ESOTERIC

Q1. What were the design goals for the Esoteric C-03?

A1. The C-03 is a Linestage pre-amplifier of our “Master Sound Works” (“MSW”), amplifier product series. The texts below, from our product literature, will help you to understand the philosophy of our Esoteric "Master Sound Works" amplifier series.

Master Sound Works

Goals of the MSW Series of components:

“Regain the dynamic sound of the original master tape. Utilize state of the art technology that will re-introduce you to the sound enjoyed from the master tapes of the original live recording.”

Master tapes capture all of the music information as it is—the individual expression of strings, wind instruments, drums, and vocals, the color and harmonization of their sound, and well beyond that, the atmosphere of the concert hall and the passion of the audience.

ESOTERIC created Master Sound Works with the goal of regaining the richness of the master tapes without losing anything. Carrying forward the next generation of TEAC’s long heritage in advanced technology; ESOTERIC sets a new standard in high-end audio.

“A preamp that combines exquisite quality with simplicity and sets a new high end standard!” At ESOTERIC, we have carried the pursuit of high quality sound to the highest degree of engineering, from new circuit designs and internal wiring that view “luxury” as standard, to the L/R dual mono configuration, custom and proprietary power supplies and high performance volume control. ESOTERIC technology has focused more than twenty two years of experience to

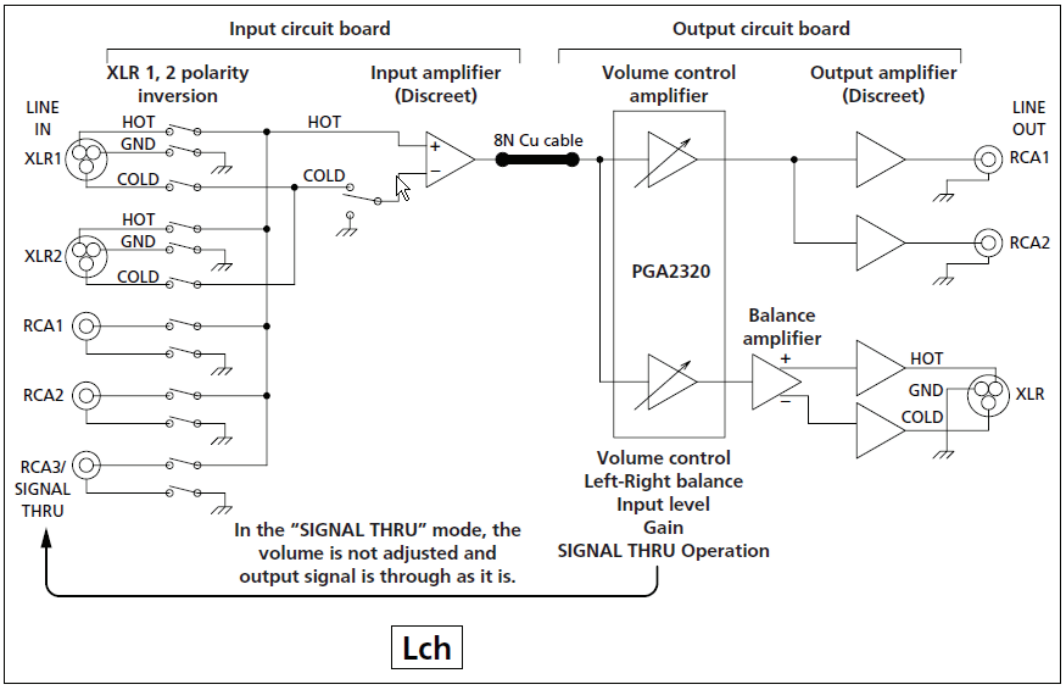
further the "State of the Art" in audio and video reproduction.

The basic design goal for the Esoteric C-03 was to realize the "highest grade sound of quality reproduction as required to revitalize the original master tape experience." Every feature listed below is dedicated to this single goal.

1. Dual mono design (even for power supply transformers and gain control amplifiers).
2. Carefully designed analog circuits (discrete input / output buffer which can drive any kind of power amplifier without any difficulty). Variable gain control from 0 to 12 to 24 dB.
3. Simplicity with the development of the shortest possible signal path. Input stage and output stage are positioned as close as possible to the i/o ports, (eliminating the need for noise reduction through the addition of extraneous balanced circuitry).
4. Use of ultra high grade audio component selection (high purity 8N copper - 99.999999% and high purity 6N copper cables), WIMA capacitors, large size dual mono 200VA toroidal power supplies, etc.
5. Very "silent" microprocessor design (always in sleep mode, hot / ground line are both isolated by optical connection to the input and output stage).

Q2. The C-03 has balanced inputs and outputs. Is its audio circuit fully balanced between those?

