ALLEN&HEATH

SQ-5 / SQ-6 / SQ-7 Getting Started Guide

IMPORTANT - Read before starting

Safety instructions

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

System operating firmware

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

ⓘ Check www.allen-heath.com for the latest version of firmware for the product or the host system.

Software licence agreement

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

Further information

Please refer to the **Allen & Heath website** for further information, knowledgebase and technical support. For more information on setup and mixing functions please refer to the Firmware Reference Guides available for download at www.allen-heath.com.

You can also join our Allen & Heath Digital Community to share knowledge and information with other users.

General precautions

- Protect the equipment from damage through liquid or dust contamination.
- If the equipment has been stored in sub-zero temperatures allow time for it to reach normal operating temperature before use at the venue. Recommended operating temperature is 0 to 40 degrees Celsius.
- Avoid using the equipment in extreme heat and direct sunlight. Make sure the ventilation slots and fans are not obstructed and that there is adequate air movement around the equipment.
- Clean the equipment with a soft brush and dry lint-free cloth. Do not use chemicals, abrasives or solvents. Do not use lubricant or contact cleaner on faders.
- It is recommended that servicing is carried out only by an authorised Allen & Heath agent. Contact details for your local distributor can be found on the Allen & Heath website. Allen & Heath do not accept liability for damage caused by maintenance, repair or modification by unauthorised personnel.

Register your product

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

Warranty

A limited manufacturer's warranty applies to this product, the conditions of which can be found at www.allen-heath.com/legal.

Packed Items

- SQ Digital Audio Mixer
- QR Code Card
- Safety booklet
- IEC mains lead

Introduction

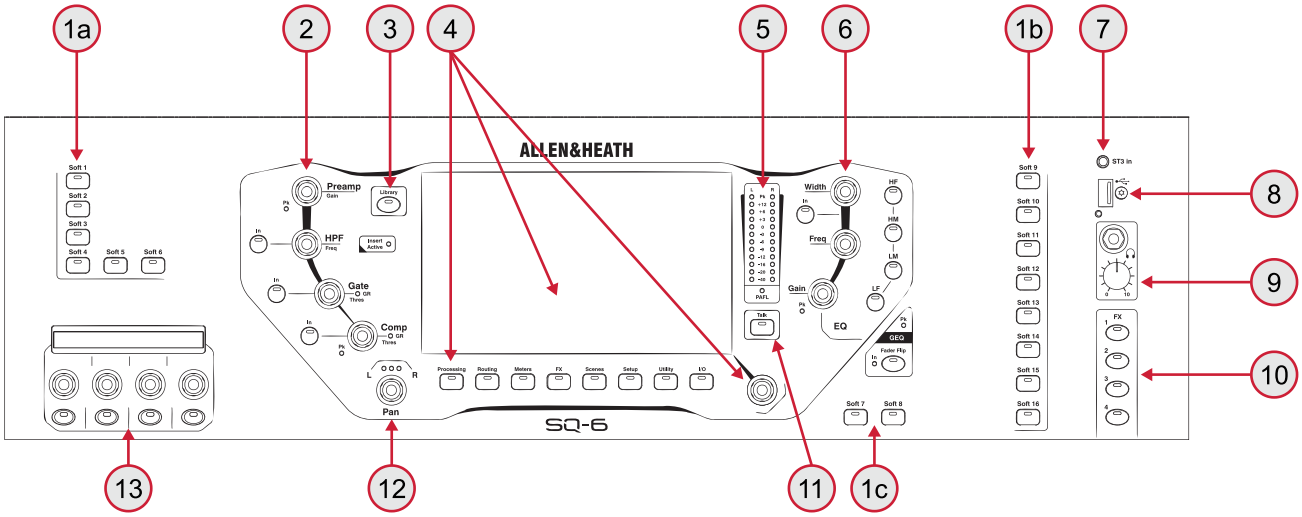
Designed for applications where high-quality audio mixing and processing is required in a compact and reliable unit, and built on an Allen & Heath XCVI core, the SQ series of digital mixers feature 96kHz, variable bit-depth processing and ultra-low latency.

