

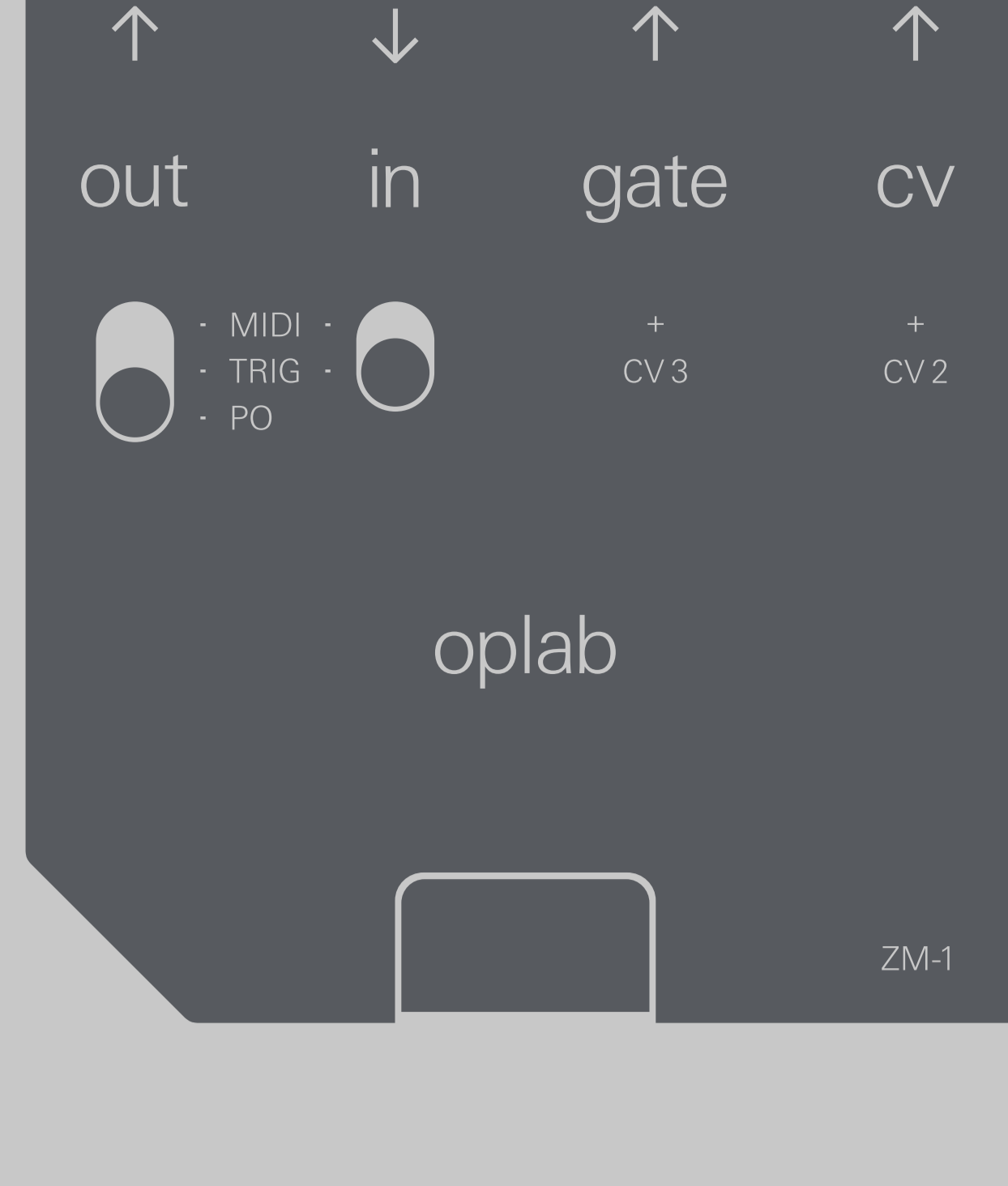
oplab module

connectivity
module for OP-Z

user guide

ガイド

v1.0



notice. read this first.

never connect the 3.5mm plugs coming from module connectors to any mic or line-level audio equipment such as inputs or outputs on sound cards, mixers and synthesizers. for example:

- phantom power coming from a mic-input on a sound card could destroy the ports on the oplab module.
- the voltage coming from oplab module's cv or gate could damage a line input or line output stage.

FCC ID: Z23012AIC; 9915A-012A

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.

