ENDORPHINES ®
AUTOPILOT 3U & 1U

CONTENT

ENDORPHINES

WARRANTY

1-year warranty guaranteed from the product's purchase date in case of any manufacturing errors or other functional deficiencies during runtime.
The warranty does not apply in case of:

➡ damage caused by misuse

➡ mechanical damage arising from careless treatment (dropping, vigorous shaking, mishandling, etc.)

➡ damage caused by liquids or powders penetrating the device

➡ heat damage caused by overexposure to sunlight or heating

➡ electric damage caused by improper connecting

The warranty covers replacement or repair, as decided by us. Please contact us via email for a return authorization before sending anything. The customer pays shipping costs of sending a module back for servicing. Device complies with all EU regulations concerning RoHS lead-free manufacturing and WEEE disposal.

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https://www.modulargrid.net/e/modules/browser/vendor:167

For technical requests: **support@endorphin.es**
For dealer / marketing inquiries: info@endorphin.es

ENDORPHIN.ES is a registered trademark.
It is doing business as FURTH BARCELONA, S. L. (EU VAT ID: ES B66836487)

INTRO

AUTOPILOT is an innovative auto-tuner module for analog oscillators. Tune your oscillators fast, just apply the AUTOPILOT in between the pitch CV and apply the reference waveform. Is available as a dual autotuner in 3U version (4hp) and as a single autotuner 1U Intellijel format version (6hp).

The problem with all analog voltage controlled oscillators is that the applied 1v/oct pitch voltage might not match up exactly to what note's frequency they should generate and it'll end up sounding out of tune. What's worse is that even if you adjust for this you'll need to re-adjust as the instrument gets warmer. With the AUTOPILOT we play a reference A or C note thru the pitch CV into an oscillator. Single button press enables the tune function to the nearest A or C note. Long hold press disables the tune. Super long hold changes the tune from A to C notes or vice versa.

CONNECTING THE POWER

Before installing a new module in your case, ensure your power supply has a free power header and sufficient available capacity to power the module.
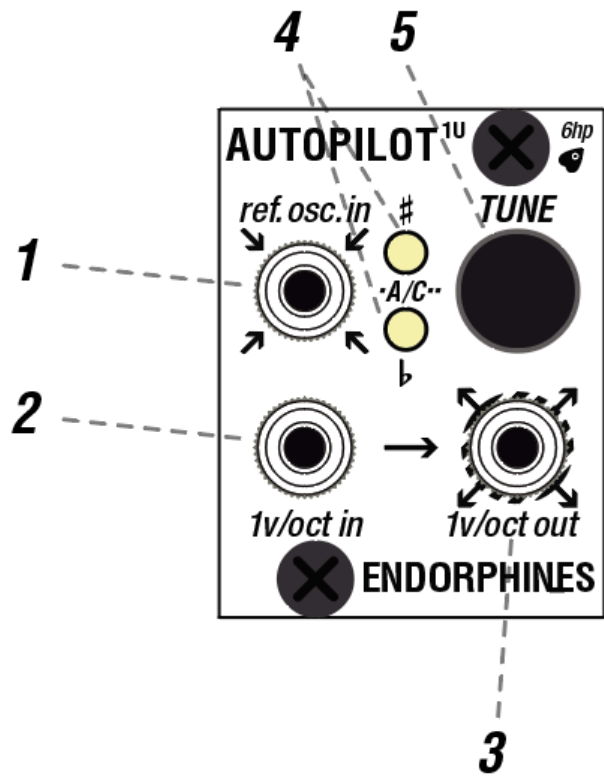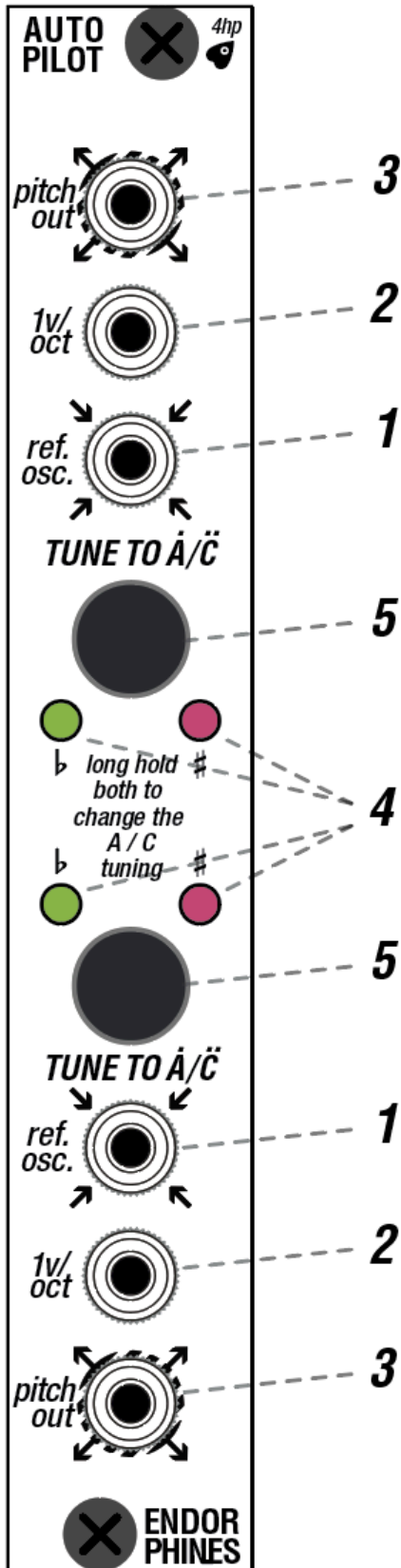
Connect the module directly to the power bus-board with supplied 10-16 ribbon cable like any other eurorack module. Pair of **RED**/**BROWN** pins on the multicolor ribbon cable corresponds to **NEGATIVE -12 VOLTS**.

