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Phase Displacement Oscillator

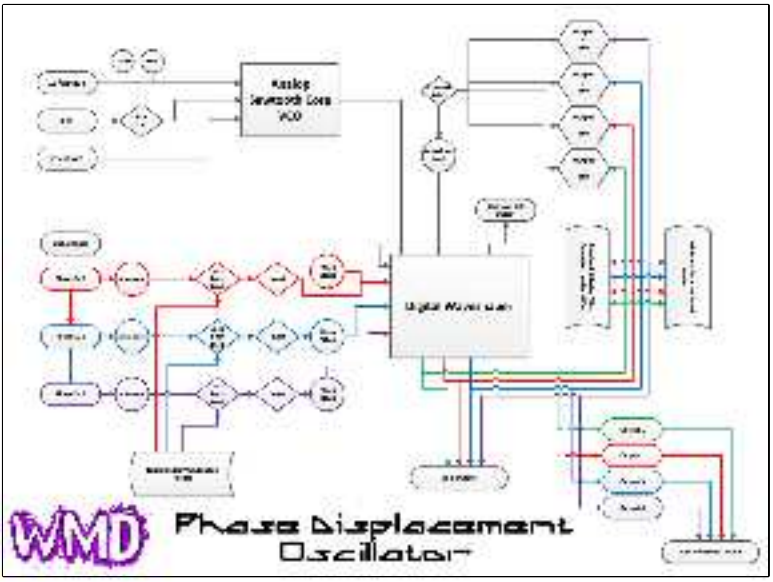
Hello and thank you for purchasing the WMD Phase Displacement Oscillator. We hope you enjoy our take on the traditional VCO.

Design

The PDO has an analog sawtooth core VCO at its heart. This is followed by a 14 bit digital waveshaper as an alternative to the traditional analog waveshapers of most VCOs. Along with traditional exponential/linear FM and Sync on the analog side, the PDO allows for Phase Distortion FM within the digital waveshaper. Phase FM paired with the four simultaneous outputs allows for a myriad of sounds and modulation opportunities.

Signal Flow

The signal flow of the PDO is relatively simple, and is explained best by the below flowchart.



VCO Inputs

1V/Octave - This input tracks the standard keyboard scale of one volt per octave. The PDO will track at least five octaves and is temperature compensated.

Sync - The sync is a hard type that resets the sawtooth wave generated by the analog VCO. It acts as an LFO reset also.

FM jack & switch - Input for linear or exponential frequency modulation. Exponential is always DC coupled, linear may be DC coupled by connection the two pin rear jumper.

Phase Inputs

The phase inputs on the PDO allow CV or audio to be used to offset the phase of that output relative to the other outputs. The CV headed to the core can be inverted with the Inv switch. The Jack/Both/Mod switch controls what CV affects each input. Jack allows the front panel jack to control CV. Mod allows for a modulation input (normally the Triple Bipolar VCA) to control CV. Both passes the jack signal and the mod signal simultaneously and mixes them.

The signals can be asymmetrically clipped by adjusting the bias knob while a large signal is present at the phase inputs.

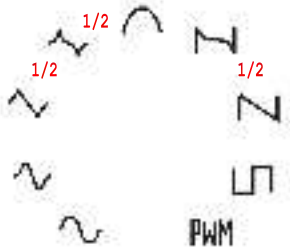
Experiment with self patching the outputs to the phase inputs to create stable wavefolding and wave distortion. Self patching through VCAs can dramatically change the output waveform.

Waveform Selection

The channel select button is located just below the red waveform knob. Pushing this button will change the channel that the waveform knob will affect. This is indicated by red light emitting from one of the four LEDs at the top of the PDO.

In order for the knob to change a waveform, the knob must be twisted past the currently selected waveform.

A jumper on the rear of the module (marked 1/2W) allows for half/inbetween waveforms of some of the waves to be selectable. Move the jumper to just below the 1/2W marking to enable this.



Other Notables

The PDO is 16 HP.

Current consumption is +85mA and -50mA. (Upgrade is +115mA, -50mA)

Analog inputs are -5 to +5 volts. Sync will respond to +5 gate signals.

Output signals are -5 to +5 volts. Sum Output maximum is roughly +-8 volts.

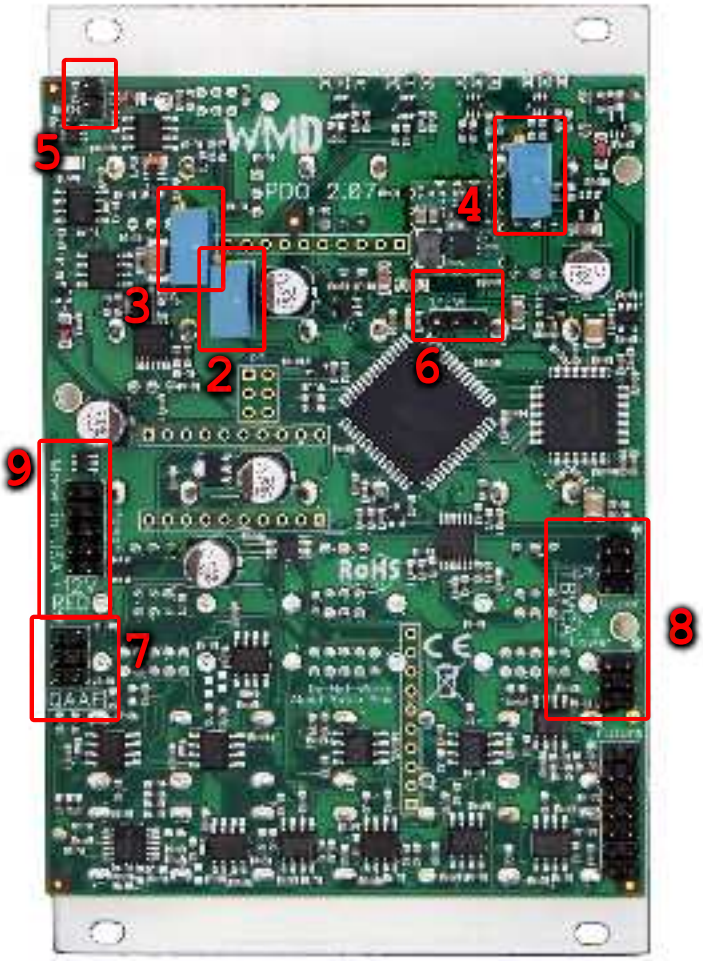
The depth from the back of the panel is roughly 25mm with connectors. (40mm for upgrades)

They PDO is reverse polarity protected.

The PDO is RoHS and CE compliant.

The PDO is warranted for 12 months after purchase. But please contact us if you ever have problems. We will take care of you.

Phase Displacement Oscillator



1. 1V/Octave Adjust
2. Saw Offset Adjust
3. Saw Level Adjust
4. Phase Reference Adjust
5. Lin FM AC/DC Jumper
   connect for DC
6. Half Waveform Jumper
   connect for 1/2 waves
7. Quad AAF Expansion header
   Stripe pointed to ⋆
8. TBVCA expand headers
   Stripe pointed to ⋆
9. +-12VDC Power Header
   Red Stripe DOWN towards
   "RED -12"

UPGRADE NOTE:
If your PDO is an upgrade (second PCB installed on connectors), use power connector on rear PCB. Use connections shown on this page for attaching expansions. 1/2W and FM jumpers will be on rear board.



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