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Veteran UREI and Universal Audio engineer Dennis Fink uses classical single-ended Class-A dual-triode tube gain blocks in the CS2-FA, a two-rackspace unit with two complete recording channel strips. Each strip has a Bill Putnam–inspired tube console mic pre; a passive EQ with the same frequency sets and operation as the Pultec EQP-1A; and an FET limiter that is similar to the [UA 1176LN](#) except that the CS2-FA has tube input/output stages. Apart from the FET attenuator, the CS2-FA offers an all-tube audio path with five tubes per channel.

BIG SURPRISES IN THE BOX

Hand-assembled in the USA, the 15.25-inch deep chassis uses high quality components and first-class internal construction that belie the unit's \$3,999 MSRP. There are two circuit boards per channel: one for the mic preamp/EQ amp and the other for the FET limiter and output amp.

The power supply is beefy and supplies the +350VDC B+, the regulated DC for phantom power, and all other circuits including 10-volts DC for the tube filaments. All four main circuit boards interconnect to each other and to the smaller front panel circuit board modules via handmade wiring looms, shielded Mogami wire and Molex connectors. This makes maintenance or field repair simple--just unplug and replace any "suspect" circuit board module.

The CS2-FA incorporates CineMag CMMI-7CPC mic input transformers and the larger CM-9589L output transformers for each channel. It uses Wima audio coupling capacitors throughout, along with Bournes control pots, Electros witch rotary switches and Neutrik XLR I/O connectors. All 10 tubes are sourced from JJ Electronics.

MIC PREAMP

The mic preamp uses two ECC83s and an ECC81--one more tube than the original Putnam design--used to drive the passive EQ. Front panel controls include 48V phantom on/off; -10dB to +10dB gain fine adjust; output level that goes to "11"; and input select with 0, -10, -20, -30 dB and line positions, plus DI for the 1/4-inch plastic direct input jack.

The DI input, when selected, connects the jack directly to the grid of the mic pre's first ECC83 triode section--just like a Fender guitar amp. Its input impedance is 1 meg-ohm. The CS2-FA's total amount of gain sans limiter inserted is stated at 60 dB for the rear panel XLR mic input path and 46 dB for the front panel DI.

PASSIVE EQ

Next on the front panel after the mic pre is the passive EQ section. It has an in/out switch for placing it into the chain before the limiter but there is no way to insert it after the limiter.

It includes midrange boost (no cut) up to +10 dB; a continuously 1 to 10 variable midrange Q control; a midrange frequency selector with 3, 4, 5, 8, 10, 12 and 16kHz frequencies; 0 to -10dB HF cut; HF choices of 5/10/20 kHz; LF selection with 20/60/120Hz positions; 0 to +10dB LF boost; and LF cut with a 0 to -10dB range.

The EQ uses a second-order LC-style midrange section based around a Cine-Mag multitap choke. Switching between different winding taps changes the midrange center frequency. Both the HF and LF sections are first-order 6dB/octave shelving RC-type filters with frequencies copied from the Pultec EQP-1A. You can boost and cut low frequencies at the same time and, as with the Pultec, produce a resonant peak just before the filter's cut-off frequency.

[Read Barry's Mix Magazine Feature Article On Compression and Compressors](#)

FET LIMITER

The limiter section has an in/out switch, input level and makeup gain Output level controls. Once you develop an operating level for a recording with the mic pre and EQ section, switching in the limiter brings up to 20dB more level. Like the [1176LN](#), the input control pushes more level into the detector circuit for more limiting/compression while the output control sets the final level.

The variable Attack control has a 0.2 to 20ms range; release times go from 100 ms to 2.2 seconds; and the Ratio control switches between ratios of 1, 4, 8, 12 and 20:1. An "A" ratio position simulates the effect of pushing all of the ratio buttons together on an [1176LN](#). The "S" ratio position switches to a soft-knee compression curve that has less compression in the beginning than a fixed 2:1 ratio and maintains this lower ratio through the first 20 dB of incoming signal level.

The limiter section finishes with a small, lighted Sifam VU meter and a three-way switch to read gain reduction, output level and Pre (the level coming from the mic pre/EQ sections into the limiter).

IN THE STUDIO

To familiarize myself with the CS2-FA, I used a -18dBFS 1kHz tone from Pro Tools' Signal Generator plug-in. I used the CS2-FA's line input position and set the Gain control minimum and adjusted the level knob until I matched the -18dB level coming out--the unit's limiter and EQ were in bypass. Both read -18dBFS in the Log scale of Roger Nichols' IXL Level meter plug-in inserted and reading the output going out I/O 5/6 of PT and coming back into PT to the Master fader channel.

Both channels had identical knob settings--a good sign of excellent design, close component tolerances and overall build quality.

With nominal song mix levels coming out of Pro Tools, the VU meters read normally, but I think the VU meters could use a scaling feature when measuring the hotter audio output levels encountered after limiting.

With or without music playing through the unit, I could hear pops when switching the limiter in and out. As the limiter uses a true bypass system, there is no way around the associated level change that occurs when the limiter is switched in and out. Fink Audio has incorporated a hardware change to fix the pops that happen with no signal present.

With a compression ratio of 1:1, I set the limiter's input and output controls to around 2 o'clock and got unity gain; when switching the limiter in/out, the levels matched.--Nice!

