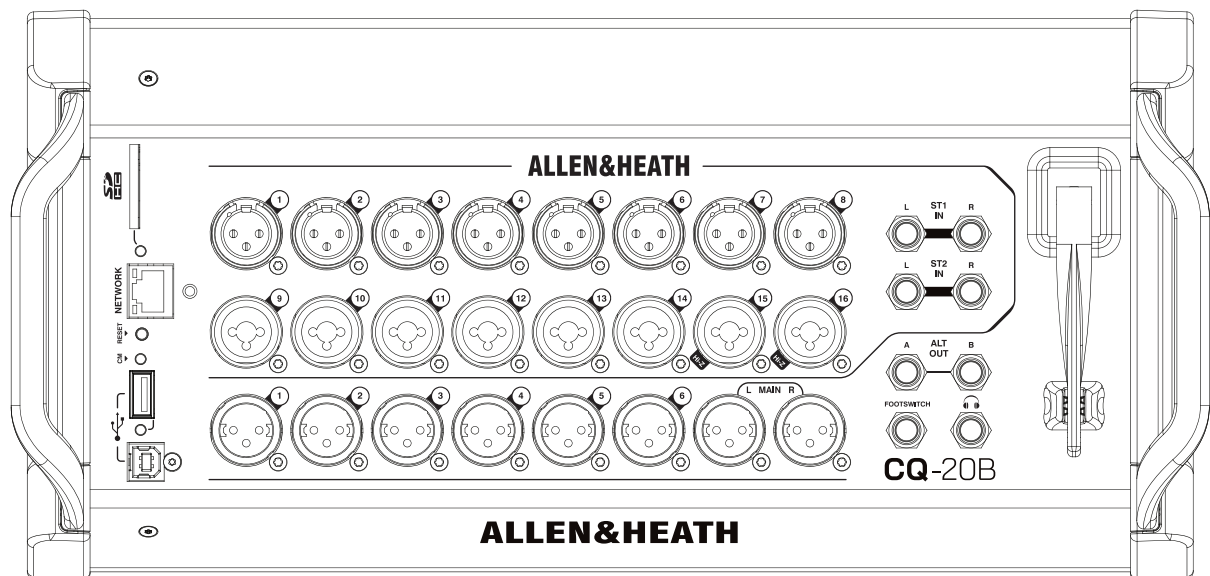


## CQ-20B

### Technical Datasheet

The CQ-20B is an ultra-compact digital audio mixer designed to be operated via its built-in WiFi or through connection to a wired or wireless network.



### Features

- 20x Inputs to Mix
- (16x Mono/Linkable, 4x Stereo)
- Stereo MainLR Output
- 6x Aux Outputs
- (Linkable up to 3x Stereo)
- 8x XLR Mic/Line Input Sockets
- 8x XLR/Jack 'Combi' Mic/Line Input Sockets
- (2 with Hi-Z option)
- 2x Stereo Line Input Sockets
- (each 2x TRS)
- 8x XLR Output Sockets
- 2x TRS Alt Out Sockets
- Stereo Headphone Output
- Dedicated Stereo USB Input to Mix
- Dedicated Stereo Bluetooth Input to Mix
- 96kHz Input/Output Processing
- 4x Multi-FX Engines
- Built-In Dual Band WiFi (CQ as Host)
- RJ45 Network Socket (CQ as Client)
- USB-A For Stereo Audio Record/Playback and Data
- USB-B For Multichannel Audio Record/Playback (24x24)
- SD Card Slot for Multichannel Audio Record/Playback (24x24)
- Configurable Single/Dual Footswitch Connection
- Configurable Chromatic Channel Meter LED
- Rack Mountable (Optional Kit Available)
- IEC Mains Connection with Worldwide PSU
- Control Via Free Apps – Windows/MacOS/iOS/Android

## A&E Specification

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The mixer shall be a compact digital mixer with 96kHz processing, 16 mono input channels and 4 stereo channels mixing to LR and 6 aux outputs.

Local analogue inputs shall use balanced XLR sockets and a minimum of 8 combi (TRS/XLR) sockets and connect to fully recallable digitally controlled preamplifiers. These shall be able to provide industry standard 48V phantom power.

