SUPERCRITICAL
SYNTHESIZERS

THE BASIC FUNCTIONS are described in the **DCO** quick start guide. This guide describes the changes in the functionality when the **EXPANDER** is connected. The **EXPANDER** doesn't require its own power connection ,as it takes its power directly from the **DCO** via the supplied ribbon cable. When connected the **DCO** draws a little more power, total of 130mA +12V / 40mA -12V

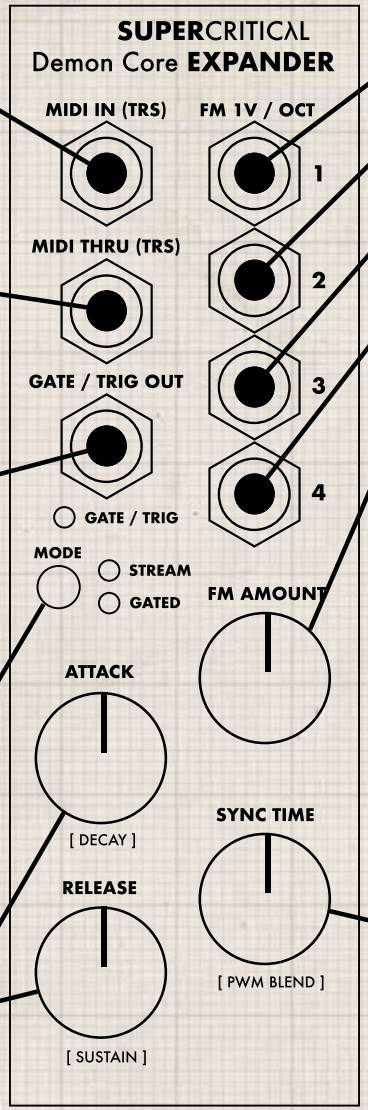
MIDI IN is a TRS 3,5mm MIDI input which automatically senses the signal polarity (Type A is the standard but some devices use Type B with reverse polarity).

MIDI THRU mirrors all MIDI fed through MIDI IN. The polarity of this output can be set between Type A & B via jumpers on the back of this module.

GATE / TRIG OUT outputs a 5V gate signal when a MIDI note is played. If the module is set to retrig mode every note triggers a 4ms reverse pulse. Otherwise this output is in legato gated mode.

MODE button changes between stream (continuous) output and MIDI gated modes. When in gated mode every polyphonic note can be played via a "virtual VCA". A long press changes between the legato (long blink)and retrig (three short blinks) mode indicated by the gate/trig LED.

ATTACK and **RELEASE** controls are the envelope of the "virtual VCA" for each polyphonic voice when in gated mode. They both go up to 20s.
FN + **ATTACK** controls the decay time of the envelope
FN + **RELEASE** controls the sustain level of the envelope

