

JP3: Bus CV connection  
when installed the bus CV is connected to the switching contact of the 1V/Oct socket

**Important note:** remove this jumper if no CV transmitter (like Midi/USB-CV interface A-190-x or bus access module A-185-x) is on the same bus. The A-110-4 will apply a low voltage with high impedance (100k) to the bus which may affect other modules on the same bus which pick up the CV from the bus !

## P10: heater temperature

Has to be adjusted for about 0.62...0.63V at pin 2 of IC5

## P5/P8: Level/Waveform

Adjust the level and waveform (sine/cosine quality) for positive and negative range. They have to be adjusted for same level for positive and negative range (e.g. 2.5 Vpp for both)

## P6: frequency offset

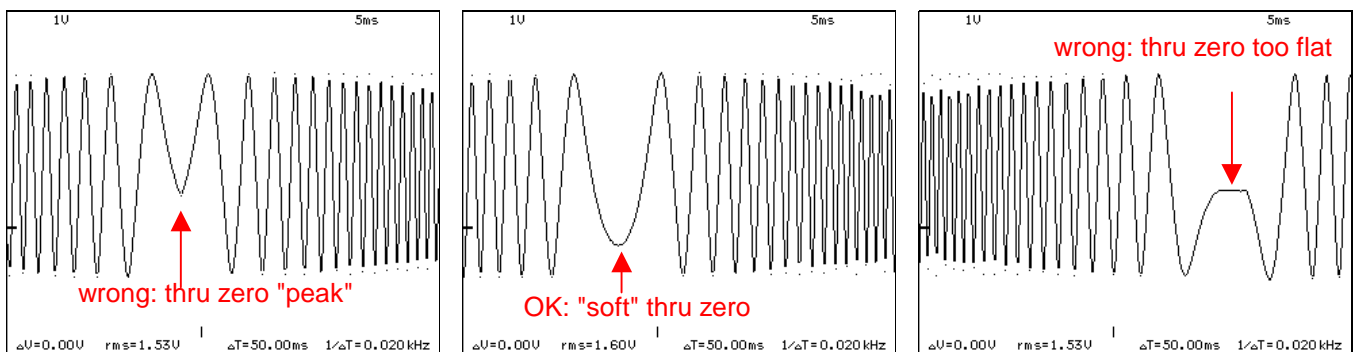
## P7: 1V/oct scale

Adjustment of the scale for the exp. CV input (1V/Oct.) with LFrq control fully CW  
In the factory P6 and P7 are adjusted for these values (with LFrq control fully CW):

- CV (1V/Oct) = 0,00V:  $f = 32 \text{ Hz} \pm 0.1 \text{ Hz}$   
(This not an open input ! The input has to be connected to GND or a 0.00V voltage source)
- CV (1V/Oct) = 1,00V:  $f = 64 \text{ Hz} \pm 0.2 \text{ Hz}$
- CV (1V/Oct) = 2,00V:  $f = 128 \text{ Hz} \pm 0.5 \text{ Hz}$
- CV (1V/Oct) = 3,00V:  $f = 256 \text{ Hz} \pm 1 \text{ Hz}$
- CV (1V/Oct) = 4,00V:  $f = 512 \text{ Hz} \pm 2 \text{ Hz}$
- CV (1V/Oct) = 5,00V:  $f = 1024 \text{ Hz} \pm 0 \text{ Hz}$  (this is the reference point for the measurement  $\rightarrow \pm 0$ )

## P9: Thru zero transition

triangle or sine LFO connected to LFM, LFrq and LFM controls at center position



## Important notes:

- *Do not change the factory adjustments unless you want to change the character of the module by intention !*
- *Modules with modified adjustments are not taken back for money refund !*
- *For modules that are returned with modified adjustments during the warranty period the working time for the re-adjustment and the shipping costs will be charged !*

## Modifying the module for VCLFO

The module was designed for audio applications. But it can be easily modified for lower frequencies. For this the two capacitors C1 and C2, which determine the frequency range, have to be increased. For e.g. two capacitors with the same capacity have to be solder in parallel to C1 and C2. The factory value of C1 and C2 is 100pF (not 1nF as printed on the pcb). Adding 10nF to C1/C2 will multiply the period time by about 100, adding 47nF by about 500.