

## Line Stage Preamp: First Prototype

Chief Designer Bill Hutchins has completed the first prototype of LKV's second product, a line stage preamplifier tentatively designated the Line 2-SB. It is an all-out effort, designed to complement its older sibling the Phono 2-SB. Together they will deliver state of the art reproduction of recorded music.

As with the Phono, 2-SB, the design focus for this new line stage is on those elements that affect sound quality, starting with the gain circuitry. The prototype's gain stage is a zero loop feedback, differential (balanced) amplifier, executed with low noise jfets (junction field effect transistors), the most musical active devices we know of. The jfet amplifiers are biased with using cascode topology and current source circuitry which achieve low distortion without loop feedback. All of the jfets are tested and matched to the same strict tolerance as are those in our phono preamp: +/- 0.1 mA max current (IDSS). This tight matching further lowers distortion and greatly increases the common mode rejection ratio (CMRR) that cancels incoming noise.

Output is via a high current follower circuit also using low noise jfets that are matched and biased in the same fashion as are those in the gain stage. This high current stage contributes to the unit's ability accurately to reproduce music's wide dynamic swings. Two, independently adjustable stepped attenuators constructed using fixed resistors control volume and provide balance adjustment. The use of two such volume controls, one for each channel, reduces inter-channel cross talk, thereby delivering precise stereo imaging. Similarly, power regulation and filter circuitry as well the signal handling circuitry are contained on two, separate 4-layer circuit boards, again one for each channel. The use of separate boards further lowers crosstalk and enhances imaging. The 4-layer circuit boards also allow for very short signal traces and a solid ground plain, both of promote noise reduction.

The Line 2-SB prototype is designed with considerable operating flexibility. It accepts balanced or single ended inputs and delivers its output in either mode as well. It has four user selectable gain settings: 9dB and 15dB in balanced mode and 3dB and 9dB in single ended mode. Its high input impedance makes it suitable for use with most line sources, while its low output impedance and adjustable gain mean it will work well with virtually any power amp.

We are frankly a little surprised at how good the Line 2-SB prototype sounds when mated with its sibling, the Phono 2-SB. For example, in our first listening sessions it appeared to take the clarity and resolving power of the latter to slightly higher levels. On familiar orchestral recordings individual instruments and sections of orchestra were even easier to distinguish and "see." The soundstage expanded, with more depth and space around individual performers. On a favorite recording of female voice, the performer was more "present" in the room and her sonic image more solid and rounded. The attack, decay and reverberation of plucked string were ever so slightly more detailed and interesting. Of course, much more listening will be needed before we can accurately assess the unit's strengths and decide what sonic attributes need to be improved.

As development continues, we will refine the design of the Line 2-SB and the attributes described here will inevitably change somewhat. But, given how well this prototype has come together, the development time line for the Line 2-SB may be considerably shorter than we had expected. Only further measuring and listening will tell how much work is left to be done. We had originally planned to launch this line stage preamp something in

mid-2014. But, now we think you may be seeing and hearing finished production units before the end of the year. Stay tuned.