

Owner's Manual



Table of Contents

Presets.....	3
The Organ.....	6
Expert Settings.....	10
Arp.....	18
FX.....	20
Tempo.....	22
MIDI.....	23
Global Preferences.....	26
Audio Unit, Inter-App Audio, Audiobus, Ableton Link....	28

PRESETS



To load a preset: Select a bank and then select a preset to load.

NOTE: Some Bank and Preset operations may not be available in the Audio Unit version. You can access these options by opening the app instead.

Bank Operations

- NEW BANK: Create a new, blank bank.
- RENAME: Rename the selected bank.

- EDIT: Enable reordering and deleting of banks.
- SHARE: Display bank import/export options.

Preset Operations

- NEW PRESET: Save the current synth settings as a new preset into the selected bank.
- OVERWRITE: Save the changes made to the currently selected preset.
- INIT: Load the basic 'INIT' preset. Useful when starting to write a new synth preset from scratch.
- RENAME: Rename the selected preset.
- MOVE: Move a preset into a different bank.
- EDIT: Enable reordering and deleting of presets.
- SHARE: Display preset import/export options.
- JOKER: Randomly select a preset from the file system and load it.
- FAVORITE: Touch the star to add the preset into the Favorites bank. There can be up to 256 favorite presets.

Other Operations

- SEARCH: Search for a preset.
- RESTORE FACTORY: Reinstall factory presets that come packaged with Galileo Organ 2.

THE ORGAN



DRAWBARS

Galileo's upper and lower manuals each have nine dedicated drawbars labeled UP and LOW. The pedal manual has two drawbars labeled PDL.

The drawbars are used to configure the basic signal produced by the organ. They work in a form of additive synthesis. As a drawbar is pulled, the amount of the corresponding signal in the mix is increased. The numbers above each drawbar represent the conventional labeling used on most electro-magnetic organs and are borrowed from pipe lengths found in pneumatic organs.

Below is a list of drawbars and corresponding tones:

16'	One octave below fundamental (Sub-Octave)
5 1/3'	5th above fundamental
8'	Fundamental
4'	One octave above fundamental
2 2/3'	One octave + a 5th above fundamental
2'	2 octaves above fundamental
1 3/5'	2 octaves + a 3rd above fundamental
1 1/3'	2 octaves + a 5th above fundamental
1'	3 octaves above fundamental

SCANNER VIBRATO CHORUS

Galileo 2 includes a modeled scanner vibrato / chorus stage. In addition to producing a modulation effect, the scanner will also slightly change the tonal characteristics of the organ to replicate the behavior of a physical scanner circuit.

Use the VIB LOW and VIB UP toggles to turn on the scanner for the lower and upper manuals, respectively. Turning on VIB LOW also connects the pedal manual to the scanner stage.

Use the VC knob to select the intensity of the vibrato / chorus effect. V1-V3 produce a small to wide vibrato, whereas C1-C3 produce a mild to deep chorus effect as the numbers increase.

PERCUSSION

A core ingredient of the traditional organ sound is the “percussion” effect. The percussion effect adds an enveloped

signal borrowed from the output of 4' or 2 2/3' drawbars to note attack to create a bell-like staccato effect.

Use the PERC LOW and PERC UP toggles to turn on the percussion effect for the lower and upper manuals, respectively.

Use the VOL toggle to specify the amplitude of the percussion signal. Use the DCY toggle to specify how fast the percussion signal fades out. Use the HAR toggle to specify the harmonic produced by the percussion effect.

In Galileo 2, certain parameters of percussion states, such as volume and decay time, can now be modified. Please refer to the section about Expert Settings to learn how.

ROTARY CABINET CONTROL SWITCHES

For your convenience, a pair of global rotary cabinet control switches are provided permanently on the upper left corner. If there are currently any rotary cabinets or amps in the FX signal chain (see the Effects section of this manual for more information), these switches will control their counterparts in all of them, globally. If there are no rotaries in the signal chain, these switches are non-functioning. In addition, you can map MIDI control codes to these two switches, so as to have a fixed way of controlling all rotary instances. Refer to MIDI section for more information about MIDI CCs and MIDI Learn.

PRE- AND POST-FX VOLUME CONTROLS

The ORGAN volume knob specifies the gain of the organ signal before the FX Signal Chain. This is also typically the parameter you would like to map to an expression pedal to mimic the swell pedal in a physical organ. You can also vary this parameter in realtime to alter the gain and distortion characteristics of the sound if you are using our virtual tube amps or preamps in the signal chain.

The MASTER volume knob specifies the final amplitude of the signal after the FX chain.

