# DFX-1

PERCUSSION PROCESSING UNIT

Manual v1.03




The DFX-1 is a multi-effect processing unit designed in collaboration with Aaron Sterling to add musical character and punch to any acoustic drum or percussion source. Craft everything from subtle to in-your-face drum sounds with studio-grade VCA & FET compression, two flavors each of Delay and Reverb, plus Saturation, Gating, an FX loop with customizable routing, and a flexible EQ. Use the DFX-1 anywhere on your kit with any microphone, whether it's a squashed, spacious room mic, a tight, gated snare, or even routed outboard for processing in post. With a high-performance microphone preamp with phantom power, an integrated effects loop, MIDI connectivity, and onboard presets, the DFX-1 unlocks a new level of sonic creativity right at your drum set.

Only use the included power supply or a 9V DC, Center-Negative, 500mA to power the pedal.
The use of an isolated power supply is recommended for powering all Walrus Audio Pedals.
Daisy-chain power supplies are not recommended.

Got questions or need a repair?
Email help@walrusaudio.com to talk with a real human about your Walrus gear!

This product comes with a limited lifetime warranty.
Click Here for more info.

## CONTROLS






# CONTENTS


CONTROLS 3

ALT CONTROLS 6

FX LOOP 7

PRESETS 7

AARON'S PRESETS 8

MENUS 9

MIDI 11

TRACKING & LATENCY 12

SPECS 13

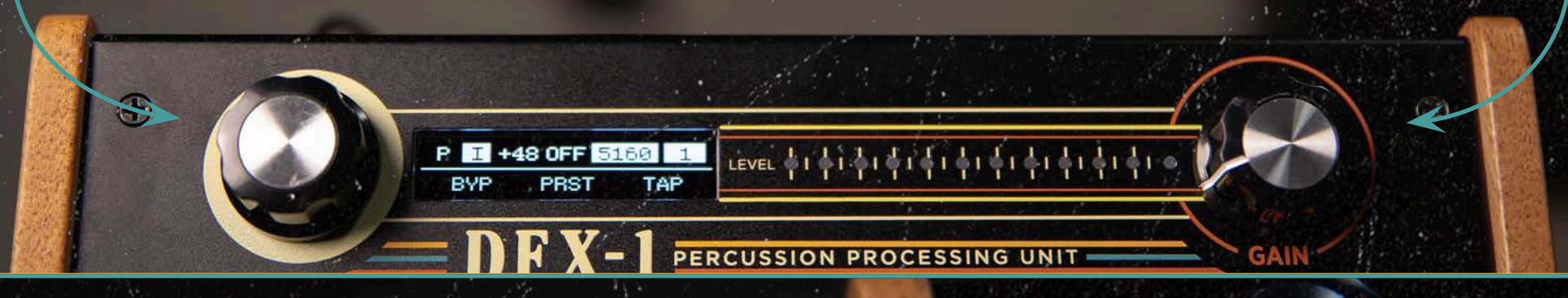



# CONTROLS

MENU: From the main screen, rotate to change the delay BPM. Press the encoder to enter menus and submenus. Once in the menu, rotate to scroll and press to select. Press and hold the Menu encoder to navigate back in any menu.

GAIN KNOB: Controls analog pre-amp gain of the input signal with a maximum of +65dB.

VU METER: The 12 LEDs visually indicate input level. The furthest right red LED indicates you have hit the clipping point and need to reduce your input level, or press the Pad switch on the back panel. The meter goes from 0 to -60dB.




Each effect has two variants and can be switched by simply pressing the effect key. You can also bypass each effect individually by holding down either one of the effect keys until the LED turns off.

## COMPRESSION

The DFX-1 features two types of studio-grade compressors:

VCA KEY: Models the API 2500's signature VCA compression for added punch to smoothly "glue" the mix together.

FET KEY: Emulates the classic 1176 FET compressor with fast attack and release for punchy, gritty dynamics.

