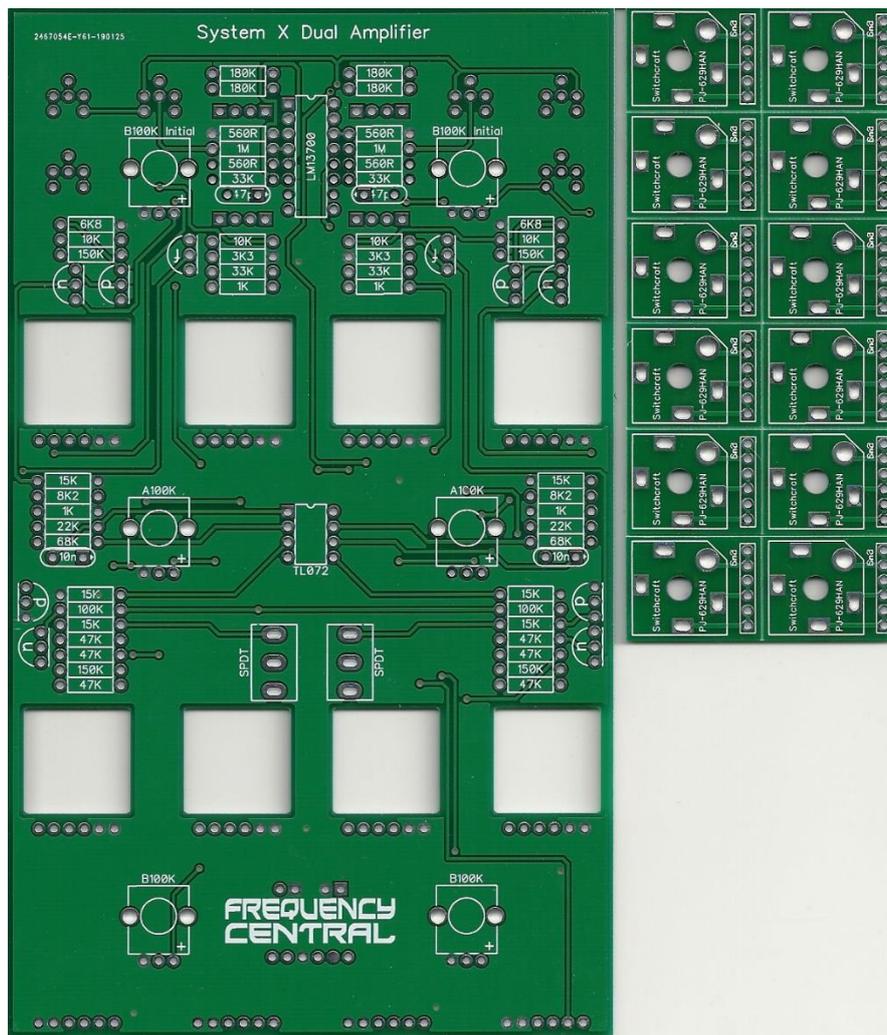


# FREQUENCY CENTRAL

Build documentation for:

## MU SYSTEM X DUAL AMPLIFIER

Based on the Roland System 100M VCA. **MU System X Dual Amplifier** features:  
Main PCB, Sockets PCB x 12



### Key to PCB screen print:

**n:** This signifies NPN BC547 transistors. Note the correct pinout as shown by the half circles.

**p:** This signifies PNP BC557 transistors. Note the correct pinout as shown by the half circles.

**f:** This signifies 2N5485 FETs. Note the correct pinout as shown by the half circles.

The PCB shows the correct orientation for BC547/BC557. Other transistor types can be used (eg 2N3904/2N3906), but please observe the correct pinout. Please observe the correct polarity of the electrolytic capacitors.

