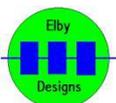# IF102 DPWG

Construction Guide

Revision 1.02
June 27th, 2018

IF102 Double-Pulse Wave Generator

Construction of the IF102 requires the assembly of 4 boards:-

Column 1 - Panther Pot PCB (3D Model)
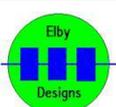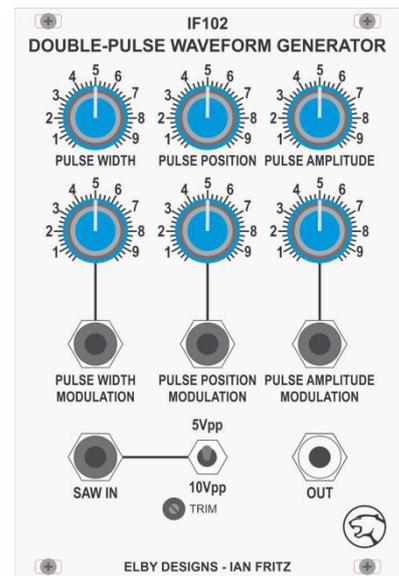Column 2 - IF102 Column 2 Pot PCB (3D Model) (PCB Overlay)
Column 3 - Panther Pot PCB (3D Model)
Main - IF102 PCB (3D Model) (PCB Overlay)

Constructors should refer to the PCB Overlays for any specific comments regarding the board assemblies, the Bill of Materials for the current value of all components and General Construction Notes for general PCB assembly guidelines.

1. Assemble the 5x Jack Carrier Board assemblies (3D Model)
2. Assemble the 1x Switch Carrier Board assemblies (3D Model)
3. Fit all components to the boards following normal assembly guidelines except for all the jack sub-assemblies and the trimpot
4. Mount the jack sub-assemblies to the Column 1 board but do not solder
5. Offer the assembly up to the front panel and secure the using the supplied nuts and washers
6. Solder the jack sub-assemblies in to place
7. Remove the Column 1 assembly
8. Mount the jack and switch sub-assemblies to the Column 2 PCB but do not solder
9. Offer the assembly up to the front panel and secure the using the supplied nuts and washers
10. Solder the jack sub-assemblies in to place
11. Guide the trimpot in to position
12. Solder in to place ensuring that the adjust screw is central to the panel hole. If you have a trimtool like this then use it to align the trimpot
13. Mount the jack sub-assemblies to the Column 3 board but do not solder
14. Offer the assembly up to the front panel and secure the using the supplied nuts and washers
15. Solder the jack sub-assemblies in to place
16. Install the Column 1 assembly
17. Mount the backboard ensuring correct alignment of the IDC connectors

Calibration

(Note that amplitude is clipped when pulses overlap.)

A.) Drive input with +/-5V Saw wave at 500Hz.

Observe Waveshape and:

1.
Set controls:

- [PULSE WIDTH] to ~'4',
- [PULSE POSITION] to ~'8',
- [PULSE AMPLITUDE] to '0'

Verify pulses are +5V and -5V in amplitude, with ~25% duty cycle for each of the four segments.

2.
Vary [PULSE AMPLITUDE] from full '0' to full '10'
Verify second pulse amplitude ranges from -5V to +5V, with 0V near midpoint.

3.
Adjust trimmer for equal pulse widths.

B.) Modulate with Triangle or Sine from an LFO:

1.
Set controls:

- [PULSE WIDTH] to ~'4',
- [PULSE POSITION] to ~'8',
- [PULSE AMPLITUDE] to '0'

Tweak [PULSE WIDTH] and [PULSE POSITION] slightly for good symmetry (25% duty cycle for each segment.)
Apply the modulation signal to [PULSE AMPLITUDE MODULATION]
Verify ~ 0-50% pulse width range.

2.
Set [PULSE WIDTH] control for a narrow pulse.
Set [PULSE MODULATION] to ~[8]
Apply the modulation signal to [PULSE POSITION MODULATION]
Verify pulse position varies across the full wave cycle.

3.
Set [PULSE WIDTH] to ~'4'
Adjust [PULSE AMPLITUDE] for zero amplitude of second pulse.
Apply the modulation signal to [PULSE AMPLITUDE MODULATION]
Verify pulse amplitude varies over full +/-5V range.