

SONIFEX

Manufacturers of Audio & Video
Products For Radio & TV Broadcasters

New Products **Update** Sept 2010



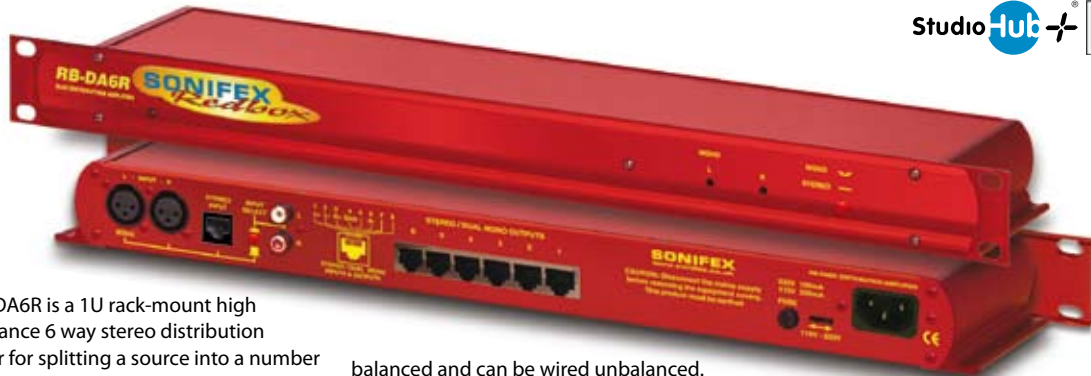
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Redbox - Audio Distribution Amplifiers

RB-DA6R**6 Way Stereo Distribution Amplifier With RJ45 Connectors**

The RB-DA6R is a 1U rack-mount high performance 6 way stereo distribution amplifier for splitting a source into a number of different outputs. The amplifier provides multiple balanced audio outputs using RJ45 connectors wired to the StudioHub+™ standard*.

By using RJ45 outputs, it allows simpler CAT5 cabling to be used to connect the amplifier to other products.

The RB-DA6R has one stereo input which is switchable via a rear panel push switch between paralleled balanced inputs (2 x XLR sockets or 1 x stereo input on RJ45) and unbalanced inputs (1 pair of stereo phono sockets).

The unit has 6 stereo outputs on 6 x RJ45 connectors. The unit can also be configured so that 1 mono input can be distributed to 12 outputs by use of a switch which is recessed on the front panel to prevent it being accidentally knocked.

The inputs and outputs are electronically

balanced and can be wired unbalanced. Each output is individually buffered so that a short circuit on one output won't affect the others. The left and right input gain controls (normalising) are pre-set potentiometers accessible through the front panel.

The output gain may be varied from -8dB to 18dB which is useful for normalising consumer and professional signals to give outputs of -15dBu and 0dBu respectively.

Audio Specification For RB-DA6R

Maximum Input Level:	+28dBu
Maximum Output Level:	+28dBu
Frequency Response:	20Hz to 20kHz ± 0.1 dB (600 Ω load, ref 1kHz)
Gain Range:	Adjustable 8dB loss to 18dB gain (L & R adjust)
Common Mode Rejection:	>66dB typically
Input impedance:	>20k Ω bridging (balanced) >10k Ω (unbalanced)
Output impedance:	<50 Ω

Distortion:	0.01% THD @ 1kHz, ref +8dBu output
Noise:	-100dB unity gain, ref +8dBu output

Connections

Inputs:	2 x XLR 3 pin female, 1 x RJ45 socket balanced 2 x phono sockets (unbalanced)
Outputs:	6 x RJ45 sockets (all balanced, can be unbalanced)
Mains Input:	Filtered IEC, switchable 110-120V, or 220-240V, fused, 6W max
Fuse Rating:	Anti-surge fuse 100mA 20 x 5mm (230VAC) Anti-surge fuse 250mA 20 x 5mm (115VAC)

Equipment Type

RB-DA6R:	6 way stereo distribution amplifier with RJ45 connectors
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Physical Specification

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):	53cm (W) x 20.5cm (D) x 6cm (H) 21" (W) x 8" (D) x 2.4" (H)
Weight:	Nett: 1.3kg Gross: 1.9kg Nett: 2.9lbs Gross: 4.2lbs

Accessories

RB-RK3:	1U Rear panel rack kit for large Redboxes
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RB-DA6RG**6 Way Stereo Distribution Amplifier With RJ45 Connectors & Output Gain Control**

The RB-DA6RG is a 1U rack-mount high performance 6 way stereo distribution amplifier for splitting a source into a number of different outputs. It is identical

* StudioHub+™ is a registered trademark of Radio Systems Inc

to the RB-DA6R with the addition of individual output gain adjustment, instead of global stereo gain adjustment.

Audio Specification For RB-DA6RG

As per RB-DA6R with the following difference:	
Gain Range:	Adjustable 8dB loss to 18dB gain (12 adjustable pots)

Redbox - Audio Distribution Amplifiers

RB-DDA22

Digital Audio Distribution Amplifier With Multiple Outputs



StudioHub+[®] **RK3** **24^{BIT}**
192^{KS}

// When an input is selected, it is copied to all of the available outputs. There are 5 sets of digital audio outputs, providing 22 outputs in total. **//**

The RB-DDA22 is a multiple input and multiple output digital audio distribution amplifier designed to accept one of 5 different digital inputs, amplify it and output this to 22 digital audio outputs in 5 different audio formats.

It accepts signals with sample rates in the range 32kHz to 192kHz and distributes them without sample rate conversion.

There are 5 inputs, one each of balanced AES/EBU on an XLR socket, unbalanced AES/EBU on BNC, balanced AES/EBU on an RJ45 socket, unbalanced S/PDIF on a phono socket and a Toslink optical connection.

