



RDL®

High Performance Audio Products. Made in America.

RACK-UP® SERIES

Model RU-RN22

Mic/Line Bi-Directional Network Interface 2x2



- Default Configuration Converts Two Mic or Line Inputs to Dante/AES67
- Default Also Converts Two Dante/AES67 Channels to Mic or Line Outputs
- 4 X 4 Mixing Matrix Signal Paths and DSP Filters Expand System Design Flexibility
- Ultra-Low Latency: 2 ms Analog to Digital to Analog
- Analog Inputs and Outputs on XLR or Detachable Terminal Block
- Terminal Block Connections may be Wired Balanced or Unbalanced
- Analog Input Gains Adjustable From 0 dB to 60 dB in 3.3 dB steps
- P48 Phantom Individually Selectable per Input or Automatically Gain-Dependent
- Selectable Audio Compressor/Limiter on Each Analog Input
- One DSP Filter for Each Analog and Dante/AES67 Input
- Three DSP Filters for Each Analog and Dante/AES67 Output
- Selectable DSP Filters: None, Hi-Pass, Lo-Pass, Shelf Hi/Lo, Notch Boost/Cut
- All DSP Filters are Fully Programmable
- Each Output Stage Receives Audio through a Four-Channel Mixer
- Each Output Mixer Source is Adjustable From Unity (Fully On) to OFF
- Analog Outputs are Protected from External Phantom Voltages up to P48
- Each Analog Output Equipped with a Selectable 180° Polarity "Phase" Inverter
- Each Analog Output Equipped with a Selectable Line to Mic Attenuator Pad
- Analog Outputs Adjust in 1 dB Steps Below +4 dBu Line or -46 dBu Mic Level
- Dante/AES67 and Analog Outputs Adjustable in 1 dB Steps 0 to -63 dB then OFF
- Remote Controllable Using Compatible RDL Remote Controls
- Multicolor LED Indication of Audio Levels, Sync and Signal Presence
- Extremely Low Noise < -69 dB Below Operating Level at 60 dB (Max) Input Gain
- Operates at 48 kHz or 96 kHz with High Resolution 24 Bit A/D and D/A Conversion
- All Operating Parameters and Settings Programmed using RDL CONSOLE

The RU-RN22 modules are Dante/AES67 audio network interface products compatible with microphones and line-level audio equipment inputs and outputs. 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-RN22 has two analog mic/line inputs, two Dante/AES67 network digital audio channel inputs, two Dante/AES67 network audio channel outputs and two analog mic/line outputs. Each output stage, local analog or network digital, is driven by an incorporated mixer fed from all four RU-RN22 inputs. Independent control of all mixer levels plus multiple DSP filters with adjustable parameters make the RU-RN22 far more versatile than a basic format converter. Each DSP filter may be set to None (audio pass-through), High-Pass, Low-Pass, Shelf High/Low or Notch Boost/Cut. Multiple filters may be set to the same function to obtain higher order filtering.

The RU-RN22 factory default settings provide high-quality converters that feed professional line-level outputs from two Dante/AES67 network received audio channels. Those settings also convert two analog line-level, dynamic or condenser microphone sources to Dante/AES67 network audio channels. The RU-RN22 provides an XLR or a detachable terminal block for connection to each analog input or output. Normal operating line level is +4 dBu balanced for -18 dBFS. The balanced terminal blocks may be wired unbalanced.



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Network to Line Level Interface Settings (Factory Default)

The RU-RN22 receives two Dante/AES67 audio channels through the network. Each channel passes unaltered through a DSP filter (set to NONE), then through the two mixers associated with AUDIO OUTPUT 1 and AUDIO OUTPUT 2. All other inputs on those two mixers are set to OFF. Each mixer output signal path includes three DSP filters, a polarity inversion “phase” switch, an output attenuator (volume control) and Mic/Line pad, none of which are active.

Mic or Line Level to Network Interface Settings (Factory Default)

The RU-RN22 receives two analog audio sources on rear-panel connectors. The inputs default to line level with phantom voltage off and the compressor/limiter disabled. Each channel passes unaltered through a DSP FILTER (set to NONE), then through the two mixers associated with audio OUTPUT 1 DANTE/AES67 and OUTPUT 2 DANTE/AES67. The signals each pass unaltered through three DSP FILTERS (set to NONE) and the OUTPUT ATTENUATOR that may be used as an output volume control.

