

**ARC**  
**NANO Modules**



## ARC NANO Modules User Guide

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**ARC NANO Modules**



Thank you for choosing ARC for your Eurorack System.

## Powering up

1. Turn off the power of your modular synthesizer.
2. Double-check the power cord polarity. If you plug the module backwards you might damage its electronic circuits.



If you flip over your ARC, you will find the “RED” mark at the PCB power connector, which must match the colored line on the ribbon cable.

3. Once you have checked all the connections, you can turn on your modular system.
4. If you notice any anomalies, turn your system off right away and check again your connections.

## Description

- ARC is an analog Dual Function Generator that features two independent channels and a versatile common section, equipped with advanced functionalities.

### Each channel can be used as

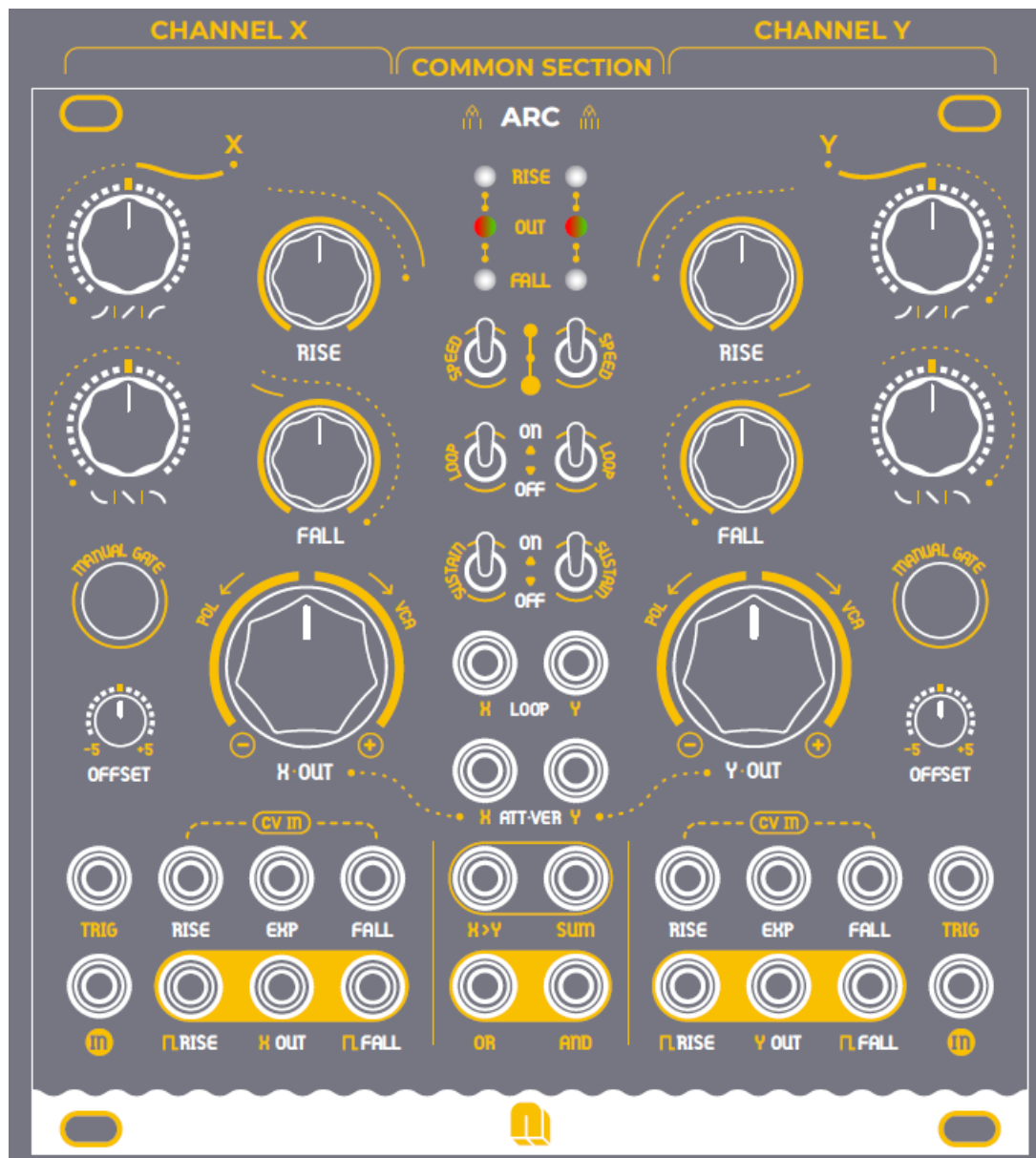
- Envelope generator (AD/ASR)
- Audio & Low-frequency oscillator (VCO/LFO)
- Slew limiter
- Waveform Modulator (VCA/Polarizer)

With dedicated trigger and signal inputs, ARC allows for fine-tuned control over RISE and FALL times, adjustable SHAPES (linear, logarithmic, or exponential), and a range of additional features including SUSTAIN mode, OFFSET adjustment, and a built-in Logic Section.

Designed to be the heart of your modular setup, ARC allows you to shape and modulate both audio and control signals, offering everything from smooth transitions and complex envelopes to precise modulation, making it the go-to module for those who demand more from their modulation sources.

