



DT-FOG SUPERFAST POLYPHONIC OCTAVER MODULE USER MANUAL

Document revision-0 (10-07-2023): Initial Release

I. Description

DT-FOG is a superfast polyphonic octaver module designed for guitar effect pedal application. Based on phase vocoder algorithm, DT-FOG employs separate high speed transient signal processor and high frequency resolution processor. By combining the outputs of the two processors, DT-FOG produces superfast transient response while maintaining high precision transpose for both octave and sub-octave synthesis.

II. Features

- Independent control for dry, octave, and sub-octave levels
- Superfast transient processing (1/100 second latency)
- High frequency resolution for non-transient signal
- Glitch-free tracking
- Designed for true bypass wiring

III. Block Diagram

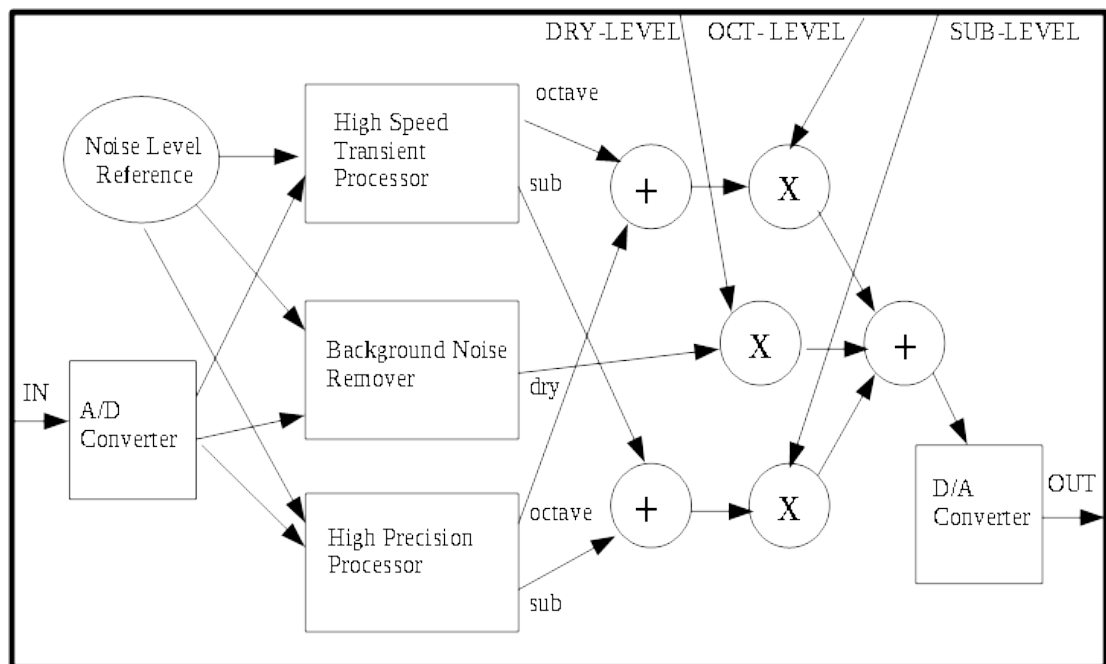
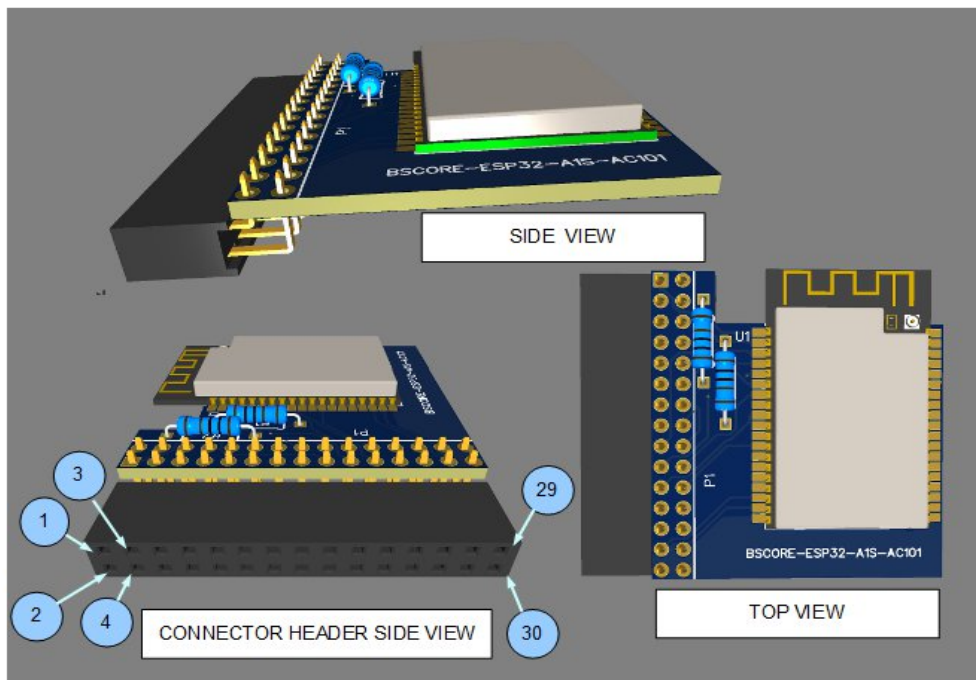