Customized Settings

RDL CONSOLE network software provides a range of settings allowing the installer or user to reconfigure the RU-RN22.

Connection of microphones to the AUDIO INPUTs may require P48 phantom voltage to be enabled, the PREAMP gain increased by as much as 60 dB, enabling the COMPRESSOR/LIMITER and setting the associated DSP FILTER as a High-Pass and defining its cutoff frequency.

Default settings, with only one mixer input turned up, effectively use the MIXER level adjustments to route audio. Turning up two or more mixer inputs can send a mix to the associated output. A common use would produce a mono sum from a stereo source.

If the MIXERs are used to connect analog input stages to analog output stages, then half the RU-RN22 becomes an audio processor with analog in, analog out, preamps, compression, four programmable DSP FILTERs and output volume control. Likewise, network digital audio sources may feed network outputs through four DSP FILTERs and volume control.

Consult the RU-RN22 functional block diagram to explore the wide range of configurations made possible by the mixing matrix design.

Common Characteristics

The RU-RN22 can be powered from PoE (Power over Ethernet) or an external 24 V DC power supply, available separately. User volume level adjustment may be provided using compatible RDL remote controls, available separately.

The RU-RN22's superior performance specifications make it ideally suited to the most demanding installations, and an exceptional value in commercial networked audio systems.

The RU-RN22 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.



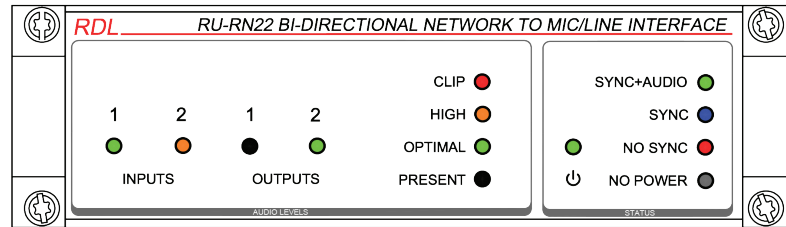
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ANALOG AUDIO LEVELS

Analog LED thresholds
(4ms refresh rate)

< -61	dBFS	OFF
-60 to -23	dBFS	WHITE
-24 to -11	dBFS	GREEN
-12 to -1	dBFS	ORANGE
-1 to 0	dBFS	RED

All operating functions and parameters of the unit are set using RDL Console software version 3.0 or newer.

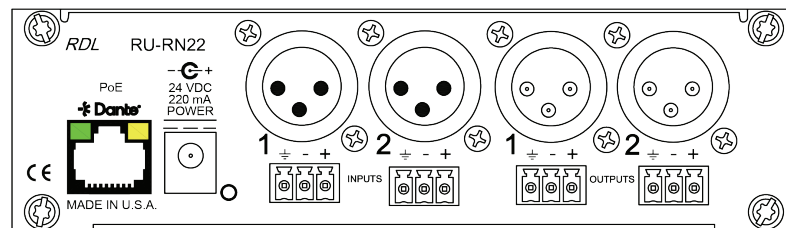
DEVICE STATUS

SYNC+AUDIO = (GREEN) when ANY DANTE / AES67 traffic is present.

SYNC = (BLUE) when device is synchronized to the network PTP leader.

NO SYNC = (RED) when device is not synchronized to the network PTP leader.

NO POWER = (OFF) when unit is not receiving valid power from either PoE or a locally connected 24 Vdc power supply.

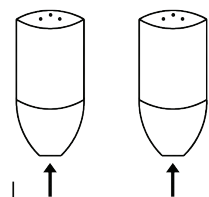


■ = Data Activity
■ = 100 Mbps
(Must be illuminated)

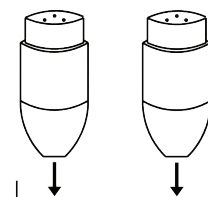
Connect optional 24 VDC Power Supply if unit is not to be PoE powered.

NETWORK CONNECTION

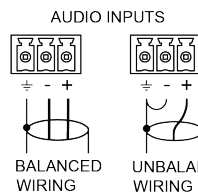
The analog audio connections can be made using EITHER the XLR or terminal block for each input or output.



