

## RACK-UP® SERIES

### Models RU-BNF & RU-BNFP

### Format-A Bi-Directional Network Interface

- Converts RDL Format-A and Aux Source to Four Dante Network Channels
- Easy Installation with Format-A Connections on RJ45 through CATx Cable
- Format-A Audio Sources from Pairs A, B and C Converted to Dante
- Fourth Dante Audio Channel Fed from Unbalanced or Balanced Aux Line Input
- Front-Panel Gain Adjustment with Dual-LED VU Meter for Aux Input
- Signal LEDs Indicate Audio for Each of the Three Audio Source Format-A Pairs
- Converts Four Dante Network Audio Signals to RDL Format-A and Aux
- Three Dante Audio Signals Feed Format-A Output Pairs A, B and C
- Fourth Dante Audio Signal Feeds Auxiliary Balanced +4 dBu Line Output
- Format-A Pairs are Distributed to Three Separate Format-A Output Jacks
- Signal LEDs Indicate Audio for Each of the Four Received Dante Audio Signals
- External 24 Vdc Supply Powers All Connected Format-A Modules through RJ45 Jacks
- PoE (RU-BNFP) Powers Format-A Input and Primary Format-A Output RJ45 Jacks
- High Resolution 24 Bit Analog to Digital and Digital to Analog Conversion
- Legendary RDL Analog Filtering Enhances Superb Audio Performance
- LED Indicators Show Network Sync Status
- Normal or Hot-Standby Operation from PoE (Model RU-BNFP)
- Compatible with Wide Array of RDL Format-A Active and Passive Senders and Receivers
- Equipped for Rack Mounting or Surface Mounting



The RU-BNF modules are Dante audio network interface products compatible with RDL Format-A twisted pair products. These modules are designed to be mounted in equipment racks, closets, conference tables and on shelves or backboards in commercial/industrial installations.

**APPLICATION:** The RU-BNF is an RDL Format-A sender/receiver that connects to a Dante-enabled network, providing all the features of an RDL RU-FN Format A to Network Interface and an RU-NFD Network to Format-A Interface/Distributor.

#### Network to Format-A Interface/Distributor Section

The RU-BNF converts three Dante audio channels to RDL Format-A. Each network channel corresponds to Pair A, B or C of the Format-A outputs. The unit converts a fourth Dante audio channel to a balanced line-level AUX output. One front-panel green signal LED corresponds to each of the four Dante input channels. Received audio level is indicated on the variable-intensity LED indicator, facilitating setup when a networked computer is not connected at the module's location.

The Format-A output is distributed to three separate rear-panel RJ45 jacks. Each Format-A output jack provides up to 200 mA of power to connected Format-A receivers. Multiple receivers may be daisy chained from one output jack, or may be connected by home run to each of the three outputs. Higher current Format-A receivers, such as RDL D-PSP1A powered Decora-style speakers, are to be individually connected to a separate output jack.

The RU-BNF output jacks support the entire range of Format-A receivers, making each output pair available for end-user connection on various wall plates, or feeding other equipment using rack-mounted, shelf-mounted or utility Format-A receivers. The wide array of Format-A receivers provide compatibility with commercial audio equipment operating at standard professional levels. High resolution digital audio converters coupled with RDL's renowned analog filters provide superior fidelity with a very low noise floor. Each Format-A receiver may be connected near the RU-BNF or up to several thousand feet distant.

#### Format-A to Network Interface Section

The RU-BNF converts the three Format-A audio pairs to Dante networked digital audio channels. Each network channel corresponds to Pair A, B or C of the Format-A input. The unit converts a fourth input, balanced or unbalanced line-level AUX, to Dante.

One front-panel green signal LED corresponds to each of the three Format-A input channels. Received audio level is indicated on the variable-intensity LED indicator, facilitating setup when a networked computer is not connected at the module's location. A Dual-LED VU meter facilitates adjustment of the front-panel AUX input gain control. The AUX input supports the complete range of normal unbalanced and balanced line-level sources.

The Format-A input jack provides up to 200 mA of power to connected Format-A senders. Multiple senders may be daisy chained from the Format-A input jack.