Local analogue outputs shall be provided on XLR sockets with a nominal line output of +4dBu and a maximum output of +22dBu.

A user-assignable Chromatic Meter LED shall be provided to display metering and indicate useful information without a remote connection present.

The mixer shall have a reset button to carry out unit resets and provide control to setup a remote connection.

All input and output processing, routing options and system configuration shall be controlled remotely, and a footswitch connection shall be provided to allow assignable control from an optional single or dual footswitch.

All input channels shall contain the following processing as a minimum: Polarity, High Pass Filter, Gate, Parametric EQ, Compressor, Pan. All output mix channels shall contain the following processing: selectable Graphic / Parametric EQ, Compressor, Delay.

Channel processing shall also include simplified, source-optimised channel presets to speed up setup and improve for inexperienced operators.

The mixer shall be capable of automatically detecting input level and adjusting preamp gain across multiple channels, as well as monitoring input level during use and reducing preamp gain to prevent clipping.

A feedback detector shall be provided to analyse one, multiple or all mixes, identify problem frequencies and apply notch filters appropriately to suppress feedback during setup or live performance.

4 effect engines shall be provided with a library of factory preset FX. The FX engines shall be individually configurable as send/return or inserted into input or output channels.

An Automatic Mic Mixer shall be provided for automatic and dynamic adjustment of input

levels across all mono input channels for spoken word applications.

There shall be a USB Type-A connector on the surface for stereo recording/playback direct to USB drives, data-transfer, archiving, and firmware updates.

There shall be a USB-B connection following the USB 2.0 standard for stereo or multi-channel, bi-directional audio streaming between the mixer and a computer.

There shall be an SDHC card slot for multitrack recording/playback at either 48kHz or 96kHz.

The mixer shall provide an Ethernet port for Cat5 cable connection to a wireless router / access point, existing network or directly to a device for control of mixer parameters. A Wi-Fi access point with replaceable antenna shall be integrated in the mixer and offer dual band, auto channel selection for wireless control of the mixer.

Control software shall be provided for tablet, phone, and computer control. In addition to a full control app for the mixer, a mobile app for personal monitoring shall be available and compatible with iOS and Android phones.

The mixer shall be capable of Bluetooth connectivity with simple pairing to third party devices for high quality stereo playback of music to a dedicated stereo channel.

The mixer shall provide the facility to save scenes of the settings of the mixing system and these scenes shall be nameable. The mixer shall also periodically record all current settings and return the mixer to that state after reboot following a power-cycle.

The mixer shall have a built in power supply accepting AC mains voltages of 100~240V, 50/60 Hz, 45W max via an earthed 3-pin IEC male connector mounted on the rear chassis.

