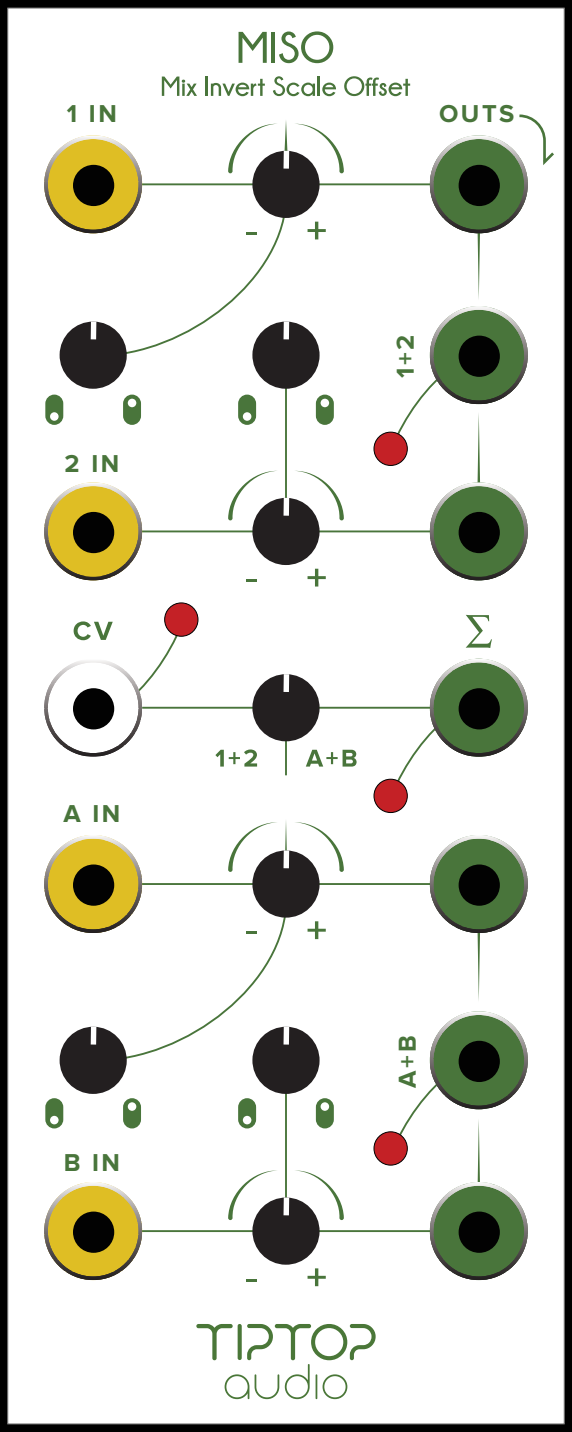
TIPTOP audio



www.tiptopaudio.com

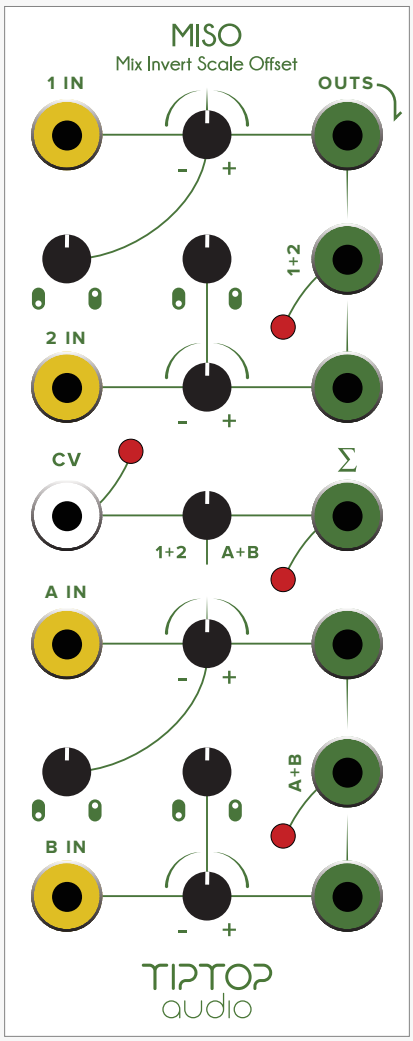
MISO User Manual

MISO stands for
Mix
Invert
Scale
Offset

Mix: Mix and sum signals
Invert: Invert signal while performing gain
Scale: Gain for signal
Offset: Adds a static DC voltage to signal

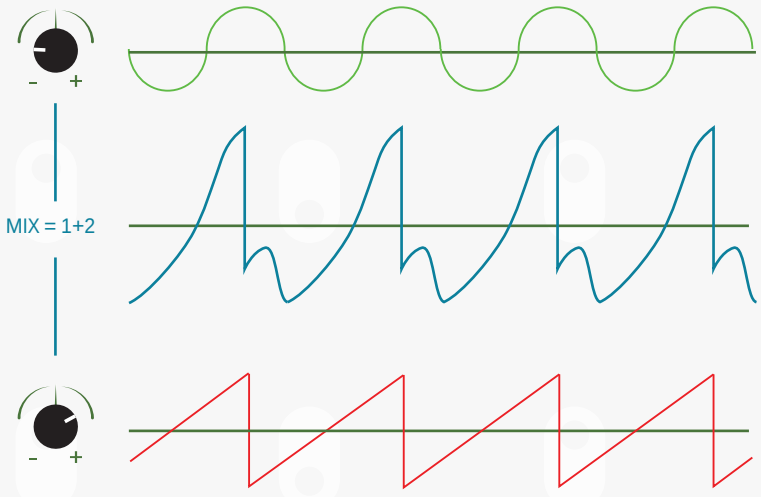
MISO is a utility module by Tiptop Audio that can be used in multiple ways: scale and invert up to four independent signals, offset four independent signals, mix four signals, and crossfade between signals.

MISO can be used to process all the signals you will find in a Eurorack setup: CV, Audio, Gates and Triggers. MISO can be used in a planned manner to adjust and craft signals in details or used without planning for blending signals for inspiring and unexpected results

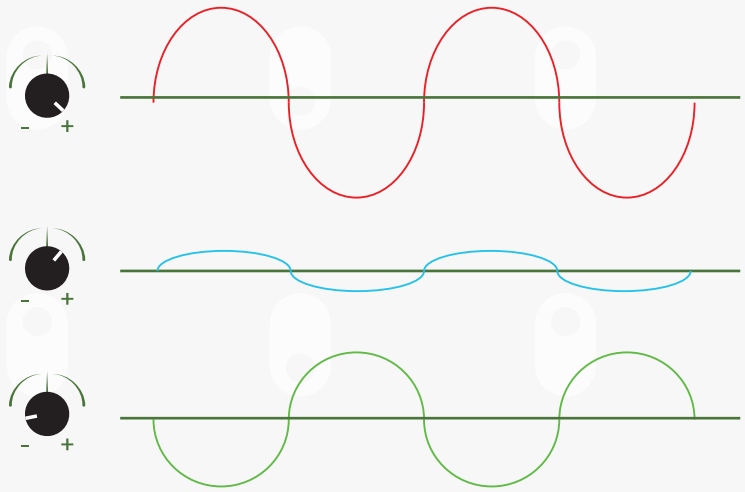


Here you can see a visualization of MISO's functions.