The RU-BNF Format-A input supports the entire range of Format-A senders, making each input pair available for end-user connection on various wall plates, or receiving signals from other equipment using rack-mounted, shelf-mounted or utility Format-A senders. The wide array of Format-A senders provides compatibility with commercial audio equipment operating at standard professional levels. High resolution digital audio converters coupled with RDL's renowned analog filters provide superior fidelity with a very low noise floor. Each Format-A sender may be connected near the RU-BNF or up to several thousand feet distant.

The RU-BNF is powered from an external 24 Vdc power supply, available separately. The external supply powers the RU-BNF, Format-A senders connected to the Format-A input jack and Format-A receivers connected to all three Format-A outputs. The RU-BNFP is equipped for PoE which powers the RU-BNF, Format-A senders connected to the Format-A input, and Format-A receivers connected to the primary Format-A output jack. Audio is also distributed to the other two output jacks. Remote Format-A receivers connected to those other two output jacks are only powered from the RU-BNFP if an external 24 Vdc power supply is connected. If PoE power and an external 24 Vdc supply are both feeding an RU-BNFP, the unit will run from the external supply and will seamlessly switch over to PoE power upon loss of the external 24 V supply. The power feeding each Format-A RJ45 connector is separately protected by an automatically resetting fuse. A power LED is associated with each connector, facilitating identification of wiring faults.

PoE relies on the use of a PoE enabled network switch. The RU-BNF will reserve power from the switch even while being powered from an external 24 Vdc supply.

The RU-BNF is constructed in a durable, professional all-metal enclosure suitable for free-standing, surface-mounted or rack-mounted operation. This full-featured product is engineered and manufactured in the U.S.A for continuous duty in demanding installations. Built to last. Built to outperform.



**RDL**<sup>®</sup>  
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SPECIALISTS IN PRACTICAL PRECISION ENGINEERING<sup>™</sup>



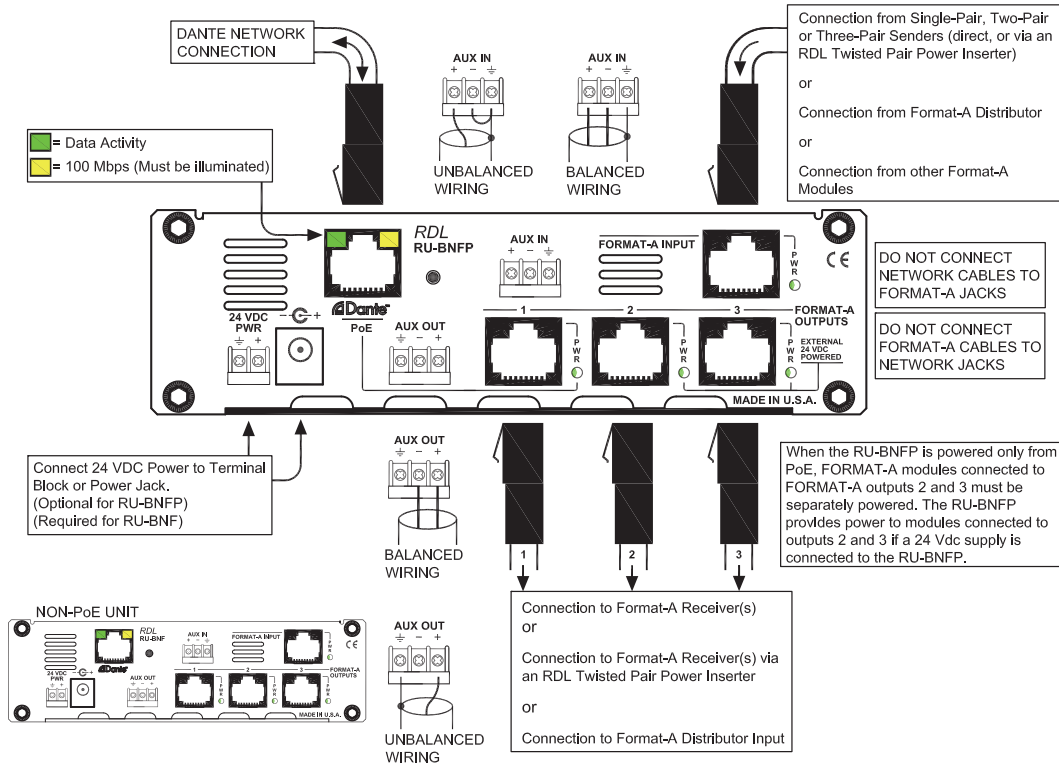
## RACK-UP<sup>®</sup> SERIES Models RU-BNF & RU-BNFP Format-A Bi-Directional Network Interface

## Installation/Operation



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.