Balanced XLR Input Accepts Mic or Line Level Signals

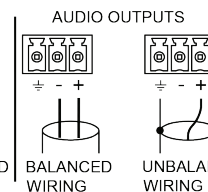


Balanced XLR Outputs Provide Mic or Line Level Signals



BALANCED WIRING

UNBALANCED WIRING



BALANCED WIRING

UNBALANCED WIRING

Safety Instructions/Consignes de sécurité/
Instrucciones de seguridad/Sicherheitshinweise:



EU Importer:
Importateur de l'UE:
Importador de la UE:
EU-Importeur:

RDL Europe B.V.
Joan Muyskenweg 124
1114 AN Amsterdam

**For Software and Programming
Information See Product Page at
rdlnet.com**

Radio Design Labs Technical Support Centers

U.S.A. (800) 933-1780, (928) 778-3554 - Europe [NH Amsterdam-Duivendrecht] (+ +31) 20-6238 983

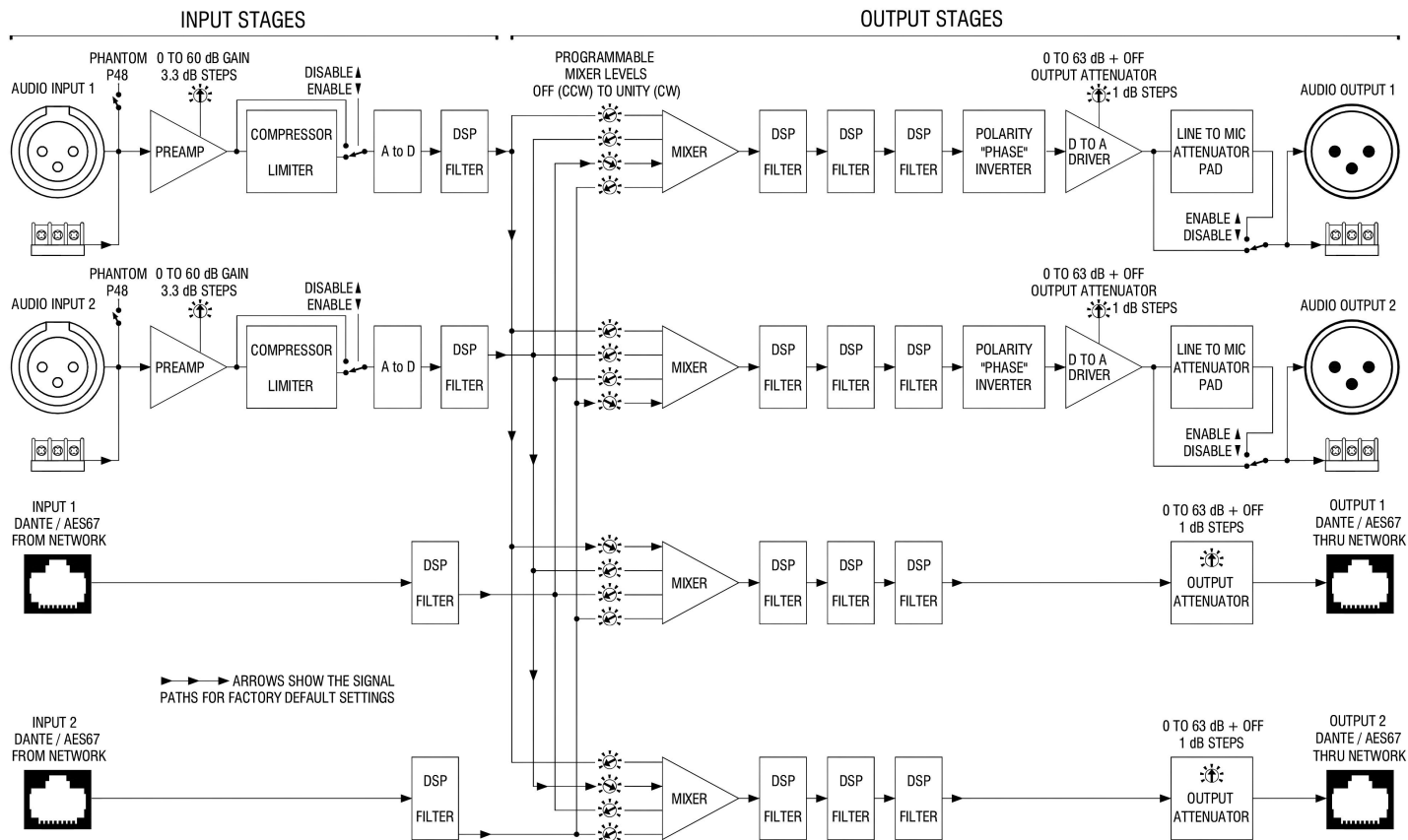


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Functional Block Diagram



NOTE: FOUR RJ45 JACKS ARE SHOWN HERE TO SIMPLIFY THE SIGNAL PATH. ALL SIGNALS FLOW THROUGH A SINGLE RJ45 ON THE PRODUCT.