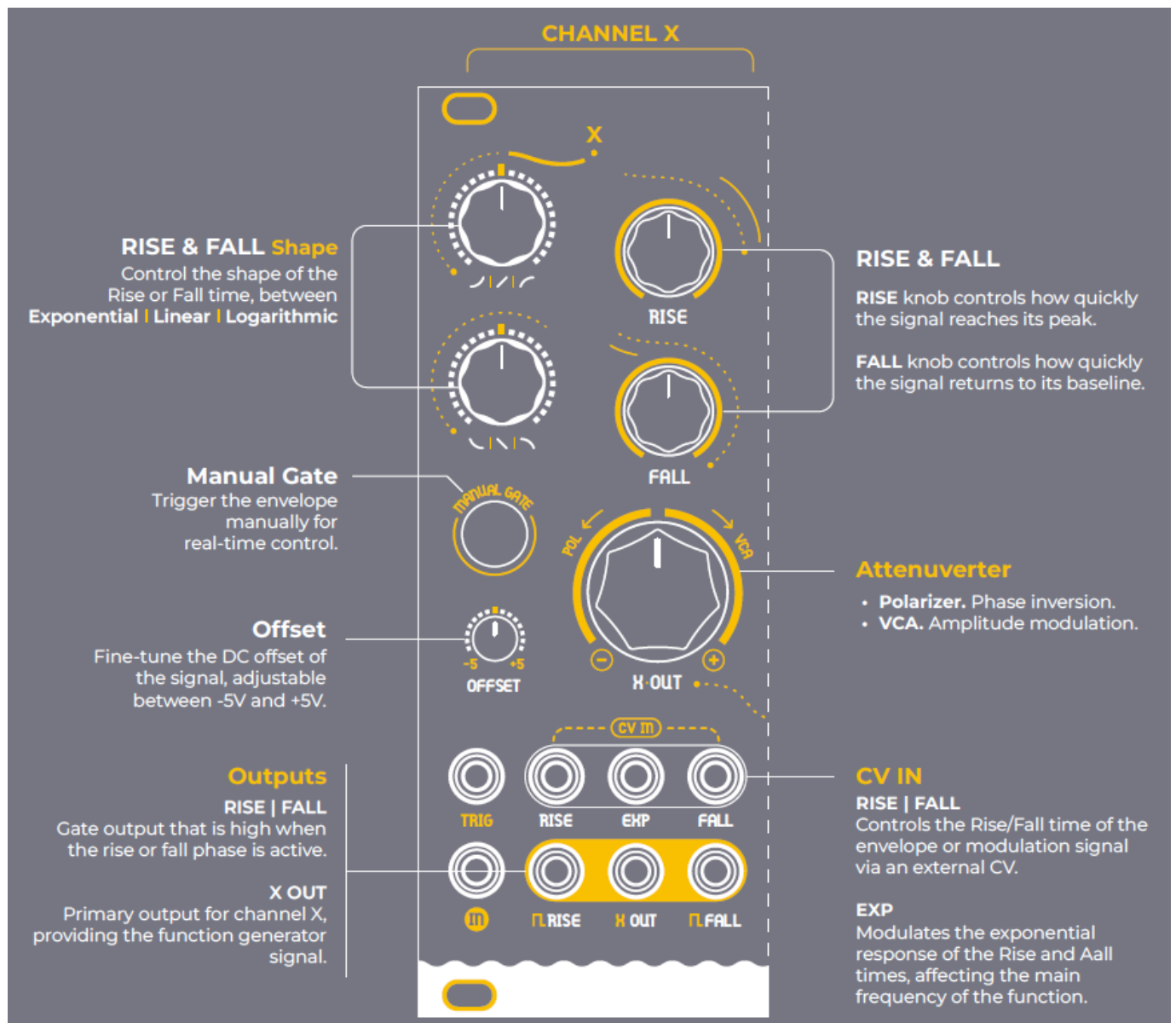
## Layout · General view

- This image will clarify the function of each of the elements of the module.



