HATS909

User Manual

Tiptop Audio

www.tiptopaudio.com

Introduction.

The HATS909 is Roland's TR-909 analog Closed and Open Hi-Hats sound generator adapted for modular synthesizer use. The front panel contains all of the controls found on the original TR-909 drum machine, allowing you full control over the sound's volume levels to mix with other drums and accent levels. In addition to those original controls we have also added new controls, further enhancing this legendary sound generator.

Let's get started.

To start using the HATS909, just plug a gate signal into either the OH GATE or the CH GATE input, plug the HATS OUT to your sound system, set the LEVEL half way, set the TUNE knob to about half way, set the SOURCE switch to 909, and set ACCENT to halfway.

OH vs CH and SOURCE switch.

The HATS909 is a low-fi sample based generator that is capable of producing only one sound at a time; the default is the OH sound which overrides the CH. If a gate signal appears at both inputs simultaneously, the OH will sound. Each of those sounds have a DECAY control knob to set the length of the analog envelope applied to that sample sound. Setting the SOURCE switch to RAW bypasses the envelope and filtering of the sound sample, giving you the raw sample with no processing. RAW mode is great for using your own filters, VCA, and envelope to process the raw sample sound. When set to 909, the sampled sound pass through the original analog filters and VCA of the 909 machine.

TUNE and MODULATION switch.

Tune:

The sample rate generator in the HATS909 module was replaced with a Voltage Controlled Oscillator which allows for full control over the tuning of the sound, both manually (TUNE knob) and with VC (VC-TUNE jack). This integration of analog control over digital sound generation gives many more Hats sounds than were originally capable with this circuit with crushed and short ticks at each end of the knob or control signal, and the original signature sound at about 1-2 o'clock of the tune knob position.

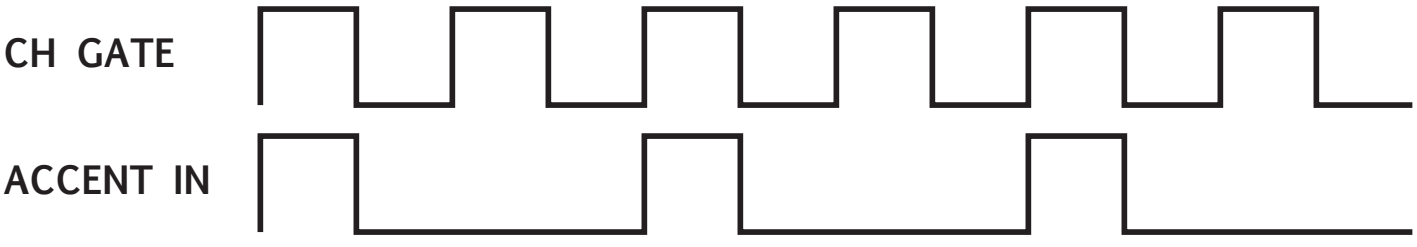
Modulation switch:

The MODULATION switch taps the FM/AM signal input to either the Tune oscillator or the internal VCA. When in FM mode, the control input is not different than the VC-TUNE input, but it does provide an attenuation on the input signal (CV IN). When set to AM, the signal is then mixed up with the internal envelope signal modulating the internal VCA. Both AM and FM can be modulated with control signals from sequencers, LFOs, envelopes etc, or modulated in the audio range, performing Amplitude or Frequency synthesis over the source sampled sound.

PATCH ideas:

The Riding 909 HATS:

Perhaps the most famous use of the 909 Closed Hats is found in so many techno and other acid tunes and here is how you do it. The trick is to use some notes with no accent and some with. In its most basic form, this is done with accent on every second note in a row. An easy way to do that is to plug the pulse of an oscillator into the CH GATE input, send the pulse also to a sequencer clock-in like the Z8000 and have every second knob turned CW on the Z8000. Clock dividers are also great for doing that with the divide by 2 patched to the ACCENT input.



PATCH Ideas Cont.

