DIRTBABY

FX TYPE: Delay
Based on the EHX® DMM™
© 2016 madbeanpedals

3.325" W x 2.325" H
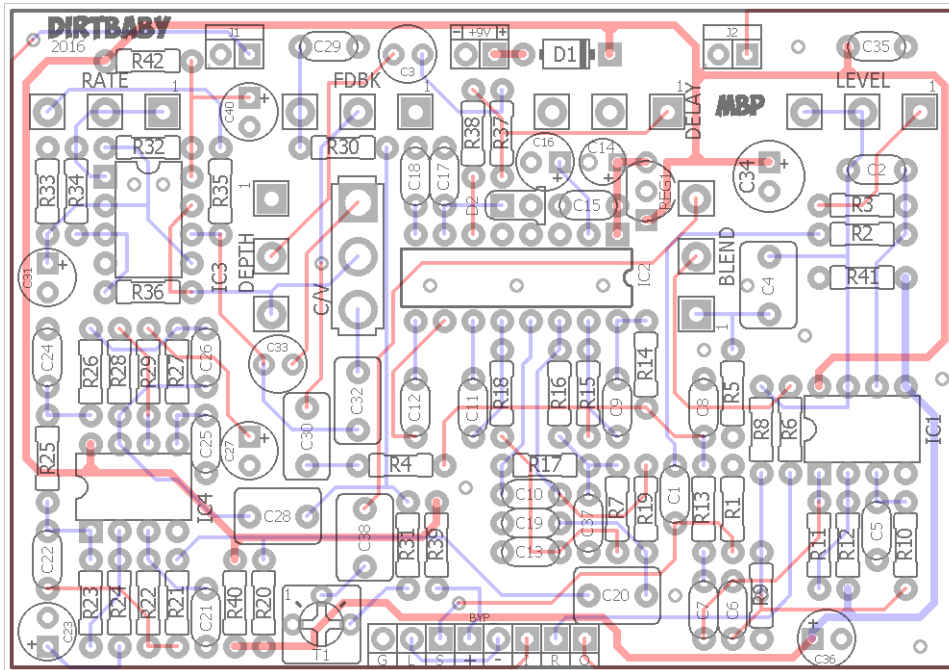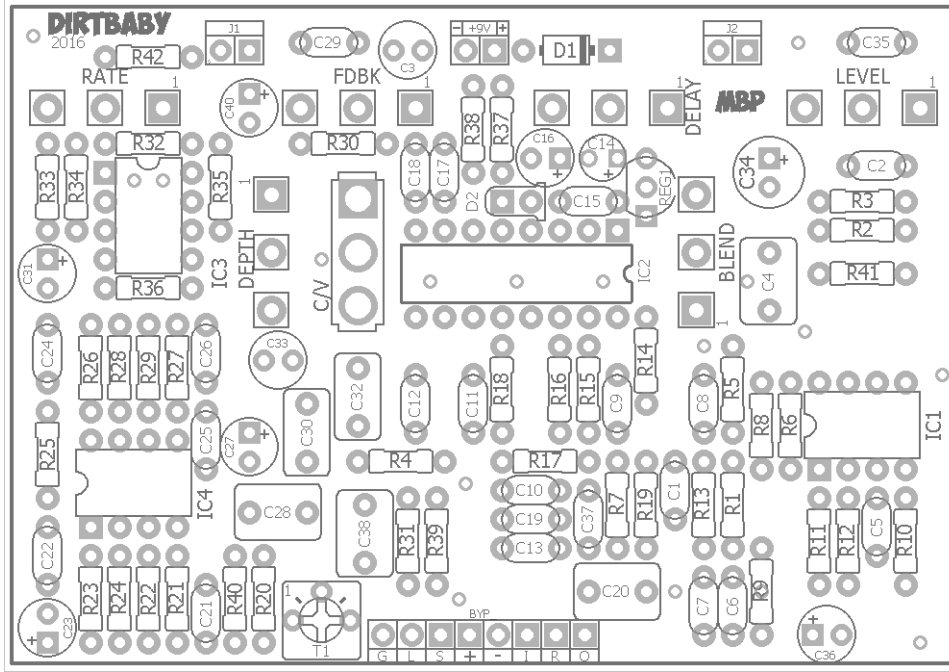
B.O.M.