Figure 1. DT-FOG Block Diagram



IV. Pinout Diagram and Pin Description



DGND	2	1	DC3V3
RXD	4	3	TXD
PROG-2	6	5	PROG-1
PROG-4	8	7	PROG-3
I2C-SDA	10	9	I2C-SCK
LED-2	12	11	LED-1
D2	14	13	D1
D4	16	15	D3
A2	18	17	A1
A4	20	19	A3
A6	22	21	A5
OUT-R	24	23	OUT-L
IN-R	26	25	IN-L
MIC-N	28	27	MIC-P
AGND	30	29	AGND

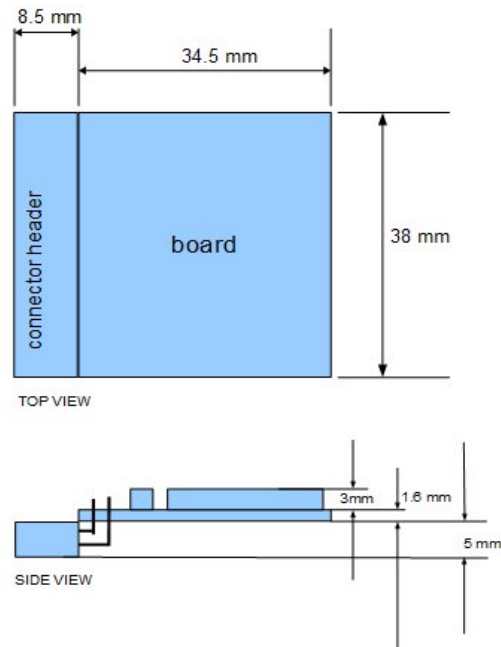


Figure 2. DT-FOG Module Pinout Diagram



NUMBER	NAME	DESCRIPTION
1	DC3V3	Power supply input +3.3V
2	DGND	Digital ground
3		(UNUSED)
4		(UNUSED)
5		(UNUSED)
6		(UNUSED)
7		(UNUSED)
8		(UNUSED)
9		(UNUSED)
10		(UNUSED)
11	LED-1	Indicator LED
12		(UNUSED)
13	D1	Digital input for the main foot switch
14		(UNUSED)
15		(UNUSED)
16		(UNUSED)
17	A1	Sub-octave level
18		(UNUSED)
19	A3	Up-octave level
20		(UNUSED)
21	A5	Dry level
22		(UNUSED)
23	OUT	Audio output
24		(UNUSED)
25	IN	Audio input
26		(UNUSED)
27		(UNUSED)
28		(UNUSED)
29	AGND	Analog ground
30	AGND	Analog ground

Table 1. DT-FOG Module Pin Description

V. Electrical Specification

- **Power supply voltage: DC 3.3V**
- **Current consumption: 100 mA (max)**
- **Audio input voltage range: 1 V_{rms} (2.8 V_{peak-to-peak})**
- **Input impedance: 20 kOhm**
- **Output impedance: 1 kOhm**



