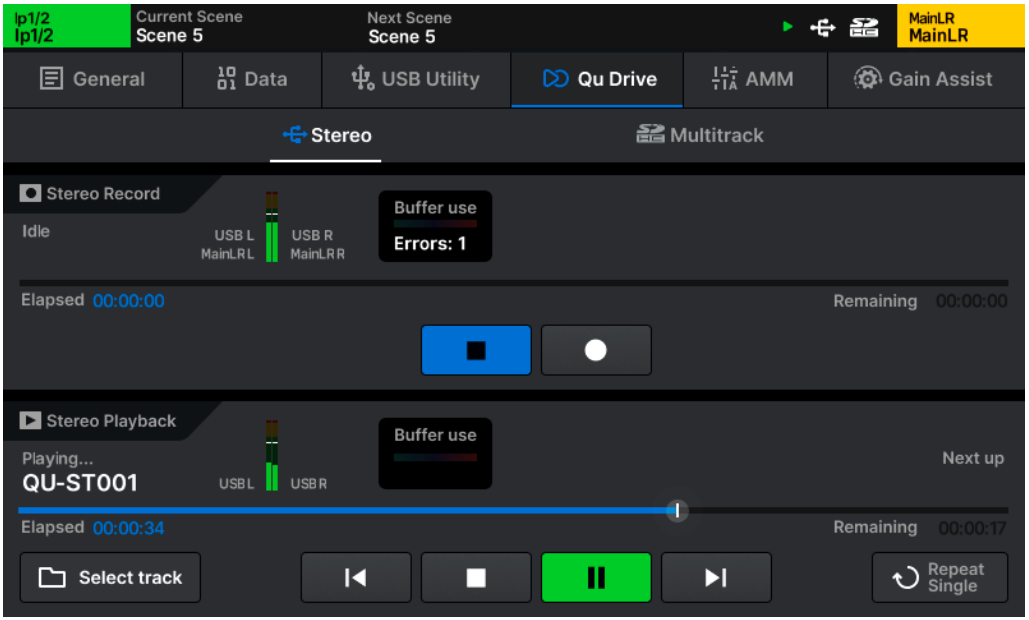
When Inserted, the FX unit does not use FX send and return channels and the available controls at the bottom of the **FX** screen change.

Dry/Wet – Balance the 'dry' unaffected signal and the 'wet' FX signal in the signal path.

In/Out – Switch the insert in or out.

14. Qu Drive and USB audio

14.1 Qu Drive Stereo Recording/Playback



|| UTILITIES | Qu Drive | Stereo

Record or playback stereo audio to/from USB-A storage.

> ⓘ USB-A audio/data and SD card recording/playback features utilise the same system resources and cannot be used at the same time.

Stereo Recording

The top section of the screen is for recording to USB-A storage and includes level meters for the channels being recorded, recording controls and elapsed/remaining time.

- Patch the channels to be recorded to USB output sockets 1&2 in the **I/O** screen.
- Press the **Record** button to start recording.
- Press the **Stop** button to stop recording.

Stereo recordings are stored in the **AH_QU\USBREC** folder on the drive.

Stereo Playback

The bottom section of the screen is for playback of audio from USB-A storage.

The Qu can playback stereo files that were recorded from the Qu to the **AH_QU\USBREC** folder on the drive, or mono/stereo, 44.1/48/96kHz, 16/24bit *.WAV files which have been copied to the **AH_QU\USBPLAY** folder.

Select Track - Select the track to be played from Playback or Recordings folders.

Transport Control – Use to Play/Pause, Stop or skip to Previous/Next. Use the circular playback position marker to jump to a specific point in the track.

Playback Mode (bottom right) – Options include Play All (and stop), Play Single (and stop), Repeat All (loop through all tracks) and Repeat Single (loop a single track).

> ⓘ When using Play All or Repeat All playback modes, tracks will playback either in the order they were recorded, or in the order they were copied to the drive.

Record/Playback Priority

Stereo USB playback signal will be sent to the dedicated stereo USB Input channel as well as USB input sockets 1&2 and take priority over signal from the USB-C audio interface. When stereo recording/playback is in progress, it is not possible to use SD card record/playback or store/recall data from USB storage.

Folders, files and formats

The USB device must be formatted to FAT32 before use. This may need to be carried out using a computer, before then formatting again using the Qu to ensure the correct folder structure.

> ⓘ Format connected storage in the **UTILITY** > **USB Utility** > **Status/Format** screen.

Recordings are stored to the **AH_QU\USBREC** folder.

Stereo recordings are made to stereo interleaved 24bit uncompressed *.WAV files, at the sample rate set in the **SETUP** > **Audio** > **Sync&USB** screen.

The Qu can playback mono/stereo, 44.1/48/96kHz, 16/24bit *.WAV files from the **AH_QU\USBPLAY** folder.

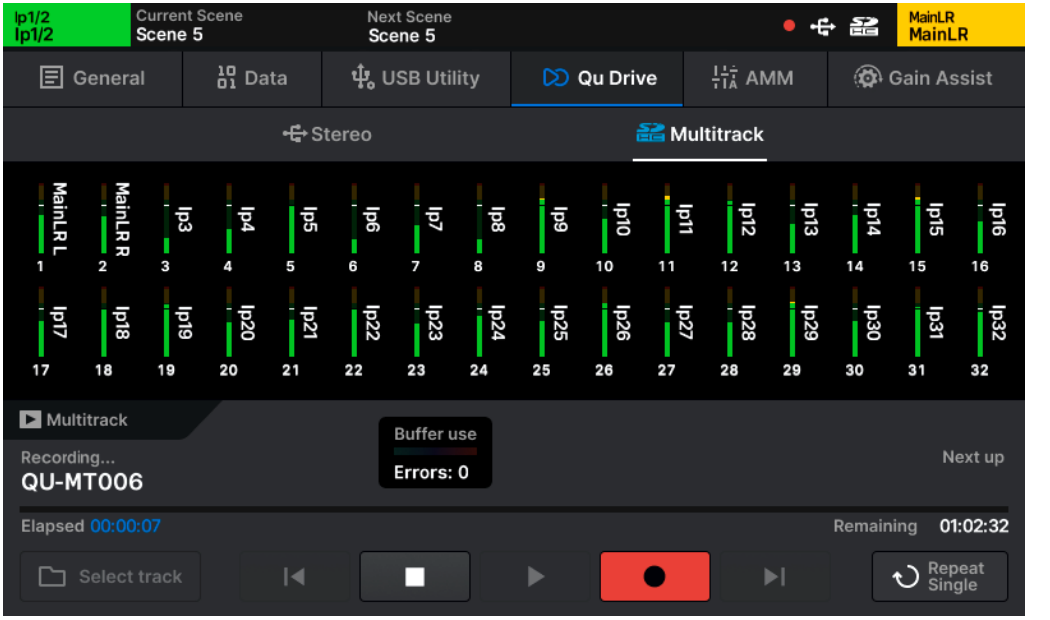
Buffer Usage

Buffer usage meters indicate the performance of the connected storage device. If buffers are filled, data will be lost and an error will be counted.

Length of recording

The maximum length of a stereo recording is determined by the maximum file size of 4GB, which equates to approximately 2 hrs at 96kHz or 4 hrs at 48kHz.

14.2 Qu Drive Multitrack Recording/Playback



|| UTILITIES | Qu Drive | Multitrack

Record or Playback individual signals to and from individual channels using an SDHC card.

- USB-A audio/data and SD card recording/playback features utilise the same system resources and cannot be used at the same time.
- SD card recording and playback modes are exclusive, it is not possible to record and playback simultaneously.
- Meters switch automatically to show either signal being recorded or played.
- Only recordings matching the current USB/SD sample rate are available for playback.

Qu Drive Multitrack Controls

Select Track - Select a multitrack recording for playback.

Transport Controls – Use to Record, Play/Pause, Stop and skip to Previous/Next. Use the circular playback position marker to jump to a specific point in the track.

Playback Mode (bottom right) – Options include Play All (and stop), Play Single (and stop), Repeat All (loop through all tracks) and Repeat Single (loop a single track).

Qu Drive Multitrack Recording

- Patch any channels to be recorded to USB output sockets in the **I/O** screen. Only patched channels will be recorded.
- Set Input Direct Output source to choose whether channel processing will be recorded for any Input Direct Outputs that have been patched.
- Press the **Record** button to start recording.
- Press the **Stop** button to stop recording.

Multitrack recordings are stored as separate folders in the SD Card **AH_QU\USBMTK** folder.

Number of channels

The maximum number of channels which can be recorded depends on the speed of the SD card and the sample rate of the recording. For best results, use an SDHC card with UHS-I and Class 10 markings.

Qu can record or playback up to 16 channels at 96kHz or up to 32 channels at 48kHz.

Record/Playback Priority

Multitrack playback signal is sent to the digital source for individual channels and takes priority over signal from USB-C. When multitrack recording/playback is in progress, it is not possible to use Qu Drive stereo record/playback or store/recall USB data.

Folders, files and formats

The SD card must be formatted in the Qu before use.

> ⓘ Format connected storage in the **UTILITY** > **USB Utility** > **Status/Format** screen.

Recordings are made to the **AH_QU\USBMTK** folder. Each recording is stored in its own sub folder as a collection of mono 24bit uncompressed *.WAV files, at the sample rate set in the **SETUP** > **Audio** > **Sync&USB** screen.

Files are named with the channel number they were recorded from combined with the channel name. e.g. '*03SnrTop.WAV*'. The channel number of the file is the USB input socket number it will be routed to when playing back a multitrack recording.