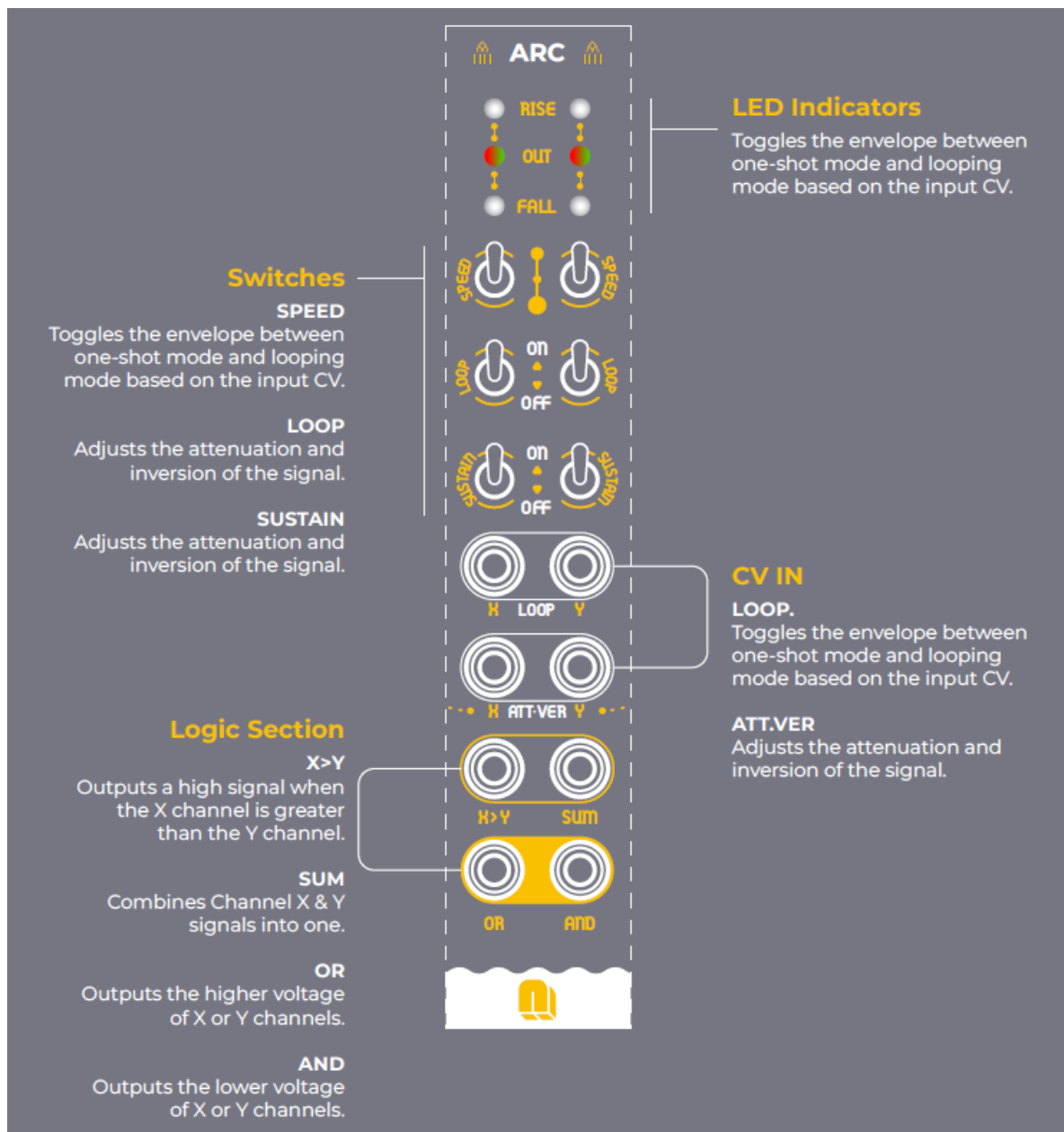
## Layout

- This image will clarify the function of each of the elements of the module.



