



Your PDF Guides

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

User manual RANE RANEGAIN
User guide RANE RANEGAIN
Operating instructions RANE RANEGAIN
Instructions for use RANE RANEGAIN
Instruction manual RANE RANEGAIN

RANE DATA SHEET RaneGain GENERATOR & TRANSDUCER



General Description

The RaneGain test set is a handy tool kit based on techniques first developed by Pat Brown of Syn-Aud-Cone for use in quickly setting sound system gain controls. Using the RaneGain pair makes correctly setting level controls a snap.

Comprised of a precision 400 Hz sine wave Generator and a matching piezo Transducer, the test set makes use of the Fourier principle that all periodic waves can be broken down into a sum of pure sine waves. If a pure 400 Hz tone is the source in a system, and the system is turned up until clipping, then what comes out is the 400 Hz fundamental, plus a whole string of predominately odd-order harmonics. Spectrum analysis of the output will show the 400 Hz fundamental, plus strong harmonics at the odd harmonic intervals of 1.2 kHz, 2 kHz, 2.8 kHz, 3.6 kHz, 4.4 kHz and so on. The RaneGain Transducer is a piezo tweeter designed to reproduce mid-to-high audio frequencies, so while it doesn't reproduce the 400 Hz fundamental worth a hoot, the harmonics make it scream.

Operation

PRESET ALL LEVEL CONTROLS IN THE SYSTEM

After all equipment is hooked-up, verify system operation by sending an audio signal through it. Do this first before trying to set any gain/level controls. This is to make sure all wiring has been done correctly, that there are no bad cables, and that there is no audible hum or buzz being picked up by improperly grounded interconnections (See RaneNote 110).

Once you are sure the system is operating quietly and correctly, then you are ready to proceed.

Turn down all power amplifier level/sensitivity controls.

Turn off all power amplifiers. (This allows you to set the maximum signal level through the system without making yourself and others stark raving mad.)

Set all gain/level controls to their off or minimum settings.

Defeat all dynamic controllers such as compressors/limiters, gate/expanders, and enhancers by setting the Ratio controls to 1:1, and/or turning the Threshold controls way up (or down for gate/expanders).

Use no equalization until after correctly setting the gain.

CONSOLE/MIC PREAMP GAIN SETTINGS

A detailed discussion of how to run a mixing console lies outside the range of this Note, but a few observations are relevant. Think about the typical mixer signal path. At its most basic, each input channel consists of a mic stage, some EQ, routing assign switches and level controls, along with a channel master fader. All of these input channels are then mixed together to form various outputs, each with its own level control or fader. To set the proper mixer gain structure, you want to maximize the overall SN (signal-to-noise) ratio. Now think about that a little: because of the physics behind analog electronics, each stage contributes noise as the signal travels through it. (Digital is a bit different and is left to another Note and another day.) Therefore each stage works to degrade the overall signal-to-noise ratio. Here's the important part: The amount of noise contributed by each stage is (relatively) independent of the signal level passing through it. So, the bigger the input signal, the better the output SN ratio (in general).

The rule here is to take as much gain as necessary to bring the signal up to the desired average level, say, +4 dBu, as soon as possible. If you need 60 dB of gain to bring up a mic input, you don't want to do it with 20 dB here, 20 dB there, and 20 dB some other place. You want to do it all at once at the input mic stage. For most applications, the entire system SN (more or less) gets fixed at the mic stage. Therefore set it for as much gain as possible without excessive clipping. Note the wording excessive clipping. A little clipping is not audible in the overall scheme of things. Test the source for its expected maximum input level. This means, one at a time, having the singers sing, and the players play, as loud as they expect to sing/play during the performance. Or, if the source



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