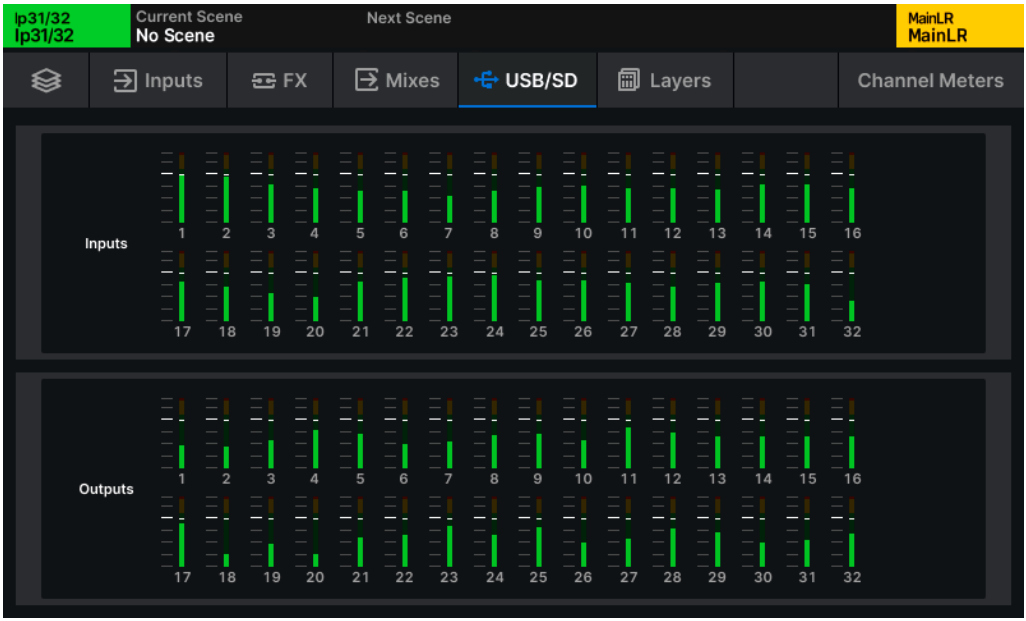
Buffer Usage

Buffer usage meters indicate the performance of the connected storage device. If buffers are filled, data will be lost and an error will be counted.

Length of recording

The maximum length of a multitrack recording is determined by the maximum file size of 4GB (for each mono channel recorded), which equates to approximately 4 hrs at 96kHz or 8 hrs at 48kHz.

14.3 USB-C Audio/MIDI interface



|| METERS | USB/SD

The Qu's USB-C Audio/MIDI interface is class compliant and conforms to USB 2.0 standards. It is recommended to use a high-speed USB cable for connection. Depending on the environment the system is being used in, it may also be beneficial to use a cable which includes a ferrite bead.

ⓘ Note that not all USB 3.0 ports are fully backward compatible with USB 2.0 – for best results, it is therefore recommended that a USB 2.0 port is used where available. Where unavailable, USB 3.0 ports utilising xHCI host controller drivers should be avoided as many are known not to support the isochronous transfer method used for streaming audio.

Connecting to a Mac

The Qu is Core Audio compliant so no driver is required, and it will appear as both an audio and a MIDI device when connected.

Connecting to a Windows PC

Visit the Allen & Heath website (www.allen-heath.com/resources) to download the latest Qu Windows ASIO/WDM driver.

Follow the instructions to install the driver before connecting the Qu.

Connecting to other devices

It is possible to connect the Qu as an Audio/MIDI interface to any device which supports Class Compliant devices, including tablets and phones, though it is not possible for all devices to be tested and officially supported.

USB Stream Mode

The USB-C interface can be switched between **Stereo** and **Multitrack** stream modes in the **SETUP** > **Audio** > **Sync&USB** screen.

Multitrack mode provides all 32 input and 32 output sockets to the connection and is intended for use with a DAW or when using USB for insert processing.

Stereo mode uses only USB input and output sockets 1&2 and presents itself as a stereo device for compatibility with tablets and phones for live streaming or background music playback, or for a simple stereo recording/playback setup with a computer.

Sample rate

The Qu USB sample rate should be set in the **SETUP** > **Audio** > **Sync&USB** screen before any programs or apps accessing the USB-C connection are used.

96kHz – Higher quality, lower latency, larger files recorded, lower SD card channel count.
48kHz – Lower quality, higher latency, smaller files recorded, higher SD card channel count.

Routing notes

- It is important to note when patching that *outputs* from the computer are USB *input* sockets on the Qu and USB *output* sockets from the Qu are *inputs* on the computer.
- The dedicated stereo USB channel on the Qu is always sourced from USB input channels 1&2.
- By default, USB output channels 1&2 are fed from the Main LR mix, though all USB patching is fully assignable.
- When using WDM drivers to utilise the Qu for Windows system/default sound, multiple pairs of USB channels are available for use. To make use of all 32 input and 32 output channels, the ASIO driver must be used with a compatible program like a DAW.
- When selecting the Qu as the default output audio device on a mac, USB channels 1&2 are used by default, though this can be changed in the Audio MIDI setup.

15. Storing and Recalling Settings

15.1 Shows

The Qu has one **Show** loaded at any time.

Multiple Shows can be stored and recalled by using a USB-A storage device.

Shows are used for different setups and applications and therefore include more settings than a Scene, such as brightness settings for screens and LED's.

However, Shows do *not* include network and user settings. These are set per unit, so that, for example, the network settings on a venue's mixer are not overwritten when a visiting engineer recalls a Show.

Included in a Show:

- 300 **Scenes**
- 128 User **Libraries**
- 1 Cue List
- Scene Manager list mode
- Bus Config
- Audio Clock source
- AES/USB/SD sample rate
- Control Network Bridge state
- PAFL and Listen settings
- Talkback settings
- Signal Generator settings
- Global scene filter settings
- Channel safes
- Meter Source Points
- Chromatic Channel Metering
- Surface preferences
- MIDI channel

Not included in a Show

- Network settings
- Unit name
- Factory Libraries
- Fader Calibration

15.2 Scenes

Scenes allow instantaneous storage and recall of multiple parameters and settings at once.

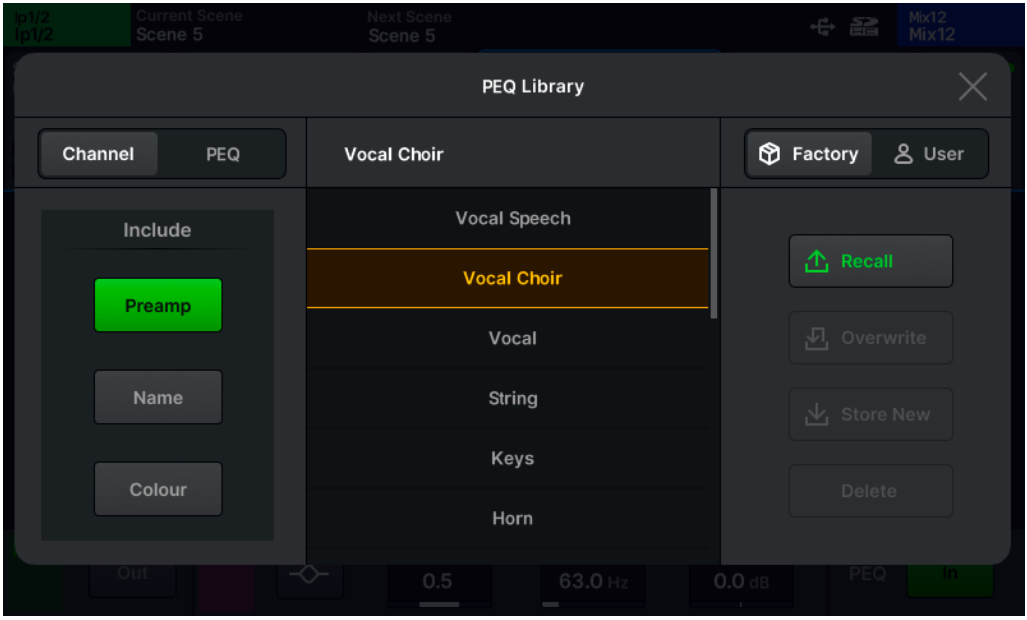
They store/recall the *mix state* of the Qu and can be used for the different scenes of a theatre production (hence the name), different songs in a set or different bands at a show.

In conjunction with Global and Scene filters, they can also become a powerful tool for recalling just some settings across many channels or do things like change the Soft Key assignments without affecting anything else.

The Qu has 300 Scene slots available (per show), each of which includes:

- Input and output routing
- Input/Mix Stereo settings
- Preamp settings
- Channel processing
- Channel assignments and send levels
- Panning and balance
- Channel mutes
- Mute Groups and DCA assignments and levels
- Fader/Channel strip assignments
- Channel names and colours
- Ganging
- Scene filter settings
- FX units and parameters
- Soft Key assignments
- Footswitch settings
- AMM settings

15.3 Libraries



|| PROCESSING | EQ | PEQ/Channel Library (Input Channel, pop-up)

Libraries are available for all processing and some other features of the Qu and can be accessed using the dedicated **Library** key which illuminates to indicate a library is available for the screen being viewed.

Factory libraries provide presets and are also used to recall different FX units or DEEP plug-ins. They are fixed in firmware and cannot be edited or overwritten. The Qu can also store up to 128 **User** Library items. All **User** libraries are included when storing or recalling an entire **Show** and can also be stored or recalled individually using a USB drive.

Channel/Processing – Switch between entire channel library and any processing library.

Factory/User – Switch between the Factory and User Libraries.

Rename (text box with pencil icon in User libraries) – Rename the currently selected item.

Recall – Replace the current settings with the selected stored settings.

Overwrite – Replace the stored settings with the current settings.

Store New – Store the current settings as a new library item.

Delete – Delete the selected stored library item.

Available Libraries

ⓘ Entire Input and Mix Channel libraries are accessed by selecting **Channel** at the top left of any processing Library pop-up.

