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transformerless circuitry based around high performance op-amps, with a view to delivering the cleanest sound possible from tape. In the plug-in, you can try the different tape types and then push them to see what different types of warmth can be added, as running at lower levels produces extremely subtle results.

Tape Machine 99 channels the Revox PR99 MkII, a high-end stereo Studer model dating back to the 1980s, which combines both discrete and op-amp circuitry. It was designed to have a very smooth frequency response, with less of a bass end 'head bump' than typical machines.

Of course, every tape machine's sound would vary according to what type of tape was used with it, and in all four cases the user can choose from 250 (modelled after the 3M/Scotch 250 tape), 456 (Ampex 456 tape — but without the sticky shed problem!), Quantegy GP9 and Ampex 499. The tape speeds of the original machines are also offered.

All four plug-in emulations offer control over tape speed, head selection, record bias, drive and EQ as well as a true stereo feature that aims to reproduce the small but important differences between the left and right channels of a real analogue machine. Of course, our old friends wow and flutter are well represented here when the Transport Modelling switch is turned on. The flip side is that such detailed emulations eat up a fair amount of CPU overhead; any one of these tape machines takes a fair chunk out of one of my Mac's processing threads.

I tried all four machines on stereo mixes, and they all sound subtly different, as you'd expect. But they all definitely do 'that tape thing' of helping glue the sounds together — rather like a good-quality compressor does, adding fullness without dullness. The difference in sound is quite small at normal VU meter levels, but that's normal, since tape machines were always designed to sound as neutral as possible. It's when you start to push the input levels that they really



start to show their colours. If the input stage is overdriven into the red, but not pinning the meter against the end stops, things warm up in a quite gentle way, but when driven really hard things get suitably crunchy. The latter might not sound great on vocals (though perhaps it could work as a parallel distortion effect) and it's also not something you'd normally want to do to a complete mix, but treating individual channels in this way can be great — it could be just the thing for snare drum, distorted electric guitar or dirty, mid-range synth sounds. Using one of these machines driven more moderately to add polish to a final mix works really well; you can do this when mixing or leave it until mastering.

Ultimately these emulations aren't a new idea: they're up against conceptually similar offerings from Waves, Slate, Universal Audio and various others. But as with other IK Multimedia products, these are good plug-ins that hold their own in that company, and are well worth investigating. *Paul White*

\$ \$199.99.

W [www.ikmultimedia.com](http://www.ikmultimedia.com)

## Roswell Mini K87 Cardioid Capacitor Microphone

Inhabiting the same 150mm long housing as Roswell's Mini 47 (<http://sosm.ag/apr16-roswell-k47>), their fixed cardioid-pattern Mini K87 is designed to have a more neutral voicing than the former, but still with a hint of vintage character. The capsule is a purpose-tuned, centre-terminated K67/K87-style component, teamed with a circuit that's designed to bring out the best in it; we're told the final voicing of the microphone is done manually to achieve consistency.

Roswell recommend this mic for vocals, guitars, acoustic stringed instruments, and drum overheads, and that suggests that it would make a good all-rounder for those who don't own a large collection of mics. The Mini K87 ships in an aluminium case with Roswell's Cutaway shockmount, which is both a rugged and a practical design — and the mic base is threaded to fit to the mount securely. The elastic elements look like O-rings, which should be easy to replace if necessary, and

a microfleece mic 'sock' is also included for reducing wind noise. Matched stereo pairs of Mini K87s are also available.

The capsule is quite large, at 34mm in diameter, and is skinned with gold-plated Mylar. Roswell boast audiophile-grade components used in a transformerless, electronically balanced output circuit designed to minimise coloration. The bodywork is fabricated from steel, and the styling looks like many classic side-address mics — it's just a little smaller in scale. By way of technical performance, the K87 has a quoted frequency response of 20Hz to 16kHz — though there's plenty of useful output above 16kHz, as the roll-off is fairly gentle, with its -5dB point at 20kHz. Roswell's smoothed response plot shows the merest hint of presence bumps at around 4 and 10 kHz, rising only a couple of dB above an otherwise nominally flat response. A sensitivity of 14mV/Pa is quoted, with a self noise figure of 12dBA, so the mic is more than adequately quiet for typical studio applications. No



maximum SPL is stated, and there are no pad or roll-off switches, so use as a kick drum mic may not be top of the list. As this is a capacitor mic, standard 48V phantom power is required for operation.

My first test was with violin, from which I obtained very usable results. (I needed only a hint of top cut to smooth out the highs — but don't infer from that >>

» that this is a bright-sounding mic; I've recorded the same player and instrument with other mics, and a little top cut has always been needed.) Switching to acoustic guitar, using the 'safe' mic position of aiming where the guitar's neck meets its body produced a great result with no need for EQ — just the right balance of wire and wood with no undue

boom, and plenty of detail in the highs but no harshness.