An illuminated front panel input select push button is used to choose one of the 5 inputs, or to select the Auto Mode. In Auto Mode the unit interrogates each of the inputs in turn until it finds a lock. The select button flashes to indicate loss of lock and the tricolour input LEDs around the push button indicate signal presence.

When an input is selected, it is copied to all of the available outputs. There are 5 sets of digital audio outputs consisting of: 6 x balanced AES/EBU on XLR plugs, 6 x professional unbalanced AES/EBU on BNCs, 6 x balanced AES/EBU on RJ45 sockets, 2 x unbalanced S/PDIF on phono sockets and 2 x Toslink optical outputs, giving 22 outputs in total, 12 balanced and 10 unbalanced.

The RJ45 input and output connections use the StudioHub+[™] wiring standard for the balanced AES/EBU connections.

Note: The BNC outputs can be converted to S/PDIF outputs using a simple locking connector, available separately, giving an additional 6 x S/PDIF outputs, if required.

Technical Specification For RB-DDA22

Audio Specification

Input & Output Impedances: 110Ω ±20% AES/EBU balanced I/O
75Ω ±5% S/PDIF unbalanced I/O
75Ω ±5% Toslink unbalanced I/O

Signal Level: Balanced: 3V/10V peak to peak min/max
Unbalanced: Min 0.5V±20% peak to peak

Sample Frequencies: 32, 44.1, 48, 88.2, 96, 176.4 or 192kHz

Bit Depth: Up to and including 24 bit

Front Panel Operational Controls & Indicators

Digital Input Select: AES/EBU (XLR), AES/EBU (BNC), AES/EBU (RJ45), S/PDIF or Toslink optical

Indicators: Input presence indicators via tricolour LEDs around the input select button

Connections

Digital Inputs: 1 x AES/EBU XLR 3 pin socket
1 x AES/EBU BNC
1 x AES/EBU RJ45 socket (StudioHub+[™])
1 x S/PDIF RCA phono socket
1 x Toslink optical input

Digital Outputs: 6 x AES/EBU XLR 3 pin plug
6 x AES/EBU BNC
6 x AES/EBU RJ45 socket (StudioHub+[™])
2 x S/PDIF RCA phono socket
2 x Toslink optical output

Mains Input: Universal filtered IEC, continuously rated 85-264VAC@47-63Hz, max 10W

Fuse Rating: Anti-surge fuse 1A 20 x 5mm

Equipment Type

RB-DDA22: Digital audio distribution amplifier with multiple outputs

Physical Specification

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

Weight: Nett: 1.4kg Gross: 2.0kg
Nett: 3.0lbs Gross: 4.4lbs

Accessories

RB-RK3: 1U Rear panel rack kit for large Redboxes



* StudioHub+[™] is a registered trademark of Radio Systems Inc

Redbox - Synchronisers, Delays & Silence Detectors

RB-DSD8**8 Channel Silence Switcher**

The RB-DSD8 8 channel silence switcher works in a similar way to the Sonifex RB-SD1 and RB-DSD1 but allows for 4 stereo channels of audio. These stereo audio channels can be either analogue or digital and can be used independently to give 4 stereo silence detectors or they can be linked to handle multichannel audio inputs, e.g. for 5.1 and 7.1 surround systems. Designed to switch from one input (or set of inputs) to another in the event of loss of audio, the unit is ideal at transmitter sites, or after the master output of a studio, to switch in another audio source, or simultaneous broadcast, should a master source fail.

The unit can switch:

- On loss of level of the main input.
- On loss of level on one channel of the main input.
- On loss of synchronisation lock of a main digital input.

The audio inputs can accept both digital and analogue connections, with the unit automatically recognising a digital input. By setting the appropriate DIPswitches each stereo output can be designated as either an analogue pair or as a digital output, thus making the RB-DSD8 incredibly flexible and suitable for many different applications. The unit level settings are in dBFS but when using analogue signals the equivalent full scale value can be set to +24dBu, +18dBu, or +12dBu by DIPswitches.

Each stereo pair has individual settings and controls and when stereo signals are linked, the foremost pair determines the switching characteristics and controls to be used. Each stereo pair has an AES LED that shows the status of the digital audio on that channel

and a Selection LED to show that input is currently being sent to each respective output. Two Presence LEDs for the left and right inputs of each stereo pair indicate the input level of the channels.

The unit can switch between sources manually or automatically at the push of a button. If switching manually, silence detection is disabled and the user chooses when to switch using the main or backup buttons. If switching automatically, the unit switches between the two sources automatically upon the detection of silence. Each pair can be set to switch manually or automatically and the current setting is indicated by the Mode LED. Link/Select buttons are used to group channels together to access multichannel operation and switch simultaneously. Each pair has a Link/Select button which illuminates blue when active. Pressing and holding the first Link/Select button with any other Link/Select button causes all inputs up to that point to be selected.

The RB-DSD8 has a 'slave mode' that allows you to connect two RB-DSD8 units and control them simultaneously from one unit.

The silence detect level is adjustable between -39dBFS and -84dBFS in 3dBFS steps via DIPswitches and this level is compared to peak signals. The silence interval can be adjusted between 2 seconds and 254 seconds in 2 second steps via DIPswitches.

A powerful feature of the RB-DSD8 is that by using the Sonifex SCI serial software, the unit can be programmed for different delay durations, levels and switching functions so

that you can set up the unit for your specific application. A DIPswitch configures the unit to be controlled serially which is indicated by a front panel LED. You can connect to the unit using either USB or Ethernet as a control port.

The RB-DSD8 has been designed with dual redundant power supplies. This means that if either power supply fails, the other is ready to take over. In the extremely unlikely event that both fail, the unit has been designed with a passive signal path through the main input. This is essential for applications such as installation at transmitter sites, where a power failure to the unit should not prevent the audio input signal from being output to the transmitter.

Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-DSD8 as standard.

