

ENDORPHINES ×  loopop

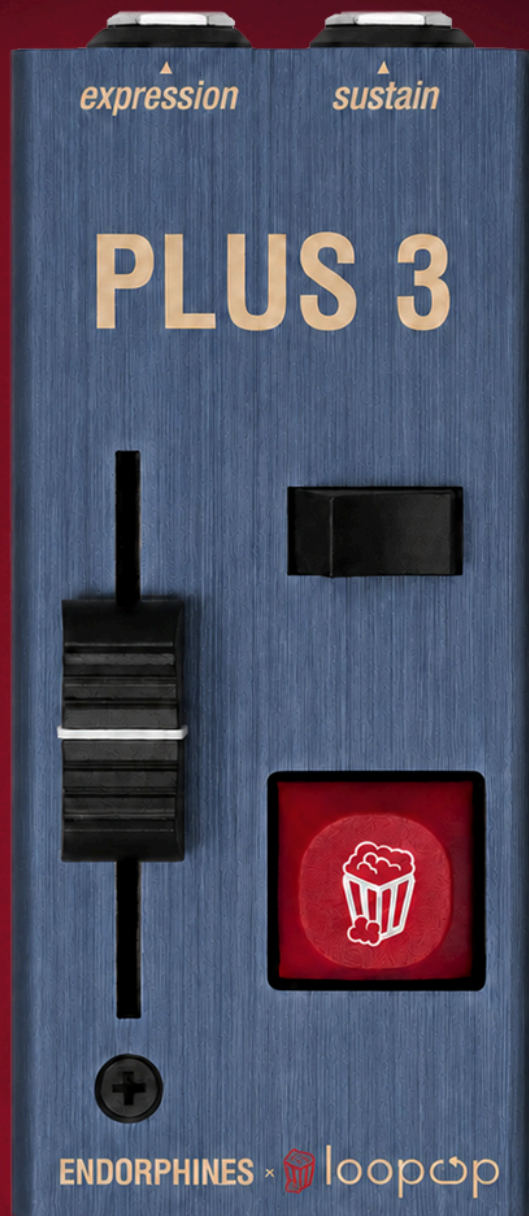


TABLE OF CONTENTS

WARRANTY.....	3
VISIT US.....	3
INTRO.....	4
VIDEO MANUAL.....	4
TECHNICAL SPECIFICATIONS.....	4
OVERVIEW.....	5
INTERFACE.....	5
SUSTAIN SIDE.....	8
USING BOTH PLUS 3 AND A SUSTAIN FOOTSWITCH PEDAL.....	9
EXPRESSION SIDE.....	10
VIRTUAL FADER GENERATOR.....	10
TRS/RTS TYPES FOR EXPRESSION.....	11
THE HIDDEN JUMPER/3-WAY SWITCH.....	13
“EXPANDING” PLUS 3 FOR MIDI.....	14
TROUBLESHOOTING.....	14
CREDITS.....	17
COMPLIANCE.....	18

WARRANTY

1-year warranty is 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 connection

The warranty covers replacement or repair, as decided by us. Please contact us via email for a return authorization before sending it. Shipping costs of sending a module back for servicing are paid by the customer.

VISIT US

<https://endorphin.es>

<https://youtube.com/@endorphines>

<https://facebook.com/TheEndorphines>

https://twitter.com/endorphin_es

<https://www.instagram.com/endorphin.es/>

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

For technical requests: [**support@endorphin.es**](mailto:support@endorphin.es)

For dealer / marketing inquiries: [**info@endorphin.es**](mailto:info@endorphin.es)

ENDORPHIN.ES is a registered trademark.

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

INTRO

PLUS 3 is a desktop expression and sustain pedal that adds controls and unlocks features in MIDI controllers, synthesizers, effects pedals and semi-modular/eurorack instruments, some in ways previously not possible.

PLUS 3 is designed for musicians who prefer compact desktop control of features accessible via the [sustain](#) and [expression](#) jacks of their instruments, as opposed to using their feet or bulky sustain and expression pedals on their desk, and since it's analog, it can also attenuate/mute audio.