All SQ models can be used standalone, or I/O socket count can be increased with a range of expanders and option cards. They can also be customised with additional processing ‘Add-on’ options.

Having the same processing core means all models have the same processing, routing, connectivity and external control capabilities. The differences between models are as follows:

SQ Model	SQ-Rack	SQ-5	SQ-6	SQ-7
Faders	-	16+Mix	24+Mix	32+Mix
Faders Screen	✓	-	-	-
SQ-Control Screen	✓	-	-	-
Built-in Preamps	16+Talkback	16+Talkback	24+Talkback	32+Talkback
XLR Outputs	12	12	14	16
SoftKeys	8	8	16	16
SoftRotaries	4	-	4	8

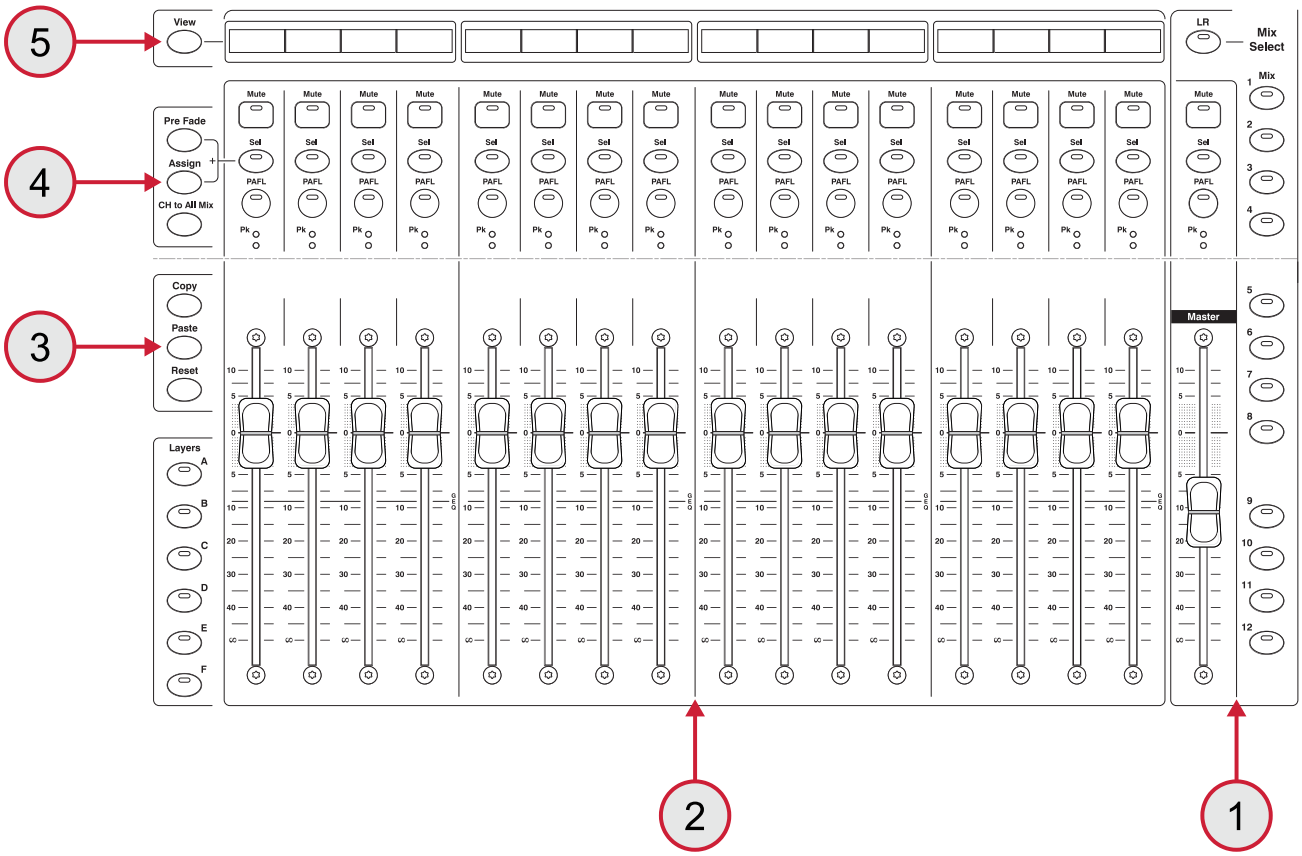
Top Panel: Screen & Controls



1. **Assignable SoftKeys**
   Use Setup screen to assign functions such as mutes, tap tempo, scene recall, SQ-Drive control and more.
2. **Channel (Pre/HPF/Gate/Comp)**
   Physical controls for the selected channel. Preamp, HPF frequency, Gate threshold, Comp threshold.
3. **Library Key**
   Opens different libraries to enable save and recall of presets for channel/mix/FX processing.
4. **Touch Screen, Screen Select Keys and Screen Encoder**
   View processing and access the routing and setup menus using keys below. Touch to select a parameter and use the rotary to adjust values.

5. **Main Meter**
   Displays the LR Mix or selected PAFL signal level.
6. **Channel (PEQ/GEQ)**
   Physical controls for the selected channel. EQ band select keys and parametric controls. Use the ‘Fader Flip’ key to present selected mix GEQ on faders.
7. **ST3 Input**
   3.5mm stereo jack input, can be used for connection to an external background music device.
8. **SQ-Drive Port**
   Record/play audio direct to/from a USB drive. Transfer scene, show and library data using a USB key. Update SQ firmware.
9. **Headphone Output and Level Control**
10. **FX Send Select Keys**
    Press a blue ‘FX’ key to present its sends on the faders and its master send on the master fader strip.
11. **Talk Key**
    Momentary or latching switch for the talkback microphone.
12. **Pan Control**
13. **Assignable Encoders (SQ-6/SQ-7)**
    Use Setup screen to assign functions for quick access to often used parameters.

