

# SONIFEX

Reference Monitor  
Expansion Cards

# Catalogue





## RM-HD1 Reference Monitor 3G/HD/SD-SDI Expansion Card



**Category:** Reference Monitor Expansion Cards.

**Product Function:** Allows the de-embedding of audio channels in a 3G/HD/SD-SDI stream.

**Typical Applications:** OB truck monitoring of incoming video feed from a sports ground. Post Production monitoring of HD-SD/SDI audio.

**Features:** Automatic 3G/HD/SD input detection, visual monitoring of all channels in a group, delay of an embedded group with PC configuration.



This expansion board allows the monitoring of embedded non-encoded linear PCM audio channels within a single link 3G/HD/SD-SDI video signal.

The RM-HD1 card can be used with the RM-2S4, RM-2S10 and RM-4C8 monitors.

The expansion board can extract any selected AES/EBU audio group (4 channels) from the video signal and pass them to the

main Reference Monitor unit for monitoring. Any group can be selected and can also be optionally delayed by up to ~300ms by using the Sonifex SCi remote control software. All channels in the selected group can be monitored visually and 2 channels can be selected to be monitored on the speakers (for the RM-2S4 and RM-2S10, stereo pairs are selected; the RM-4C8 allows any 2 channels to be monitored). The input is auto-sensing for either SD, HD or single link 3G input formats and the extraction of embedded audio complies with SMPTE-272 (SD) and SMPTE-299 (HD/3G).

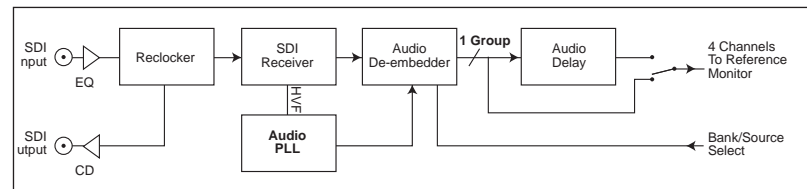
The SDI input is equalized, internally re-clocked and re-transmitted to provide a re-clocked output to pass to external equipment such as another reference monitor.

### Technical Specification For RM-HD1

SDI Specification	
SDI Input:	1 x BNC, 3G/HD/SD-SDI
SDI Outputs:	1 x BNC, 3G/HD/SD-SDI, Re-clocked
Impedance:	75Ω
Output Alignment Jitter:	<0.2UI
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 (HD asynchronous) SMPTE-272M-ABC SMPTE-299M

Equipment Type	
RM-HD1:	3G/HD/SD-SDI expansion card
Physical Specification	
Dimensions (Raw):	15cm (W) x 11.5cm (D) x 3.1cm (H) 5.9" (W) x 4.5" (D*) x 1.2" (H) (1U)
Dimensions (Boxed):	22.9cm (W) x 12.7cm (D) x 7.6cm (H) 9.0" (W) x 5.0" (D) x 3.0" (H)
Weight (RM-HD1):	Nett: 0.13kg Gross: 0.4kg Nett: 0.3lb Gross: 0.9lb

		Reference Monitor		
		RM-2S4	RM-2S10	RM-4C8
Expansion Card	RM-HD1	✓	✓	✓
	RM-HDE1	✗	✗	✓
	RM-E1X	✗	✗	✓
	RM-E1B	✗	✗	✓





## RM-HDE1 Reference Monitor HD-SDI & Dolby® E & Dolby® Digital Expansion Card



**Category:** Reference Monitor Expansion Cards.

**Product Function:** Allows the de-embedding of audio channels in a 3G/HD/SD-SDI stream and subsequent Dolby E decoding.

**Typical Applications:** For taking a satellite feed and monitoring HD-SDI and decoded Dolby E sources. Post Production monitoring of HD-SD/SDI audio.

**Features:** Dolby metadata display on connected PC, 8 input metering on 4 meters, 3G/HD/SD-SDI de-embedding and monitoring



This expansion board allows the monitoring of embedded audio channels within a single link 3G/HD/SD-SDI video signal. The embedded audio can be either non-encoded linear PCM, Dolby® E or Dolby® Digital. Please note that the RM-HDE1 card is for use with the RM-4C8 unit only.

The expansion board can extract any selected AES/EBU audio group (4 channels) from the video signal and pass them to the main Reference Monitor unit for monitoring. Any group can be selected. All channels in the selected group can be monitored

visually and any 2 channels can be selected to be monitored on the speakers. If a Dolby E or Dolby Digital input is detected on the selected channel, the Channels (CHANS) button flashes to indicate that decoding is possible. Pressing the CHANS button displays the Dolby Digital 5.1 or Dolby E 8 channel signal, using the 4 bar-graph meters. Each meter is split into 2 sections, top and bottom, allowing you to monitor all 8 channels coming from the Decoder.

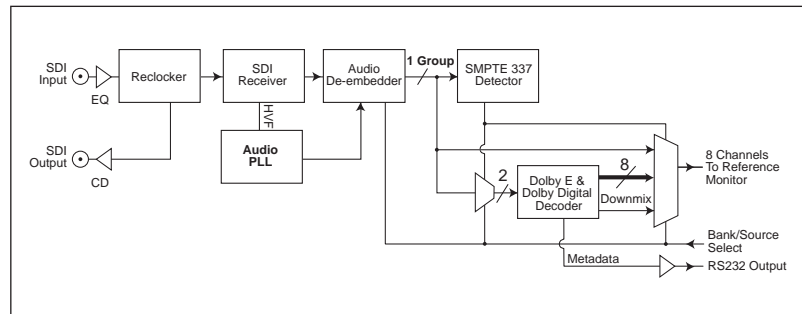
Full Dolby Metadata is available using the Sci remote control software. For a more detailed description of Dolby Decoding operation please refer to the handbook.

