

Gaining Mastery Over Microphone Preamps.

Marco Migliari / **AUDIOTUTS.com**

How much do you know about micamps? Should technology guide your choices? Or maybe you're happy to use whatever is around, but sometimes you'd like to have a more informed approach to recording? This tutorial will help you choose the colour you're missing from your canvas.

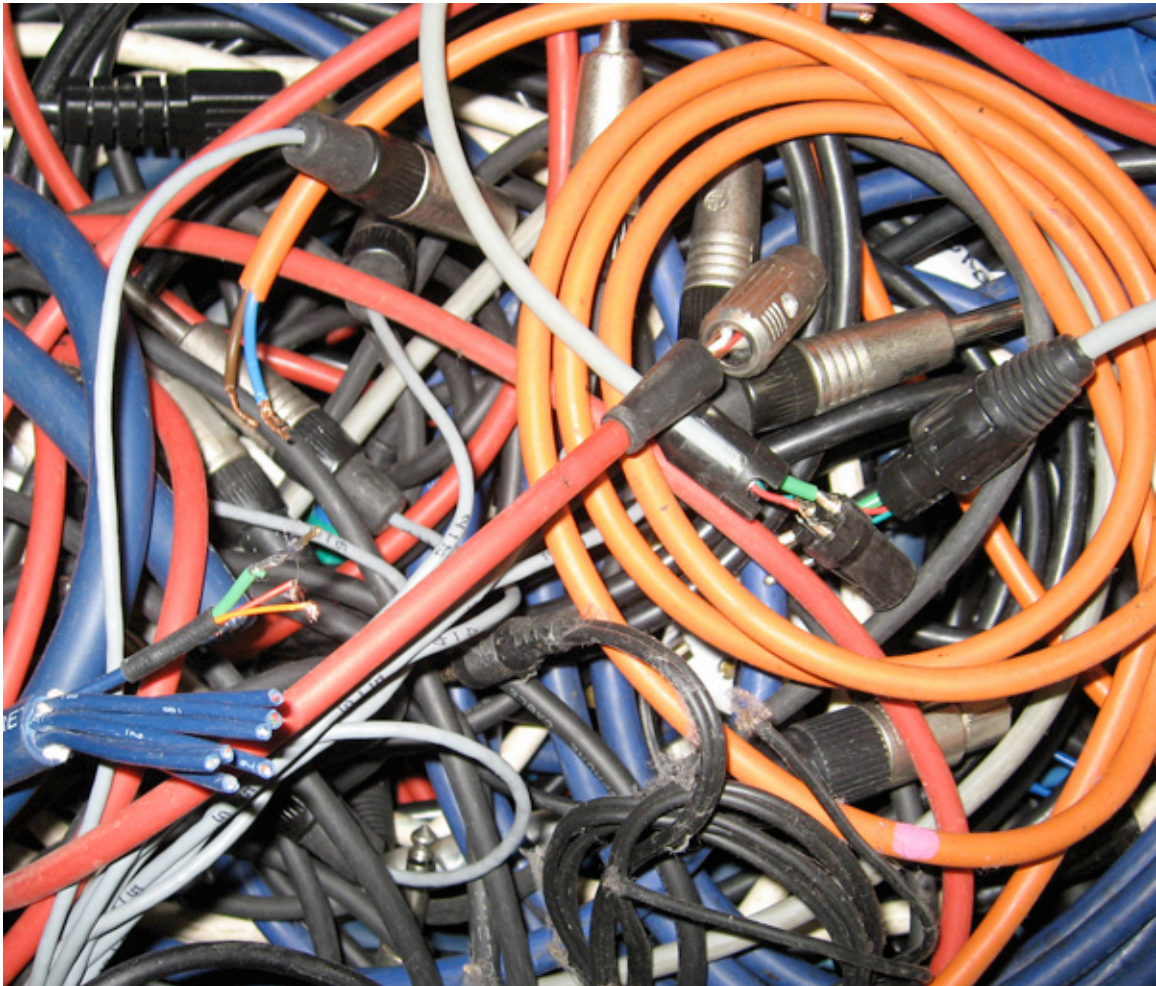
Choosing the right microphone preamp

Micamps are a studio essential, and are likely to stay that way for a while. We might have ditched tape machines, passive speakers, even hard drives are going to become a thing of the past at this rate, but it's still not possible to record acoustic music, or in fact any sound or noise, without a microphone. Although some digital microphones are beginning to appear on the market (see the Neumann Solution-D), the classic, analogue microphone is going to be with us for some time—and the micamp with it.



