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BY PAUL VNUK JR.

REVIEW

Locomotive Audio

Model 286A Dual-Channel Mic Preamp / DI

New firm, old inspiration, exquisite results

Locomotive Audio is a new St. Louis-based audio company that I had the pleasure of learning about at last year's AES Convention. Currently Locomotive offers two products: the Model 286A microphone preamp on review here, and the Model 14B compressor (review forthcoming, I hope!). Both units are tube designs and are heavily inspired by the studio gear of yesteryear. I love the company statement on its website: "A trip to Sun Studio in Memphis changed everything..."

The 286A

The 286A is a 2-channel microphone preamp in a 2U 19" rackmount enclosure. It's housed in an 18-gauge steel box finished in a stunning retro gray-blue with the company logo in white. (Great logo, by the way!)

The center of the unit is dominated by a large old-school Sifam VU meter with a 2-position switch for selecting between the output levels of channels 1 or 2. Each channel's controls flank the VU meter in a mirror image on each side.

The 286A is a 2-stage vintage design where you can push the input gain into the output stage and add grit, harmonics and weight. That's controlled by a small black gain knob with the larger level knob diagonally below it. Both are continuously variable rather than stepped controls.

Each channel also offers +48V phantom power, 20 dB pad, polarity reverse, 100 Hz low cut filter, impedance switching between 500 Ω or 1800 Ω, and a Mic/DI switch that selects between each channel's rear XLR input or its front-panel 1/4" DI/instrument input.

As on many vintage designs, the 286A's front panel is connected to a big bottom hinge. When a pair of set screws are released, the faceplate flips down for inside access. This harks back to a time when units had to be easily field-serviceable, often without leaving the rack.

The 286A is a completely hand-wired affair, with all wires, capacitors, resistors and more laid out on an old-school turret board (a forerunner of the modern circuit board). The organization and internal craftsmanship are some of the most meticulous and clean I have seen. Also old-school: the back of the unit contains each channel's XLR ins and outs, plus all of the tubes, input and output transformers, and power transformer.

Tubes and trannies and specs oh my!

The input stage of each channel uses an EF86 tube and a Cinemag CMQEE-3440A transformer. The outputs use a 12AY7 tube and Cinemag CM-27101 transformer.

Its specs are as follows: Mic input load impedance of 500Ω or 1800Ω, output impedance of 300Ω, 1/4" DI impedance of 169 kΩ, maximum gain of 72 dB, and signal/noise ratio greater than 70 dB. Its maximum input level (measured at 20 Hz and at 1 kHz at 1% THD) is –18 dBu (+2 dBu with the pad engaged) and its maximum output level is +26 dBu.

Sound and use

The 286A is modeled on the microphone preamps found on old portable Ampex tape units (see the sidebar interview with designer Eric Strouth for more background). It is equal parts clean, warm, and smooth, but can also get driven and gritty when pushed.

For a clean, open, and slightly creamy sound, keep the input set low and the output on the higher side. This unit has gain for days and can very quickly be roughed up with drive and harmonics, especially if you engage the 20 dB pad and really crank the input. The 286A has one of the broadest throws of clean to driven that I have used in a tube preamp.

In my studio I have a pair of Chandler REDD.47 preamps (reviewed January 2015), and a Universal Audio SOLO/610 that I reviewed back in January 2007 and have since modified with a vintage 1950s RCA Black Plate tube. In our October 2015 issue, I also reviewed the tube-based Manley CORE channel strip. It was great to compare and contrast all of them side by side with the 286A.

Overall the CORE is a clean, hi-fi audiophile box, the REDD.47 has a wide sonic throw of its own from wide, clean and hi-fi to beautifully aggressive, and the SOLO/610 is the most overtly thick and vintage-sounding with a low threshold for overdrive. I would place the 286A between the REDD.47 and the SOLO/610, leaning toward the latter. It's more open and clean up top than the 610, and yet rounder than the REDD.47. To romanticize it a tad, it's a British Invasion sound vs. the American sound of Phil Spector and the 1950s/60s.