VIDEO MANUAL

PLUS 3 overview video by Loopop:

<https://youtu.be/Hf7ug75bkZI>

and check out the update video here:

<https://youtu.be/tBtnIsFz62w>

TECHNICAL SPECIFICATIONS

- Expression input impedance: 10 kΩ, 50mm fader
- Audio connectors: 1/4" TRS for expression, 1/4" TS for sustain
- Current draw: 0 mA (fully passive, no adapter needed)
- Cables included: 1m/0.39" - 1/4 TS-TS for sustain, 1m/0.39" - 1/4" TRS-TRS for expression, 1/4" TRS to 1/8" (3.5mm) female TS left/right adapter (red connector corresponds to the TIP/left channel).
- Pedal dimensions: 110 mm x 50 mm x 40 mm (4.3" x 2" x 1.6")
- Box dimensions: 145 mm x 80 x 65 mm (5.7" x 3.1" x 2.6")
- Weight: pedal only: 150 gr. / 0.33 lbs; incl.box & packaging: 300 gr. / 0.66 lbs

OVERVIEW

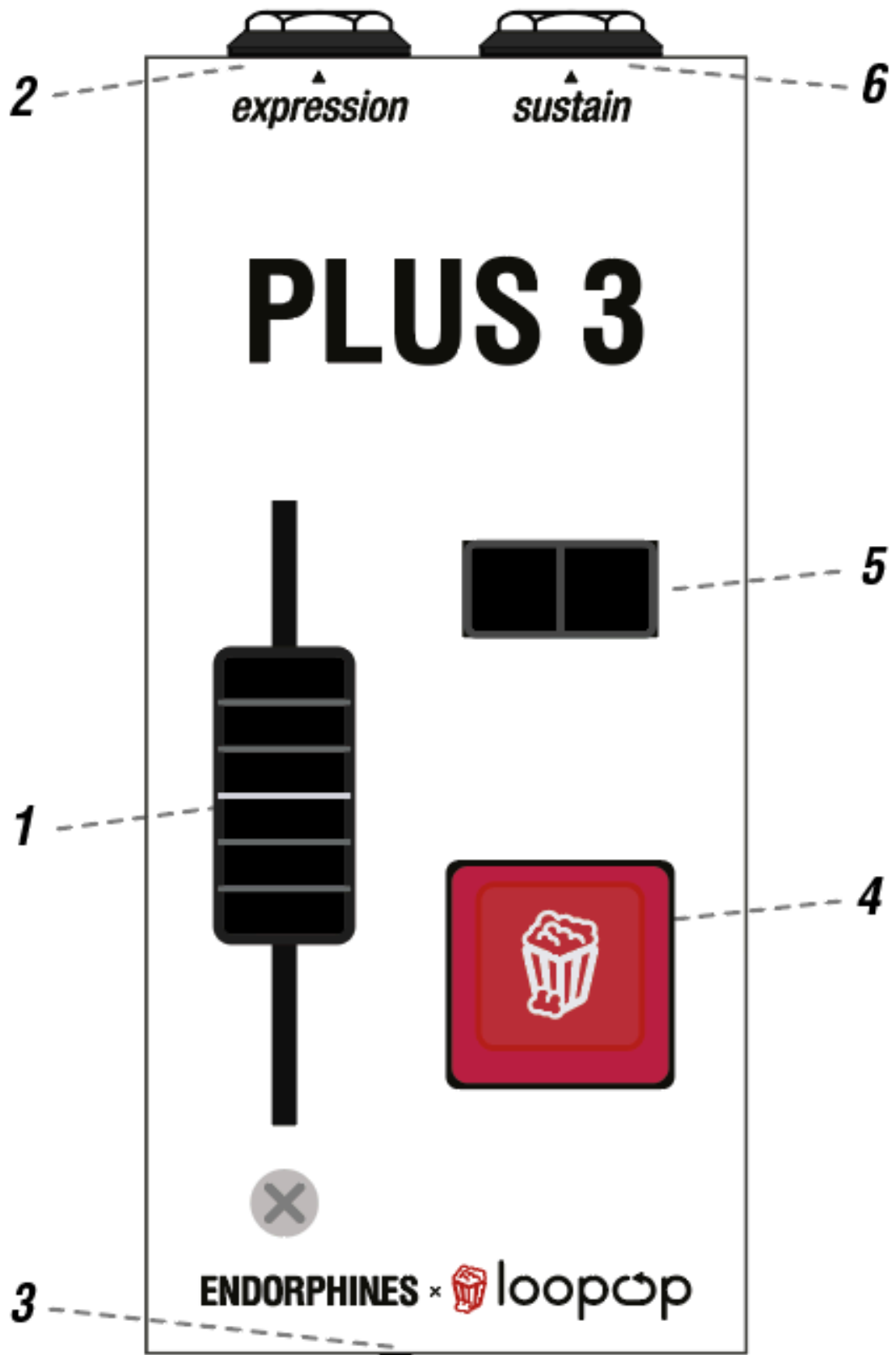
PLUS 3 features a high-quality fader for [expressive](#) performance and automation, a momentary [sustain](#) key, and an innovative [‘drone mode’](#) toggle switch, allowing you to free your hands and hold notes indefinitely. In drone mode, the momentary key’s functionality changes to let you swap droned notes with new ones.