Reverse Hats:

With the AM control, different envelopes can be applied to the source sounds. For example, patch the pulse of a VCO/LFO into the OH GATE, patch the sine wave from that VCO into the AM input, set the MODULATION switch to AM and with the CV IN knob set the amount of modulation. The sine wave will blend with the internal envelope and will create a fade-in effect to the sound, and in certain settings the sound will appear as if it was being played in reverse.

Live Hats:

Live Hats refers to Hats sound with many variations that make them sound more alive and less repetitive This is done by applying several control and modulation signals simultaneously. Using a Z8000, send one CV out to the OH GATE, another CV outto the CH GATE, another CV out to the ACCENT in, another CV out to the FM in, now either clock the Z8000 sequencers from different clock sources, clock divider or just one clock that is multed to all clock inputs with Stackcables.

Dynamics and Gain.

Accent and Levels:

Dynamic Accent and Level control of any drum sound in the mix is a big part of making a beat sound right. Dynamic Accent provides emphasis on a particular note through loudness. In analog circuits like the HATS909, the accent pulse physically "hits" the internal envelope circuit harder and provides not only a louder sound but also slightly more attack (much like if you were to hit a real cymbal harder or softer with a drum stick.)

While the original 909 has one global accent knob for setting accents levels for all of its sounds, the HATS909 (and all other drum modules in this series) offers an independent accent level control. This feature adds to richer dynamics than what was possible with the original machine.

Accent Explained:

The accent input can be driven by either a gate/trigger or CV signal.

While the accent input is not in use, the incoming gate input is routed (normalized) to both the accent input and the gate input. This serves for two purposes:

1. To allow you to reach the hottest drum sound possible even when there is no accent input signal connected.

2. It makes the ACCENT knob act as a fine control of the output gain level. This is very useful in situations where the level knob range is too coarse for setting precise levels in a mix with other drum sounds.

Connecting a gate or CV signal into the accent input will break the internal routing mentioned above and will allow for independent control over accent regardless of the incoming gate signal. In this case as long as there is no accent signal present, the drum sound will be set to the minimum accent level set internally, and once the accent input gets hit by a gate or CV signal, the drum sound will get louder in proportion to the accent level set by the accent knob. In short: the higher the knob setting, the larger the difference will be in gain levels between the accented notes and the un-accented notes. Using CV allows for even greater variations.

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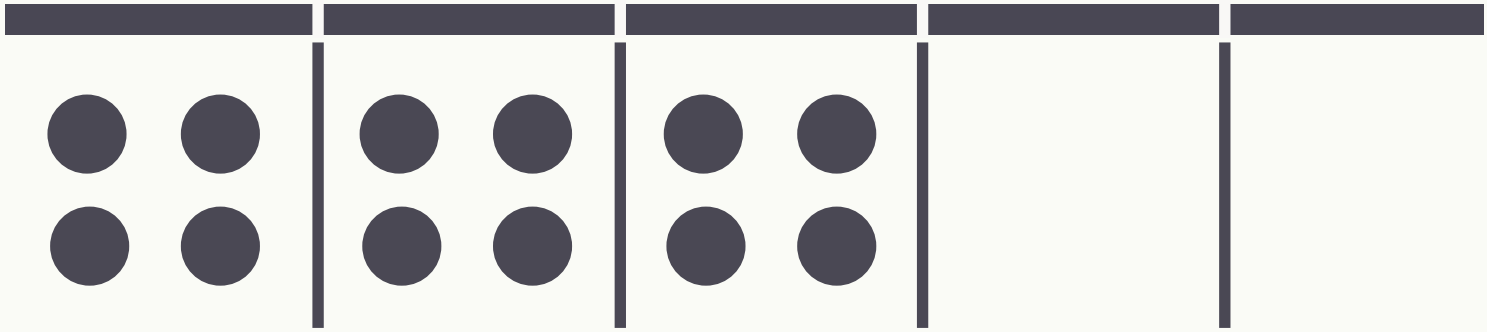

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