

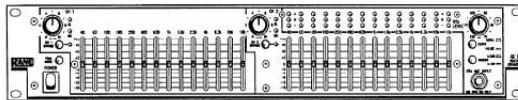
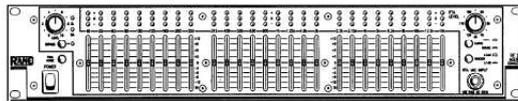


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You can read the recommendations in the user guide, the technical guide or the installation guide for RANE RE 14. You'll find the answers to all your questions on the RANE RE 14 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual RANE RE 14**  
**User guide RANE RE 14**  
**Operating instructions RANE RE 14**  
**Instructions for use RANE RE 14**  
**Instruction manual RANE RE 14**

## RE 27 AND RE 14



## OPERATING AND SERVICE MANUAL



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**Manual abstract:**

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CONSEQUENTIAL AND INCIDENTAL DAMAGES SUCH AS ECONOMIC LOSS OR INJURY TO PERSON OR PROPERTY, WHATEVER THE CAUSE, ARE EXCLUDED FROM COVERAGE. PLEASE REFER TO THE LIMITED WARRANTY CARD FOR A FULL DESCRIPTION OF THE LIMITS ON THE COVERAGE OF THE LIMITED WARRANTY. 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 Mukilteo, WA 98275-5098 Phone: (425) 355-6000 FAX: (425) 347-7757 2 II. PANEL DESCRIPTIONS RE 27 FRONT PANEL RE 14 FRONT PANEL 1. EQ LEVEL CONTROL: This controls volume through the equalizer section and provides up to 6 dB overall gain.

Turn this control down if the overload LED lights up. 2. BYPASS SWITCH: Push this button IN to bypass the equalizer and level control; the bypass LED will light whenever the bypass switch is engaged. 3. PINKNOISE SWITCH: Press this button IN to activate the built-in pink noise generator. IMPORTANT: SWITCH THE PINK NOISE GENERATOR OFF WHEN NOT IN USE, TO PREVENT POSSIBLE NOISE BLEEDTHROUGH INTO PROGRAM MATERIAL 4. POWER SWITCH: You've probably figured this one out by now... 5.

SIGNAL PRESENT INDICATOR: This green LED lights with any input above -20 dBm (.076 volts), even in the bypass mode. 6. OVERLOAD INDICATOR: This red LED lights whenever the signal level through the equalizer section reaches 4 dB below clipping 7. ANALYZER DISPLAY LEDs: Each red LED lights up when response is too high in that band; green LEDs light when response is within  $\pm 3$  dB or  $\pm 1$  dB of the selected curve; yellow LEDs come on when response is too low. 8. EQUALIZER SLIDERS: Calibrated in 3 dB increments, these sliders provide 12 dB of boost and 15 dB of cut at each of the ISO frequency centers. 9. CURVE SELECT SWITCH: The NORMAL position will yield a flat response when all LEDs are green. The HOUSE CURVE changes the response of the display such that the EQ sliders between 400 Hz and 1.

6 kHz must be attenuated 3 dB to obtain green LED response. This reduction in midrange results in a warmer more desirable sound at lower sound pressure levels. 10. WINDOW SELECT SWITCH: In the  $\pm 3$  dB position, the green LED in each band will be lit when signals of that frequency are within 3 dB above or below the Normal or House curve, whichever is selected. In the  $\pm 1$  dB mode, system response must be within 1 dB above or below the selected curve to light the green LEDs.

