10.7   Home Screen – Qu-Drive (USB audio)

ⓘ Qu-Drive audio recording and multitrack playback require the USB storage device to support high sustained transfer rates. Not all USB devices will guarantee flawless performance. To find out more please refer to the 'Understanding Qu-Drive and USB' document in the Qu Knowledgebase on the Allen & Heath web site.

This opens screens associated with the USB stereo and multitrack recording:

ⓘ Use the USB storage device with the Qu mixer only. Do not use it for other applications.

* Format the hard drive on the Qu mixer before starting to record. Use the **Setup / Utility / Qu-Drive** screen. This clears the drive and sets up the Qu directory structure.

Qu-Drive Stereo page – This screen presents the controls for stereo recording to and playback from a USB device plugged into the top panel Qu-Drive port.

The blue Stop buttons light if the USB device is recognised by the mixer. The controls are disabled if a USB device is not plugged in or recognised.

Stereo Record – You can record to a USB storage device plugged into Qu-Drive:

* Format = 48kHz, 24-bit, WAV file

* Data rate = 288 KB/sec, maximum 4 hours (4GB)

* Qu allocates a file name 'QU-STnnn.WAV' where 'nnn' increments from 001 to 999 starting at the highest number +1 it finds on the USB device.

Patch the source to be recorded using the **Setup / Output Patch / USB Audio** screen. Touch the track 17 box and turn the rotary to select the left source. Press the '+1' **Fn** key to increment the right source to track 18, or use the rotary to select an unrelated source.

Mono or stereo Channels and Groups can be globally sourced from their Insert Sends (pre-processing) or from Direct Out using this button.

ⓘ Qu-Drive Stereo recording shares the same patch as Track 17-18 of the Qu-Drive multitrack recording and USB streaming.

The record meter on the USB page displays the current source. The default is LR post-fade.

Arm the recording by touching the red circle Record button. Touch the Play button to start the recording.


Recording Errors - A warning message displays if buffer overrun errors are detected during recording. Try reformatting or using a different USB drive.

Stereo Playback – You can play back audio files from a USB storage device plugged into Qu-Drive:

- Format = 44.1 or 48kHz, 16 or 24-bit, WAV file

ⓘ Use the USB device with the Qu mixer only. Do not use it for other applications.

Format the USB device on the Qu mixer before loading the playback files. Use the **Setup** / **Utility** / **Qu-Drive** screen. This clears the drive and sets up the Qu directory structure.

Copy audio WAV files on to USB from your computer. Place these in the AHQU / USBPLAY directory. Plug the USB device into Qu-Drive.
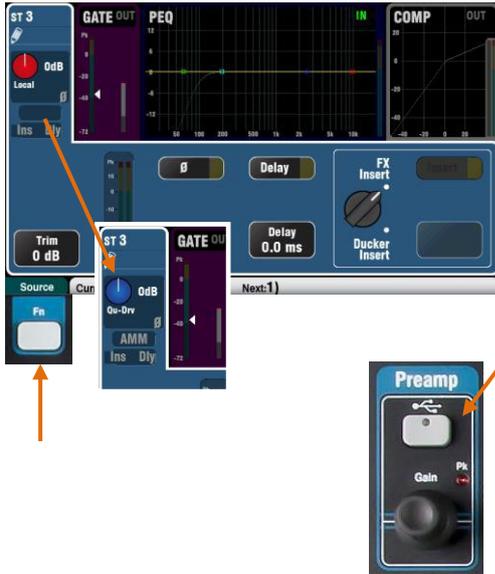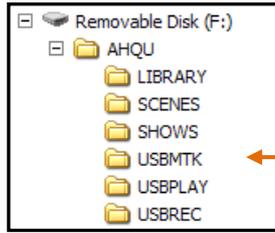

Patch the playback to the ST3 channel using the **Processing** / **Preamp** screen **Fn** key to open the Preamp Source screen. Make sure Qu-Drive is selected as the 'Global USB Source'. Select USB as the source for ST3.

