Description

The NM 84 Network Mic Preamplifier allows sending eight Channels and receiving four Channels of high quality audio over a single, low cost computer network cable. The NM 84 provides a cost effective solution for audio routing problems in venues such as arenas, convention centers, churches, schools and theme parks. Unlike point-to-point distribution systems, the NM 84 features a highly flexible network protocol, allowing full control of audio destination and source. It is possible to build flexible audio networks on a large or small scale by using multiple NM 84s or by combining NM 84s with Rane NM 48 Network Preamplifiers.

The NM 84 provides eight studio grade microphone preamplifiers. Each Input features selectable 48 volt phantom power, MIC and LINE modes, coarse gain select, high- and low-cut filters, gain trim, limiter and 10-segment meter. Each Input routes to a balanced, direct Output.

The NM 84 Network Preamplifier features Peak Audio 100Base-T CobraNet™ technology. It allows deterministic (fixed propagation delay), 100Base-T transport of up to 64 channels of audio on a single computer network cable. (A switched network can transport up to 128 audio channels over a single network cable.) Each Bundle can contain up to eight 20-bit CobraNet Audio Channels. In addition, the NM 84 may receive four Channels of 24-bit audio from the 100Base-T network. Network control is possible using the rear panel Memory Recall Port (MRP), SNMP or the ActiveX controls

provided by Rane. All NM 84 parameters may be controlled from the front panel interface.

24-bit A/D converters provide the digital audio signal for 100Base-T transport. Audio may be transmitted in 20- or 24-bit mode. In 20-bit mode, all eight Inputs are transmitted on a single CobraNet Bundle. In 24-bit mode, two CobraNet Bundles are required. The user may determine how many Cobranet Audio Channels (maximum of 7) are transmitted on each of the two specified Bundles (the NM 84 can identify the addresses of 999 Bundles).

The NM 84 also provides four high-quality Monitor Output Channels. Each may be assigned to monitor any one of the eight possible Cobranet Audio Channels of any 100Base-T Bundle or any one of the eight possible Local Channels. Monitor Outs feature 24-bit D/A converters and balanced line-level cross-coupled outputs capable of +20 dBu signals.

The NM 84 can transmit and receive one channel of RS-232 data over the 100Base-T network. The user may set the baud rate as well as 232 Tx and 232 Rx Channels.

The Memory Recall Port allows up to 16 pre-set Memories to be recalled with simple switch closures to ground. In addition to Local MRP, the NM 84 may be set to respond to Network MRP messages. It may also transmit Local MRP for monitoring by other NM 84s in the Network.

The NM 84 is fully compatible with other existing CobraNet products.

Features

- Eight Studio Grade Mic/Line Preamplifiers
- 48 volt Phantom Power
- Four 15 dB Coarse Gain Steps
- +16 to -20 dB Trim in 1 dB Steps
- Input Muting
- 40-160 Hz Low-Cut and 7k-20k Hz High-Cut Filters
- Limiter with +18 to -30 Threshold Adjust

- 10-Segment Metering for Each Input
- Cross-coupled Direct Outputs
- 100Base-T Network Transmission/Monitoring
- 24-bit A/D Converters with 20/24-bit Transmit Mode
- Four Network Monitor Channels with 24-bit D/A Converters
- Programmable Memory Recall Port