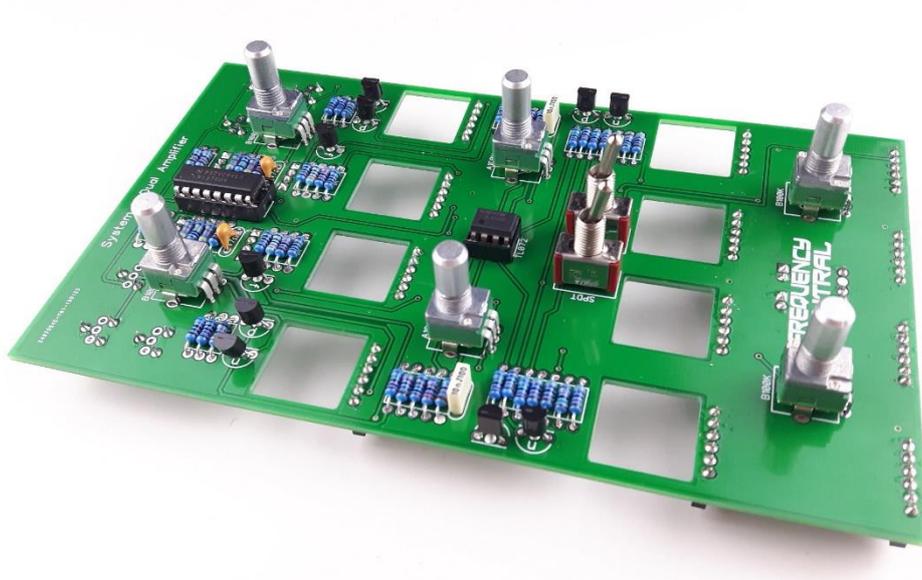
### Bill of Materials

560R x 4 1K x 4 3K3 x 2 6K8 x 2 8K2 x 2 10K x 4 15K x 6 22K x 2 33K x 4 47K x 6 68K x 2 100K x 2 150K x 4 180K x 4 1M x 2  <a href="#">All resistors ¼ watt metal film.</a>	<a href="#">47pF x 2</a> <a href="#">10nF x 2</a> <a href="#">22uF x 8</a> <a href="#">47uF x 4</a>	<a href="#">LM13700 x 1</a> <a href="#">TL072 x 1</a> <a href="#">BC547 x 4</a> <a href="#">BC557 x 4</a> <a href="#">2N5485 x 2</a>  <a href="#">16 pin IC socket</a> <a href="#">8 pin IC socket x 1</a>	<a href="#">A100K x 2</a>  <a href="#">B100K x 4</a>  <a href="#">20K trimmer x 2</a> <a href="#">100K trimmer x 4</a>  <a href="#">SPDT toggle x 2</a>  <a href="#">6.3mm socket x 12</a>  <a href="#">Male 40 pin header x 2</a>  <a href="#">6 pin female header x 12</a>  DOTCOM 6 pin header
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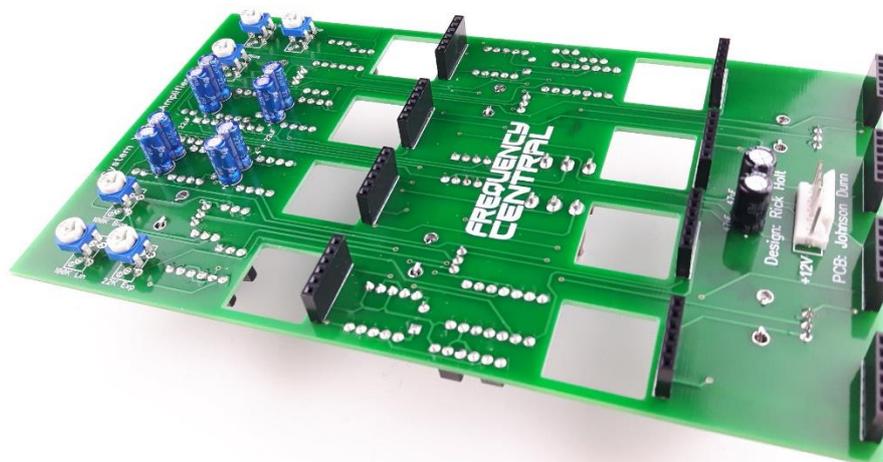
## Main PCB assembly - FRONT

1. Solder all resistors.
2. Solder all IC sockets
3. Solder all non-electrolytic capacitors
4. Solder all transistors
5. Solder the 6 x Alpha pots and the two switches. Make sure they fit snug to the PCB.



## Main assembly – REAR

1. Solder all trimmers
2. Solder all of the 6 pin female headers. These will later accept the Socket PCBs
3. Solder the DOTCOM power header. Don't forget to make it 'keyed' by removing the second pin in (the PCB won't accept it otherwise – it's keyed too!)
4. Solder the electrolytic capacitors



### Socket PCB

1. Solder the 12 sockets to the 12 Socket pcsb, socket sits on it's silkscreen footprint



### Final Assembly

1. Present the pcb to the panel, and bolt the two together using the washers and nuts for the pots and switch
2. Cut 12 pieces of male header to be 6 pins wide. Place the long end of each into the 12 female headers.
3. Present each socket pcb assembly to the main pcb, bolt into place, making sure that the male headers line up with their places on the socket pcsb. Solder the male headers to the sockets pcsb.

### Calibration

- **Bias:** Adjust Bias trimmer to sweet spot, ie a nice clean undistorted VCA output with no thunk when a snappy ADSR is applied to a CV input. I do this without any audio at the inputs. The chances are that that the sweet spot is around the mid position.
- **Lin and Exp:** you can set these up to output matching voltages, however, in reality it's better to set them up to perceived volume.

RDH 27/07/19

<http://www.frequencycentral.co.uk/>

