

Passive LPG 1U

Passive Low Pass Gate

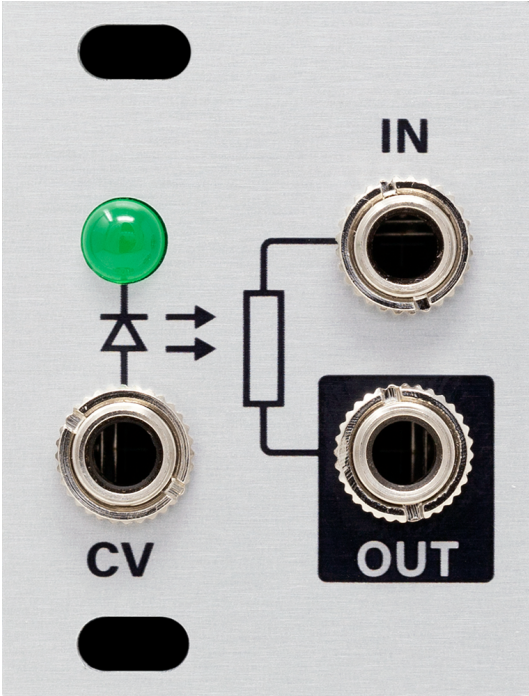


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Compliance



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by Intellijel Designs, Inc. could void the user's authority to operate the equipment.

Any digital equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.



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

EMC: 2014/30/EU

EN55032:2015 ; EN55103-2:2009 (EN55024) ; EN61000-3-2 ; EN61000-3-3

Low Voltage: 2014/35/EU

EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011

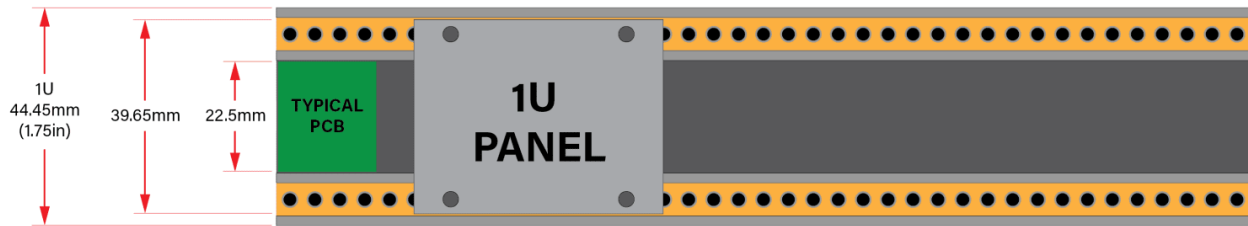
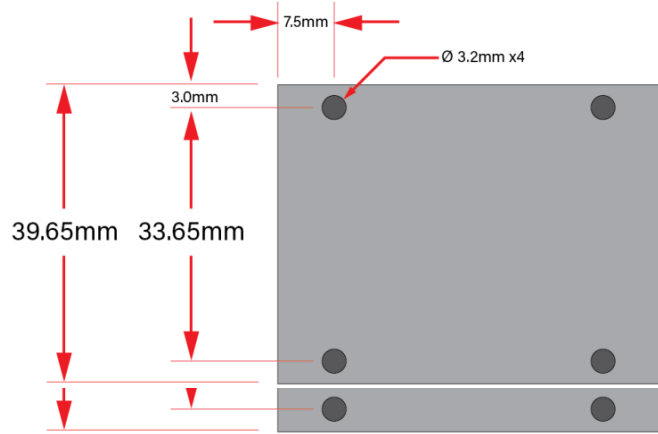
RoHS2: 2011/65/EU

WEEE: 2012/19/EU

Installation

This module is designed for use within an Intellijel-standard 1U row, such as contained within the Intellijel 4U and 7U Eurorack cases. Intellijel's 1U specification is derived from the Eurorack mechanical specification set by Doepfer that is designed to support the use of lipped rails within industry standard rack heights.

Because this is a passive module, it requires no power to operate.



Overview

In general, low pass gates (LPGs) control the amplitude and timbre of a signal by opening and closing a low pass filter. When the gate is closed, no frequencies are allowed to pass through (and no output is heard). As the gate begins to open, the lowest frequencies pass through to the output. As the gate opens further, the output grows louder and its high frequency content increases.