Clocking & Synchronisation

All digital input signals are routed to a sample rate converter allowing mixed incoming sample rates to be used. The output sample rates are selectable from a predefined master clock of 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz or 192kHz or the clock can be derived from a sync input. When analogue inputs are selected, the analogue to digital converters are also clocked at that sample rate.

DIPswitches choose the synchronisation mode and the sync source from TTL wordclock or AES/EBU through the dual-purpose synchronising input as standard. A front panel indicator shows the status of the synchronization input. Selectable sync modes are as follows:

AUDIO & VIDEO INTERFACES

Redbox - Synchronisers, Delays & Silence Detectors

Master Mode

In this mode the digital output sample rate is simply set by, and locked to, the internal on-board clock generator. No sync signal is used or required.

Auto Lock Mode

In this mode no output is generated until lock is achieved with a sync signal. The digital output sample rate now follows the sync input. If the sync signal is removed then the output sample rate is set by, and locked to, the internal on-board clock generator at the closest frequency available to the previous sync input.

Slave Mode

Here the digital output sample rate follows the sync input. When the sync signal is not present the digital output is turned off.

Audio Specification For RB-DSD8

Audio Specification - Digital

Dynamic Range:	>138dB
Distortion & Noise:	<-137dB THD + N at 1kHz, ref 0dBFS
Input & Output Impedances:	110Ω ± 20% AES/EBU balanced I/O 50Ω BNC TTL word clock input
Signal Level:	Balanced: 3V/10V peak to peak min/max
Sample Rates:	32, 44.1, 48, 88.2, 96, 176.4 or 192kHz
Bit Depth:	Up to and including 24 bit

Audio Specification - Analogue

Maximum Input Level:	+24dBu
Input Impedance:	>20kΩ bridging balanced
Dynamic Range:	>110dB
Distortion & Noise:	>82dB THD + N at 1kHz
Common Mode Rejection:	>60dB, ref 0dBu

Front Panel Operational Controls

Switch Mode Select:	Via AUTO, MANUAL or SLAVE push-buttons
Manual Source Select:	Via MAIN and BACKUP push-buttons
Group Selection:	Via LINK/SELECT push-buttons

Front Panel Indicators

Presence LEDs:	For all input channels
Link LEDs:	Show which channels are controlled concurrently
Mode LEDs:	Indicate the current mode selected for each group
Selection LEDs:	Indicate whether MAIN or BACKUP is selected
AES LEDs:	Show the state of the digital input to each group
PSU LEDs:	Show the state of each power supply
Remote Control LED:	Show if remote control is selected
External Sync LED:	Show the state of any sync inputs used.

Rear Panel - Operational Controls

Silence Threshold:	-39dBfs to -84dBfs in 3dBfs steps, via rear panel DIPswitches
Silence Duration:	0 - 254 seconds in 2 second intervals duration, via rear panel DIPswitches
Stereo/Mono Switching:	Stereo or mono, via rear panel DIPswitch
Master Select:	32, 44.1, 48, 88.2, 96, 176.4 or 192kHz Output sample rate, via rear panel DIPswitches
Ignore Silence:	Each channel can be set to ignore silences, via rear panel DIPswitches

Remote Control Enable:	Enabled or disabled, via rear panel DIPswitch
Sync Mode & Source Select:	Sync in master mode or sync from MAIN input1, AES or wordclock sync input in auto or slave mode, via rear panel DIPswitches
Remote Start:	Latched or momentary, via DIPswitch
Input Lock Loss:	Switch immediately or treat as silence delay, via rear panel DIPswitch
Digital or Analogue Output:	Digital or analogue, via rear panel DIPswitches
Full Scale Line Up:	24, 18 or 12 dBu = 0dBFS, via rear panel DIPswitches
Boot Mode:	Boot in boot or normal via rear panel DIPswitch

Connections

Digital/Analogue Inputs:	2 x 25 pin D-type male
Digital/Analogue Outputs:	1 x 25 pin D-type female
Sync Inputs:	1 x BNC (Wordclock or AES)
Remote I/O Port:	25 way D-type female
SCI port:	USB or ethernet
Mains Input:	2 x Universal filtered IEC, continuously rated 85-264VAC @47- 63Hz, max 60W
Fuse Rating:	2 X Anti-surge fuse 2A 20 x 5mm

Equipment Type

RB-DSD8:	8 channel silence switcher
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Physical Specifications

Dimensions	48cm(W) x 22cm(D) x 4.2cm(H) 1U (Raw): 19" (W) x 8.7" (D) x 1.7" (H) 1U
Weight:	Nett: 2.3kg Gross: 2.9kg Nett: 5.1lb Gross: 6.4lb

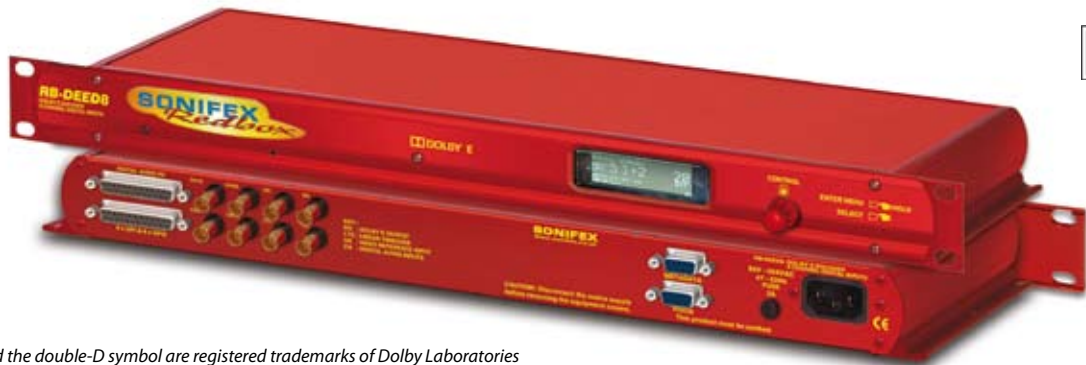
* Note that this product is deeper than standard Redboxes

Accessories

RB-RK3:	1U Rear panel rack kit for large Redboxes
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RB-DEED8

Dolby® E Encoder 8 Channel, Digital Inputs



Dolby® and the double-D symbol are registered trademarks of Dolby Laboratories

The RB-DEED8 is a Dolby® E Encoder. It encodes up to 8 digital audio channels into a single Dolby bitstream output. There is also an extra Dolby output for connection to monitoring equipment.