THRESHOLD: Controls the Threshold of the compressor from 0dB to -48dB.

ATTACK: Controls the Attack speed of the compressor.
- VCA: 0.0ms to 30.0ms
- FET: 0.0ms to 10.0ms

RELEASE: Controls the Release speed of the compressor.
- VCA: 0.05s to 3.0s
- FET: 0.05s to 1.5s




## SECONDARY CONTROLS

Secondary controls are accessible through the effect submenus by pressing down on the Menu Encoder or by holding down either of the FX order keys until the OLED screen reads "ALT." Both Forward and Reverse LEDs will be illuminated. Each knob will now control its corresponding secondary parameter. You will see the screen show the secondary parameter you are tuning. Exit the "ALT" mode by pressing either the Forward or Reverse key.

## SECONDARY COMPRESSION CONTROLS

RATIO: Sets the amount of applied compression when the threshold level is crossed. The higher the value, the harder the signal is compressed.

COMPRESSOR MIX: Controls the dry/wet mix amount of the compressor with the dry signal
- 0.0 = no compressor in the mix
- 10.0 = full compressor in the mix

## DELAY

The DFX-1 features two types of delay:

MODERN KEY: Provides a tasteful digital delay with clear repeats.

VINTAGE KEY: Emulates a warm analog-style delay with natural degradation and tape-inspired character.

DELAY MIX: Controls Mix level of Delay effect and Delay input signal.

FEEDBACK: Controls Feedback level of Delay effect, more feedback gives more repeats.

TIME: Controls Time interval between repeats. Repeats can go from 10ms to 2s.

### SECONDARY DELAY CONTROLS

TONE: Controls tone for Delay effect with a Tilt EQ.

DIV: Changes the tap division of the delay repeats. Select from 1/4, 1/4 triplet, 1/8, 1/16, and dotted 1/8th notes.

BPM: Changes the tempo of the delay time by its beats per minute.



## REVERB

The DFX-1 features two types of reverb:

SPRING KEY: Captures the splashy character of classic spring tanks with lively, wobbly reflections.

PLATE KEY: Emulates a plate reverb for smooth, diffused reflections for a polished studio sheen.

REVERB MIX: Controls Mix of Reverb effect and Reverb input signal.

REVERB DECAY: Controls Decay time of Reverb effect Spring and Plate: 0.2s to 8.2s

REVERB TONE: A Tilt EQ that controls tone for Reverb effect. Turn left to boost lows and cut highs. Turn right to boost highs and cut lows.

## SECONDARY REVERB CONTROLS

SIZE: Sets the size of the reverb space emulation, more size creates longer reverb tails and vice versa.

DIFFUSION: Controls how much smoothing is applied to the reflections, less diffusion has more reflections audible, and more diffusion creates a smoother sounding trail.

DISPERSION: Adjusts the delay time of a set frequency range, creating additional texture options for the reverb trail.




## GLOBAL CONTROLS

LEVEL: Controls output volume from -∞dB to 0dB

EQ: Adjusts tilt EQ on the output.
Left: Cuts highs and boosts lows by up to 9dB
Right: Cuts lows and boosts highs by up to 9dB

SATURATION: Controls the level of output Saturation.
0dB to +24dB

ATTACK: Controls the Attack speed of the Compressor.
VCA: 0.0ms to 30.0ms
FET: 0.0ms to 10.0ms

RELEASE: Controls the Release speed of the Compressor.
VCA: 0.05s to 3.0s
FET: 0.05s to 1.5s

## EFFECT ORDER

Use the Forward / Reverse keys to select the routing order of the Compressor, Delay, and Reverb.

Forward: EQ > Noise Gate > Comp > Saturation > Delay > Reverb
Reverse: EQ > Noise Gate > Saturation > Reverb > Delay > Comp

The Forward / Reverse keys can also be used to put all controls in "ALT" mode in lieu of going through the Menu Encoder. See next page for details.