3 11. MICROPHONE INPUT JACK: PLUG ONLY THE RANE MICROPHONE INTO THIS JACK--THE DC POWER SUPPLY VOLTAGE SUPPLIED BY THIS JACK COULD BE DAMAGING TO ANY OTHER MICROPHONE When the mic is plugged in, the display responds to whatever the mic picks up; when the mic is unplugged, the jack automatically switches the display to monitor the output of the equalizer section (see Section IV-9). 12. RTA LEVEL CONTROL: Use this knob to adjust the microphone level (or line level when the microphone is unplugged) to properly drive the display. This control is accurately calibrated in dB-SPL; any display band whose LED is green has the sound pressure level indicated by this knob (only with the mic plugged in). RE 27 REAR PANEL RE 14 REAR PANEL 1. PINK NOISE LEVEL ADJUST: Use a 1/8" inch screwdriver to adjust the output from the Pink Noise generator from 0 to 1.2 volts (-4 dBm) to match the input level requirements of the mixer or other equipment driven by the generator. 2. PINK NOISE OUTPUT JACK: This is an unbalanced 1/4" jack which supplies Pink Noise to selected equipment 3. EQ INPUT JACK: This is an automatic balanced/unbalanced 1/4" input to the equalizer section. Use a mono 1/4" plug for unbalanced operation, or a stereo 1/4" plug wired as shown in the diagram below for balanced operation. 4. EQ OUTPUT JACK: This is the automatic unbalanced/floating output from the equalizer section. Use a mono% plug for unbalanced operation, or a stereo 1/4" plug wired as shown in the diagram below for use with balanced equipment (Refer to Rane Note 102 for further information on Rane's floating output system.

) 5. AC LINE CORD: Plug this into a 120 VAC power outlet with grounding pin. 6. GROUND LIFT SWITCH: This switch provides the ability to separate chassis ground and signal ground. Normally, this switch should be in the LIFT position. If you are tempted to try moving this switch with your power amplifiers turned on or turned up, DON'T BE. ALWAYS TURN YOUR AMPLIFIER LEVELS DOWN BEFORE CHANGING YOUR GROUNDS AROUND and then bring them up slowly. 4 3-PIN BALANCED RANE 1/4" IN (BAL) See Rane Note 110 for other configurations. III. INSTALLATION This section contains several diagrams which plainly show many, but by no means all, of the ways to connect the RE 27 or RE 14 into a sound reinforcement or monitor system. Whatever your particular application, it is helpful to realize that the RE 27 or RE 14 is actually two independent products in one: an equalizer with input(s) and output(s), and a realtime analyzer with mic input and pink noise output Another thing to keep in mind is that the analyzer display will automatically monitor the output of the equalizer section whenever the microphone is unplugged from the front panel jack This feature is very useful in monitoring program material for feedback problems, resonances and the like. Diagram III-1 : Main Speaker Equalization Diagram III-2: Powered Mixer System Equalization Diagram III-3: Stage Monitor Equalization Using Rane Microphone Diagram III-4: Equalizing Specific Microphone/Speaker Combinations 5 DIAGRAM III-1: MAIN SPEAKER EQUALIZATION HEAVY LINES INDICATE DIRECT CONNECTIONS TO RE 27 AND RE 14.



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Next time, green out the analyzer during the pink noise test (get all LEDs green before making any further adjustment), then immediately bump up the 63 Hz slider 3 dB as indicated by the front panel calibrations so that you're tuned up before the show starts (slick, no?). The constant-Q sliders will assure accurate adjustments from any slider position. 9. USING THE RANE ANALYZER WITH OTHER EQUALIZER CHANNELS: The analyzer section of the RE 27 or RE 14 will respond to whatever program the test microphone picks up. Therefore, the display can be used to adjust any equalizer channel which controls the pink noise through the speaker(s).