Entire Input Channel (**PROCESSING** / Any Input Channel processing selected)
Includes: Trim, HPF, Gate, PEQ, Compressor
Optionally: Preamp, Name, Colour

Entire Mix Channel (**PROCESSING** / Any Mix Channel processing selected)
Includes: FBA/GEQ, PEQ, Compressor
Optionally: Name, Colour

Preamp (**PROCESSING** > **Source** / Input Channel selected)
Includes: DEEP Preamp Model (Tube Stage)

Gate (**PROCESSING** > **Gate** / Input Channel selected)
Includes: Gate settings

FBA/GEQ (**PROCESSING** > **FBA/GEQ** / Mix Channel selected)
Includes: FBA settings (excluding any Live filters) or GEQ settings

PEQ (**PROCESSING** > **EQ/PEQ**)
Includes: PEQ settings

Compressor (**PROCESSING** > **Comp**)
Includes: Compressor settings

FX (**FX**)
Includes: FX model, FX parameters, Insert Wet/Dry levels

User Permissions (**SETUP** > **Users** / User 1-10 selected)
Includes: All User Permissions

Input Channel Patch (**I/O** > **Inputs**)
Includes: Input Channel Patching

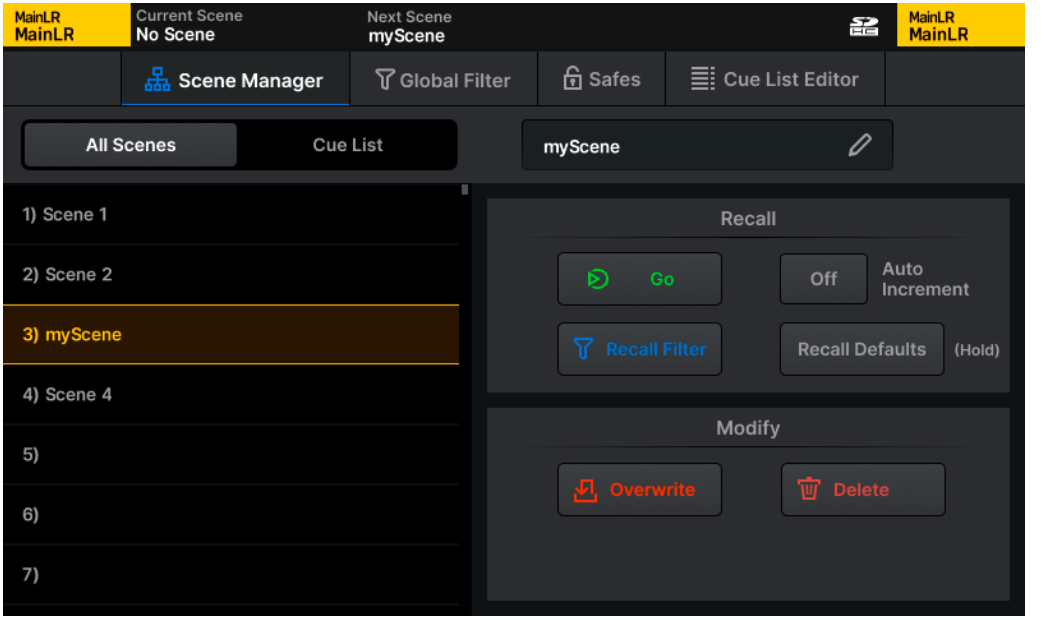
15.4 Scene Manager

Scene Manager Mode

Touch the **All Scenes**/**Cue List** button above the scene list to choose the **Scene Manager** 'mode'. **All Scenes** works directly with all 300 scene slots. The **Cue List** is like a playlist of cues, each with an associated scene, to allow for easy inserting, reordering, repetition and renumbering.

ⓘ The Scene Manager mode is global and affects external recall of Scenes via the Qu-MixPad app.

All Scenes List



|| SCENES | Scene Manager | All Scenes

With **All Scenes** selected as the **Scene Manager** 'mode' all 300 scene slots are displayed.

- Touch and drag up and down or touch to select then use the touchscreen rotary to scroll through all scene slots.
- Select a scene slot from the **All Scenes** list to recall or modify.

Rename (pencil icon in text box) – Edit the name of the selected Scene.

Go – Recall the selected Scene, replacing the current state of the mixer with the selected stored state. Subject to any Global or Scene Recall filters.

Auto Increment On/Off – Select the next stored Scene after recalling a Scene with the **Go** button.

Recall Filter – View and edit the per-Scene filters for the currently selected Scene.

Recall Defaults – Touch and hold to replace the current state of the mixer with the default state. Unlike a full factory reset, this does not delete any stored data.

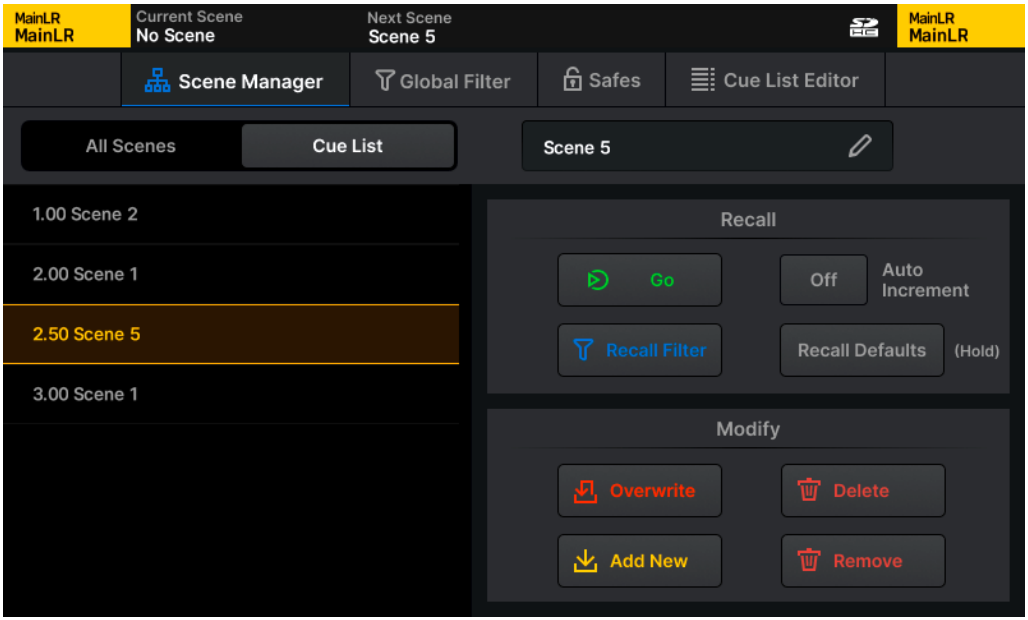
Store New – Store the current state of the mixer in the selected scene slot.

Overwrite – Store the current state of the mixer in the selected scene slot (replacing a previously stored state).

Delete – Touch to delete the selected scene.

ⓘ You can choose whether or not to confirm scene operations (and avoid accidental overwriting) by using the **Confirm Scene Operations** button found in Surface Preferences.

Cue List



|| SCENES | Scene Manager | Cue List

Each Cue in the list has an associated scene from one of the (up to 300) Scenes in the current show. Cue numbers are displayed instead of the scene slot number.

Rename (pencil icon in text box) – Edit the name of the Scene associated with the selected Cue.

Go – Recall the selected Cue, replacing the current state of the mixer with the selected stored Scene state. Subject to any Global or Scene Recall filters.

Auto Increment On/Off – Select the next Cue after recalling a Cue.

Recall Filter – View and edit the per-Scene filters for the currently selected Scene.

Recall Defaults – Touch and hold to replace the current state of the mixer with the default state. Unlike a full factory reset, this does not delete any stored data.

Overwrite – Store the current state of the mixer in the scene slot associated with the selected Cue (replacing a previously stored state).

Add New - Store the current state of the Qu into the next available empty scene slot *and* add/insert a new cue for that scene after the currently selected cue.

Delete – Touch to delete the selected scene.

Remove – Remove the Cue from the list, but do not delete the Scene itself.

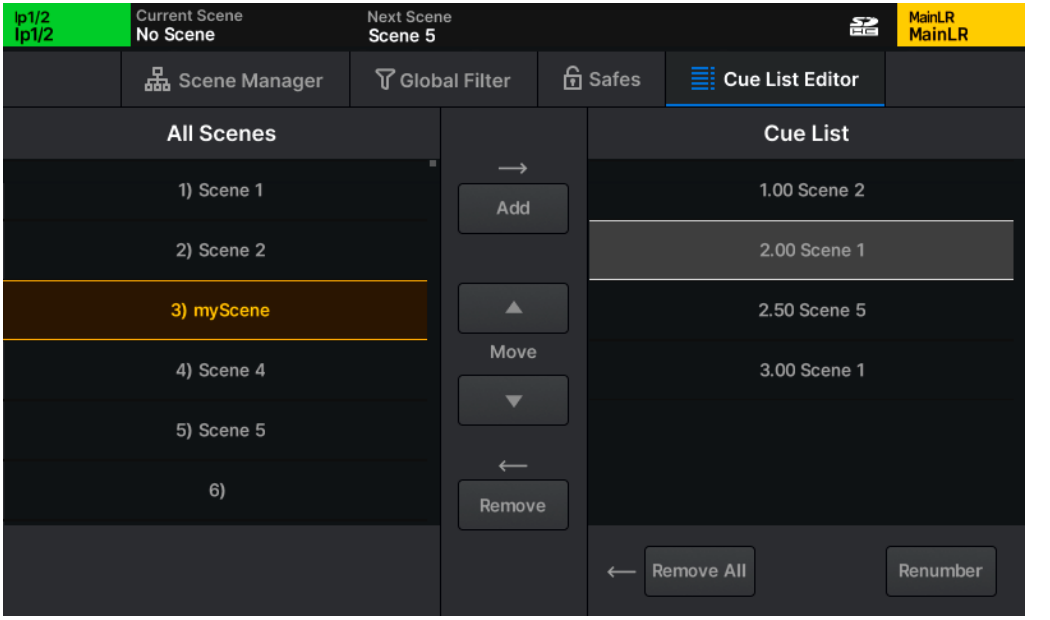
ⓘ You can choose whether or not to confirm scene operations (and avoid accidental overwriting) by using the **Confirm Scene Operations** button found in Surface Preferences.

Auto Increment

With Auto Increment turned on, recalling a scene using the **Go** button on the Scene Manager screen will automatically select the next used scene slot in the **All Scenes** list or the next Cue in the **Cue List**. Meaning the **Go** button can be pressed repeatedly to move through the scenes sequentially.

The Auto Increment setting on this screen does not affect the **Scene Recall Go** Soft Key option, which has a separate **Auto Increment** option available.

