SQN-4S_mini mk II

Miniature 4:2 ENG Audio Mixer

The smallest of our broadcast quality stereo portable mixers for TV, film and radio locations

The SQN-4S_mini, an upgraded revision of the SQN-2S which created new size and weight benchmarks for the miniature ENG mixer, has placed the essence of the well known SQN-4S Series IVe 4:2 mixer into a case identical in size to the earlier SQN-3M mono mixer.

A new version, the **SQN-4S_mini mk II**, has been developed and now permits line input on all channels and provides individual pre-fade output of all 4 channels. This tiny mixer is capable of carrying out virtually any of the tasks commonly required of a portable mixer in location recording and outside broadcast.

Two of the input channels, CH1 & CH2, are conventional microphone channels with the full range of powering bass cut and attenuation. This pair can also be MS matrixed. The second pair, CH3 & CH4, have a reduced gain and no powering. They are intended for use with Radio Mics or other self-powered mics. All channels can be routed Left, Right or Centre (both).

The mixer includes balanced transformerless input and output amplifiers, virtually unbreakable analogue level meters, pre-fade listening (on CH4), slating microphone, a minimal length audio path with the option of MS matrixing of CH1 & CH2. The limiter is identical to the design already proven in the SQN-4S as is the low distortion tone oscillator. MS decoding of the monitoring is also provided.

Front Panel

Connector and Routing End Blocks

The essential information for connecting to and operating the mixer is permanently printed on the baseplate.

Dimensions
The dimensions of the mixer case are: Height 44mm, Width 210mm, Depth 120mm

Weight
The weight of the mixer without batteries is 1.1kg

Construction
The outer case of the mixer is made of aluminium. The Connector and Routing End Blocks are milled from solid aluminium bar, as is the Battery Compartment Door. The circuitry is constructed on multi-layer printed circuit boards with internal ground and power planes which ensure the integrity of the internal grounding system.

All control knobs are special to SQN and are turned and milled from solid aluminium bar. The internal battery compartment is milled and bored from a solid block of polyacetal engineering plastics material and the moving parts are aluminium and stainless steel

All labels and legends on the mixer are permanent. On the end blocks they are engraved; on the Front Panel they are printed into the hard-anodised surface; on the baseplate they are reverse printed on a polycarbonate label.

The mechanical construction is a development of a system which has proven in the past to be resistant to mechanical damage

The SQN-4S_mini mk II mixer offers the professional recordist:

- ✳ Unsurpassed sound quality
- ✳ Industry standard acceptability
- ✳ User friendly ergonomic layout
- ✳ Tried and tested electronic design
- ✳ Superior mechanical engineering
- ✳ Lowest running costs
- ✳ Highest resale value
- ✳ Long trouble-free service
- ✳ The utmost in portability
- ✳ Efficient factory back-up service

SQN Electronics Ltd

SQN-5S Series II Miniature 5:2 ENG Audio Mixer

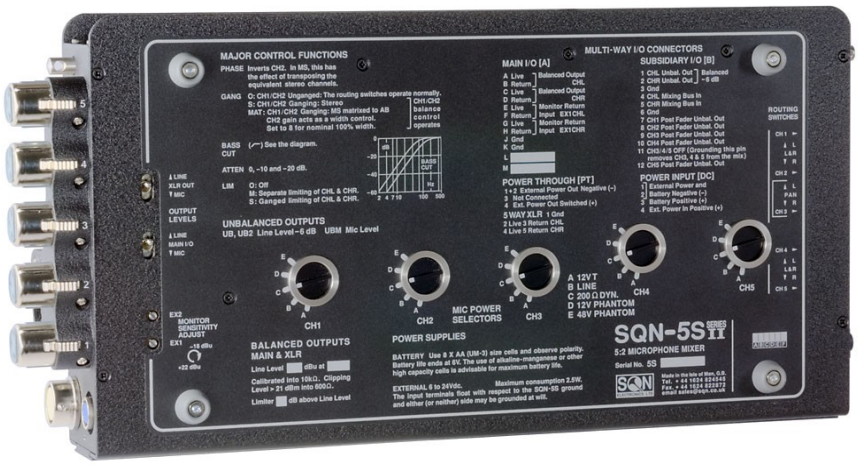
A broadcast quality stereo portable mixer for TV, film and radio locations.
With five full mic-powering input channels
and twin camera drive.

The original SQN-5S as successor to the classic SQN-4S Series IVe offered the same convenience of operation in exactly the same size case but with five channels and reduced weight. Recordists familiar with the earlier mixer were immediately at home with the SQN-5S and organizations that had been using the 4S found the new mixer to be completely compatible with the old.

The new SQN-5S Series II expands upon the virtues of its predecessor, including transformerless input and output amplifiers for reduced weight and uninhibited bass, virtually unbreakable analogue level meters, four channels of pre-fade listening, slating microphone, superb limiter, output feed for all five microphone channels and logic processing of most switching giving a minimal length audio path.