The input is auto-sensing for either SD, HD or single link 3G input formats and the extraction of embedded audio complies with SMPTE-272 (SD) and SMPTE-299 (HD/3G). The SDI input is equalized,

internally re-clocked and re-transmitted to provide a re-clocked output to pass to external equipment such as another reference monitor.

### Technical Specification For RM-HDE1

SDI Specification	
SDI Input:	1 x BNC, 3G/HD/SD-SDI
SDI Output:	1 x BNC, 3G/HD/SD-SDI, Re-clocked
Impedance:	75Ω
Output Alignment Jitter:	<0.2UI
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 (HD asynchronous) SMPTE-272M-ABC & SMPTE-299M
Equipment Type	
RM-HDE1:	HD-SDI & Dolby® E expansion card
Physical Specification	
Dimensions (Raw):	15cm (W) x 11.5cm (D) x 3.1cm (H) 5.9" (W) x 4.5" (D*) x 1.2" (H) (1U)
Dimensions (Boxed):	22.9cm (W) x 12.7cm (D) x 7.6cm (H) 9.0" (W) x 5.0" (D) x 3.0" (H)
Weight (RM-HDE1):	Nett: 0.15kg Gross: 0.4kg Nett: 0.3lb Gross: 0.9lb





## RM-E1X Reference Monitor Dolby E & Dolby® Digital Decoder XLR AES Expansion Card RM-E1B Reference Monitor Dolby E & Dolby® Digital Decoder BNC Expansion Card



**Category:** Reference Monitor Expansion Cards.

**Product Function:** Allow Dolby E decoding from an AES/EBU audio input

**Typical Applications:** For monitoring a Dolby E or D audio source.

**Features:** Dolby metadata display on connected PC, 8 input metering on 4 meters, Dolby E decoding & monitoring.



RM-E1X Expansion Card.



RM-E1B Expansion Card.

These expansion boards for the Reference Monitor RM-4C8 allow the monitoring of a digital audio stream containing either Linear PCM or Dolby\* encoded audio.

The RM-E1X has 2 x XLR inputs to accept AES/EBU level inputs and the RM-E1B has 2 x BNC connectors for S/PDIF level inputs.

Dolby data is decoded and passed to the Reference Monitor as either a stereo down mix or the full complement of individual channels. If the signal is standard Linear

PCM, then this audio data is simply passed straight through.

The input is re-transmitted with minimal delay, to allow connection to other equipment.

*\* Dolby and the double-D symbol are registered trademarks of Dolby Laboratories.*

### Technical Specification For RM-E1X and RM-E1B

#### Audio Specification

AES Input/ Output:	110Ω transformer coupled balanced I/O (RM-E1X)
S/PDIF Input/ Output:	75Ω transformer coupled unbalanced I/O (RM-E1B)
Sample Rates:	32 - 48 kHz
Audio Formats:	Linear PCM Dolby E (16, 20 and 24 bit) Dolby Digital (16 and 32 bit)

#### Connectors

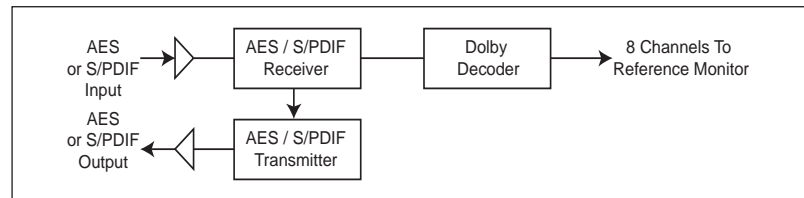
AES Input:	1 x XLR 3 pin socket (RM-E1X)
AES Output:	1 x XLR 3 pin plug (RM-E1X)
S/PDIF Input:	1 x BNC (RM-E1B)
S/PDIF Output:	1 x BNC (RM-E1B)

#### Equipment Type

RM-E1X:	Dolby® E Decoder XLR expansion card
RM-E1B:	Dolby® E Decoder BNC expansion card

#### Physical Specification

Dimensions (Raw):	15cm (W) x 11.5cm (D) x 3.1cm (H) 5.9" (W) x 4.5" (D) x 1.2" (H) (1U)
Dimensions (Boxed):	22.9cm (W) x 12.7cm (D) x 7.6cm (H) 9.0" (W) x 5.0" (D) x 3.0" (H)
Weight (RM-E1X/B):	Nett: 0.13kg Gross: 0.4kg Nett: 0.3lb Gross: 0.9lb



*\* Dolby and the double-D symbol are registered trademarks of Dolby Laboratories.*

# **SONIFEX**

[www.sonifex.co.uk](http://www.sonifex.co.uk)

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## **UK Office:**

### **Sonifex Ltd**

61 Station Road, Irthlingborough,

Northants, NN9 5QE, UK

Tel: +44 (0) 1933 650700

Fax: +44 (0) 1933 650726

Email: [sales@sonifex.co.uk](mailto:sales@sonifex.co.uk)

## **Australian Office:**

### **Sonifex Pty Ltd**

12/6 Leighton Place,

Hornsby NSW 2077, Australia

Tel: +61 (2) 9987 0499

Fax: +61 (2) 9476 4950

Email: [sales@sonifex.com.au](mailto:sales@sonifex.com.au)