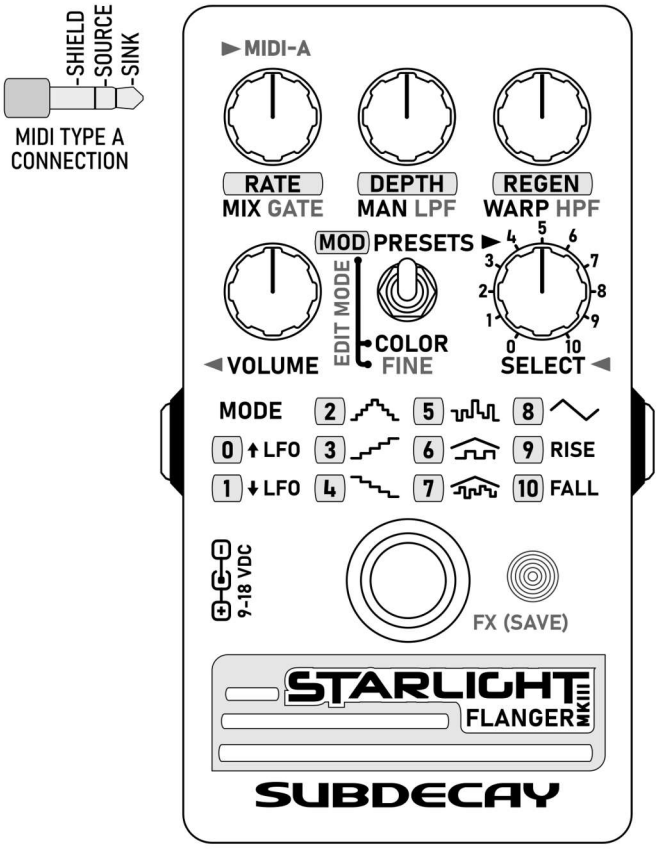
SUBDECAY

STARLIGHT MKIII

FLANGER



USER GUIDE

VERSION 1.00A

Comprehensive User Guide

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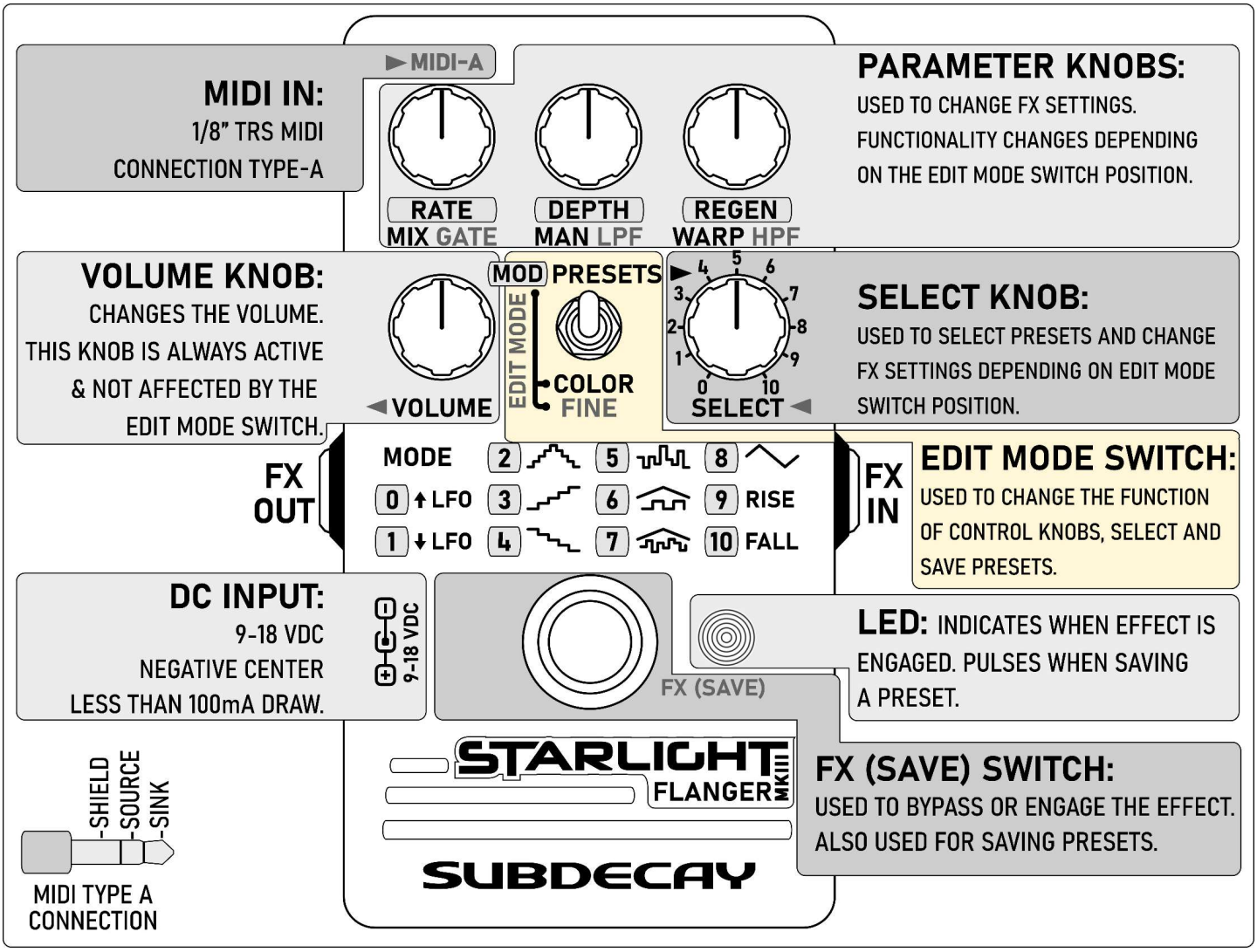
INTRODUCTION:

The Starlight mkIII Flanger is not your average flanger. Aside from the modulation options and presets, you have access to tone shaping settings that would usually be fixed internally. That will certainly keep things simple, but if you've acquired a Subdecay modulation pedal, simple probably wasn't what you were looking for.

In total there are ten parameters and 11 modes. You can make it do things most flangers won't. Alas with great power comes great responsibility. You can turn the mix knob 100% dry or turn the volume all the way down. You can even make it sound not very good. But you can also use it as a chorus or envelope controlled pitch vibrato.

While this isn't one of our big box DLX pedals, the Starlight sticks with the ethos of making something where we want to hear how others will use it. There are so many options we're sure you'll find ways to use it that we didn't think of.

INPUTS, OUTPUTS, CONTROL SURFACE:



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CONTROLS:

Top left you'll see the MIDI input. This uses a 1/8" TRS type A MIDI connector. You will need an adapter and midi controller or midi host to use this.

To get started:

1. Connect the pedal to your guitar, amp and power.
2. When powering up the LED will flash 5 times. Wait for flashing to stop (~2 seconds) (During the flashing sequence pressing the FX switch takes the pedal to setup mode. This will be covered later in the user guide.)
3. Press the bypass switch to engage the effect. The LED will turn on.
4. Flip the EDIT MODE switch to MOD PRESETS and use the SELECT knob to try the stock presets.

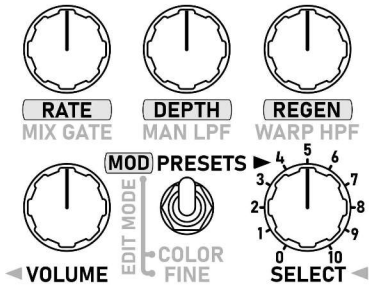
While the EDIT MODE switch is set to MOD PRESETS the top three knobs are the usual flanger controls: RATE, DEPTH & REGEN.

Use the EDIT MODE switch to access other parameters with the top three knobs.

EDIT MODE SWITCH:

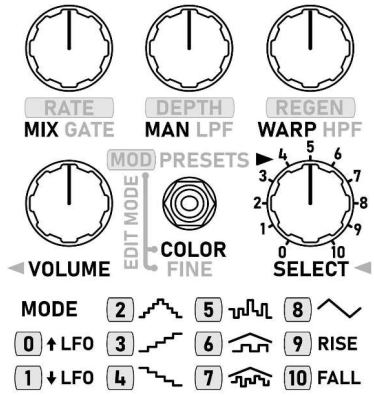
MOD PRESETS:	In this mode you can recall 11 user presets with the SELECT knob.
COLOR:	For editing COLOR parameters: MIX, MANual & WARP.
FINE:	For editing FINE parameters: GATE, LPF & HPF.