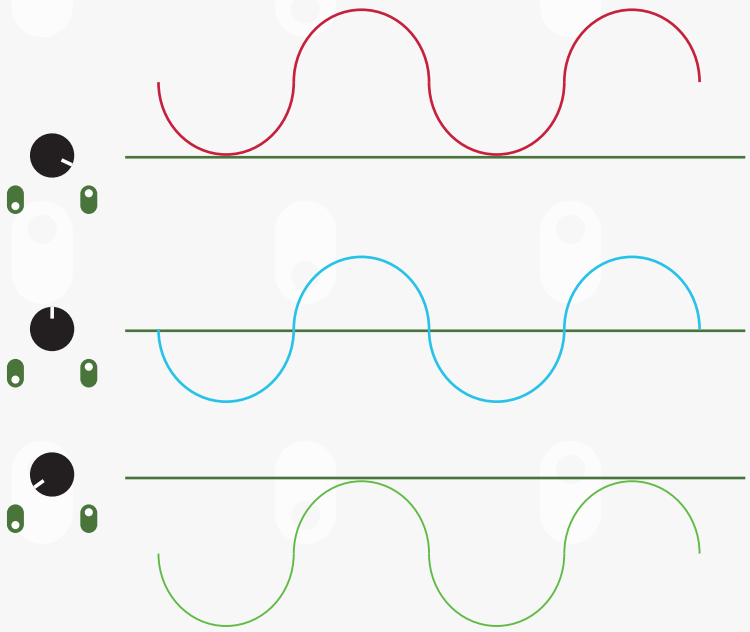
MIX



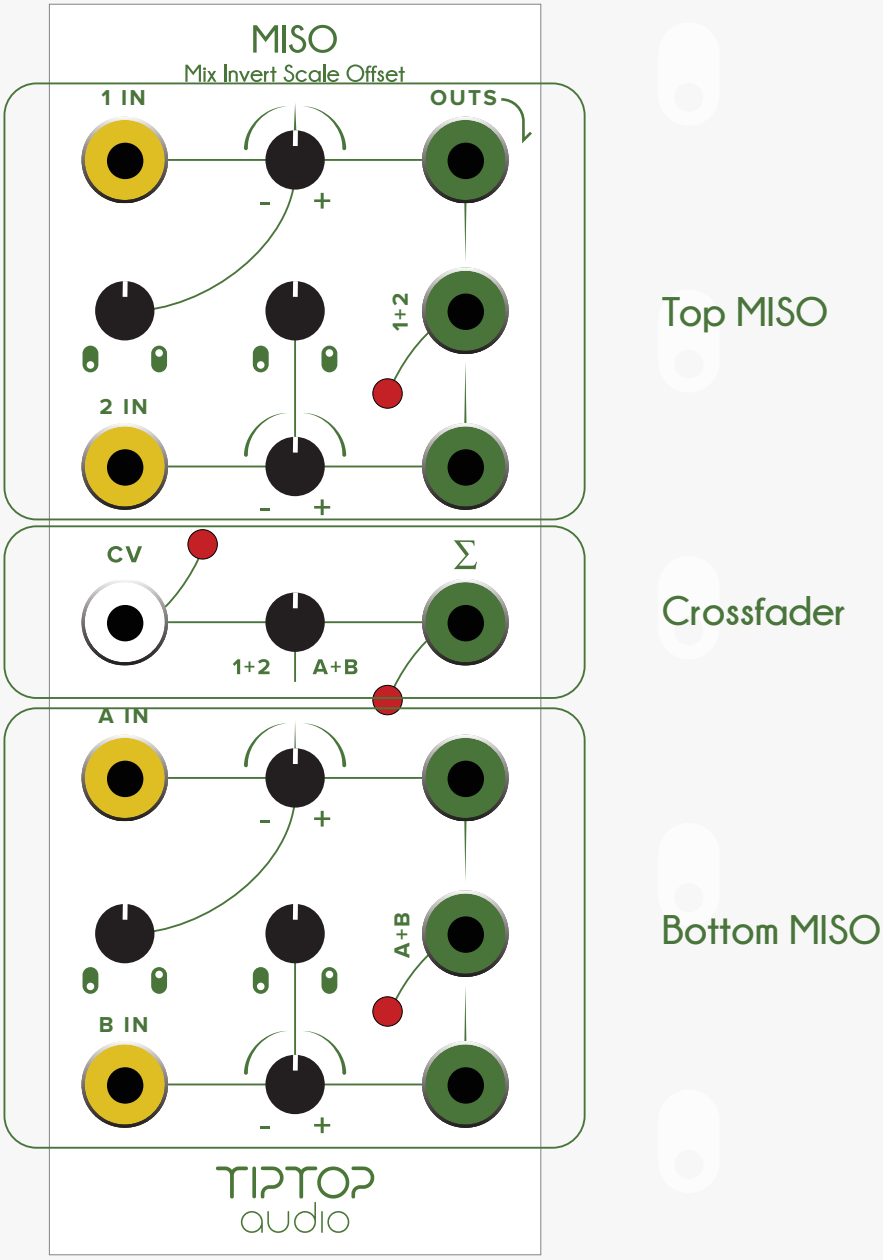
Scale & Invert



Offset

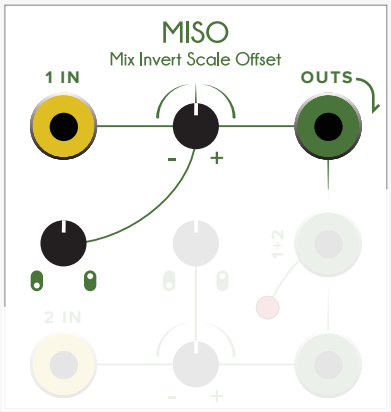


There are two MISO sections in each MISO module, one on the top and one on the bottom. Top MISO is labeled **1** and **2**. Bottom MISO is labeled **A** and **B**. Both top and bottom sections of MISO are identical and can be used independently. At the center of the module is a voltage controlled **crossfader** allowing you to mix between the top and bottom section of MISO.

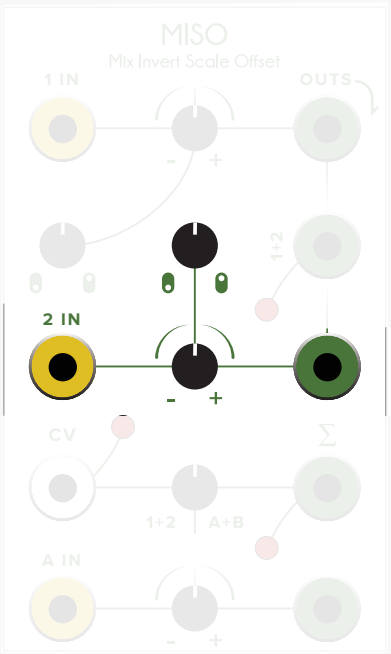


Each MISO contains two channels (1/2 + A/B).