Now there are two separate pairs of electronically balanced output line drivers and two pairs of monitor return inputs (with front panel selection), allowing the use of two cameras or recorders. A simple adaptor cable can be used to provide a second interface to standard SQN cabling. There are also four unbalanced outputs, three on 3.5mm jacks and one on a multi-way connector. One jack is dedicated to mic level. Phones output is on both quarter inch and 3.5mm jacks. Using 8 AA size internal alkaline cells, the SQN-5S easily gets through the working day without reloading, delivering 48V phantom power until the cells are completely exhausted. The quick change battery compartment permits reloading in seconds. External power can be from 6V to 24V dc, positive or negative to ground or floating.

The essential information for connecting to and operating the mixer is permanently printed on the baseplate.



Features and Specification - SQN-5S

Mixer Inputs Five transformerless balanced inputs using XLR-3 type female connectors. Each channel is switchable for:

1. Powering:
    - a) 12V T (Din AB)
2. b) 12V Phantom
3. c) 48V Phantom
4. d) Dynamic (150 to 600 Ohms)
5. Attenuation:
    - 0dB, -10dB or -20dB
      Setting an internal switch on each channel enables automatic insertion of an extra 10dB of attenuation when mic powering is selected. This is achieved without compromising the noise performance of the microphone.
6. Bass Cut:
    - Flat, -6dB or -16dB at 50Hz
7. Line Attenuation:
    - Adds 50dB attenuation before the mic preamp.

Sensitivity -78dBu for nominal line level (PPM4, 0VU) with the channel gain at maximum and the master gain at 0dB

Max Level, Mic Inputs -20dBu (+4dBu with full attenuation)

Noise Figure -130dBu (A weighted) from a 200 Ohm source.

Frequency Response 20Hz to 20kHz +0, -1dB, referred to 1kHz.

Crosstalk Isolation, channel to unrelated channel: 75dB at 1kHz, 60dB at 15kHz.

Channel Configuration The mixer has five input channels, all of which have the same input selectors, bass cuts and attenuators. The routing arrangements for CH1 & 2 differ from those for CH3, 4 & 5.

Channels 1 & 2 [GANG 1-2]

The operation of the CH1, CH2 pair is controlled by the GANG 1-2 switch on the front panel. This switch has three positions:

1. Twin MONO [O] in which the channels are unganged and each input channel can be routed to either or both of the output channels.
2. Stereo [S] ganging in which the Channel 1 fader controls the gain of both channels and a stereo balance control on the side panel comes into play.
   If required, a factory modification allows the CH2 fader to control the relative level of CH2 so that equality of level is achieved with the CH2 fader at maximum. This can be useful as an MS width control when handling MS without decoding.
3. Mid-Side [MAT] ganging in which the Channel 1 fader controls the gain of both channels and the Channel 2 fader acts as an image width control. The incoming signal is assumed to be in MS format and is matrixed to AB. The stereo balance control remains active and will balance the matrixed signal.

Phase Switch

A front panel switch inverts CH2 phase. This also interchanges left and right in an MS encoded signal.

Channel 3

CH3 can be routed to LEFT, RIGHT or to a PANpot.

Channels 4 & 5

Each of CH4 and CH5 can be routed to LEFT, RIGHT or CENTRE (both).

Monitor Return Inputs

Two sets of monitor return inputs are provided
EX1 on a combined 12-Way connector[A]:
Balanced inputs with a range of sensitivity from -20dBu to +20dBu for loudness parity with the internal monitoring. EX2 on a 3.5mm jack [EX2]: Unbalanced inputs of similar sensitivity.

The sensitivity is adjusted by a screwdriver preset on the base, with an internal range switch.

Mixing Bus Inputs

The SUBSIDIARY I/O connector [B] carries two inputs directly into the summing amplifiers. Sensitivity is 0dBu for +8dBu at the balanced outputs with the master gain set at 0 and can be trimmed internally.

Balanced Outputs

Two pairs of line drivers are provided.
The No.1 outputs are available on a combined 12-Way connector [A] and the No.2 outputs on a 5-Way XLR connector.

Line Drivers

The line drivers are electronically balanced sources with a clipping level of +22dBm into 600 Ohms. Distortion at the nominal peak level of +8dBm is less than 0.01% with a 600 Ohm load 20Hz to 20kHz. Output resistance is below 10 Ohms and it is permissible to forcibly unbalance any of the outputs without it affecting the others.

Output Attenuators

Switches on the base allow attenuation by 50dB at either set of connectors for microphone level feed.

Unbalanced Outputs

Two stereo 3.5mm jacks, UB and UB2 carry 220 Ohm unbalanced outputs at 6dB below the main outputs, while the 3.5mm jack UBM carries Mic-Level signals at 50dB below the main outputs.

The SUBSIDIARY I/O connector [B] shares the UB2 220 Ohm unbalanced output.

Direct Outputs, All Channels

The SUBSIDIARY I/O connector [B] carries the five unbalanced, pre-fader mic preamp outputs at a nominal level of -10dBu peak from a 220 Ohm source resistance.

If a link to ground is made on the connector, post-fader outputs are available instead. If a further link is made, CH4 and CH5 are removed from the mix and the signal routing for CH3 is changed so that selecting PAN for CH3 will switch the channel out of the mix.