MOD PRESETS:



Edit MOD/PRESET: The EDIT MODE switch changes the function of the knobs. When set to MOD PRESET, the select knob is used to switch between different presets.
SELECT: Changes preset.
RATE: Controls the modulation rate of the flanger effect.
DEPTH: Controls the depth of the flanger sweep.
REGEN: Controls the intensity of the flanger effect. On other flanger effects this is sometimes called feedback or intensity.

COLOR:



Set the EDIT MODE switch to COLOR.

SELECT: Changes the flanger modulation mode.
MIX: Mix from 100% dry to 100% wet. Most flangers don't have a mix control and are set to a 50/50 mix.
MANual: controls resting point of the flanger sweep. Sometimes called frequency on other flanger effects.
WARP: Alters each modulation mode in different ways.

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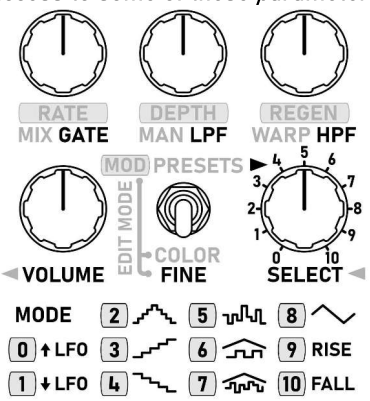
MODE		WARP
0 ↑ LFO	Sine LFO speeds up via envelope control.	Envelope amount.
1 ↓ LFO	Sine LFO slows down via envelope control.	Envelope amount.
2	Step Triangle Sequence Modulation.	Alters sequence.
3	Step Ramp Sequence Modulation.	Alters sequence.
4	Step Saw Sequence Modulation.	Alters sequence.
5	Random Sample/Hold Modulation.	Glide control.
6	Tri Square Mix Modulation.	Mix of tri and square.
7	Tri Random Mix Modulation.	Mix of tri and random.
8	Triangle LFO with Through Zero.	Zero delay point.*
9 RISE	Infinite Rise Modulation.	n/a
10 FALL	Infinite Fall Modulation.	n/a
for true through zero flanging: use light negative regen to reverse delay phase and set mix to 100% wet. Turning the warp control all the way to the left disables the zero delay point.		

FINE: **In most flangers these settings are part of a fixed internal design. With the wide range and modulation options you may want access to some of these parameters to round things out.*



Set the EDIT MODE switch to ANALOG to control the analog fuzz.

GATE: Many flangers use a gate or compander circuit to mute the flanger sweep when you are not playing. This control sets the gate threshold.
LPF: Low pass filter. Turn to the left to cut high frequencies. Does not affect the dry signal.
HPF: High pass filter. Turn to the right to cut low frequencies. Does not affect the dry signal.

MIDI clock Sync: By default the Starlight mkIII will synchronize the LFO to any incoming MIDI clock. This will change the way the rate control behaves. Instead of smoothly transitioning from slow to fast it will set a ratio for the LFO synchronization. See the ratios from left to right below.

16 beats
8 beats
whole note
dotted half note
half note
quarter note
dotted eighth note
eighth note
triplet
sixteenth note

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SAVING A PRESET:

Saving: With EDIT MODE switch is in the MOD PRESETS position you can save a preset at any time.

1.EDIT MODE switch set to MOD PRESETS.
2.Hold the FX(SAVE) for two seconds.
3.The LED will flash.
4.Use the SELECT knob to choose a save location. (0-10)
5.Press the FX(SAVE) switch again to save the preset.

Now, whenever edit mode is set to MOD PRESETS you can recall your preset with the SELECT knob.

SYNTHESIZER MODE:

For some reason we decided to add a fully functional MIDI controlled 4 voice polyphonic synthesizer to the Starlight MKIII. The synthesizer is loosely based on the Roland Juno synths. This made some things complicated, but we made activating the synthesizer super simple.