Each digital input channel has independent level control, which can be adjusted from -24dB through to +24dB in 0.5dB steps. The digital inputs and outputs can be selected to be either balanced or unbalanced AES/EBU specification, and can be connected through

either BNC or D-type connectors. These I/O connections are paralleled, allowing one type to be used per input or output.

Metadata can be input to the encoder using RS-485 via the external 9-pin D-type socket on the rear panel and can also be viewed using the SCI software.

A video input is used to genlock the audio output and Dolby® E encoding to a known video reference. This input autodetects

between NTSC, PAL or Tri-level sync.

8 general purposes inputs and 8 outputs are available on a rear panel 25 way D-type socket whose function can be programmed using the menu, e.g. alarm outputs for loss of input or encoder errors.

The unit is controlled locally using the front panel display and control knob but can be remote controlled via an RS-232 serial connection using the Sonifex SCI software.

Redbox - Dolby® Encoders & Decoders

RB-DEED8

Dolby® E Encoder 8 Channel, Digital Inputs (continued...)

Audio Specification For RB-DEED8

Output Sample Rate:	48kHz
Input Sample Rates:	CH1/2 & CH3/4: 32-192kHz CH5/6 & CH7/8: 32-48kHz
Input & Output Impedance:	75Ω/110Ω selectable
Signal Level (un-terminated):	Unbalanced: 1Vp-p +/- 20% Balanced: 6.6Vp-p +/- 20%
Digital Audio I/O: Inputs:	8 input channels via 4 x BNCs or 25 way D-type socket (AES3)
Dolby Output 1:	1 x Dolby bitstream output via BNC
Dolby Output 2:	1 x Dolby bitstream output via BNC or 25 way D-type socket (AES3)
Digital Audio Connectors:	6 x BNC 1 x 25-way D-type socket
Metadata:	SMPT-E-RDD06, 9 way D-type socket

Video Reference

Reference Type:	Autodetect NTSC, PAL or Tri-level sync
Impedance:	75Ω
Connector:	1 x BNC
LTC Input:	1 x BNC (not used)

Operational Control

Display:	Vacuum fluorescent display
System Navigation:	Rotary selector with integral push-switch

Additional Connections

Remote Input/Output Port:	25-way 'D'-type socket
Serial Port:	RS232, 9 way D-type
Power Supply:	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) 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

Equipment Type

RB-DEED8	Dolby® E encoder 8 channel, digital inputs
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Accessories

RB-RK3:	1U Rear panel rack kit for large Redboxes
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RB-DEDD8

Dolby® E & Dolby Digital Decoder 8 Channel, Digital Outputs



The RB-DEDD8 is a Dolby® E & Dolby Digital Decoder. It decodes an incoming Dolby bitstream and transmits the decoded outputs on BNC or D-type connectors on the rear panel. The Dolby input is also looped through to allow connection to other Dolby receiver equipment.

Each digital output channel has independent level control, which can be adjusted from -24dB through to +24dB in 0.5dB steps. The digital inputs and outputs can be selected to be either balanced or unbalanced AES/EBU specification, and can be connected through either BNC or D-type connectors. These I/O connections are paralleled, allowing one type to be used per input or output.

The metadata output from the decoder is transmitted using RS-485 via the external 9-pin D-type socket on the rear panel and can also be viewed using the SCI software.

A video input is used to genlock the audio outputs and Dolby® E decoding to a known video reference. This input autodetects between NTSC, PAL or Tri-level sync.

8 general purposes inputs and 8 outputs are available on a rear panel 25 way D-type socket whose function can be programmed using the menu, e.g. alarm outputs for loss of input or decoder errors.

The unit is controlled locally through the front panel display but can be remote controlled via an RS-232 serial connection using the Sonifex SCI software.

Audio Specification For RB-DEDD8

Output Sample Rate:	48kHz
Input Sample Rates:	32-48kHz
Input & Output Impedance:	75Ω/110Ω selectable
Signal Level (Un-terminated):	Unbalanced: 1Vp-p ±20% Balanced: 6.6Vp-p ±20%
Digital Audio I/O: Dolby Input:	1 x Dolby bitstream input via BNC
Outputs:	8 x Digital audio output channels & 2 x Auxiliary audio output (stereo downmix) channels via 5 x BNCs or 25 way D-type socket
Dolby Output:	1 x Dolby bitstream output via BNC or D-type
Digital Audio Connectors:	7 x BNC 1 x 25 way D-type socket
Metadata:	SMPT-E-RDD06, 9 way D-type socket

Video Reference

Reference Type:	Autodetect NTSC, PAL or Tri-level sync
Impedance:	75Ω
Connector:	1 x BNC
LTC Output:	1 x BNC (not used)

Operational Control

Display:	Vacuum fluorescent display
System Navigation:	Rotary selector with integral push-switch

Additional Connections

Remote Input/Output Port:	25-way 'D'-type socket
Serial Port:	RS232, 9 way D-type socket
Power Supply:	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) 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

Equipment Type

RB-DEDD8	Dolby® E & Dolby Digital decoder 8 channel, digital outputs
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Accessories

RB-RK3:	1U Rear panel rack kit for large Redboxes
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Dolby® and the double-D symbol are registered trademarks of Dolby Laboratories

DOLBY® ENCODERS & DECODERS

Redbox - Video Embedders & De-embedders

RB-VHEDD8

3G/HD/SD-SDI Dolby® E Encoder & Embedder

The RB-VHEDD8 is a Dolby® E Encoder and Embedder. It encodes 8 channels of audio into two channels of an AES/EBU digital audio stream which is then embedded onto any of the available groups within each of the two video output paths. It is also transmitted on a BNC or D-type on the rear panel.