Make sure to align the power cable with the *'RED/BROWN STRIPE'* label on the module that corresponds to -12V, to the 10-pin connector and with typically a white line for the 16-pin connector on the bus board.

TECHNICAL SPECIFICATIONS

➜ Width: 4 HP/TE for 3U version, 6 HP for 1U Intellijel format version

➜ Depth: 26 cm / 1″ for 3U version, 42 cm / 1.65″ for 1U version with inserted ribbon cable (fits all Intellijel Palette cases)

➜ Current draw: 3U version: +12V: 25 mA, -12V: 15 mA

1U version: +12V: 20 mA, -12V: 10 mA

INTERFACE

AUTO PILOT ✕ 4hp

pitch out — **3**

1v/oct — **2**

ref. osc. — **1**

TUNE TO Å/Ë

— **5**

🟢 🔴

♭ long hold ♯
both to
change the — **4**
A / C
♭ tuning ♯

🟢 🔴

— **5**

TUNE TO Å/Ë

ref. osc. — **1**

1v/oct — **2**

pitch out — **3**

✕ ENDOR PHINES

4   5

AUTOPILOT ¹ᵁ ✕ 6hp

ref. osc. in ♯ TUNE
1 — ○ ·A/C·· ○
♭

1v/oct in → 1v/oct out
2 — ○ → ○

✕ ENDORPHINES

— **3**

1. REFERENCE OSCILLATOR input jack: that's where you connect one of your oscillator's spare waves so the tuners will analyze its frequency. Once the wave is connected into *REF. OSC*. jack, the **TUNING LEDS** (4) will begin to blink showing current oscillator frequency relation to the tuning A or C note. Simple waveforms like square or sine will work best. Please note the AUTOPILOT tuner <u>will not work</u> properly with atonal or complex waveforms as well as the waveforms under heavy influence of frequency modulation. Oscillators should be stable when you apply their reference wave so you may tune them. You may go all crazy after the tune procedure is done.

2. 1V/OCT JACK INPUT this is where you apply the pitch CV from your sequencer, MIDI CV or DAW. Without any tuning applied it will pass thru at the **PITCH OUT 1V/OCT OUT jack** (3)

3. PITCH OUT 1V/OCT OUT jack: this is where your pitch CV with corrected offset goes out and that output is supposed to be feed into the 1v/oct of your oscillator which you want to tune in.

4. TUNING LEDs: two LEDs by lighting up show the current VCO tune:

→ ♭◯ if the frequency is lower than any closer A/C-notes

→ ◯♯ if the frequency is higher than any closer A/C-note

→ ♭◯ ◯♯ if the frequency is in perfect tune with the selected A/C-note

To change the reference note from A to C and vice versa:

→ **in 3U version**: press both *TUNE* buttons (5) for 3 seconds will select the either A or C reference note: by blinking the *TUNING LEDS* (4):

→ **in 1U version**: press *TUNE* button (5) for 3 seconds will select the either A or C reference note: by blinking the *TUNING LEDS* (4):

→ ● **one** blink (by default) means that the tuning (and appropriate auto-tuning) works to the nearest **A** (*La*) notes frequencies multiple to A-440 Hz in both directions.

→ ●● **two** blinks means that the autotuning works to the nearest **C** (*Do*) notes frequencies multiple to 261.63 or 523.26 Hz in both directions. Since in most MIDI CV interfaces C notes correspond to the whole voltage numbers (e.g. 0v, +1v, -3v etc), that becomes essential to even autotune to oscillator without pitch CV patch cable applied. Be sure as there might always be a small voltage offset from any

sequencer or MIDI CV interface so it is always recommended to autotune after you patched the pitch CV cable first.

→ **HINT:** selected note is saved and is restored on the next module's power up. Every time the module is powering up, the tuning LEDs show the selected note with a certain amount of blinks as shown with the amount of dots above A/C note letters on the panel: Å/C̈

5. TUNE /* button: shortly press to **AUTOTUNE** the oscillator's frequency to the nearest **A** or **C** notes. If you press that button after applying that certain note from the MIDI CV or your sequencer into **1V/OCT IN jack** (2), the oscillator will be tuned in exactly that note enabling its perfect pitch offset to be played with all the rest instruments. Long hold press for 1 second disables the tune. Long hold for 3 seconds (both *TUNE* buttons in 3U version or one button in 1U version) to select the A or C notes scale: see **TUNING LEDS** (4) above.

3U VS 1U VERSION

As you may notice, the 1U version is basically a single autotuner while the 3U version has two independent identical parts.

Changing the *TUNE* note from A to C and vice versa in the 3U version is made with both *TUNE* buttons pressed and both parts always share the same note selected either A or C.

CREDITS

ENDORPHIN.ES® – AUTOPILOT 3U & 1U
COLLECTION SPRING/SUMMER 2024

Module idea, hardware design, direction and manual by Andreas Zhukovsky

Core engine programming by BSVi

Endorphin.es are made in Barcelona province, Spain

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COMPLIANCE

FCC

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 / modifications not approved by ENDORPHIN.ES (doing business as Furth Barcelona, S.L.) could void the user's authority to operate the equipment.

This 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.

CE

This device meets the requirements of the following standards:

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