A presettable line-up tone for aligning external recorders is provided, ganged with the main tone. Its level of -10dBu corresponds to the preamp output with the fader at 5 and peak level at the mixer output. The output level (and tone) may be attenuated by 6dB using internal switches.

Meters

Twin peak reading, logarithmic level meters with Peak Programme Meter (PPM) dynamics. Scaling may be BBC PPM, Nordic Norm, or SMPTE. VU meters can also be provided. The meters are normally calibrated with the mixer driving a bridging load of 10k Ohms. While the mixer is operating the meters are illuminated by low power light emitting diodes.

Line Output Level

The nominal line level is normally set at 0dBu for PPM metered mixers and +4dBu for VU metered mixers. Peak level, which is used as a reference for the limiters, is considered to be 8dB above this setting. Other calibration levels are readily available to order.

Output Limiters

[O]ff [M]ono [S]tereo (ganged) Attack time constant 0.5ms, release time 100ms. The limiter range is 20dB. An LED for each output channel indicates limiter action.

Line-up Tone

The Line-up tone is a sine wave at 1kHz with distortion below 0.1% which is inserted into both channels, displacing the audio output. When the [GANG 1-2] switch is in either of the ganged positions, the left hand channel tone is interrupted for 250ms every 3s. The tone switch on the front panel is a three position toggle, shared with the Slating Microphone.

Monitoring

The mixer has a pair of headphone amplifiers with adjustable gain. The outputs are available on both quarter inch and 3.5mm jacks and are capable of driving most types of headphone to a suitable level. Pre-Fade listening to four of the input channels is possible as is MS matrixing of the two output channels so that an MS recording may be monitored in the equivalent AB stereo. The headphone gain control is a tall knurled knob easily accessible at the front of the left side panel.

Monitoring Mode Selector The monitoring mode rotary selector switch on the front panel [PHONES] has the following functions.

- S Stereo
- R Right Channel
- L Left Channel
- MS MS Matrix (MS heard as AB stereo)
- L-R Left minus Right (MS stereo equivalent Right)
- L+R Left plus Right
  (MS stereo equivalent Left or Phase Check)

Monitoring Source Selector A front panel toggle switch selects the monitoring source as either internal [MXR] or external [AUX]

Pre-Fade Listen A pair of front panel toggle switches selects Pre-Fade Listen for channels 2 or 3 and 4 or 5. The switches are three position, centre off.

Slating Microphone A microphone is mounted behind the front panel near the centre of the mixer. When in use, the output of the microphone is levelled by a compressor and displaces the normal audio, appearing on the mixer outputs and in the monitoring system. While the microphone is active, the monitoring mode automatically reverts to the internal or [MXR] setting. The Slating Microphone switch on the front panel is a three position toggle, shared with the Line-up tone.

Batteries Eight AA size cells housed in a quick-change compartment. The acceptable range of voltages is 6 to 24 Vdc allowing the use of most cell technologies.

Battery Drain 135mA at 12 Vdc with unpowered mics. Battery life with alkaline cells will be about 10 hours.

Battery Test The right channel meter is fitted with a suppressed-zero battery voltage scale, brought into operation by a front panel push button.

External Power A supply in the range 6 to 24 Vdc may be used. The maximum consumption will be 2.5W and quiescent consumption, without microphones, 1.6W. The input terminals float with respect to ground. Either (or neither) side may be grounded at will, thereby allowing the use of floating supplies or grounded supplies of either polarity. There will be no possibility of hum-loops being formed.

Power Distribution The mixer carries two four-way connectors, one of which [DC] gives access to the internal batteries for charging and also serves to connect to an external power source. The second connector [PT] is an output which provides a switched, short circuit proof connection to the power supplied to [DC]. This allows the mixer to be used as the focal point for a system of interconnected devices, all controlled from the mixer’s power switch.

Temperature Range The mixer is designed to work over the temperature range of -20 to +60 °C.

Dimensions The dimensions of the mixer case are: Height 47mm, Width 297mm, Depth 161mm

Construction The outer case of the mixer is made of aluminium. The end blocks holding the connectors and the panpots are milled from solid aluminium bar. Inside the mixer is an inner compartment of steel, tin-plated after forming, which contains all of the circuitry that might be sensitive to radio frequency interference. The top and bottom of this compartment are sealed by copper screens and rf gasket material and all inputs to and outputs from this compartment are filtered. The circuitry is constructed on multi-layer printed circuit boards with internal ground and power planes which ensure the integrity of the internal grounding system.

All control knobs are special to SQN and are turned and milled from solid aluminium bar. The internal battery compartment is milled and bored from a solid block of polyacetal engineering plastics material and the moving parts are aluminium and stainless steel.

All labels and legends on the mixer are permanent. On the end blocks they are engraved; on the front panel they are printed into the hard-anodised surface; on the baseplate they are reverse printed on a polycarbonate label.

The mechanical construction is a development of a system which has proven in the past to be resistant to mechanical damage.

Weight The weight of the mixer without batteries is 2.1kg

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