## SECONDARY EQ CONTROLS

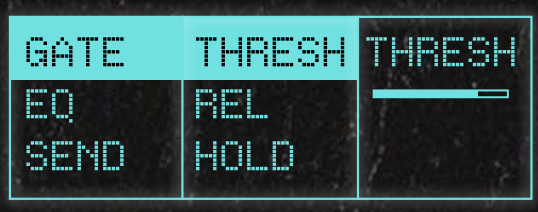
HIGH-PASS FILTER: HPF from 2 Hz to 600 Hz

LOW-PASS FILTER: LPF from 1kHz to 20kHz

MID: Mid from +6dB to -18dB with a sweepable frequency from 200 Hz to 1.8kHz and adjustable Q in the EQ submenu.

## NOISE GATE CONTROLS

NOISE GATE THRESHOLD: Set the threshold point for the noise gate to activate from -6dB (will be very active)
to -72dB (not very active)

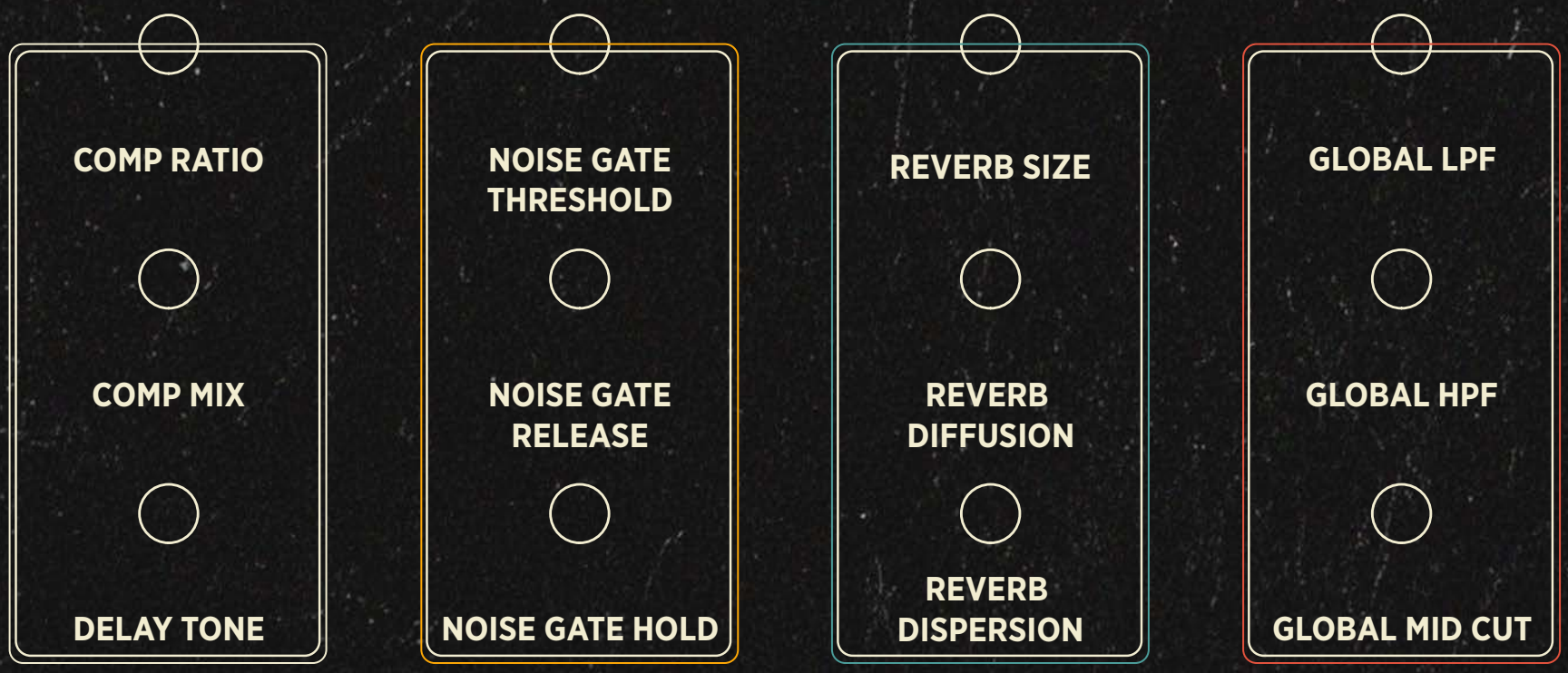



NOISE GATE RELEASE: Set the release time for the gate to fade back to attenuation after the signal drops below the threshold.

NOISE GATE HOLD: Sets the minimum time the gate stays open after dropping below the threshold to prevent chatter.

# ALT CONTROLS

Press and hold either of the Forward or Reverse keys to engage alternate controls on each knob. All of these controls are available in the menu system, but this is an easy way to access them on the fly.




## BACK PANEL BUTTONS

The DFX-1 has three push-button controls on the rear panel to control the input signal.

+48V: Applies +48V phantom power to the XLR Input connection (does not affect 1/4” input)

Some microphones require Phantom power.
Be certain of your microphone’s requirements before engaging.

LINE/INST: Adjusts attenuation and input impedance to work correctly with your selected input source (Does not affect XLR input).

Line mode
Applies -20dB attenuation to 1/4” input signal
24k Ohm input impedance

Instrument mode
No input attenuation
1M Ohm input impedance

PAD: Applies -20dB attenuation after pre-amp stage (applies to XLR and 1/4” input signals).






## EFFECTS LOOP

The DFX-1 has an effects loop allowing you to introduce other effects into the signal chain of the DFX-1.

The SEND should be sent to the input of your pedal you want to introduce to the effect loop.

The output of your pedal (or output of the last pedal in the chain of your loop) should be sent to the RETURN of the DFX-1.

