



# NIJEL v1.1

by neutral labs



## Manual

Hello, owner.

Nijel is a distortion module that lets you change its sonic character by plugging in components like diodes, capacitors or resistors directly to the front panel. You can also use separately available preset cards that are compatible with other Neutral Labs products.

## Specifications

- Width: 4 HP
- Supply voltage: +12V/-12V (Eurorack 10-pin header)
- Current draw:
  - +12V: 12 mA
  - -12V: 12 mA
  - 5V: unused, 0 mA
- CV inputs: 0V to 10V usable, -12V to 12V absolute

## Connecting NIJEL to Eurorack power

Connect a 10 pin Eurorack power cable to the 2x5 power header on the back of the module. There is an arrow indicator next to the word STRIPE on the circuit board. Unsurprisingly, the red stripe side of the cable goes on the side that says STRIPE. The module (and your power supply) is protected in case you should ever connect it the wrong way around, but it won't turn on if you do.

## Module Function

NIJEL is a diode distortion module that has drive control via a knob and/or incoming control voltage (CV).

The user can optionally modify the distortion character by plugging passive electronic components like diodes, capacitors or resistors into either or both of two rows of ports on the front panel, or special pre-made cards that contain small circuits made up of such components.

NIJEL comes with a small set of suitable passive components for experimentation: a photoresistor, diode, LED and capacitor.

## Controls

Control	Function
<b>DRIVE</b>	<p>This knob adjusts the intensity of the distortion. When fully counterclockwise, there is a minimal amount of distortion applied to the incoming audio. When fully clockwise, the applied distortion is at its maximum. More is not always better: Sweet spots are often found around the midpoint or slightly above, depending on the source material.</p> <p>If a jack is inserted into the CV input, the knob works as an attenuator of the incoming CV.</p>

## Inputs/Outputs

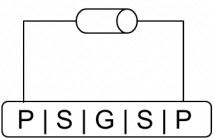
Input	Function
<b>IN</b>	This accepts an incoming audio signal.
<b>OUT</b>	This outputs the processed audio signal.
<b>DRIVE CV</b>	<p>This is for modulating the DRIVE parameter via incoming control voltage (CV). If a jack is inserted into this socket, the DRIVE knob now works as an attenuator of the CV: In the fully clockwise position, the CV is completely attenuated. In the middle position, the CV amplitude is divided by 2. In the fully counterclockwise position, the CV is applied to the fullest extent.</p> <p>Only positive CV has an effect. Negative voltages will be limited and appear to the module as 0V. Any voltage between -12V and +12V will not harm the module.</p>

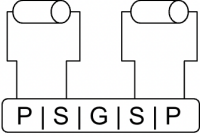
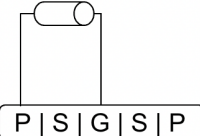
## Modifier Ports

The ports at the top of the module labeled P|S|G|S|P support the plugging in of pre-assembled cards available from Neutral Labs, as well as individual passive components like resistors, capacitors or diodes. LEDs and LDRs (light-dependent resistors) can be used as well, even in combination. Any combination of components and/or cartridges will change the distortion behavior in its own unique way.

There are 2 rows of ports which work exactly the same, and they can be used at the same time. E.g. it is possible to connect two cartridges to both rows of ports simultaneously, or one cartridge and a number of components on the other row of ports. When using cartridges, their orientation doesn't matter, they will work the same way facing either up or down.

**Caution:** As shown by the warning icon to the top left of the ports, **do not use normal (unipolar) electrolytic capacitors** unless you know exactly what you're doing! Reverse voltage may make them explode violently. You may use them with the positive leg on one of the P ports and the negative leg on one of the G ports, but it is better to avoid them completely. Large value bipolar ceramic capacitors are easily available and should be used instead. The use of active components like transistors could result in unexpected behavior and might damage the module, so avoid them as well. An exception would be a BJT with either its emitter or its collector leg remaining unconnected. Rule of thumb for the novice user: **Plugging in any kind and combination of diodes, resistors and ceramic capacitors is always safe.**

Connection type	Function
<p>Parallel (P)</p>  <p>The diagram shows a port strip with five ports labeled P, S, G, S, P from left to right. A component, represented by a circle with a horizontal line through it, is connected between the leftmost P port and the rightmost P port. The connection is made by two vertical lines extending from the component to the P ports, and a horizontal line connecting the two vertical lines at the top of the component.</p>	<p>Connecting a component between the left and right P ports puts this component in parallel to the distortion's main feedback circuit. Doing the same on the other row of ports will put both of these components in parallel.</p> <p><b>Accidentally shorting these ports will not harm your component or the module.</b></p>

<p>Serial (S)</p> 	<p>This is used for putting two components in series, the combination of which will then be in parallel to the feedback circuit.</p> <p>Put the first of the two components from P to S and the other one from the other S to the other P. Both of the S ports on either row are interconnected, so a series connection will be made between the components.</p> <p>You could e.g. put a resistor between P and S on the left side, and an LED between S and P on the right side.</p>
<p>Ground (G)</p> 	<p>This is for components that should go from the feedback circuit to ground. In this case, components should be placed in such a way that one of their legs connects to either P port and the other connects to a G port.</p> <p>In case two components should go to ground in series, connect the first one between a P and an S port and the second one between the other S port on the same row and a G port. In case two components should go to ground in parallel, connect either of them to one of the P ports and both of their other legs to a G port.</p> <p><b>Accidentally shorting from P or S to ground will not harm your component or the module.</b></p>

## Modifier Port Patch Ideas

- Diodes or LEDs work well in parallel, especially if using two different diode types while their polarities are opposite each other, so e.g. a Schottky diode on port row 1 and an LED in reverse on port row 2.
- Light-dependent resistors (LDRs) can be used. Put an LDR in parallel and change the amount of light it receives (either by shining a light on it or using your hand to cover it in a well-lit room). You can also put an LDR in series with a diode in order to adjust the amount of effect the diode has.
- You may use an LED in conjunction with an LDR, in various combinations. Place the LED close to the top of the LDR, so the light from the LED modifies the LDR's resistance.
- Capacitors to ground give sonically interesting results, as they will bleed high frequencies from the feedback loop, resulting in harmonics created in the resulting audio signal.