I have been tracking an Americana-flavored pop record for the past few months, and the 286A has handled room mic duties on guitars and drums for pretty much every song. Aside from solid-state Chandler TG2 preamps used on drum tracking, the rest of the album has been an all-tube affair. On one song, a swampy lap steel and reverb laden reading of the old hymn "Come Ye Sinners", I used the 286A and ribbon mics exclusively. In the end the track is warm, clear, and round, just dripping with vibe.

Conclusion

There is much to appreciate in the 286A. It is visually stunning, handmade with love, and sounds fantastic. While its price tag isn't trivial, it's actually priced quite competitively when you consider that many companies charge a similar price for a single-channel unit.

Locomotive Audio accomplished the rare feat (at least in the audio world) of launching a Kickstarter campaign, reaching its goal, and delivering precisely what was promised and then some. Congratulations on a great launch, guys—I can't wait to see what's next.

Price: $2495
More from: Locomotive Audio, www.locomotiveaudio.com

A Chat with Eric Strouth

I know that the 286A is inspired by the mic pre section of old Ampex tape machines. How does that type of preamp differ from what you would find in a classic console?

Eric Strouth: The design of the Locomotive 286A was derived from the very popular Ampex 601 "suitcase" tape recorder. The preamp section of the 601 is based around EF86 and 12AY7 tubes in three gain stages, two within the 12AY7. The 286A focuses on these three stages.

Usually in a classic tube console (such as the REDD 47), each channel has an output tube that is capable of driving heavy loads. Since the 12AY7 in the 286A is not really supposed to be an output tube, a higher turns-ratio output transformer must be used, which can affect the performance if special care is not taken.

How close is the 286A to the original?

Besides the type of tubes and number of gain stages, the circuit has been heavily modified to allow for more input headroom, making it cleaner on loud sources. With the high-output condenser mics we have today, the original Ampex 601 design is not capable of handling this signal because it will distort the EF86 input tube before the first "Gain" knob.

A lot of time, measuring, and listening went into designing the first gain stage (EF86) of the 286A. The modified output gain stage incorporates a very special local negative feedback loop which allows for better frequency and distortion numbers as well.

I notice inside that this is a complete throwback to vintage hand-wired turret board circuit design.

I'm a huge fan of turret board layouts, not only because they look cool, but because they've allowed me to make changes on the fly when testing my units. The components that affect the sound the most are the incredible Cinemag input and output transformers. Cinemag's wide product line allowed me to pick just what I wanted in this design. The input transformers are the same as the ones the old Quad Eight consoles used, while the output transformers have the perfect turns ratio and specs to be paired with the 12AY7 tube.

The 286A also uses high-grade Solen polypropylene coupling capacitors throughout the signal path, which make for a higher-quality sound.

This unit has a huge tonal range, from clean and round to vintage and fully driven—much more so than most of the modern tube preamps I have reviewed. Care to comment on this choice?

I always thought that heavier color on those moments of passion really lit things up and brought the vocal and other instruments to a different level... Some love it, some hate it. And because of this, I'd decided that if I wanted to sell in today's market and offer "heavily-colored" units, I needed to build units that could be pretty clean as well.

What this means is that at low gain settings on the front panel (Gain set low, Level set high) a singer could scream into a high-output condenser or even a hot dynamic such as a Shure Beta 58A and not distort the input transformer and tube. However, by adjusting the Gain, the ability to drive the next gain stage for the appropriate amount of warmth, color, or even fuzzy distortion would be at the engineer's fingertips. In my opinion, these options are why a "dual-knob" preamp is superior to a "single-knob" preamp.

How did you keep its noise floor so quiet?

A lot of trial and error! The EF86 input tube was a great place to start. I've tried all the new EF86 tubes available, and I have to say that I've found their quality control lacking. Lately, we've been sourcing "New Old Stock" tubes that are actually cheaper and way better in terms of reliability and noise floor. It is important that we run all tubes for several days at high voltages before making the final decision as to whether they will make it out the door.

Next, since the layout of the unit is on a turret board, much care had to be taken with wire runs with shielded and twisted-pair cable. I've actually found that tight unshielded twisted pairs have a better noise figure than just shielded cables in our units, for whatever reason.