VI. Controls

- **BYPASS switch** is used to activate/deactivate the effect by un-bypass and bypass.
- **SUB knob** controls the sub octave level of the effect output
- **UP knob** controls octave level of the effect output
- **DRY knob** controls the dry level of the effect output

VII. Building FOG Pedal Using Blackstomp's Generic Production Model-1 (BGPM-1) PCB

- A) Application circuit is shown in Figure 3
- B) BGPM-1 PCB is shown in th Figure 4
- C) Bill of materials (BOM) is shown in the Table-2
- D) Off-board wiring layout is shown in the Figure 5
- E) Drill template for 125B enclosure is shown in Figure 6

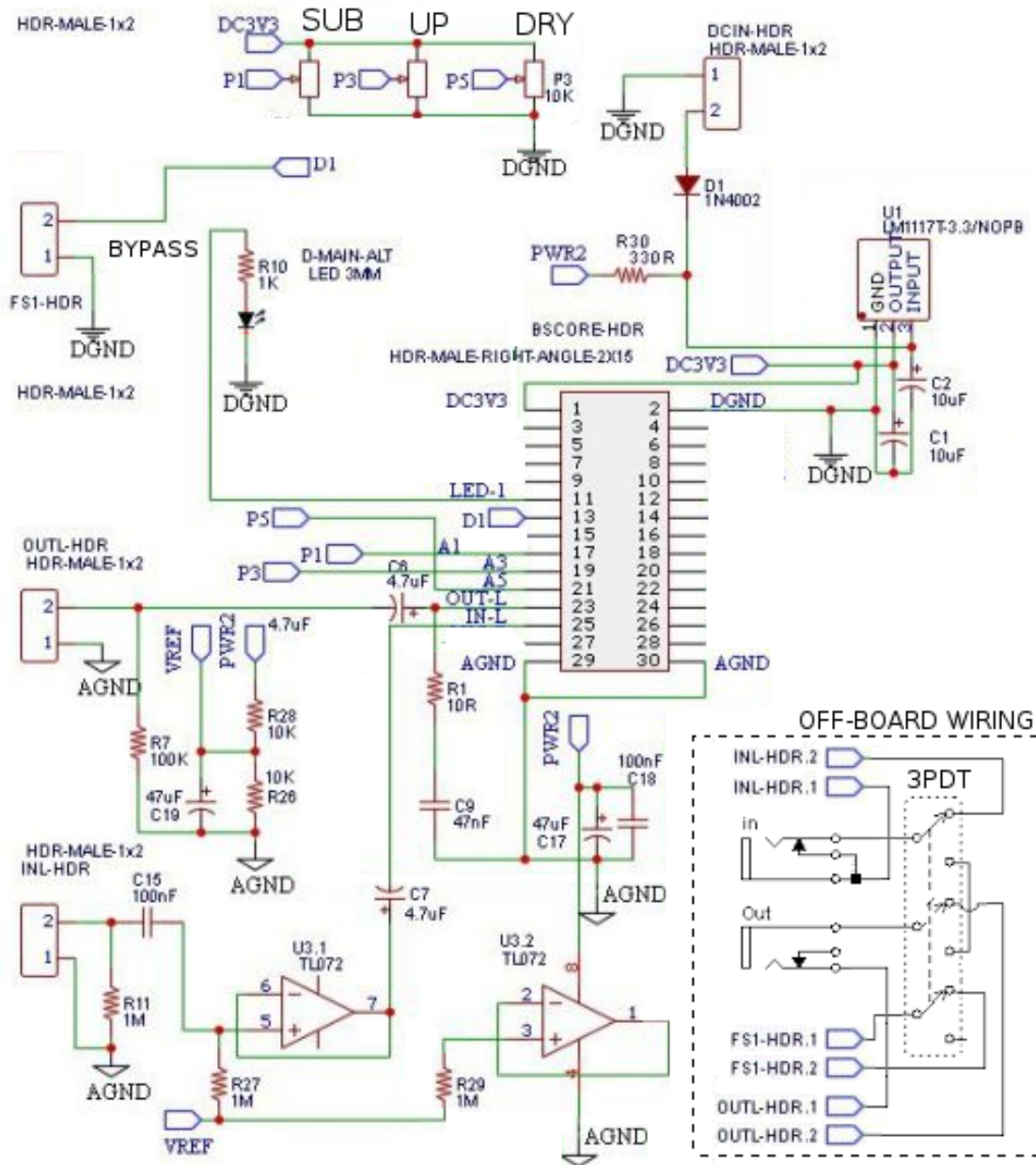


Figure 3. DT-FOG Pedal Application Circuit (Input Impedance = 0.5 MOhm)

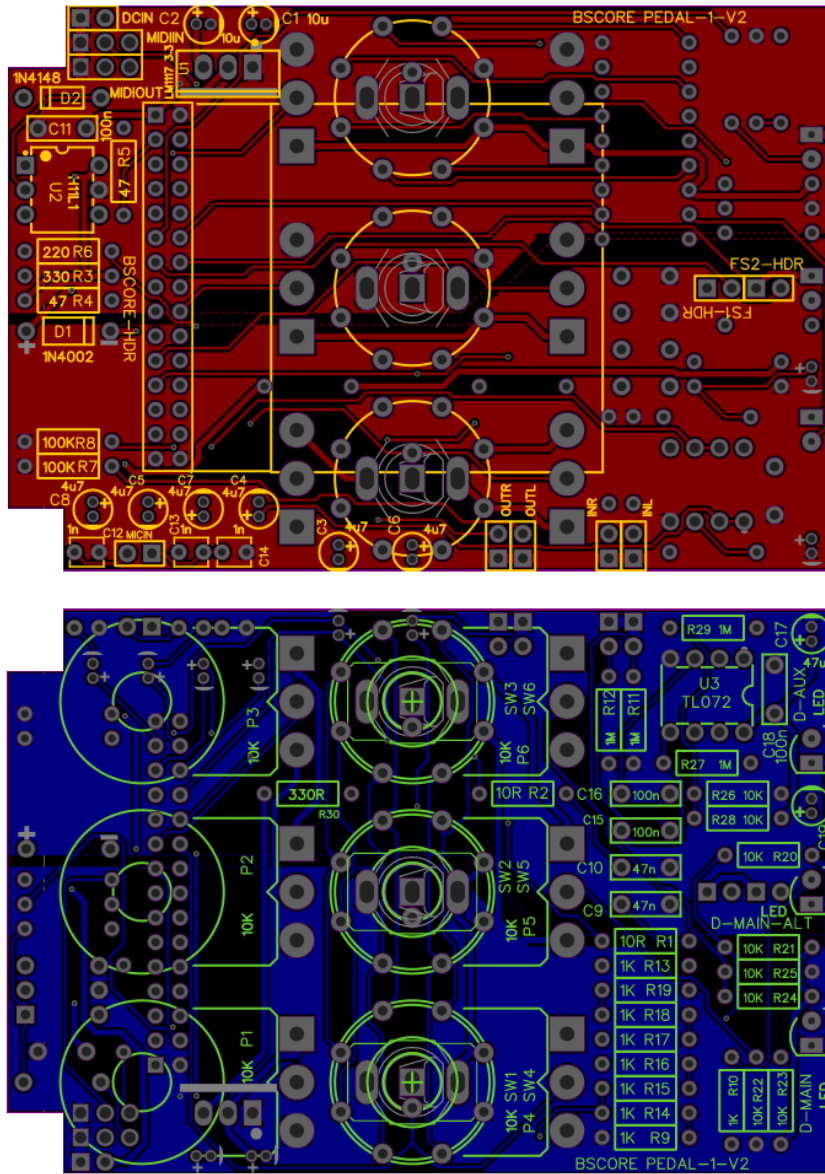


Figure 4. BGPM-1 PCB (Upper: TOP SIDE, Lower: BOTTOM SIDE)