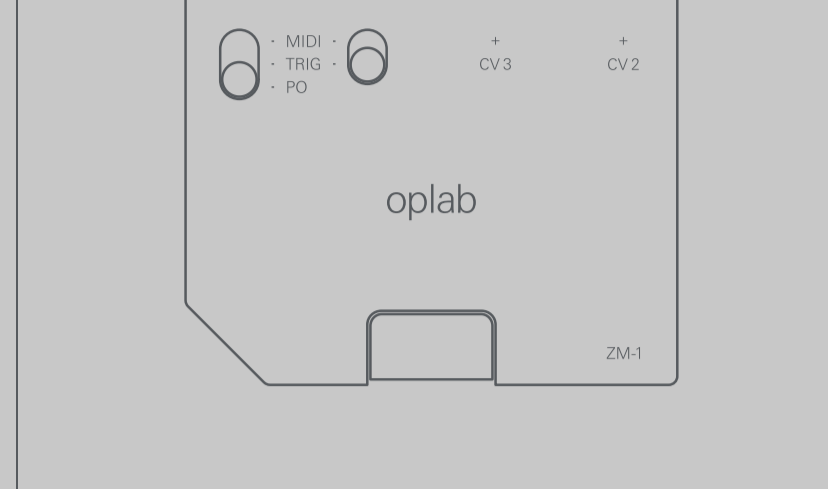
this device complies with industry canada licence-exempt (res standard). operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

warranty: the oplab module is fully factory tested and comes with a 12 month (from purchase date) warranty. this does not include malfunction due to misuse of the device, such as being dropped, crushed or use in an application of inappropriate voltages to the device's connectors or improperly designed or executed modifications. store small parts out of the reach of children and infants. if accidentally swallowed, contact a doctor immediately. make sure to avoid touching sensitive components and be aware of static discharge (esd).

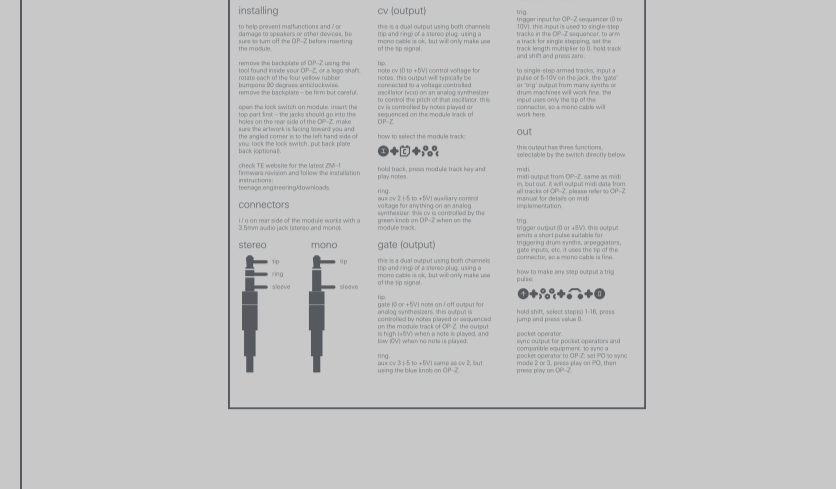
the general guarantee policy does not cover end-damaged products due to improper handling. the warranty does not cover shipping charges. make sure to read the terms & conditions on our website.

what's in the box

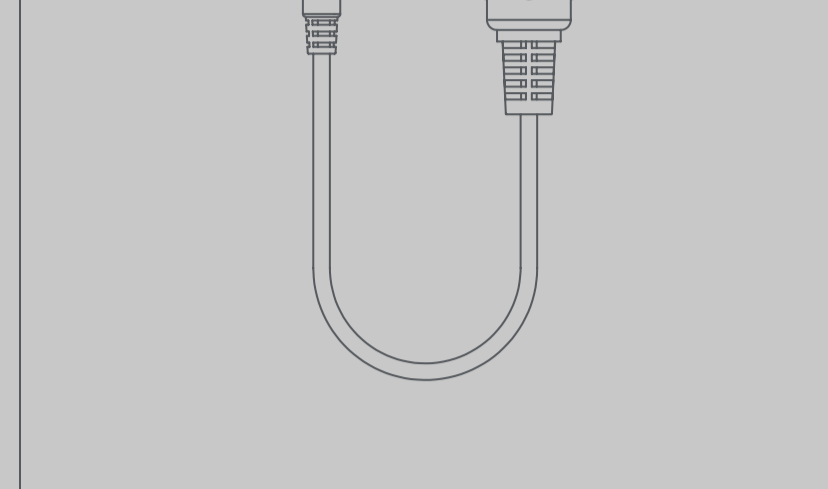
check that the following items are included when you open the box.



oplab module.