You can also choose where in the signal chain the FX Loop is placed.

In the menu, navigate to:
Send > FX Loop > Pos (Position), then choose from the following options:







OFF - FX Loop is bypassed.

COMP - FX Loop will be before the Compressor.

DELAY - FX Loop will be before the Delay.

REVERB - FX Loop will be before the Reverb.

Note: The FX Loop location will remain relative to the selected effect regardless of the effect order selected.

# PADS & PRESETS

## DRUM PADS

PAD A: Tap to toggle the bypass state of the DFX-1. If the white LED is on, the DFX-1 is engaged. If the white LED is off, the DFX-1 is bypassed.

PAD B: Tap to cycle between the three presets in your active preset bank.

- Preset Banks are based on groups of three.
- Bank A = Preset 1, 2, 3
- Bank B = Preset 4, 5, 6
- Bank C = Preset 7, 8, 9
- Cycling presets 10 and beyond will continue to load three at a time.
- Presets can be copied and pasted as well. See below for more info.

Red, Green, or Blue LEDs will indicate which of the three presets is currently selected. The LED will turn purple to indicate parameters have been modified from the preset value.

PAD C: Tap Tempo - Tap in the desired time interval to modify the Delay Time BPM. Tap tempo range is 35 to 450 BPM. Note the Tap LED will turn Red when MIDI clock is selected and sent from an external controller / DAW.

Note: The pads have a wide area of sensitivity, but will respond best to hits closer to the center of the top or bend of the drum pad.

## PRESETS COPY / PASTE

SELECT: Select the active preset you would like to use.
SAVE: Save modifications to the currently active preset.
COPY: Select which preset you would like to copy.
PASTE: Paste which preset you would like to overwrite with the currently copied preset.
CONFIRM: Confirm your copy / paste selections, then select “Paste” to confirm.

# PRESETS

The first three presets in the DFX-1 were custom made by Aaron Sterling with some of his favorite settings.

