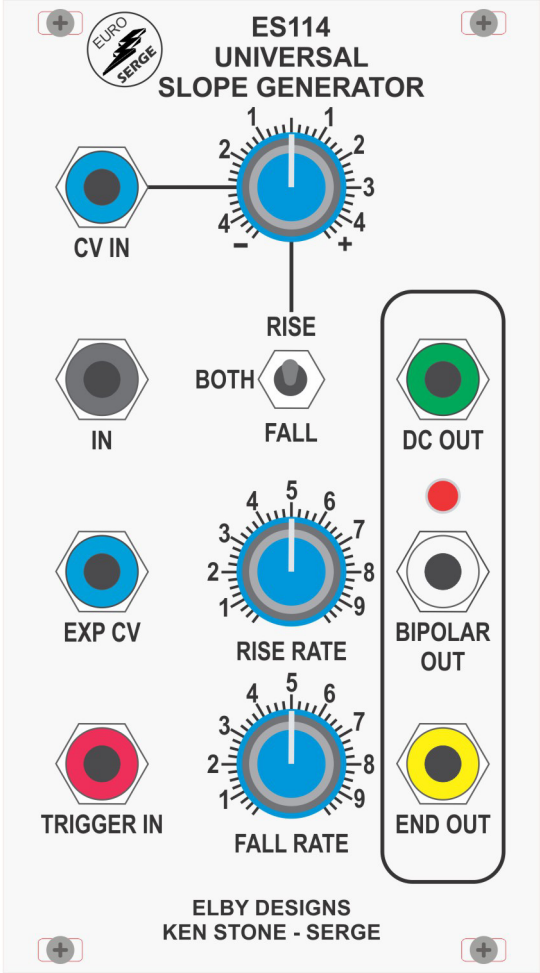
ES114 – Universal Slope Generator

The Panther ESxxx Series is a collection of SERGE modules (re)designed to fit the EuroRack module system offering the euro-rack user access to the extensive and unique range of modules designed by Serge Tcherepin.

The ES114 Universal Slope Generator

The ES114 USG as an oscillator



1. Patch the [END OUT] pulse to the [TRIGGER IN] jack
2. Turn the [RISE RATE] and [FALL RATE] knobs fully CW.
3. Patch [BIPOLAR OUT] into an audio mixer or Output Module to monitor the output.
4. There should be a 5000 Hz triangle wave present which can be changed to a sawtooth wave of lower frequency by turning down either the [RISE RATE] or [FALL RATE] knob. The frequency and timbre will depend upon the settings and the shape as set by the relationship between the Rise and Fall times.
5. Patch a control voltage from a processor or other source into the [CV IN] jack. Note the effect on the Rise, the Fall, and the Rise+Fall times with the position of the switch
6. Patch a 1.0V voltage into the [EXP CV] jack. The USG will produce a doubling of frequency (halving of the Rise and Fall times)

The DSG may not track as well as the NTO's and PCO's when used as an oscillator.

Remove the patch from the END and TRIG IN jacks, and apply a control voltage from a keyboard, Stopped Function, or Stepped Random Voltage Generator. Turn the RISE and FALL knobs all the way up (clockwise, and apply the output to the control input of an oscillator. The signal should be the same as the input. As the RISE and FALL knobs are turned down, there should be a portamento or slowing Effect on the changing stepped voltage.

The ES114 USG as a simple envelope generator

1. Connect a trigger pulse to the [TRIGGER IN] jack. When a pulse is applied here, an envelope defined by the [RISE RATE] and [FALL RATE] knobs will be produced which goes from 0 to +5 volts. If a second trigger is received before the envelope has finished, it will not re-initiate the envelope.
2. With a gate signal into the [IN] jack, an envelope will be produced which begins to rise at a rate set by the [RISE RATE] knob to a level equal to the gate level. The level will remain at this level as long as the gate is present: an envelope with sustain.

   When the gate level drops back to zero at its end, the envelope will fall at the rate set by the [FALL RATE] knob. If the gate level rises before the end of the [FALL RATE] cycle, the output will rise again, rising toward the gate level, at a rate set by the [RISE RATE] knob. Multiple gate signals will re-initiate the envelope, even if the envelope has not completed its cycle back to zero volts.

   A positive signal applied to the [IN] jack will always over-ride any trigger at the [TRIGGER IN] jack.

The ES114 USG as a frequency divider

Using a pulse train into this input, the USG can be used as a frequency divider, or sub-harmonic generator. A waveshape and a pulse from the [END OUT] jack will, be produced for each pulse applied to the [TRIGGER IN] jack as long as the total envelope time is shorter than the pulse period.

If the envelope time is slightly longer than the pulse period, then the USG will only be triggered on alternate pulses, producing a division of two. If the envelope is slightly longer than two pulse periods, then it will only be triggered on every third pulse, producing a division by three, and so on.

The ES114 USG as a slew limiting processor

The USG can be used as a slew limiting processor to change discrete voltage steps into gliding voltages (portamento). Voltages from a keyboard, sequencer, or other sources can be applied to the [IN] jack, and the [RISE RATE] and [FALL RATE] knobs will now determine the rate of glide in the positive and negative direction, independently.

The slopes from the USG are linear (equal voltages per unit of time), but they can be altered using feedback. If the [DC OUT] jack is patched to the [CV IN] jack, then the slope can be given an exponential or a logarithmic shape determined by the amount of feedback set by the processing knob. Since both the RISE and FALL can be switched to be controlled separately or together, the slope of either or both can be shaped using this technique.

The ES114 USG as a positive peak follower

The USG may be used as a positive peak follower by setting [RISE RATE] time to minimum and applying an audio signal to the [IN] jack. Adjust the [FALL RATE] knob for a compromise between response time and the best filtering of the audio component at the USG output. If [FALL RATE] time is turned to minimum, and the [RISE RATE] knob adjusted for optimum response time and filtering, then the unit will function as an envelope follower-producing a negative envelope corresponding to the negative peaks of the input audio signal.

Power Consumption	+12V @ 10mA, –12V @ 5ma
Module Width	14HP
Module Depth	51mm