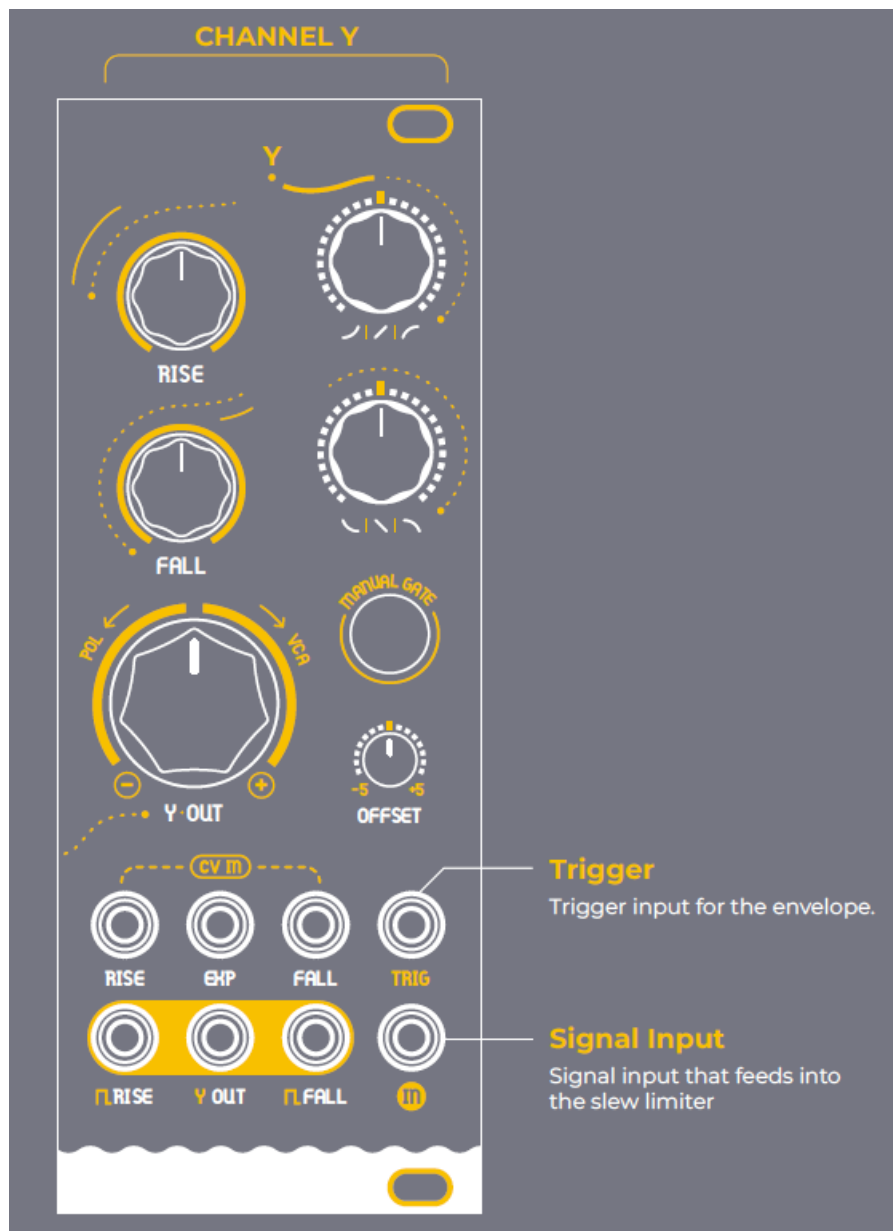
## Common Section

- This section includes shared controls from both channels seamlessly.



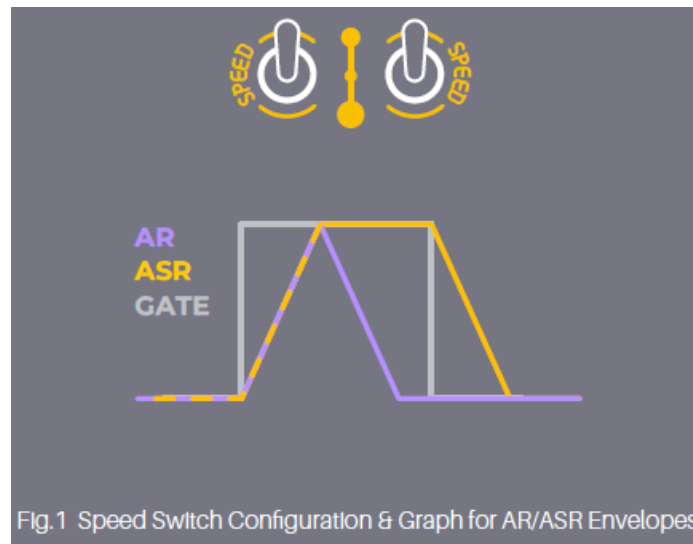
## Channel Y

- Same as Channel X.



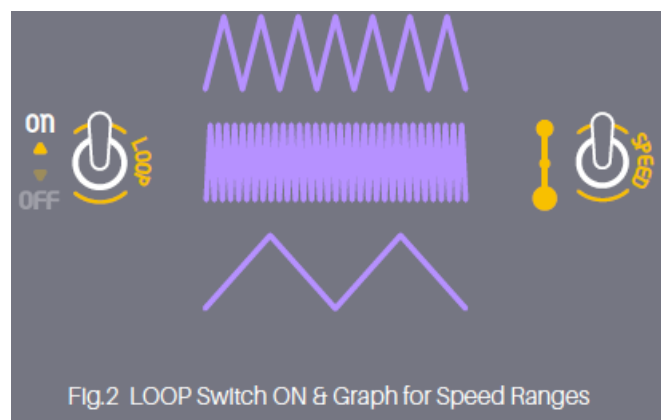
## Envelope Generator AR/ASR

- Use the RISE & FALL controls to create simple AD envelopes for punchy and percussive sounds.
- For ASR envelopes, turn on the Sustain switch! The envelope will rise to the peak and be held there while the Gate is active.



## Audio & Low-Frequency Oscillator

- ARC features RISE & FALL frequency adjusts and a SPEED switch with three positions (slow, mid, fast) to cover all possible needs.
- Turn on the LOOP switch to convert the function generator into an oscillator. Use the previous controls to match the required frequency.
- ARC can generate a huge range of frequencies for producing both audio-rate signals for pitched sounds and ultra-slow waveforms for modulation purposes.



## Slew Limiter & Waveform Modulation

### Slew limiter

- Smooth out abrupt changes in CV & audio signals to create filtering and portamento effects.