PLUS 3 comes bundled with three cables in the box - a 1-meter stereo/balanced TRS cable for the expression side, a 1-meter mono/instrument TS cable for the sustain side, and a TRS Y-breakout cable for connecting PLUS 3 to semi-modular and Eurorack gear. This breakout cable lets you use PLUS 3’s expression side as an attenuator, and its sustain side as a gate/mute control for CV.

PLUS 3 is totally passive, meaning it doesn’t require any power to work. It’s made of aluminum, so it’s sturdy, light, and portable. Its sustain key is based on standard mechanical keyboard-style keys, so you can customize it and swap the key out to make the pedal your own with your key of choice.

PLUS 3 has an on-panel [TRS/RTS](#) switch for various expression jack configurations, and an internal [‘hidden’](#) jumper (or 3-way switch on the bottom in Rev 1.1) that lets you use its sustain side as an expression toggle, control one of two parameters in dual footswitch jacks, or for muting audio.

INTERFACE



1. **EXPRESSION SLIDER:** is a 50mm 10kΩ sliding potentiometer / fader to control expression with dedicated *TRS-TRS* cable plugged in to **EXPRESSION JACK** (2).
2. **EXPRESSION JACK:** is a 1/4" TRS connector controlled by the **EXPRESSION SLIDER** (1). Connect this jack into the 'expression' control of a synthesizer or pedal (or see other [examples of use](#)), or use the breakout cable to connect to modular instruments and use the **EXPRESSION SLIDER** (1) as an attenuator.
3. **EXPRESSION TRS/RTS SWITCH:** is a two position polarity selector for expression: TRS or RTS (see [TRS/RTS chapter below](#)).
UPPER / TOP position corresponds to **TRS type** (typical Roland® EV-5 or Moog® EP-3);
LOWER / BOTTOM position corresponds to **RTS type**.
 Using the wrong polarity will yield nonlinear control or other unexpected results.
4. **MOMENTARY SUSTAIN BUTTON:** is a momentary key switch to control sustain with a dedicated *TS-TS* cable from **SUSTAIN JACK** (6).
5. **REVERSE/LATCH/SUSTAIN TOGGLE SWITCH:** defines whether the action of the **MOMENTARY SUSTAIN BUTTON** (4) is reversed, or in other words, it toggles between an 'always on' state, where pressing the **SUSTAIN BUTTON** momentarily changes the state to 'off', or vice versa.
6. **SUSTAIN JACK:** is a 1/4" TS/TRS connector controlled by the combined states of the **MOMENTARY SUSTAIN BUTTON** (4) and the **SUSTAIN TOGGLE SWITCH** (5). Connect this to the 'sustain' or 'footswitch' control of the synthesizer or pedal (or see other [examples of use](#)). You may also connect this jack to expression jacks, dual footswitch jacks or modular gear using the breakout cable, just make sure to set the [internal jumper](#) (or 3-way switch on the bottom in Rev 1.1) to TRS or RTS mode.