The audio inputs to the encoder can be selected to either come from the external audio inputs via the BNC or D-type connections on the rear panel or from the audio in the incoming SDI input. Similarly, the metadata input for the encoder can be selected to either come via the external 9-pin D-type on the rear panel or from metadata embedded into the vertical blanking area of the video input.

The unit is controlled locally through the front panel display but can be remote controlled via an ethernet connection using the Sonifex SCi software. The embedding channel routing is controlled using these methods also.

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 channel has independent level control, which can be adjusted from -24dB through to +24dB in 0.5dB steps. The digital inputs and outputs can be selected to be either balanced or unbalanced AES/EBU specification, and can be connected through either BNC or D-type connectors. These I/O connections are paralleled, allowing one type to be used per input or output.

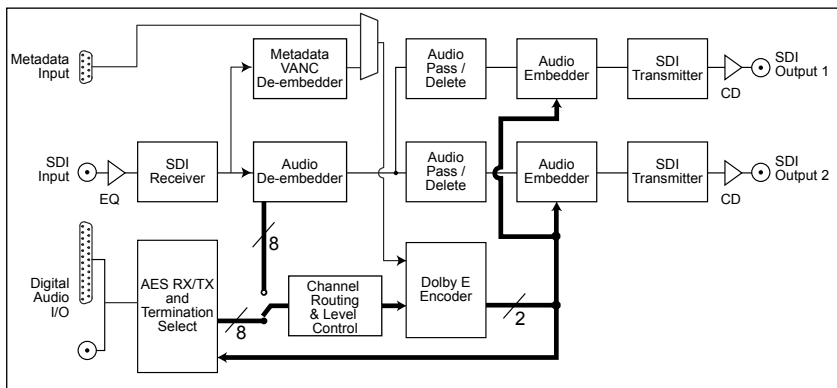
8 general purposes inputs and 8 outputs are available on a rear panel 25 way D-type socket whose function can be programmed using the menu, e.g. alarm outputs for loss of input or encoder errors.



Audio Specification For RB-VHEDD8	
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 Alignment	<0.2UI (3G <0.3UI)
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), SMPTE-425M-A
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) 1080p5F/23.98, 24, 25, 29.97, 30 (RP-211) 1080i/50 (SMPTE-295M) 1080p/50 (SMPTE-295M)
Embedded Audio:	24-bit, 48kHz synchronous SMPTE-272M-C SMPTE-299M
Metadata:	SMPTE-2020M SMPTE-RDD06, 9-Pin D-type socket
Audio Specifications	
Output Sample Rate:	48kHz
Input Sample Rates:	CH1/2 & CH3/4: 32-192kHz CH5/6 & CH7/8: 32-48kHz
Input & Output Impedance:	75Ω/110Ω selectable

Signal Level (Un-terminated):	Unbalanced: 1Vp-p ±20% Balanced: 6.6Vp-p ±20%
Digital Audio I/O Inputs:	8 x digital audio input channels via 4 x BNCs or 25 way D-type socket (AES3)
Outputs:	2 output channels via 1 x BNC or 25 way D-type socket (AES3)
Digital Audio Connectors:	5 x BNC 1 x 25-way D-type socket
LTC Input:	1 x BNC (not used)
Operational Control	
Display:	Vacuum fluorescent display
System Navigation:	Rotary selector with integral push-switch
Additional Conections	
Ethernet Port:	10/100Mbps, RJ-45
Remote Input/Output Port:	25-way 'D'-type socket
Power Supply:	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) 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	
Equipment Type	
RB-VHEDD8	3G/HD/SD-SDI Dolby® E encoder & embedder
Accessories	
RB-RK3:	1U Rear panel rack kit for large Redboxes

RB-VHEDD8 Block Diagram



Redbox - Video Embedders & De-embedders

RB-VHDDD8

3G/HD/SD-SDI Dolby® E & Dolby Digital Decoder & De-Embedder

The RB-VHDDD8 is a Dolby® E & Dolby Digital Decoder and De-Embedder. It de-embeds up to 10 channels of audio within any audio group of an SDI video signal and a further 2 which are sent to the Dolby® Decoder. The outputs from the Decoder or the De-embedder can then be re-embedded onto either of the two SDI outputs and also transmitted on a BNC or D-type situated on the rear panel.

The metadata output from the decoder is transmitted using RS-485 via the external 9-pin D-type on the rear panel and can also be embedded into the vertical blanking space onto either of the two SDI outputs.

The unit is controlled locally through the front panel display but can be remote controlled via an ethernet connection using the Sonifex SCi software, through which metadata can also be viewed. 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 output channel has independent level control which can be adjusted from -24dB through to +24dB in 0.5dB steps. The digital outputs can be selected to be either balanced or unbalanced AES/EBU specification, and can be connected through either BNC or D-type connectors. These output connections are paralleled, allowing one type to be used per output.

8 general purposes inputs and 8 outputs are available on a rear panel 25 way D-type socket whose function can be programmed using the menu, e.g. alarm outputs for loss of input or decoder errors.