The CLIP indicator will light up or flash when signal clipping is detected. This means that the signal is too loud, and digital distortion may occur. Although we have algorithms in place to minimize unpleasant artifacts, please reduce the MASTER volume if you start to get clipping.

DRAWBAR SETS (DB SETS)

You can use Galileo's "Drawbar Sets" feature to instantly change drawbar configurations during a musical performance. The upper and lower manuals can each accommodate twelve drawbar configurations, accessible through the scrollable drawbar presets area. The configurations are all saved when you save your current sound as a preset (for more about presets and banks, please refer to the related section). Drawbar sets can also be selected using MIDI notes on an external keyboard, or via MIDI CCs. Please refer to the section about MIDI for more information.

To select a pre-set drawbar configuration, simply touch its corresponding numbered button.

To program a DB Set, simply choose the numbered button you would like to store your configuration to, and then proceed to adjust the drawbars to your liking. The final configuration will automatically be remembered by that DB Set.

In addition to the drawbar configuration, a DB Set also remembers the state of the Vibrato / Chorus toggle and the Percussion On/Off toggle for that manual.

EXPERT SETTINGS



Use the parameters provided under the EXPERT screen to customize the tonal and basic MIDI characteristics of Galileo 2. (Advanced MIDI settings could be accessed through the PREFS dropdown).

PAGE 1

Organ Model: Specify the organ model for each manual. Models vary from different types of tonewheel organs, to vintage transistor instruments.

Organ Model Link: When enabled, all three manuals are set to the same model. To set each manual's model individually, turn off this toggle.

Drawbar Leakage: Set the amount of signal leak from the drawbars.

Tonewheel Leakage: Set the amount of tonewheel leakage into the pure organ signal. Tonewheel and drawbar leakage were behaviour encountered in some electro-magnetic organs.

Keyclick:

Galileo 2 features a drastically more realistic approach to modeling classic organ keyclick. In addition, it has a more versatile set of keyclick parameters, in addition to adjustable velocity control.

On Vol: Set the amplitude of keyclick sound when a note is engaged.

Off Vol: Set the amplitude of keyclick sound when a note is disengaged.

Pedal Level: Set the overall level of keyclick for the pedal manual.

Tone: Set the tonality of the keyclick sound.

Vel Ctrl: Specify the amount of MIDI note velocity control for the keyclick amplitude. Set this to 0 to disable velocity control.

Percussion:

Galileo 2's new percussion module comes with all-new parameters for controlling percussion emphasis and decay, and also provides adjustable velocity control for either of those musical qualities.

Soft Vol: Specify the level of the percussion signal when the percussion VOL toggle is set on the SOFT position.

Norm Vol: Specify the level of the percussion signal when the percussion VOL toggle is set on the NORM position.

Drawbar Loss: Specify the attenuation of the signal coming from drawbars when percussion is turned on. The default setting of -3dB attenuation follows the behavior seen in well known tonewheel organs.

Velocity Control: Specify the amount of MIDI note velocity control over the percussion amplitude, so as to vary it with the force by which a keyboard key is pressed. Set this to 0 to disable velocity control.

Fast Decay: Set the decay time for the percussion signal when the percussion DCY toggle is set on the FAST position.

Slow Decay: Set the decay time for the percussion signal when the percussion DCY toggle is set on the SLOW position.

Decay Velocity Control: Specify the amount of MIDI note velocity control over the percussion decay time, so as to vary it with the force by which a keyboard key is pressed. Set this to 0 to disable velocity control.

Poly: Set the trigger mode for percussion. In the OFF state, percussion signal is triggered by the first key the player presses, and not re-triggered until all keys are disengaged. This replicates the trigger mechanism found in classic tonewheel organs. In the ON state, percussion is re-triggered by each new key the player presses, regardless of whether the other keys are already engaged.



PAGE 2

Levels

Use the VOL parameters to specify the gain of each manual individually. Use the PAN parameters to specify each manual's position in the stereo field.

Attack & Release

Use each manual's ATTACK parameter to specify the length of attack at the beginning of a musical note. By increasing the attack, you can achieve a swell effect.

Use each manual's RELEASE parameter to set the release duration after a note is released. In authentic organs, the release time is at or near 0, but you can achieve new and interesting effects by manipulating Galileo 2's release

parameters.

Tone

Use the UP, LOW and PEDAL brightness parameters to set how 'lively' each manual sounds by itself. Use the MASTER brightness control to set the overall brightness in addition to those above. Reducing brightness will result in a more 'vintage' tone, whereas increasing it will help you cut through a dense mix more easily.

