



**RDL**<sup>®</sup>  
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

# HALF-RACK SERIES

## Model HR-DAC1

### Digital to Analog Audio Converter



- Broadcast Quality Audio Digital to Analog Conversion
- Input: AES/EBU, Coaxial or Optical S/PDIF, AES-3/ID
- Outputs: Balanced and Unbalanced Stereo Audio
- Adjustable Audio Output Gain Trim
- Dual-LED Audio Output Level VU Metering
- Operation Up to 24 bits, 192 kHz
- Exclusive **SURE-LOK™** Auto-Recovery Sentinel
- Transformer Isolated AES/EBU Input
- Automatic Sample Rate Detection with Indicators
- Digital Signal Lock Indicator for Valid Inputs

The HR-DAC1 is an RDL HALF-RACK product, featuring an all metal chassis and the advanced circuitry for which RDL products are known. HALF-RACKs may be operated free-standing using the included feet or may be conveniently rack mounted using available rack-mount adapters.

**APPLICATION:** The HR-DAC1 is the ideal choice in installations requiring high quality analog audio from an AES/EBU, AES-3/ID or S/PDIF digital audio source. The HR-DAC1 automatically detects a valid input on any of the four input jacks: S/PDIF optical, S/PDIF coaxial, AES-3/ID or AES/EBU. The AES/EBU input is 110  $\Omega$  terminated; the S/PDIF coaxial and AES-3/ID jacks are 75  $\Omega$  terminated. A front-panel LOCK LED indicates the presence of a valid digital audio source without any phase-lock or bit errors. Sample rates from 32 kHz to 192 kHz are supported with front-panel LEDs to indicate standard digital audio rates of 44.1 kHz, 48 kHz, 96 kHz and 192 kHz.

The digital input is converted to stereo audio using high speed delta-sigma conversion, digital filtering and filtered wideband analog drivers. The high performance, low-noise converters are supplemented with digitally controlled analog gating to produce unparalleled performance. The LEFT and RIGHT output levels are individually adjustable using front-panel knobs. A dual-LED VU meter displays the output level of each channel to facilitate level adjustments. Balanced +4 dBu audio outputs are provided on a rear-panel detachable terminal block and on XLR jacks. Unbalanced -10 dBV outputs are provided on phono jacks. For installations requiring fixed, calibrated output levels, the HR-DAC1 front-panel knobs may be removed and replaced with security covers, available separately (RDL SC-2 Kit of two security caps with tightening tool).

The HR-DAC1 is powered from 24 Vdc, which may be connected through the detachable terminal block or through the dc power jack. A front-panel power switch is provided.

RDL's proprietary **SURE-LOK™** auto-recovery supervision monitors possible causes of latch-up and reinitiates digital signal lock, bringing a high level of stability to digital to analog audio signal conversion under the variety of conditions encountered in professional environments.

Use the HR-DAC1 individually, or combine it with other RDL products as part of a complete audio/video system.

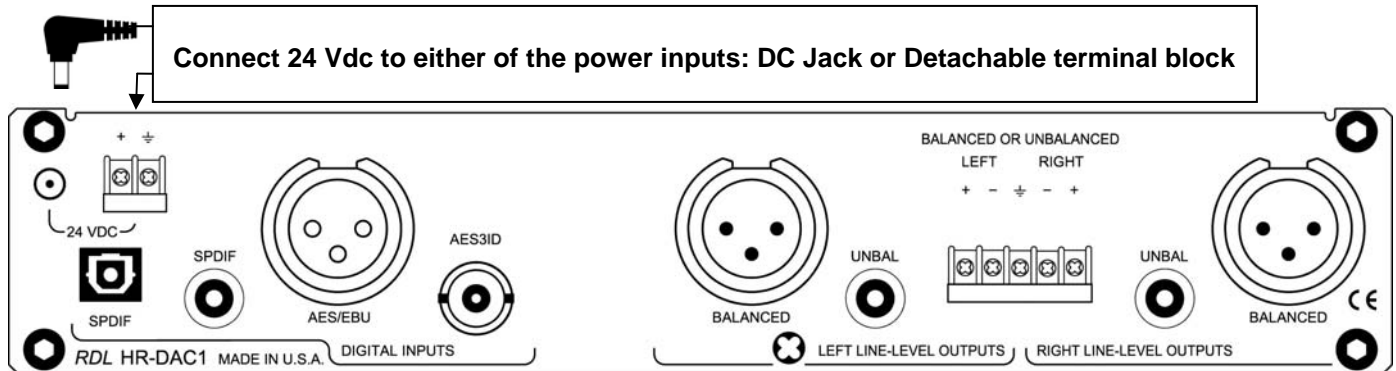
# HALF-RACK SERIES

## Model HR-DAC1

### Digital to Analog Audio Converter

## Installation/Operation

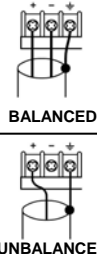
**CE** EN55103-1 E1-E5; EN55103-2 E1-E4  
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.