Top Panel: Faders

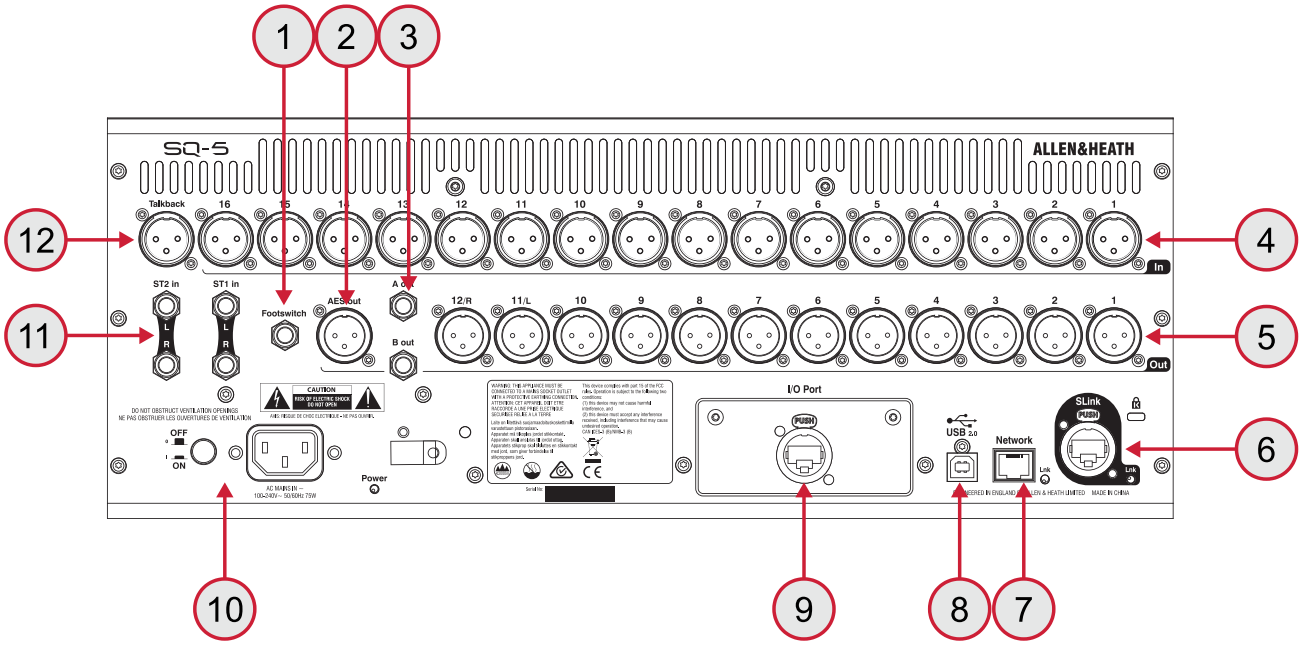


1. **Master Strip and Mix Select Keys**
   Press a blue ‘Mix’ key to present its sends on the 24 faders and its master on the master fader strip. Select ‘LR’ to work with the main LR mix and channel faders.
2. **Fader Strips and Layer Select Keys**
   6 layers of faders provide assignable strips for access to any combination of channels, returns, masters and DCAs. Each strip has fader, mute, select and PAFL keys, peak and signal meter.
3. **Copy/Paste/Reset Keys**
   Used to copy, paste or reset processing blocks or channel parameters.
4. **Pre Fade, Assign, and CH to All Mix Keys**
   Hold ‘Pre-Fade’ and press ‘Sel’ to toggle channels pre or post fade to the mix.

   Hold ‘Assign’ and press ‘Sel’ to route channels to the selected mix.

   Press and hold 'CH to All Mix' to present all sends to mixes for the currently selected channel. The channel strip displays show mix names.
5. **Fader Strip Displays**
   LCD displays show channel name and colour for each of the strips. Press (and hold) the ‘View’ key once to see channel type and number, press twice (and hold) to see patching info.

Rear Panel



1. **Mono/Dual Footswitch Connection**
2. **AES Digital Output**
3. **Local TRS Jack Outputs**
4. **Local Mic/Line Inputs**

5. **Local XLR Outputs**
6. **SLink Port**
   For connection to Allen&Heath remote audio racks, including AB, AR and DX ranges, as well as the ME personal monitoring system
7. **Network Port**
   Connect to a router for network/wireless control
8. **USB-B Port**
   Connection to a computer for multi-channel audio and MIDI I/O
9. **I/O Port - Option Card**
   Multi-format multi-channel digital audio
10. **Mains Power Input and Switch**
11. **Local Stereo Line Inputs**
12. **Talkback Mic Input**

Digital Audio I/O and Expansion

SQ has built-in 'Local' input and output sockets. Local inputs include mic/line inputs on XLR with associated preamp and ADC and line level TRS connections with ADC. Local outputs include both XLR and TRS line level analogue outputs with associated DAC, as well as a stereo digital AES3 output on XLR.

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

USB-B and SQ-Drive

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

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

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

The SQ-Drive connection is USB-A and can be used with USB storage directly to either record or playback up to 16 channels at 96kHz or up to 32 channels at 48kHz.

ⓘ Record and playback patching for USB-B and SQ-Drive is presented as simply 'USB' in the SQ. Playback can only be from either USB-B *or* SQ-Drive at any one time.

SLink Port

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

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

For more information and examples of possible SLink configurations, refer to the 'SLink Connections' document available to download from https://www.allen-heath.com/.