15.5 Cue List Editor



|| SCENES | Cue List Editor

The Cue List Editor allows Cues to be added or inserted into the Cue List directly from the All Scenes list. Additionally, it's possible to remove Cues or clear the Cue List completely, as well as reorder and renumber it.

To add/insert a new cue for a scene into the Cue List:

- Touch a stored **Scene** in the **All Scenes** list on the left.
- Touch a **Cue** in the **Cue List** on the right.
- Touch **Add** to add a new **Cue** for the selected **Scene** after the selected **Cue**.

ⓘ When inserting a new cue, it will be automatically numbered based on its position in the Cue List.

To remove scenes from the Cue List (this will not delete scenes from the Qu, only remove the cue for it from the Cue List):

- Touch the cue to be removed.
- Touch the **Remove** button to remove it.

OR

- Touch the **Remove All** button to completely clear the Cue List.

To move scenes up or down in the Cue List:

- Touch a **Cue** in the **Cue List** to select it.
- Use the **Up** or **Down** arrows in the middle of the screen to move it up or down the **Cue List**.

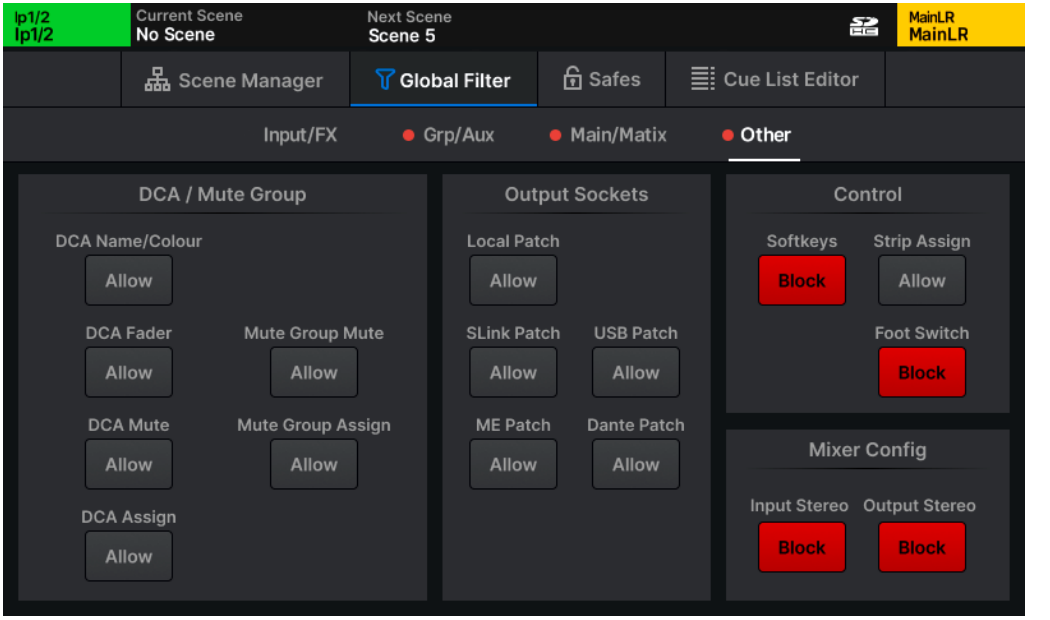
Cue List numbering and renumbering

Cues are numbered to two decimal places, allowing Cues inserted between two existing Cues in the **Cue List** to be automatically assigned a number between the two without changing the existing numbering.

This is for systems and setups using external triggering via MIDI Show Control to prevent those triggers from needing to be changed if extra scenes are inserted.

It is possible to renumber the Cue List scenes at any time however, by touching the **Renumber** button which will renumber all Cues in the list from 1.00 in 1.00 increments.

15.6 Global/Per-Scene Filters



|| SCENES | Global Filter

When storing a Scene, all mix settings are saved. However, it is possible to filter what is recalled using a combination of **Global Filters** and **Scene Recall Filters**.

Global Filters are always active and set per Show in the **Scenes** > **Global Filter** screen. They take precedence over **Scene Recall Filters**.

- Navigate through different channel types using the tabs near the top of the screen.
- Touch any filter button to switch between **Allow** and **Block**.
- Blocked parameters will not be affected when recalling any Scene.

Scene Recall Filters are applied per-Scene:

- Touch a Scene or Cue to highlight it then touch the **Recall Filter** button.
- **Allow** or **Block** parameters in the same way as with Global Filters.
- Blocked parameters will not be affected when recalling the Scene which the filters have been applied to.

ⓘ It is common to block **SoftKeys** and **Footswitches**, so they continue to function in the same way whenever Scenes are recalled.

ⓘ Changes to **Talkback** are always blocked as these are Show level parameters.

ⓘ All output socket filters also affect socket settings e.g. AES sample rate setting.

Input/FX Filters

Inputs	
Filter	**Includes**
Name/Colour	All input channel names and colours
Patch	Source and Direct Out patching of input channels
Preamp	Preamp settings of input channels (excludes DEEP preamp models)
Fader	All input channel fader positions and assignments to the Main LR mix
Pan/Balance	All input channel panning and balance to Main LR mix
Mute	All input channel mutes
AMM	All AMM assignments and settings
Processing/Insert	All Input channel insert patching and settings
Processing/EQ	All Input channel HPF and PEQ settings
Processing/Dynamics	All Input channel Gate and Compressor settings
Processing/Other	All Input channel Trim, DEEP preamp, Stereo Image and channel Delay settings

FX	
Filter	**Includes**
Name/Colour	All FX Send and Return channel names and colours
Patch	All FX input patching (Mix->Return or Insert) and output patching
Parameters	All FX parameters and wet/dry mix settings
Fader	All FX Send and Return channel fader positions
Return Balance	All FX Return channel balance positions
Mute	All FX Send and Return channel mutes
Sends to FX	All send levels and assignments to FX busses

Mix Filters

Group	
Filter	**Includes**
Name/Colour	All Group channel names and colours
Fader	Fader positions and output balance of Group channels
Pan/Balance	Pan and balance positions for all Group channels
Mute	Group channels mutes
Assigns to Group	All channel assignments to all groups
Processing/Insert	All Group channel insert patching and settings
Processing/PEQ	All Group channel PEQ settings
Processing/FBA/GEQ	All Group channel FBA/GEQ settings
Processing/Dynamics	All Group channel Compressor settings
Processing/Other	All Group channel Delay settings

Aux	
Filter	**Includes**
Name/Colour	All Aux channel names and colours
Fader	Fader positions and output balance of Aux channels
Mute	Aux channels mutes
Sends to Aux	All send levels to Aux channels
Processing/Insert	All Aux channel insert patching and settings
Processing/PEQ	All Aux channel PEQ settings
Processing/FBA/GEQ	All Aux channel FBA/GEQ settings
Processing/Dynamics	All Aux channel Compressor settings
Processing/Other	All Aux channel Delay settings

Main	
Filter	Includes
Name/Colour	Main LR channel name and colour
Fader	Fader position and output balance of the Main LR channel
Mute	Main LR channel mute
Processing/Insert	Main LR channel insert patching and settings
Processing/EQ	Main LR channel PEQ settings
Processing/FBA/GEQ	Main LR channel FBA/GEQ settings
Processing/Dynamics	Main LR channel Compressor settings
Processing/Other	Main LR channel Delay settings

Matrix	
Filter	**Includes**
Name/Colour	All Matrix channel names and colours
Fader	Fader positions and output balance of Matrix channels
Mute	Mute for all Matrix channels
Sends to Matrix	All send levels to Matrix channels
Processing/Insert	All Matrix channel insert patching and settings
Processing/PEQ	All Matrix channel PEQ settings
Processing/FBA/GEQ	All Matrix channel FBA/GEQ settings
Processing/Dynamics	All Matrix channel Compressor settings
Processing/Other	All Matrix channel Delay settings

Other Filters

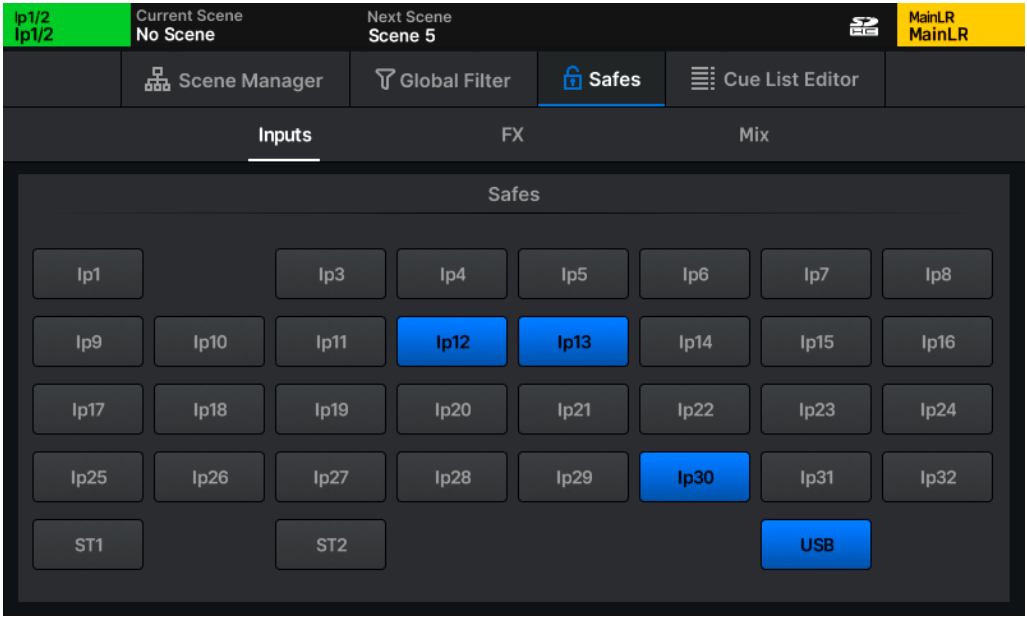
DCA/Mute Group	
Filter	**Includes**
DCA Name/Colour	All DCA names and colours
DCA Fader	All DCA fader values
DCA Mute	All DCA mutes
DCA Assign	All DCA member assignments
Mute Group Mute	All Mute Group mutes
Mute Group Assign	All Mute Group assignments