Audio Specification For RB-VHDDD8

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 Alignment Jitter:	<0.2UI (3G <0.3UI)
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), SMPTE-425M-A

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)

Embedded Audio:	24-bit, 48kHz synchronous SMPTE-272M-C SMPTE-299M
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Metadata:	SMPTE-2020M SMPTE-RDD06, 9-Pin D-type
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Audio Specifications

Output Sample Rate:	48kHz
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Output Impedance: 75Ω/110Ω selectable

Signal Level (Un-terminated):	Unbalanced: 1Vp-p +/- 20%
Balanced:	6.4Vp-p +/- 20%

Digital Audio Outputs:	12 output channels via 6 x BNC or 25 way D-type socket (AES3)
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Digital Audio Connectors:	6 x BNC 1x 25-way D-type socket
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Operational Control

Display:	Vacuum fluorescent display
System Navigation:	Rotary selector with integral push-switch

Additional Connections

Ethernet Port:	10/100Mbps, RJ-45
Remote Input/Output Port:	25-way 'D'-type socket
Power Supply:	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) 19" (W) x 4.3" (D*) x 1.7" (H) (1U)
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Dimensions (Boxed):	59cm (W) x 27.5cm (D) x 11cm (H) 23.2" (W) x 10.8" (D) x 4.3" (H)
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Weight:	Nett: 1.8kg Gross: 2.3kg Nett: 4.0lb Gross: 5.1lb
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* Note that this product is deeper than standard Redboxes

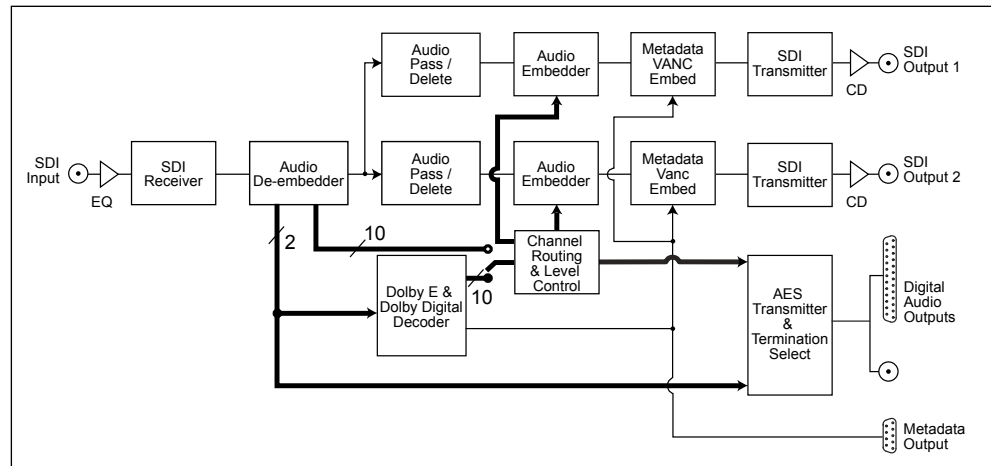
Equipment Type

RB-VHDDD8	3G/HD/SD-SDI Dolby® E & Dolby Digital decoder & de-embedder
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Accessories

RB-RK3:	1U Rear panel rack kit for large Redboxes
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RB-VHDDD8 Block Diagram



VIDEO EMBEDDERS & DE-EMBEDDERS

Talkback & Communications

CM-TBU

Line Powered Telephone Balance Unit

The CM-TBU line-powered telephone balance unit is compatible with all analogue direct exchange lines and provides a 4-wire communications system to interface with the telephone network.

The high degree of separation between send and receive signals makes it suitable for use in telephone IFB (interrupted foldback) applications and the high drive capacity at the 4-wire output enables a presenter's earpiece to be connected directly to the unit without an external amplifier.

This extremely compact unit is powered from the telephone line and provides an interface to a 4-wire circuit with separate level control of send and receive signals.

Optimum rejection of the input signal on the 4-wire output is achieved in a bridge



Front and rear view of the CM-TBU

circuit by adjusting three elements (NULL, R-BAL and C-BAL) via potentiometers which simulate the complex line impedance. This can be used to compensate for local line variations or to adapt to the telephone systems of other countries, where line characteristics may differ. Optimization of the sidetone rejection does not involve the use of any test equipment and can be easily carried out while the system is in use.

Although the signal level being sent to the line can be manually adjusted using the 'SEND LEVEL' control over a wide range, the level control is followed by a limiter that prevents the telephone line signal level becoming overloaded or distorted. The limiter drives a 'LIMIT' LED to indicate the onset of limiting.

Although the output stage can drive a presenter's earpiece in a telephone IFB application, the 'RECEIVE LEVEL' control may not be accessible to the presenter, who is normally situated some distance from the unit. The presenter may then require a local control of the earpiece signal level. The CM-TBU can be used to supply the correct signal level to a suitable battery powered earpiece belt-pack unit.

To enable communication between the 4-wire circuit and the telephone network, once the 4-wire and telephone line cable connections are made to the unit, the 'LINE CONNECT' switch can be pressed to power the unit from the line. This is indicated

by the 'ON' LED, and can either be done after an outgoing call has been dialled on a telephone set connected to the unit, or to answer an incoming call after the 'RING' LED is seen to flash. Note that a telephone set is not required for incoming calls unless an audible ring is required. If the sidetone level at the 4-wire output is found to be excessive, the outgoing signal level can be reduced using the 'SEND LEVEL' control or the balance controls can be adjusted to minimize it.

The unit is supplied with a connector and cable kit that enables connections to be made to both UK Telecom or the universal RJ11 sockets used in most telephone networks around the world.