A tastefully populated rack of 8 API 512c modules. Classic micamps like these, originally designed to be fitted into a modular console, are often re-issued for rackmount use.

Microphones detect the smallest vibrations in the air or in a solid with clever mechanical devices—capsules, ribbons or pickups—but they are often not very efficient at translating it into a signal. To make matters worse, whatever they pick up is often sent down a few runs of long cables, through a number of connections, running over humming mains cables and finally into the back of the preamp. What are the chances for the original signal to survive such a hurdle?

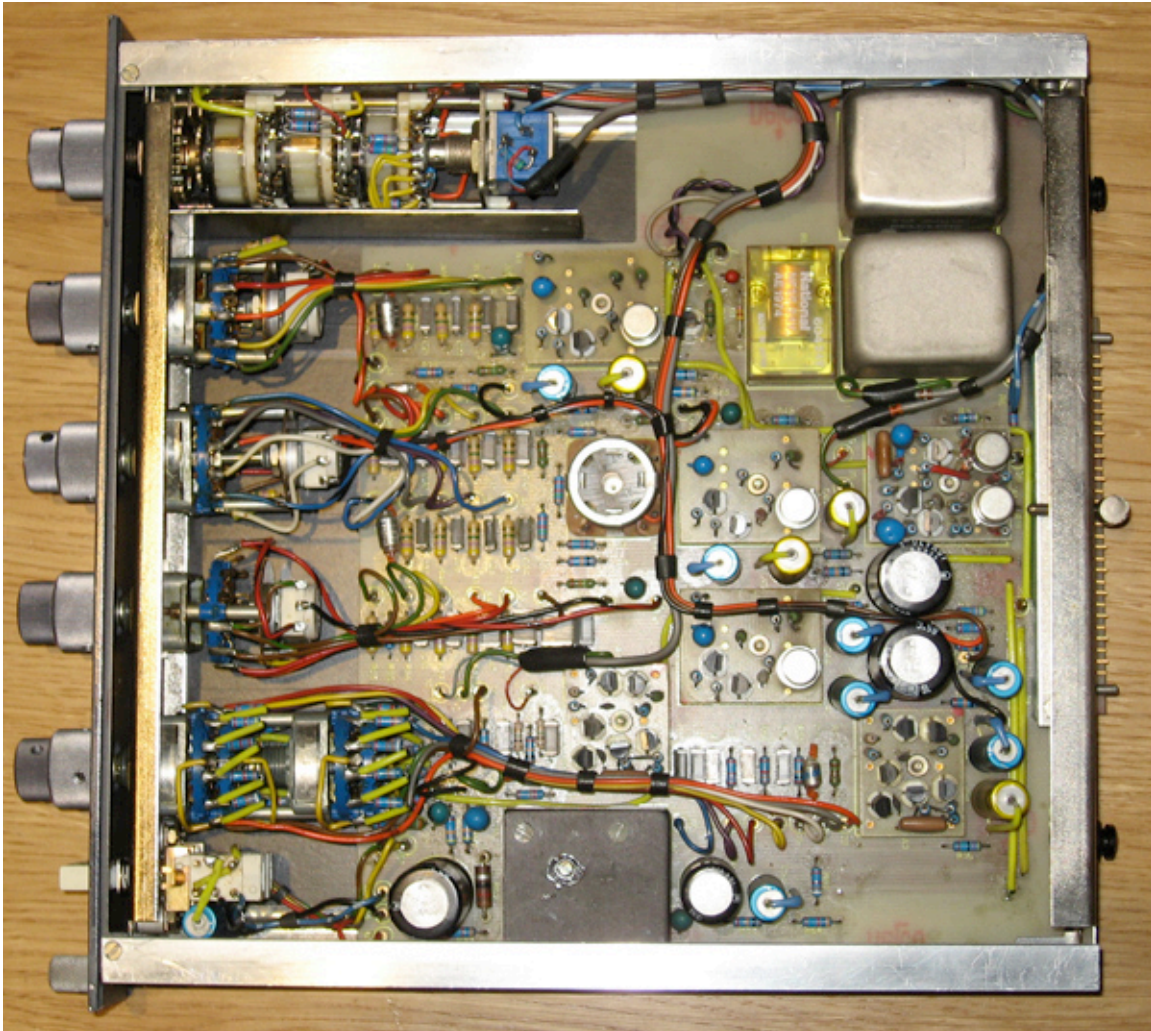


Old leads and tanished connectors can cripple a perfectly good sound source, and make it impossible for a micamp to extract any quality at the other end.