Each channel has:
IN jack (Input)
Scale / **Invert** knob
Offset knob
OUT jack (Output)

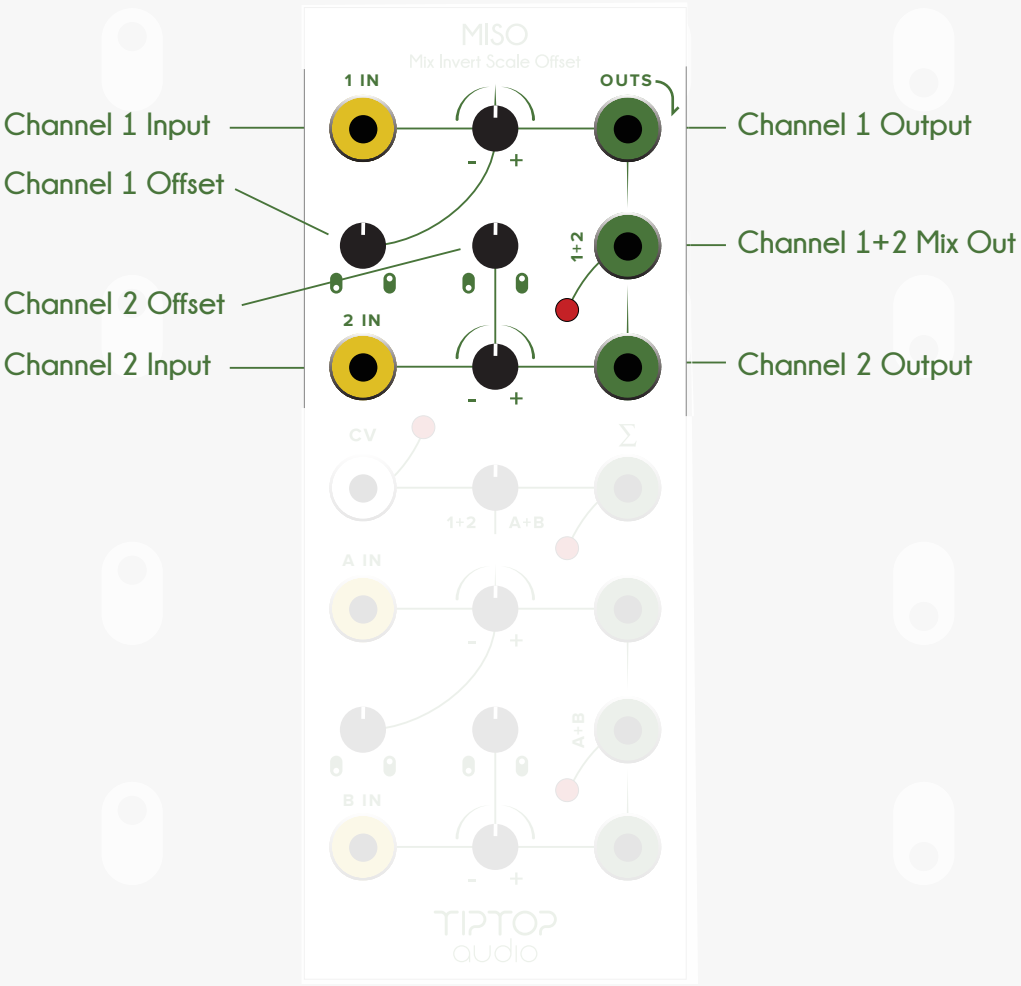


Top MISO
Channel 1

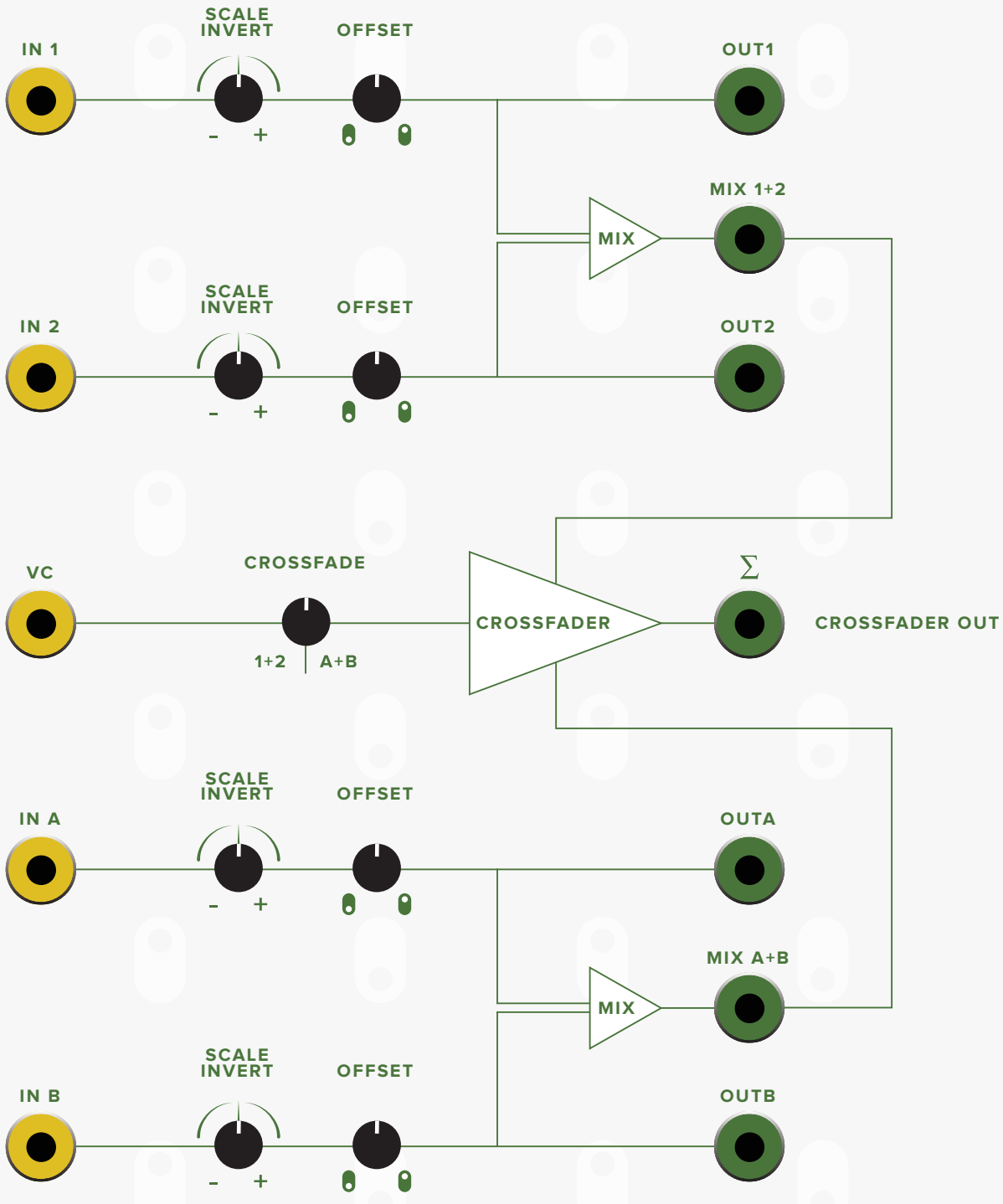


Top MISO
Channel 2

A Mix Out jack provides the mix of thennels. The LED indicates the mix output level and polarity, yellow is positive voltage and red is negative voltage.

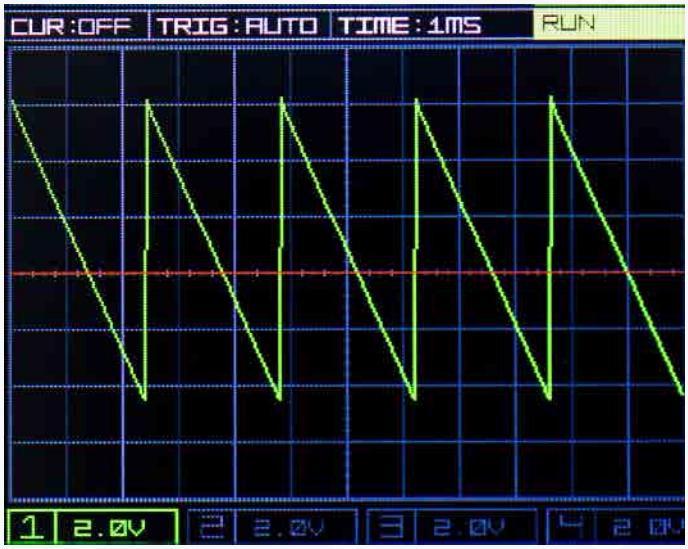


All together, MISO signal flow looks like this:

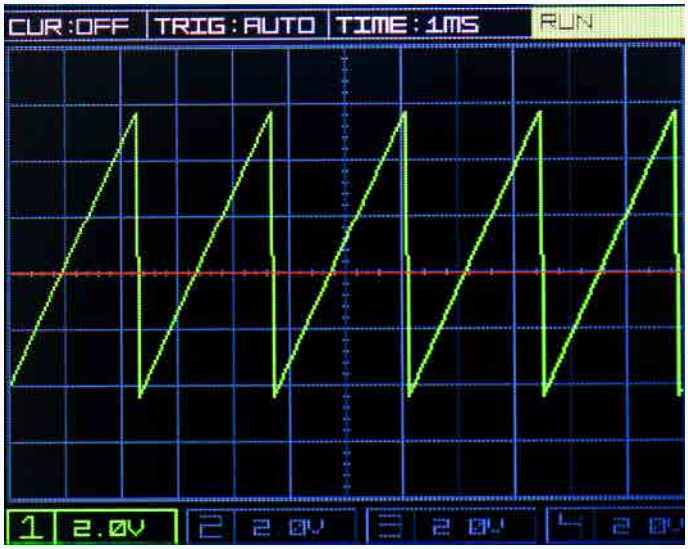


Here are some oscilloscope images. At the input is a sawtooth wave from a Z3000 VCO into IN1, and the output at OUT1.

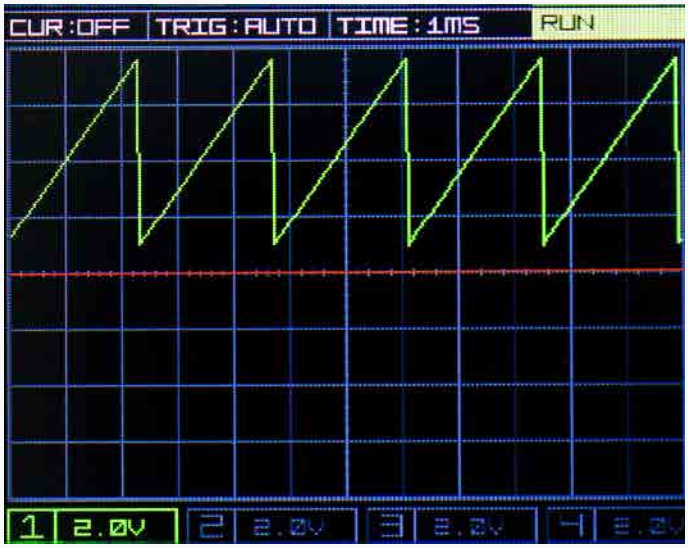
INPUT



OUTPUT: NVERTED

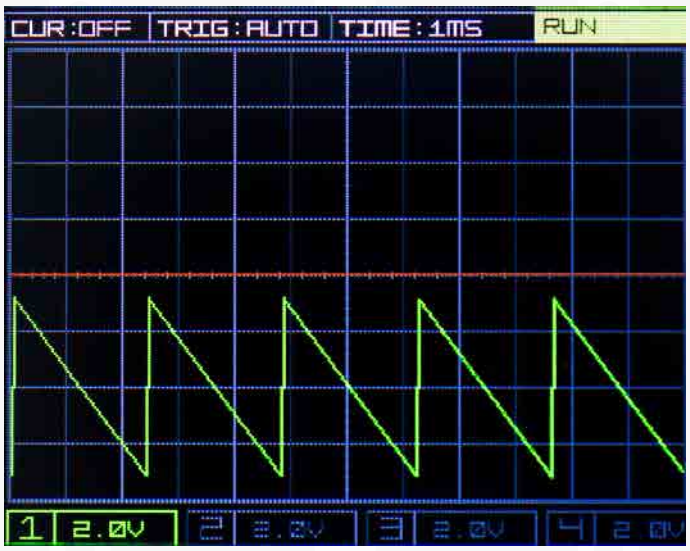


OUTPUT: INVERTED + POSITIVE OFFSET

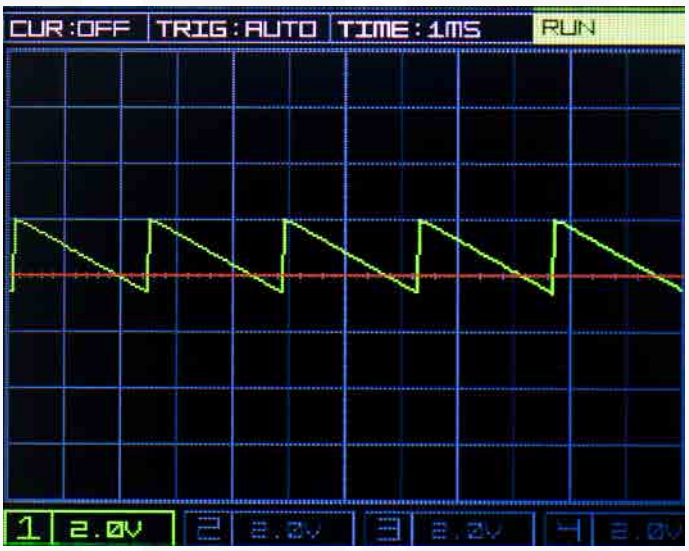


OUTPUT: POSITIVE OFFSET

OUTPUT: NEGATIVE OFFSET

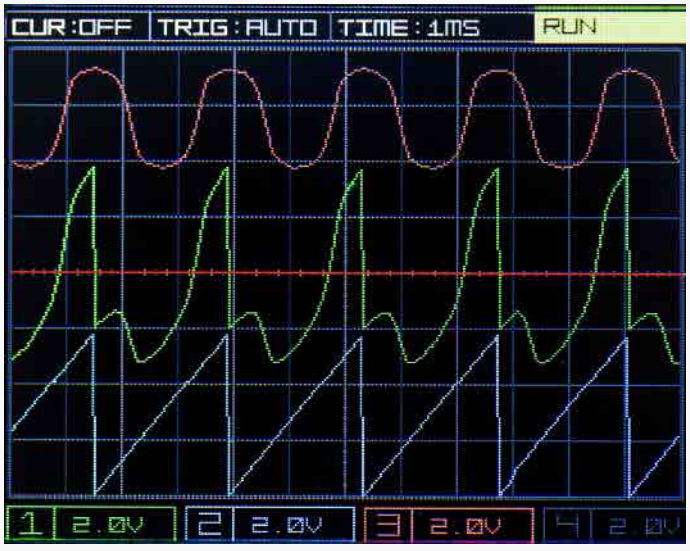


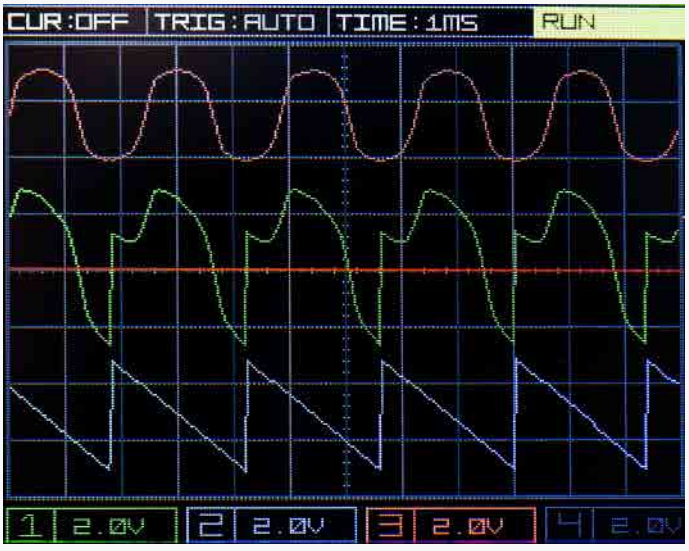
OUTPUT: NEGATIVE OFFSET



Here are some oscilloscope images.
IN 1 is a sawtooth wave and IN 2 is a sine wave, both from the Tiptop Audio Z3000 VCO.
At the center, in green, is the combined output of MIX 1+2.

