



Thank you for your purchase of the Hakai Labs DEFCON 2 Satellite Eurorack Module! This guide will give you a good overview of the module and its functionality, allowing you to explore deeper on your own.

Don't bother RTFM'ing this thing, just plug the module in and start playing with it. 😊

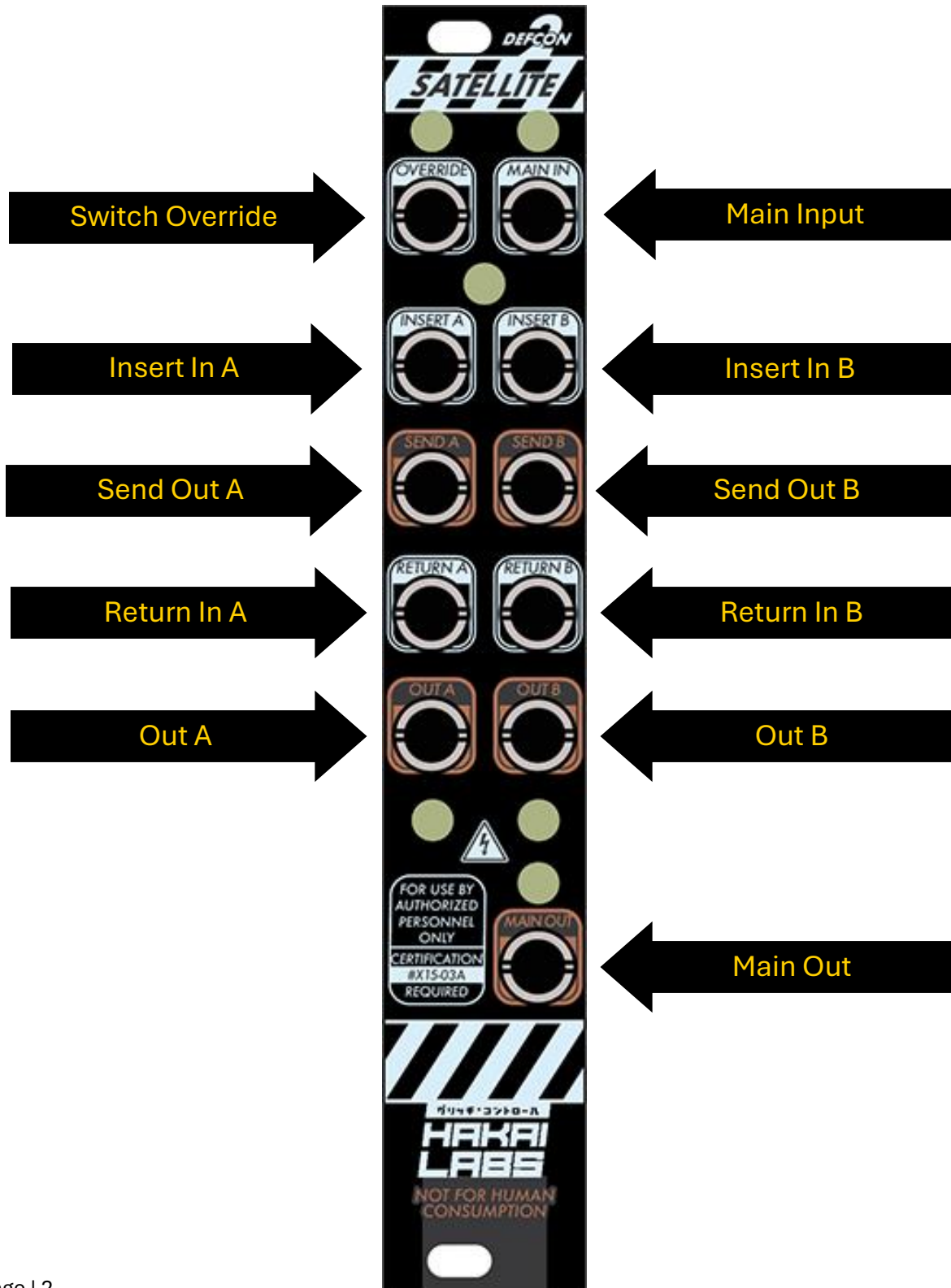
What is the DEFCON 2 Satellite?