Other than the normal stuff you use with guitar (cables, power supply, etc) you will need:

- A Starlight mkIII (duh)
- A MIDI controller or keyboard with a MIDI out port.
- A MIDI cable.
- A 1/8" MIDI type A adapter to plug into the pedal's MIDI input.

Connect this all up and press any note on the keyboard. The synthesizer should start right up.

By default the Starlight mkIII is set to MIDI channel 1 as are most MIDI controllers. If it doesn't work a channel mismatch is the most likely reason. See page 8&9 if you need to change the Starlight's MIDI channel.

SETUP MODE: FACTORY RESET AND STARTUP OPTIONS

To access startup options, restore settings or factory reset:

Setup mode is used to change global parameters like the MIDI channel or initiate a factory reset.
When powering up the pedal the LED will flash 5 times. Access setup mode by pressing the FX(SAVE) switch while the LED is flashing.
Options are chosen with the select knob.
The LED will display a series of flashes to confirm the option selected.
To use Setup Mode follow these steps and see the table below.

1. Power up the pedal.
2. Press the FX(SAVE) switch while the LED flashes.
3. Choose an action with the select knob.
4. The LED will display one long flash followed by a series of short flashes to confirm your selection.
5. Press the FX(SAVE) switch again to initiate the action
6. To change the MIDI channel (action 8&9) there is an additional step.

Select	Long Flash	Short Flash1	Short Flash2	
0	1	2	1	Factory reset
1	1	2	2	Restore factory chorus presets
2	1	2	3	Restore factory synth presets
3	1	2	4	Reset start up options – Midi CH1. MIDI note enables synth.
4	1	3	1	Reserved
5	1	3	2	Set MIDI clock enabled
6	1	3	3	MIDI note activates synth.
7	1	3	4	Only CC115 activates synth.
8	1	4	1	Set MIDI Channel 1-11.
9	1	4	2	Set MIDI Channel 12-16.
10	1	1	1	EXIT.

MIDI channel & MIDI clock: Changing the MIDI channel or clock input requires and extra step. See the next page for details.

SETUP MODE: CONTINUED

If you chose action 8 or 9 from the startup options to change the MIDI channel there are additional steps to choose a MIDI channel and save the setting.

The LED will continue flashing and wait for another input from the SELECT knob and a press of the FX switch to save the setting. See the charts below for the corresponding MIDI channels.

Action 8: MIDI channel 1-11:

SELECT	MIDI CHANNEL
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	11

Action 9: MIDI channel 12-16:

SELECT	MIDI CHANNEL
0	12
1	13
2	14
3	15
4	16
5	16
6	16
7	16
8	16
9	16
10	16

MIDI clock: By default the Starlight mkIII will sync the LFO to an incoming MIDI clock. This will affect presets as well even if they were created without a MIDI clock present. This may lead to some unwanted behavior, but can be easily disabled.

If you chose 5 from the startup options to enable or disable the MIDI clock there are additional steps. The LED should continue flashing. To disable the MIDI clock set the select knob to zero, then press the FX save switch. To Enable the MIDI clock set the select knob to any setting from 1-10 and press the select knob.

After a setup option is chosen and saved the pedal will attempt to restart. This often works without issue, but sometimes it is necessary to remove power and plug it back in.

MIDI CC IMPLEMENTATION:

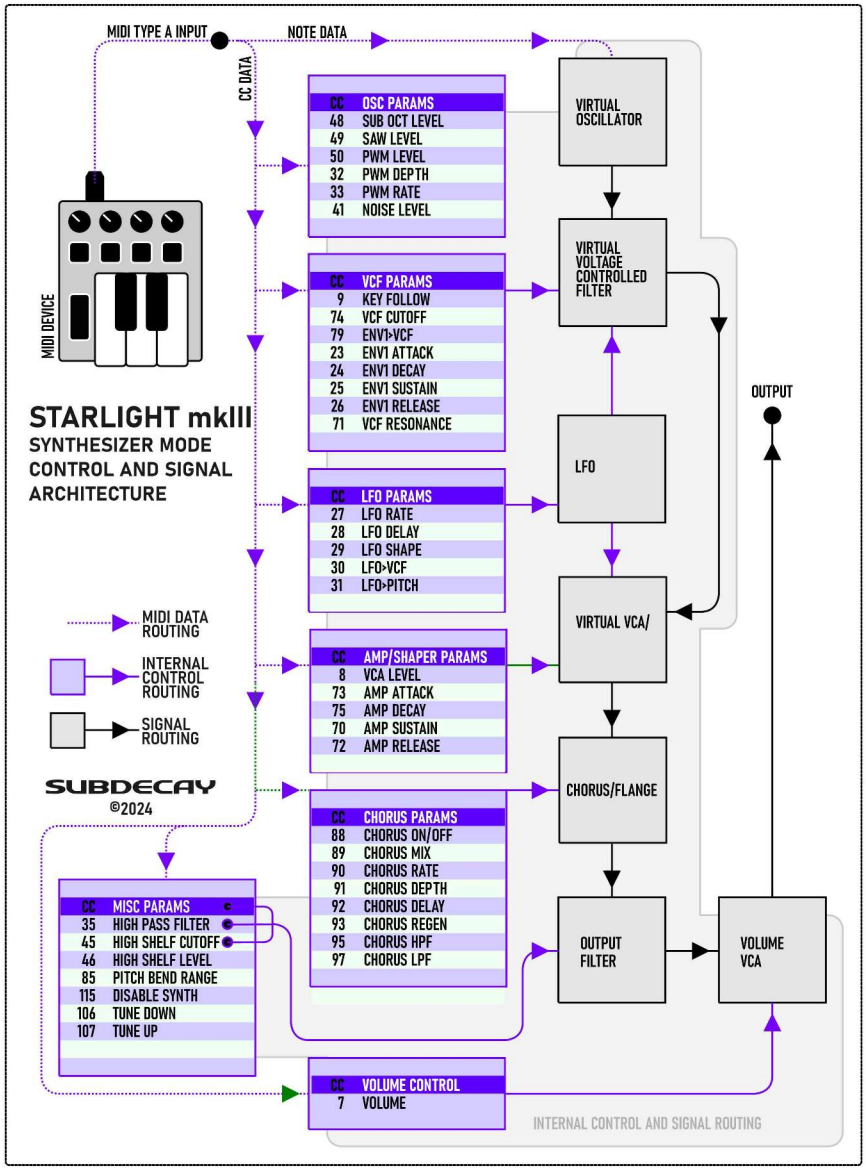
MIDI CC MAP: FLANGER/CHORUS MODE

MIDI CC	RANGE	PARAMETER
7	0-127	VOLUME
44	0-127	Soften LFO edge. This was used during development. It was left in for fun. This setting affects modes 2-8 and is not savable to a preset.
51	0-127	Set gate threshold
89	0-127	Flanger Mix
90	0–127	Flanger LFO Rate
90 if MIDI clock detected and sync is enabled	0-12	16 beats
	13-26	8 beats
	27-38	whole note
	39-50	dotted half note
	51-63	half note
	64-76	quarter note
	77-89	dotted eighth note
	90-101	eighth note
	102-114	triplet
	115-127	sixteenth note
91	0-127	Flanger Depth
92		Flanger Manual
93		Flanger Regen
94	0-127	Flanger Warp
95	0-127	Flanger HPF
96	0	LFO Env-Up
	1	LFO Env-Down
	2	Step Triangle
	3	Step Ramp
	4	Step Saw
	5	Step Random
	6	Triangle Square LFO mix
	7	Triangle Random LFO mix
	8	Triangle LFO
	9	Infinite Rise
	10	Infinite Fall
97	0-127	Flanger LPF
100	0	Bypass Effect
	>0	Engage Effect
101	>0	Toggle bypass (Flip state)
115	>0	Enable Synth

Sending MIDI PC messages 0-10 will change the current preset.
Any PC messages above 10 will be ignored.