RDL

RU-RN22 BI-DIRECTIONAL NETWORK MIC/LINE INTERFACE

REV A



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Mic/Line Bi-Directional Network Interface 2x2

Installation/Operation



Declaration of Conformity available from rdlnet.com.
Sole EMC specifications provided on product package.
Specifications are subject to change without notice.

TYPICAL PERFORMANCE

Network Connector:	RJ45 with Link and Speed indicators
Digital Audio Ethernet Protocol:	Dante or AES67
Transmission Rate:	100 Mbps
Sample Rates Supported:	44.1 kHz, 48 kHz (default), 88.2 kHz, 96 kHz
Bit Depth Supported:	24 bits
Audio Operating Level:	-18 dBFS = +4 dBu
Reference Level:	0 dBFS = +22 dBu

Mic/Line Inputs to Network Section:

Inputs (2):	Balanced, XLR (female) or Detachable Terminal Block (may be wired unbalanced)
Gain:	Software adjustable, 0 dB to 60 dB, 3.33 dB steps
Input Level (for +4 dBu/-18 dBFS):	-56 dBu minimum, +4 dBu , maximum
Input Level (maximum):	+22 dBu
Input Impedance:	> 1.2 k Ω
Phantom Power:	P48, software-selectable; programmable for automatic enable when MIC gain is selected
Standard for Phantom:	IEC 61938:2013
Frequency Response:	20 Hz to 20 kHz (+0, -0.75 dB)
Equivalent Input Noise EIN:	< -129 dBu (60 dB gain); < -131 dBu A-Weighted
Noise below -18 dBFS (20 to 20 kHz):	Mic: < -69 dB (60 dB gain), < -79 dB (50 dB gain); Line: < -100 dB
THD+N:	< 0.05% (20 Hz to 20 kHz, +4 dBu/-18 dBFS)
CMRR:	Below Noise Floor (50 Hz to 150 Hz)
Crosstalk:	< -70 dB (20 Hz to 20 kHz, any channel to any channel, 0 dB gain to 60 dB gain)

Network to Line Outputs Section:

Outputs (2):	Balanced, XLR (male) or Detachable Terminal Block (may be wired unbalanced)
Output Attenuation Pads (2):	Software-selectable, Line Output (no attenuation), Mic Output (50 dB attenuation)
Output Level (operating):	Line: +4 dBu (nominal) balanced; Mic: -46 dBu (nominal) balanced
Output Level (maximum):	Line: +22 dBu balanced; Mic: -28 dBu balanced
Output Attenuators (2):	Software-controlled, 0 to -63 dB and OFF, 1 dB steps (per analog output)
Output Impedance:	150 Ω balanced
Frequency Response:	20 Hz to 20 kHz (+0, -0.75 dB)
THD+N:	< 0.01% (20 Hz to 20 kHz, +4 dBu/-18 dBFS)
Noise below -18 dBFS (20 to 20 kHz):	< -85 dB (20 Hz to 20 kHz, +4 dBu/-18 dBFS); < -103 dB (below +22 dBu)
Crosstalk:	Below Noise Floor (1 kHz at operating level, output to output); < -74 dB (20 Hz to 20 kHz)
Headroom above +4 dBu:	> 18 dB
Indicators (7):	Ethernet Link and Speed (2, rear panel); Signal per audio channel and Power (5, front panel)
Ambient Operating Environment:	0° C to 40° C
Power Requirement:	PoE Class 0, IEEE 802.3af, or 24 Vdc @ 220 mA (5.28 W)
Specification Conditions:	Gain/Level $\pm$ 1 dB; Source termination 150 Ω
Dimensions:	5.74" (14.58 cm) W; 1.64" (4.17 cm) H; 6.4" (16.26 cm) D
Package Type:	Cardboard Box
Package Dimensions:	3.25" (8.26 cm) H X 7.8" (19.8 cm) W X 7.25" (18.4 cm) D
Shipping Weight:	2.17 lbs. (0.98 kg)
WEEE weight:	1.81 lbs. (0.82 kg)