

Tunnage

What is it?

Tunnage translates CV representing 1v/oct into a possibly different CV representing 1v/oct as specified by a .tun file. This allows any source that produces 1v/oct CV (or can be converted to 1v/oct, such as MIDI) to use alternate tunings.

What it is a little deeper

CV comes into Tunnage through a single and/or poly jack. First the CV is quantized into a standard 1v/oct CV. This represents a MIDI note. The matching MIDI note is found in the tuning specified by the tun file, and this gives the frequency of the audio output in Hz. This frequency is converted to 1v/oct CV and sent on its way.

Loading a tuning

Tunings are specified in tun files. Instead of regurgitating the specs, you can find the full document [here](#). All 3 tuning versions are supported. The other sections are ignored by Tunnage if present.

You can find tun files online or use various tools to create them. You can also use a simple text editor. The formats of all 3 versions are mostly straightforward. Version 3 (functional tuning) can be a bit convoluted, but if you've jumped into that rabbit hole you're likely already prepared for a fantastic journey.

To load a tun file, use the Load Tun button.

Translation will only occur for valid midi notes (0-127), since that is all a tun file can specify. CV that would fall outside of the range specified in the tun file is mapped to either the lowest or highest note, depending on whether it falls below or above the range, respectively.

To get things started, a file that contains the examples in the spec as well as some other examples can be found [here](#).

Error handling

If there are errors in the loaded file that result in a note being undefined, that note will use the current tuning. Hard errors, such as specifying an invalid number for a frequency, will be written to the Voltage Modular logs. Soft errors, such as leaving out note 42, will not be noted by Tunnage because they could be intentional.

Verifying a tuning

The current translations can be exported to a text file via the Export Mapping button. The file shows the original and translated CVs and associated frequencies.

Changing what 1v/oct means

By default, midi note 0 represents C-1 and corresponds to -3 volts. Thus middle C (midi note 60) is C4 and +2 volts. This can be shifted by 24 semitones (2 octaves) up or down using the Offset knob. The offset can also be modulated via the associated input jack. The small purple knob sets the modulation amount.

Final thoughts

While this module is quite simple from the outside, there is a bit going on inside, especially when functional tuning is used. If you run into anything that seems to contradict the spec or looks to be incorrect, please let me know via my [Cherry Audio forum](#). It's also a good place to post ideas or ask questions.

Thank you!

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