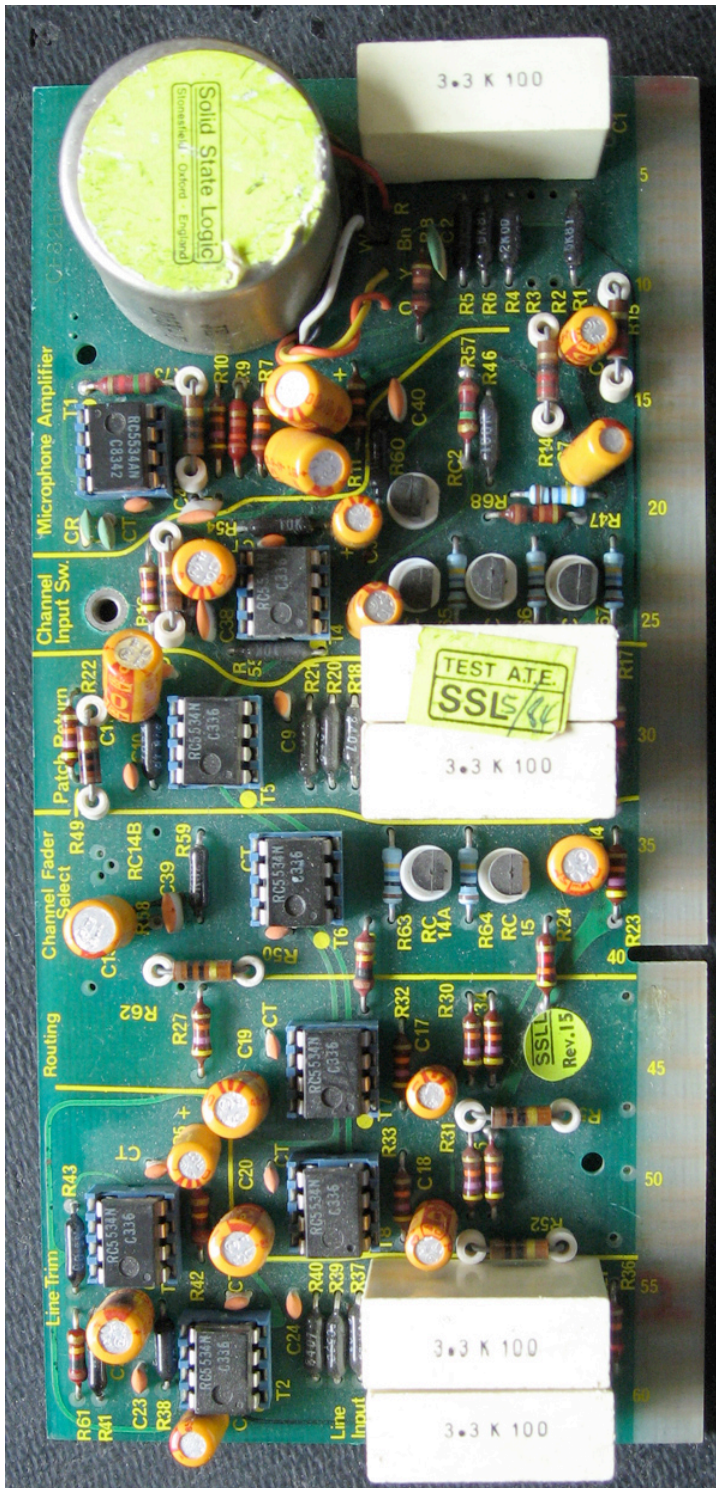
Micamps are not just dull boxes designed to turn the volume up—or at least, they shouldn't be. Their primary task is to recover as much sound as possible from the microphone and make it intelligible. We often take it for granted that a microphone shouldn't hum, buzz or crackle, but the reality is that this would almost inevitably happen if the pairing with the micamp was less than perfect.

Micamps can have an audio transformer on their input stage or they can have a transformerless design. The active gain element of a micamp can either be a tube, solid state or hybrid design. Solid state is a generic word that implies the use of transistors, whether they are integrated circuits, discrete FET or traditional type. Without getting into the electronic details of each technology, each of these design choices will affect the sound.

