API 5500 EQ

API has re-mastered the art of analogue stereo EQ by drawing on vast experience and classic design.

Text: Robin Gist

▶The API 5500 dual four-band parametric equaliser is a new product from Automated Processes Inc. that could well be the answer to many mastering engineers' prayers: "Dear API, who's art is analogue heaven… please can I have smaller gain steps, balanced inputs and oh, yes… a hardwire bypass?" The designers of the 5500 have listened to their clients' needs and answered the call on all fronts, delivering what is arguably the most versatile and fully featured API EQ yet.

DUALING 550Bs

Some years ago, API manufactured a rackmount case designed to house two 500-series devices together. It was soon discovered, however, that most people who bought this case were using it to house two 550B EQs. The product was eventually discontinued, making way for the 5502 dual equaliser, which consisted of (you guessed it) two 550Bs in a single rack unit. However, the issues of unbalanced inputs and lack of fine gain control for mastering applications still hadn't been addressed on the 5502. This has led to the design of the 5500. With improvements including gain range modifiers, hard-wire bypass, an integrated power supply with noiseless muting and balanced inputs, the 5500 now stands fully evolved atop the API EQ evolutionary tree, making it suitable for all audio EQ applications and, in particular, mastering.

THREE FOR ONE

What really sets the 5500 apart from simply sticking two 550Bs side by side in a case are the global gain range modifiers for each channel that provide quarter, half or all of the stated EQ gain. This is significant because, when equalising program material in a mastering situation, the 2dB gain steps of the 550B can often be too coarse a control and you need the 'in between' gain positions. Mastering versions of the 550B, in the form of the 550D and the 550M, have been available for some time now and in the hierarchy of gain options the 550B has +12 of gain in 2dB steps, the 550D has +6dB of gain in 1dB steps, while the 550M gives you +3dB in half dB steps. So, given the 5500 can provide all these gain ranges, it's like having three models of API EQ in one, and a dual version to boot!

A WELL BALANCED BOX

Another welcome improvement over the 550B's design is the 5500's electronically balanced inputs. As I've mentioned in the past, the 550A and B's unbalanced inputs can sometimes be the cause of interconnection problems. This problem is solved in the 5500 with electronically balanced inputs provided by the API 2510 discrete op amps. The 2510 is basically the same as a 2520 but with a lower output current stage. The audio circuitry for both channels (with the exception of the audio related switches) is confined to one large printed circuit board with the toroidal transformer and power supply mounted on a separate board. For those so inclined, there's space on the audio PCB to mount optional API input transformers and bypass the electronically balanced input circuitry altogether for that 'all-transformer' sound.

All connectors (XLR on both the inputs and outputs) are rear mounted and a ¼-inch jack on each channel provides for an unbalanced input that, when connected, interrupts any signal present on the XLR input. Gain within the unit comes from two 2520 op amps feeding an API 2503 output transformer, making the 5500 capable of levels of +28dBm before clipping. This is plenty of headroom and, as API itself says, you're unlikely to drive the unit into distortion unless you're driving it with another API device!

The two channels of four-band EQ each have seven selectable frequencies with some overlap between the adjacent bands. Both channels have an EQ in/out switch that glows a 'warm analogue blue' when the 'EQ in' position is selected. The high and low bands have peak/shelf switches that also glow blue when switched into the 'shelf' position, while the two mid bands are of peak type only. The frequencies of each band (along with other specs) are listed in the 'Specs of Note' sidebar, and if you want to check out API's web page on the unit, then go to www.apiaudio.com/5500.html.

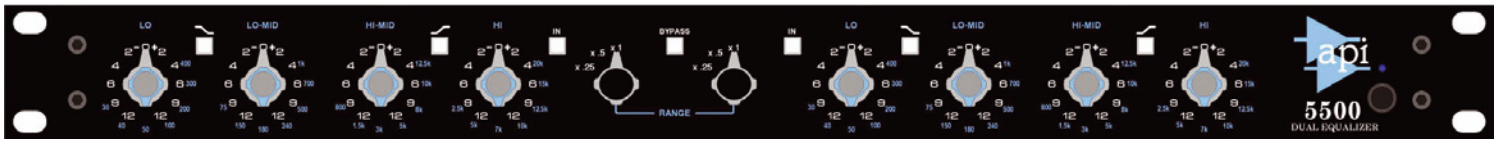
PROPORTIONAL Q-DOS

In operation, the 5500 sounds brilliant. As an immediate test, I inserted it over a client's mix that I knew had been tracked and mixed 'in the box'. After sweeping through all the frequencies on offer and trying various levels of boost and cut, it was clear that the 5500 was going to inject some much needed EQ life into a track that had suffered from the full digital calamity. The available frequencies are musical and very usable indeed and I soon had a setting that improved the track no end. Because I had begun tweaking the EQ with the gain range modifiers on the 'half' setting, I was able to test what my EQ curve sounded like with globally reduced or increased amounts of gain – a very powerful and very useful facility.