| Resistors		Resistors		Caps		Caps		Diodes	
R1	2M2	R24	24k	C1	100n	C24	47n	D1	1N5817
R2	220k	R25	470R	C2	27pF	C25	2n7	D2	LED
R3	100k	R26	15k	C3	2u2 NP	C26	2n7	**IC's**	
R4	10k	R27	15k	C4	1uF	C27	4u7	IC1	4558
R5	47k	R28	15k	C5	2n7	C28	1uF	IC2	PT2399
R6	150R	R29	39k	C6	2n7	C29	47n	IC3	TL062
R7	10k	R30	1k	C7	220n	C30	470n	IC4	4558
R8	15k	R31	1k	C8	2n7	C31	10uF	**Regulator**	
R9	33k	R32	100k	C9	1n	C32	470n	REG1	LM78L05
R10	15k	R33	100k	C10	1n	C33	2u2 NP	**Switch**	
R11	33k	R34	1M	C11	100n	C34	100uF	C/V	SPDT
R12	33k	R35	22k	C12	100n	C35	100n	**Trimmer**	
R13	10k	R36	120k	C13	15n	C36	10uF	T1	50k
R14	10k	R37	220k	C14	10uF	C37	4n7	**Pots**	
R15	10k	R38	1k5	C15	100n	C38	1uF	FDBK	10kA
R16	20k	R39	4k7	C16	47uF	C40	10uF	BLEND	10kB
R17	10k	R40	10k	C17	100n			DELAY	50kB
R18	10k	R41	10k	C18	100n			DEPTH	100kB
R19	1k	R42	100R	C19	10n			LEVEL	1MA
R20	1M			C20	1uF			RATE	1MB
R21	15k			C21	2n7				
R22	15k			C22	2n7				
R23	33k			C23	4u7				

Shopping List

Value	QTY	Type	Rating
100R	1	Metal / Carbon Film	1/4W
150R	1	Metal / Carbon Film	1/4W
470R	1	Metal / Carbon Film	1/4W
1k	3	Metal / Carbon Film	1/4W
1k5	1	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
10k	9	Metal / Carbon Film	1/4W
15k	7	Metal / Carbon Film	1/4W
20k	1	Metal / Carbon Film	1/4W
22k	1	Metal / Carbon Film	1/4W
24k	1	Metal / Carbon Film	1/4W
33k	4	Metal / Carbon Film	1/4W
39k	1	Metal / Carbon Film	1/4W
47k	1	Metal / Carbon Film	1/4W
100k	3	Metal / Carbon Film	1/4W
120k	1	Metal / Carbon Film	1/4W
220k	2	Metal / Carbon Film	1/4W
1M	2	Metal / Carbon Film	1/4W
2M2	1	Metal / Carbon Film	1/4W
27pF	1	Ceramic / MLCC	25v min.
1n	2	Film	25v min.
2n7	7	Film	25v min.
4n7	1	Film	25v min.
10n	1	Film	25v min.
15n	1	Film	25v min.
47n	2	Film	25v min.
100n	7	Film	25v min.
220n	1	Film	25v min.
470n	2	Film	25v min.
1uF	4	Film	25v min.
2u2 NP	2	Non-Polar / BiPolar	25v min.
4u7	2	Electrolytic	25v min.
10uF	4	Electrolytic	25v min.
47uF	1	Electrolytic	25v min.
100uF	1	Electrolytic	25v min.
1N5817	1		
LED	1	Green, Diffused	3 or 5mm
4558	2		
PT2399	1		
TL062	1		
LM78L05	1		
SPDT	1	Solder Lug or Pin Mount	
50k	1	Bourns 3362P	
10kA	1	PCB Right Angle	16mm
10kB	1	PCB Right Angle	16mm
50kB	1	PCB Right Angle	16mm
100kB	1	PCB Right Angle	16mm
1MA	1	PCB Right Angle	16mm
1MB	1	PCB Right Angle	16mm

