

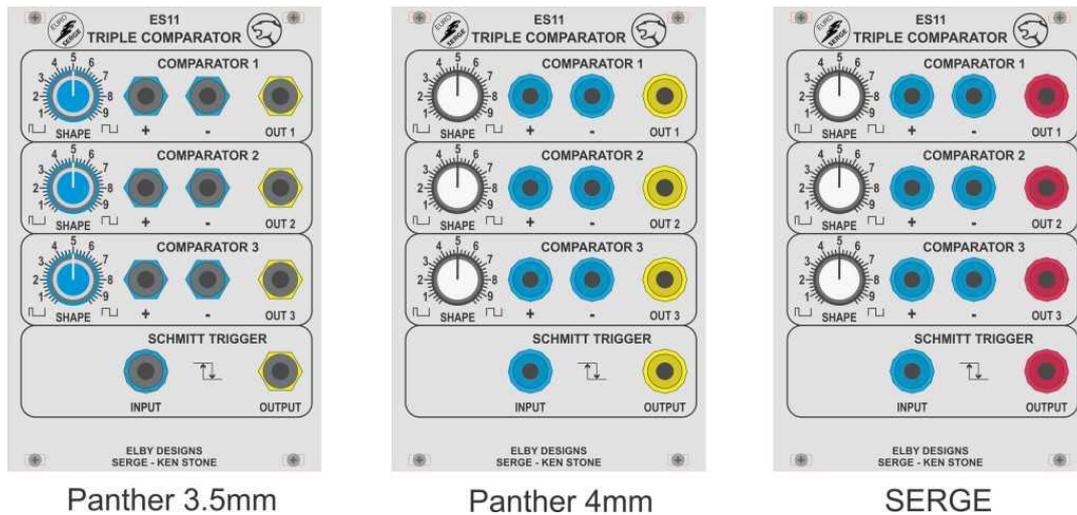
# ES11 – Triple Comparator & Schmitt Trigger



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 ES11 Triple Comparator and Schmitt Trigger



Panther 3.5mm

Panther 4mm

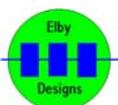
SERGE

The ES11 - TRIPLE COMPARATOR and Schmitt Trigger module provides several often useful house-keeping functions within your system:

- Logical Decisions: If the + input is greater than the – input, the output will be high. If not, then the output will be low.
- Level Detection: A pulse will be generated whenever an input voltage reaches a pre-set threshold. For example, when an envelope detector reaches a certain loudness level, it can be used with an ES11 Comparator to generate a pulse to activate or de-activate other events programmed within the synthesiser
- Voltage variable pulse width modulation of any oscillator input.
- `Squaring' audio signals, whereby frequency related pulses are derived from an input signal. These pulses can be used for frequency sub-division, or as raw audio, rich in harmonic content.

In addition to the +/- inputs, each of the Comparators include a front-panel knob to manually set a threshold.

The module also contains a single, non-adjustable, Schmitt Trigger. This is similar to the Comparator except that it has been optimised for squaring up audio signals. The Schmitt Trigger is a single-input comparator with hysteresis. Hysteresis means that the switching thresholds are different for an input signal depending upon whether the signal is going up



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## ES11 – Triple Comparator & Schmitt Trigger

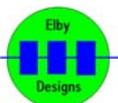
or down. This feature can be used with an envelope and VCA functioning as a noise gate to reject low-level background noise in audio applications.

The Schmitt Trigger can also be used for level detection.

As with all of our EURO-SERGE modules and most of our current Panther modules, the ES11 is offered in 3 configurations:-

1. Panther 3.5mm: this is the typical euro-rack format utilising 3.5mm jacks. Jacks are colour-coded using our extended Serge-Patch-Colour codes and use Hi-Contrast, soft-touch blue-on-grey knobs
2. SERGE: this variant uses 4mm banana sockets and hi-contrast white-on-black ABS knobs. The patch-colour code follows the SERGE standard using the 3 colours Black, Blue and Red to distinguish between AC, DC and Logic signals
3. Panther 4mm: this variant simply enhances the SERGE variant by adding 3 extra colours to allow differentiation between input and output signals within the 3 signal groups. The original SERGE colours are retained as the INPUT colour-code for each category:- Black/White = AC input/output, Blue/Green = DC input/output and Red/Yellow = Logic input/output.

Power Consumption	+12V @ 10mA, -12V @ 5ma
Module Width	17HP
Module Depth	45mm



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