Analog Audio Processing

API 5500 Dual-Channel EQ

A well-pedigreed, innovative and versatile equalizer offering world-class results.

by Stephen Murphy, 6.15.2007 email the author

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The API 5500 dual-channel equalizer, like everything in API's rackmount and module product lines, can be traced directly to its roots in the late '60s when API founder Saul Walker introduced his ground-breaking modular console component designs. In this case, the 5500 owes its existence to the original single-channel three-band API 550 EQ, as well as successive 550A and 550B (four-band) modules.

At a time when most equalizers could be called broad, ham-fisted tools, Walker created an equalizer with thoughtful and creative innovations such as proportional-Q, which varies bandwidth in proportion to filter amplitude, and 100-percent reciprocal boost and cut behavior. Extending the 550 lineage, the new API 5500 ($2,995) remains true to the original 550 signal path design, while adding some creative new features.

Fast Facts

(Click thumbnail)

Applications
Studio

Key Features
Dual-channel (API 550B x 2) 4-band EQ; all-discrete analog components; capable of output levels up to +30dBm before clipping; selectable filter amplitude range (+/- 12, 6 or 3dB) with corresponding step resolution change; EQ in/out and straight-wire bypass; 5-year warranty

Price
$2,995

Contact
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Features

The API 5500 is essentially two 550B four-band EQ modules configured in a single-space rackmount chassis with an internal power supply.

Like the individual 550 modules — and, in fact, all API analog products — the 5500 is a fully discrete-component device with no integrated circuits in its audio pathways. Per-channel signal gain is provided courtesy of two of the legendary, hand-built 2520 operational amplifiers. An API 2510 op amp handles the 5500's electronically balanced input section, and the API 2503 output transformer is capable of delivering up to +30 dBm at the output before clipping. A field-upgradeable transformer-coupled input section that bypasses the stock input section is available as an option.

Each channel features four bands of EQ with peaking-type filters for the inner pair and peak/shelf-switchable filters for the two outer bands. Filter frequency centers per band are as follows: Low 30, 40, 50, 100, 200, 300, 400 Hz; Low-Mid 75, 150, 180, 240, 500, 700, 1000 Hz; Mid-High .8, 1.5, 3, 5, 8, 10, 12.5 kHz; High 2.5, 5, 7, 10, 12.5, 15, 20 kHz. Each EQ band is capable of a +/- 12 dB amplitude range though the overall range of each channel's filters can be reduced to .5 or .25 of the normal range via two rotary switches.

In addition to an EQ section In/Out button for each channel, the 5500 also features a global straight-wire bypass with no electronics in line.

I/O connections are XLR with additional balanced/unbalanced 1/4-inch input jacks that override the XLR inputs. The unit can be switched for 115- or 230-volt operation, has a replaceable fuse, and connects to A/C outlets via a standard IEC cable.

In Use

Everybody sing! "550, glorious 550… "

The 550B modules paired within the 5500 can indeed sing, and they do it extremely well, thank you very much. They also whisper, growl, purr and soar — in short, it's unlike any other beast out there.

Truth be known, despite my long-term and deeply rewarding relationship with API preamps, I have never owned, and have barely used, API equalizers. So it was with great anticipation that I waited for the 5500 to move in with me for a month.

Before getting into specific applications, let me expand on several features mentioned earlier that define the 5500's power and versatility. Topping the bill is the per-channel range switch that sets the maximum boost/cut depth to 12, 6 or 3 dB with corresponding step-size resolution changes. Combine that with Saul Walker's pioneering proportional Q design, where the width of the filter narrows at

greater amplitudes, and you end up with an incredibly powerful and creative coloring box. An additional bonus is the reciprocal nature of the filter amplitude (where the exact same components are reconfigured for boosting or cutting), which allowed the precise 1:1 undoing of previously made EQ changes.

Even with the EQ section disengaged, the 5500 is gifted with a certain amount of that API sound – due to the input op amp and output transformer – making it useful right off the bat as an API-zer. (API: I am willing to trade use of "API-zer" for, say, a gratis 5500. Call me.) But that simple use of the device was eclipsed when I discovered the sonic beauty of its filter behavior.

Like many engineers, I don't usually record with any EQ (though I most certainly did back in the 2-inch/24-track days when boosting high-band EQ on playback would also boost tape hiss). So I started out using the API as an insert on a variety of different channels in a mix on which I was working.

It quickly became obvious that I was going to need about 15 more 5500s (along with a second mortgage). Alternatively, I could spend several days bouncing tracks through the 5500, but I don't think the clients would be too happy about the additional hours.

As I moved the insert across different channels in Nuendo — with any existing channel or plug-in EQ bypassed — I found that there wasn't a single track that wasn't improved versus the digital EQ. I swear I could hear the channels weeping softly as I took their baby away. The only exceptions were the rare incidences where "non-creative" forensic use of EQ was required (we're talking -15 dB micro-width surgical strikes).

I eventually graduated to using the 5500 inserted between the mic preamps and converters, usually for conservative shelving and mid-band nudges, and always with great results. I also employed the 5500 for subtle teaks on several two-track mixes (mastering, if you will, with due respect proper mastering engineers) with great results.

Summary

Let's face it; except for mastering facilities, high-end equalizers qualify as luxury items in most studios. Even the typical world-class studio will have a limited number of outboard, high-end equalizers in their racks, and the number diminishes at every stop below. High-end EQs have historically faced stiff competition from console EQs and resources that gravitate towards more pressing equipment needs. With the ubiquity of DAW plug-in EQs of every flavor (including several modeled high-end hardware EQs) that competition has expanded exponentially.

Then along comes the API 5500 – with its enduring all-discrete analog component design and eminently useful new features – to remind you what a truly great EQ can achieve and at the same time put so many plug-ins and digital console EQs to shame. API deserves credit for its adept addressing of the obstacles a high-end EQ faces in the market. The 5500 is endowed with top-notch audio quality and innovative features, making it versatile enough to use in any application, from the gentlest coloring of an input signal all the way up to world-class mastering applications.