Traditional Low Pass Gates use vactrols to control the opening and closing of the filter. Encased within a vactrol is both a light source and a light detector. Applying a control voltage to the vactrol lights its internal LED — the brightness of which is measured by its detector. What makes vactrols particularly unique (and well-suited to musical applications) is their non-linear response to voltage — in particular, the way in which the internal LED slowly dims (rather than shutting off instantly) when the control voltage is removed. This sonic coupling of timbre and volume, along with the circuit's natural decay, makes the low pass gate particularly adept at producing tones associated with struck objects, like hand drums or marimbas. Indeed, low pass gates are the main ingredient of the so-called “Buchla Bongo” sound.

The Intellijel Passive Low Pass Gate 1U is a simple, DC coupled, vactrol based, 1-pole passive low pass gate, which is controlled by an external CV input. Without positive control voltage, the gate is completely closed and none of the LPG's input signal is passed through to the output. Increasing amounts of positive CV open the gate — making the output signal both louder and brighter. At +5V, the gate is fully open and the input signal is passed through to the output.

This makes LPGs sound very different (and more “acoustic”) than the traditional complement of envelopes, VCFs and VCAs that are employed in most subtractive synthesizers. Exciting the vactrol (via the CV input) with a trigger, noise blast, or short envelope will result in a very natural sounding filtered envelope that's reminiscent of the sonic characteristics of struck objects, which are allowed to decay naturally.

In addition, because this is a passive circuit (no power is applied to it), its sonic characteristics are somewhat dependent upon the audio signal you feed into it, making it a very natural and organic way to shape a signal's volume and tone.

Front Panel

1. LPG IN

Input into the Low Pass Gate circuitry.

Any signal patched into here will be gated by the voltage arriving at the **CV IN [3]** jack, and sent to the **LPG OUT [2]** jack.

2. LPG OUT

The output of the Low Pass Gate.

It contains an amplitude and timbre modified version of the signal patched into the **LPG IN [1]** jack. The amount of amplitude attenuation and timbre modification is determined by the voltage present at the **CV IN [3]** jack.

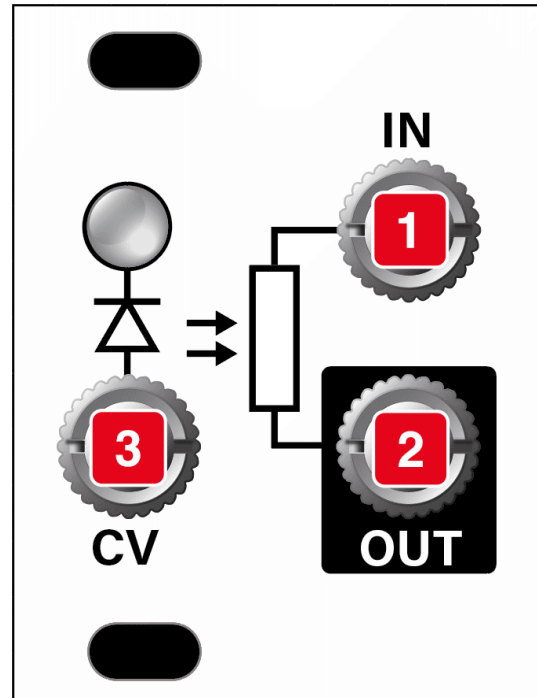
3. CV IN & LEVEL LED

A voltage patched into this input will determine the extent to which the Low Pass Gate affects the signal arriving at the **LPG IN [1]** jack before passing it to the **LPG OUT [2]** jack

At +5V, the Level LED lights bright **green**, and the gate “opens,” allowing the signal to pass from the **LPG IN [1]** to the **LPG OUT [2]** unaffected.

Voltages less than +5V, but higher the 0V partially “close” the gate, causing a dulling of the sound (much like a low pass filter) as well as a decrease in amplitude. The Level LED dims as the **CV IN [3]** voltage diminishes.

Unlike traditional VCFs and VCAs, low pass gates have a more ‘organic’ response to gating and filtering a signal, and work particularly well when a short trigger or noise burst is sent into the **CV IN [3]** jack. When excited this way, the circuit imparts a more natural sounding filter/envelope to the input that’s reminiscent of the sonic characteristics of a struck object, such as a hand drum or marimba.



Technical Specifications

Width	6 hp
Maximum Depth	19 mm
Current Draw	None (passive module)