ID	NAME	DESIGNATOR	QTY	MT.SIDE
ON-BOARD PARTS				
1	HDR-MALE-RIGHT-ANGLE-2.54MM-2X15	BSCORE-HDR	1	TOP
2	10uF/16V tantalum or 47uF/16V electrolytics	C1,C2	2	TOP
3	4.7uF	C6,C7	2	TOP
4	47nF	C9	1	BOTTOM
5	100nF	C15,C18	2	BOTTOM
6	47uF/16V	C17,C19	2	BOTTOM
7	1N4002	D1	1	TOP
8	LED 3MM	D-MAIN-ALT	1	BOTTOM
9	HDR-MALE-1x2	DCIN-,FS1-,INL-,OUTL-HDR	4	TOP
10	B10K PCB-mount right-angle potentiometer	P1,P3,P5	3	BOTTOM
11	10R 0.25W	R1	1	BOTTOM
12	330R 0.25W	R30	1	BOTTOM
13	100K 0.25W	R7	1	TOP
14	1K 0.25W	R10	1	BOTTOM
15	1M 0.25W	R11,R27,R29	3	BOTTOM
16	10K 0.25W	R26,R28	2	BOTTOM
17	LM1117T-3.3/NOPB	U1	1	TOP
18	TL072	U3	1	BOTTOM
OFF-BOARD PARTS				
19	DT-FOG MODULE	Plugged to BSCORE-HDR	1	
20	3PDT FOOT SWITCH	Wired to FS1, INL-HDR,OUTL-HDR	1	
21	ISOLATED DC SOCKET	Wired to DCIN-HDR	1	
22	ISOLATED 6.35MM TS SCOKET	Wired to INL-HDR,OUTL-HDR, 3PDT	2	

Table 2. DT-FOG Pedal Circuit Bill of Materials (BOM)