1590BB Drill Guide

5.79"W x 6.83"H
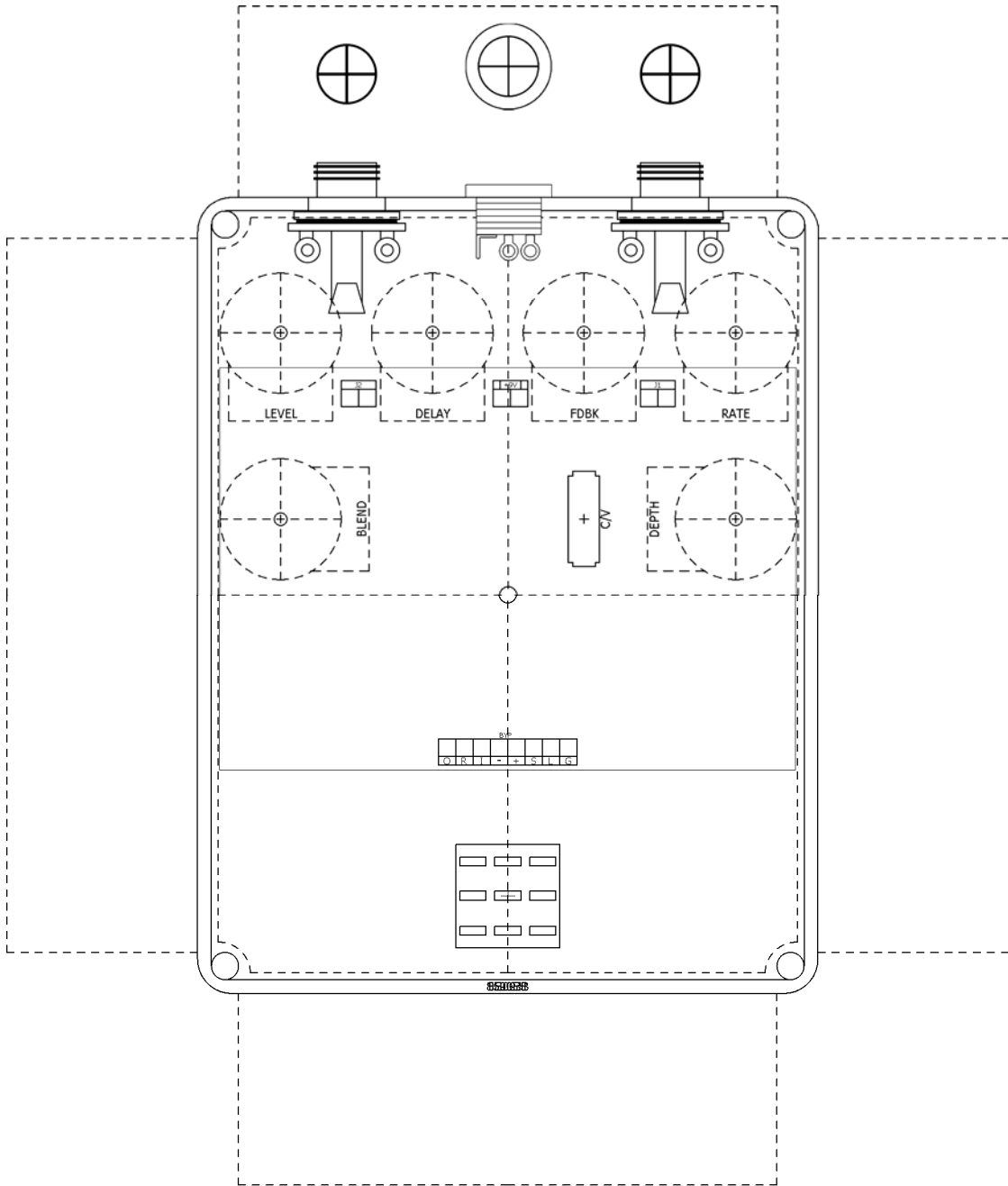