A2. No. The C-03 is basically a single-ended Linestage pre-amplifier. No balanced internal circuit is needed because it is not necessary. The purpose of those common circuits it to reduce noise. In the C-03, the noise floor is so low and the signal path so direct, that the design negates the need for an extraneous balanced circuit. Please note the block diagram below to view Esoteric's signal path implementation;



Q3. How many gain stages are in the C-03?

A3. There is only one gain stage in the C-03. This is a good example of our design philosophy of "simplicity" and designing "the shortest possible signal path". The gain stage is in the volume control amplifier (Burr-Brown PGA 2320), only. This layout is implemented in a dual-mono configuration (1 chip per channel), and mounted on the final audio output stage.

Q4. Does the audio circuit employ any negative feedback?

A4. Yes.

Q5. I've read specs that indicate the C-03 has a 'maximum output' of 7 Volts and a 'rated output' of 2 Volts. Is it fair to say the unit delivers 2 Volts into 100 Ohms for its balanced outputs? (I'm not sure I understand the difference between the 'maximum' and 'rated' output.)

A5. 'Rated output' means when you input 1 kHz, 2V signal, the C-03 outputs 2V signal when the gain setting is 0 dB. 'Maximum' output means that signal will break up when you input 1 kHz signal more than 7 volts, when the gain setting is 0 dB. However, this 'maximum' output level is nominal, and the C-03 should have enough headroom at even higher input voltage. Gain is also adjustable to 12 dB and 24 dB.

Q6. Any comments on the Burr-Brown PGA 2320 volume control amplifier are most welcome!

A6. We hope our product literature explains the detail of the volume control amplifier;

The volume control system, as a key component of the preamplifier:

When designing the C-03, we reviewed numerous devices and worked on developing circuits and housings from the earliest stages of the system's evolution with the goal of achieving the very highest possible sound quality. In our search for the perfect components for the master sound concept, we conducted repeated trial listening tests to compare the sound of variable resistance amplifiers and volume control amplifiers, finally settling on a volume control amplifier made by Burr-Brown (TI). By locating this device independently on each audio board, we pursued the dual mono configuration even into the realm of the volume control - something that is usually shared between the left and the right channels. Because the audio signals are routed through the audio board only, the audio circuit can be limited to the rear half of the compartment, where the input/output terminals are also located.

The volume control knob follows the traditional level of usability, displaying the volume intuitively through the position of the pointer. A microcomputer recognizes the knob's position via an A/D converter, setting the correct volume for the knob's position on the volume control amplifier. Control of left and right channel balance, input sensitivity, and total gain, are comprehensively controlled by a microcomputer which sets the volume control amplifier's gain in a single location. Unlike when these controls are performed by several circuits, with the C-03, there is no need to worry about signal degradation and changes in acoustic quality when each item is adjusted.

The implementation of volume control amplifier design enables;

1. Consistency of dual mono concept throughout the entire signal path.
2. Shortest possible signal path. (input signal goes right down to the output stage without passing through the volume controller located on the front panel).
3. Many options of gain control functions are available without adding circuits.

Q7. I'm understanding that at its zero-gain setting the C-03 yields the voltage of its input signal and the volume control simply attenuates a lower output voltage. Is that correct?

A7. It is correct, but volume control of the C-03 is NOT just a so-called “passive attenuator”, (which is a volume pot using variable resister). The volume control system is a gain control amplifier which can also amplify the input signal, not only attenuate it. The C-03 has only one gain stage and it controls everything – from input signal gain, channel balance of left/right, total gain (0, +12, +24), and output volume levels. RCA 3 input can also be used as “signal through” input to connect the pre-out terminals of an A/V processor for visual use, and this function is also controlled by this volume control amplifier.

Q8. Are there any recommendations on output cable length the unit can drive?

A8. Any length will be no problem. The C-03 features carefully designed discrete output buffer circuits driven by extremely high voltage (+/-38v), power supplies. This very strong buffer circuit will drive any type of power amplifier, hooked up with any length of interconnect cables.

Q9. How long does it take to build a C-03?

A9. We have had many requests since 2003 and 2004 for a pre-amplifier to combine with our mono-block amplifiers (A-70/A-80), and more recently, with our new A-100 and A-03 amplifiers. Our pre-amplifier project went through several “internal use only prototypes” and took almost 5 years to complete.

In the meantime, we had built many prototypes, (including ones you might have seen at CES or at the High End Society Munich show), and cultivated many technologies to put into our preamp design. The high voltage output buffer design is from our highly acclaimed D-01 reference DAC, and the highly rigid multiple layer (box-in-a-box), chassis design and dual-mono designs came from our “03 series” (P-03/D-03), series of source players. Our “three-dimensional” inner component layout is the result of our trademark “Mechatronics Technology,” and over 22 years of craftsmanship. It took very long time to complete this project but for our audiophile customers, we believe the result was well worth waiting for!

We hope you will enjoy Esoteric’s award winning model C-03!