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

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

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

ⓘ For all digital audio connections using network connections, use CAT5e (or higher specification) STP cables up to 100m long.

ⓘ Refer to Recommended cables for cable requirements and recommendations.

ⓘ Refer to https://www.allen-heath.com/hardware/sq/sq-accessories/ for a list of CAT cables available to order.

I/O Port

The I/O Port enables the fitting of an SQ option card for 3rd party protocols or an additional SLink port.

Available option cards include:

SLink

Provides a secondary SLink port with independent SRC to connect up to 128×128 channels at 96kHz. Can be used to run two different A&H protocols with a single SQ and/or to connect to expanders at the same time as other mixers.

Dante 32×32

Provides a 32×32 channel connection to a Dante network at either 48kHz or 96kHz. Can also be used for connection of DT expanders.

Dante 64×64

Provides a 64×64 channel connection to a Dante network at either 48kHz or 96kHz. Can also be used for connection of DT expanders.

Waves

Provides a 64×64 channel connection to a Waves SoundGrid network at either 48kHz or 96kHz. Can be used with Waves hardware and software (e.g. Waves SoundGrid Server and SuperRack).

MADI

Provides two MADI I/O pairs on BNC for 48kHz (64 channel with redundancy options) or 96kHz (32×32 on each pair) operation. Includes switchable (In/Out) BNC Wordclock connection.

Control of the mixer

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

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

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

Local Surface control

The top section of the surface features a touchscreen with associated screen selection keys and rotary control.

Select a screen, then touch on screen to navigate and action any on screen buttons. Select parameters on screen, and the touchscreen rotary will illuminate to show it can be used for

adjustment.

Surrounding the screen are dedicated physical controls which illuminate when active, along with customisable 'Soft' controls. SoftKeys and Soft Rotaries can be set to control specific functions and parameters, including options for control of the currently selected channel. Their functions can be changed on a scene-by-scene basis if required.

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

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

The lower section includes 6 custom layers of channel strips, allowing channels to be muted, selected or heard in the PAFL (Pre/After Fade Listen) headphone bus. With a channel selected, dedicated controls apply to that channel and the Processing and Routing screens show all processing and routing options for that channel. Pressing a blue Mix key displays the send levels to that mix on all channel strip faders, the default being the main LR mix.

Copy, Paste and Reset keys are provided which can be used with surface processing in/out keys, Sel keys and items on screen (e.g. Scenes in the Scene list) for easy duplication or resetting of parameters and data.

ⓘ Refer to the relevant firmware reference guide available from https://www.allen-heath.com/resources for more information on the navigation and features of the installed firmware.

Network control

There are 3 remote control apps available for the SQ series:

SQ-MixPad – for the engineer

Provides control over almost all parameters and settings of the mixer, including many setup functions. Can also be used in Offline mode as an editor.

More Info on SQ MixPad

SQ4You – for the performer

Provides easy to use control over a single mix, allowing control of monitoring levels without the risk of affecting other performers' mixes.

More Info on SQ4You

SQ-Control – for simplified control

5 tabs with up to 48 widgets in each can be setup by the Admin user to provide simplified access to key parameters including levels, mutes and SoftKeys.

More Info on SQ Control

Network Information

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

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

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

ⓘ A total of 8 remote apps can be connected to an SQ at one time, with up to 3 of these being SQ-MixPad.

ⓘ All SQ Network settings can be found in the Setup > Network Setup screen.

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

MIDI control

MIDI (Musical Instrument Digital Interface) is a standardised communication protocol that enables digital devices to communicate and allows one piece of equipment to control another.

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

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

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

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

Refer to the SQ MIDI Protocol document available from https://www.allen-heath.com/resources for full details on MIDI messaging for the SQ series.

Download the most recent version of the Allen & Heath MIDI Control app from https://www.allen-heath.com/resources and refer to the MIDI Control Help article for information on installation, setup and use.