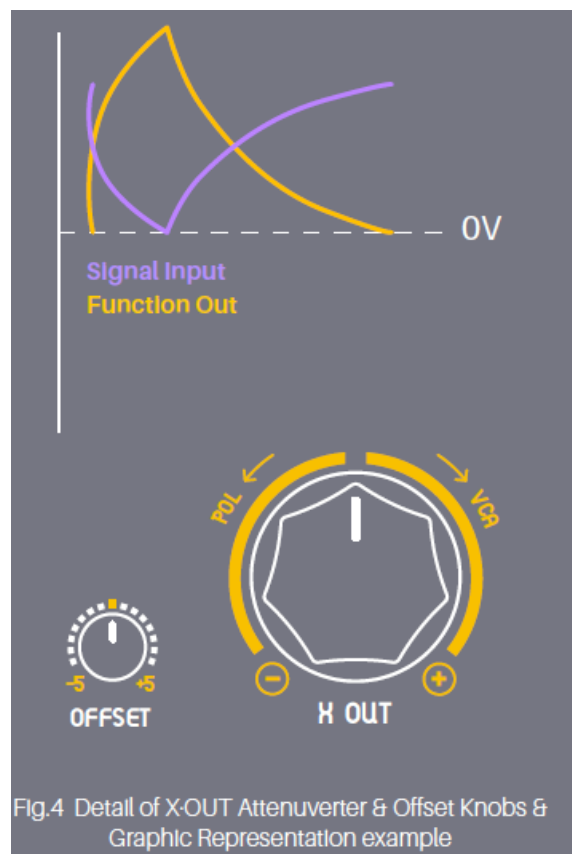
### Waveform Modulation

- Adjust Rise and Fall shapes to create logarithmic, linear, or exponential shapes over your input signal.



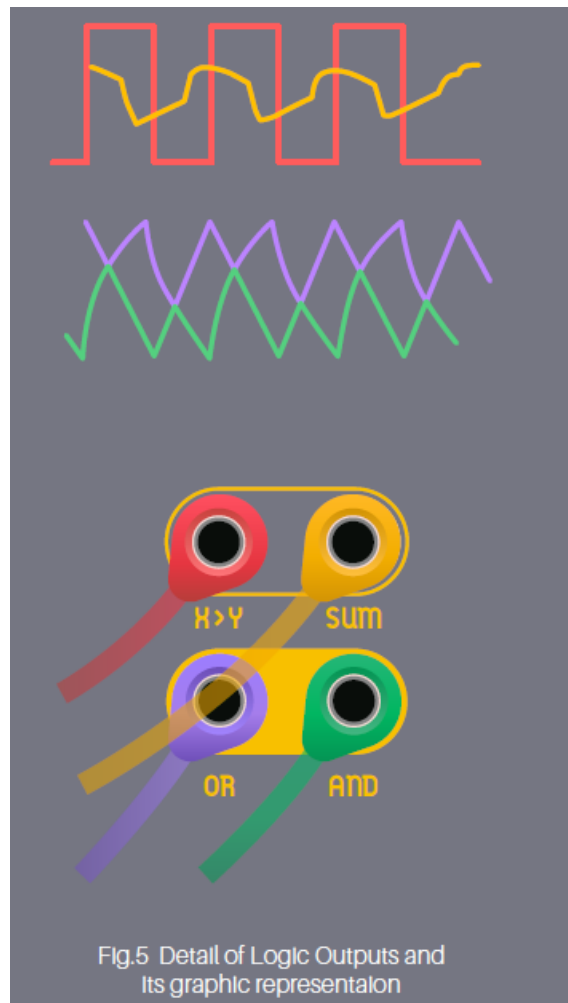
### VCA & Signal Inversion (POL)

- The VCA/POL adjusts the volume of the signal, acting as a traditional VCA for dynamic level control.
- Additionally, the POL function modifies the polarity, enabling both positive and negative modulation for more complex sound shaping.
- The OFFSET function can add or subtract a voltage from -5V to 5V to match the required signal range.



## Logic Section

- ARC includes an  $X > Y$  gate logic output, which compares the two function signals and outputs a gate when X is greater than Y.
- Additionally, the module provides the SUM of X and Y functions, as well as OR and AND logic functions.



## Controls / Channel X & Y

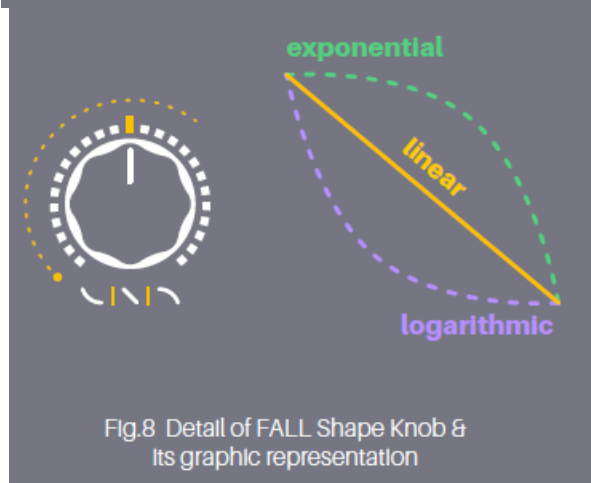
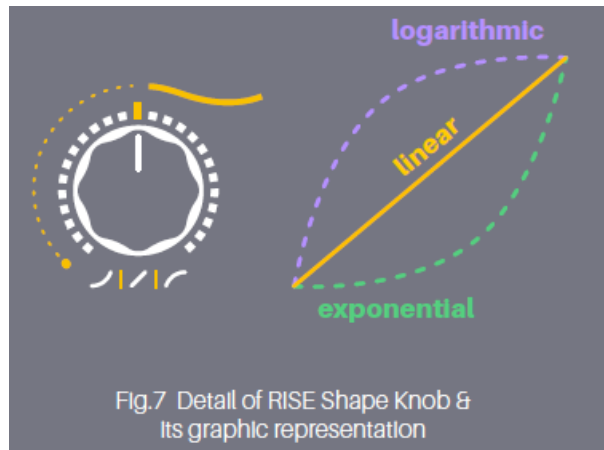
### RISE & FALL

- **RISE:** Controls how quickly the signal reaches its peak. Turn clockwise for a slower, smoother rise; counterclockwise for a faster, sharper rise.
- **FALL:** Controls how quickly the signal returns to baseline. Clockwise for a gradual fall; counterclockwise for a quicker drop.