Tuning: Transpose Galileo 2. Display is in semitones:cents format.

Bass Foldback

Traditional tonewheel organs feature bass foldback, where the signal controlled by the upper and lower manual 16' drawbars on the C3-C4 range is repeated for the C2-C3 range. You can turn off this feature using the BASS FOLDBACK toggle, so as to obtain an extra sub-octave in the C2-C3 range.



MIDI

In this section, you specify basic MIDI parameters related to MIDI note messages and keyboard control. All other MIDI settings could be accessed through the PREFS dropdown menu.

NOTE IN CH: Set the MIDI channel on which each Galileo 2 manual will receive note on/off, as well as aftertouch, messages. You can choose among chs 1-16, or omni to receive from all channels. You can also block a manual from receiving any note events by setting this parameter to OFF. NOTE: some AUv3 hosts are known to work with plugins instruments set to OMNI mode.

Filters

Each manual is provided with MIDI filters for sustain and pitch wheel messages. To stop a given manual from receiving

sustain or pitch wheel messages, simply turn on its associated MIDI filter.

Note mapping

In cases where you need to control multiple Galileo 2 manuals using a single keyboard, or via a single MIDI channel (we call the latter 'sources', where Galileo 2 is a 'destination'), you can use the NOTE MAPPING parameters to allot regions in your source to Galileo 2's manuals.

In Min: Specify the lowest source note that will be accepted by the manual. Notes lower than this will be ignored.

In Max: Specify the highest source note that will be accepted by the manual. Notes higher than this will be ignored.

Organ Min: Specify the destination (Galileo 2) note that will be triggered by the destination note set on IN MIN.

MIDI NOTE to DRAWBAR LAYOUT

Galileo 2 allows players to select a DRAWBAR SET using MIDI note messages, thus mimicking the behavior found on some tonewheel organs. You may find this feature useful when playing live to obtain an instant change of drawbar settings. For more information on Drawbar Sets, please refer to the related section above.

Use the dropdown for the UP and LOW manuals to specify the source MIDI note range that corresponds to Drawbar Sets 1-12. You can also disable this feature therein.

RESET

Touch this button to reset all the note mapping and MIDI NOTE->DB LAYOUT preferences to factory defaults.

Expression

Velocity: Specify amount of MIDI note velocity control over the note amplitude.

Velocity Attack: Specify amount of MIDI note velocity control over the note attack. The attack will vary between 0 (instant-on) and the amount set by user under the ATTACK & RELEASE parameters found in EXPERT -> Page 2.

Aftertouch Volume: Specify the amount and direction of MIDI aftertouch (also called pressure) control for note volumes. Be aware that not all keyboards are capable of aftertouch. Also be aware that only some keyboards are able to transmit polyphonic aftertouch, whereas others transmit channel aftertouch, which is global over all the notes of that channel. Regardless, Galileo 2 is able to process either type of messages. In addition, Galileo 2's built-in ribbon controller is able to transmit polyphonic aftertouch into Galileo Organ 2.

Aftertouch Pitch: Specify the amount and direction of MIDI aftertouch (also called pressure) control for note pitches. Be aware that not all keyboards are capable of aftertouch. Also be aware that only some keyboards are able to transmit polyphonic aftertouch, whereas others transmit channel aftertouch, which is global over all the notes of that channel. Regardless, Galileo 2 is able to process either type of messages. In addition, Galileo 2's built-in ribbon controller is able to transmit polyphonic aftertouch into Galileo Organ 2.

ARP



- **ON:** Select the UP/LOW/PDL options to turn the arpeggiator on or off.
- **MODE:** Select the mode of operation for the arp. In LIVE mode, the arp will step through the notes currently pressed on the keyboard. In PROG mode, the arp will play a pre-programmed pattern when a key is pressed down; it will transpose the pattern with the MIDI note of the key. In PROG FIXED mode, the arp will play the pre-programmed pattern, but will not transpose the pattern.
- **ALGORITHM:** Select the arp stepping pattern.
- **GATE:** Specify length of each step relative to the arp note value.

- SWING: Set the amount of rhythmic swing.
- NOTE: Set the note value for the arp steps.
- NOTE RPT: Specify the number of times a step is repeated before moving on to the next one.
- OCT: Specify the number of octaves for the pattern to snap.
- OCT RPT: Indicate the number of times a pattern is repeated in each of the octaves set by the OCT knob.

Arp Programming Area

Provide a pre-programmed pattern for the arp by selecting notes. The pattern can then be triggered by the keyboard when the Arp is in the PROG or PROG FIXED mode.