Once you have selected Qu-Drive as the global USB source you can also use the panel **USB** key in the Preamp section to toggle between the ST3 preamp and USB source.
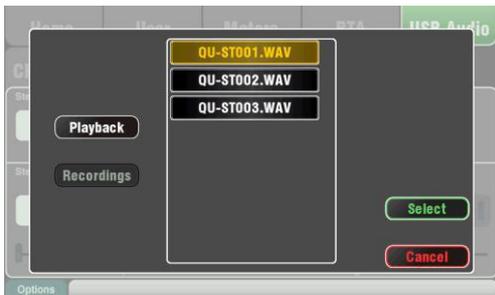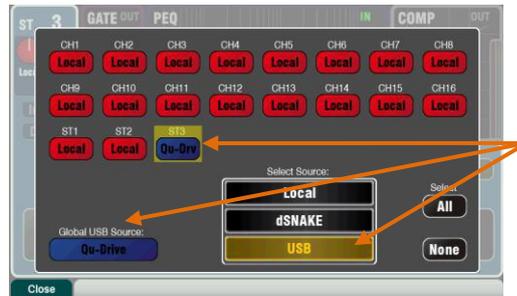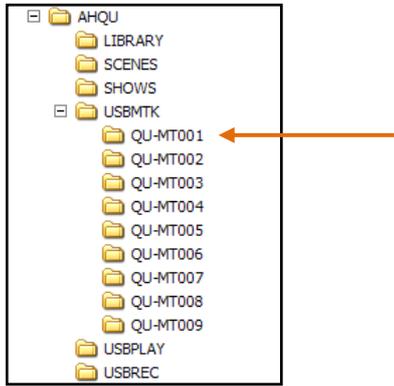

Select the track to play back by touching the name box. You can choose a track from the Playback or the Recordings directory. Touch **Select** to confirm.

Press the Fn key for options to choose playback mode:
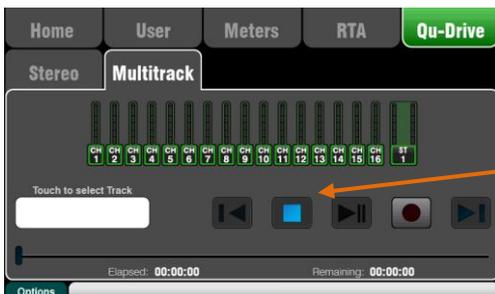
Qu-Drive Multitrack page – This screen presents the controls for multitrack recording to, and playback from a USB storage device plugged into the top panel Qu-Drive port.

The blue Stop button lights if the USB device is recognised by the mixer. The controls are disabled if a device is not plugged in or recognised.

Multitrack Record – You can record to a USB storage device plugged into Qu-Drive:

- 18 Tracks = Individually patchable sources

- Record format = 48kHz, 24-bit, WAV file

- Data rate = 144 KB/sec per track (max 4GB total)

- Qu allocates a folder name 'QU-MTnnn' for each recording where 'nnn' increments from 001 to 999 starting at the highest number +1 it finds on the device. The tracks are named 'TRKnn' within the folder where 'nn' is 01 to 18.

ⓘ We recommend you transfer previous recordings to your computer and then reformat the USB device on the Qu mixer before using it for each show. This will avoid potential audio skipping that may occur with some USB devices containing long recordings.

ⓘ Use the USB storage device with the Qu mixer only. Do not use it for other applications.

Format the USB device on the Qu mixer before starting to record. Use the **Setup / Utility / Qu-Drive** screen. This clears the USB and sets up the Qu directory structure.

Patch the sources to be recorded using the **Setup / Output Patch / USB Audio** screen.

Touch a track box and turn the rotary to select the source. Press the '+1' **Fn** key to increment the assignments. Choose the global source for CH and ST channels and the Audio Groups (Insert sends (default) or Direct Outputs).

Arm the recording by touching the red circle Record button. Touch the Play button to start the recording.

Multitrack Playback – You can play back your multitrack recordings from the USB device plugged into the Qu-Drive port:

Patch the playback to the input channels using the **Processing / Preamp** screen **Fn** key to open the Preamp Source screen. Make sure Qu-Drive is selected as the 'Global USB Source'. Select USB as the source for the channels you wish to play back.

