

Timbre

SMD Version

Build Guide

Dannysound

1 Introduction

2 Parts Lists

3 Main Board

4 Pots Board

5 Panel Components and Final Assembly

6 Testing and Calibration

1 Introduction

The Timbre module is based on the wave folder section of the Buchla 259 oscillator as implemented in the Music Easel.

The wave folder adds harmonics to input signals that have low harmonic content such as Sine and Triangle waves creating rich timbres.

The addition of an extra input to allow 2 oscillators to drive the wave folder dramatically increases the range of possible tones that can be generated.

Features:

Osc1 / Osc2 Mix – Adjusts mix between oscillator 1 and 2 inputs, also acts as an attenuator if only one of the inputs is used.

Timbre – Adjusts the wave fold amount.

Timbre CV – Bipolar (attenuverter) control of Timbre CV.

Symmetry – Adds offset to input so top half of wave starts folding earlier.

Blend – Mixes between clean and effected sound.

Connections:

Inputs

Osc 1

Osc 2

Timbre CV

Symmetry CV

Blend CV

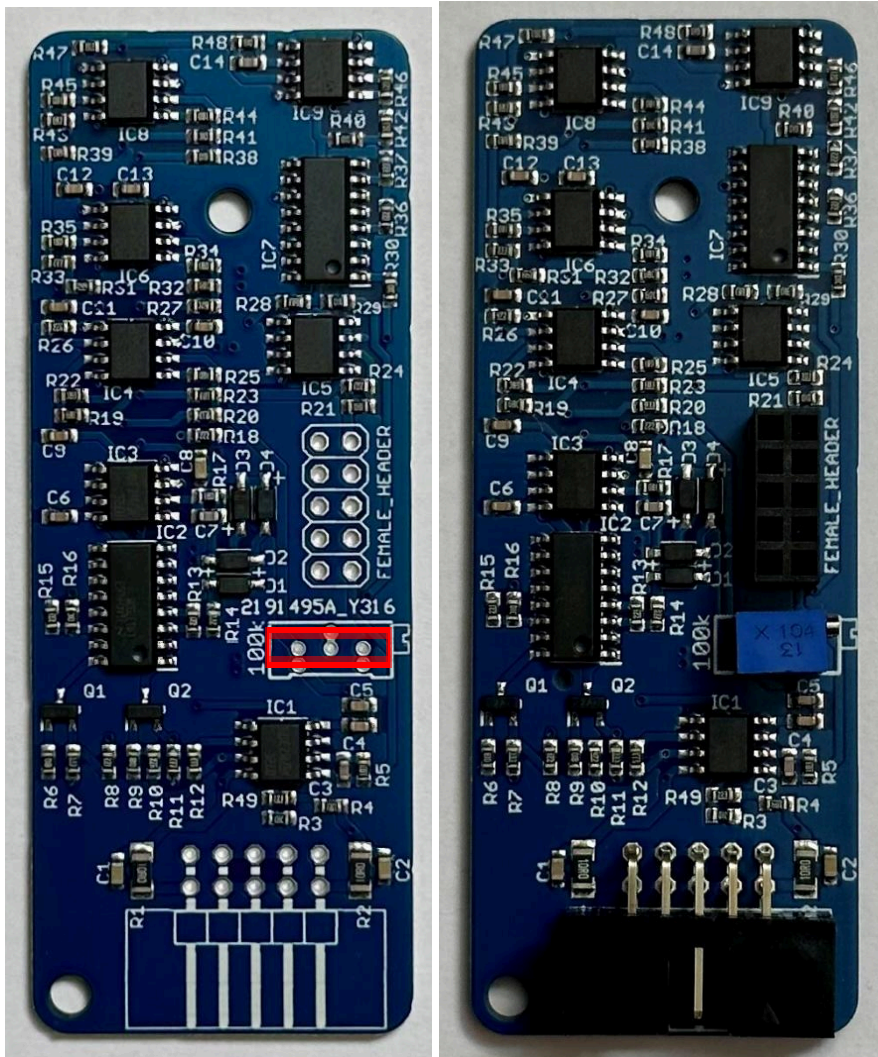
Output

1 x Output.

2 Parts Lists

Timbre Parts List			
3266X Side adjust	OFFSET	1	100k
10-16 Pin	POWER CABLE	1	
Tall Trimmer	SYMMETRY, BLEND, MIX	3	B10k
ALPHA Vertical 9mm	TIMBRE	1	B10k
ALPHA Vertical 9mm Centre Detent	TIMBRE CV	1	B50kC C
Thonkiconn-PJ398SM	SYM, BLEND, TIMBRE_CV, OSC1, OSC2, OUT	6	
Knurled Nuts		6	
ROGAN SMALL SKIRTED	Black	1	
ROGAN SMALL	Black	1	
LIGHT PIPES 3MM		1	
LIGHT PIPES 5MM		2	
2x5p Shrouded Right angle	Power Connector	1	
2x5 pin 2.54mm male header		1	
2x5 pin 2.54 female header		1	
11mm Hex Standoffs		2	
M3 6mm Screws		6	