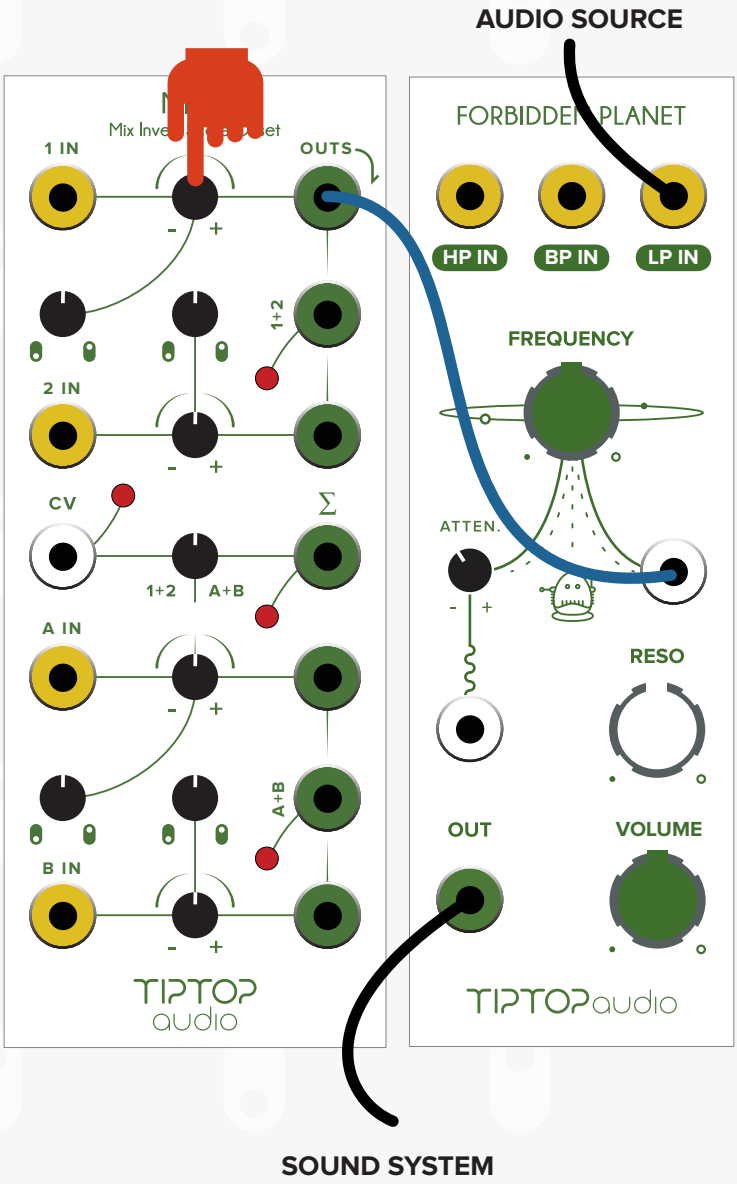
MIX A+B=C





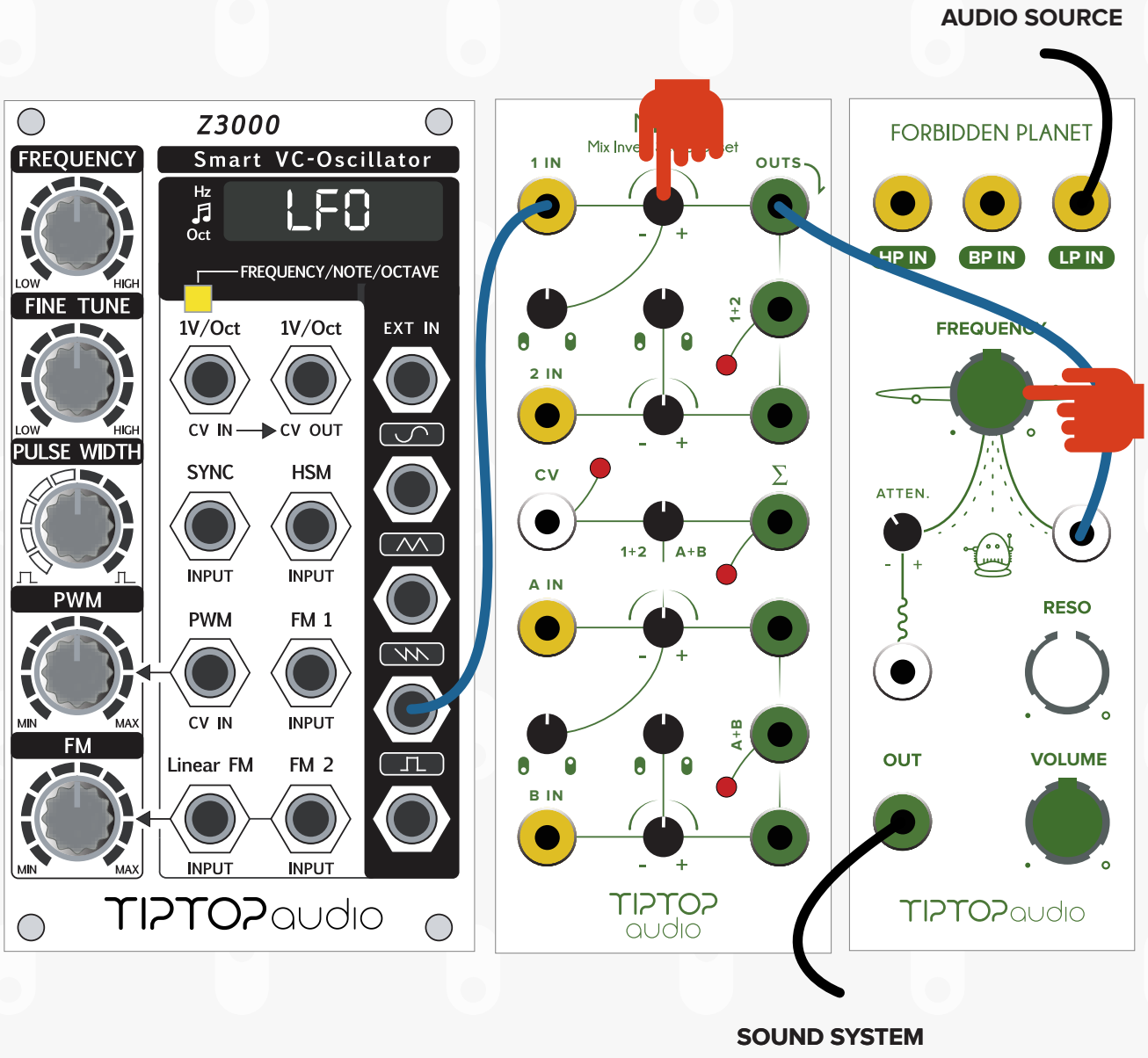
Let’s get started.

1 Set all the knobs on MISO to the center, 12 o'clock, all LEDs are OFF.
2 Patch channel 1 OUT to CV IN on your filter.
3 Patch audio into the filter IN and the filter OUT to your speakers.
4 Turn channel 1 Offset knob, it will open and close your filter. This is the Offset generator, it is working as a manual CV generator.