SUSTAIN SIDE

Capabilities PLUS 3's **SUSTAIN** side unlocks for instruments with a sustain jack, subject to the instruments' capabilities are, among other:

- A momentary sustain button for instruments that don't have a dedicated physical sustain control (most don't!)
- A dedicated drone/hold switch for instruments that don't have one (many don't!)
- As 'UNSUSTAIN': If you want to swap the held/drone notes, play the new notes and tap the momentary **SUSTAIN BUTTON**; the previously held notes should be turned off
- It's important to note that even if an instrument has a hold button, its sustain jack may unlock additional functionality or behavior (for example, a button that simply holds notes does not cause Piano VSTs to resonate sympathetic strings in the way using sustain does. See more examples in Loopop's video)
- Hands-on Arpeggiator latch: Some synths don't have an arp hold button – with PLUS 3 they can!
- Momentary and toggle control of any parameter mappable in your DAW synth's mod matrix/menu system, or effect pedal (for example, sostenuto, a freeze effect, dry/wet bypass, swapping presets, checking a reference mix)
- Sostenuto: if your instrument supports Sostenuto, it will drone notes held while engaging the Sustain side, and let you play un-held notes on top of the drones ones. If your instrument doesn't support Sostenuto, you might be able to find a MIDI effect that enables it (see video links to such devices to Ableton Live and Logic), or use a clever sound design trick as shown in Floyd Steinberg's video [here](#).
- Enhance arpeggiator riffs: Most arps can't tie notes beyond 100%. Holding sustain as a pattern is arpeggiating and can dramatically enhance its sound.

Additional functionality can be unlocked when using the sustain side in one of the two “hidden” modes, RTS/TRS, and using a TRS cable:

- A CV or audio mute with Eurorack gear with the bundled TRS to TS Y splitter cable (don't forget to set the [hidden jumper](#) to TRS or RTS mode for best performance)
- A toggle between two states for devices with expression jacks
- Control one of the two parameters in devices that support dual-footswitches. Use the hidden TRS/RTS jumper/switch to select which of the two parameters you wish to control. Note that unlike regular footswitches which are only momentary, PLUS 3's sustain toggle switch lets you latch parameters!

USING BOTH PLUS 3 AND A SUSTAIN FOOTSWITCH PEDAL

If you'd like to use both a regular sustain pedal and PLUS 3 simultaneously, there's a good chance you can! You'll need to have or buy a cheap splitter accessory and also be mindful of a few things:



1. You'll need a **TS splitter** (TS male 1/4" mono splitting out to two TS female 1/4" jacks).
2. We do **NOT** recommend using a **TRS breakout/Y/insert/ring-tip, or stereo to left/right cable** (TRS male 1/4" mono splitting out to two TS left/right or tip/ring female 1/4" jacks). It might work if you have one around the house, but it might not, depending on how your instrument is wired.
3. Connect PLUS 3 and your sustain pedal to the TS splitter, and plug the splitter into your instrument's sustain jack. It might just work! If not, keep reading.
4. Ideally, both your instrument/MIDI controller and your sustain pedal will let you choose the polarity of their circuit. Typically, the options will be - or +, but some use other names like '*invert*', '*normally open*' or '*normally closed*', switch to the left or right, or brand names like '*KORG*' and '*other*'). Regardless of the name, that gives four

possible combinations in total (--, +-, ++). One of those should work! On the instrument or MIDI controller, it will be in the settings, and on your sustain pedal the polarity switch will probably be on the bottom, back or side. If you're buying a new sustain foot pedal make sure it has a polarity switch! The **M-Audio SP-2** and **Alesis ASP-1 MKII** are good examples of budget sustain pedals with polarity switches. Half-damper sustain pedals might not work!