On voice, the mic also works well, giving a natural-sounding result on speech, which is always a good test. Given its modest coloration, it should work for a wide range of voices (though it's still worth auditioning as many mics as possible if the mic is mainly for one

person — you really never know what mic will best suit a particular voice until you try it!). Overall, then, this is a very capable studio microphone that combines a natural sound with just a little gentle flattery, and it can be obtained for a very sensible price. *Paul White*

**S** \$349.  
**W** <https://roswellproaudio.com>

## Source Audio Collider Delay + Reverb Effects Pedal

Source Audio pedals are a little unusual, in that they not only store presets (up to eight of which are accessible from the front panel, or 128 via MIDI), but they can also be integrated with other Source Audio pedals, to form a symbiotic system that's controlled either from an optional 'Neuro Hub' or via MIDI. There's also a free Neuro app for mobile devices and a desktop version for Mac and Windows OS.

The Neuro software uses input two's jack ring contact as a Neuro App data input, and it caters for alternate routing options, such as changing the effect order or running effects in parallel. Of course, there's also a sound editor for creating presets. You can take the pedal at face value, if you prefer, using it as a regular stompbox, but the comprehensive MIDI support also allows it to be used as part of a MIDI-controlled rig (even if you don't have a Neuro Hub), in which you can access controls using CC messages as well as implementing patch change messages.

Stereo ins and outs allow for any permutation of mono/stereo input or output, and the dry signal path remains analogue — so there's no loss of sound quality or character when the pedal is in circuit. A Control mini-jack input accepts a tap-tempo switch, Source Audio's Dual Expression Pedal, their Reflex Universal Expression Controller, a Neuro Hub or a Hot Hand Motion Controller. This input has its own mini button on the back panel — when held down this also allows the Mix knob to be used as a master volume adjustment. There are also a quarter-inch Pedal In (which can host an expression pedal or a switch, with a choice of assignments), a mini USB port, and a socket for the included 9V PSU. The user can use a power-up routine to select from relay-switched bypass or a buffered bypass that allows the delay trails to fade naturally. A power-up routine is also used to switch from the default four-presets mode to eight.

No Higgs Bosons were harmed in the creation of the Collider, which is essentially a dual-DSP marriage of Source Audio's Ventriss reverb pedal and their Nemesis delay. It's presented in an almost identical format to those two, but presets can combine two effects from either or both. There are fewer effect choices than on the separate pedals, of course, but all the important ones are included. By default, a patch comprises one reverb and one delay, either of which can be bypassed if you only need one effect. A 12-way rotary switch selects from seven reverb and five delay algorithms, and to get the most out of the control knobs, there's a small toggle switch that lets you select whether the knobs are controlling the reverb, the delay, or are locked to prevent accidental adjustments being made during performance.

Dual footswitches offer independent bypass for the reverb and delay effects, as well as accessing the tap-tempo and hold effect functions. The latter freezes the reverb tail to create pad-like drones — anybody into ambient music is going to love this pedal. When the effects are bypassed it's also possible to use the footswitches to move up or down through the presets. Presets are selected or saved using the button and bank of four LEDs at the bottom of the front panel, and the Delay/Tap stomp-switch is accompanied by a smaller toggle switch offering three choices of subdivision. There's a routine to 'unlock' the effects selector, so that a preset can be made up of two delays or two reverbs — should you feel the urge. By default the delay comes first, feeding into the reverb.

Each effect is clearly labelled around the selector knob, with a ring of LEDs indicating which is active. Delay sets the delay time or reverb decay, Mix adjusts the wet/dry balance, and Feedback sets either the delay regeneration or the reverb decay time. Tone does pretty much what you'd expect for the selected effects, while the Control 1 and Control 2 knobs take on different functions depending on which reverb algorithm is selected; in delay mode they're used to affect the modulation rate and depth.

Operation from the front panel is straightforward, so let's consider the effects themselves. In the delay section, we get the choice of Analogue, Digital, Tape, Reverse and Oil Can, while the reverb section gives us the expected Room, Hall, and

Plate, an authentically drippy-sounding Spring plus a lovely octave-up Shimmer, and the huge-sounding E-Dome. There's also a Swell reverb that puts a slow attack on the dry sound before feeding it into the reverb engine.

These are powered by two independent 56-bit processors, so any two-effect combination of delay/reverb, delay/delay, or reverb/reverb is possible without compromising on the effect quality or imposing restrictions on what can and can't be combined.