3 Main Board

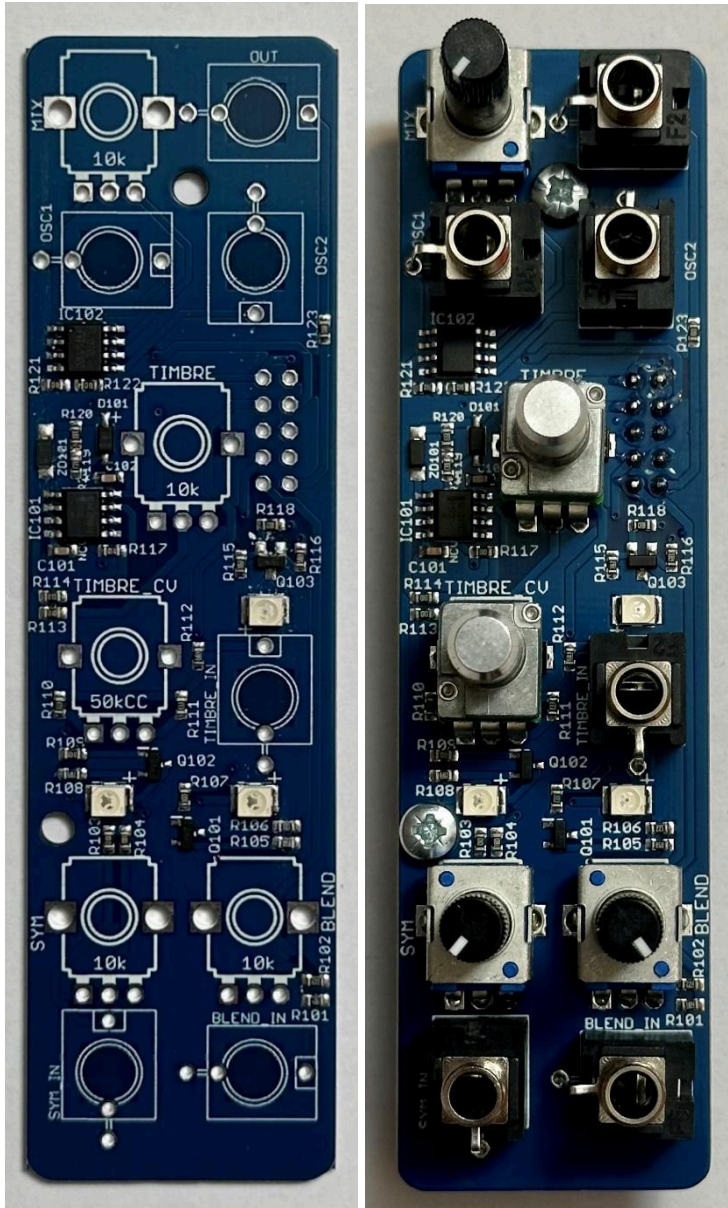


- On the main board, Solder the following on the same side as all SMD components as pictured above
- Solder the 100k trimpot in the bottom right position, the value is identified on the trimmer as '104'. **IMPORTANT** Be sure to solder the trimmer with the screw facing the edge of the PCB as pictured. Thonk kits are supplied with straight legged trimmers, solder into the three centred points marked in red on the image above.
- Solder in the 2x5pin FEMALE header and the power socket ensuring they are flush to the PCB

4 Pots Board

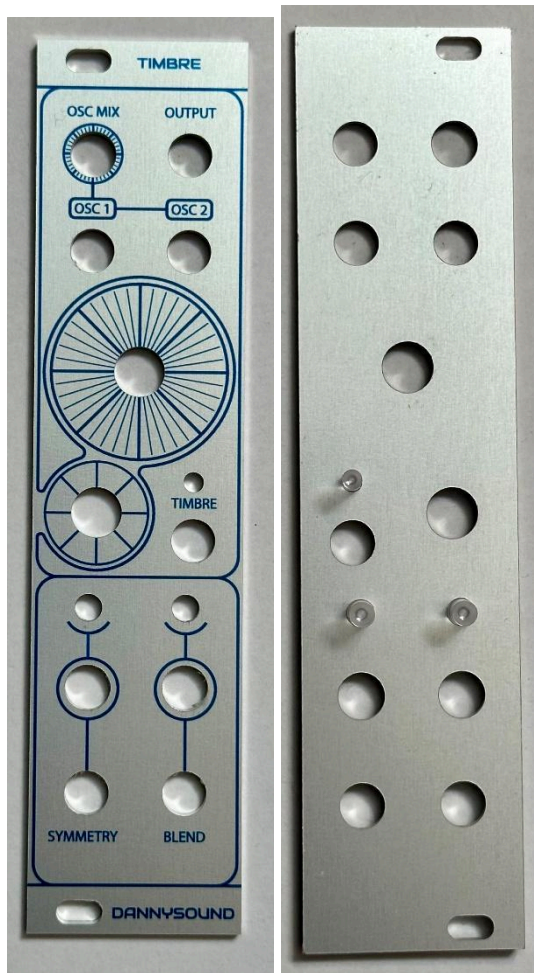


- On the pots board, solder in the 2x5 pin MALE Header to the opposite side to all pre soldered components. Ensure it is flush to the PCB.
- Screw the 2 standoffs to the board from the component side of the PCB, as shown above.



