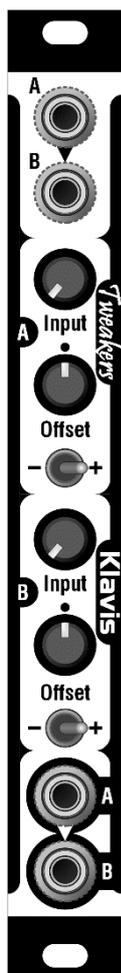


Tweakers

Dual CV processor

Overview

The Tweakers is a slim companion module that allows fine tuning your modulations. Two channels offer control over gain and offset. A three-position switch allows muting the channel and inverting the modulation polarity without impacting the offset. Normalizing of the inputs avoids using a multiple when a signal is dispatched to two targets. Normalizing of the outputs offers an extra mixer, summing the two channels. The Tweakers is a perfect companion for modules whose modulation inputs lack such amenities. Activating predefined settings at the flick of a switch is paramount for live situations. Being able to prepare two sets of carefully adjusted settings for a given signal is even more useful. It may come handy as an audio mixer too.



Features

- Two independent channels also useable jointly as a mixer or splitter
- In each channel:
 - Input and output jack
 - Gain pot with up to 2.1 amplification
 - Bipolar offset pot
 - 3-position switch:
 - Inverted polarity
 - Channel off
 - Normal polarity
- Offset setting is independent of the polarity switch
- Normalized input A can distribute the signal in both channels
- Normalized outputs can mix the two channels on out B
- Compact module

Installation and security

Purpose

This module is meant for installation in a Eurorack-compliant chassis. It adheres to Doepfer Eurorack mechanical and electrical specifications.

Do not attempt using this module in other mechanical or electrical contexts.

Installation

Before the installation, disconnect the mains power supply from your modular system. Some power supplies are not safely isolated; there is a risk of injury!

See in the specifications if this module requires 5V from the supply rails. If 5V is needed and your rack is not providing 5V, do not attempt connection!

Check that the current consumption requirements of this module, when added to your installed set of modules do not exceed the available current from your supply. This is done by adding up the current draw of all modules (mA) separately for each of 5V, 12V and -12V rails. If any of these 3 sums exceeds the available current of your supply for that voltage, do not connect the module to your system; you need a stronger power supply.

The provided supply flat cable can only be inserted in the appropriate orientation at the back of the module, so there is no risk of error on that end. However, you should pay attention to the orientation of the cable in the socket of the supply PCB inside your chassis. Cheap sockets without shrouding may allow you to plug in the connector the wrong way!

The red stripe on the cable should match a stripe printed on the supply board. The stripe also indicates the -12V side. In case there is no stripe, a -12V marking is a safe indication of the orientation.

Double check that the connectors are fully inserted and correctly oriented before switching on the power supply. In case of an anomaly, switch off the power supply immediately and check everything again.

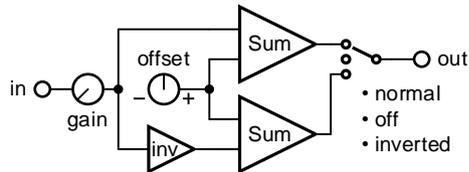
Quick overview

The Tweakers is all you need to pre-process up to two modulation signals.

There are two identical channels that can be used independently.

Normalization of the inputs and outputs offer duplicating and mixing options.

Channel features



Each channel presents one input, one output, a 3-state switch and two potentiometers.

- The input jack accepts modulation or audio signals of any amplitude.
- The Gain pot allows reducing the amplitude down to zero or amplify weak signals.
- The Offset pot brings an adjustable voltage that is added to the incoming signal.
 - It generates an increasingly negative voltage when turned counter-clockwise,
 - an increasingly positive voltage when turned clockwise,
 - and zero volts (no offset) when set halfway
- The 3-position switch allows:
 - switching off the channel entirely when set to the middle
 - enabling the channel with the incoming signal non-inverted when set to the right
 - enabling the channel with the incoming signal being inverted when set to the left
- The output jack brings the resulting signal according to the switch and pots settings

Usage examples

The main use is in front of a module lacking gain and offset settings at its modulation inputs.

By adding a fixed voltage, the Offset pot can change a unipolar signal into bipolar and vice-versa.

Another use of Offset is to create predefined transpose settings ready to be switched on or added from the two channels.

Offset can be used to deliberate clip an audio wave to change its harmonic content (e.g. a triangle or saw into a half-trapezoid). Using the offset of the second channel can recenter the signal around zero after being clipped in the first channel.

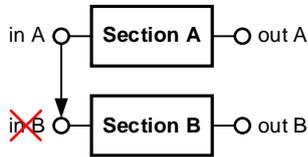
Using the two channels with their outputs mixed on board, a slow modulation signal can dynamically change such waveshaping. The gain and offset pots allow a perfect control of the process.

The tweakers is also useful as a simple audio mixer.

Normalizing

Internal connections that are active when no jacks are inserted allow additional features. Such connections are called normalization and can be seen as internal patching.

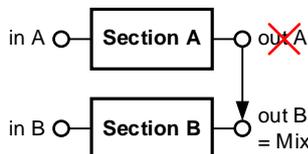
Input normalization



When there is no jack in input B, the signal brought to input A is distributed to both inputs.

This is useful to send a single modulation source to two targets without requiring a multiple or other signal duplicating accessory.

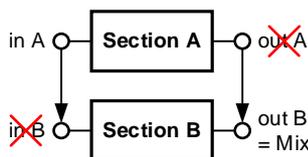
Output normalization = mixer



When there is no jack at output A, output B becomes a mix of signal A and B.

This is useful when two modulation signals should act on the same destination. It avoids requiring an additional mixer.

Making use of in and out normalization jointly



At first glance this setup might seem pointless.

Actually, it is a very useful setup for live performance: it allows preparing a first adjustment of gain and offset for a modulation and a activate a variation of the whole at the flick of switch B.

The neat trick is that it is not necessary to switch off A before activating B; as a matter of fact:

- If the gain should go higher, switch b is set to + and Gain B adds some signal to the one set in A
- If the gain should be reduced, switch B is activated to negative and Gain B will reduce the signal set in A; going further will even invert the polarity of the signal.
- Offset B pot can freely increase, reduce or counteract the offset defined in A

Specifications

Mechanical

Dimensions	mm	inches	Eurorack compliance
Height	128.40	5.06	3HE
Width	15.00	0.59	3HP
Depth behind panel	33.00	1.30	

Supply

The supply socket is protected against reverse insertion.

Supply rail	Current draw
+12V	24mA
-12V	24mA
+5V	0 mA

Input/output

All inputs and outputs can withstand signals between -12V and +12V without harm.

Jack	Effective voltage range received or generated
Input	+/- 12V, gain: zero to x2.1
Output	~ +/-10V

Signals

Parameter	Values
Frequency range	DC to beyond audio

Packing list

The box contains:

- Tweakers module
- 2x M3 black mounting screws + washers
- Eurorack-compliant 10/16-pin supply cable

Klavis products, including PCB and metalwork, are designed and manufactured in Europe.