5. Some instruments/controllers don't have a polarity switch, rather, they **automatically try and detect the pedal's polarity** when you plug it in or when you power up the controller. In this case, plug everything in first, then turn on your controller. In this case the four options you can experiment with are PLUS 3's Sustain Toggle Switch and your pedal's polarity switch. One of the four possible combinations should work! Remember to turn your controller off before testing each of the four options. Sometimes just plugging the splitter out and in will be enough and you won't need to restart the controller.
6. Note that in the solution mentioned here, the sustain pedal will only work as a regular sustain pedal, meaning, if you put PLUS in drone mode, the sustain pedal won't '*unsustain*' the drone momentarily, you'll still need to use PLUS 3's Momentary Button for that.

EXPRESSION SIDE

Capabilities PLUS 3's **EXPRESSION** side unlocks for instruments with an expression jack are, among other:

- PLUS 3 is particularly useful for adding an expressive physical fader to MIDI controllers that don't already have faders, but have an expression jack (for example, Native Instruments Kontrol MK3, or M32; or Korg's KeyStage)

- Use PLUS 3's fader for direct access and expressive control of any single parameter mappable in your DAW, effects pedal or synth in ways not possible with a regular keyboard (for example, bowing a violin, an orchestral swell, fine tuning a track's level in the mix)
- Control the last parameter you edited in your DAW: choose a parameter with your mouse and edit it with the fader. This workflow is enabled in Ableton Live Suite using the free max for live 'kozel', and in Cubase, you can use the sustain button to lock a parameter and fader to control it. Check out Jef Gibbons' video [here](#).
- Macros! For DAWs, synths with a mod matrix or effect pedals with expression jack mapping capabilities (e.g. many Chase Bliss, Boss, EHX pedals, and ENDORPHIN.ES' own [GHOST](#) and [GOLDEN MASTER](#) pedals), use PLUS 3's fader as a macro control to change multiple parameters at once - almost similar to preset morphing, based on your instruments ability to map its expression input to multiple parameters
- Map PLUS 3's fader to numerous destinations for fun sound shaping, for example, in build-ups and drops
- If your synth has a bouncy joystick instead of a mod wheel (some Korg and Roland synths), map PLUS 3's fader to control the mod wheel (typically CC#01 or Joystick Y) to get back non bouncy mod controls.
- If you're using 88-key controllers, PLUS 3 is a great way to bring the mod wheel closer to your hands, especially if you want to control it with your right hand.
- Explore feedback! Use the included TRS to TS Y splitter to insert PLUS 3 in a feedback loop and control its intensity. This, along with filtering, can dramatically change the character of your synth/effect, as shown [here](#).

VIRTUAL FADER GENERATOR

Use Floyd's Virtual Fader Generator to control two parameters using PLUS 3's fader and sustain sides combined:

<https://endorphines.info/loopop>

TRS/RTS TYPES FOR EXPRESSION

All [expression pedals](#) work based on the same principle: like PLUS 3, they have a variable resistor (slider) inside. A reference voltage is sent from the keyboard or MIDI controller or guitar pedal and the position of the slider determines the voltage returned back to the keyboard or pedal.

TRS

In most cases the reference voltage comes into the **RING** pin of the 1/4" connector. It then gets divided or attenuated via the slider from its maximum level to zero, and is then returned via the **TIP** back into the keyboard or pedal. That type of expression connection is called **TRS** and it corresponds when the **EXPRESSION TRS/RTS SWITCH** (3) is switched to the **UPPER / TOP** position.

RTS

Unlike the example above, in some cases, instruments send voltage to the **TIP** pin and expect to get it back from the **RING** pin. That type of expression connection is called RTS and it works well when the **EXPRESSION TRS/RTS SWITCH** (3) is switched to the **LOWER / BOTTOM** position.

Switching to RTS mode also helps if you use the *EXPRESSION* part as an attenuator with Y-cables and occasionally use stereo jacks on the reception. In that case the ring will be shorted to the sleeve (ground)

which in turn may cause hum when touching PLUS 3's body in TRS mode. Switching down to RTS (down) will fix that.