## Preset 1, Red - “Slappy Room”




## Preset 2, Green - “Dark & Crushed”

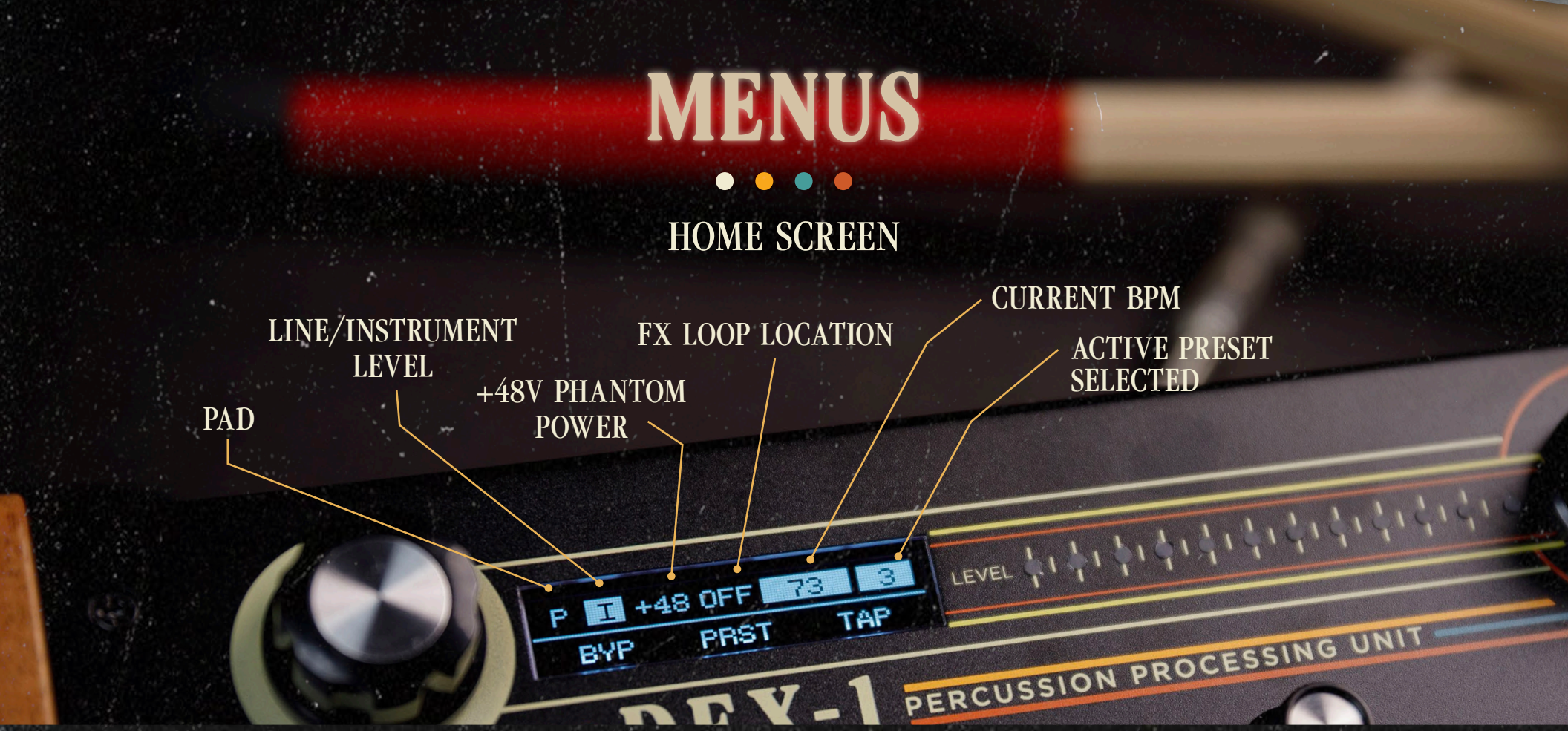



## Preset 3, Blue - “Dub Snare”



# MENUS

## HOME SCREEN




## MENU FLOW

COMP
- RATIO
- MIX

DELAY
- TONE
  - Tilt EQ
- TAP DIV (Tap Division)
  - Quarter
  - Quarter Triplet
  - Eighth
  - Sixteenth
  - Dotted Eighth
- BPM