FX



Galileo 2 features an all-new FX module where you can add, remove, reorder, or even have multiple instances of, effects. In addition, all standard Galileo 2 effects are fully re-written to be stereo, provide more authentic tonality as well as higher sound quality. They are also now capable of processing natively at higher sampling rates than their legacy versions. Upgraded effects are also available, and feature our most cutting edge modeling technologies to bring new tones and variety to your Galileo 2.

The FX signal chain is managed in the left area of the FX screen, where the icons are found. This area is scrollable. To add an effect to the signal chain, touch the + sign at the bottom. This will launch an FX browser where you can select the new effect. To select an effect, touch its icon: the interface for the selected effect will appear on the right side of the FX screen. To remove an effect, first select it, and then touch the - sign at the bottom. To replace an effect with a new one, double tap its icon, which will launch the FX browser. The signal chain is currently capable of hosting up to 8

effects.

MIDI Control of Effects

Galileo 2 effects units' parameters are controllable via MIDI CCs. As these units are mutable (you can add or remove them at any time), and as you are now allowed to have multiple instances of the same unit, it does not make sense to have a global MIDI CC mapping for effects. Indeed, we now provide MIDI Learn capability at the unit-instance-level, so you can map each unit instance individually to MIDI CCs. These mappings are now retained in the preset, when you press SAVE or SAVE AS in the PRESET SCREEN, so that you can use them in the future. Please refer to the sections about MIDI Learn and Preset Management for more information.

TEMPO CONTROLS

- **BPM:** Touch to display the BPM set options, including tap tempo.
- **TAP TEMPO:** Tap a steady beat to set the BPM. It will take a second or two after the last tap for the reader to completely reset.
- **BPM Wheel:** Set the BPM by dragging this wheel.
- **BPM LOCK:** Enable to cause preset BPM data do be ignored upon future preset loads.
- **EXT CLOCK:** Disables Galileo's internal MIDI clock. In this mode, arp, metronome, and some BPM-synced parameters will not work, unless Galileo 2 is being controlled by an external or virtual MIDI clock from a third party app or device.

MIDI

MIDI KEYBOARDS

Use Apple's Camera Connection Kit to connect a CoreMIDI compatible USB MIDI controller to your device's charging port.

You can also use an iOS compatible MIDI interface connected to a MIDI controller via a standard MIDI cable.

NOTE: USB MIDI controller may require a power adaptor to work with your device.

See EXPERT section for more information about keyboard MIDI channels, keyboard mapping, and expression features.

If your external controller is equipped with a pitch wheel, you can use it to apply pitch bending. The pitch bend range can be configured in the PREFS dropdown.

ADVANCED MIDI

Access advanced MIDI settings by selecting the PREFS menu button and then selecting Advanced MIDI Settings.

MIDI IN ENABLE/DISABLE

Use the switches on the MIDI Settings menu to enable/disable external or virtual MIDI in. NOTE: it is preferable to set these switches in the OFF position when using Galileo 2 as an AUv3 plugin, so as to prevent Galileo 2 from receiving

MIDI messages outside of the DAW's context.

BLUETOOTH MIDI

With the iOS device Bluetooth enabled, and an iOS compatible Bluetooth MIDI device in proximity, you can create a connection between Galileo 2 and the MIDI device by launching this settings panel and following the instructions.

MIDI LEARN

Turn MIDI learn on or off via the PREF->MIDI SETTINGS->MIDI LEARN Switch. Select the rectangular overlay on the MIDI-learnable parameter you wish to assign a CC. Once selected, manipulate the knob, button or control on your connected MIDI device that you'd like to assign to the parameter. Alternatively, double tap the parameter on the Galileo 2 screen to display options for manual data entry. When finished, turn off MIDI LEARN and save your changes by launching the MIDI MAPS MANAGER, also accessed in the MIDI Settings menu (for Organ Parameter mappings only), or by saving the changes to a preset (for FX Parameter mappings only: see FX section for more information).

You can also map continuous control values to a specified range. With MIDI LEARN active, double tap a parameter to display advanced options. For continuous parameters, use the MIN and MAX fields to specify the range into which the CC value will map. For example, when MIN = 32 and MAX = 93, the value of 0 sent by the external controller will be mapped to 32, and 127 will be mapped to 93. Values between 0 and 127 will be mapped linearly to the interval (32, 93).

MIDI MAPS MANAGER

This provides features for saving and loading MIDI CC Maps, as well as options for clearing all MIDI CC assignments at parameter, and organ levels. MIDI CC Maps in the Map Manager contain the CC mapping information for the organ only. MIDI CC maps for effects units are saved into, and loaded from, presets instead.

