

eCorder

Faraday Z1 Manual

Kickstarter Beta Edition

Rev 0.9.0

www.ecorder.io

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Chapter 1: Introduction

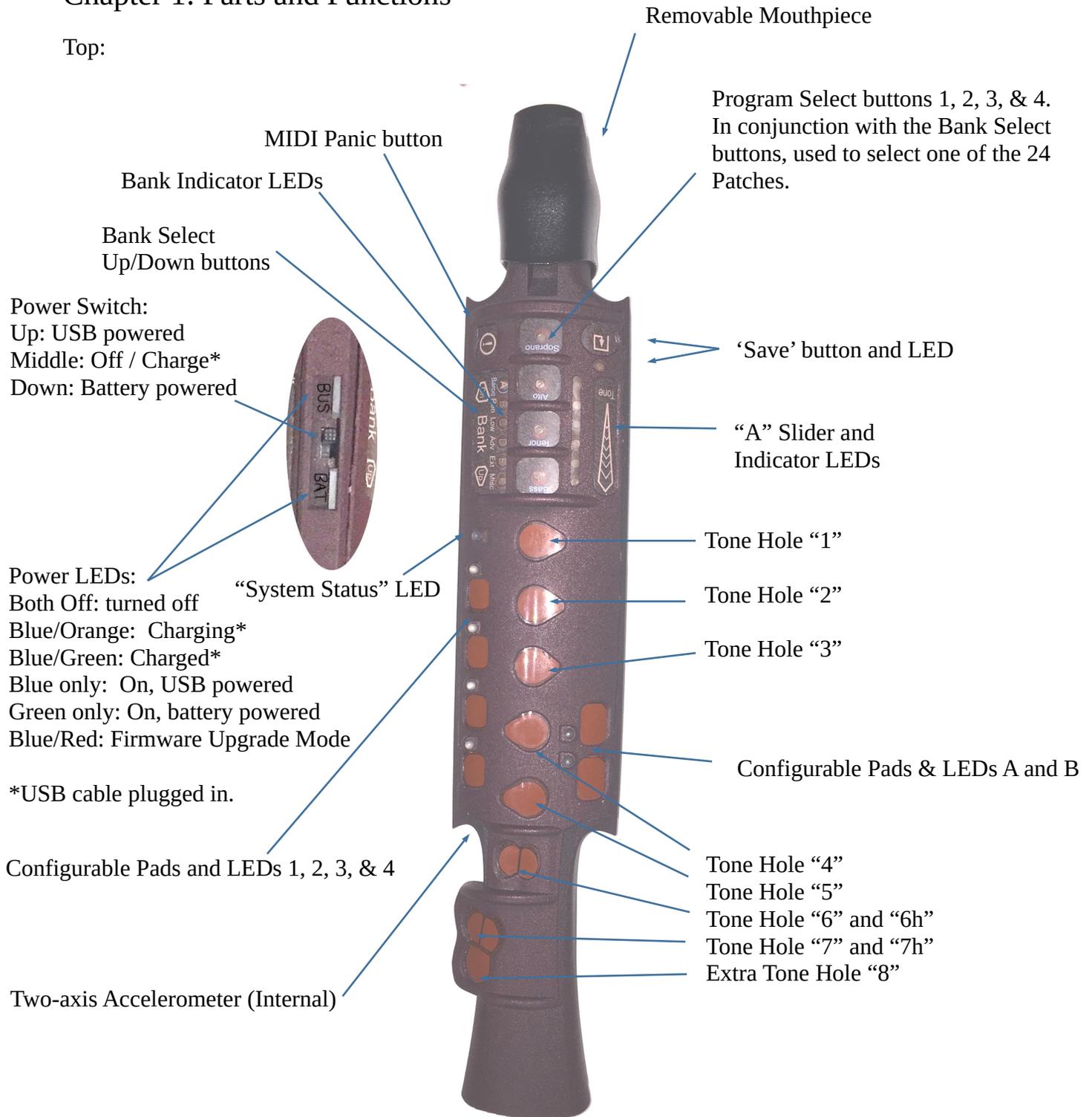
The eCorder Faraday Z1 is an all-electronic Soprano recorder, designed to take you from standard recorder playing to infinity and beyond. It plays just like a standard recorder, but can be played in any key and any octave, from Sub-Contra-Bass to Garklein. It also features MIDI, for use with any other hardware or software synthesizer plug-in, and Analog Control-Voltage (CV) outputs for use with analog synthesizers. Further extending the capabilities of the acoustic recorder, it has extra holes and sensors to play an extra octave higher and lower, and is equipped with an accelerometer to sense up/down and left/right tilting (which can be flexibly mapped to almost any parameter) as well as two sliders and six additional configurable buttons / pads. It features a high-bandwidth pressure sensor for the breath, capacitive finger sensors for the same no-force feel as an acoustic recorder, including flattement. A built-in ultra-low-latency (sub- millisecond) physical-modeling synthesizer provides realistically accurate emulation of the acoustic recorder.