The DEFCON 2 Satellite is a compact dual-path analog signal router with the same signal flow as the DEFCON 2. A CV input controls whether the signal from the Main Input flows down Path A (left) or Path B (right) on its way to the Main Out, letting you change your signal routing instantly at any rate of speed you can throw at it.

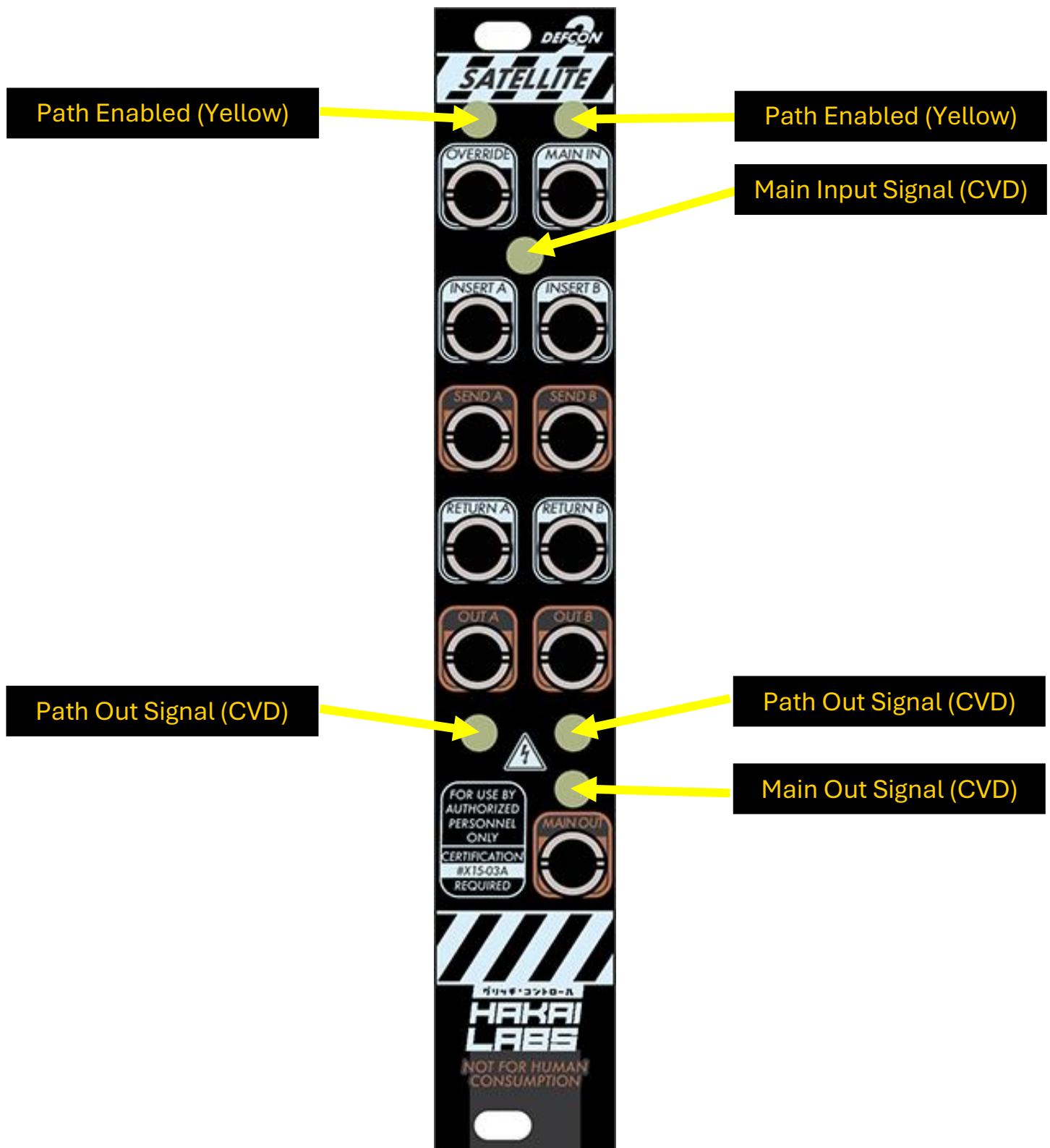
The Satellite works two ways. Use it as an expander: connect it to a DEFCON 2 with a patch cable and it follows the big red switch, and you can chain as many Satellites as you like. Or use it as a standalone module: no DEFCON 2 required. Patch a CV into the Switch Override input and control the routing yourself.

