

## Digital heart and analog soul

Inside the Rane G4 four-channel gate

By Dave Dermont

**T**he Rane G4 is a four-channel digital gate/expander/ducker, part of the company's recently released Live Sound Tool Kit that also includes parametric and graphic equalizers, a four-channel compressor, and a crossover.

All are digital units with analog-style controls. But because they're digital, features not found with analog designs are offered. I recently put the G4 through its paces at a series of live club gigs, and here's what I found.

This unit includes all the controls one would expect in a top-line expander/gate/ducker: Attack, Hold, and Release controls are right there on the front panel, as are sweepable side-chain Hi-Pass and Lo-Pass filters. Bypass and Key Listen, too.

Of note, there's also a switch (and related back-panel connectors) that allows the use of external detector filters. Each channel also offers a mode switch for selecting one of the three modes of operation - Gate, Duck, and Expand.

One aspect of the G4 that seems to be very well thought-out is the metering. An 11-segment side-chain meter

indicates level relative to the threshold. And, Rane has expanded the common three-segment "stoplight" type meter into a seven-segment gain reduction meter.

Placing a meter on the side-chain, and allowing the user to see five levels of gain reduction between "closed" and "open," is a stroke of ergonomic inspiration. This really gave me a handle of what's going on inside this thing. Anyone who deals with stage volume and/or dynamics that mysteriously changes between soundcheck and show time (are they ever the same?) will appreciate this metering arrangement.

### THINGS GATES DO

In a perfect world, you'd only need a gate to turn off a channel when it's not being used and to open it when needed. All drum kits would be well tuned and played by talented drummers. It's not always like this in my world, and sometimes, where talent leaves off, we call upon technology to take over.

In my practical, real-use experiences with this unit, where the drum sound is often less than stellar, I've found plenty of options to adequately combat problems.

As with all things digital, there is latency involved in this unit's A/D/A conversions process. The specification on the G4 lists its propagation delay as 1.62 milliseconds (ms), certainly a reasonable amount. However, Rane has chosen to further enhance the situation with a 16 sample (333 microsecond) look-ahead delay (included in the 1.62 millisecond (ms) propagation delay).

It allows the G4 side chain to "sample" the signal amplitude and open the gate before the "delayed" audio shows up and passes through, producing "true zero" attack time. Pre-ramping is a technique used to ensure



The G4 looks and feels like analog, but it's digital. And the back panel offers handy interconnect information.

the first waveform cycle is gated on, but does not produce the annoying "click" that occurs with an instantaneous rise time. (See **Figure 1**)

### BALLPARK SETTINGS

The first time I hook up the G4, it's on toms; I used another channel switched to expander mode on snare drums as well. I set the knobs to what seems like good ballpark settings and begin checking the drums.

When setting up the first tom, I grab the attack knob and give it a big twist counter-clockwise. (What I call "painting with broad strokes.") I immediately got my rear-end kicked. The heavens opened and the angels began to sing. So...this is what "zero attack" is! I immediately see the beginning of a beautiful friendship.

I went on applying the G4 on the usual things requiring gates and expanders, and it excelled at everything I threw at it.

One application in particular proved quite interesting. I have a steady gig at a local club with a flown downstage center monitor. No big thing, if not for the unusually low ceiling height and an even lower soffit that hangs down right at the stage lip.

The monitor is jammed in the corner that's formed by the ceiling and the soffit. At a height of only about seven feet high, it gives new meaning to the term "in your face."

What I did was switch a channel of the G4 into expander mode, and patch the monitor send though it.

(Monitors are mixed at front-of-house.) This lowered the gain of the monitor when it wasn't being used.

I tweaked this out well beforehand, so it was ready when the talent showed up. The monitor in question was to be used only for a lead vocalist, and as is typical, he wanted his voice big and loud and downstage center (of course).

Using a normal-level speaking voice, with no band playing, you could already hear the monitor well enough. Singing louder, the expander opened up and got out of the way, allowing the full-pitched singing vocal to pass through in all its splendor. It's something I'd tried before with other units, but never achieved the results found with the G4.

### FINAL THOUGHTS

At a cost of about \$200 per channel, the G4 is not necessarily an entry-level piece from a price standpoint. However, in terms of a workhorse product with the additional features and flexibility I've noted, it can be considered a bargain, comparing favorably to any high-quality gate of the same cost or more. (And I'm talking about two-channel units, not four channels.)

In an industry where it's very hard

to please everyone, my experiences with this unit have been so positive that I'll go out on a limb and suggest trying one. ■

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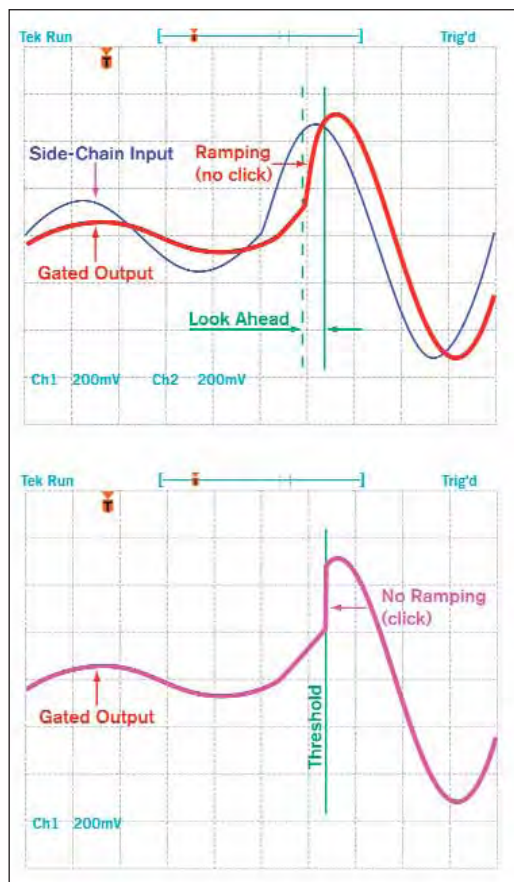


Figure 1: The top chart shows the G4 uses a very short look ahead (16 samples) with exponential ramping to attain "clickless" gating. The bottom chart demonstrates what happens with other types of gates that don't include look ahead - the result is audible clicks.

### Rane G4 Key Specifications

Parameters	Specification	Limit	Units	Conditions/Comments
<b>Dynamics Controls</b>				All pots 8-bit resolution Active/Bypass LED indicators
.....Bypass	toggle switch			
.....Threshold Range	+20 to -60	1	dBu	
.....Attack	0 to 250		ms	Settle to 85% of final value
.....Release	0.025 to 2.0		Sec.	For 10 dB step
.....Hold	0 to 3		Sec.	Gate and Duck modes only
.....Depth	0 to 80		dB	Gate and Duck modes only
.....Ratio	1:1 to 8:1			Expand mode only
.....Low Cut	20 to 5000		Hz	2nd-order Butterworth (12 dB/oct.)
.....High Cut	200 to 20,000		Hz	2nd-order Butterworth (12 dB/oct.)
.....Internal / External	Toggle switch			LED indicator (side-chain key source)
.....Normal / Listen	Toggle switch			LED indicator (listen to side-chain)
Meter: Gain Reduction	Closed, -24, -12, -6, -3, -1, Open			Each channel
.....Side-chain level	Relative to threshold setting			Peak dBu for Gate/Duck, 11-segment
.....Side-chain level	Relative to threshold setting			RMS dBu for Expander, 11-segment