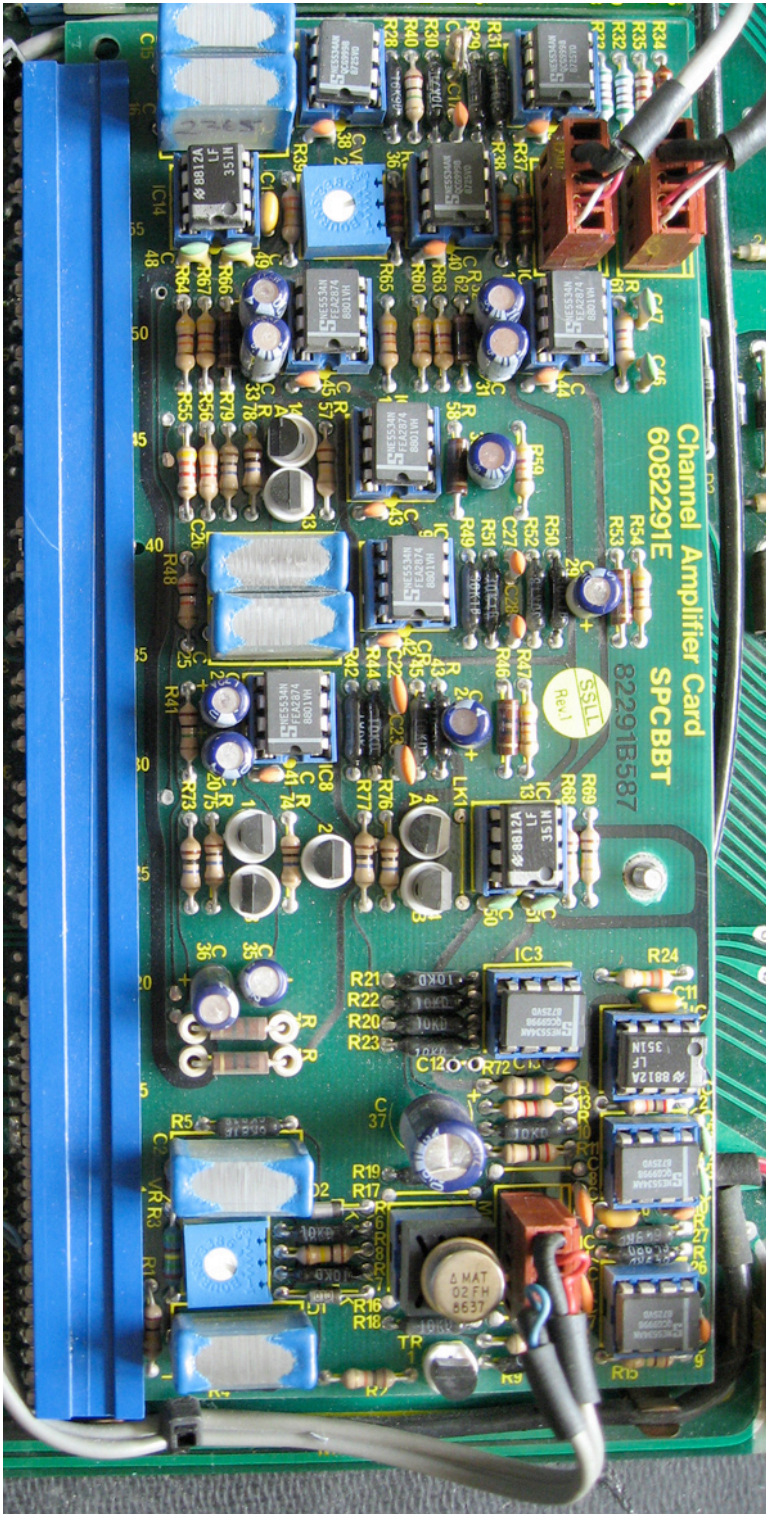
BONUS CONTENT



Neve 33122 module - notice the complete lack of integrated circuits (chips). The only active components are discrete transistors, a normal design feature for '70s preamps. Notice the 2 large shielded audio transformers in the top right corner.



SSL E-series micamp card. This is an '80s design, but still hosts a round audio transformer.



SSL G-series micamp card. A re-designed micamp for the improved G-series console, this card shows a transformerless design, but with a transistor on the front end (the round, shiny thing on the right).

Vintage mic preamps

Vintage micamps were designed at a time when modern technology wasn't available, and they all have transformer-isolated inputs. Really old ones also had tube circuitry, because transistors hadn't been invented yet! The classic sound they're known for—big, warm and round are words often used to describe it—is a direct consequence of the components they're made of.