SYNTHESIZER MODE:

Architecture and CC list for Synthesizer mode:



OSCILLATOR

48	0-127	SUB OCTAVE	SUB OCTAVE LEVEL
49	0-127	SAW	SAW WAVE LEVEL
50	0-127	PULSE	PULSE WAVE LEVEL
32	0-127	PWM DEPTH	PULSE WAVE MODULATION AMOUNT
33	0-127	PWM RATE	PULSE WAVE MODULATION RATE
41	0-127	NOISE	NOISE LEVEL
85	0-127	PITCH BEND RANGE	PITCH WHEEL RANGE 1 STEP TO OCTAVE

VIRTUAL VOLTAGE CONTROLLED FILTER

9	0-127	KEY FOLLOW	NOTE>VCF CUTOFF
74	0-127	VCF CUTOFF	DIRECT CONTROL OF VCF
79	0-127	ENV>VCF	AMOUNT OF ENV SENT VCF
23	0-127	ENV ATTACK	VCF ENV ATTACK
24	0-127	ENV DECAY	VCF ENV DECAY
25	0-127	ENV SUSTAIN	VCF ENV SUSTAIN
26	0-127	ENV RELEASE	VCF ENV RELEASE
71	0-127	VCF RESONANCE	RESONANCE AT VCF CUTOFF

AMP/VIRTUAL VCA

8	0-127	ENV>AMP	AMOUNT OF ENV SENT TO AMP
73	0-127	AMP ATTACK	AMP ENV ATTACK
75	0-127	AMP DECAY	AMP ENV DECAY
70	0-127	AMP SUSTAIN	AMP ENV SUSTAIN
72	0-127	AMP RELEASE	AMP ENV RELEASE

LFO CONTROLS

27	0-127	LFO RATE	CONTROLS SINE WAVE LFO RATE.
28	0-127	LFO DELAY	CONTROLS LFO DELAY AND FADE IN TIME.
29	0-127	LFO SHAPE	AMOUNT OF LFO SENT TO OSC PITCH.
30	0-127	LFO>OSC PITCH	AMOUNT OF LFO SENT TO OSC PHASE DIST.
31	0-127	LFO>OSC PHASE DIST.	

CHORUS/FLANGER CONTROL

*88	0 >0	CHORUS ON/OFF	BYPASSES CHORUS EFFECT. ENGAGES CHORUS EFFECT.
89	0-127	CHORUS MIX	SETS CHORUS LEVEL
90	0-127	CHORUS RATE	SETS CHORUS LFO RATE.
91	0-127	CHORUS DEPTH	CHORUS 2 MODULATION AMOUNT.
92	0-127	CHORUS DELAY/MAN	SETS CHORUS 1 LEVEL FROM 100% TO 100%.
93	0-127	CHORUS REGEN	CHORUS REGEN AMOUNT
95	0-127	CHORUS HPF	CHORUS HIGH PASS FILTER
97	0-127	CHORUS LPF	CHORUS LOW PASS FILTER.

MISCELLANEOUS

31	0-127	HIGH SHELF CUTOFF	SETS HIGH SHELF CUTOFF FREQ. 0HZ TO 10kHZ
32	0-127	HIGH SHELF LEVEL	SETS HIGH SHELF LEVEL. 0 TO 100%.
*115	0	DISABLE SYNTH	DISABLE SYNTH.
*106	>0	TUNE DOWN	INCREMENT PITCH TUNING DOWN.
*107	>0	TUNE UP	INCREMENT PITCH TUNING UP.
7	0-127	VOLUME	SETS MASTER OUTPUT VOLUME.

*CC USED AS TOGGLE

MIDI PC changes presets. 0-63 are user presets. 64-127 are factory presets and can not be overwritten.

Additionally CC 119 & 118 are used for saving presets. To save a preset:

1. Send a non zero value to CC119 to prepare a patch to be saved.
2. Select a save location by sending a Program Change message from 0 to 63. (64-127 can not be saved to.)
3. Send a non zero value to CC118 to save.

WARRANTY

Warranty: Subdecay Studios offers a 3 year limited warranty from the purchase date to the original purchaser. This warranty does not cover polar bear attacks, willful destroyment, using your pedal as a hammer, or the neglect of the user. It does not cover the finish, paint or any external superficial damage. Any unauthorized repairs or modifications voids the warranty.
This document was believed to be accurate at the time it was created. Specifications are subject to change without notice.