Connect one digital audio source to the appropriate input jack:

S/PDIF OPTICAL,  
S/PDIF COAXIAL,  
AES-3ID or  
AES/EBU

#### TERMINAL BLOCK WIRING



#### Output connections:

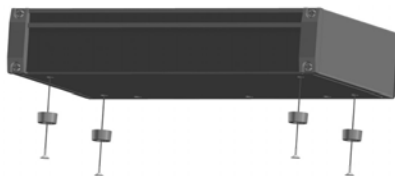
Connect balanced +4 dBu line-level output cables, left and right, to the XLR jacks.

Connect unbalanced -10 dBV line-level output cables, left and right, to the phono jacks.

For hard-wired installations, connect balanced (or unbalanced) audio cables to the detachable terminal block.

(Note: Unbalanced outputs connected to the terminal block will be fed at a -2 dBu level for a front-panel dual-LED VU meter reading of +4 dBu. Use the phono jacks for standard -10 dBV output level.)

#### MOUNTING



For free-standing operation, use the four provided machine screws to mount the feet to the bottom of the module as shown.

OR

Use the four provided machine screws to secure the module to an optional RDL mount, such as an HR-RA2 Rack Adapter.

#### LABELING

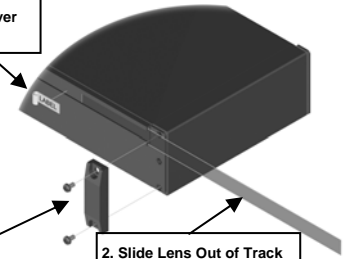
The functions of this product can be conveniently and professionally labeled with a hand-held label printer equipped with 1/4" wide clear label tape.

4. Slide Lens back in position, covering the clear adhesive labels. Replace the End Cap.

3. Place Adhesive Label over Laminate in Track

1. Remove End Cap

2. Slide Lens Out of Track



#### TYPICAL PERFORMANCE

Inputs (4):	110 Ω AES/EBU XLR, transformer isolated; S/PDIF optical; 75 Ω S/PDIF coaxial phono jack; 75 Ω AES-3ID BNC
Outputs (6):	Left and Right: 150 Ω balanced XLR, +4 dBu; 150 Ω balanced terminal block, +4 dBu; -10 dBV unbalanced phono jack
Sample Rate:	32 kHz to 192 kHz
Resolution:	16 to 24 bits
Frequency Response:	5 Hz to 24 kHz (+/- 0.2 dB into high impedance load)
THD+N:	< 0.002% (20 Hz to 20 KHz, below +22 dBu)
Harmonic attenuation (typ.):	2 <sup>nd</sup> : -105 dB; 3 <sup>rd</sup> : -108 dB; 4 <sup>th</sup> : -115 dB; 5 <sup>th</sup> : -110 dB; 7 <sup>th</sup> : -115 dB
Crosstalk:	< -100 dB (5 Hz to 3 kHz); < -90 dB (3 kHz to 20 kHz)
Output Level:	Adjustable from OFF to +24 dBu (input = 0 dBFS); Left and Right front-panel user controls
Phase L→R:	±0.15° (5 Hz to 20 kHz)
Residual Noise:	< -100 dB (10 to 20 kHz, -120 dBFS input, reference +22 dBu @ 0 dBFS) < -110 dB (locked to digital input, digital audio signals off, reference +22 dBu @ 0 dBFS) > 110 dB (resolution 24-bit unweighted)
Dynamic Range:	
Indicators (10):	<b>POWER</b> LED, blue; <b>LOCK</b> LED, green (locked to valid input signal); <b>RATE</b> : 44.1 kHz, 48 kHz, 96 kHz, 192 kHz; dual-LED VU meter, <b>LEFT</b> and <b>RIGHT</b>
Standards:	AES3-2003, IEC60958
Power Requirement:	24 to 33 Vdc @ 175 mA, Ground-referenced
Mounting:	Rack-mount using optional rack adapters such as HR-RA2; or operate free-standing (feet included)
Dimensions:	Height: 1.7 in 4.3 cm Length: 8.6 in 20.6 cm Depth: 4.59 in 11.66 cm

Radio Design Labs Technical Support Centers

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