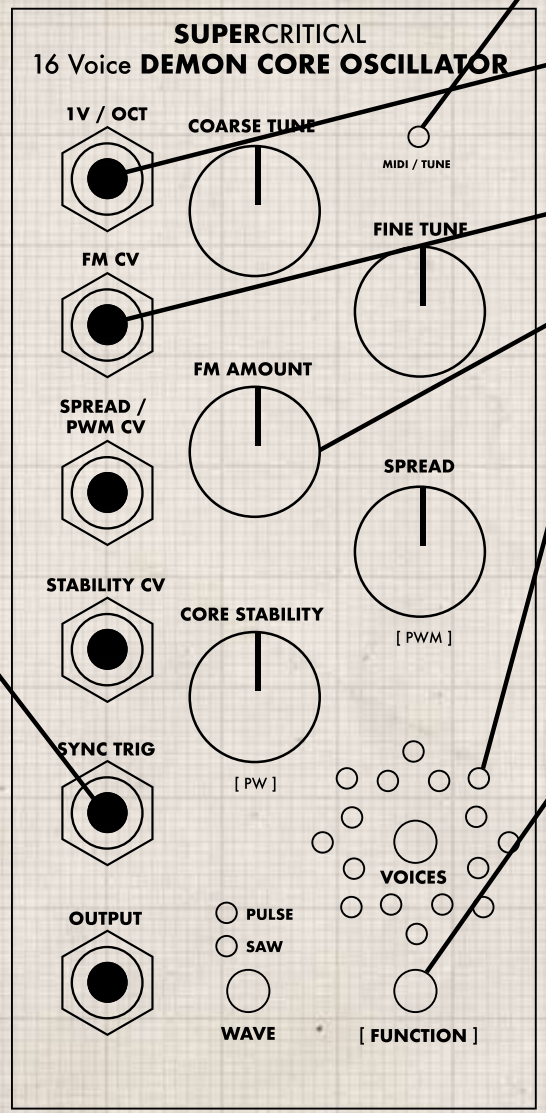


FM 1V/OCT inputs are four calibrated FM inputs for the first four polyphonic voices Their range is ±5V. If gated mode and hold time is set, the VCA envelope triggers when the CV changes rapidly. If the alternate CV mode is selected from **FN + MODE**, these CVs control following params:
1. Sync Time
2. Sync Random
3. Octave stack size
4. Octave stack interval

FM AMOUNT is an attenuator for all four FM inputs above (and the alternate CVs)
Fully CW the FMs go 1V/oct.
FN + FM AMOUNT sets hold time for gated mode for FM inputs

TIME SYNC is also triggered on every midi note when in sync mode. It's set by pressing **FN + WAVE** (blinking waveform indicates sync mode). It also works polyphonically!
Sync trig input works always monophonically.

SYNC TIME controls the timing of the phase sync. CW = The phases will be in sync. CCW = the phases were in sync.
One knob time travel! In the center position the waves start in phase. If the **SPREAD** control is the "**decay**" of the time sync, careful adjustment of this knob acts like a "**attack**" control.
If pulse is selected and FN is pressed, this knob controls crossfade between PW and square wave, dividing the polyphony.



MIDI/TUNE Shows midi activity if the module receives MIDI with the set MIDI channel. It also shows the tuning for fine and coarse.

1V / OCT Transposes the whole module even if it's played via MIDI. You can use this as a traditional chord memory. Play a chord via MIDI, set the expander to stream mode and transpose via 1V/oct.

FM CV Also modulates the whole module.

FM AMOUNT has a hidden LFO if MIDI CC#1 Mod Wheel is used. **While** pressing **FN** you can set the rate of this sine LFO which modulates the whole pitch.

VOICES LEDs now display the state of polyphony **while** pressing **FN** by blinking fast.

FUNCTION (FN) has many functions when pressed down (multiple button combos require **FN** pressed down first, then other buttons pressed down and all buttons released):
FN + **WAVE** + **MODE** = enters MIDI setup mode, the next played note determines MIDI channel, **FM AMOUNT** controls pitch bend range (2,7,12 steps) if turned before the next played note.
FN + **WAVE** + **VOICES** held down 2s resets the module to panel settings. Polyphony, octave stack offsets and all extra stuff are reset. MIDI settings are not reset.
FN + **WAVE** + **VOICES** pressed down when powering up sets the module to its bootloader state. You can update the firmware via **FM CV** input at this point.
FN + **MODE** sets the expander **FM** jacks to alternative cv inputs.
FN + **SYNC TIME** controls crossfade between PW and square wave

ALL POTENTIOMETERS work in jump mode when using alternate controls. Buttons have a short press mode with a 0,5sec "click" and in some cases, a long press mode with over 0,5sec hold. The LEDs also have a fast and slow blinking rate indicating different functions.

16 Voice **DEMON CORE OSCILLATOR**
with the Demon Core **EXPANDER**
QUICK START **GUIDE** (Firmware 1.2)