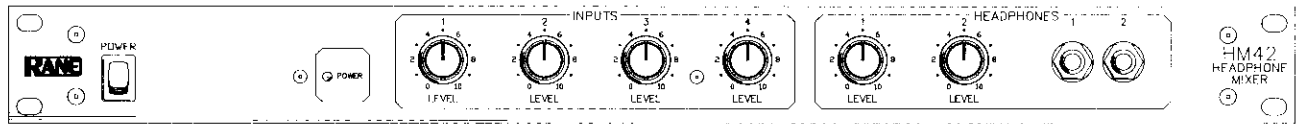


HM 42



OPERATING AND SERVICE MANUAL

RANE
CORPORATION

CONTENTS

I. WARRANTY INFORMATION.....	2
II. FRONT PANEL DESCRIPTION	3
III. REAR PANEL DESCRIPTION	3
IV. FUNCTIONAL DESCRIPTION.....	4
V. SYSTEM CONNECTION	5
VI. OPERATING INSTRUCTIONS.....	6
VII. SPECIFICATIONS	6
VIII. PERFORMANCE CURVES.....	7
IX. SERVICE INFORMATION	8

I. WARRANTY INFORMATION

Rane offers a limited warranty, which covers both the parts and labor necessary to repair any defects in the manufacture of your Rane product.

The warranty period is two (2) years and is determined from either of these two methods, whichever is longer:

1. Starting from the date of retail purchase, as noted either on the sales slip from an authorized Rane dealer, or on the warranty registration slip sent into the factory;

or:

2. Starting from the date of manufacture, which is coded on the rear of the chassis, in case the warranty card or the sales slip is not available.

If you send in the registration card or retain your sales slip as proof of **purchase**, you will receive a full two (2) year warranty period from the date of purchase, regardless of the date of manufacture. If you do not send in the registration card ("I forgot...") or you do not have a sales slip from an authorized Rane dealer ("My dog ate it..."), the warranty period will only extend two (2) years from date of **manufacture**.

All registered owners are tracked by serial number, not by owner. Once your Rane product is registered, it will be covered the full two years, regardless of any change in ownership.

Should you encounter any problems with your Rane product, be sure to contact either your local Rane dealer or the Rane factory before taking it anywhere for repair. We will help you to identify and locate any specific malfunctions, possibly avoiding needless shipment, or instruct you as to the speediest method for authorized repair.

If you must send your Rane product to the factory or a warranty station for repair, **BE SURE TO INCLUDE THE FOLLOWING INFORMATION:**

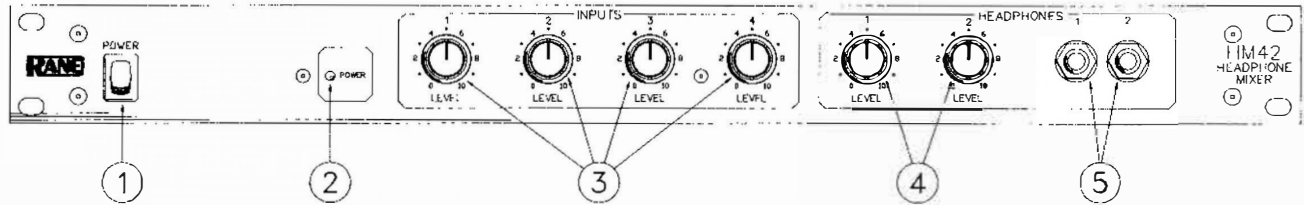
1. YOUR COMPLETE NAME AND RETURN SHIPPING ADDRESS
2. THE SERIAL NUMBER OF THE RANE PRODUCT FOR REPAIR
3. A COMPLETE DESCRIPTION OF ANY AND ALL PROBLEMS YOU ARE EXPERIENCING WITH THE PRODUCT.

Never ship the unit in any shipping carton other than the original or a replacement supplied by Rane. Ship only by a reputable carrier. Be sure to insure the package for the full replacement value. Rane cannot be held responsible for damage or loss due to shipping or improper packaging.

If you need further assistance concerning the repair, installation or operation of your Rane product, please feel free to contact Rane galactic headquarters at:

Rane Corporation
10802 47th Avenue West
Everett, WA 98204-3400
Phone: (206) 355-6000

II. FRONT PANEL DESCRIPTION



1. POWER ON/OFF CONTROLLER. This rocker-style switching mechanism is used to control whether or not the HM 42 will do anything when knobs are turned, headphones connected and inputs supplied.

