



SONIFEX

Redbox Video Embedders & De-embedders September 2009



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SONIFEX
Redbox

VIDEO INTERFACES

Redbox - Embedders & De-Embedders

3G, HD & SD-SDI

Still in the familiar Redbox chassis offering rackmounting as standard and a universal AC power supply, these new video Redboxes use latest technology components to offer embedding and de-embedding for analogue and digital audio signals into and out of all 3G, HD and SD-SDI video signals, respectively.

With simple front panel controls, standard BNC connectivity and remote operation on serial and ethernet ports, there are currently 4 products in the range:

- RB-VHEMA8 Embedder, 8 Channel Analogue Inputs
- RB-VHDMA8 De-Embedder, 8 Channel Analogue Outputs
- RB-VHCMA4 Embedder & De-Embedder, 4 Channel Analogue I/O
- RB-VHCMD16 Embedder & De-Embedder, 16 Channel Digital I/O

Common Specifications

SDI Specification

SDI Input:	1 x BNC, 3G/HD/SD-SDI
SDI Outputs:	2 x BNC, 3G/HD/SD-SDI, Re-clocked
Impedance:	75Ω
Output:	<0.2UI (3G <0.3UI)
Alignment Jitter:	
Output Level:	800mV +/- 10%
Return Loss:	<15dB at 1500MHz
SDI Supported Standards:	270Mbps, SMPTE-259M-C (SD) 1.485 or 1.4835Gbps, SMPTE-292M (HD) 2.97 or 2.967Gbps, SMPTE-424M (3G)
Supported Video Formats:	525/59.94 (SMPTE-125M) 625/50 (ITU-R BT.656) 720p/23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (SMPTE-296M) 1035i/59.94, 60 (SMPTE-260M) 1080i/50, 59.94, 60 (SMPTE-274M) 1080p/23.98, 24, 25, 50, 59.94, 60 (SMPTE-274M) 1080pSF/23.98, 24, 25, 29.97, 30 (RP-211) 1080i/50 (SMPTE-295M) 1080p/50 (SMPTE-295M)
Embedded Audio:	48kHz, synchronous SMPTE-272M-ABC SMPTE-299M
Serial Port:	RS232, 9 way D-type
Ethernet Port:	10/100Mbps
Power:	Universal filtered IEC, continuously rated 85-264VAC @47-63Hz, fused
Fuse Rating:	Anti-surge fuse 1A 20 x 5mm

Physical Specifications

Dimensions (Raw):	48cm (W) x 10.8cm (D*) x 4.2cm (H) (1U) 19" (W) x 4.3" (D*) x 1.7" (H) (1U)
Dimensions (Boxed):	59cm (W) x 27.5cm (D) x 11cm (H) 23.2" (W) x 10.8" (D) x 4.3" (H)
Weight:	Nett: 1.8kg Gross: 2.3kg Nett: 4.0lb Gross: 5.1lb

* Note that this product is deeper than standard Redboxes

RB-VHEMA8 3G/HD/SD-SDI Embedder, 8 Channel Analogue Inputs



The RB-VHEMA8 is an 8-channel analogue embedder.

The unit can selectively embed up to 8 analogue channels onto either of the two output video streams which are re-clocked and sent to the SDI outputs. It also has the capability to allow audio groups to be deleted or passed through untouched on each of the two video streams.

The embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It supports the full range of 3G, SD and HD standards from NTSC and PAL up to 1080p 60Hz.

The analogue inputs full-scale gain settings can be set via jumpers situated inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu for FSD. The balanced and unbalanced input connections are paralleled, allowing one type to be used per input.

Audio Specification For RB-VHEMA8

Front Panel Controls & Indicators

Embed Bank Select:	Bank 1 or 2
Bank Channel Select:	Channels 1, 2, 3 or 4
Group Select:	Groups 1, 2, 3 or 4
Group Channel Select:	Group channels 1,2,3 or 4
Status:	1 x SDI input status LED 2 x SDI output LEDs 4 x Audio group status LEDs

Audio Specifications

Maximum Input Level:	+27dBu (balanced)
Input Impedance:	>10kΩ bridging (balanced)
Input Levels:	+12dBu, +18dBu or +24dBu for FSD (jumper selectable)
Signal to Noise:	Better than -113dBFS (RMS A-weighted at 24-bit, balanced)
Distortion and Noise:	Better than -100dB THD+N at 1kHz (balanced)

Connections

Analogue Audio Inputs:	8 input channels via BNC (unbalanced) or D-type socket (balanced)
Analogue Audio Connectors:	8 x BNC 2 x 25-way D-type

Equipment Type

RB-VHEMA8	3G/HD/SD-SDI embedder, 8 channel analogue inputs
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RB-VHDMA8 3G/HD/SD-SDI De-Embedder, 8 Channel Analogue Outputs

The RB-VHDMA8 is an 8-channel analogue de-embedder.

