

General Description

The Rane ML 1 Mic / Line Preamplifier provides the answer when you just need a preamplified pair. Go from either dynamic, condenser or electret microphones to line-level with a minimum of noise, distortion, and hassle.

At the same time the ML 1 can convert those mics, or a stereo line source, to a digital output of your choice: AES3, S/PDIF coaxial or optical.

The ML 1's rear panel provides 48 V switchable Phantom Power with an indicator LED. Each channel has Mic / Line input selection with Gain trims between 18 dB and 66 dB. Output Signal and Overload LEDs help set levels to other equipment whether you are looking at the front *or* the back panel. Inputs

and outputs let you choose between balanced XLR or Euroblock connectors. The Euroblocks accept 22 to 12 gauge wire.

The ML 1 utilizes one of the finest ultra low noise amplifier designs available. Featuring a true differential input with high common-mode rejection, use of the ML 1 guarantees performance usually found only in mixing consoles costing thousands of times as much.

A security cover for the rear panel Gain and Mic / Line switches is included for those set-and-forget installations. The internal power supply operates almost anywhere in the world with the proper IEC-C5 cord.

Features

- Two Channels, Mic or Line
- Rear Panel Gain Controls with Security Cover
- Signal / Overload Indicators
- Switchable 48 V Phantom Power
- Balanced line driver
- Internal Universal Power Supply (100-240 VAC)