Wiring
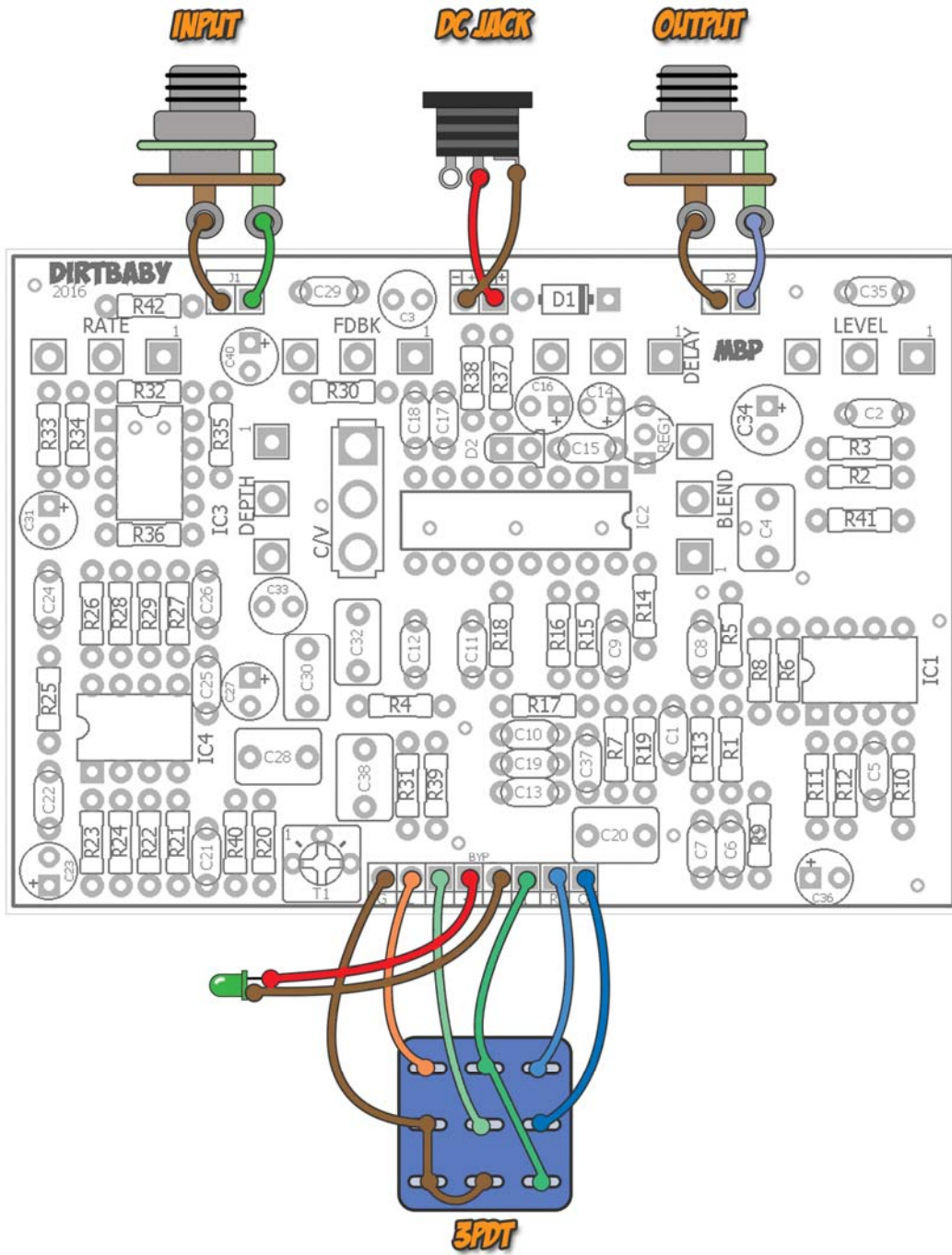
Overview