Output Sockets	
Filter	**Includes**
Local Patch	All patching to local output sockets (XLR, TRS and AES)
SLink Patch	All patching to the SLink port
USB Patch	All patching to USB (Qu Drive and USB-C)
ME Patch	All patching to a ME system
Dante Patch	All patching to the Dante port (Qu-5D, Qu-6D and Qu-7D only)

Mixer Config	
Filter	**Includes**
Input Stereo	Mono/stereo state of odd/even Input channel pairs
Mix Stereo	Mono/stereo state of Group, Aux and Matrix channels

Control	
Filter	**Includes**
SoftKeys	All SoftKey assignments
Strip Assign	Channel strip layout
Foot Switch	Foot switch assignments

15.7 Channel Safes

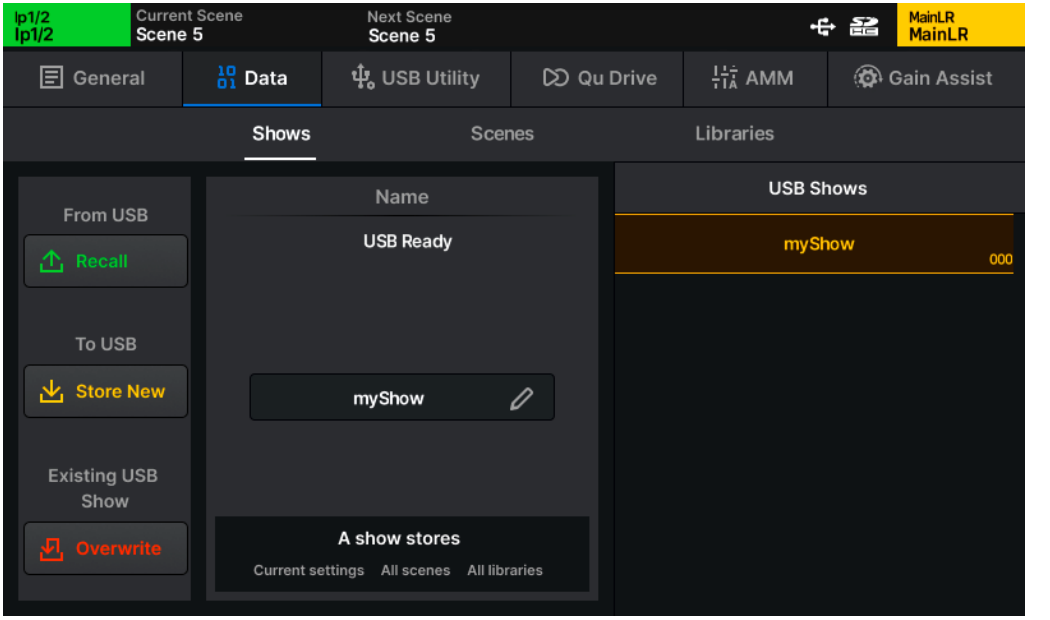


|| SCENES | Safes

Safes block any changes to an entire channel when recalling a scene. They are commonly used on announcement/continuity microphone channels and those being used for background music playback.

- Touch **Inputs**, **FX** or **Mix** tabs to view all channel safes.
- Touch a **Safe** button to safe the channel (the button will turn blue).

15.8 USB Data



|| UTILITIES | Data | Shows

All data transfer options are located in the **Utility** > **Data** screen. These enable **Shows** and individual **Scenes** and **Libraries** to be stored and recalled, and are used to back-up data or transfer it to another Qu.

USB Shows

A **Show** includes the current state of the Qu, along with all stored states (**Scenes**) and all stored **User Libraries**. The Qu has one Show loaded at any time, but can store or recall Shows to/from a connected USB drive.

ⓘ Shows are stored in separate folders within the **AH_QU\SHOWS** folder of the drive.

Recall – Replace the current Show (state, all Scenes and Libraries) on the Qu with the stored Show.

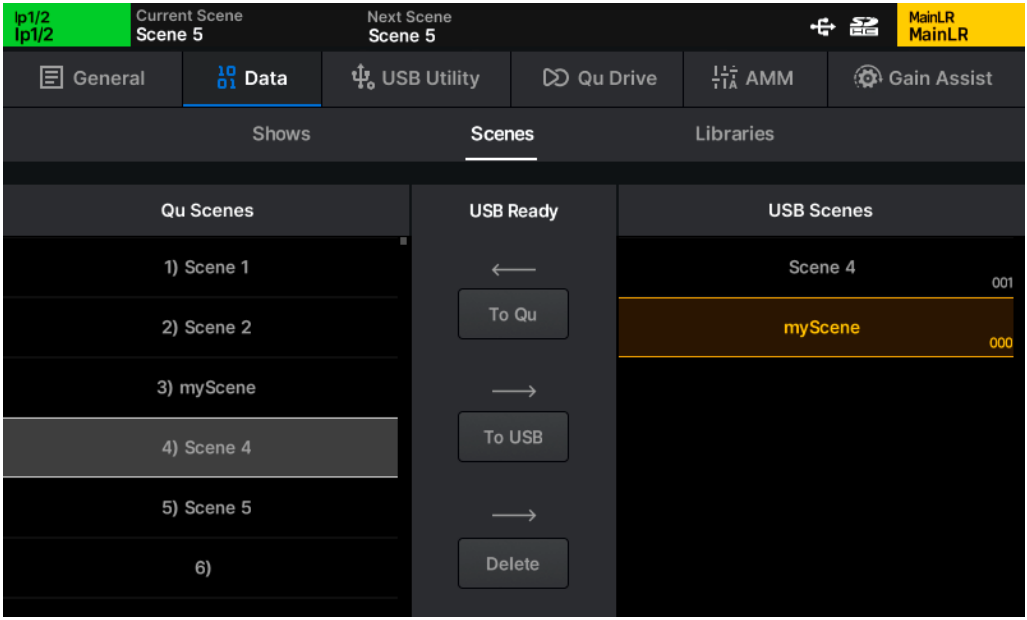
Store New – Store the current Show of the Qu as a new Show on the drive.

Overwrite – Store the current Show in place of the selected Show on the drive.

Rename (text box with pencil icon) – Edit the name of the selected Show on the drive.

ⓘ Storing or recalling shows is not possible when Qu Drive is being used for recording or playback.

ⓘ Storing or recalling shows will interrupt USB-C audio streaming.



|| UTILITIES | Data | Shows

USB Scenes

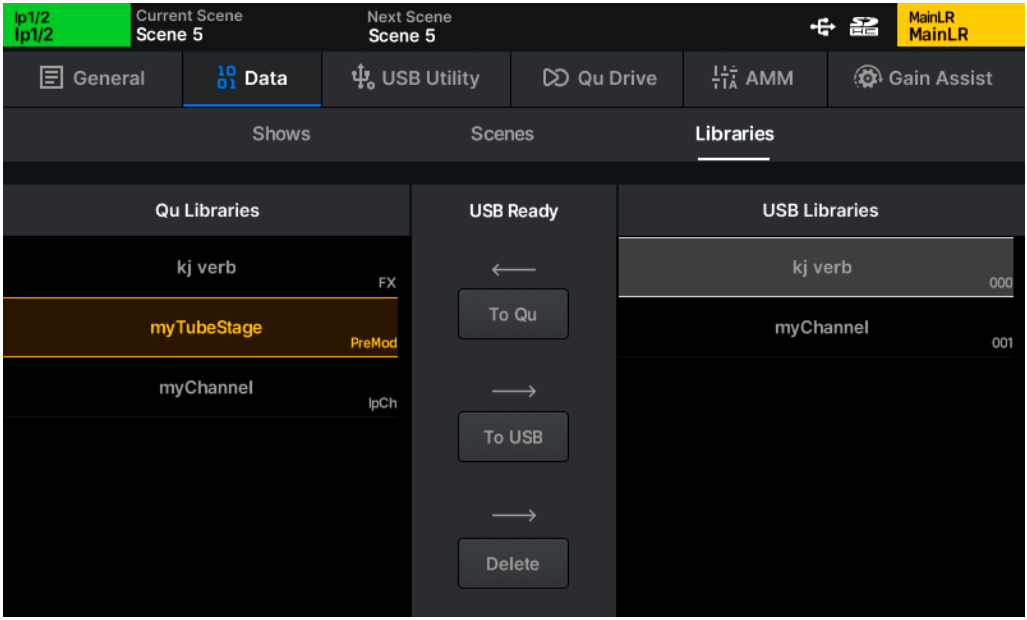
Qu Scenes lists all the Scenes in the Show currently loaded on the Qu.

USB Scenes lists all the Scenes stored in the **AH_QU\SCENES** folder of the connected USB drive.

To Qu – Copy the Scene selected from the USB Scenes list to Mixer Scenes.

To USB – Copy the Scene selected from the Qu Scenes list to USB Scenes.

Delete – Delete the Scene selected in the USB Scenes list from the drive.



USB Libraries

Qu Libraries lists all Libraries in the Show currently loaded on the Qu.

USB Libraries lists all Libraries stored in the **AH_QU\LIBRARY** folder of the connected USB drive.

To Qu – Copy the Library selected in the USB Libraries list to Mixer Libraries.

To USB – Copy the Library selected in the Qu Libraries list to USB Libraries.

Delete – Delete the Library selected in the USB Libraries list from the drive.