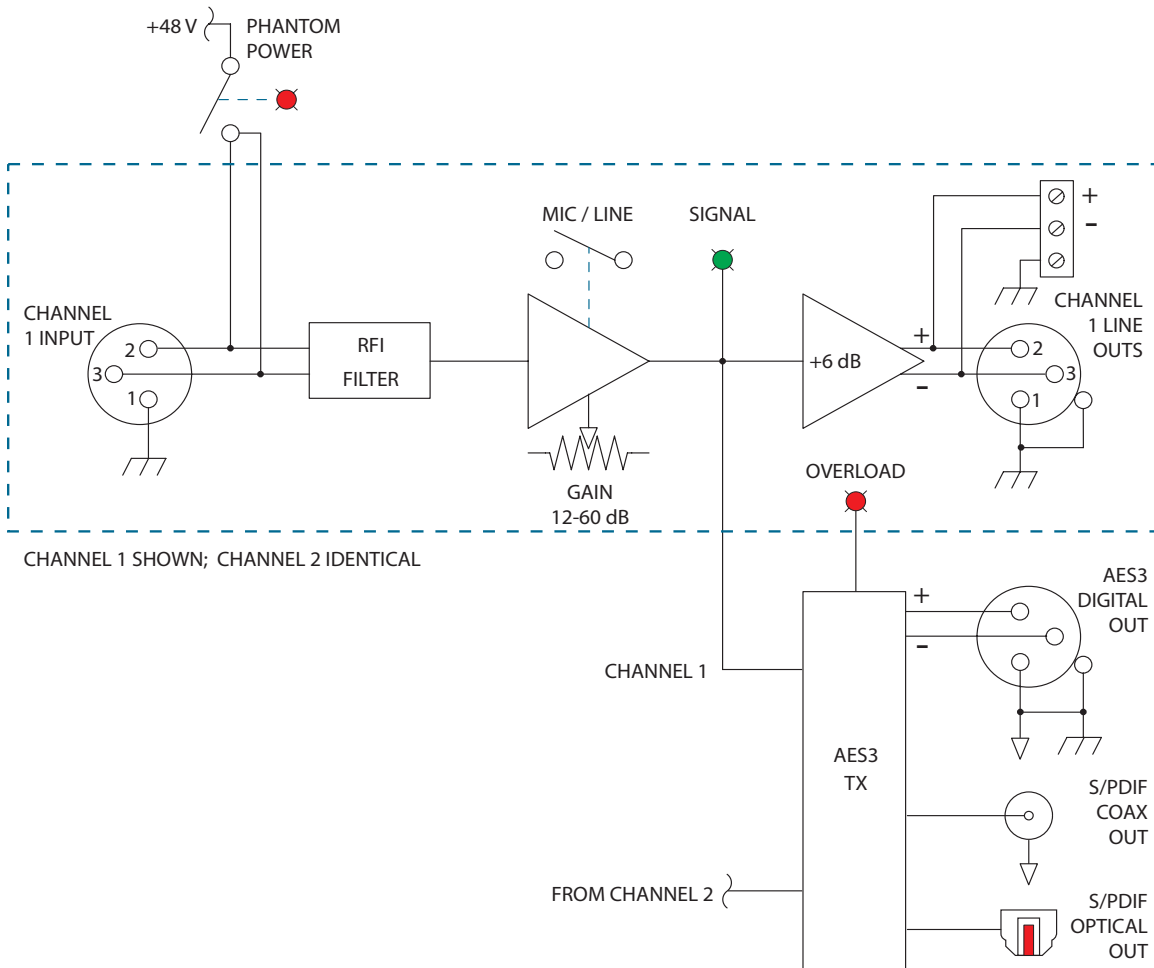


Features and Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
Input Impedance: Mic	2.6k	1%	Ω	Balanced 1.3k + 1.3k
Input Impedance: Line	98k	1%	Ω	Balanced 49k + 49k
Gain Range: Mic	18 to 64	typ.	dB	
Gain Range: Line	-14 to 32	typ.	dB	
Phantom Power	+48	4%	V	10 mA max.
.....Impedance	6.81k	1%	Ω	Each leg
.....Load Regulation	0.1	typ.	%	0 to 14 mA
.....RMS CM Noise	.003	typ.	%	% of Vout (10 Hz to 10 kHz)
Max. Input Level	+6 / -42	min.	dBu	Gain 18 / 66, balanced output
Equivalent Input Noise	-126	typ.	dBu	20 kHz BW, Rs=150 Ω, Gain = 60 dB
Signal to Noise Ratio	94	typ.	dB	20 kHz BW, Rs=150 Ω, Gain = 0 dB, re 24 dBu
Dynamic Range	110 / 92	typ.	dB	Gain 0 / 66
CMRR	50	typ.	dB	Rs=150 Ω, 120 Hz, Gain = 0 dB
Frequency Response				
.....Gain 60 dB	50 to 20k	typ.	Hz	+0, -2 dB
.....Gain 0 dB	20 to 20k	typ.	Hz	+0, -3db
THD+Noise (gain 60 dB)	.014 (Output=+20 dBu)	typ.	%	55 Hz to 20 kHz, 20 kHz BW, RI=10 kΩ
THD+Noise (gain 0 dB)	.014 (Output=+20 dBu)	typ.	%	50 Hz to 20 kHz, 20 kHz BW, RI=10 kΩ
Max. Output Level	+24 / +27	min.	dBu	Balanced, 600 / 100 kΩ load
Output Impedance	100	1%	Ω	Each Leg
Signal Indicator	-60	typ.	dBu	Balanced input, green LED, re 1 kHz sine wave
Overload Indicator	-0.3	typ.	dBFS	Digital clipping, red LED
Output Cable Length	1000 feet / 300 meters	typ.		Belden 8451 or equivalent
AES3 digital Output				2 channels, balanced
Connector	XLR-type, male			ANSI S4.40-192; IEC 60958-4 standards
Max cable length	328 feet / 100 meters			See RaneNote "Interfacing AES3 to S/PDIF"
Sample rate	48 kHz			
Word length	24 bit			
Power Supply Requirement	100 to 240	10%	VAC	50/60 Hz, 7W
Unit: Conformity	CE, FCC, cULus			
Unit: Construction	All Steel			
.....Size	1.75"H x 19"W x 5.3"D			(4.4 cm x 48.3 cm x 13.5 cm)
.....Weight	4 lb			(1.7 kg)
Shipping: Size	4.25" x 20.3" x 13.75"			(11 cm x 52 cm x 35 cm)
.....Weight	7 lb			(3.0 kg)

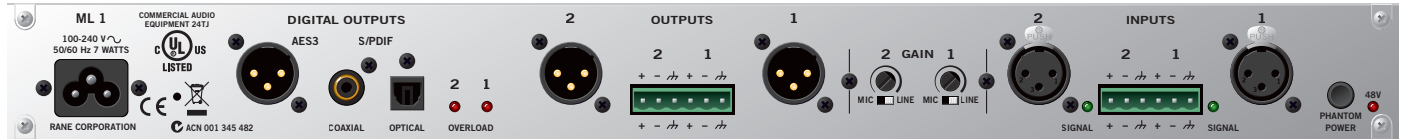
Note: 0 dBu=0.775 Vrms

Block Diagram





Security cover included for Gain controls



Application Ideas

Uses and applications for the ML 1 should be obvious. But to spark your imagination, these words on using the ML 1 might not be wasted.

MIXING

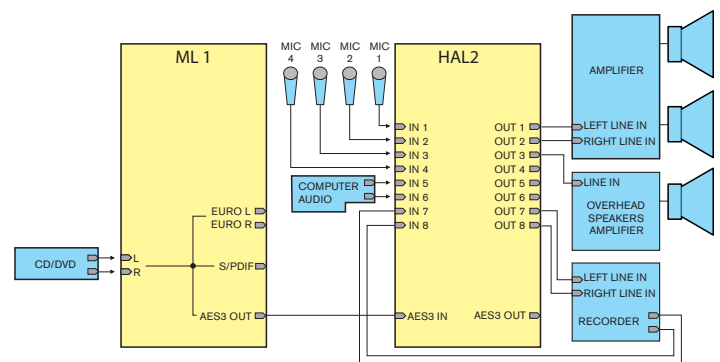
The ML 1 fills the need for adding a pair of microphone channels to line-level mixers such as the Rane SM82S. The versatility of the Rane HAL2 increases to 10 inputs using an ML 1 with a single cable: ML 1 digital out to HAL2 digital in.

DIGITAL RECORDING

Another handy use for the ML 1 is in recording applications. Many popular products (including most computer sound cards) do not have a high enough quality mic preamp to suit the resolution of digital processing electronics. Such irony. Using the ultra-low noise ML 1 to bring the mic inputs up to extremely high quality line-level or digital signal is an easy and affordable solution for this dilemma. No garbage in; no garbage out.

MICROPHONE TYPES

The available gain and large input range of the ML 1 allows the use of virtually any type of microphone. True 48V phantom power guarantees the ML 1 will work with every microphone. The better the mic, the better the ML 1 sounds.



Architectural Specifications

The microphone preamplifier shall be a two-channel rack-mount unit. The inputs and outputs shall include both XLR and Euroblock connectors. Phantom power shall be provided in compliance with IEC 60268-15 and be controlled by a rear panel switch with an LED indicator. Mic / line input selection and gain controls shall be provided with an 18-66 dB adjustment range. A security cover shall be provided to conceal the gain and mic / line pad controls. Power, input signal and output signal / overload indicators shall be provided.

A digital output shall be provided with AES3, S/PDIF optical and coaxial connection. High current active output line driver shall be standard, as well as input and output RFI filter protection.

The unit shall be capable of operation by means of its own built-in universal power supply operating at 100-240 VAC and meet CE requirements. The unit shall be UL and cUL listed. The unit shall be entirely constructed from cold-rolled steel.

The unit shall be a Rane ML 1 Mic / Line Preamp.