On my Pro Tools rig's stereo bus output (actually interface 5/6 in/out), with the unit's ratio set to 4:1, the Attack knob straight up and fastest release setting, I found the limiter to be smoother and less aggressive than my [1176LNs \(Rev-D\)](#), but definitely in that same family of sound.

I was getting about 2 to 6 dB of gain reduction as read on the meter and was able to increase the output level upward of 5 dB. I tried

the Link switch and found it to work exactly like UA's 1176LN stereo adapter unit, where the control signals from each limiter channel are summed and then applied to both.

I enjoyed building a resonant peak with the EQ by boosting low frequencies at 60 Hz and cutting at the same time. This causes the kick drum to move forward in the mix and the bottom end got tighter and less round. The equalizer is refined and musical-sounding; the 10dB boost is spread over the knob's entire range. Ditto for boosting high-midrange frequencies at 8 kHz and then using the HF cut at 10 kHz. This is an excellent way to precisely set the overall brilliance of a mix. For recallable use, adding detented control pots for all the front panel controls would make a good "mastering version" of the CS2-FA.

I used a pair of [Mojave MA-101fet condenser mics](#) with omni capsules and no pads. I spaced the mics about four feet apart, four feet from the floor and in front of my drummer's kit at about three feet out. I got a warm, natural tone from the kit and from the small room it was in. With the mic preamp set at 0 dB, I got plenty of level with the Gain knob at about 2 o'clock and the Level at 11 o'clock.

By switching in the equalizer, I was able to boost more low frequencies at 120 Hz for increased low end on the drums--particularly the kick. With the limiter switched in, the ratio on the S position worked well to smooth out and further fatten the drum tones: snare, kick and toms. The cymbals and hi-hat did come up in level, but rolling off 12 kHz with the Hi-Cut control seemed to prevent them from taking over the whole kit sound.

Next, I recorded a male vocal using a Neumann M149 mic with no pad and no roll-off, and played with the ability to saturate the unit's mic pre. At 0dB mic gain, the CS2-FA's tube mic pre and input transformer were constantly saturated from the hot level coming from the M149. Saturation can increase apparent loudness, in which the signal is louder without much VU meter (electrical) level increase.

For the most part, I liked it on the track except when the singer pushed his voice and the additional roughness became too much. Reducing the mic gain attenuator to -10 dB produced a more "conservative" and high-fidelity sound. Having the choice is good--the saturation mode is an excellent way to fatten up the sound of thin voices, thicken falsetto singing or high tenor male vocal harmony parts.

The CS2-FA's EQ was very flattering to the voice. Pushing low frequencies sounds great, although that is unnecessary for my singer's barrel-chested sound. If you like a bright vocal sound, boosting the midrange section set at 10, 12 or 16 kHz is glorious--there is nothing like a tube-based LC equalizer!

Next I tried recording a 1971 Fender P-Bass plugged into the front panel DI jack. Here the sound is (as I might predict) exactly like UA's 6176--thick and creamy, big tube coloration with loads of sustain. But unlike the 6176, the CS2-FA has a complete EQ for carving the bass sound to perfectly fit the player, the part, the track and the song. Again, you can crank gain and reduce level going to the EQ/limiter and go from clean to dirty, and easily maintain the same amount of compression.

My 80-year-old Schiller baby grand piano sounded amazing when recorded through the CS2-FA. The [Mojave mics](#) were used again but with the -15dB pads and cardioid capsules. I placed them right over the hammers, aimed outward, left and right, toward the extreme ends. By themselves, the mic pres produced a full and balanced sound. Boosting 10 kHz using the broadest Q in the midrange EQ opens up the sound with more air/brilliance, and adding the compressor set to a 4:1 ratio with 2 to 4 dB of compression compacted the dynamics nicely.

TWO-RACKSPACE POWERHOUSE

I found the CS2-FA wonderfully handled any recording task and stereo mix bus processing. While the front panel looks technically daunting at first glance, operationally it works in a musical and non-critical or technical manner. As with any vintage tube unit, I quickly learned each control and then cranked them around freely, achieving a lustrous, fat sound on all sources.

Check For More On [The Fink Analog Audio CS2-FA Tube Dual Channel Strip](#)

PRODUCT SUMMARY

COMPANY: Fink Analog Audio
PRODUCT: CS2-FA Tube Dual Channel Strip
WEBSITE: www.finkanalogaudio.com
PRICE: \$3,999

PROS: Two complete
dream tube channel
strips in two rackspaces.

CONS: Compact front
panel necessitates small
controls and VU meters.

Specifications

General

Bandwidth 10Hz-50kHz, ± 1 dB
Maximum Output +22dBu
Gain 80dB
Equivalent Input Noise -120dB

Limiter Section

Makeup Gain: -infinity to +20dB
Input Control 0 to 11
Output Control 0 to 11
Ratio 1, Soft, 4, 8, 12, 20, All
Attack 0.2 to 20msec
Release 100msec to 2.2sec

Preamp Section

Inputs Mic, Line, DI
Input Pad 0, -10, -20, -30dB, Line
Gain Control ± 10 dB Continuous
Level Control 0 to 11

Passive EQ Section

Low Boost 0 to +10dB
Low Cut 0 to -10dB
Low Frequency 20Hz, 80Hz, 120Hz
Mid Boost 0 to +10dB
Mid Q 1 to 10
Mid Frequency 3k, 4k, 5k, 8k, 10k, 12k,
16kHz
High Cut 0 to -10dB
High Frequency 5k, 10k, 20kHz

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