I also used the 5500 on a number of tracking sessions, recording a variety of instruments that included voice, clarinet, percussion, guitar and bass. In each and every case I was able to apply everything from subtle hints to substantial amounts of sweet and open sounding EQ that enhanced all of the recordings with a musical, clear tone. To that end, the proportional Q design works extremely well, giving you the ability to apply large amounts of EQ boost or cut on frequencies of interest without affecting the sidebands around them too much. In tandem with

HEART & SAUL OF API

The 5500's legacy can be traced all the way back to the late '60s when the founder of API, Saul Walker, along with his team of engineers, designed the 2520 operational amplifier. The 2520 op amp became the heart of all API products and, in particular, the 550 series equalisers, which were first made available as modular OEM units. This three-band parametric design, with stepped gain and frequency controls, was integral to the architecture of all the early '70s API consoles and, along with its younger brother, the four-band 550B, became the EQ 'flavour of choice' for many engineers and producers worldwide.
The key to Saul and his team's design success was the use of 'proportional Q' filters (where the more you boost or cut, the narrower the filter becomes) and choosing musically appropriate frequencies to apply them to.



the gain modifiers, this lets you EQ in a precise and controlled manner.

HARD TO PASS BY

The hard-wire bypass is a great inclusion. It connects the outputs directly to the inputs via a relay, so you can fully bypass the unit's circuitry from your signal path. The hard bypass switch turns red when activated. When you power up the unit, the red lights stay on for a second or so, as the 5500 holds itself in true bypass to prevent power-on thumps or noises through the outputs. Similarly, when powering down the unit (or during a loss of power), the unit again switches to hard bypass. This is a great little feature that will save your ears, speakers or headphones from these nasty spikes and thumps.

If you want to use the 5500 as a 'through box' – because you love the sound of your signal passing through a pair of 2520s and an output transformer – then it's simply a matter of having the hardwire bypass off and the individual channel EQ in/out switches in the 'Out' position. You can now switch the hard-wire bypass in and out to hear the difference between the 'through' sound of the circuitry and bypassing it completely. Nice one.

A CASE FOR COMPRESSING?

The only small criticism I have of the 5500 is not audio related at all. It concerns the lack of central mechanical support for the case lid and sub PCB that the peak, EQ in/out and bypass switches mount on to. When I first took the unit out of its cardboard box, I grabbed it between my thumb and forefinger midway along, and just behind the front panel I felt the case lid compress inward. I thought straight away, 'uh oh, no central lid support' (as you do). Flipping the bonnet confirmed this and given the manufacturer went to the trouble of punching out the API dual op amp logo shape using small holes in the underside of the case, I think it could certainly have included one extra support point as part of the metal work. A very minor quibble, but it's a facet that could be improved.

I WANT THE BLUE GLOW

All in all, I think the engineers at API have done a great job, answering the prayers of mastering engineers admirably. They've come up with a device that meets all their requirements and addresses the limitations and faults of previous incarnations of API EQs as stand-alone units. While not cheap, I know of at least one mastering engineer (who tends to have the 'last word' on many things) who decided to place an order for the 5500 after using it for a just a couple of minutes! I want one too, so I guess I will have to schmooze the financial controller and point out just how lovely those blue lights really are. ■

SPECS OF NOTE

Number of EQ bands: Four

Filter types: Low and High bands are Peak/Shelf switchable
Low/Mid and Mid/High are peaking type

Filter Frequency Centres:
Low – 30, 40, 50, 100, 200, 300, 400Hz
Low/Mid – 75, 150, 180, 240, 500, 700, 1kHz
Mid/High – 800, 1.5k, 3k, 5k, 8k, 10k, 12.5kHz
High – 2.5k, 5k, 7k, 10k, 12.5k, 15k, 20kHz

Filter Boost/Cut: ±12dB

Filter Slope: 12dB per octave

Input Impedance: >100kΩ balanced

Output Impedance: < 75Ω floating

Maximum Output Level: > +28dBm with 600 ohm or greater load

Frequency Response: < + 1dBm from 10Hz to 30kHz

Distortion: < 0.1% @+20dBu from 100Hz to 20kHz

Noise: < –70dBu unweighted

Power Requirement: 15W (130mA at 115V, 65mA at 230V)

NEED TO KNOW

Price
$4500

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Pros
Great-sounding proportional Q design.
Gain modifiers offer lots of flexibility.
Balanced I/O.
Hard-wire bypass switch.

Cons
Chassis needs central support on top cover.
Switch sub PCB also needs central support.

Summary
A great-sounding, standalone, dual EQ with gain range modifiers suitable for all EQ applications, especially mastering.