You can 'learn' a given parameter by turning on the LEARN button, selecting the desired parameter and manipulating the component on your connected MIDI device to create the assignment. In addition, you can manually enter CC, Channel, and MIDI Value Range data for the selected parameter.

MIDI PROGRAM CHANGES

Specify the MIDI Channel over which MIDI Bank and Program change messages are to be broadcast. You can use this setting to also ignore program change messages.

MIDI INPUT DEVICES

See a list of physical (e.g., MIDI keyboards) or networked MIDI control devices currently available. Use the MIDI and CLOCK switches for each device to specify whether MIDI or MIDI clock messages from that device are to be ignored.

GLOBAL PREFERENCES

- Fullscreen Mode (iPad Only): Replaces the virtual keyboard with a second control screen area. In this mode, upper control area displays the ORGAN screen, whereas the lower control screen is chosen among the options on the top navigation bar.
- Pitchbend Radius: Set the number of semitones that the pitch wheel will cause a note's frequency to shift when moved in either direction. Set to 0 to turn off pitch bending altogether.
- Virtual Keyboard: Choose between the classic style of keyboard and the ribbon style on-screen controller. The ribbon controller provides polyphonic aftertouch, which is manipulated by moving the finger vertically on a given key. In addition, you can assign a musical key and scale to the ribbon controller.
- Virtual KB Velocity (Standalone App Only): Enables MIDI velocity for the onscreen keyboard. The sensitivity of the velocity recognizer can be adjusted to your playing style and other factors via the Sensitivity slider.
- Buffer Size (Standalone App Only): Specify the buffer size for audio processing. Smaller values equate to reduced latency, but at the same time place more demand on the CPU. The default setting is 256.
- NOTE: As the buffer size is a global property in iOS, the buffer size could be successfully set only if there is no other music or audio-related app currently open. All the music apps launched after the first one will typically inherit the 1st app's buffer size. Some apps may not be capable of running at certain buffer sizes. If you are having difficulties or encountering 'jittery' audio, first rule out that the cumulative demand on the CPU of all the

open apps is not the culprit. Then, make sure that the current buffer size for iOS is compatible with all the open apps.

- Background Audio: Enable Galileo 2 to run even if it's not the current app in focus.
- **WARNING:** It is easy to forget that an app with Background Audio enabled is actually still running, even if not in the focus. To prevent accidentally draining your battery, please make sure you either turn off audio backgrounding or quit the app completely after your finished with your session.

Audio Unit, Inter-App Audio, Audiobus, Ableton Link

AUDIO UNIT

Galileo 2 comes packaged with its iOS Audio Unit plugin (Galileo 2 AU) binary. You can use Galileo 2 AU within an iOS DAW that is capable of hosting Audio Unit instrument plugins. Note that some of the features available in the standalone (app) version may not be available in the Audio Unit version, do to the restrictions and limitations imposed on Audio Units.

NOTE: If your DAW is providing MIDI thru, the Galileo 2 external & virtual MIDI inputs should be turned off to prevent receiving MIDI messages outside of the DAW context, or from other plugins. You can do so in PREFS -> Advanced MIDI Settings.

DISCLAIMER: Audio Units on iOS are a very recent technology, and as a result, there is a lot of variation among different hosting and plugin implementations, as well as their approaches to resource and memory management. In addition, Audio Units are currently restricted to a relatively small amount of memory, which they must share among all their instances. Although Galileo 2 is optimized to perform as an Audio Unit plugin, running multiple instances will inevitably cause the memory limit to be reached, in which case iOS will “crash out” the plugin. We’re hoping that as devices and operating systems get more powerful, these restrictions will be eased and you will be assured a more satisfying experience with this and other Audio Units. Fullscreen AU requires iOS 11 or higher and a DAW with the

fullscreen plugins feature.

INTER-APP AUDIO (Standalone App Only)

Galileo 2 can be used as an IAA instrument with an IAA compatible host, and features seamless integration via IAA with ToneStack, our flagship guitar, bass, and production effects platform for iOS. Please refer to the host's documentation about how to connect with an IAA instrument.

AUDIOBUS

Galileo 2 is available as an instrument/input in Audiobus sessions. In addition, it supports Audiobus state saving. Please refer to Audiobus documentation about how to use apps with Audiobus.

ABLETON LINK

Galileo 2 integrates Ableton Link functionality for BPM syncing. By connecting to a Link session you can share tempo data among apps or devices, and set the session BPM from a single app. For more information, please refer to Ableton's documentation.