REINFORCEMENTS HAVE ARRIVED
Connect to a DEFCON 2, or go it alone with a CV.

Front Panel / Outputs / Controls



LED Indicator Functions



DEFCON 2 Satellite Signal Overview

The DEFCON 2 Satellite is a dual-path analog signal switcher. It routes a single Main Input to either Path A (left) or Path B (right). Each path has its own Insert In, Send Out, Return In, and Out jacks, so you can override, process, or tap the signal at several points along the way. High-speed CMOS switching keeps transitions silent and instantaneous, with no audible artifacts.

Unlike the DEFCON 2, the Satellite has no big toggle switch and no gate outputs. Its switch state comes from the rear expansion input or the front panel Switch Override CV input.

Only the active path reaches the Main Out, though anything patched into an inactive path's Insert In or Return In still flows through to that path's Send Out and Out jacks.

Signal Path

On each path, the signal travels in this order (the Signal Flow Diagram at the end of this manual shows the full route):

- Main Input is routed to the active path by the switch state (from the rear expansion input or the Switch Override).
- Insert In: a patched cable replaces the signal on that path.
- Send Out taps the signal at this point (buffered).
- Return In: a patched cable replaces the signal on that path.
- Out taps the signal at this point.
- Main Out: only the active path continues here.

Controlling the Switch

The switch state can be controlled in two ways:

- **Expander mode:** Connect the rear Expansion In to a DEFCON 2 (or to another Satellite's Expansion Out) with a standard patch cable. The Satellite mirrors the switch state of the DEFCON 2.
- **Standalone mode:** Patch a CV, gate, or clock into the Switch Override input. No DEFCON 2 is needed.

A cable in the Switch Override breaks the connection to the rear Expansion In. The override then takes full control, and the Expansion Out passes the override state on down the chain.

A signal above 2.5v at the Switch Override routes the Main Input to Path B. A low signal, or no signal, routes it to Path A.

WARNING: A fast clock into the Switch Override will reroute your signal very quickly. Hakai Labs is not responsible for sudden silence, unexpected noise, or ruined takes.

Jack Reference

Front Panel

Main Input

Accepts any signal at Eurorack levels: audio, CV, gates, triggers, envelopes, and more. Signals beyond $\pm 12V$ will be clipped by the input protection circuitry. The Main Input is routed to Path A or Path B depending on the switch state.

Switch Override

A CV input that controls the CMOS switch directly. Patching a cable here breaks the connection to the rear Expansion In, so the Satellite ignores the DEFCON 2 (or previous Satellite) and follows the override instead. This is what makes the Satellite a fully standalone module: patch in a gate, clock, sequencer lane, or other CV to switch paths at any speed. The override state is also passed on through the Expansion Out.

Input range: 0-5v (protected internally on over or under voltage signals, put audio into here, I dare you!)

Insert In A / Insert In B

Overrides the signal on a path. When a cable is patched into an Insert In jack, the connection from the Main Input to that path is broken, regardless of the switch state, and the patched signal takes its place. The inserted signal continues through the rest of that path (Send Out, Return In, and Out), even when the path is inactive. With nothing patched, the Main Input passes through normally.