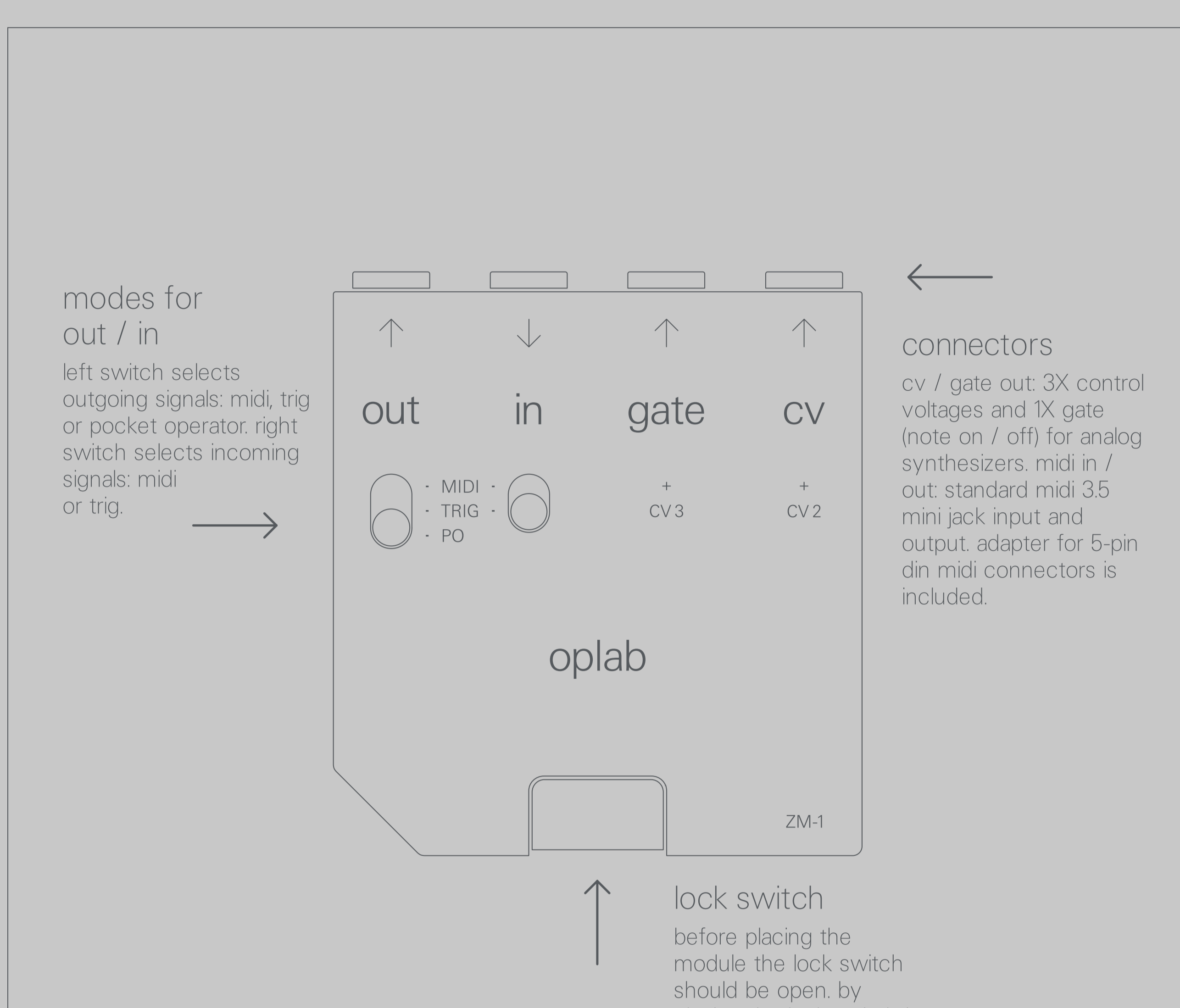


user's guide.



midi adapter cable.

interface



ratings

CV out:	voltage range: 0 to +5V
CV 2 / 3 out:	voltage range: -5 to +5V
gate out:	voltage range: 0 to +5V
midi out:	voltage range: 0 to +5V
trig out:	voltage range 0 to +5V
po out:	voltage range 0 to +5V
midi in:	voltage range: -10 to +10V
trig in:	voltage range: -10 to +10V
note: maximum ratings indicate limits beyond which damage may occur. always make sure to check the voltage levels of external equipment before connecting it to the oplab module. all outputs are short-circuit tolerant.	