The unit can selectively de-embed up to 8 channels within any 2 audio groups contained within the video stream, to any of the analogue outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through and then re-clocked and sent to the SDI outputs.

The de-embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and

Redbox - Embedders & De-Embedders

- individually buffered SDI outputs. It supports the full range of 3G, HD and SD standards from NTSC and PAL up to 1080p 60Hz.

The analogue outputs full-scale gain settings can be set via jumpers inside the unit.

Allowable settings are +12dBu, +18dBu and +24dBu reference FSD. The balanced and unbalanced output connections are paralleled, allowing one type to be used per output.



Audio Specification For RB-VHDM8

Front Panel Controls & Indicators

De-embed Bank Select:	Bank 1 or 2
Bank Channel Select:	Channels 1,2,3 or 4
Group Select:	Groups 1,2,3 or 4
Group Channel Select:	Group channels 1,2,3 or 4
Status:	1 x SDI input status LED 2 x SDI output LEDs 4 x Audio group status LEDs

Audio Specifications

Max Output Level:	+24dBu (balanced)
Output Impedance:	<50Ω (balanced)
Gain Range:	12dBu, 18dBu or 24dBu ref FSD (jumper selectable)
Signal to Noise:	Better than -106dB (RMS A-weighted at 24-bit, balanced)
Distortion and Noise:	Better than -85dB THD+N at 1kHz (balanced)

Connections

Analogue Audio Outputs:	8 output channels via BNC (unbalanced) or D-type socket (balanced)
Analogue Audio Connectors:	8 x BNC 2 x 25-way D-type

Equipment Type

RB-VHDM8	3G/HD/SD-SDI De-embedder, 8 channel analogue outputs
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RB-VHCMA4 3G/HD/SD-SDI Embedder & De-Embedder 4 Channel Analogue I/O



Audio Specification For RB-VHCMA4

Front Panel Controls & Indicators

Bank Select:	De-embed bank or embed bank
Bank Channel Select:	Channels 1,2,3 or 4
Group Select:	Groups 1,2,3 or 4
Group Channel Select:	Group channels 1,2,3 or 4
Status:	1 x SDI input status LED 2 x SDI output LEDs 4 x Audio group status LEDs

Audio Specifications

Analogue Inputs

Maximum Input Level:	+27dBu (balanced)
Input Impedance:	>10kΩ bridging (balanced)
Input Levels:	+12dBu, +18dBu or +24dBu for FSD (jumper selectable)
Signal to Noise:	Better than -113dBFS (RMS A-weighted at 24-bit, balanced)
Distortion and Impedance:	Better than -100dB THD+N at 1kHz (balanced)

Analogue Outputs

Max Output Level:	+24dBu (balanced)
Output Impedance:	<50Ω (balanced)
Gain Range:	12dBu, 18dBu or 24dBu ref FSD (jumper selectable)
Signal to Noise:	Better than -106dB (RMS A-weighted at 24-bit, balanced)
Distortion and Noise:	Better than -85dB THD+N at 1kHz (balanced)

Connections

Analogue Audio Inputs:	4 input channels via BNC (unbalanced) or D-type (balanced)
Analogue Audio Outputs:	4 output channels via BNC (unbalanced) or D-type (balanced)
Analogue Audio Connectors:	8 x BNC 2 x 25-way D-type socket

Equipment Type

RB-VHCMA4	3G/HD/SD-SDI embedder & de-embedder, 4 channel analogue I/O
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The RB-VHCMA4 is a 4-channel analogue de-embedder and a 4-channel analogue embedder combined into a single 19-inch rack unit.

The unit selectively de-embeds up to 4 channels within any audio group contained within the video stream to any of the analogue outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through. The unit then embeds any of the 4 analogue input channels to available groups within each of the two video streams, which are then re-clocked and sent to the SDI outputs.

The de-embedding and embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It supports the full range of 3G, SD and HD standards from NTSC and PAL up to 1080p 60Hz.

The analogue outputs full-scale gain settings can be set via jumpers situated inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu reference FSD

Similarly, the analogue inputs full-scale gain settings can be set via jumpers inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu for FSD.

The balanced and unbalanced connections are paralleled, allowing one type to be used per input or output.



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RB-VHCMD16 3G/HD/SD-SDI Embedder & De-Embedder 16 Channel Digital I/O

NEW!



The RB-VHCMD16 is a 16-channel de-embedder and 16 channel embedder combined into a single 19-inch rack unit.

