

Redbox - Digital - Audio Converters

RB-ADDA Combined A/D and D/A Converter

The RB-ADDA A/D and D/A converter is a 1U rack-mount which produces an AES/EBU or S/PDIF level digital audio output from a balanced XLR or unbalanced phono stereo audio input. It also produces a stereo balanced XLR or unbalanced phono output from an incoming AES/EBU or S/PDIF digital input signal. The unit operates in four modes:

Master Mode

In this mode the unit receives an analogue audio signal, which is digitised and formatted for digital serial transmission (IEC958). The necessary clock signals are generated internally from an on board master clock at a selectable rate (32kHz, 44.1kHz, 48kHz or 96kHz).

Slave Mode

In this mode the unit automatically detects the presence of a digital audio sync signal, if present at the digital input, and synchronises the digital output to it. If no sync is present, no output will be generated.

Auto Mode

Here the unit synchronises to the digital audio sync signal if present at the digital input and uses the internal master clock only if no sync input signal is detected. In this case, the internal master clock is used at the selected sample rate.

Auto Lock Mode

This operates like the auto mode except that if no sync input signal is detected, it will use the internal master clock to sync to the sample rate which was last clocked to.

When operating in sync modes, the front panel power LED flashes whenever the unit is not synchronised to the incoming digital signal.

The analogue inputs have left and right level controls using pre-set potentiometers and DIP switches allowing a signal range from +9dBu to +27dBu. The RCA phono inputs have a further 10dB gain incorporated to give a total gain range of -1dBu to +17dBu for full-scale digits.



Digital to Analogue Conversion D/A Audio Specification For RB-ADDA

Maximum Output Level: +24dBu balanced output, +14dBu unbalanced output

Output Impedance: <50 balanced, <75 unbalanced

Dynamic Range: >100dB

Gain Range: Selectable 12dBu, 18dBu or 24dBu output level, ref FSD

D/A Connections

Digital Inputs: 1 x AES/EBU XLR 3 pin female
1 x S/PDIF RCA phono

Analogue Outputs: 2 x XLR 3 pin male (balanced)
2 x RCA phono (unbalanced)

Equipment Type

RB-ADDA: Combined A/D and D/A converter

Physical Specification

Dimensions: 48cm (W) x 10.8cm (D) x 4.2cm (H) (1U)
19" (W) x 4.3" (D) x 1.7" (H) (1U)

(Boxed): 53cm (W) x 20.5cm (D) x 6cm (H)
21" (W) x 8" (D) x 2.4" (H)

Weight: Nett: 1.6kg Gross: 2.2kg
Nett: 3.5lbs Gross: 4.8lbs

The analogue outputs have an output level control, allowing full-scale settings selectable from +12dBu, +18dBu or +24dBu. There are factory-set internal level controls for the analogue outputs allowing gain adjustment of ± 1 dB.

There are buttons to select either the AES/EBU or S/PDIF input or output for the D/A and A/D sections respectively.

The output bit depth can be selected from 16, 20 or 24 bits. Inputs of a different bit depth to the output are dithered using a noise filter.

For the digital output, there is a switch available to define the content of the

Analogue to Digital Conversion A/D Audio Specification For RB-ADDA

Maximum Input Level: +27dBu balanced inputs, +17dBu unbalanced inputs

Input Impedance: >10k unbalanced, >20k bridging balanced

Dynamic Range: >110dB

Gain Range: Adjustable input gain of ± 3 dB on 12dBu, 18dBu or 24dBu, ref FSD

Distortion and Noise: >96dB THD + N at 1kHz

A/D Connections

Analogue Inputs: 2 x XLR 3 pin (balanced)
2 x RCA phono (unbalanced)

Digital Outputs: 1 x AES/EBU XLR 3 pin male
1 x S/PDIF RCA phono

Mains Input: Filtered IEC, switchable 110-120V, or 220-240V, fused, 10W max

Fuse Rating: Anti-surge fuse 100mA 20 x 5mm (230VAC)
Anti-surge fuse 250mA 20 x 5mm (115VAC)

Operational Controls

Analogue Input Select: XLR or phono, via push-switch

Digital Output Select: AES/EBU or S/PDIF, via push-switch

Digital Input Select: AES/EBU or S/PDIF, via push-switch

De-emphasis On/OFF: DIP switch

Input Level Adjust: DIP switch & pre-set pots

Sample Rates: Master rates of 32kHz, 44.1kHz, 48kHz or 96kHz, or can synchronise to incoming 32kHz to 100kHz sample rate

Bit Depth: 16, 20 or 24 bits via DIP switch

Modes & Frequencies: 16 way rotary DIP switch

Channel Status Bits: Forced to consumer mode or professional mode, via DIP switch

Output Level Adjust: DIP switch

channel status bits embedded within the digital audio stream. The status bits can be forced to either Professional or Consumer Mode.

Additionally, if de-emphasis is selected, the RB-ADDA will decode 50/15 μ s emphasis when indicated by certain channel status bits in the incoming digital audio data.

The RB-ADDA has a calibration routine for optimum performance, which allows the noise floor and dynamic range to improve by 1-2dB.

The calibration cycle operates by calibrating the gain and the zero reference of the A/D converter.

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