In some cases the pedal will not work properly if you don't choose the correct polarity, but PLUS 3 has a protection resistor which should prevent any damage to the gear in case of a wrong polarity choice. However, the TRS/RTS SWITCH will likely change the curve of the attenuation - so swap the TRS/RTS switch position if you're not getting a linear response.

→ *Note:* when using the included TRS to left/right TS adapter, the **red** connector corresponds to the TIP/left channel and **black** corresponds to RING/right channel.

TS

Some companies like Line 6® use **TIP-SLEEVE** (TS) type of expression pedals, meaning their devices only use two jack pins instead of 3 like typical expression jacks. No worries though, we've got you covered - PLUS 3 is also compatible with TS expression. Simply use the included 1/4" TS-TS cable (or any other instrument mono cable) for the *EXPRESSION* part instead of the typically used TRS-TRS cable. The TRS/RTS switch in that case should be in the UPPER - TRS position.

THE HIDDEN JUMPER/3-WAY SWITCH



PLUS 3's SUSTAIN side has a hidden feature accessible via either a 3-way switch or jumper-based selector to toggle it between 3 possible modes: TS, TRS and RTS (see **SUSTAIN AS EXPR**).

In the original Rev 1.0 PLUS 3, it's a yellow jumper inside the enclosure - see the left photo), and on the Rev 1.1 PLUS, it's a 3-way switch on the bottom (see the picture on the left).

By default, PLUS 3's SUSTAIN side is designed to respond to TS-type cables (but also shorting TIP with RING only while using TRS cable). By default the internal jumper isn't connected to

anything, it's just "floating" on the middle pin, and in Rev 1.1, the 3-way switch is in the middle position.

However, if you wish to use the SUSTAIN side of PLUS 3 as a **TOGGLE**

EXPRESSION for TRS/RTS-style cables and jacks, you'll likely need to swap the 3-way switch/jumper's position - otherwise you will only have part of the useful expression range.

In PLUS 3 REV 1.1: There's no need to open the enclosure. The 3-way switch is accessible using a toothpick on the bottom of PLUS 3. The middle position is TS (default factory setting), the top position is TRS and the bottom is RTS



In PLUS 3 REV 1.0: With the jumper installed on a pair of the pins, the SUSTAIN side of PLUS 3 will behave exactly as the [EXPRESSION side](#) just in a momentary way and invert depending on the **LATCH** switch (5).



Use the jumper to connect:



the middle pin to the right pin for **TRS** type devices, or



the middle pin to the left pin for **RTS** type devices.

What the jumper does when installed on the pairs of 2/3 or 1/2 pins is shunts (or pulls down) the TIP (for TRS) or RING (for RTS) correspondingly with a 10kOhm resistor to ground (sleeve), thus preventing the ‘floating’ expression input in the moment when switch is OFF and enabling full expression range.

To open the enclosure, you’ll need to separate the top part from the bottom part. Remove the fader’s cap and unscrew the top screw and the two side screws using a **PH1 Philips-type** screwdriver. Do NOT remove the nuts around the EXPRESSION and SUSTAIN jacks - that’s not needed to remove the top of the enclosure.

To reassemble PLUS 3, use the fader’s shaft to align the fader with the top panel screw’s hole. Screw in the top and side screws making sure not to over-tighten the screws. Put the fader cap back on.

Check out the video walkthrough of the disassembly and assembly [here](#).

“EXPANDING” PLUS 3 FOR MIDI

PLUS 3 is fully analog and passive, and can’t be used directly as a MIDI controller. When you connect it to the sustain or expression jacks of a MIDI controller/synth, that controller/synth in turn can send out MIDI data based on the position of PLUS 3’s fader and switches.

A compact alternative to using a full MIDI controller is a product called [MPC-10](#) by DOREMIDI. It costs around \$40 and comes with configuration software that lets you assign its two inputs to MIDI CCs, notes and more. It needs to be



powered via USB C and can send out MIDI both over USB and its TRS MIDI port.