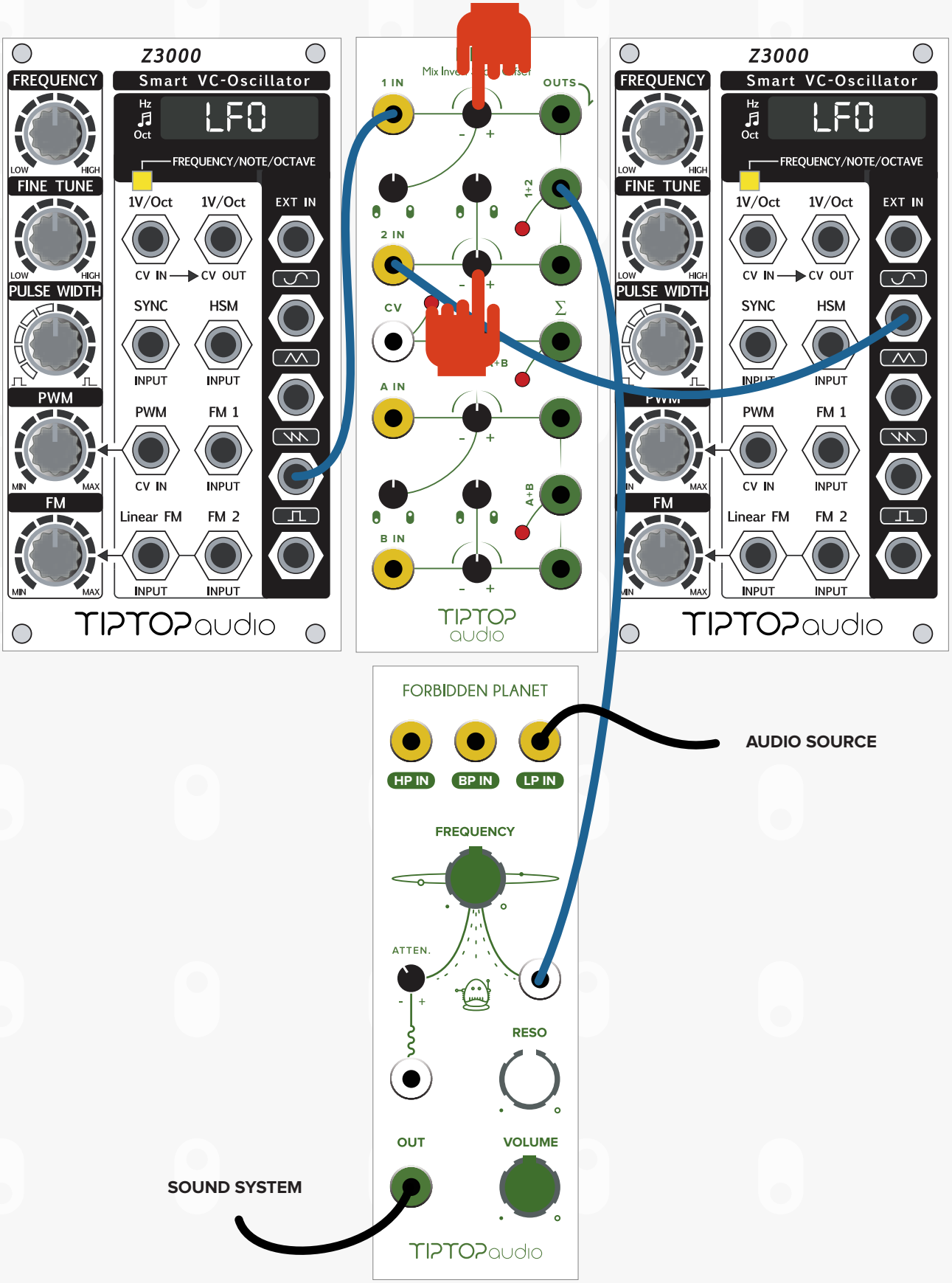
Reset the MISO offset to center.

1 Patch a Sawtooth wave from your Z3000 (or any other LFO) to channel 1 IN jack
2 Set the Z3000 to LFO, start turning the Scale/Invert knob to the right and the Sawtooth starts opening the filter.
3 Turn the knob the other way around and the signal gets inverted.
4 Re-adjust the cutoff knob on your filter to get a feel for it.



Each MISO section has two channels (1/2 + A/B) that are mixed, lets try that.

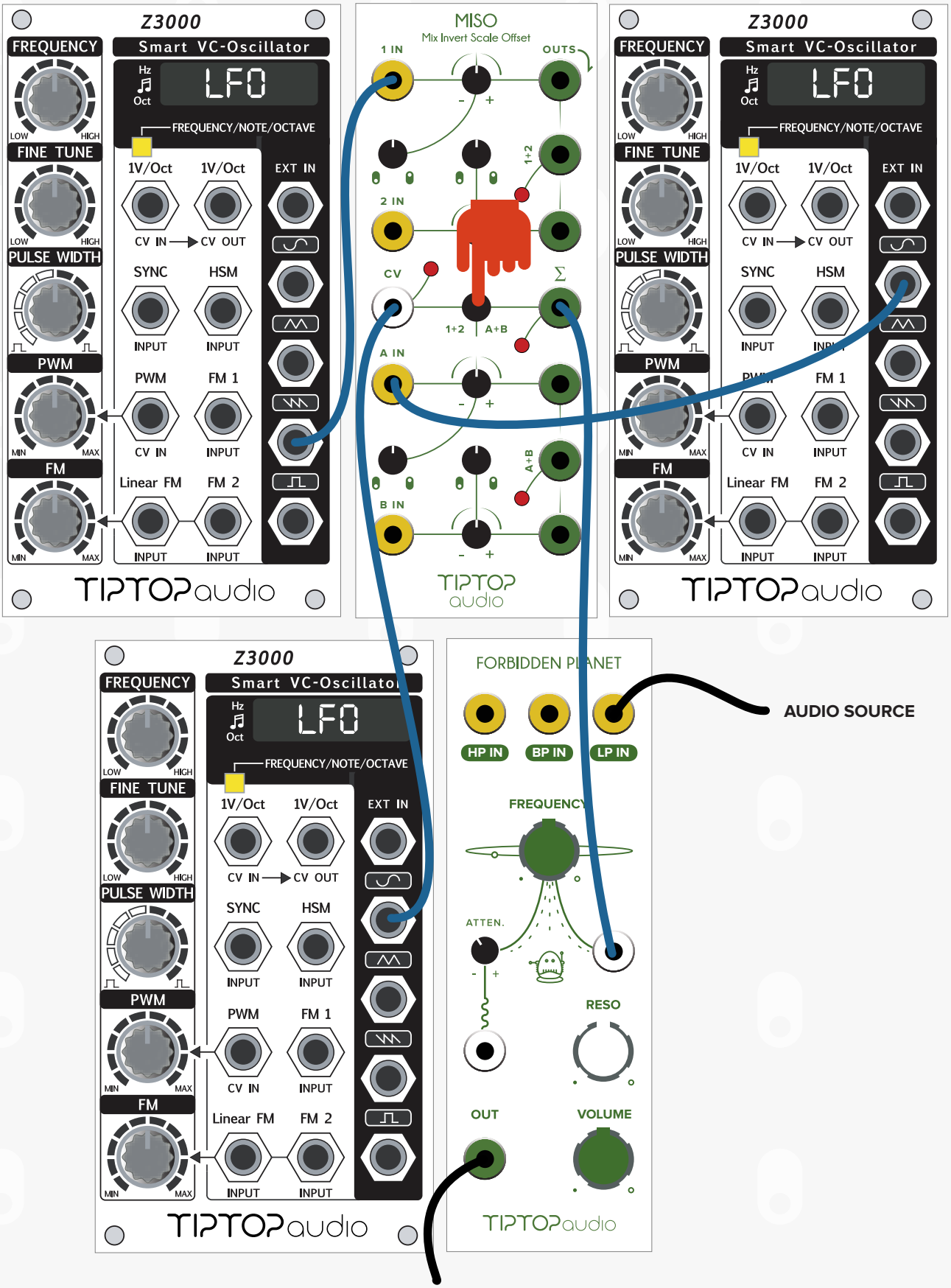
1 Remove the patch from OUT 1 and patch it to OUT 1+2.
2 Patch a Sine wave from another Z3000 into IN 2.
3 Open the Scale/Invert and hear how IN 1 and IN 2 are now mixed, play with all four knobs to get complex shapes modulating your filter.