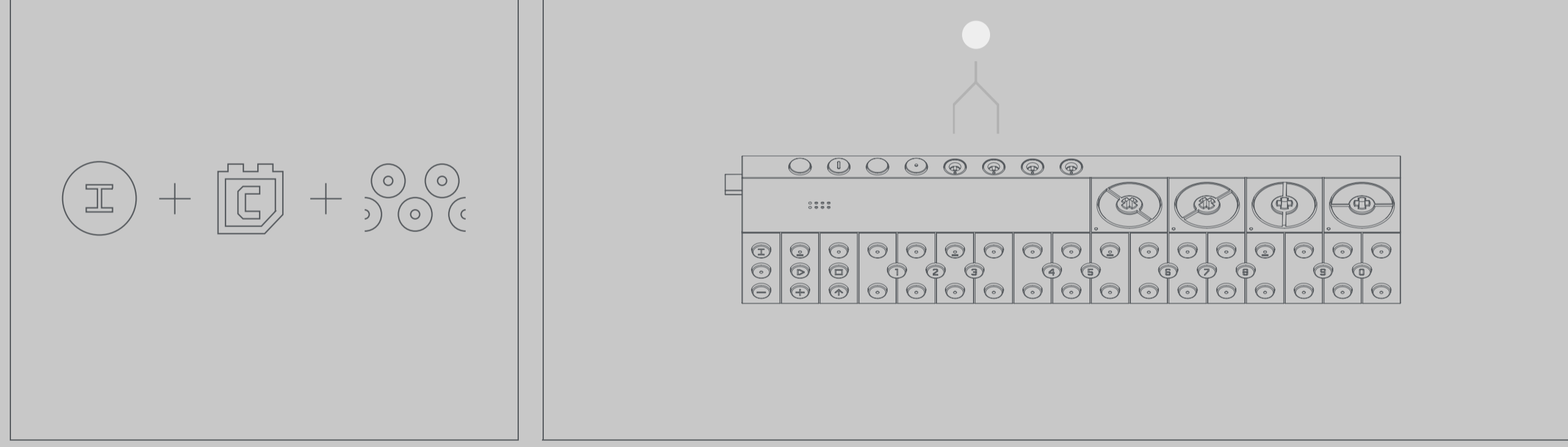
installing

- to help prevent malfunctions and / or damage to speakers or other devices, be sure to turn off the OP-Z before inserting the module.
- rotate each of the four yellow rubber bumpoms on the back side of the OP-Z 90 degrees counter clockwise.
- remove the backplate of OP-Z using the tool found inside your OP-Z, or a lego shaft. be firm but careful.
- remove the dummy module. break the lego legs and use them as a screwdriver for the next time you open your OP-Z.

- make sure the module is off by pressing the lock switch toward the top connectors.
- make sure the artwork is facing toward you and that the angled corner is on the left hand side.
- insert the top part first – the jacks should go through the holes on the top side of the OP-Z. once inserted, pull down the lock switch and put back the OP-Z back plate.
- now you're done and the oplab module is ready to be used.

regularly check the website for the latest ZM-1 firmware: teenage.engineering/downloads