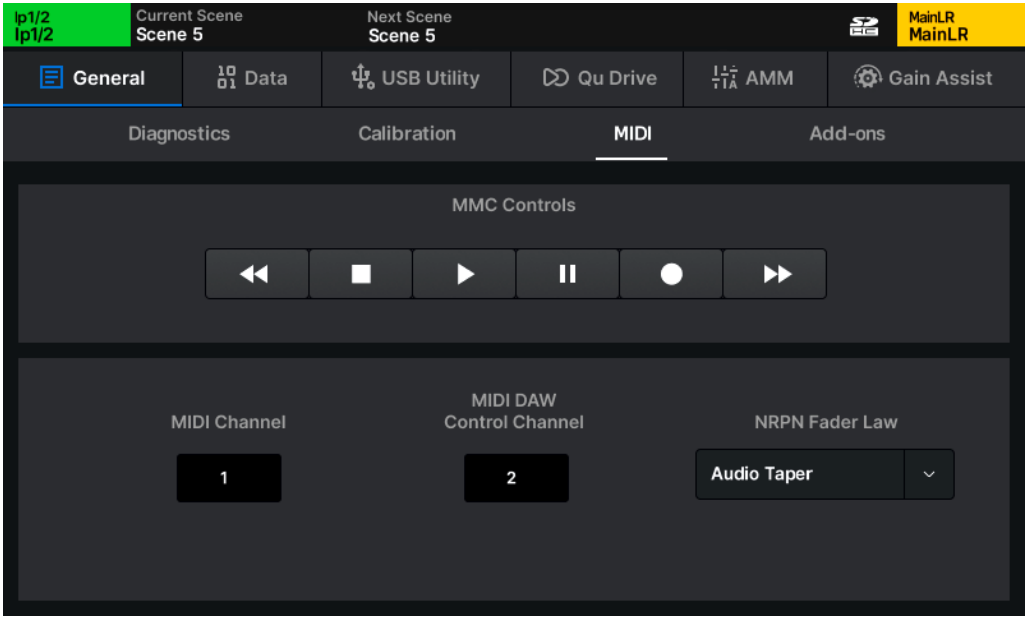
16. MIDI and DAW Control

When connected to a computer either via USB or TCP/IP, the Qu sends and receives MIDI control messages.

These can be broken down into two sets of bi-directional messages; Those that are used to control the Qu, and those used to control external software or equipment.

ⓘ Please refer to the separate Qu MIDI Protocol document, available from www.allen-heath.com/resources for full details on all Qu MIDI communication.

16.1 MIDI Channel and MMC



|| UTILITIES | General | MIDI

MIDI settings and controls are found in the **Utility** > **General** > **MIDI** screen.

MMC Controls – Standard MIDI transport controls.

MIDI Channel – Qu mixer MIDI channel (for external control to/from the mixer core).

MIDI DAW Control Channel – Automatically set as MIDI Channel +1 (for MIDI channel strips).

NRPN Fader Law – Adjust the messaging sent to/from Qu audio channel faders.

Audio Taper – Common low resolution 7-bit fader tapering.
Linear Taper - High resolution 14-bit linear tapering.

ⓘ The channel used for DAW Control (and therefore all MIDI fader strips) is always one more than the MIDI Channel the rest of the Qu is set to. To use MIDI channel 1 for the DAW Control Channel, set the main Qu MIDI channel to 16.

ⓘ Touching any of the MMC Controls sends standard MMC transport messages to all channels. These are also translated by the DAW control driver to specific transport messages for the control surface emulation being used.

ⓘ MMC controls can also be assigned to Soft Keys.

16.2 MIDI Fader Strips

The Qu has 32 available MIDI fader strips that can be assigned anywhere across the strip layers.

These transmit standard MIDI messages over USB and TCP/IP when **Mute**, **Sel** or **PAFL** keys are pressed, or the **Fader** is adjusted. They also respond to the same messages.

- Messages can be used as-is, and 'learnt' by software for control.
- By default, MIDI strip messages are transmitted on MIDI Channel 2.
- Pressing a key will send a note on followed by a note off, moving a fader sends a continuous change message.

Qu MIDI Fader Strip Control	MIDI message
Mute keys 1 to 32	Note On/Off 0 (C-1) to 31 (G1)
Sel keys 1 to 32	Note On/Off 32 (G#1) to 63 (Eb4)
PAFL keys 1 to 32	Note On/Off 64 (E4) to 95 (B6)
Faders 1 to 32	CC 00 to CC 31

16.3 DAW Control

MIDI fader strips can be used with the **Allen & Heath MIDI Control** application.
This translates the messages from the MIDI strip and emulates standard control surface messaging for use with a DAW. Channel names can also be sent from the DAW and appear on the MIDI channel strip displays.

Note that Soft Keys can also be assigned to send **MMC** messages or **Bank Up**, **Bank Down** messages.

Visit www.allen-heath.com/resources to download the latest version of Allen & Heath MIDI Control and view instructions for installation and correct setup.

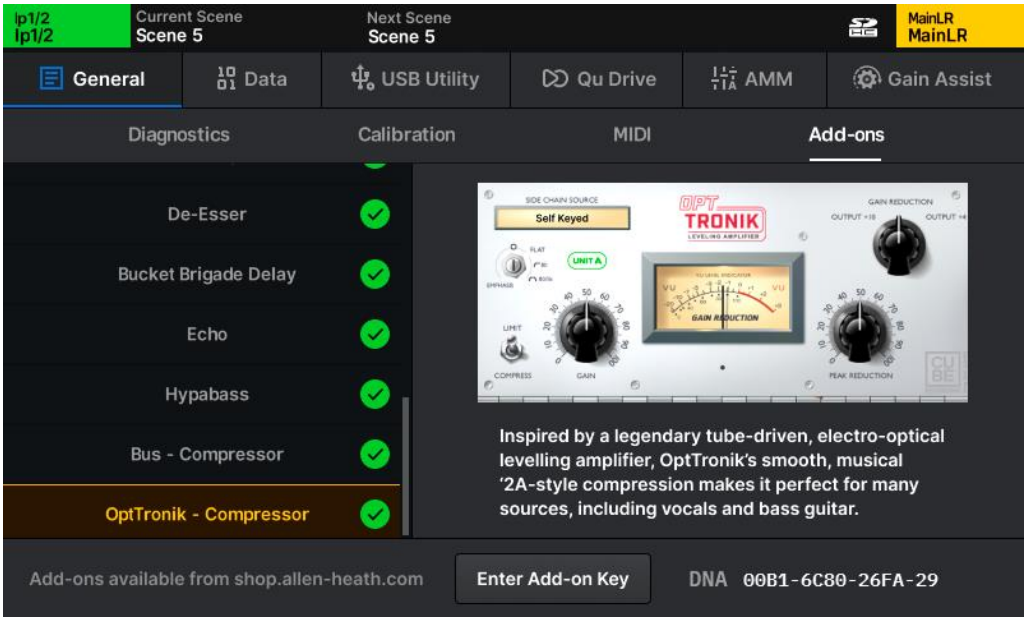
ⓘ Only the MIDI fader strips, MMC controls and specific Soft Key assignments are used for DAW control surface emulation. Other physical controls (such as EQ rotaries) always control the selected channel in the Qu.

16.4 MIDI from Soft Keys and Footswitch

Soft keys and a connected Footswitch can be used to transmit MIDI messages over USB and TCP/IP, including note on/off, MMC and program change messages.

These are assigned in the **SETUP** > **Surface** > **Soft Keys** and **SETUP** > **Surface** > **Footswitch** screens.

17. Add-ons



|| UTILITIES | General | Add-ons

Optional Add-ons for the Qu are available to purchase from shop.allen-heath.com.

Available and activated Add-ons are shown in the **UTILITY** > **General** > **Add-ons** screen.

ⓘ To ensure the latest Add-ons are available on the Qu, install the latest version of firmware.

Activating an Add-on

- Note the serial number and unique DNA for the Qu and visit shop.allen-heath.com
- Purchase Add-ons, ensuring you are purchasing for the correct mixer model, as an Add-on for one model cannot be activated on any other.
- Generate a unique Add-on key in the shop.
- Touch **Enter Add-on Key** in the **UTILITY** > **General** > **Add-ons** screen, then enter the 16-character key from the shop and touch **OK** to activate.

Keys are unique to each Qu unit, and only ever need to be entered once. They will not need to be re-entered when updating firmware or after a system reset.

17.2 DEEP Channel Processing Add-ons

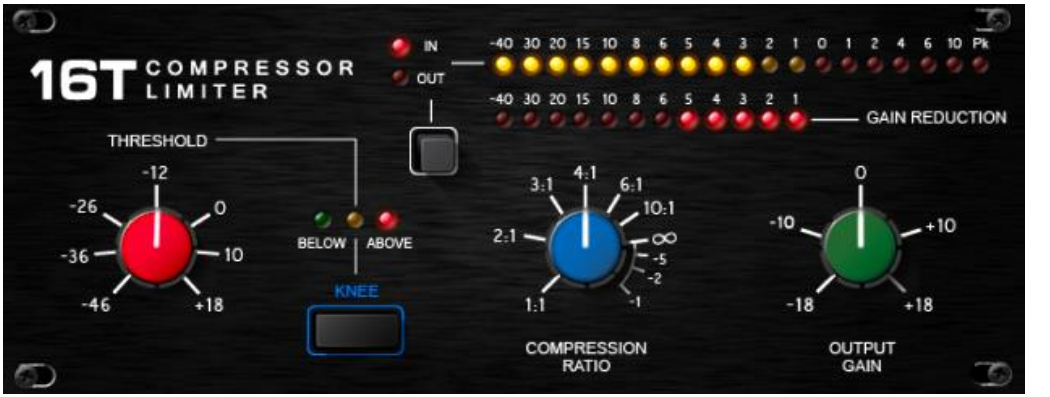
ⓘ DEEP Add-ons are available from shop.allen-heath.com

Tube Stage Preamp

6 classic valve preamp topologies with easy-to-use controls, for adding harmonics and saturation to inputs.

Peak Limiter 76 Compressor Limiter

Two versions of the renowned FET levelling amplifier. One vintage, one more modern, both with all-button mode.



16T Compressor Limiter

Tight and punchy VCA-based RMS compressor, with natural sounding gain reduction.

16VU Compressor Limiter

The classic VCA-based RMS compressor. Musically enhances low-mid frequencies when driven.

Mighty Compressor

Transistor array compressor that features a unique attack sound. Capable of massive gain reduction with low distortion.