NM 84 Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
Inputs: Type	Active Balanced			XLR connectors
Mic Mode: Input Impedance	5.2k	1%	Ω	@ 1 kHz
..........Phantom Power	+48	4%	Volts	10 mA max/channel (80 mA total)
..........Gain Range	15 to 60	1	dB	15, 30, 45, 60 @ 1 kHz
..........Equivalent Input Noise	-128	max	dBu	20-20k Hz, 150 Ω source, gain: 60 dB
..........THD+N	0.05	typ	%	+4 dBu, 1 kHz, 20 kHz bandwidth
..........Maximum Input	+4		dBu	Gain: 15 dB, @ 1 kHz
Line Mode: Input Impedance	6.8k	1%	Ω	@ 1 kHz
..........Gain Range	-5 to +10	1	dB	-5, +10, @ 1 kHz
..........Output Noise	-87	1	dBu	20 kHz bandwidth, Gain +10
..........THD+N	0.05	typ	%	+4 dBu, 1 kHz, 20 kHz bandwidth
..........Frequency Response	40-20k	+0/-3	dB	
Input Filters: Type	2nd-Order Butterworth			
..........High-Cut	7k	5%	Hz	On-off switch
..........Low-Cut	160	5%	Hz	On-off switch
Gain Trim: Type	VCA			
..........Range	+18 to –20	1	dB	1 dB steps
..........Mute	-69	2	dB	
Limiter: Type	Analog, Feedforward			
..........Threshold Range	+18 to –30		dBu	1 dB steps; 2 dB accuracy
..........Attack	20	10%	ms	10 dB step, settle within 2 dB
..........Decay	60	10%	ms	10 dB step, settle within 2 dB
Direct Output: Type	Active Balanced			Cross-coupled; XLR connectors
..........Maximum output	+24	min	dBu	@ 1 kHz, 2 kΩ load
A/D Converters: Type	Delta-Sigma			24-bit conversion
..........Dynamic Range	103	typ	dB	A-weighted
..........Sample Rate	48k		Hz	
Monitor Outputs: Type	Active Balanced			Cross-coupled: XLR connectors
..........Maximum Output	+20	min	dBu	@ 1 kHz, 2 kΩ load
D/A: Dynamic Range	102	typ	dB	A-weighted
..........Sample Rate	48k		Hz	24-bit conversion
Metering: Type	Peak dBu			2 dB accuracy
..........Attack	20	10%	ms	Settle within 2 dB
..........Decay	60	10%	ms	Settle within 2 dB
Transmit Format	20/24-bit			Transmit 8 mic inputs on up to 4 bundles
Network Receive	24-bit			Accepts 16-, 20-, or 24-bit words
A/D Propagation Delay	666.7		μs	32 samples at 48 kHz
D/A Propagation Delay	520.8		μs	25 samples at 48 kHz
Network Propagation Delay	5.33		ms	256 sample at 48 kHz
Communications:				100 meters max using CAT-5 UTP cable;
..........100Base-T Ethernet	RJ-45 Connector			2,000 meters using fiber media converter
..........RS-232	DB-9			Maximum cable length 50'
Power Supply: Agency Listing	RS 3 (see data sheet)			Class 2 Equipment
...........120 VAC model	UL			File No. E132267
	CSA			File No. LR57450-99
...........230 VAC model	CE-EMC			EMC Directive 89/336/EEC
	CE-Safety			LVD 73/23/EEC
Power Supply Input	85 to 265		VAC	IEC line cord jack
Unit: Construction	All Steel			
...........Size	3.5" H x 19" W x 8.5" D (2U)			(8.9 cm x 48.3 cm x 21.6 cm)
...........Weight	9 lb (w/o power supply)			(4.1 kg)
Shipping: Size	4.5" x 20.3" x 13.75"			(11.5 cm x 52 cm x 35 cm)
...........Weight	13 lb			(5.9 kg)