REVERB
- SIZE
- DIFF (Diffusion)
- DISP (Dispersion)

GATE
- THRESH (Threshold)
- REL (Release)
- HOLD

EQ
- LP CUT (Low Pass Cut)
  - Min: 1kHz
  - Max: 20kHz
- HP CUT (High Pass Cut)
  - Min: 2Hz
  - Max: 600Hz
- MID CUT
  - Min: 0dB
  - Max: -18dB
- MID FREQ (Mid Frequency)
  - 200Hz to 1.8kHz

## MENU FLOW

AUDIO
- FX LOOP
  - Off
  - -> Comp (FX loop will be before the Compressor)
  - -> Delay (FX loop will be before the Delay)
  - -> Verb (FX loop will be before the Reverb)

*Note: The FX Loop location will remain relative to the selected effect regardless of the effect order selected.*

- TRAILS*
  - Off
  - On
- PHASE
  - $0^0$
  - $180^0$

PRESET
- SELECT
- SAVE
- COPY
- PASTE
- CONFIRM

PADS (See pg. 10 for additional info)
- SENS
- CALIBRATION

MIDI
- CLOCK
- CHANNEL

SYSTEM
- BRIGHT
- ABOUT
- RESET

*TRAILS NOTE: When “Trails Mode” is active, the effect signal will continue to pass through the output after the DFX-1 is bypassed. Time based effects like the Delay and Reverb will ring out while the dry signal is passing.

“Trails Mode” also works for the effect loop, so time based effects in your effect loop chain will also behave the same. When “Trails Mode” is off, the effect signal will cut off when bypassed.