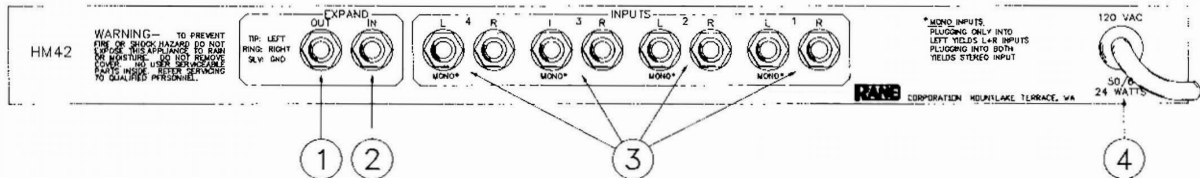
2. POWER INDICATOR LED. This solid-state illumination device will light up and let the operator know that item 1. (above) is working and the thing is plugged in.

3. CHANNEL ONE THROUGH FOUR INPUT LEVEL CONTROLS. These four rotary controls are used to set the individual input levels for the desired mix to be supplied to the headphone outputs.

4. CHANNEL ONE AND TWO OUTPUT LEVEL CONTROLS. These two rotary level controls set the output levels to their respective output jacks.

5. RESPECTIVE OUTPUT JACKS. These are the output connectors to which the headphone listening devices are connected.

III. REAR PANEL DESCRIPTION



1. EXPAND OUTPUT. This stereo connector is used for sending the mix output of the HM 42 to the expand input of another like product. This is a Tip left, Ring right configuration.

2. EXPAND INPUT. This stereo connector is used to receive the expand output of another HM 42. It too is a Tip left, Ring right situation.

3. MIX INPUTS. These eight 1/4" mono inputs are used to supply the main inputs to the mixer section of the HM 42. Each channel, 1 through 4, has a right and left input connector. Only the left input is to be used if mono operation is desired from a given input channel.

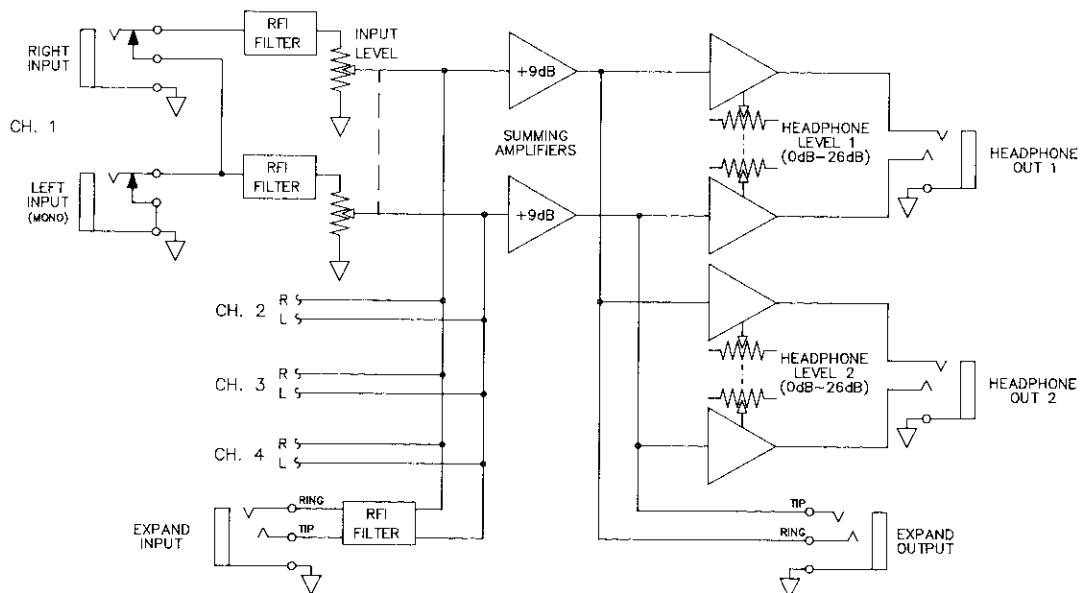
4. LINE CORD. This goes up to the power switch on the front panel.

IV. FUNCTIONAL DESCRIPTION

All inputs to the HM 42 are routed to their respective level pots for control over input level. Should only the left input be used on any of the four stereo input channels, the switch located in the right channel's input jack routes the left input to both left and right summing amplifiers for that channel only. The outputs of the level controls are applied to either a left or a right summing amplifier which combines the audio on the respective channel in a linear fashion. The design of the summing amplifier insures that one input cannot back-feed to another so that no signal degradation shall occur.