The Dirtbaby is a PT2399-based delay modeled after the Deluxe Memory Man™. It is an attempt to re-design the DMM™ without the use of the stock MN3005/MN3008 BBDs. While I will not claim the Dirtbaby sounds exactly like the DMM, it is at least a genuine alternative to the standard PT2399 type delays out there and does manage to cop some of the feel of the DMM™.

2016 changes: Revisions to the power section. Added a secondary Low Pass filter at the delay output to reduce noise at higher delay settings.

Design

The design eliminates the DMM compander but retains the input section (with one resistor change for higher input impedance), the filtering and a simplified version of the LFO (with added Rate control). The Feedback path skips the pre-emphasis filtering and goes straight back to the input of the PT2399 which keeps the delays from getting too "filtered sounding". The T1 trimmer sets the overall delay output level before the Blend pot. This gives you much more control over the dry/wet blending of the effect.

The Rate and C/V switch have some overlap in the range of modulation, but they do offer variety. With the Rate knob set most of the way down the C/V switch operates much like the modulation on the DMM™. The Rate control then allows you to take the modulation into warp speed for some interesting sounds.

Controls

LEVEL – The gain of the input section. At maximum it will produce some distortion like the DMM™.
FDBK – The number of delay repeats from one to many. High levels of feedback will produce self-oscillation.
DELAY – The total amount of delay from a few ms to about 600ms.
BLEND – The ratio of dry to wet signal.
RATE – The speed of the LFO which controls the delay modulation.
DEPTH – The intensity of the modulation.
C/V – This switch allows you to go between "chorus" and "vibrato" type modulation.
T1 – This trimmer lets you set the delay output before the Blend knob.

Mods

- To decrease the maximum depth of the modulation, increase R37 to 470k or 1M.
- To decrease the maximum rate of the modulation increase R35 to 68k or 120k (I prefer 68k here).

Notes

- D2 is used to reduce potential distortion at the input of the PT2399. It should not be mounted to the enclosure (it does not light up).

- 2u2 Non-polar caps: http://www.mouser.com/ProductDetail/Panasonic/ECE-A1HN2R2U/?qs=sGAEpiMZZMtZ1n0r9vR22RyzzjEKRzqKNYR5Qg6bFXA%3d

- If you cannot get 2u2 non-polar caps, use two regular 1uF caps and solder them back to back (like clipping diodes) to approximate a value of 2uF.

- You can run the Dirtbaby at up to 15v.

<u>Voltages</u>

	IC1		IC2		IC3		IC4
1	1.6	1	4.95	1	varies	1	4.24
2	2.93	2	2.38	2	4.41	2	4.24
3	2.92	3	0	3	varies around 4v	3	3.9
4	0	4	0	4	0	4	0
5	4.24	5	2.85	5	4.41	5	4.23
6	4.26	6	2.37	6	4.42	6	4.24
7	4.24	7	0.71	7	varies around 4v	7	4.24
8	8.89	8	0.74	8	8.85	8	8.89
		9	2.39				
		10	2.39				
		11	2.39				
		12	2.39				
		13	2.39				
		14	2.39				
		15	2.39				
		16	2.39				

These voltages were taken from the previous Dirtbaby version which had a small series resistor on the power supply. The 2016 voltages will read slightly higher than what's listed here but should be proportionally the same.

DIRTBABY

2016 ed. (c) madbeanpedals