Specs and Features Summary

- Standard and Extended Recorder Fingerings and Blowing
- Touch-Sensitive Tone Holes
- Standard and USB MIDI Out
- Built-in Synthesizer and Audio Output
- Analog Control-Voltage (CV) Output
- Any Key, Any Octave
- Accelerometer
- Two Configurable Sliders
- Configurable Trigger/Pad Buttons
- Flattement/Finger Shading

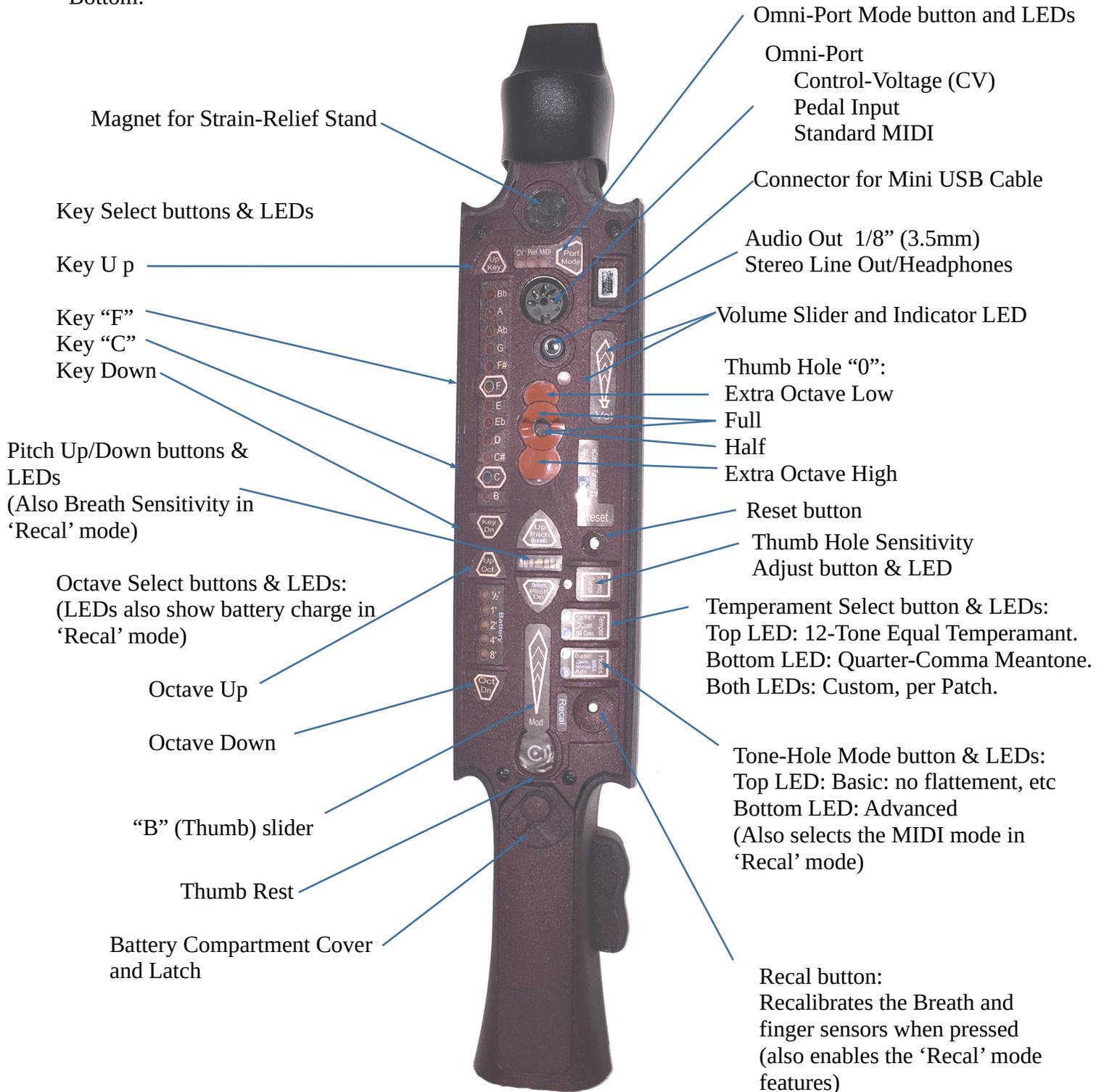
Chapter 1: Parts and Functions

Top:



Chapter 1: Parts and Functions

Bottom:



Chapter 2: Operation

The eCorder Faraday Z1 interface consists of one physical Power Switch, two physical buttons (Reset and Recal), and a number of touch-sensitive buttons and sliders. The touch-sensitive buttons use Haptic Feedback to confirm actuation. LEDs are used to indicate selections and modes.

The Mouthpiece is removable and should be taken off after playing (and periodically during playing to shake out excess condensation) to allow the unit to dry.

We recommend using the stand any time a cable is plugged in. If the eCorder is rested on its side or upside down, on rare occasions, after heavy playing, water may be drip down the bottom and may enter the unit and temporarily disrupt normal operation. It's recommended to keep the top side up and to periodically remove the mouthpiece and wipe things dry with a soft cloth. Make sure not to allow water to enter the Pressure Sensor Tube when the mouthpiece is removed.

Top and Side Panel Functionality:

◆ Power Switch and LEDs

The power switch is located on the side of the instrument, near the mouthpiece. It is a 3-position switch that functions as follows:

- Center Position: Off if no USB cable is plugged in, or Battery Charge if a USB cable is plugged in. When charging, the LEDs will light as follows: the upper LED will be lit bright Blue, and the lower LED will be Orange if still charging, and Green if fully charged.
- Upper (BUS) Position: On and powered by the USB port. The upper LED will be Blue and the lower LED will be off.
- Lower (BAT) Position: On and powered by the internal Battery. The upper LED will be off and the Lower LED will be Green.
- For Firmware Upgrade mode, the upper LED will be Blue and the lower LED will be Red.

◆ MIDI Panic button

The MIDI Panic button will send all notes off to both the USB MIDI and Standard MIDI (if in MIDI mode) ports.

◆ Bank and Program Select buttons and LEDs

The eCorder Faraday Z1 has 6 Banks (“A”, “B”, “C”, “D”, “E”, and “F”), and each bank has 4 Programs, for a total of 24 Patches.

The Programs within each Bank are directly selected by pressing one of the 4 Program Select buttons.

The Banks are selected by using the Bank Down (Dn) and Up buttons.

◆ Save button and LED: (Feature not yet implemented and details TBD)

◆ Slider “A” (Tone): adjusts the sounds, exact functionality depends on the Patch.

◆ System Status LED: (functionality may change): indicates Tone-Hole activity. If it’s illuminated and no Tone Holes are covered, then please make sure there’s no moisture on any holes and then press the Recal button (be careful not to have your fingers on any of the Tone Holes).

◆ Configurable Pads & LEDs: Functionality depends on the selected Patch.

◆ Tone Holes: These are the standard Recorder Tone Holes. Flattening is supported by touching the smaller-radius end of the opening.

