



## Features

- 4 waveforms outputs Pulse, Saw, Triangle & Sine
- 1 Volt/Octave control voltage input
- Coarse and fine frequency potentiometer controls
- Pulse output can be varied from around 5% to 95% pulse width with potentiometer
- External pulse width modulation of pulse output with potentiometer attenuator

Kit Contents				
Description	Reference	MOTM Qty	MU Qty	Notes
Components Kit	7216-203-1	1	1	See BOM
Accessories Pack including:	7216-203-2	1	1	
Pot Sticky Pads	7210-188	4	4	
10mm M4 Spacers	7210-186	4	4	
M4 x 14 Cap Head Screws	7210-187	4	4	
M3 x 8mm Stainless Panel Screws	7210-189	4	4	
8-Pin IC Socket	7212-331	1	1	
14-Pin IC Socket	7212-332	1	1	
16-Pin IC Socket	7212-333	1	1	
Red Jumper for calibration Only		1	1	
Power Lead	7216-164	1		
MOTM Front Panel	7216-503	1		Black
MOTM Back Panel	7216-803	1		
MU Front and Back Panel	7219-503		1	
Main PCB	7216-003	1	1	
Jack Socket PCB	7215-723	1	1	
Jack Sockets	7216-606	1	1	Pack of 6
B100k Pots Long Shaft	7216-704	1		Pack of 4
B100k Pots Short Shaft	7216-734		1	Pack of 4
KM20B Knobs	7212-104	1		Pack of 4
MU Knobs	7219-104		1	Pack of 4
General Assembly Guidance Booklet	S-7216-003-c	1	1	
Circuit Schematic	S-7216-003-c	1	1	
BOM	S-7216-003-c	1	1	
PCB Layout	S-7216-003-c	1	1	

## Assembly Instructions

The Mini VCO module has no particular requirements not already covered in the 'General Guidance on a M<sup>2</sup>Synth Module Assembly' booklet included with this kit.

### Calibration

1. Power up module and allow to 'warm up' for 15 minutes
2. Measure mV across TP1 pins and adjust Pr5 'Null' until as close to 0mV as possible
3. Put the supplied red jumper on JP1. Adjust Pr1 'Set C5 with JP1' until pulse output frequency is 523.25Hz. Then remove the red jumper, it is no longer required.
4. Set coarse pot fully CCW, Fine pot fully CW
5. Apply an accurate CV of 5V to the V/Oct input. Adjust Pr2 'Set C5 @ 5V CV' until pulse output is 523.25Hz
6. Reduce the CV from 5V to 0V. Adjust Pr4 'Scale' until pulse output is 16.35Hz.
7. Increase CV from 0V to 8V and adjust Pr3 'HF Trim' until pulse output is 4186Hz
8. That completes the calibration. The V/Octave tracking should be excellent from 16.35Hz through to 4186Hz and beyond subject to accurate CV calibration voltages and accurate frequency measurement. Aim for better than 0.05% accuracy from your test equipment for best results.

### Specification

- Supply voltage +/-12Vdc
- Supply current +20mA / -20mA
- Waveform levels +/-5V
- PWM CV range 0-10V
- Frequency range <10Hz to > 16kHz using coarse and fine frequency controls. <1Hz to > 60kHz with external CV applied
- Main PCB dimensions 43.5x130mm

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