## RISE & FALL Shape

- Adjusts the curve of the rise and fall times between Exponential, Linear, and Logarithmic.



## Manual Gate

- Manually trigger the envelope for real-time activation.

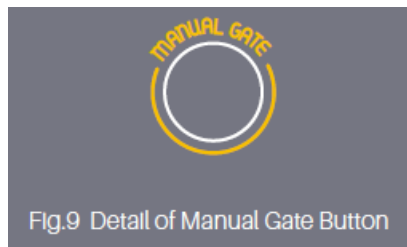


Fig.9 Detail of Manual Gate Button

## Offset

- DC Offset Adjustment: Adjusts the signal's baseline voltage between -5V and +5V, aligning it with your needs or ensuring the correct modulation starting point.

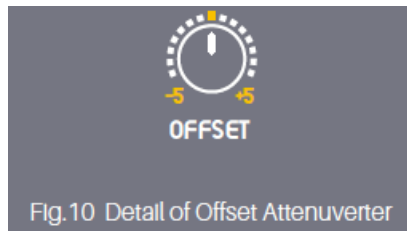


Fig.10 Detail of Offset Attenuverter

## Attenuverter

- Acts as a polarizer and amplitude controller. It allows you to control the amplitude and invert the phase of the signal.

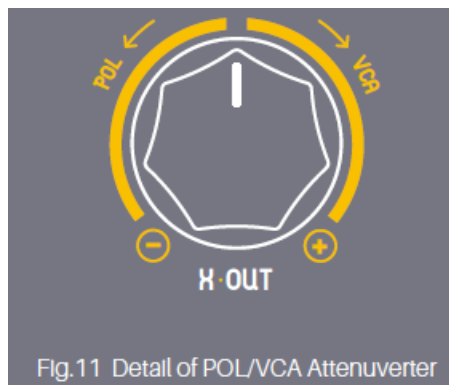
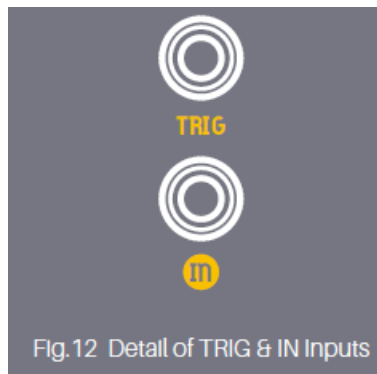


Fig.11 Detail of POL/VCA Attenuverter

## Inputs

### /IN

- This is the signal input that feeds into the slew limiter. It smooths out and shapes incoming signals.



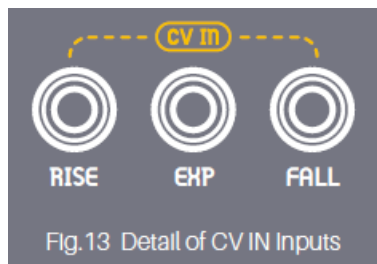
## **/TRIG**

- The trigger input for the envelope.
- When a trigger signal is received, it activates the envelope, initiating the rise and fall phases according to the set controls.

## **CV Inputs**

### **/RISE | FALL**

- Controls the Rise/Fall time of the envelope or modulation signal via an external CV.



## **/EXP**

- Modulates the exponential response of the Rise and Fall times, affecting the main frequency of the function.

## **Outputs**

### **RISE | FALL**

- Gate output that is high when the rise or fall phase is active.

## **X OUT**

- The primary output for channel X provides the function generator signal.

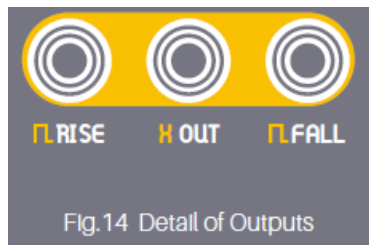


Fig.14 Detail of Outputs

## Controls / Common Section

### LED Indicators

#### RISE

- This LED lights up during the rise phase of the envelope or function generator, indicating that the signal is increasing toward its peak.

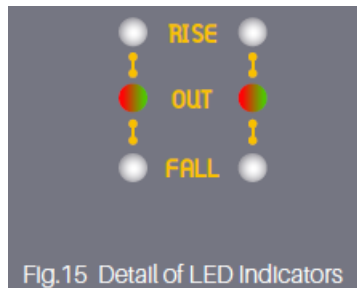


Fig.15 Detail of LED Indicators

#### OUT (Bicolor)

- This bicolor LED shows the output status of the module.

It typically changes color based on the signal polarity or state, allowing you to quickly assess whether the output is positive, negative, or at zero.

