

Neumann TLM 103 Studio Condenser Microphone


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Two Reviews

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by [Barry Rudolph](#)

Neumann's newest entry into the professional and project studio markets, the TLM 103 is part of the FET 100 series of condenser mics. The TLM 103's heritage is divided between two distinct and important Neumann technological eras: the venerable U87 microphone and the modern Transformerless Microphone (TLM) technology. As should be expected by the marriage of these two pedigrees, the 103 is indeed a quality microphone well worth the under-\$1,000 price.

The TLM 103's capsule is based on the K87 capsule used in the famed U87 and tube U67 mics. Whereas the 67 and 87 use a dual-diaphragm capsule (with two separate back electrodes) to create multiple polar patterns, the 103 uses the single, K103 large diaphragm capsule for cardioid-only operation. (This was acceptable to me, as there are few studio situations where I would use an omni mic and even fewer times I would use a mic on figure-8.)

The 48 VDC-powered, fourth-generation transformerless circuit within the TLM 103 has low self-noise (7 dBA) and a large dynamic range (131 dB SPL). The low noise figure makes the 103 ideal for Foley/sound effects and ambient recordings. Withstanding sound levels up to 138 dB (at 0.5% THD)--nearly the sound level of a modern fighter jet exhaust in full afterburner--the TLM 103 is ideal for close recording of drums and percussion without distortion. There's no attenuation switch, so you may want to verify that your microphone preamp will handle this mic's high 13dBu max output when recording close and loud vocals (or close loud anything else for that matter).

Frequency range is 20 to 20k Hz. The mic has a flat response up to 5k Hz where a wide, 4dB presence boost begins. This is similar to the U87, but the 103 remains sensitive down to 5 Hz due to the TLM circuitry. An elastic-mounted internal structure reduces the influence of external shocks on the sound of the mic. This is crucial, as the 103 does not have a bass roll-off switch. This was apparent when I used the 103 around a group of backing vocal



singers and could clearly hear the "thump" of foot tapping. The shockmount elastic suspension holder (EA 103) accessory is a recommended investment, especially when the mic is used onstage or around a drum kit. The mic includes the SG 103, a plastic swivel clip of minimal quality. After just a few mic stand changes, the plastic threading looked worn. It would be better if Neumann could have made this out of metal like the U87 mount.

The mic's small size works well around drum kits or as an unobtrusive mic for an acoustic guitar player. All the musicians I recorded with the 103 were intrigued by the new "cool little mic."

Subjective comparisons to the U87 are obvious, but I feel the microphone really has its own identity. As a reference point, I did a brief, A-B "comparison" with an AKG C-414 TLII (set on cardioid). I placed both mics in front of a player with a '60's vintage Martin D-28. In the case of this song and this particular guitar part, I liked the TLM 103 over the AKG. It has a definite, more "forward" sound, but not in the sense of a EQ'd sound. The guitar occupied a good "space" within the track without much extra equalization or compression. I also liked using the TLM 103 on electric guitar, making a midrange Vox AC-30 sound bright and fat.

Due to the mic's low self-noise and distortion, you could use a hyper-EQ shape and/or an extremely squashed and spanking compressor setting and not highlight any microphone shortcomings. I found applications where I preferred the TLM 103 over anything else in the mic cabinet. It was excellent on drums, harmonica and sax as well as certain singers who would also sound good on a U87.

The TLM 103 is \$995 (including SG 103 mount and a wooden storage box), yet I never felt I was using a "budget" microphone. The mic comes in either satin nickel or black matte finishes, and Neumann also plans to offer the mic in stereo pairs.

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by [George Petersen](#)

Technology is sometimes unveiled in the most mysterious places. I first saw the Neumann TLM 103 on a clear summer afternoon at Beaulieu Vineyards in California's Napa Valley, while enjoying some vintage Cabernets in BV's reserve tasting room. And, no, it didn't happen entirely by chance--you see, when you go wine tasting with some friends from Neumann (another company known for fine vintages), special things are bound to happen.

After a quick toast to our mutual successes, Wolfgang Fraissinet from Neumann Berlin pulled a gleaming wood box out of his briefcase. I wasn't exactly sure what to expect, but inside was the TLM 103 shown here. I carefully lifted it out of the case and held it to the light, just as one would check out the deep hue of a good Merlot. And through the layers of its front grille, I could make out the distinct silhouette of the K103 large-diaphragm capsule, derived from that used in Neumann's classic U67 and U87 studio condensers. But the TLM 103 was clearly different, weighing in at about a pound and being a scant 5.25 inches in height. And best of all--it was priced at \$995!

Essentially, the TLM 103 (slated to ship in January) is a 48VDC phantom-powered studio condenser mic designed for users who require a high-quality, yet affordable, microphone--perfect for the project studio owner. With this in mind, some frills were eliminated from the TLM 103, such as multipattern operation, bass roll-off switches and internal attenuation pads. The polar pattern is a traditional cardioid, which is the best choice in 90% of all studio applications anyway.

As another way of addressing the project studio owner, the TLM 103's frequency response and polar patterns were optimized for voice and instrument reproduction, with a flat frequency response to about 5 kHz, followed by a wide, +4dB presence boost in the higher frequencies. Overall, the frequency response is similar to that of the U87.

As the mic's bottom-end frequency response extends down to 20 Hz, the TLM 103 can be susceptible to unwanted subsonic frequencies. So to reduce vibration from outside sources that could be transmitted through the mic stand, all of the TLM 103's internal components, including the capsule, are elastically mounted. And if your studio is located below a subway station or next to an artillery range, an EA 103 elastic suspension (shock-mount) is optional.

But the real difference between the TLM 103 and other Neumann mics lies beneath the surface. Neumann's TLM designation is actually an acronym for "transformerless microphone," a design where the usual output transformer is replaced with an electronic circuit. As with traditional transformers, this ensures good common-mode rejection and reduces the RF interference that can degrade the balanced audio signal. Additionally, transformerless designs can offer better low-level linearity, more accurate low frequencies and freedom from core saturation.

More significant is the fact that the TLM 103's self-noise is stated to be an impressively low 7dB DIN/IEC 651 (A-weighted) or 17.5dB CCIR, which--from the standpoint of noise performance alone--puts the TLM 103 on a par with the best measurement mics available. With the ability to handle sound pressure levels of up to 138 dB (at 0.5% THD), this provides a maximum dynamic range of 131 dB.

The TLM 103's \$995 price includes wooden box and swivel mount. Numerous options are available, such as battery- and AC-powered phantom power supplies, an overhead hanging mount, windscreen, pop filter and shock-mount.

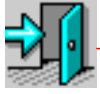
There is no question that a quality mic with extremely low noise performance will appeal to a wide range of users, especially in Foley, radio drama, sound effects/sample recording and as a spot mic in orchestral applications. Additionally, the combination of a large-diaphragm design with a rising high-end response should be useful in all sorts of voice situations, whether it's vocal recording in project studios or announce narration for broadcast. So far, the TLM 103 looks good, feels good and has impressive specs. But how does it sound? We'll have to wait until AES to find out.

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