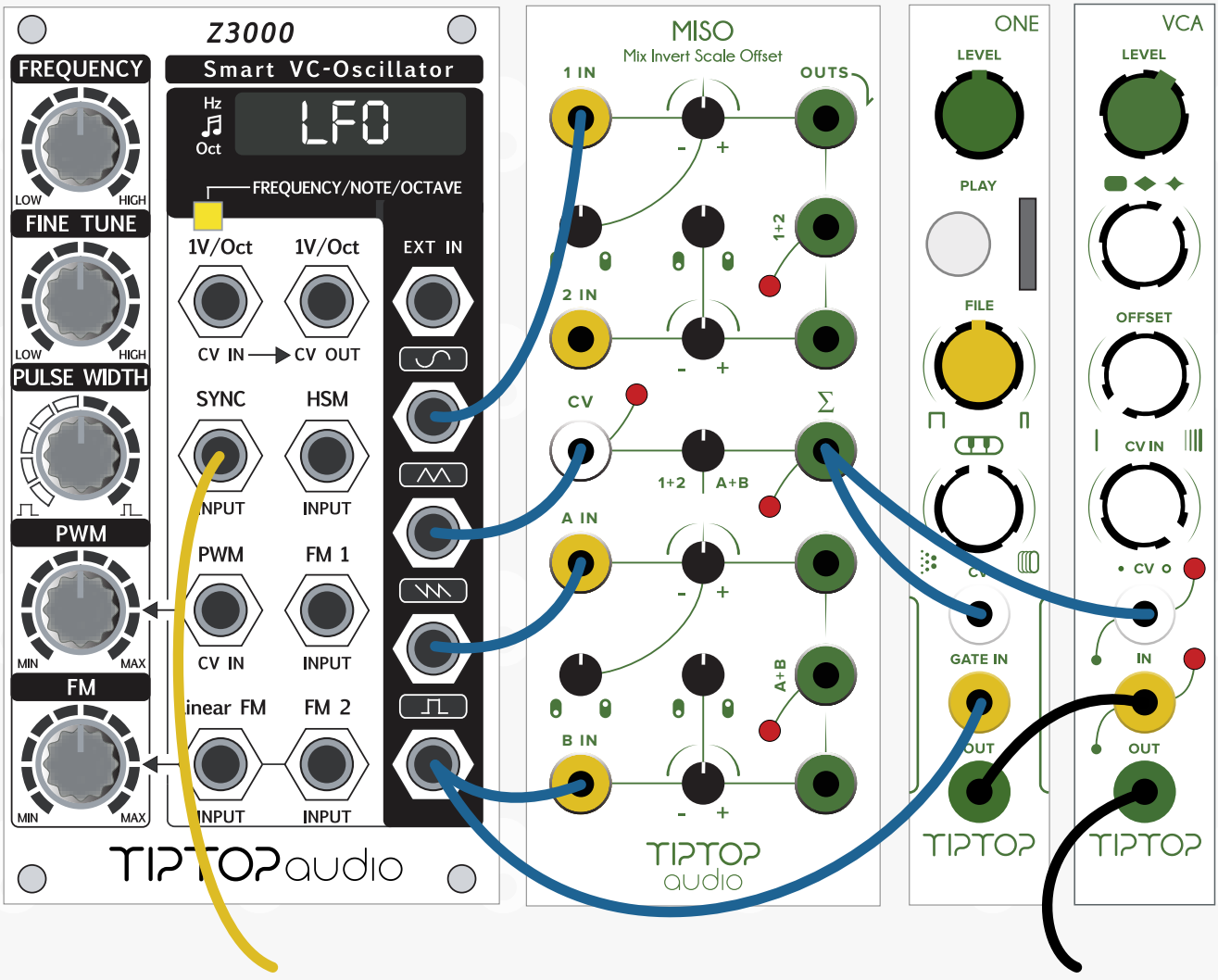
Patch more signals into the lower MISO. Now let's use the crossfader. The crossfader mixes between the 1+2 OUT and the A+B OUT.

1 Patch the filter CV to the Greek Sigma jack, Sigma represents the function Sum in math, and is basically the Sum of the cross fader inputs.

2 Rotate the crossfader knob to hear how it fades between 1+2 to A+B. You can use another CV source to modulate the crossfader.