### TYPICAL PERFORMANCE

Network Connector:	RJ45 with Link and Speed indicators
Digital Audio Ethernet Protocol:	Dante
Transmission Rate:	100 Mbps
Sample Rates Supported:	44.1 kHz, 48 kHz (default)
Bit Depth Supported:	24 bits
Audio Operating Levels:	-20 dBFS = +4 dBu

### Format-A to Network Interface Section

<b>Format-A Input</b>	RDL Format-A RJ45
Format-A Signal Pairs Used (3):	A, B, C
Frequency Response:	20 Hz to 20 kHz ( $\pm 0.5$ dB)
THD+N:	< 0.1%
Noise below +4 dBu:	< -75 dB
CMRR:	> 90 dB (50 to 120 Hz, any input pair)
Crosstalk:	> 80 dB (20 Hz to 20 kHz)
Headroom above +4 dBu:	> 18 dB

### AUX Input

Input:	Balanced, detachable terminal block
Input Impedance:	> 20 k $\Omega$
Input Level for +4 dBu:	-16 dBu to +12 dBu, +22 dBu maximum
Frequency Response:	20 Hz to 20 kHz ( $\pm 0.75$ dB)
THD+N:	< 0.1%
Noise below +4 dBu/-18 dBFS:	< -75 dB
CMRR:	> 60 dB (50 to 120 Hz)
Crosstalk:	< 80 dB (20 Hz to 20 kHz)
Headroom above +4 dBu:	> 18 dB

### Network to Format-A Interface/Distributor Section

#### Format-A Outputs

Format-A Signal Pairs Used (3):

Frequency Response:	RDL Format-A RJ45 (3)
THD+N:	A, B, C (each Format-A output)
Noise below +4 dBu:	20 Hz to 20 kHz ( $\pm 0.75$ dB)
Crosstalk:	< 0.1%
Headroom above +4 dBu:	< -85 dB (pair active); < -100 dB (pair muted)
	< 80 dB (20 Hz to 20 kHz)
	> 18 dB

#### AUX Output

Output:	Balanced, detachable terminal block
Output Level:	+4 dBu (nominal)
Output Impedance:	150 $\Omega$ balanced; 75 $\Omega$ unbalanced
Frequency Response:	20 Hz to 20 kHz ( $\pm 0.5$ dB)
THD+N:	< 0.1%
Noise below +4 dBu:	< -75 dB
Crosstalk:	< 80 dB (20 Hz to 20 kHz)
Headroom above +4 dBu:	> 18 dB

#### Indicators (18):

Power Connections (2):	Power In (1); Power Out (4); Audio Signal LEDs (7);
Ambient Operating Environment:	AUX Dual-LED VU Meter (2); Network Sys and Sync (2),
Power Requirement:	Ethernet Link and Speed (2)
	Power Jack; Detachable Terminal Block
	0° C to 40° C
	24 Vdc @ 150 mA plus connected loads,
	or PoE (RU-BNFP)
PoE (RU-BNFP):	Class 0, IEEE 802.3af
Dimensions:	5.8" (15 cm) W; 1.7" (4.3 cm) H; 5.2" (13.2 cm) D
Package Type:	Cardboard Box
Package Dimensions:	6 x 6 x 2.625 in.
Shipping Weight:	1.72 lbs. (RU-BNF); 1.745 lbs. (RU-BNFP)
WEED weight:	1.46 lbs. (RU-BNF); 1.485 lbs. (RU-BNFP)
Tariff code:	8517.18.0050

### Radio Design Labs Technical Support Centers

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