Select the recording to play back by touching the name box. You can choose a folder from the list. Touch **Select** to confirm.

Press the Fn key for options to choose playback mode:

ⓘ Qu always expects 18 tracks to be present in the multitrack folder. -You can create dummy tracks by duplicating and renaming existing track files.

ⓘ Choose to play back either Qu-Drive stereo or multitrack. It is not possible to play back both stereo and multitrack at the same time.
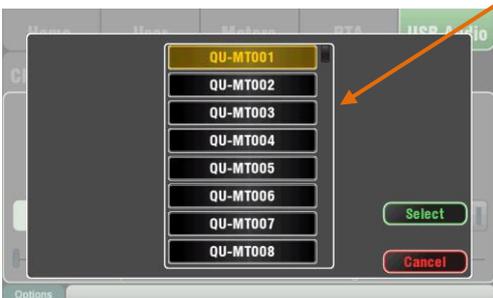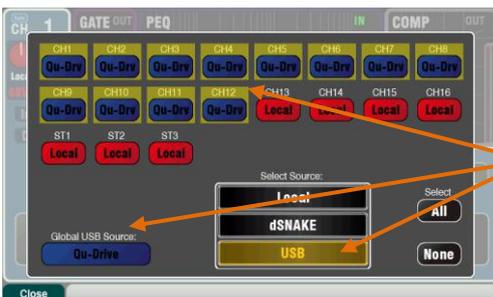
Qu. Qu-Drive & USB Audio

By default your Qu mixer is set to tap the signal for Qu-Drive and USB Audio from the insert sends, directly after the preamp. There may be scenarios where you will want to include the channel processing and inserts in your USB audio.

You can change this by going to: **Setup > I/O Patch > USB Audio**

Toggle the CH/ST source from 'Insert Send' to 'Direct Outs' and press 'Apply'.

You can also set the point in the signal path where the direct outs tap the signal.

Go to: **Routing > Press 'Sel' on an Input Channel**

The global direct out options are:

1. Post Preamp
2. Post Insert
3. Post EQ
4. Post Comp
5. Post Delay

The other global settings here determine whether the direct outs follow faders and mutes.

The 'Direct Out Trim' setting can be individually adjusted for each track.

Qu. Alternative Qu-Drive Stereo Recording

Sometimes you may want to make a stereo recording of a mix which mostly follows the Main LR mix, but that uses different output processing, levels or that includes microphones you are not sending to the speakers.

This can be useful in many situations, for example, when you want to incorporate an 'ambient' microphone, or compress the mix being recorded.

To do this, you can send a 'copy' of the main mix to a spare stereo mix as follows;

1. Select the mix you wish to use (eg. Mix 9-10)
2. Ensure all channels you wish to record are assigned to the mix - To assign all channels at once, go to the Routing screen and press the 'All On' button
3. Also in the Routing screen, press the 'All Post' button and set 'Channel Source' to 'Post-All'
4. Adjust the send levels to this mix - To have this mix follow the Main LR mix exactly, set all levels to 0dB (Unity)
5. In the Processing screen for the selected mix, switch in and adjust any output processing you wish to use (you can use PAFL or the Alt Out to monitor this)
6. Press the 'Setup' Key and go to 'I/O Patch > USB Audio'
7. Change USB output channels 17 and 18 to your chosen mix (eg. Mix 9 and Mix 10) - These channels feed the Qu-Drive stereo recording

Qu. Understanding Qu-Drive and USB devices

Qu-Drive is a facility to record and playback stereo (2-track) and multitrack (18-track) audio.

The recording format is WAV 48kHz 24-bit.

Qu-Drive audio recording and multitrack playback require the USB storage device to support high sustained transfer rates. Not all USB devices will guarantee flawless performance - when a USB device causes a pause that is longer than the buffer time in the mixer, a dropout will occur, and data is lost.

Note that the buffer size in Qu-Drive was improved in firmware V1.4, however dropouts can still occur for a number of reasons. Please refer to the following guidelines for sourcing a suitable USB device.