Bottom Panel Functionality

- ◆ **Magnet for Strain-Relief Stand:** Attach the Strain-Relief Stand here (with the ‘arms’ facing forward). Cables may be poked through the slot and hooked around the arms, which will provide some protection from being accidentally pulled out. We recommend using the stand any time a cable is plugged in. If the eCorder is rested on its side or upside down, on rare occasions, after heavy playing, water may be dripping down the bottom and may enter the unit and temporarily disrupt normal operation, so it’s recommended to keep the top side up and to periodically remove the mouthpiece and wipe things dry with a soft cloth. Make sure not to allow water to enter the Pressure Sensor Tube when the mouthpiece is removed.
- ◆ **Key Select buttons and LEDs**
The “Key” (pitch of the lowest normal-fingered note) may be selected with the Key Up, Key ‘F’, Key ‘C’ and Key Down (Dn) buttons. The Key will be indicated with a lit LED by the Key name.
- ◆ **Octave Select buttons and LEDs [Alternate Function: Battery Charge Indicator]**
The Octave may be changed with the Octave Up and Down (Dn) buttons, and the currently selected octave is indicated with the corresponding LED being lit.
[Alternate: in ‘Recal’ mode, the current battery charge state is displayed, starting from the bottom 8’ LED for 20% charged, and all LEDs lit for full charge]
- ◆ **Pitch Up / Down (Dn) buttons and LEDs [Alternate Function: Breath Sensitivity]**
These buttons will adjust the playing pitch up or down by a few cents (up to +/- 60) . The LEDs will show the current tuning (center is 0, minus is to the left, and plus is to the right).
[Alternate Function: Not implemented yet, but will adjust breath pressure response]
- ◆ **“B” (Thumb) Slider:** Depends on Patch.
- ◆ **Battery Compartment Cover Latch:** To open the battery compartment, rotate the latch to the Open (Split-open circle icon) and pull. To re-place, position the latch in the Open position, press into place, and rotate latch to the Closed (Circle with slot icon) position. If replacing the battery, be sure to observe correct polarity (+ goes towards the mouthpiece). The battery is a standard 18650 (without the ‘protection’ circuit, which makes it too long) and if desired, may be swapped out with another (charged) one. External charger and extra battery not included but are generally available through third-party sellers.

- ◆ Omni-Port and Port Mode button and LEDs
The Faraday Z1 is equipped with a multi-use 5-pin 180° DIN socket. This port can operate in 3 modes, selectable with the ‘Omni-Port Mode Select’ button and indicated with the Mode LEDs, as follows:
 - CV: Outputs four analog Control-Voltages (0-5 volts) on the port.
 - Pedal (Ped): Accepts 2 on/off foot controllers and 1 proportional controller, which can be configured to adjust the sound or control MIDI [Feature not implemented yet]
 - MIDI: Outputs standard MIDI.
- ◆ USB Cable connector
Accepts a standard USB mini cable. Enumerates as a standard MIDI class-compliant device. Also charges the battery when unit is turned off.
- ◆ Audio Out 1/8” (3.5mm) Stereo Jack (Line / Headphone)
Outputs audio signal from built-in ZaeroDyne syntheizer.
- ◆ Volume Slider and LED
Adjusts the volume of the Audio Out. The LED shows the volume level by the brightness.
- ◆ Thumb Hole “0”
Acts as both a standard Recorder thumb hole (including the ‘pinch’ position for the second register, as well as extending the range an extra octave higher (by covering the pad below the main thumb pads) and lower (by covering the pad above the main thumb pads).
- ◆ Reset button (physical): [Currently forces it into Firmware Update mode if pressed when powering up but subject to change as needed]
- ◆ Thumb Hole Sensitivity Adjust button and LED: [Feature not yet implemented but will adjust the thresholds of the thumb pinch point to accommodate different thumb use]
- ◆ Temperament Select button and LEDs
Selected between 12-Tone Equal Temperament (12-TET), quarter-comma meantone, or custom per Patch. [currently only does the custom per-patch].
- ◆ Tone-Hole Mode button and LED [Alternate Function: USB MIDI Mode]
Selects between Basic tone-hole mode (no Flattement, etc) and Advanced.
In Recal mode, selects the USB MIDI Mode for either standard or for the ZaeroDyne soft-synth [currently only supports ‘Standard’]
- ◆ Recal button (physical)
Pressing this causes the unit to recalibrate the breath and touch sensors, as well as activating the alternate modes of the Octave LEDs [Battery charge state], Pitch Up/Down [Breath sensitivity], and Tone-Hole Mode [MIDI Mode].