Technical Specification For CM-TBU

4-Wire Input

Input Impedance:	10kΩ, transformer coupled
Input Connector:	3 pin XLR female connector
Input Level Range:	-12dBu to +4dBu before limiting when connected to an average line

4-Wire Output

Output Impedance:	150Ω, transformer coupled
Output Connector:	3 pin XLR male connector
Output Level Range:	-6dBu to +6dBu, for average line level
Sidetone Rejection:	30dB to 40dB average, depending on line characteristics

2-Wire

Off Hook Voltage:	6V minimum
2 Wire Connectors:	RJ11 socket - line RJ11 socket - handset

Front Panel Operational Controls

Line Connect:	Push button with indicator
Send Level:	Small rotary control
Receive Level:	Large rotary control
Null Balance:	Recessed preset potentiometer
R Balance:	Recessed preset potentiometer
C Balance:	Recessed preset potentiometer
Ring LED:	Indicates incoming ringing
Limit LED:	Indicates limiter active
On LED:	Indicates connection to the telephone line

Equipment Type

CM-TBU	Line powered telephone balance unit
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Physical Specification

Dimensions:	77mm (W) x 83mm (D) x 42mm (H) 3.0" (W) x 3.3" (D) x 1.7" (H)
Weight:	Nett: 0.25kg Gross: 0.75kg Nett: 0.60lbs Gross: 1.7lbs

Features of the CM-TBU

- Isolated, full-duplex 4-wire interface to direct non-digital telephone exchange lines.
- Line powered, requiring no battery or external power.
- Simple optimization of sidetone rejection with any country's telephone system.
- LEDs indicating 'Ring', 'Line Hold' and 'Limit' conditions.
- Input level control with line-sensing limiter and limit indicator.
- High drive output with level control for direct feed to presenter's earpiece, etc.
- Loop-through RJ11 line sockets provide universal connection to line and telephone set.
- Connection to the telephone set is maintained while the unit is in use.
- Small, rugged extruded aluminium case with XLR3 male & female 4-wire connectors.

Talkback & Communications

CM-TLL**Line Powered Telephone Line Listen Unit**

The CM-TLL provides a low-loss interface to receive audio from a telephone line. The line-powered unit is compatible with all analogue direct exchange lines and includes an LED indication of incoming calls. The unit is intended to be used with an earpiece amplifier to receive an audio feed by telephone from a studio.

The line and telephone set are connected to the unit via the RJ11 connectors in order to make an outgoing call. A telephone may not be required if calls are only incoming, because telephone line ringing is indicated by a flashing LED built into the unit. In either case, the 'LINE CONNECT' switch is pressed to make the line connection. The 'ON' LED indicates that the unit is powered and that audio is routed to the line via the XLR plug.



Front and rear view of the CM-TLL

// An audio interface to connect to direct analogue exchange lines and receive calls with electrical isolation from the line. //

Features of the CM-TLL

- Audio interface to direct analogue exchange lines - receive calls with electrical isolation from the line.
- Line powered, requiring no battery or external power.
- LEDs indicating 'Ring' and 'On Hold' conditions.
- Loop-through line sockets provide in-line connection with existing telephone.
- Existing telephone remains connected when the unit is in use.
- Line connections to British or International sockets via supplied cable kit.
- Connection to the telephone set is maintained while the unit is in use.
- Small, rugged extruded aluminium case with XLR3 male 4-wire connector.

Technical Specification For CM-TLL**4-Wire Output**

Output Impedance: 150Ω, transformer coupled

Output Connector: 3 pin XLR male connector

Output Level: Typically 0dBu for average line level

2-Wire

Off Hook Voltage: 6V minimum

2 Wire Connectors: RJ11 socket - line

RJ11 socket - handset

Front Panel Operational Controls

Line Connect: Push button with indicator

Ring LED: Indicates incoming ringing

On LED: Indicates connection to the telephone line

Equipment Type

CM-TLL Line powered telephone line listen unit

Physical Specification

Dimensions: 77mm (W) x 83mm (D) x 42mm (H)
3.0" (W) x 3.3" (D) x 1.7" (H)

Weight: Nett: 0.20kg Gross: 0.70kg
 Nett: 0.50lbs Gross: 1.6lbs

Radio Talkshow System

Phone In 6

Radio Talkshow Telephone Switching System



PI-6R Remote Control Front Panel

Talkshows have never been so easy

The Phone In 6 is a telephone switching system for radio talkshows. It consists of a desktop Remote Control Panel for call control, and a rackmount Base Console which contains all of the audio and telephony connections, including two superb quality digital telephone hybrids. Connected via ethernet, the units make up a simple, easy to use talkshow system.

The Base Console can be loaded with 2, 4, or 6 phone line modules, where each module can have 2 PSTN (normal telephone) lines or 1 ISDN BRI line. The ISDN basic rate interface allows 2 calls to be handled, 1 on each B channel. The PSTN module has 2 interfaces each using a modern digital hybrid interface, which is settable by software to handle a variety of PSTN and PABX systems with varying impedances, call connection & disconnection tones.

The Phone In 6 uses an echo-cancellation DSP algorithm and impedance matching to give around 70dB cancellation, which provides excellent separation of caller & line send audio and elimination of feedback, distortion & echo on the incoming calls. This is close to being the best performance possible on a telephone line & uses the same enhanced echo cancellation algorithms as used on the DHY-03, the best performing telephone hybrid in the world.



PI-6C Base Console Front & Rear



Features List

- Simple installation using CAT5 cabling for the remote control panel.
- Automatic call answering.
- Automatic call disconnection.
- Self-op or call screening modes.
- Caller conferencing.
- Headset included with system.
- Simple switch button control of callers.
- Receive, route, drop or make calls.
- 12 digit keypad to make calls, recall favourite settings and for speed-dialling.
- Two line LCD display.
- Phonebook for automatic dialling.
- Responsive illuminated switch buttons.
- Programmable GPIO.
- Ethernet control/connectivity.
- Two superb quality digital telephone hybrids.
- Modular PSTN & ISDN telephony inputs.
- Hardware metering of send & receive levels.
- Send & receive level adjustment.
- Wide range of impedance matching options.
- Music on hold input.
- AGC, automatic gain control of send & receive signals.
- Echo cancellation.
- Noise gate.
- Automatic caller ducking.
- Option for AES/EBU inputs & outputs.

Radio Talkshow System

Phone In 6

Radio Talkshow Telephone Switching System (continued...)