Note: 0 dBu=0.775 Vrms

NM 84 Block Diagram

Data Sheet-3
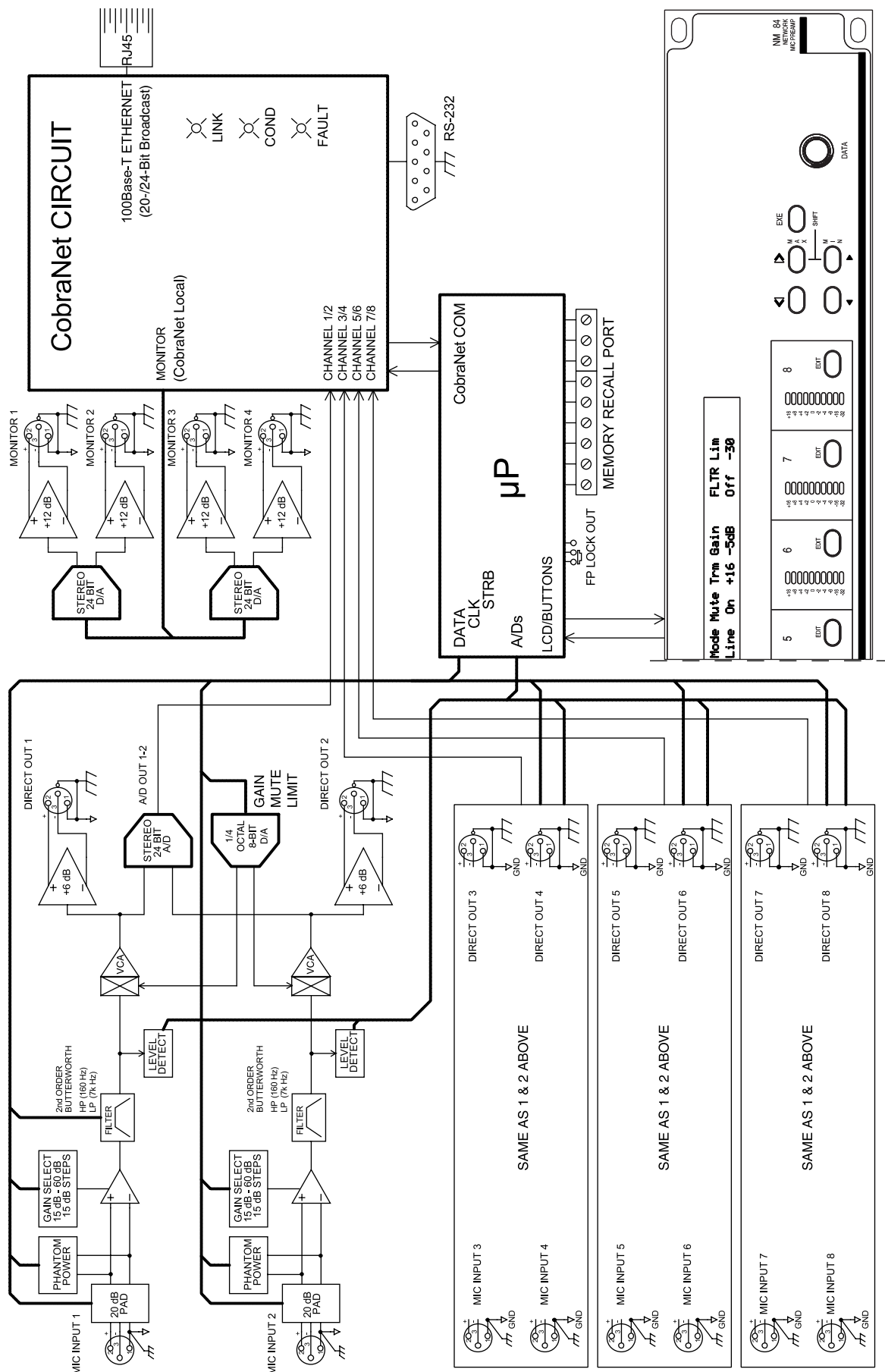
RANE

NM 84 Rear Panel
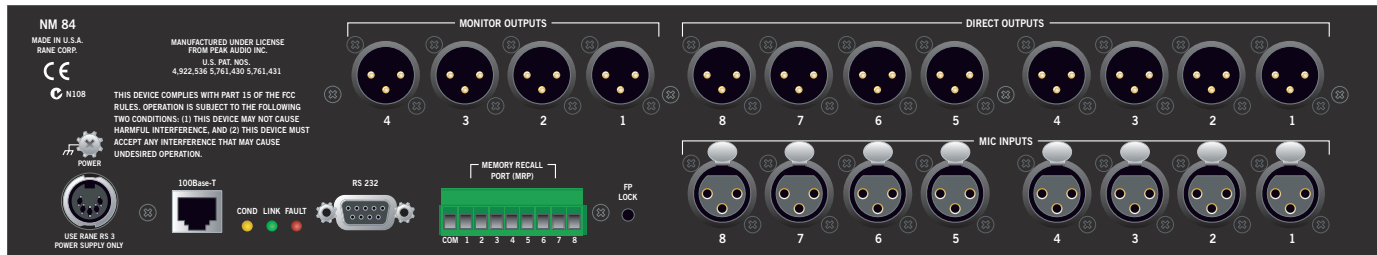
Applications

- Arenas
- Convention Centers
- Churches
- Schools
- Theme Parks

Anywhere multiple channels of deterministic, high-quality digital audio transport is required with the full flexibility of CobraNet 100Base-T network technology.

Architectural Specifications

The Network Microphone Preamplifier (CobraNet audio network device) shall provide 8 mic- or line-level inputs utilizing female XLR connectors, 8 line-level Direct Outputs utilizing male XLR connectors and 4 line-level, Monitor Outputs utilizing male XLR connectors.

Each input shall feature selectable Mic and Line modes, Mute, Trim, coarse Gain select, 48 volt phantom power, High- and Low-Cut Filters, Limiter and 10-segment meter.

Each input shall route to a balanced, discrete cross-coupled Direct Output capable of +24 dBu signals. All 8 inputs shall transmit on up to four independent CobraNet Bundles.

Each of the four Monitor Outputs shall independently monitor (receive) any one of the eight possible Audio Channels of any CobraNet Bundle -or- any one of the eight possible Local Mic Inputs. Monitor Outputs shall provide 24-bit D/A converters and discrete cross-coupled outputs capable of +20 dBu signals.

Bundles 0 through 999 (0-65,000 using CobraCad software) shall be supported for network transport.

Twenty-four-bit A/D converters shall provide the digital audio signal for 100Base-T transport over the CobraNet network. Audio shall be transmitted in 20- or 24-bit word lengths.

Control of all parameters shall be possible using the front panel interface, the rear panel, contact-closure Memory Recall Port (MRP), SNMP or via ActiveX controls. ActiveX controls shall be easily integrated within control interface web pages using one of a variety of web-authoring software tools.

The network device shall transmit and receive one channel of RS-232 data over the 100Base-T network. The user shall set the baud rate as well as the transmit (Tx) and receive (Rx) RS-232 channels to utilize.

The Memory Recall Port shall allow up to 16 preset Memories to be recalled with simple switch closures to ground. In addition to Local MRP switches, the network device shall respond to Network MRP messages when set accordingly. The network device shall transmit Local MRP closures for monitoring by other NM network devices on the network.

The device shall have certified compliance with FCC Part 15J for a Class B computing device and EMCD 89/336/EEC (CE approved). The unit shall be powered from a UL listed, CSA certified remote power supply meeting LVD 73/23/EEC and EMCD 89/336/EEC standards. The unit shall be constructed entirely of cold-rolled steel.

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Data Sheet-4   All features & specifications subject to change without notice. DOC 108214