Opto Compressor

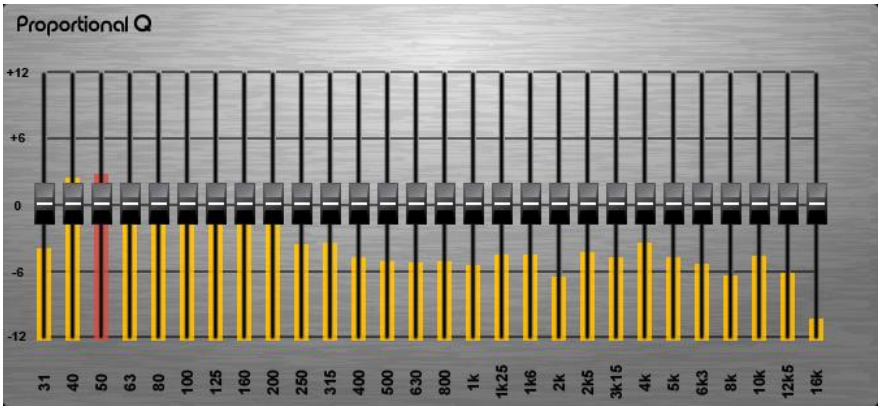
The best characteristics from a range of optical compressors combined into one smooth sounding unit.

OptTronik Compressor

Two versions of the legendary electro-optical levelling amplifier. Smooth and musical compression.

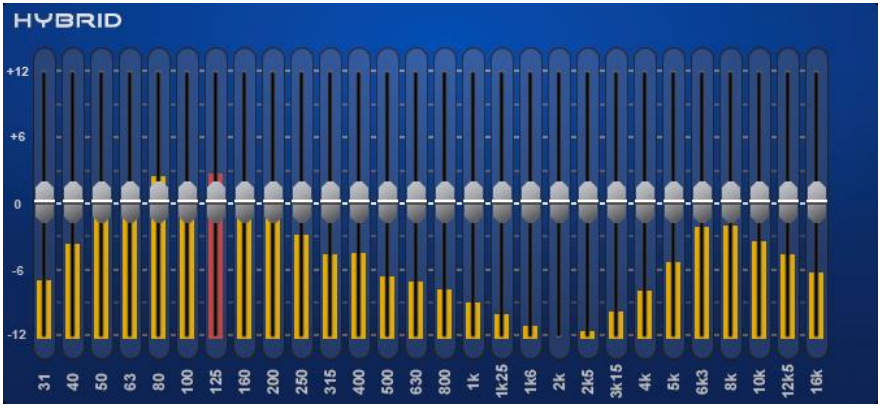
Bus Compressor

The most well-known VCA compressor for sonic cohesion of mixes and program material.



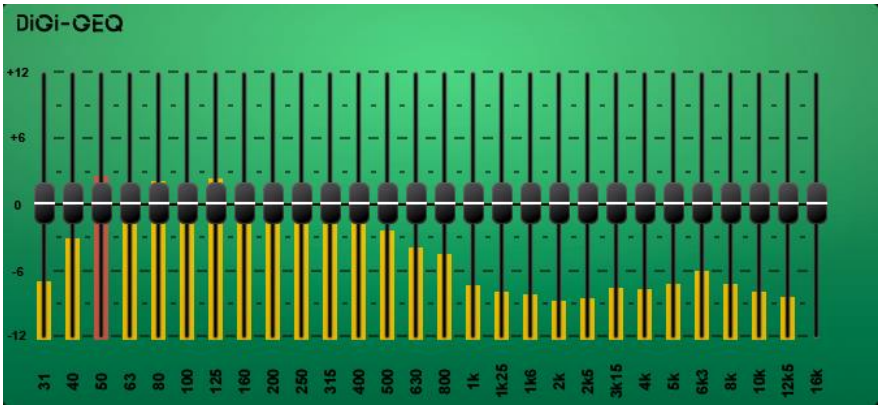
Proportional Q GEQ

Smooth wide Q which progressively narrows toward maximum cut or boost values.



Hybrid GEQ

A combination of the Proportional-Q and Constant-Q units providing smooth boosts and clinical cuts.

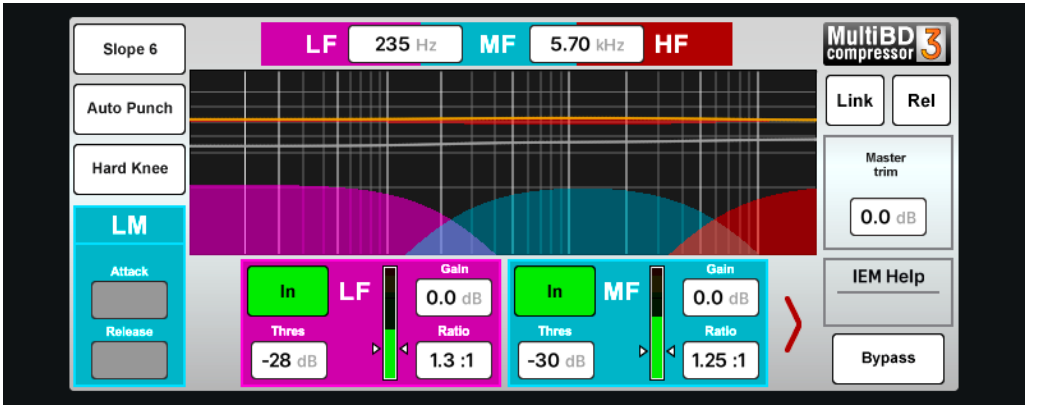


DiGi GEQ

Optimised gain and width to minimise frequency band interaction.

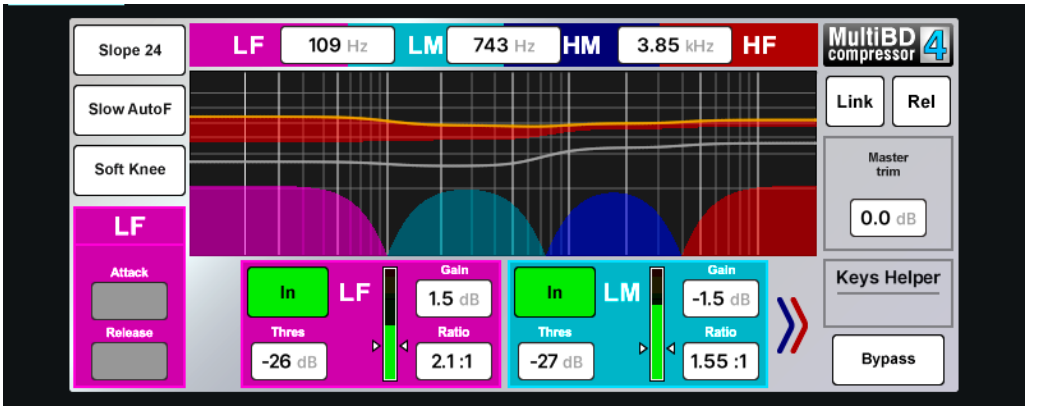
17.3 FX Add-ons

ⓘ FX Add-ons are available from shop.allen-heath.com



MultiBD3 Multiband Compressor

Fully featured 3 band compressor for dynamic control on input or mix channels.



MultiBD4 Multiband Compressor

Fully featured 4 band compressor for dynamic control on input or mix channels.

DynEQ4 Dynamic EQ

4 band dynamic equaliser, able to carve and shape any sound source.

De-Esser

Classic De-Essing with auto-threshold for natural sibilance reduction.

Bucket Brigade Delay

Stereo analogue delay model with vintage bucket brigade sound.

Echo Tape Delay

Faithful reproduction of the classic tape echo unit.

Hypabass Subharmonic Synthesiser

Very low distortion sub-harmonic synthesizer to generate low end from sources with weaker bass content.

18. Formatting, Calibration and Resets

18.1 USB/SD Card Formatting

Formatting a connected USB-A storage device or SD Card will clear all stored data and set up the correct folder structure for use with the Qu mixer.

It should be carried out before storing any mixer data or making any recordings for the first time.

1) Connect the USB-A drive or SD Card to format.
2) Navigate to the **UTILITY** > **USB Utility** > **Status/Format** screen.
3) Press the **Format** button at the bottom of the **USB** section on the left, or **SD Card** section on the right.
4) Once formatted, the storage may need to be disconnected and reconnected to be seen correctly.

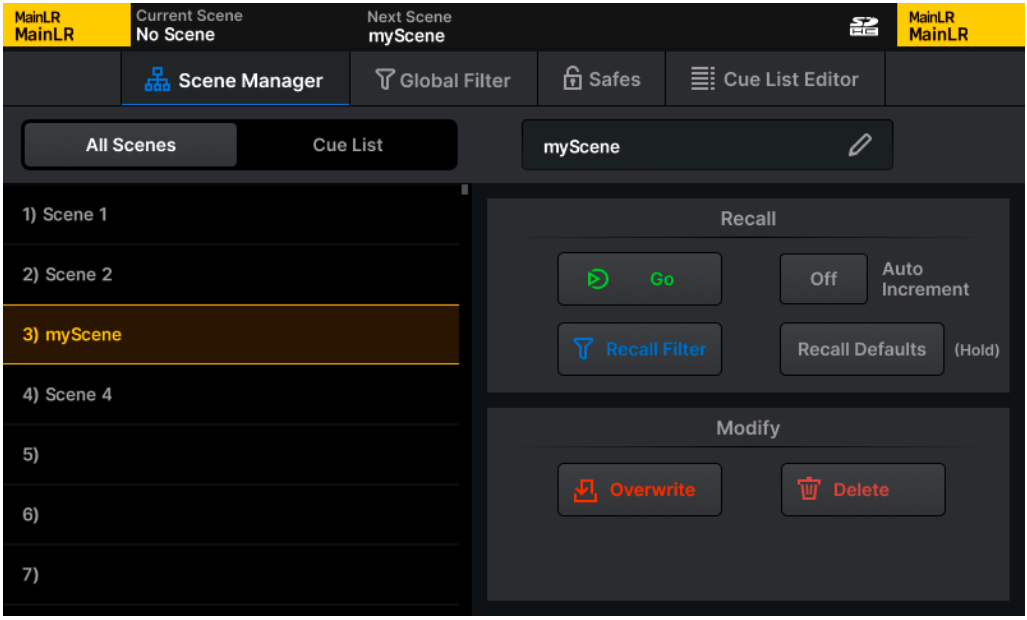
ⓘ If a USB-A drive or SD Card is connected, but does not appear as **Ready** in the **UTILITY** > **USB Utility** > **Status/Format** screen, try formatting to FAT32 (32k cluster size) using a computer before reformatting in the Qu.