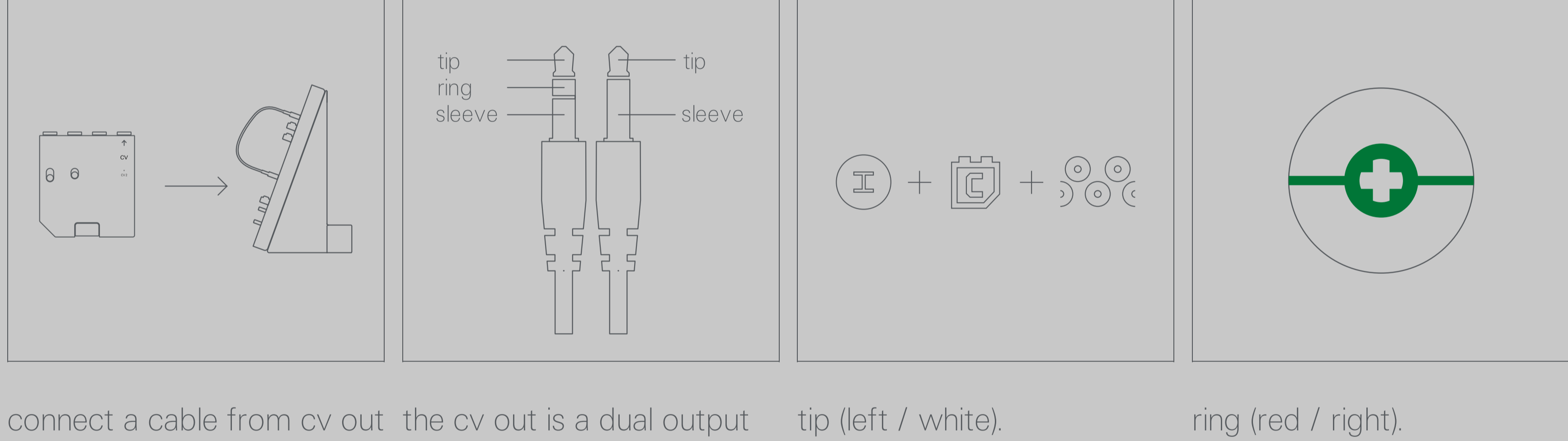
using



to send cv and gate out of your oplab module, select the module track, and play something on the musical keyboard.

as you press the keys, note the blinking leds on the back side by the module outputs. each key press sends control voltage and gate signals straight out the back of you your OP-Z, ready to be used in any modular system, such as the pocket operator modular or a eurorack system.

cv (output)



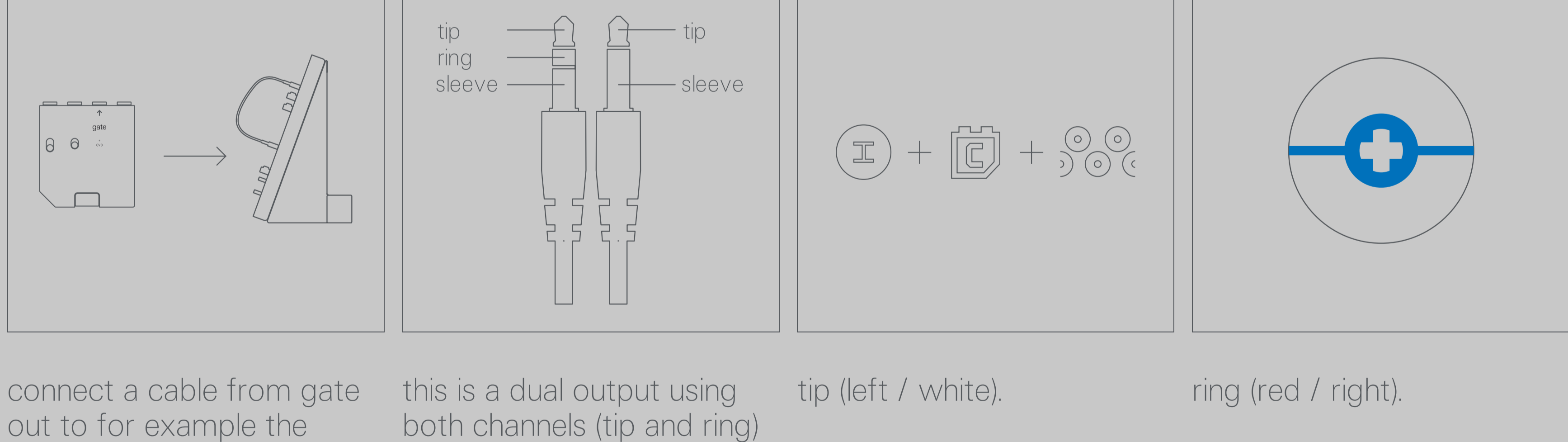
connect a cable from cv out to for example the 'control' or 'key' inputs of the po modular 400.

the cv out is a dual output connection using both channels of a stereo plug. using a mono cable is ok, but will only make use of the tip signal.

tip (left / white).
note cv (0 to +5V) output for notes. this output will typically be connected to a voltage controlled oscillator (vco) on an analog synthesizer to control the pitch of that oscillator. this cv is controlled by notes played or sequenced on the module track of OP-Z.

ring (red / right).
cv 2 (-5 to +5V) auxiliary control voltage for anything on an analog synthesizer. this cv is controlled by the green dial on OP-Z when on the module track.

gate (output)



connect a cable from gate out to for example the sequencer 'clock' input or the envelope 'trig' input of the po modular 400.