#### FALL

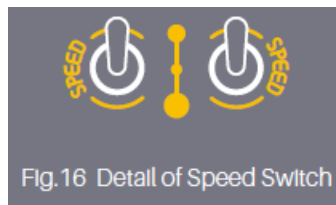
- This LED lights up during the fall phase, showing that the signal is returning to its baseline or completing its cycle.

### Switches

#### SPEED

This switch controls the overall timing range of the rise and fall times.

- **MID.** A balanced range for medium-speed transitions.
- **HIGH.** For fast, snappy envelopes, ideal for percussive sounds or quick modulation changes
- **LOW.** For very slow envelopes and modulations.



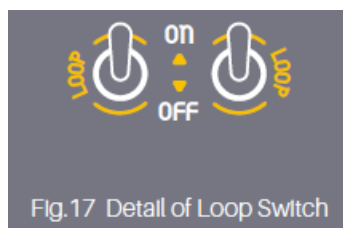
## Controls / Common Section

### Switches

#### LOOP

Toggles the looping function of the envelope.

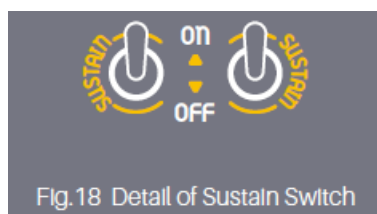
- **ON.** The envelope will continuously loop, creating a repeating cycle without the need for external triggering.
- **OFF.** The envelope will function normally, only triggering once per trigger signal.



#### SUSTAIN

Controls whether the envelope holds at its peak.

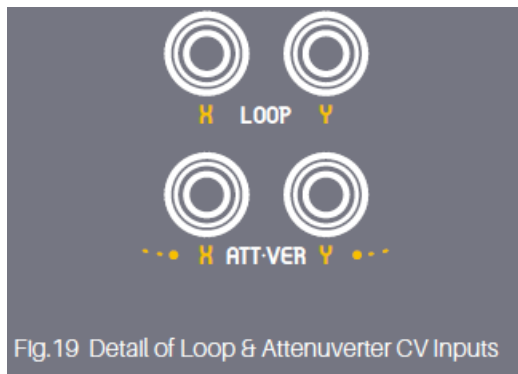
- **ON.** The envelope will sustain at the peak level as long as the gate or trigger signal is active, only proceeding to the fall phase once the gate is released.
- **OFF.** The envelope will immediately proceed to the fall phase after reaching the peak, without holding.



### CV Inputs

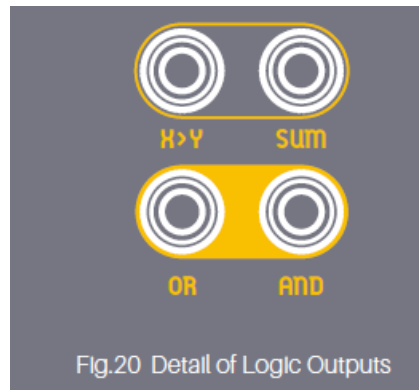
#### LOOP

- Applying a voltage of more than 2V to this input activates the loop mode, causing the function generator to repeat its cycle continuously, without needing manual activation or a gate signal.



## ATT.VER

- This input acts as a CV control for the channel attenuverter, allowing you to dynamically adjust the amplitude and polarity of the signal.
- 0V results in no modulation, maintaining the current amplitude and polarity.
- -5V inverts the signal with maximum amplitude. (POL)
- +5V maintains the signal's polarity with maximum amplitude. (VCA)



## Logic Operations

- /X>Y. Outputs a high signal when the X channel is greater than the Y channel, useful for creating complex modulation or conditional triggers.
- /SUM. Outputs the sum of the X and Y channels, combining both signals into one.
- /OR. Outputs the higher voltage of X or Y channels.
- /AND. Outputs the lower voltage of X or Y channels.

## Calibration

ARC is factory-calibrated with precision sources. The following procedure is for adjusting inaccuracies in your system:

### ATT-VER Center Adjust 1 2

- These adjust the center position of the attenuator/offset voltage for Y and X channels. When the potentiometer is centered, the output should be 0V to ensure proper alignment.