For example, suppose you are running the RE 14 for left and right main speakers. Plug the pink noise output into the mixer, turn up channel 2 on the RE 14 and turn off channel 1, so that only one speaker emits pink noise. Use the analyzer to adjust the channel 2 sliders. @@@@10. @@When the mic is unplugged, the display is automatically switched to monitor the output of the equalizer section (Channel 2 on the RE 14). Adjust the RTA Level control so that an occasional green LED blinks on during the performance peaks, but no red LEDs come on: you should be in the  $\pm 3$  dB mode on the display. If feedback occurs, one or more red LEDs will light showing the general 12 feedback frequency area. Usually several red LEDs will be lit by the time you quickly cut back volume to kill the feedback and glance at the display. When this happens keep watching the display: the last red LED to go off contains the exact feedback frequency (it was the first LED on, too, but you probably didn't see it). Adjust that slider down a couple dB and feedback problem will be reduced. If you're real good you'll keep one eye on the analyzer display and quickly adjust one or two sliders when feedback occurs, without altering master volume levels.

This program monitoring feature is particularly useful for stage monitors which are usually plagued with feedback problems. V. SPECIFICATIONS All sliders centered and level controls set at unity gain unless otherwise noted EQUALIZER SECTION RE 27: (27) 1/3-octave Constant-Q derived filters on ISO centers from 40 Hz to 16 kHz. RE 14: (14) 2/3-octave Constant-Q derived filters on ISO centers from 40 Hz to 16 kHz. Center Frequency Accuracy:  $\pm 3\%$  maximum. Filter Type: Constant-Q, state variable derived (no inductors or gyrators). Sliders: 45 mm full-throw, positive center detent (grounded). Range: Boost: 12 dB, +2/-1 dB; Cut: 15 dB, +2/+1 dB. Signal/Noise Ratios, re +4dBm, unweighted, 20 kHz bandwidth: RE 27 Sliders Sliders Sliders Sliders centered, unity gain: centered, max gain: max.

unity gain: max, max gain: 92dB 90dB 73dB 69dB RE 14 88dB 84dB 69dB 64dB Frequency Response: 20Hz to 50kHz, +0/-3dB. THD + Noise: less than .009%, 20-20kHz with +4dBm output. IM Distortion: less than .02%, 60/7kHz, 4:1.

Maximum Gain: +6dB (+3/-0dB) with sliders centered. Input Impedance: 20k ohms. Output Impedance: 100 ohms. Maximum Input Level: +22dBm (9.7 VRMS), level control below unity gain.

+19dBm (7.0 VRMS), level control at unity gain. +14dBm (4.0 VRMS), level control maximum. Maximum Output Level (600 ohms): +20dBm (7.8 VRMS), level control max. +18dBm (6.2 VRMS), level control at unity gain. 13 Subsonic Filter: fixed at 20Hz, 18dB/octave. Ultrasonic Filter: fixed at 50kHz, 12dB/octave.

Overload Indicator: Red LED, lights at 4dB below clipping. Signal Present Indicator: Green LED, lights above -20dBm input. RE 14 Channel Separation: better than 75dB, 20-20kHz. RFI Input Filters. Bypass Switch: Passive (hard-wire type), red LED indicated (bypass=on). Output Relay: Turn on/off transient control. ANALYZER SECTION Display Range: +1 dB or  $\pm 3$ dB "green" window, selectable. Measurement Level Range: 70dB to 120dB SPL, calibrated.

Curve Selection: Normal: flat from 40-16kHz,  $\pm 5$ dB.

House: +3dB boost between 400 Hz & 1.6kHz. Display Attack Time: Peak Instantaneous. Frequency Accuracy:  $\pm 5\%$  maximum. Analyzer Filters: ANSI Class II Pink Noise: Pseudo-random NMOS digitally-synthesized, 23-bit word length, 1 min.

repetition rate. Output level adjustable to +4dBm. Response: 16Hz to 20kHz, +1 dB; crest factor 4.0. Microphone: Omnidirectional back-electret condenser type, powered by front panel jack (not phantom power).

Sensitivity: -65dB. Frequency Response: 20Hz to 16kHz. Maximum SPL: 140dB. MISCELLANEOUS Chassis and Front Panel: Cold rolled steel. Size: 19"W x 3.5"H x 8.5" rack depth. Weight: RE 27: 11 lb net RE 14: 11 lb net 14.



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