Audio transformers have a tendency to enhance the lower end of the audio spectrum and filter out the top end, and tubes are characterized by even harmonic distortion, which is more pleasing to the ear. On the other hand, because of their age, most vintage micamps are noisy and hissy, particularly at high gain settings. This is because old components, which are at the heart of the sound, couldn't be manufactured to the same specification of their modern counterparts.

Modern re-issues

Modern re-issues of vintage microphones often incorporate slight modifications to the design to improve the noise floor without affecting the sound too much.



A rack of original Neve 33122 modules. First released in the 70s, these micamps (and countless variations on the theme) are still very popular for their warm sound.



Modern Neve 1081 reissue. Although closely matched to the specs of the original, their noise floor is much improved.

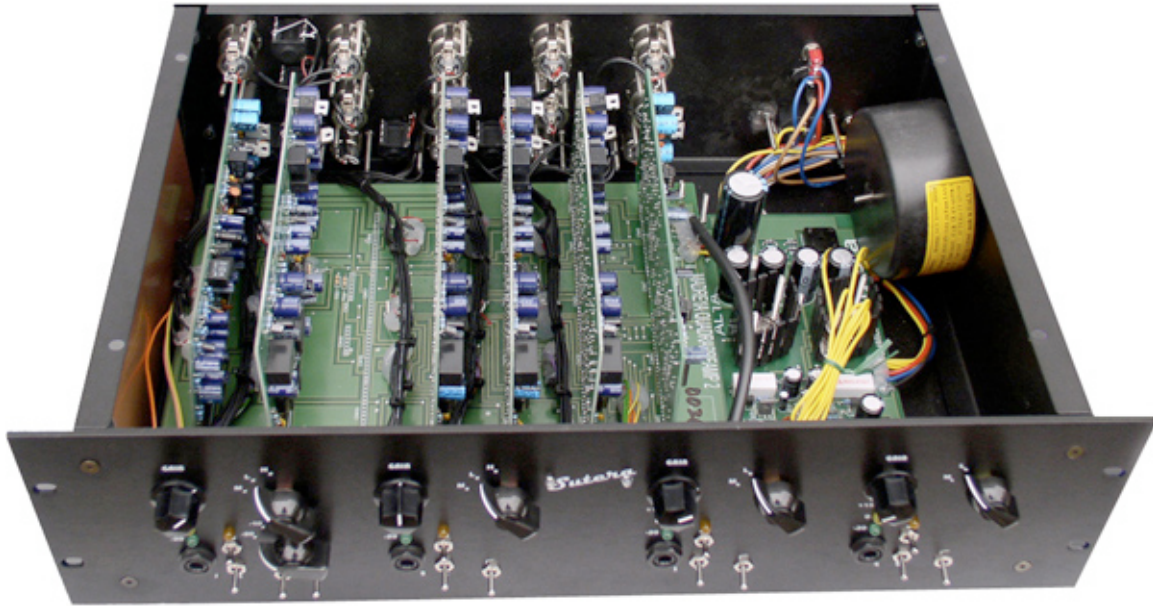
Modern mic preamps

Modern mic preamps offer a massive improvement over their vintage predecessors. Superior components and improved techniques can offer spectacular performance

and amazing linearity. Often quoting a dynamic range of 120dB or more, a ridiculous noise floor and an extended frequency response that can stretch way beyond 100KHz, modern micamps can not only capture the minutest nuances of a performance, but also show microphone defects otherwise unnoticeable. Some modern micamps offer more than one technology at the gain stage, as well as the option of switching a transformer into the input stage.



Pendulum Audio Quartet II: this micamp and channel strip is the engineer's holy grail. The micamp offers a choice of 2 transformers on the input or none at all, and an increasingly popular choice of input impedances.



Some hand-made products (like this) can easily beat the competition because of their custom components and rigorously selected parts.

Remember: cheap components can also mean cheap design. Micamps found on popular mixing consoles or budget channel strips are pretty basic and use standard integrated circuits, which barely deliver the goods at their best.



A cheap analogue console can't compete with purpose-built micamps.

Conclusion

Different micamps offer different flavours. The most expensive ones will usually offer a better technical performance, and will make the most of needy vintage mics. Modern designs can offer a cleaner signal path,

but sometimes might lack the oomph of older designs to privilege attention to detail and crispness.