## Rise Shape Adjust 3 5

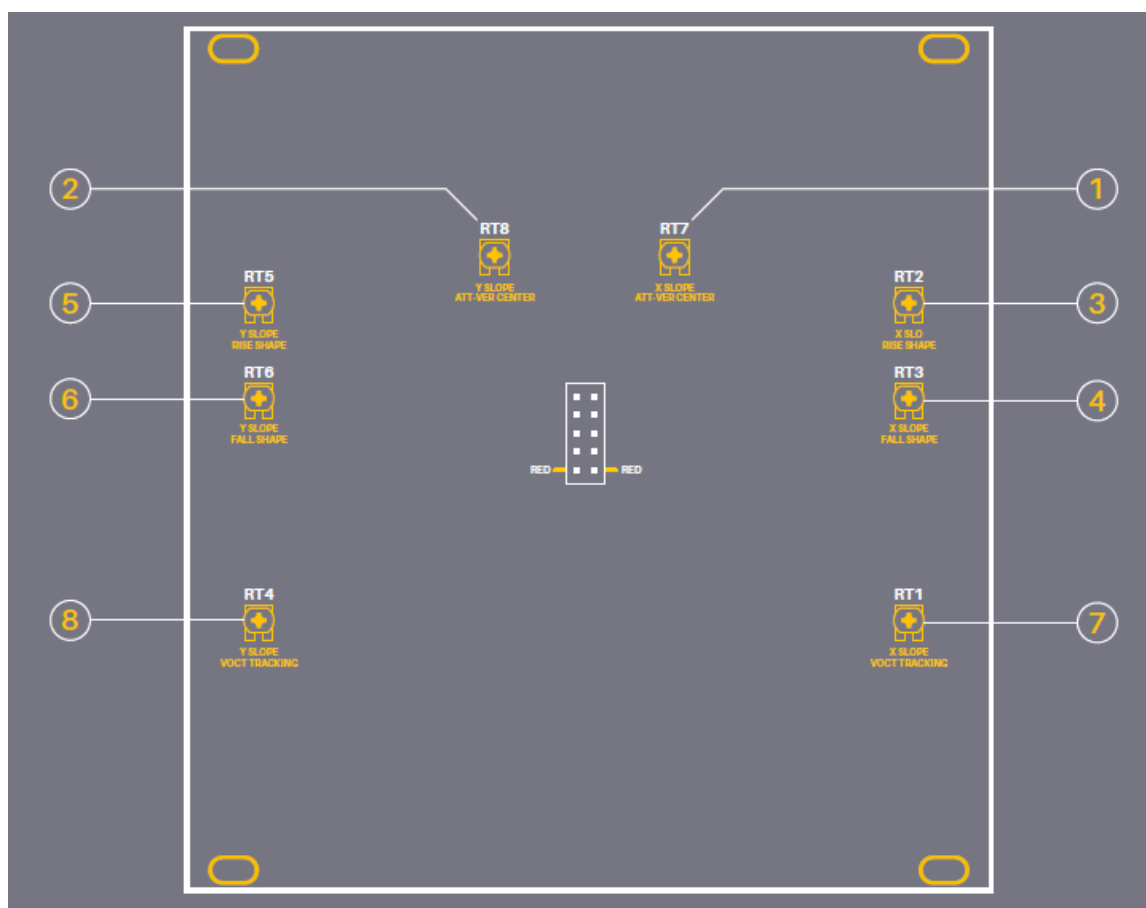
- These trimmers adjust the rise curve for the Y and X channels. Calibrate them so that when the shape potentiometer is centered, the rise curve is linear.
- This ensures a neutral starting point for further adjustments.

## Fall Shape Adjust 4 6

- These control the fall curve for the Y and X channels. Set them so that the fall curve is linear when the shape potentiometer is in the center, allowing for smooth modifications.

## V/OCT Tracking Adjust 7 8

- These trimmers tune the 1V/Octave tracking for Y and X channels, ensuring accurate response across some octaves range.



## Compliance

This device complies with the EU guidelines and is manufactured RoHS conforming without the use of lead, mercury, cadmium, or chrome. Nevertheless, this device is special waste, and disposal of household waste is not recommended.

This device meets the requirements of the following standards and directives:

- EMC: 2014/30/EU
- EN 55032. Electromagnetic compatibility of multimedia equipment.
- EN 55103-2. Electromagnetic compatibility – Product family standard for audio, video, audio-visual, and entertainment lighting control apparatus for professional use.
- EN 61000-3-2. Limits for harmonic current emissions.
- EN 61000-3-3. Limitation of voltage changes, voltage fluctuations, and flicker in public low-voltage supply systems.
- EN 62311. Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields.
- RoHS2: 2011/65/EU
- WEEE: 2012/19/EU



## Guarantee

- This product is covered by 2 years of guarantee on purchased goods, which begins when you receive your package.

### This guarantee covers

- Any defect in the manufacturing of this product.
- Replacement or repair, as decided by NANO Modules.

### This guarantee does not cover

Any damage or malfunction caused by incorrect use, such as, but not limited to:

- Power cables connected backward.
- Excessive voltage levels.
- Unauthorized mods.
- Exposure to extreme temperature or moisture levels.

Please contact our customer service – [jorge@nanomodul.es](mailto:jorge@nanomodul.es) – for a return authorization before sending the module. The cost of sending a module back for servicing is paid for by the customer.

## Technical Specifications

- Dimensions 24HP – 120×128,5mm
- Current +12V 150mA / +5V 0mA / -12V 130mA
- Input & Output Signals  $\pm 10V$
- Min. time for Attack & Decay 0.5ms
- Max. time for Attack & Decay 7 minutes
- Impedance Input 10k – Output 10k
- Materials PCB and Panel – FR4 1,6mm

- Depth 40mm – Skiff friendly


Modules are designed and assembled in València.

## Contact

- Bravo! You have learned the basic
- fundamentals of your ARC Module.
- If you have any doubts, please feel free to contact us.
- [nano-modules.com/contact](https://nano-modules.com/contact)

NANO Modules – València 2024 ©

## Documents / Resources

	<a href="#">ARC NANO Modules</a> [pdf] User Guide ARC-Manual.pdf, ARC - Manual_1, NANO Modules, NANO, Modules
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## References

- [📞 Contact - NANO](#)
- [User Manual](#)

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