- **USB flash 'key', 'stick',** or **'thumb drive'** - most keys on the market are not fast enough for multitrack recording.

- **SSD drives -** generally suitable for recording but can be prone to performance degradation over time, also some forms of wear levelling and 'garbage collection' algorithms can cause write speeds to become reduced during recording.

- **HDD drives** - magnetic drives are generally suitable for recording but can suffer from physical disturbances such as vibration due to low frequency exposure, which can throw the head off-track and cause a delay while the actuator repositions it, eventually impacting on the input/output performance.

- **SCSI drives** - hard drives using the SCSI command protocol ATAPI are not supported. Only drives that communicate over USB Attached SCSI are supported. This is not obvious when looking at drives and you will need to consult the manufacturer's data

The smallest USB drive size that should be used with Qu-Drive is 2GB.

Maximum USB drive size (FAT32 file system limit) is 2TB.

We recommend you use the USB hard drive for the Qu mixer only. Do not use it for other applications.

Format the hard drive on the Qu mixer before each use. This clears the drive, sets up the Qu directory structure, and formats into FAT32 with a constant cluster size of 32kB.

Additional notes on Qu-Drive

Please refer to the Qu Mixer Getting Started Guide for an overview of Qu-Drive supported file formats, data rate, folder structure and file naming, patching and instructions on multitrack playback and recording.

Note - .wav files imported to the USB drive for multitrack playback via Qu-Drive must be MONO tracks, 48kHz 24bit, and follow the naming and file structure convention detailed in the User Guide. Also note that the Qu mixer expects 18 tracks to be present in the multitrack folder - you can create dummy tracks by duplicating and renaming your files.

The maximum file size on FAT32 is 4 GB. Qu-Drive audio data rate per track is 8.24 MB / minute (144 KB / second). This would allow a maximum recording time of roughly 8 hours. For 18 tracks you would need 72 GB drive capacity for the maximum recording time.

Note - .wav files imported to the USB drive for Stereo playback via Qu-Drive must be INTERLEAVED stereo tracks, and placed into the AHQU/USBPlay folder.

Note - .wav files with a BWF (broadcast) header are only supported on firmware V1.31 or higher.

Qu-Drive modes

Stereo Playback + Stereo Record, **not** supported simultaneously.

Stereo Playback + Multitrack Playback, **not** supported simultaneously.

Stereo Playback + Multitrack Record, **not** supported simultaneously.

Stereo Record + Multitrack Playback, **not** supported simultaneously.

Stereo Record + Multitrack Record, **not** supported simultaneously.

Multitrack Record + Multitrack Playback, **not** supported simultaneously.

Qu-Drive Playback (stereo or multitrack) + Multitrack Recording to USB B (streaming to DAW) **is** supported.

Playback from USB B (streaming from DAW) + Qu-Drive Recording (stereo or multitrack) **is** supported.

Qu-Drive Recording (stereo or multitrack) + Multitrack Recording to USB B (streaming to DAW) **is** supported.

Qu-Drive Playback (stereo or multitrack) + Playback from USB B (streaming from DAW) **not** supported.

DO's and DON'TS

Recommended best practices for multitrack recording with Qu-Drive:

- Format the USB device via the mixer
- Arm recording before needing the recording to start
- Press play to start recording, and leave the drive continuously recording for the total time of the recording (try not to stop start the recording)
- Press stop once you have finished, and wait for the drive to process the audio
- Remove the drive and back up the recorded material onto your computer
- Don't fill the USB drive with lots of multitrack projects if possible, as the drive can become fragmented requiring longer seek times to write

Third-party USB devices:

Specifications and performance of USB devices can be changed at any time by the manufacturer, we recommend that you test the device fully before you depend on it in a recording / playback situation. Be aware of possible batch variance in memory chipsets and performance. What appears to be the same device may not actually work.

We recommend purchasing from a retailer who provides a suitable returns policy to allow you to try the device and return if unsuitable.

Please see the following thread in the A&H Digital Community regarding tested 3rd party devices:

http://community.allen-heath.com/forums/topic/qu-drive-compatible-usb-device-database