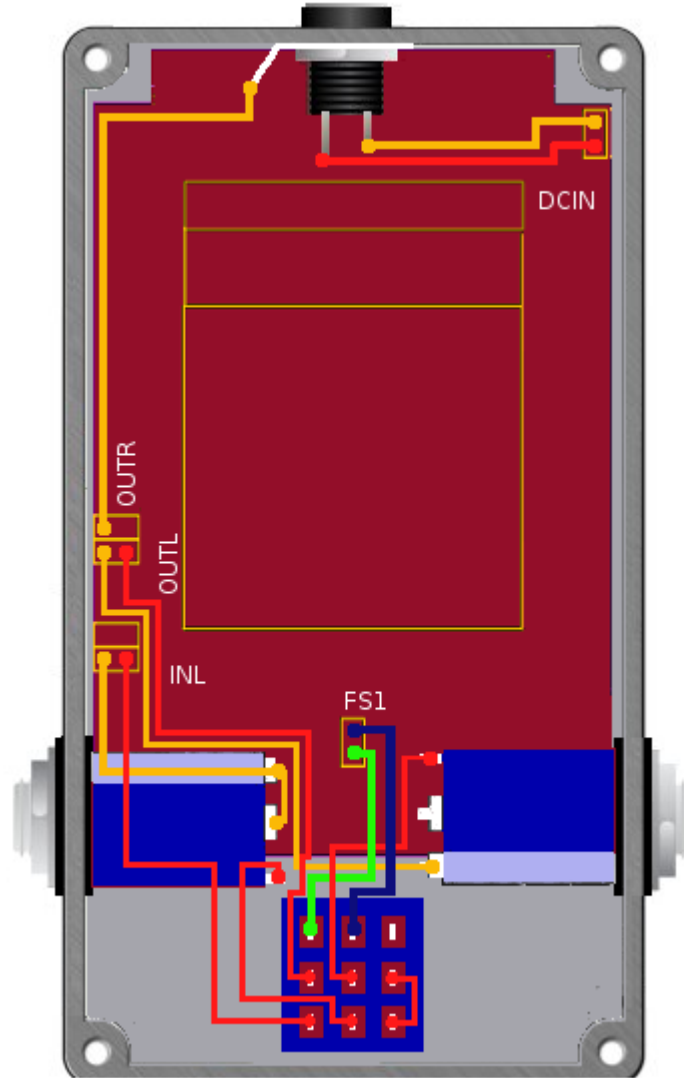


Figure 5. DT-FOG Pedal Off-Board Wiring Layout

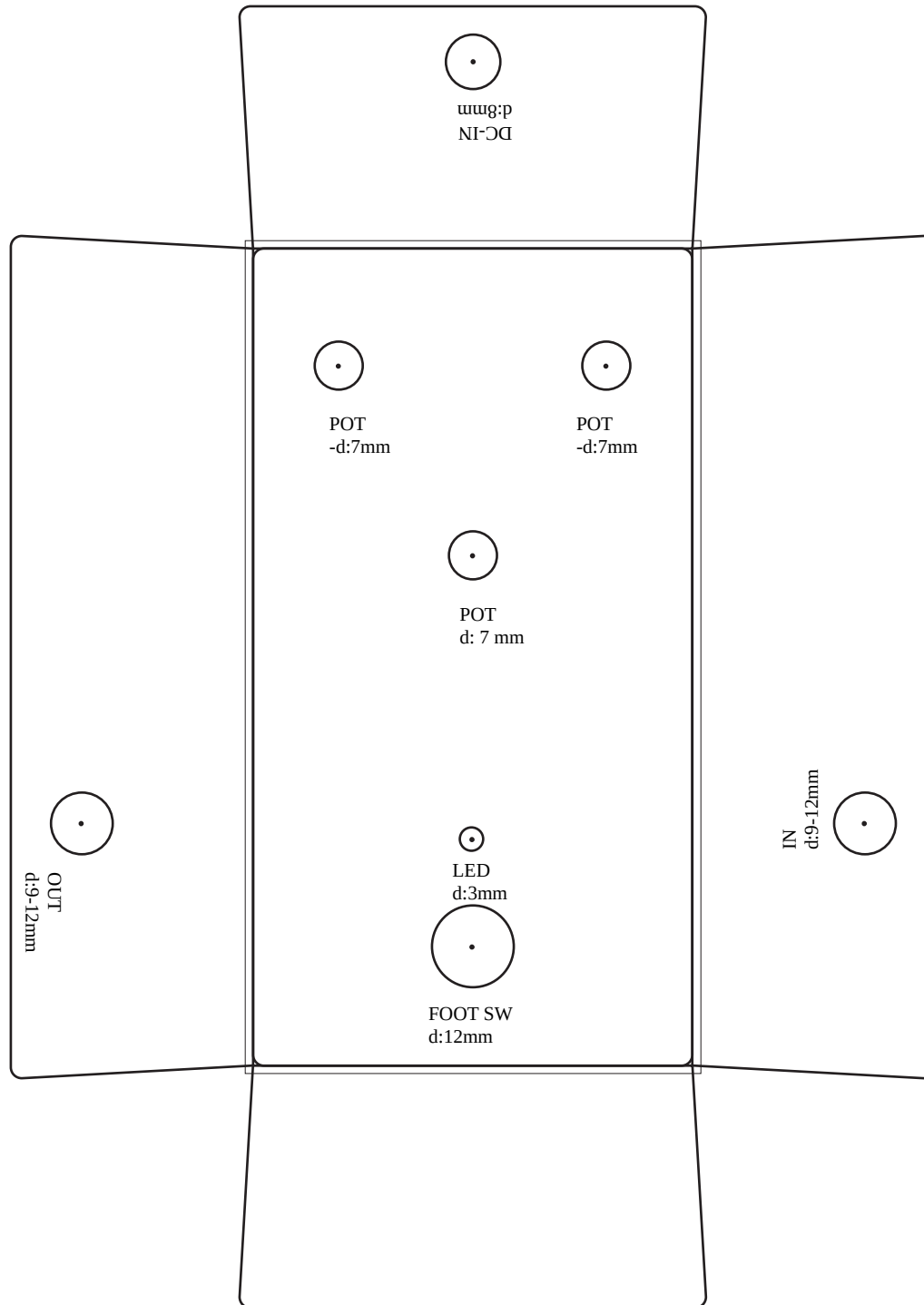


Figure 6. DT-FOG Pedal Drill Template for 125B Enclosure

END OF USER MANUAL, Revision-0