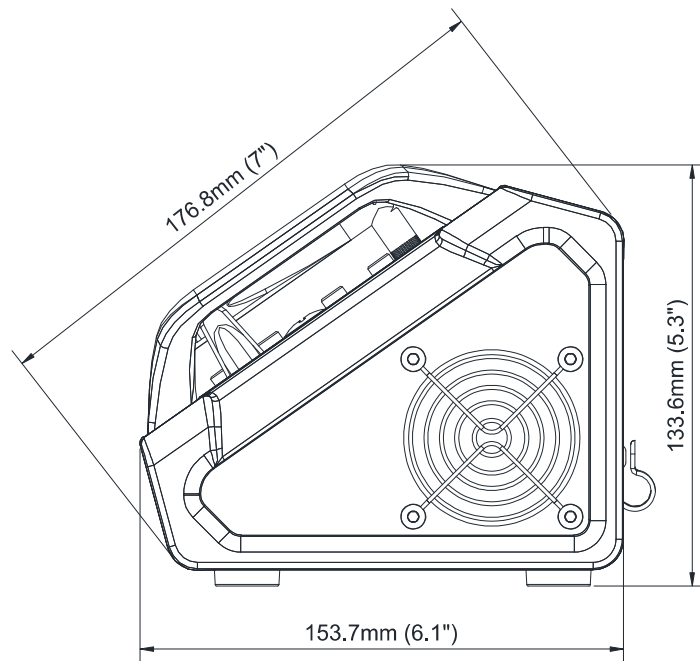
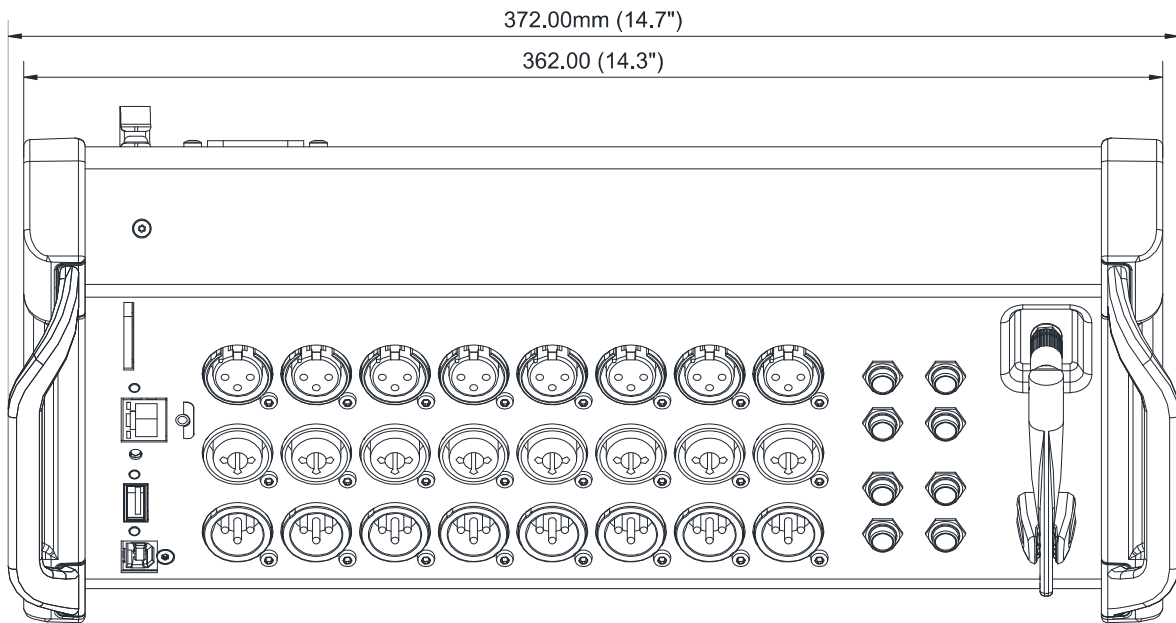
Recommended operating temperature for the mixer shall be 5 to 40 degrees Celsius.

An optional kit for mounting the mixer in a standard 19" rack shall be made available.

The mixer shall be the Allen & Heath CQ-20B.

## Dimensions

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## Technical specs

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### Inputs

<b>Mic/Line Inputs</b>	Balanced XLR, Balanced XLR/TRS Combi, fully recallable preamp
Phantom Power	+48V (+3V / -2V)
Input Sensitivity	-60 to +0dBu
Line Inputs (Combi Sockets)	-20dB Pad (Fixed)
Analogue Gain	0dB to +60dB, 1dB steps
Maximum Input Level	+17dBu (XLR), +30dBu (TRS)
Input Impedance	>1.5k $\Omega$ (XLR), >10k $\Omega$ (TRS)
THD+N, Unity gain 0dB	0.002% -92dBu (20Hz-20kHz, USB soundcard, @0dBu 1kHz)
THD+N, Mid gain +30dB	0.004% -88dBu (20Hz-20kHz, USB soundcard, @-30dBu 1kHz)

### Stereo Line Inputs

Stereo Line Input Connection	Balanced, 1/4" TRS Jack, Normalled (Left/Mono)
Input Sensitivity	Nominal +4dBu
Trim	+/-24dB
Maximum Input Level	+21dBu
Input Impedance	>10k $\Omega$

**Hi-Z Inputs** 1M $\Omega$ , JFET input stage, 0dB to +40dB gain

### Outputs

<b>Main LR Outputs</b>	Balanced, XLR
<b>Outputs 1-6</b>	Balanced XLR
Output Impedance	<75 $\Omega$
Nominal Output	+4dBu = 0dB meter reading
Maximum Output Level	+22dBu
Residual Output Noise	-88dBu (muted, 20Hz-20kHz)