Once the summing amplifier has combined all the inputs, the individual left and right signals are fed to the input level controls of the two stereo headphone amplifiers. These amplifiers are of a high current design which deliver the high power necessary for the reproduction of virtually any kind of music.

The expand output jack is a stereo, ring tip sleeve connector which supplies a direct output from the left and right summing amplifiers for use only by the expand input of another HM 42. The expand input jack is connected directly to the summing amplifier such that when an expand output from another HM 42 is connected to it, left and right signals will be summed with all of the inputs of the second HM 42 and will appear at the headphone outputs of the second unit.



HM 42 BLOCK DIAGRAM

V. SYSTEM CONNECTION

Connecting sources the HM 42 requires the following:

1. Connect the stereo outputs of a source to any unused pair of stereo inputs on the HM 42. The cables to be used for this purpose must be shielded to prevent unwanted noise from penetrating the signal path and must be terminated with MONO 1/4" connectors on the HM 42 end. The connectors used on the other end of the cables will be determined by the type of equipment being employed. The majority of keyboard sources will use the same MONO 1/4" connector.
2. The expand input may be used as a fifth input, assuming the following limitations are acceptable. First, the expand input will not be used by the expand output of another HM 42. Second, the expand input has no level control so an output level control on the sending unit must be available for proper mixing with HM 42 inputs. Third, a special cable is required on which one end is two separate connectors for the left and right outputs of a stereo device and the HM 42 input end is a ring-tip-sleeve 1/4" connector on which the ring is connected to the right channel and the tip to the left. Should you wish to use a mono device and would like it to drive both left and right channels of the HM 42, you must use a cable with a mono 1/4" connector on one end and a stereo connector on the other with the tip and ring connected to the tip of the mono connector on the other end.

The expand output is to be used only to drive the expand input of another HM 42 and should utilize a cable with a stereo tip-ring-sleeve connector on both ends.

As an alternate configuration, the HM 42 may be used as an 8 to 1 mono mixer/headphone amplifier. To do this, connect mono sources to each of the eight inputs on the rear of the unit. Every two inputs will be controlled by one of the four input level knobs on the front panel, an unworkable situation in some applications. The headphones used in this configuration must be modified such that the tip and ring connections in the headphone plug are shorted together allowing both the left and right output buses of the unit to be supplied to both earcups. Granted, this is rather a crude use of the HM 42 but it will work and cause no undue stress on the unit should the need arise.

If stereo operation is required at the headphone outputs, virtually any headphone on the market will function satisfactorily. Headphones range in "impedance" from as low as 8 ohms to as high as 2,000 ohms. As a general rule, lower impedance phones will produce louder levels when used with the HM 42 than will higher impedance models. The average seems to be in the 150 ohm vicinity in today's market and the HM 42 has been optimized so that what many would consider to be an excessive level may be produced in phones of this type.

VI. OPERATING INSTRUCTIONS

Once all of the inputs and outputs are properly connected in accordance with the preceding section, normal operation of the HM 42 should be achievable. If any of the following procedures do not appear to produce the required results, take a step backwards and check your wiring.

As with all sound equipment, before turning on the power switch for the first time, ensure that all level controls are turned all the way down (fully counter clockwise).

With all of the level controls down, turn on the power switch. When the yellow power light illuminates on the front panel, the system should be ready to audition. Do whatever is necessary to produce sound from the component connected to one of the inputs of the HM42 and slowly increase the level of that channel's input level control. When the channel level control is at about 12:00, slowly increase the output level control for the channel to which your headphones are connected. You should begin to hear something immediately, assuming your input source is functioning. Increase the output level control until the desired loudness is achieved. Now all of the other inputs may be played, started, operated, or whatever it is that you normally do with them. Set the input level controls for each of the inputs until a desirable relative mix is achieved between them. You should now be up and ready to go with your HM 42.

VII. SPECIFICATIONS

POWER OUTPUT (Minimum available power @ 1kHz)

Headphone Impedance (ohms)	Power Output (mW)
8	40
16	75
50	180
100	250
200	240
300	200
600	150