TROUBLESHOOTING

PLUS 3's fader isn't reaching my instrument's maximum value (for example, it only reaches a CC value of 90 instead of 127), or it reached the maximum value far from the end of the fader's travel

Some instruments require calibration of the bottom and top positions of the fader (for example, NI's KONTROL and KOMplete keyboards)

PLUS 3's fader control isn't linear

- Flip the [TRS/RTS switch](#) to the other (upper/lower) position
- Check the expression curve settings in your instrument, it may not be set to linear

I'm getting ground loop noise

- If it's happening when using the EXPRESSION side of PLUS 3, swap positions on the RTS/TRS switch on the front of PLUS 3
- If you're using the SUSTAIN side, check the [Hidden Jumper's position](#) – make sure it's on TRS or RTS.

I'm getting clicks when using the sustain side to mute Eurorack audio

- The [SUSTAIN](#) side is designed for a fast response - that's just how the circuit works, which is great for gating CV but may cause clicks on audio. Pressing the button down slowly may help (it may sound like we're kidding but we're not, it may help because of the two-stage way the circuit is built similar to two way light switching)

I've connected to PLUS 3 but it's not working!

- Make sure you're using the right cable for the right jack. The EXPRESSION side of PLUS 3 expects a TRS cable (the one with

two black rings), and the Sustain side expects a TS cable (the one with one black ring).

- Make sure you're plugging into the right jack. Sometimes labels may be confusing. The SUSTAIN side of PLUS 3 should be connected to jacks labeled '**sustain**' or '**footswitch**', and the EXPRESSION side should be connected to jacks labeled '**expression**' or sometimes '**control**'.
- Make sure your synth/pedal/controller settings are configured for whichever side of PLUS 3 you're connecting it to; some have dual-purpose jacks that support both sustain and expression usage.

My Synth or MIDI controller only has a sustain jack – can I not use the expression side of PLUS 3?

- Some controllers like Arturia's Minilab 3 or Native Instruments M32 or A25 let you choose the behavior of its jack – either sustain or expression.
- You can always connect one side of PLUS 3 to control one instrument, and connect the other side to a different instrument for exciting dual device combos!

PLUS 3's rubber feet aren't providing enough friction to hold PLUS 3 in place when I use the fader

- Push down slightly when using the fader
- If that doesn't work, try removing the rubber feet and using double sided tape. PLUS 3 can handle it, just make sure what you're sticking it to can!

Incompatible instruments for PLUS 3's expression fader:

We've tested PLUS 3 with dozens of instruments, MIDI controllers and pedals, and have found its expression fader to be compatible with all of those we tested. For the broadest compatibility, PLUS 3 is designed with a 10kOhm expression sliding potentiometer.

However, some instruments have expression inputs that require higher resistance pots, like 50kOhm or 100kOhm. In this case, higher-resistance pedals like the Moog EV-3 might work better than PLUS 3; however, note that high-resistance pedals won't reach the maximum range on devices that expect a 10kOhm pot.

CREDITS

ENDORPHIN.ES x LOOPOP – PLUS 3

COLLECTION AUTUMN/WINTER 2024

BLACK VERSION: SUMMER/AUTUMN 2025

Pedal idea, concept and video by Loopop

Hardware design, prototyping by Andreas Zhukovsky

A big thanks to creators [Keinseier](#), [Oora Music](#), [Hainbach](#), [Floyd Steinberg](#), [David Ahlung](#), [Jef Gibbons](#), who participated in the launch video and many more.

ENDORPHIN.ES are made in Barcelona province of Spain

Follow, like, post and tag us at Instagram: [@endorphin.es](#)

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 ; EN 55103-2: 2009 (EN55024) ; EN61000-3-2; EN 61000-3-3

Low Voltage: 2014/35/EU EN 60065: 2002+A1: 2006+A11: 2008+A2 :2010+A12: 2011

RoHS2: 2011/65/EU

WEEE: 2012/19/EU