

Description:

This is a close clone of the Elektor Formant VCA. It consists off two OTA's in serial configuration. The first OTA provides the log response and the second one the linear response. DA2A sums up the external and internal audio signal. The circuitry around DA1A provides the log converter, DA1B the linear current source for the second OTA.

We changed R47 from 20kOhm to 47kOhm (the value 20kOhm is printed on the PCB and is the value of the Haraldswerk design). With R47 at 47kOhm the output voltage is 20Vpp at full gain (and cannot be trimmed to 10Vpp with R48 OUT LVL ADJ. as described in the calibration document). With the original value of 20kOhm this is possible and the VCA is at unity gain so R47 should be 20kOhm. If you want to have extra gain use a 22kOhm Resistor, so gain is at 110% (11Vpp max with 10Vpp input).

VCA Calibration

Stage one OTA

Move wiper of R16 (OFFSET ADJ.) to ground (CCW).

Set switch SW1 to ENV

Apply signal of about 1kHz/10Vpp to input

Look at pin 12 of the first OTA (DA4/DA5) with oscilloscope (signal is at 180deg phase).

Adjust R16 (OFFSET ADJ.) to minimal signal feedthrough (~ -3.5V at wiper (TP3)).

Set switch SW1 to OFF

Adjust R15 (ENV LVL ADJ.) so that the volume of the signal at pin 12 (DA4/DA5) is near the input signal (180deg phase).

Set scope to DC

Adjust R20 (OTA1 TRIM) for minimum DC offset

Stage two OTA

Connect oscilloscope to output.

Set gain potentiometer to max.

Adjust R48 (OUT LVL ADJ.) to equal volume for the output signal with the input.

Adjust R38 (OTA2 TRIM) for minimum DC offset.

Special parts

None

Match VT1 and VT2 and glue them together for best results.