18.2 Fader Calibration

Occasionally faders can become misaligned or behave incorrectly, this can happen for many reasons and is usually nothing to be concerned about. However, it may necessitate a re-calibration.

1) Navigate to the **UTILITY** > **General** > **Calibration** screen.
2) Touch the **Calibrate** button and follow the on-screen instructions, positioning the faders at +10dB, 0dB, -10dB, -30dB and -inf when prompted.

18.3 Recall Defaults



|| SCENES | Scene Manager | All Scenes

The **SCENES** > **Scene Manager** screen includes a **Recall Defaults** button.

This can be used to reset all mix config, patching, layout, processing and routing to the default state, without clearing any stored Scene or Library data. It is best practice to store a scene in an empty slot before recalling defaults, which can be recalled again later if needed.

- Press and hold the **Recall Defaults** button to action.

18.4 Full Factory Reset

A Factory reset will clear all stored data including Scenes and Libraries and reset all preferences and network settings to their default values. Before carrying out a factory reset, it is best practice to store a Show which can be recalled again later if needed.

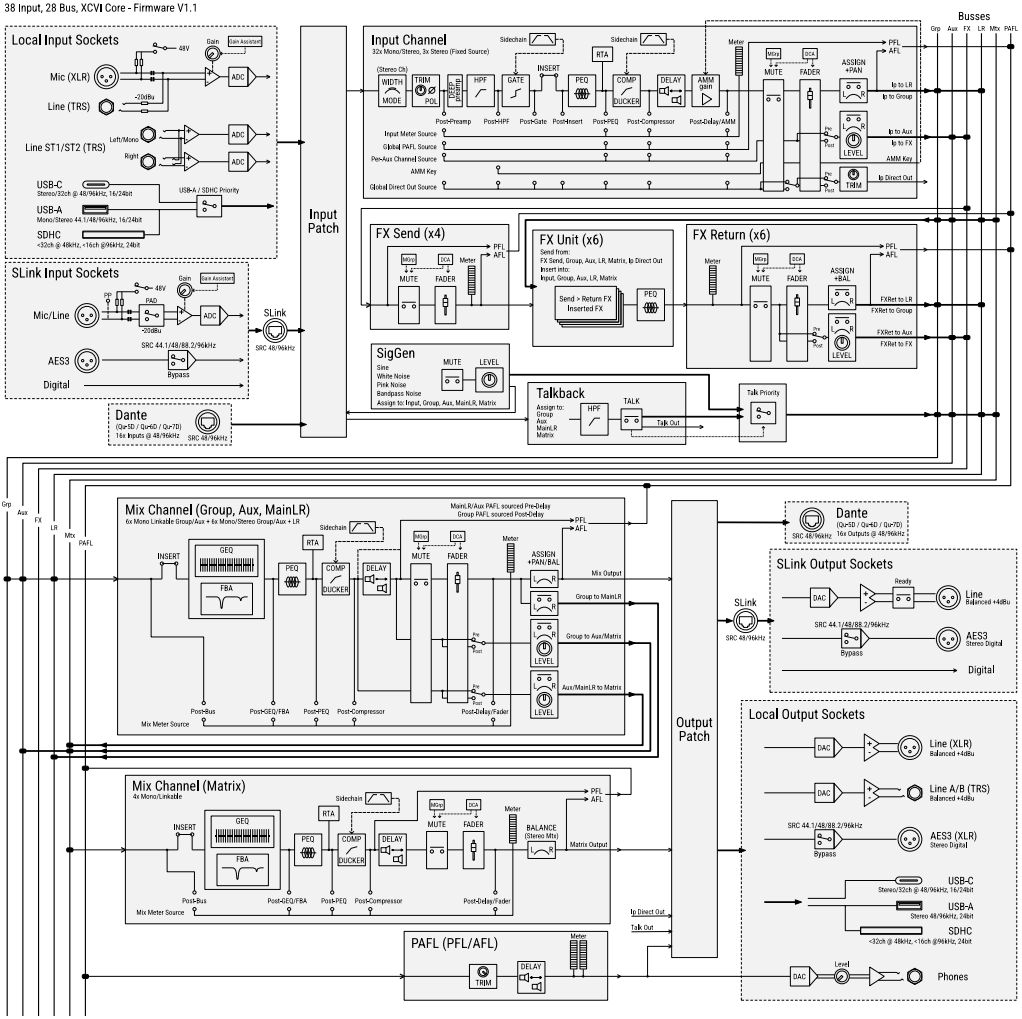
To carry out a full reset of the mixer:

1) Start with the power off.
2) Hold the **PEQ In** key and **Soft Key 1** whilst powering on the unit.
3) Continue to hold until the unit has fully booted.

19. System Block Diagram

Qu-5/Qu-5D, Qu-6/Qu-6D, Qu-7/Qu-7D SYSTEM BLOCK DIAGRAM

38 Input, 28 Bus, XCVI Core - Firmware V1.1



20. 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, 2x 1/4" TRS jack
	Input Sensitivity	Nominal +4dBu
	Trim	+/-24dB
	Maximum Input Level	+21dBu
	Input Impedance	>6kΩ
Outputs	**XLR Outputs**	Balanced, XLR
	Outputs A and B	Balanced 1/4" TRS Jack
	Source	Fully patchable
	Output Impedance	<75Ω
	Nominal Output	+4dBu = 0dB meter reading
	Maximum Output Level	+22dBu
	Residual Output Noise	-88dBu (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-5D, Qu-6D and Qu-7D only)	16 input, 16 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 x 480 resolution, 24-bit RGB
	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	38 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, 0.005%, -87dB (20Hz-20kHz)
	dBFS Alignment	+18dBu = 0dBFS (+22dBu at XLR output)
	Meter Calibration	0dB meter = -18dBFS (+4dBu at XLR out)
	Main Meter Type	2x 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-5 / Qu-5D / Qu-6 / Qu-6D / Qu-7 / Qu-7D)	70W / 75W / 90W / 95W / 105W / 110W
Input Processing	**Source**	
	Channels 1-32	Fully patchable
	ST1 / ST2 / USB Channels	Fixed patch, ST1 / ST2 / 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	Patchable Sidechain
	Sidechain filter	Hi-pass (20Hz-5kHz), band-pass (120Hz-10kHz, Q=1), Lo-pass (120Hz-20kHz)
	Threshold / Depth	-72dBu to +18dBu / 0 to 60dB
	Attack / Hold / Release	50µs to 300ms / 10ms to 5s / 10ms to 1s
	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 Processing	**Insert**	Fully Patchable (Digital/Analogue/-10dBV level)
	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	2x 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-5 / Qu-5D**	Width x Depth x Height
	Unit only	440 x 476 x 213 mm (17.3" x 18.7" x 8.4")
	Packed in shipping box	570 x 640 x 310 mm (22.5" x 25.2" x 12.2")
	Unpacked weight	10 kg (22 lbs)
	Packed weight	12.6 kg (27.8 lbs)
	Qu-6 / Qu-6D	Width x Depth x Height
	Unit only	609 x 476 x 213 mm (24" x 18.7" x 8.4")
	Packed in shipping box	740 x 640 x 310 mm (29.2" x 25.2" x 12.2")
	Unpacked weight	13.5 kg (29.8 lbs)
	Packed weight	16.5 kg (36.4 lbs)
	Qu-7 / Qu-7D	Width x Depth x Height
	Unit only	800 x 476 x 213 mm (31.5" x 18.7" x 8.4")
	Packed in shipping box	940 x 670 x 320 mm (37" x 26.4" x 12.6")
	Unpacked weight	16.7 kg (36.8 lbs)
	Packed weight	20.8 kg (45.9lbs)

21. Warranty Information

Limited One Year Manufacturer's Warranty

Allen & Heath warrants the Allen & Heath -branded hardware product and accessories contained in the original packaging ("Allen & Heath Product") against defects in materials and workmanship when used in accordance with Allen & Heath's user manuals, technical specifications and other Allen & Heath product published guidelines for a period of ONE (1) YEAR from the date of original purchase by the end-user purchaser ("Warranty Period").

This warranty does not apply to any non-Allen & Heath branded hardware products or any software, even if packaged or sold with Allen & Heath hardware.

Please refer to the licensing agreement accompanying the software for details of your rights with respect to the use of software/firmware ("EULA").

Details of the EULA, warranty policy and other useful information can be found on the Allen & Heath website: www.allen-heath.com/legal.

Repair or replacement under the terms of the warranty does not provide right to extension or renewal of the warranty period. Repair or direct replacement of the product under the terms of this warranty may be fulfilled with functionally equivalent service exchange units.

This warranty is not transferable. This warranty will be the purchaser's sole and exclusive remedy and neither Allen & Heath nor its approved service centres shall be liable for any incidental or consequential damages or breach of any express or implied warranty of this product.

Conditions of Warranty

The equipment has not been subject to misuse either intended or accidental, neglect, or alteration other than as described in the User Guide or Service Manual, or approved by Allen & Heath. The warranty does not cover fader wear and tear.

Any necessary adjustment, alteration or repair has been carried out by an authorised Allen & Heath distributor or agent. The defective unit is to be returned carriage prepaid to the place of purchase, an authorised Allen & Heath distributor or agent with proof of purchase. Please discuss this with the distributor or the agent before shipping. Units returned should be packed in the original carton to avoid transit damage.

DISCLAIMER: Allen & Heath shall not be liable for the loss of any saved/stored data in products that are either repaired or replaced.

Check with your Allen & Heath distributor or agent for any additional warranty information which may apply. If further assistance is required, please contact Allen & Heath Ltd.

Any changes or modifications to the equipment not approved by Allen & Heath could void the compliance of the product and therefore the user's authority to operate it.

Qu User Guide, Firmware V1.1.0, issue 1.

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