- Place the rest of the components on the board but **DO NOT SOLDER** yet.
- Insert the 3 x 10k tall trimmers as shown above.
- Insert the 50k centre detent pot into the position marked 'Timbre CV' and the 10k pot into the position marked 'Timbre'. Double check the values displayed on each pot before placing them in their correct position.
- Insert the six jack sockets with the nuts removed.

5 Panel Components and Final Assembly



- Next Insert 3mm light pipe into the panel. Turn the panel over and press down firmly to ensure the light pipe is fully pushed in. A piece of paper under the panel is handy to stop the light pipes getting scratched but it's not critical.
- Insert the 2 x 5mm light pipes and follow the above method before securing the provided rubber fastenings to the back of the light pipes.
- Place the panel onto the pots pcb and add the nuts and washers to the two pots and 6 jacks securing everything in place.
- Once everything is fitted and lined up correctly, solder the pots and jacks. Double check to make sure all parts are through the panel and lined up properly before soldering.
- Finally place the main board and pots board together and secure with the remaining standoff screws. Attach the knobs to all pots using the provided allen key.



6 Testing and Calibration

The calibration procedure should be done with an oscilloscope but can be done by ear if an oscilloscope is not available.

Offset calibration and initial test.

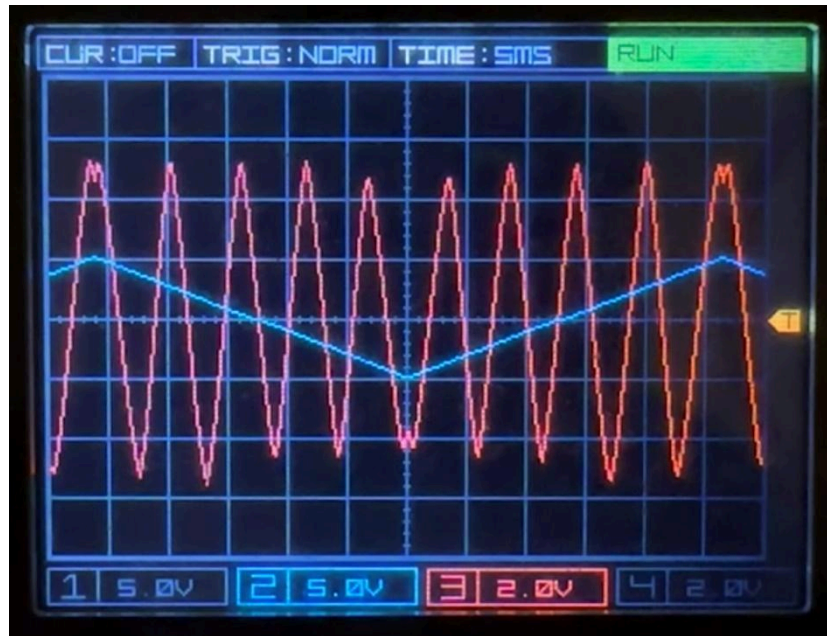
1. Connect the OUTPUT of the timbre to an oscilloscope if available or to an amplifier if testing by ear.
2. Connect an oscillator +-5v triangle wave to the OSC 1 INPUT and set the OSC MIX control to 0.
3. If an oscilloscope is being used, connect the triangle wave or another output from the same oscillator to the oscilloscope to use as the trigger reference.
4. Set the Timbre control to 0, the symmetry control to 100% and the blend control to 100%.
5. Adjust the OFFSET trimpot so the waveform is twice that of the oscillator triangle. If you are adjusting by ear, you should hear the pitch an octave up from the original signal.



Blue trace is the oscillator wave form, Red trace is the Timbre output.

Fine tuning of the OFFSET trimpot can only be done with an oscilloscope.

1. Set the symmetry control to 0 and Blend to 100%.
2. Set the Timbre to 100% and observe how the waveform folds the triangle wave as the Timbre control is increased.
3. Set the Timbre control to around 70% so the last folded wave is just at the peak.



Blue trace is the oscillator wave form, Red trace is the Timbre output.

4. Adjust OFFSET trimpot so the fold on upper and lower peaks of the output are matched as in the picture above.

Testing

1. Set TIMBRE to 50%, connect an LFO to the TIMBRE CV input and adjust to 100% or to 0. You should hear the TIMBRE being modulated by the LFO.
2. Connect the LFO to the Symmetry input and note the change in timbre. This is a subtle effect but should be clearly audible.
3. Connect a second oscillator to OSC 2 input and set the MIX to 50%, you should hear the output producing extra harmonics on the mix of both oscillators.