Send Out A / Send Out B

Outputs a buffered copy of the signal currently on the path, ideal for feeding external effects or processors. Patching a Send Out does not interrupt the signal flow.

Return In A / Return In B

Works like Insert In, and is designed to bring an external effect back into the path. With nothing patched, the signal continues unchanged. When a cable is patched, it replaces the signal on that path from this point onward. Pair a Send Out with a Return In to build an effects loop on either path.

Out A / Out B

Outputs the signal at the end of each path, just before the Main Out switching stage. These are passive taps, so patching them does not interrupt the signal to Main Out. Out is available regardless of switch state, but an inactive path carries a signal only if something is patched into that path's Insert In or Return In. Otherwise there is nothing on it.

Main Out

Outputs the signal from the active path. The inactive path is not passed to Main Out.

Rear Panel

Expansion In

Connects to the Expansion Out of a DEFCON 2 or another DEFCON 2 Satellite using a standard patch cable. The Satellite mirrors the switch state it receives here. This connection is broken whenever a cable is patched into the Switch Override.

Expansion Out

A buffered output of this Satellite's switch state. It passes on the state received at the Expansion In or, if a cable is patched into the Switch Override, the override state. Connect it to the Expansion In of another Satellite to daisy-chain modules.

LED Indicators

The LEDs on the Satellite show what is happening in the module in real time. The LED Indicator Functions diagram on page 3 shows where each one sits.

- **Path Enabled (yellow):** Lit while that path is the active one, whether the switch state comes from the rear expansion input or the Switch Override. Each path has one Path Enabled LED, at the top of the panel.
- **Signal LEDs (bi-color red/green):** Show the signal present at three points: Main Input Signal, Path Out Signal (one per path), and Main Out Signal.

The signal LEDs are bi-color red/green CVD LEDs, chosen to be easier to distinguish for people with red-green color vision deficiency. Because each path is monitored independently, you can see an Insert or Return signal on the inactive path even though it is not reaching the Main Out.

Routing Modes

The Satellite supports the same routing modes as the DEFCON 2, whether the switch is controlled by a DEFCON 2 or by CV at the Switch Override.

1-to-1 (single source, single destination): Patch into Main Input and take the signal from Main Out. Use the Send/Return loops to insert effects on either path.

2-to-1 (source selector): Patch two sources into Insert In A and Insert In B, bypassing the Main Input. The switch state selects which source reaches Main Out.

1-to-2 (split and route): Patch into Main Input and take the signal from Out A and Out B. Process each path independently through its Send/Return loop before sending to separate destinations. Only the active path carries the Main Input at any time.

Expansion and Daisy-Chaining

To expand a DEFCON 2, connect a standard patch cable from the rear expansion port of the DEFCON 2 to the Expansion In of a Satellite. Each Satellite adds two more independent signal paths that follow the same switch state.

To add more, connect the Expansion Out of that Satellite to the Expansion In of the next one. You can chain as many Satellites as you like. The switch state is buffered at every stop, so it does not degrade along the chain.

Patching a cable into the Switch Override on any Satellite breaks its link to the module before it. That Satellite, and every Satellite downstream of it, then follows the override instead of the DEFCON 2.

You can also skip the DEFCON 2 entirely. A Satellite on its own, controlled by CV at the Switch Override, is a complete, compact signal router.

Power

The DEFCON 2 Satellite connects to your Eurorack power supply with a 10-pin shrouded power connector. Follow the standard Eurorack convention with the red stripe of the ribbon cable toward the -12V side. The module is reverse-polarity protected, but always power down your system before connecting or disconnecting any module.

Specifications

- Width: 4 HP
- Depth: 25 mm
- Current draw:
 - 60 mA @ +12V
 - 30 mA @ -12V
 - 0 mA @ 5V
- Signal range: $\pm 12V$ (clipped beyond this)
- Switch Override input range: 0-5v, but internal protected for over/under voltages.

DEFCON Series Signal Flow Diagram