*-These values produce loudness levels in excess of 120dB SPL in most headphones

FREQUENCY RESPONSE: 20-20kHz, +0/-3dB

THD+N: less than .02%, 20Hz to 20kHz, 250mW into 100 ohms

INTERMODULATION DISTORTION (SMPTE, 60/7kHz, 4:1): less than .01%

SIGNAL-TO-NOISE RATIO: 100dB minimum re 250mW into 100 ohms

AVAILABLE GAIN: 32dB minimum, 35dB typical

INPUT IMPEDANCE: 10K ohms minimum

OUTPUT IMPEDANCES: Headphone Out: 90 ohms; Expand Out:100 ohms

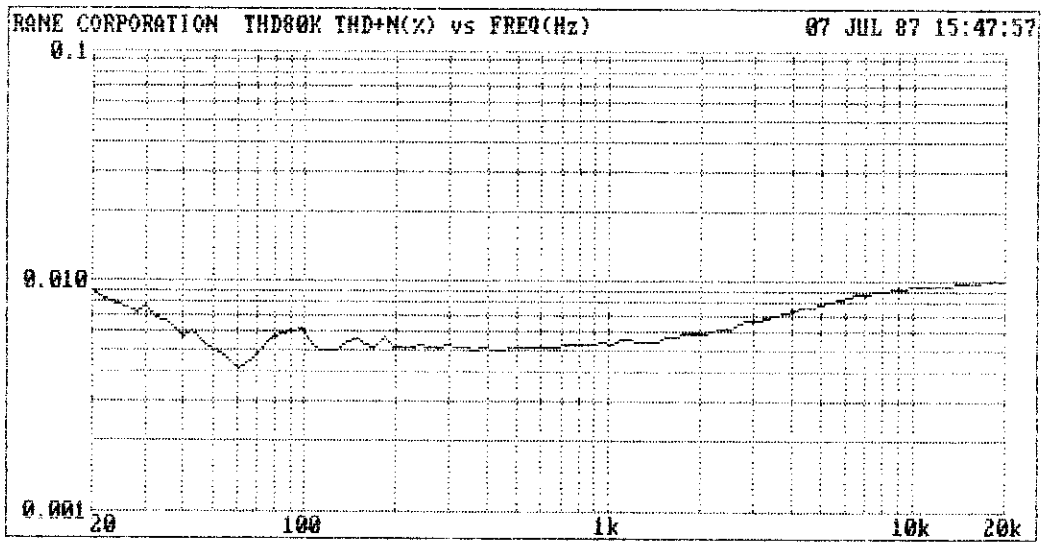
MAXIMUM INPUT LEVEL: +20 dBu (7.75 Vrms)

SIZE: 1.75" H x 19" W x 5.25" rack depth

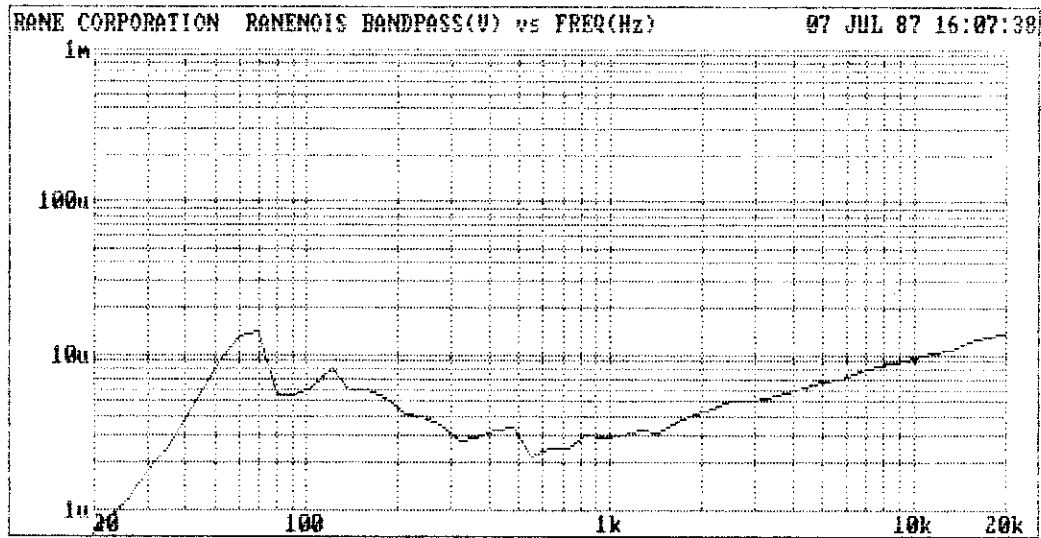
WEIGHT: 5 lbs. net

All specifications and features are subject to change at the discretion of Rane Corporation without prior notice, hopefully for the better.

VIII. PERFORMANCE CURVES



THD+N PERFORMANCE: 250mW into 100 Ohms



NOISE PERFORMANCE: Input level controls max, output level controls set at 5, 100 ohms load