### System

<b>System</b>	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 routed to Main L/R Out	+10dBu input, 0dB system gain, 0.003%, -92dB (Relative, 20-20kHz)
dBFS Alignment	+18dBu = 0dBFS (+22dBu at XLR output)
Meter Calibration	0dB meter = -18dBFS (+4dBu at XLR out)
Sampling Rate	96kHz
Bit Depth	Custom, up to 96-bit
Latency	<0.7mS, Local Mic Input to Main L/R, with all processing in or out
Operating Temperature Range	0° C to 40° C (32° F to 104° F)
Power	100-240V AC, 50/60Hz, 45W max

## Record/Playback

### USB-A

Stereo Record

48/96 kHz, 24-bit WAV format. Patchable from Outputs, ST in, or FX Units

Stereo Playback

44.1/48/96 kHz, 16/24 bit, Mono/Stereo WAV files

### USB-B

Send / Return

24 channels / 24 channels

### SD Card

Multitrack Record

SDHC, 32 GB, UHS-I, Class 10 for maximum channels, 48/96 kHz, 24-bit

16 channels @ 96kHz or 24 channels @ 48kHz

Multitrack Playback

16 channels @ 96kHz or 24 channels @ 48kHz

## Connectivity

### Wi-Fi Access Point

802.11 a/b/g/n/ac (dual band, auto channel)

### Bluetooth

4.1 (high quality stereo playback)

## Weights and Dimensions

Width x Depth x Height

As Used

372 x 154 x 134 mm (14.7" x 6.1" x 5.3"), 2.6 kg (5.8 lbs)

Packed in shipping box

450 x 260 x 250 mm (17.7" x 10.2" x 9.8"), 3.3 kg (7.3 lbs)

## Processing specs

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### Input Processing

<b>Channels</b>	16 mono (stereo linkable), 4 stereo (ST1, ST2, USB, Bluetooth)
<b>Source</b>	Analogue or Digital (USB/SD) with automatic override (SD>USB)
<b>HPF</b>	20Hz to 2kHz
<b>Gate</b>	Self-keyed
Threshold	-72dB to +18dB
Depth	0dB to 60dB
Attack	50 $\mu$ s to 300ms
Hold	10ms to 5s
Release	10ms to 1s
<b>Insert Point</b>	Internal FX Unit
<b>PEQ</b>	4-band fully parametric, with RTA option
LF/HF Type	Shelf, Bell or HPF/LPF
Frequency	20Hz to 20kHz
Width	1.5 to 1/9 Octave
Gain	+/-15dB
<b>Compressor</b>	Self-keyed, RMS/Peak
Knee control	Hard/Soft
Threshold	-46dB to +18dB
Ratio	1:1 to Inf:1
Attack	30 $\mu$ s to 300ms
Release	50ms to 2s
Gain	0dB to +18dB

### Output Processing

<b>GEQ</b>	20-band 1/2 oct, 31Hz-16kHz, +/-12dB Gain, with RTA option
<b>PEQ</b>	As Input PEQ
<b>Feedback Assistant</b>	Automatic feedback suppression
Filters	16 total, maximum 12 Fixed, maximum 16 Live
Filter Cut	0dB to 18dB
Automatic Filter Width	18 to 116 Q
Manual Filter Width	6 to 640 Q
Live Recovery (+0.5dB)	Off to 1s
<b>Compressor</b>	As Input Compressor
<b>Limiter</b>	Fast/Slow
Threshold	-24dB to +18dB
<b>Delay</b>	Up to 682ms

## **FX Units**

Number of FX Units	4
Types	Easy Verb, Echo Verb, Space Verb, Echo, Tap Delay, Stereo Delay, Beat Delay, Double Tracker, Chorus, Flanger, Phaser
Dedicated Stereo FX channels	Fader, Pan, Mute, Sends to LR/Outputs/FX

## **AMM**

Channels	16 (Mono only)
Type	D-Classic Gain Sharing
Priority	-15dB to +15dB per channel

# Block Diagram

## CQ SYSTEM BLOCK DIAGRAM

Firmware V1.1

