

BETST DOUBLE DRAGON USER MANUAL

The illuminated "Dragon Eye" displays the currently selected algorithm. ALG - Turning the ALG knob selects one of RED - LFO1 and LFO2 are mixed together seven algorithms that are used to modulate **GREEN** - LFO1 modulates the aplitude of LFO2 LFO 2. The colour of the "Dragon Eye" above CYAN - LFO1 modulates the frequency of LFO2 the knob indicates the selected algorithm. YELLOW - LFO1 is summed with LFO2 and Pressing the ALG knob selects one of three subjected to wave folding frequency ranges. PURPLE - LFO1 distorts the phase of LFO2 BLUE - LFO1 is XORed with LFO2 Regular - 0.05 hz to 410 hz "Dragon Eye" lit continuously WHITE - LFO1 is sampled and held Slow - 0.00001 hz to 2 hz "Dragon Eye" flashes slowly each time LFO2 starts a new cycle. Fast - 0.1 hz to 1.28 khz "Dragon Eye" flashes rapidly FREQ 2 - Selects the FREQ 1 - Selects the frequency of LFO 1. frequency of LFO 1. SHAPE 2 - Selects one of SHAPE 1 - Selects one of eight eight waveforms for use waveforms for use by LFO 1. by LFO 2. 1. Sine Triangle SYNC - When enabled will 3. Ramp Up "lock" the frequency of 4. Ramp Down LFO 2 to a subdivision or 5. Inverted Exp multiple of LFO 1 frequency. Staircase 7. 50% Pulse PARAM - Used to 8. Noise modify/adjust a parameter of the selected algorithm. RESET MOD - Selects the amount of **RESET** - Reset input for modulation applied to LFO 2 LFO₂ output by the selected FREQ - CV Input for algorithm. frequency of LFO 2 **RESET** - Reset input for SHAPE - CV Input for LFO 1 SHAPE setting of LFO 2 FREQ - CV Input for DOUBLE DRAGON frequency of LFO 1 SHAPE - CV Input for OUT 2 - LFO 2 Output. SHAPE setting of LFO 1 -8 .. +8v (16VPP) MOD - CV Input for PARAM - CV Input for OUT 1 - LFO 1 Output.

PARAM setting

MOD setting

-8 .. +8v (16VPP)



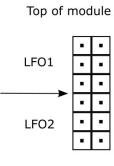
EVST DOUBLE DRAGON

USER MANUAL

Colour	Algorithm	MOD	PARAM
		Selects the mix between LFO1 and LFO2. Fully counter clockwise is 100%	
RED	Mixer		Applies 0x - 2x gain and clipping on LFO2 after mixing occurs.
GREEN	Amplitude Modulation	Selects the amount that LFO1 modulates the amplitude of LFO2.	Applies 0x - 2x gain and clipping on LFO2 after AM occurs.
CYAN	Frequency Modulation	Selects the amount that LFO1 modulates the frequency of LFO2.	Applies 0x - 2x gain and clipping on LFO2 after FM occurs.
YELLOW	Wave Folder	Selects the amount of LFO1 that is added to LFO2 before wavefolding.	Applies a 0x - 2 x gain on LFO2 which is then subjected to wavefolding to prevent clipping.
PURPLE	Phase Distortion	Selects the amount that LFO1 distorts the phase of LFO2.	Applies 0x - 2x gain and clipping on LFO2 after PD occurs.
BLUE	XOR	Selects the mix between the LFO2 and LFO2 XOR'd with LFO1.	Selects one of sixteen different bit masks that are used during XORing, each producing different results.
WHITE	Sample & Hold	Selects the mix between LFO2 and the S&H value.	Each time LFO2 crosses from negative to positive, the potential for a sample and hold of LFO 2 exists. Param controls the probability of this taking place from 0% through to 100%.

Jumper Settings

On the back of the module is a block of six jumpers that configure alternative behaviors. The first three jumpers are for LFO1 and the last three are for LFO2. Both sets of Three jumpers configure LFO1 and LFO2 in the same manner.



Bottom of module



RAMP Mode - placing a jumper here will change the LFO from a bi-polar waveform to a uni-polar (positive only) ramp. This mode also changes the function of the SHAPE control so that it can blend from ramp down through triangle to ramp up. This allows Double Dragon to be used as a function generator for driving VCAs etc.



HANG - placing a jumper here will change the function of the RESET input to an active high Hang function. When reset is high the output level will be held at the current level until it returns low again. This allows for tempo sync and other cool effects.



ONE-SHOT - placing a jumper here will change the function of the LFO from a continuous cycle to a single wave cycle each time the RESET input is high or "triggered".



 $\mbox{\bf ONE-SHOT RAMP}$ - placing two jumpers here will turn the LFO into a triggerable envelope generator perfect for driving VCAs.



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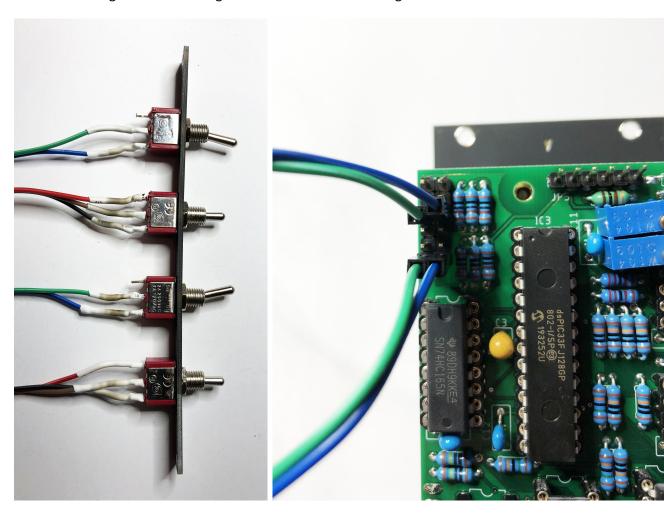
USER MANUAL

Connection of DD Expander

The DD expander utilizes toggle switches to modify the jumpers on the back of Double Dragon without having to remove the module from the case. The jumpers are simple connections of the active wire to ground.

Connection of the LFO/RAMP is done on the bottom block of three jumpers per LFO (As per diagram above).

Refer to the diagrams below using the colour of the wires as a guide.





BEVST DOUBLE DRAGON USER MANUAL

USER MANUAL

The connection of the 1-Shot/Cycle/Ramp switches are a little more complicated.

Use the pictures below as a guide. The center (BROWN in this case) wire is the ground and its connected to either of the two available pins on the left hand side of each block of 3.

The red and black wires are the ones that matter, pay close attention to the diagram below – the black wire from the bottom lug of the ON-OFF-ON switch is connected to the first jumper on the right hand side. The red wire on the top lug is connected to the second pin on the right hand side. Because there are two identical blocks of three jumpers for each LFO, the pattern repeats and is identical for the second block of 3 jumpers for the second LFO.