The unit selectively de-embeds any channel within any audio group contained within the video stream to any of the digital outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through. The unit then embeds any of the digital input channels to available groups within each of the two video streams, which are then re-clocked and sent to the SDI outputs.

The de-embedding and embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex Sci software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It

supports the full range of 3G, HD and SD standards from NTSC and PAL up to 1080p 60Hz.

Each digital input is normally sample rate converted to 48kHz before embedding, so that it is synchronous to the video input. Though sample rate conversion can be bypassed on a per bank basis allowing SMPTE-337M data to be embedded. All digital outputs are output at 48kHz, synchronous to the video input.

The digital inputs and outputs can be selected as AES or S/PDIF via jumpers situated inside the unit. The balanced AES/EBU and unbalanced S/PDIF I/O connections are paralleled, allowing one type to be used per input or output.

Audio Specification For RB-VHCMD16

Front Panel Controls & Indicators

Bank Select:	Bank 1, 2, 3 or 4
Bank Channel Select:	Channels 1,2,3 or 4
Function Select:	De-embed or embed
Group Select:	Groups 1,2,3 or 4
Group Channel Select:	Group channels 1,2,3 or 4
Status:	1 x SDI input status LED 2 x SDI output LEDs 4 x Audio group status LEDs

Audio Specifications

Output Sample Rate:	48kHz
Input Sample Rates:	32-192kHz, sample rate converted to 48kHz
Input & Output Impedance:	110Ω or 75Ω (jumper selectable)

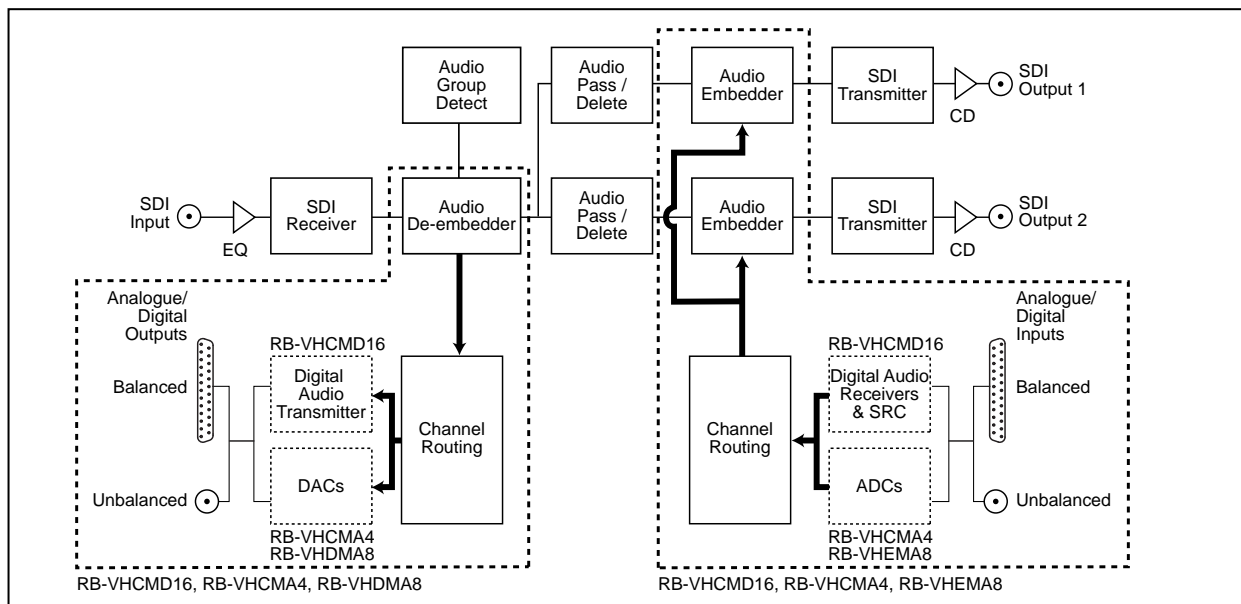
Signal Level (un-terminated):	Balanced: 3Vp-p +/- 20% Unbalanced: 1Vp-p +/- 20%
Dynamic Range:	138dB
Distortion and Noise:	<-137dB THD+N at 997Hz, ref 0dBFS

Connections

Digital Audio Outputs:	16 outputs via 8 BNCs (S/PDIF) or D-type (AES/EBU)
Digital Audio Inputs:	16 inputs via 8 BNCs (S/PDIF) or D-type (AES/EBU)
Digital Audio Connectors:	16 x BNC 2 x 25-way D-type socket

Equipment Type

RB-VHCMD16	3G/HD/SD-SDI embedder & de-embedder 16 channel digital I/O
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Redbox Embedders & De-Embedders System Block Diagram

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