# MENUS




## PADS

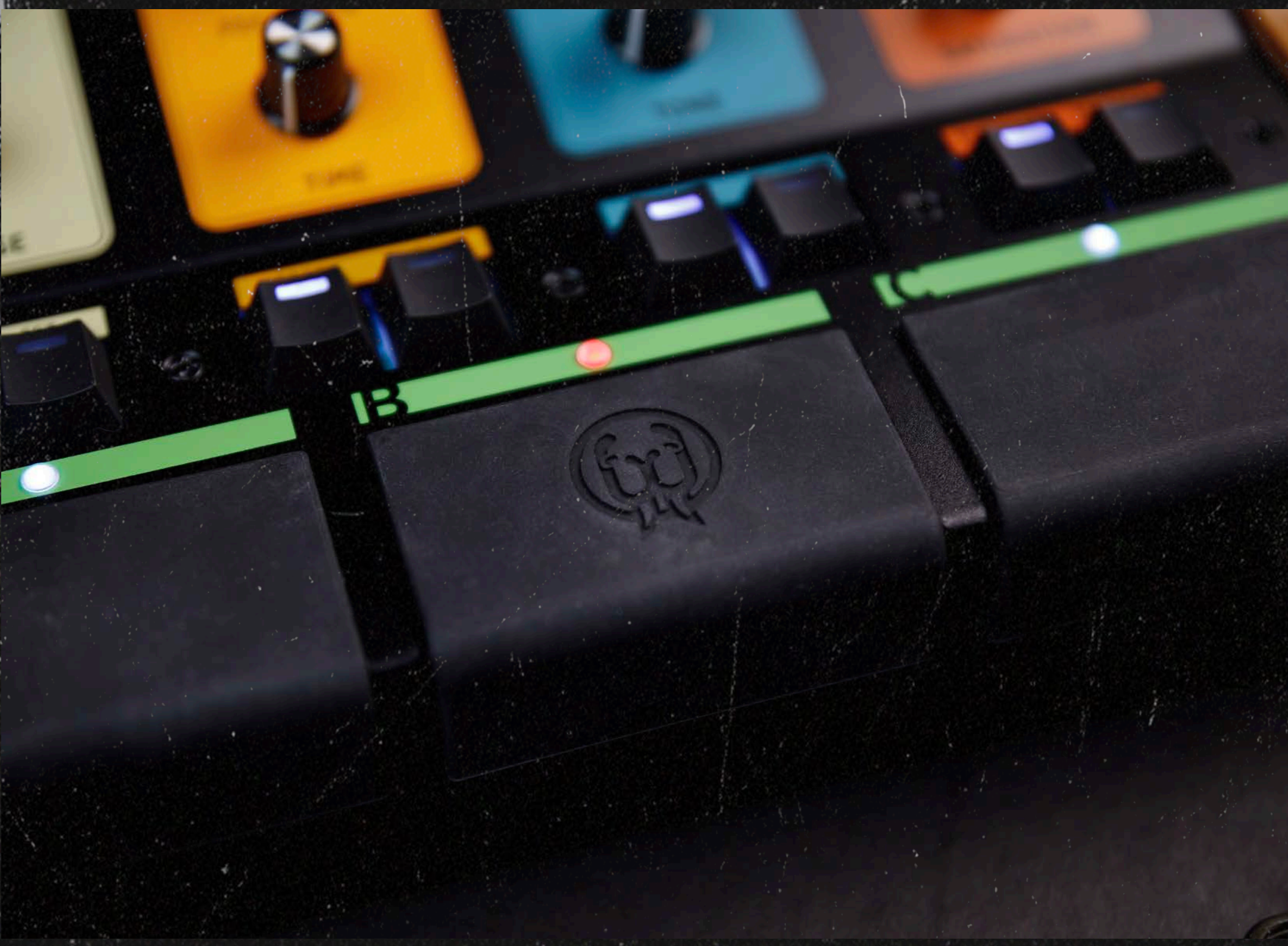
### SENSITIVITY (SENS)

Under the Pads menu, you will find a Sensitivity (SENS) parameter. Use this to adjust the sensitivity of the pads: increase the parameter if you want the pads to be sensitive to lighter finger touches, or decrease to only be sensitive to stronger hits from drum sticks.

*NOTE: Higher Sensitivity values may cause ghost triggering and other unwanted behavior, adjust accordingly.*

### CALIBRATION (CALIB)

Use this feature ONLY re-calibrate if you are experiencing issues. Ex - hitting a pad and nothing happens or hitting a pad and the wrong pad is triggered. While calibrating, do not press or touch any of the pads.



# MIDI

MIDI In/MIDI Thru: Connect a MIDI cable to control the digital parameters of this pedal.

Change MIDI channel: Using the Menu Encoder, press down to enter the menu screen and scroll to the “MIDI” option. Select “CHAN” to then select which MIDI channel you need to use.

PC Messages: Presets on the DFX-1 are able to be recalled via MIDI program change messages. Simply send a program change message corresponding to the desired preset to be recalled on the DFX-1 MIDI channel.