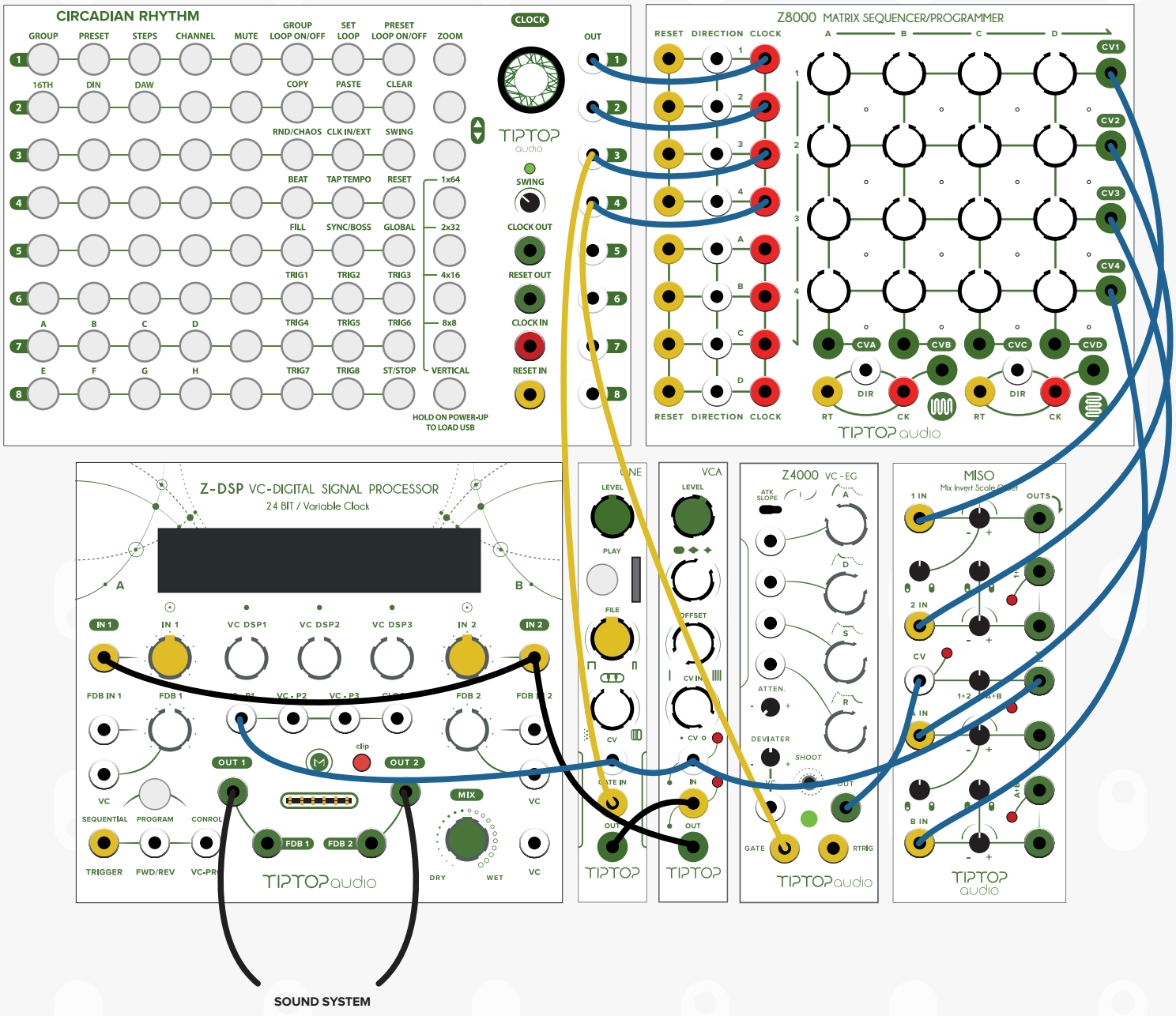


As you can see MISO can be used to Scale, Invert or Offset any of the signals found in Eurorack. The real fun with MISO is revealed when you patch in multiple sources of CV and have MISOs controls apply changes to them, mix them and cross fade to create complex CV shapes to control other modules. The level of chaos you can achieve is limited only by your imagination. Below are a few patch examples to get you inspired.



CIRCADIAN RHYTHM

SOUND SYSTEM


CIRCADIAN RHYTHM
GROUP
PRESET
STEPS
CHANNEL
MUTE
GROUP LOOP ON/OFF
SET LOOP
PRESET LOOP ON/OFF
ZOOM
16TH
DIN
DAW
COPY
PASTE
CLEAR
RND/CHAOS
CLK IN/EXT
SWING
BEAT
TAP TEMPO
RESET
FILL
SYNC/BOSS
GLOBAL
TRIG1
TRIG2
TRIG3
TRIG4
TRIG5
TRIG6
TRIG7
TRIG8
ST/STOP
A
B
C
D
E
F
G
H
1x64
2x32
4x16
8x8
VERTICAL
HOLD ON POWER-UP TO LOAD USB
CLOCK
TIPTOP audio
SWING
CLOCK OUT
RESET OUT
CLOCK IN
RESET IN
OUT
Z8000 MATRIX SEQUENCER/PROGRAMMER
RESET
DIRECTION
CLOCK
CV1
CV2
CV3
CV4
CVA
CVB
CVC
CVD
DIR
RT
CK
TIPTOP audio
Z-DSP VC-DIGITAL SIGNAL PROCESSOR
24 BIT / Variable Clock
IN 1
VC DSP1
VC DSP2
VC DSP3
IN 2
FDB IN 1
FDB 1
FDB 2
OUT 1
OUT 2
clip
MIX
VC
SEQUENTIAL
PROGRAM
TRIGGER
FWD/REV
FDB 1
FDB 2
DRY
WET
TIPTOP audio
ONE
LEVEL
PLAY
FILE
CV
GATE IN
OUT
TIPTOP
VCA
LEVEL
OFFSET
CV IN
IN
OUT
TIPTOP
Z4000 VC-EG
ATK SLOPE
A
D
S
R
ATTEN.
DEVIATER
SHOOT
GATE
RTRIG
TIPTOP audio
MISO
Mix Invert Scale Offset
1 IN
2 IN
CV
A IN
B IN
OUTS
TIPTOP audio
SOUND SYSTEM

Connecting Modules to Power

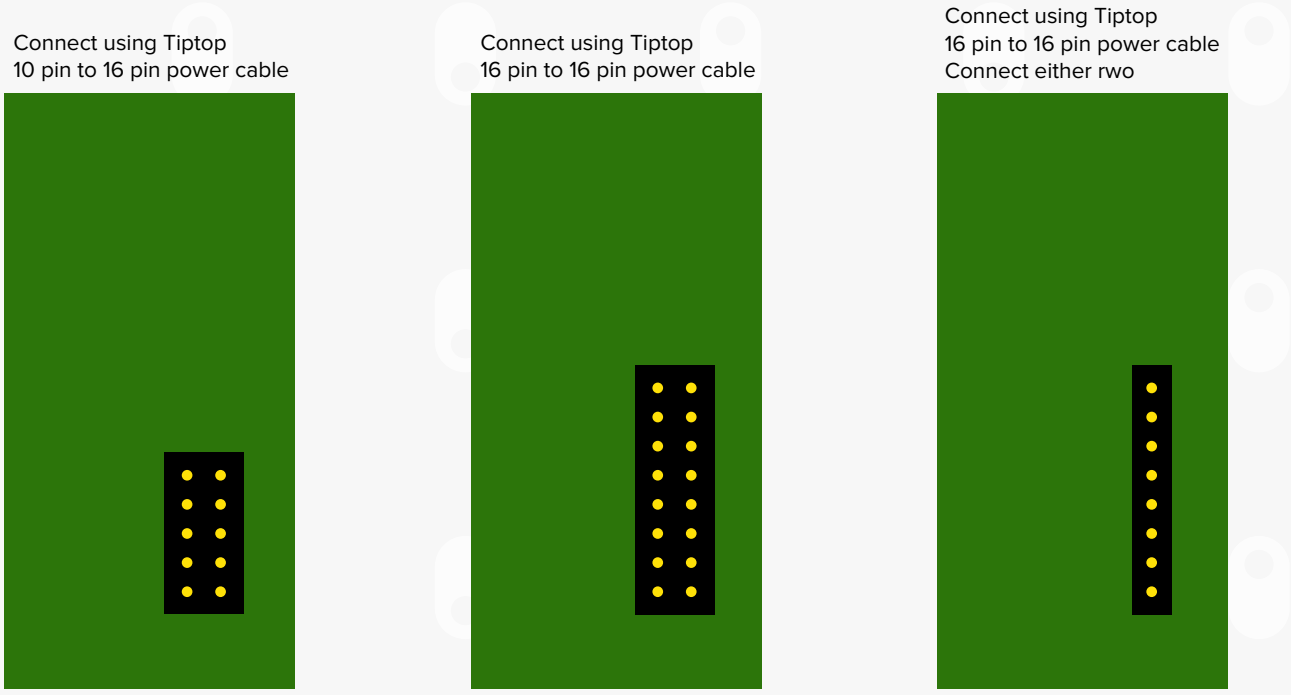
When shipped from the factory the module will have the power ribbon cable correctly connected to the module. If the cable is removed at some point, use the following instructions to reconnect the module to power:

1 Locate the power header on the rear of the module circuit board. It may have one or two rows of pins and and have 5 or 8 pins per row. Make sure the header is not labeled SyncBus.

2 Check the circuit board near the bottom pin of the power header for printing that says ‘Red Line’ or ‘-12V’. This may be faintly printed so use good lighting and a magnifier to locate it.

3 Plug the cable into the power header with the red line on the cable matching with the printing. Double check that all of the pins are covered by the connector!

Here are the three types of power connectors available on Tiptop Audio modules:



MISO SPECS:

Size: 10HP – Depth: 42mm
Power Consumption: +12V 55ma / -12V 55ma

Input voltage range: +/-10V
Output voltage range: +/-10V
Crossfade CV voltage range: +/-10V
Max offset: +/-10V