Easy to Use Menu System

The system can be set up to operate in the manner required using the menu system on the Remote Control Panel. Some of the settings are specific to the install, e.g. country type for the hybrid settings, ring cadences & disconnect tones supplied by the network provider. Other settings can be program specific, e.g. call screening/self-op mode. The latter settings can change with the presenter, or as a particular show changes, so multiple sets of these parameters can be saved into permanent memory within the system which you can easily store and change by using the * key and a single digit number to update those parameters. Use the keyboard to direct dial a call using DTMF dialling, use the hash (#) key to use the phonebook entries or ## to repeat the last used number.

PI-6R Remote Control Panel Rear

Conferencing Calls

Normally 2 calls can be handled independently, each with their own caller output and cleanfeed input. A conference mode is available where up to 2 calls can be mixed within the unit which are presented as a single audio stream on the output with a single cleanfeed input. In conference mode the Phone In 6 mixes the other caller audio into the sent signal so that each caller can hear the station output and the other caller in the conference call.

Call Handling - Self-op & Call Screening Modes

The Phone In 6 provides two different ways of operating: 'Self-op' where the show is entirely controlled by the presenter or using 'Call-screening' where an assistant or producer deals with incoming calls manually and then places the calls to the presenter via the on-air buttons.

For more information, check www.sonifex.co.uk



Technical Specification Phone In 6 System		
Audio Inputs		
Input Impedance – Line Mode (Mix-Minus Audio to Caller):	>10kΩ balanced 0dB, optimum working input	
Input Level Range:	Adjustable 0 to +12dBu	
ADC Signal to Noise:	Better than –89dBFS (RMS A-weighted at 24bit)	
ADC Dynamic Range: >96dB		
ADC Distortion & Noise:	>87dB THD + N at 1kHz	
ADC Frequency Response:	20Hz to 3.8kHz	
Optional Digital Audio:	AES/EBU 110 Ω balanced inputs (IEC60968)	
Sample Rates:	32kHz to 96kHz	
OdBFS Reference Level:	12dBu or 18dBu	
Audio Outputs		
Output Impedance (Received Audio From Caller):	<50Ω balanced floating 0dB, optimum working input	
Output Level Range:	Adjustable –6 to +6dBu	
DAC Signal to Noise:	Better than –85dBFS (RMS A-weighted at 24bit)	
DAC Dynamic Range: >97dB		
DAC Distortion & Noise:	>83dB THD + N at 1kHz	
DAC Frequency Response:	20Hz to 3.8kHz	
Optional Digital Audio:	AES/EBU 110Ω balanced outputs (IEC60968)	
Sample Rates:	32kHz to 96kHz	
OdBFS Reference Level:	12dBu or 18dBu	
ISDN Telephone Connection		
ISDN Interface:	S0 (BRI) / I.430	
D Channel Protocol:	DSS1, National 1, SESS, JATE (INS64), AUSTEL, X.31, VN 4, TPH 1962	
B Channel Protocol:	G.711	
Regulatory Approval:	CE	
PSTN Telephone Connection		
Send to Line Limiting Input:	+4dBu	
Bandwidth to Telephone Line:	125Hz – 3.8kHz, -3dB ref 1kHz	
Telephone Line Impedance:	Nominally 600Ω - set complex impedances via country code	
Telephone Line Impedance Range:	300Ω to 1500Ω	
Telephone Rejection:	78dB on 1kHz tone, typically 75dB on complex waveforms, reference peak level of 0dB	
Ring Detector Sensitivity:	1 ring to 8 rings	
Connections (PI-6C Base Console)		
Music On Hold Input:	3 pin XLR socket, balanced	
Hybrid 1 & 2 Inputs:	2 x pin XLR socket, balanced	
Hybrid 1 & 2 Outputs:	2 x pin XLR plug, balanced	
Link to RCP:	RJ45 socket, link using CAT5 cable	
Ethernet Port:	RJ45 socket	
RS232 Serial Comms Port:	9-way 'D'-type socket	
GPOI/O Remote I/O Port:	9-way 'D'-type socket	
Mains Input:	Filtered IEC, continuously rated 85-264V AC @ 47-63Hz, fused 1A, max 10W	
Connections (PI-6R Remote Control Panel)		
Local Headset:	2 x 3.5mm jack socket (mic input & headphones output)	
Link to BC:	RJ45 socket, link using CAT5 cable	
Ethernet Port:	RJ45 socket	
Mains Input:	Filtered IEC, continuously rated 85-264V AC @ 47-63Hz, fused 1A, max 10W	
Physical Specifications		
PI-6C Base Console		
Dimensions (Boxed):	60cm (W) x 34cm (D) x 7cm (H) 23.6" (W) x 13.4" (D) x 2.8" (H)	
Weight:	Nett: 2.2kg Gross: 3.2kg	Nett: 4.8lbs Gross: 7.0lbs
PI-6R Remote Control Panel		
Dimensions (Boxed):	32cm (W) x 29cm (D) x 15cm (H) 12.6" (W) x 11.4" (D) x 5.9" (H)	
Weight:	Nett: 1.8kg Gross: 2.9kg	Nett: 4.0lbs Gross: 6.4lbs
Equipment Type		
PI-6PSTN4	Phone In 6 system, 1 x PI-6C, 1 x PI-6R & 2 x PI-PSTN2	
PI-6PSTN6	Phone In 6 system, 1 x PI-6C, 1 x PI-6R & 3 x PI-PSTN2	
PI-6ISDN6	Phone In 6 system, 1 x PI-6C, 1 x PI-6R & 3 x PI-ISDN2	
PI-6C	Phone In 6 Base Console	
PI-6R	Phone In 6 Remote Control Panel	
PI-PSTN2	Phone In 6 PSTN Card	
PI-ISDN2	Phone In 6 ISDN Card	

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PHONE IN 6