| PARAMETER | CC NUMBER | VALUE RANGE |
|---|---|---|
| Compressor Threshold | 3 | 0-127 |
| Compressor Attack | 9 | 0-127 |
| Compressor Release | 14 | 0-127 |
| Delay Mix | 15 | 0-127 |
| Delay Feedback | 20 | 0-127 |
| Delay Time | 21 | 0-127 |
| Reverb Mix | 22 | 0-127 |
| Reverb Decay | 23 | 0-127 |
| Reverb Tone | 24 | 0-127 |
| Volume | 25 | 0-127 |
| EQ | 26 | 0-127 |
| Saturation | 27 | 0-127 |
| Compressor Ratio | 28 | 0-127 |
| Compressor Mix | 29 | 0-127 |
| Delay Tone | 30 | 0-127 |
| Gate Threshold | 31 | 0-127 |
| Gate Release | 85 | 0-127 |
| Gate Hold | 86 | 0-127 |
| Reverb Size | 87 | 0-127 |
| Reverb Diffusion | 89 | 0-127 |
| Reverb Dispersion | 90 | 0-127 |
| LPF | 102 | 0-127 |
| HPF | 103 | 0-127 |
| MID Cut | 104 | 0-127 |
| Delay Mode | 105 | 0-1 |
| Reverb Mode | 106 | 0-1 |
| Compressor Mode | 107 | 0-1 |
| Order | 108 | 0-1 |
| Tap Tempo | 109 | 0-127 on/off |
| Tap Division | 110 | 0-4 |

# TRACKING & LATENCY

As a drummer, you may already be familiar with this concept, but if not, here's a quick explanation and some guidance on how to set up your system to avoid the issues it can cause.

Latency refers to the small delay between when an audio signal is generated and when it is heard. Several factors can create latency. When mic'ing a drum kit, one common cause is the different distances between microphones and the sound source. A closer mic "hears" the sound first, while a mic placed farther away captures it a moment later.

Another source of latency occurs when some mics are processed through external gear while others are not. Even if two microphones are placed the same distance from the source, the signal routed through outboard hardware may be slightly delayed compared to the unprocessed mic.

When processing a drum mic through the DFX-1, its signal will be slightly delayed compared to your other unprocessed mics. Fortunately, this delay is a consistent 2.9 ms (or 5.8 ms when the FX Loop is engaged), and it can easily be compensated for in any standard DAW or digital mixing console.

There are a few common ways to correct this:

When recording, you can simply capture all drum mics as usual and then nudge the recorded DFX-1 track to the left by 2.9 ms (or 5.8 ms if the FX Loop is engaged).

Alternatively, you can insert a lightweight sample delay plugin on all drum tracks except the DFX-1 track. This delays all other mics so they align with the DFX-1 signal.
The number of samples needed depends on your recording sample rate. See the table below for the appropriate delay values for common sample rates.

| Sample Rate | FX Loop Disengaged (2.9ms) | FX Loop Engaged (5.8ms) |
|---|---|---|
| 44.1kHz | 128 | 256 |
| 48kHz | 139 | 278 |
| 96kHz | 278 | 557 |
| 192kHz | 557 | 1114 |



# SPECS

Power: 9V 500mA Minimum

Frequency Response: 20Hz to 20kHz
Sample Rate: 48kHz
Bit Depth: 24 - Bit
Preamp Gain: +65dB

XLR Input Impedance: 6.8k Ω
1/4" Line Input Impedance: 24k Ω
1/4" Instrument Input Impedance: 1M Ω
FX Loop Send Impedance: 220 Ω
FX Loop Return Impedance: 1M Ω
XLR and Output Impedance: 220 Ω
1/4" Output Impedance: 220 Ω

Note:
The XLR and 1/4" Outputs are not discrete outputs, they are simply split from the same source for your preferred connection type.

Dimensions:
Total Weight in Box: 5.7lb
Box Dimensions: 312mm x 289mm x 115mm

Unit Weight: 3.8lb
Unit Dimensions (including knobs):
262mm x 232mm x 97mm

Unbalanced:
SNR: 98dB @ 1kHz +4dBu A-weight
THD+N: 0.0032% @ 1kHz +4dBu A-weight
Dynamic Range: 100dB @ 1kHz +4dBu A-weight

Balanced:
SNR: 99dB @ 1kHz +4dBu A-weight
THD+N: 0.0025% @ 1kHz +4dBu A-weight
Dynamic Range: 100dB @ 1kHz +4dBu A-weight
Total Latency: 2.9ms

Mounting: The DFX-1 can be mounted to Roland SPDSX compatible stands like this one.

Uses M5 x 12mm screws.