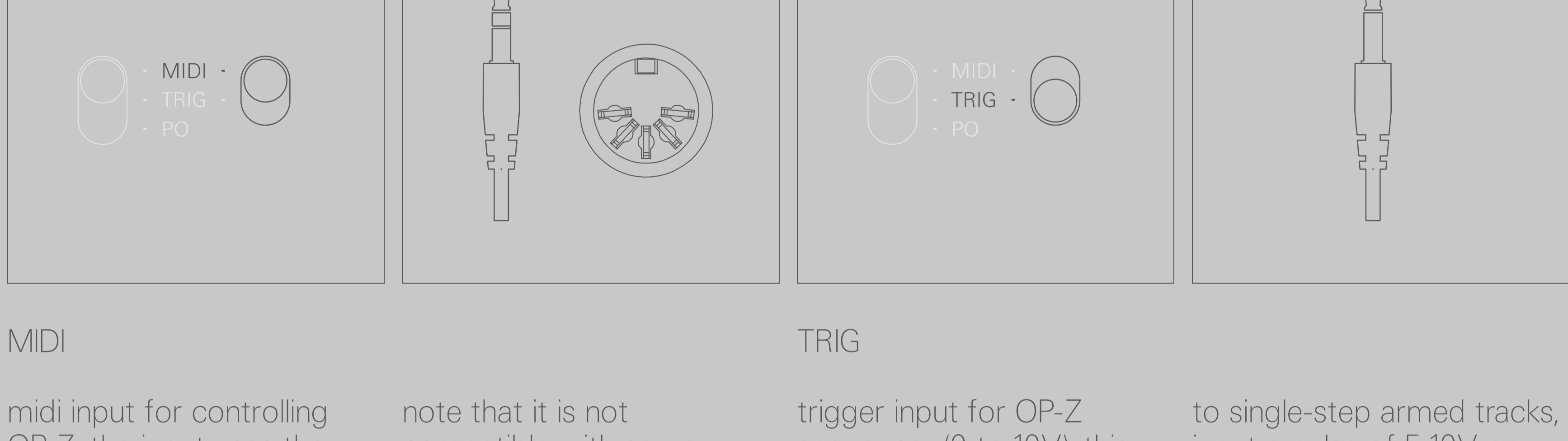
this is a dual output using both channels (tip and ring) of a stereo plug. using a mono cable is ok, but will only make use of the tip signal.

tip (left / white).
gate (0 or +5V) note on / off output for analog synthesizers. this output is controlled by notes played or sequenced on the module track of OP-Z. the output is high (+5V) when a note is played, and low (0V) when no note is played.

ring (red / right).
cv 3 (-5 to +5V) is same as cv 2, but using the blue dial on OP-Z.

in

this input has two functions, selectable by the switch directly below.



MIDI
midi input for controlling OP-Z. the input uses the standard midi 3.5 mm connector pinout (tip = source, ring = sink). a stereo cable must be used.

note that it is not compatible with some equipment which uses non-standard reverse pinout. an adapter cable for 5-pin din midi cables is included. refer to the OP-Z manual for details on midi control.

TRIG
trigger input for OP-Z sequencer (0 to 10V). this input is used to single-step tracks in the OP-Z sequencer. to arm a track for single stepping, set the track length multiplier to 0. hold track and shift and press zero.

to single-step armed tracks, input a pulse of 5-10V on the jack. the 'gate' or 'trig' output from many synths or drum machines will work fine. the input uses only the tip of the connector, so a mono cable will work here.

out

this output has three functions, selectable by the switch directly below.



MIDI
midi output from OP-Z. it will output midi in, but out. it will output midi data from all tracks of OP-Z. please refer to OP-Z manual for details on midi implementation.

TRIG
trigger output (0 or +5V). this output emits a shorter pulse suitable for triggering drum synths, arpeggiators, gate inputs, etc. it uses the tip of the connector, so a mono cable is fine.

to make any a step output a trig pulse:

- select any hold shift
- press and hold track
- select step(s) 1-16
- press jump
- press value key 0
- press value key 0
- release shift
- press play and verify led display

for pocket operators and compatible equipment, set the switch to PO on the oplab module.
to sync a pocket operator to an OP-Z:

- connect oplab out with PO input (left side)
- set PO to SY2 or SY3
- press play on PO
- press play on OP-Z

connector overview

the CV interface sends on MIDI channel 1 and listens to channel 1 and 15.

jack	cv	gate	in	out
mode	-	-	midi	po
tip	cv (note)	gate	source	sync
ring	cv 2	cv 3	sink	-
sleeve	ground	ground	-	ground