electro-harmonix

HOLIEST GRAIL

- DESCRIPTION -

The Holiest Grail is built around a high quality stereo reverb algorithm coupled with a painstakingly developed simulation of spring reverb as found in guitar amps and dedicated reverb tanks. The decay time, damping and diffusion parameters of the reverb can be freely tweaked to design an infinite array of natural and unnatural sounding spaces. A versatile pre-delay can be applied to the reverb, and a feedback control has been added to the pre-delay to provide even greater sound-sculpting capabilities for spatial simulation and/or experimentation.

As an aid to both live performance and recording, the box is able to store 8 user presets and can be remotely controlled via MIDI. A standard expression footpedal can be used to control the amount of signal sent to the reverb, a performance tool that can help personalize the sound.

> **WARNING:** Use only the 9VDC/500mA AC adapter the Holiest Grail comes supplied with. Do not use any other AC adapters. Using other AC adapters, even those made by Electro-Harmonix, could cause harm to the unit, the adapter or you. The Holiest Grail does not use batteries.

- CONTROLS/INDICATORS -

INPUT

INPUT GAIN Slider – A control for setting optimal analog signal level into the A/D Converter. The green LED lights when there is sufficient level. The red LED will light when clipping occurs. **The position of the INPUT GAIN Slider is not saved with the user presets.**

Signal LED – Green LED above INPUT GAIN Slider. The Signal LED varies in brightness depending on the strength of the input signal. The louder the signal the brighter this LED will be.

Clip LED – Red LED above INPUT GAIN Slider. The Clip LED lights when the signal clips the A/D Converter. Ideally you want the largest possible signal entering the A/D Converter without clipping. One way to achieve the ideal signal level is to raise the INPUT GAIN Slider until the CLIP LED starts to blink and then lower the INPUT GAIN Slider slowly until the CLIP LED stops lighting.

REVERB Design

Pre-delay Controls

    TIME Slider – Controls the length of time between striking a note on your instrument and the start of the reverb. For maximum usability, the slider has two ranges of usage: between 0% and 50%, the predelay time can be adjusted from 0 to 100 ms with an accuracy of approximately 1.5 ms. From 50% to 100%, the time ranges from 100ms to 440ms in 5 ms increments.

    FEEDBACK Slider – Controls the amount of feedback that is re-circulated in the pre-delay before the reverb. At its maximum setting an infinite loop will be created. At the lowest level the pre-delay simply delays the sound of the reverb without any special effects. When the FEEDBACK Slider is set somewhere in the middle, your original note will enter the Reverb a number of times.

Reverb Controls

    DECAY Slider – Controls the length of the reverb time. This affects the apparent size of space. At maximum setting an infinite reverb may occur, depending on the other settings.

    DAMPING Slider – Affects the frequency response of the reverb over time. A setting of 0% has more damping and thus the reverb is muted. As the slider is pushed up, the reverb sounds more bright and 'open'. Higher settings (less damping) also yield a longer reverb time.

    DIFFUSION Slider – Works in conjunction with the other parameters to provide a density control to make subtle variations in the quality of the reverb

sound. At the lowest setting, the reverb has a grainier quality, while at the maximum setting the reverb is at its most lush.

Output Mixer Controls

DRY Output Level Slider – Controls the amount of dry signal sent to the outputs. The dry signal is mixed into both the left and right output channels. At maximum setting, 100% signal is output.

SPRING Output Level Slider – Controls the amount of spring simulation effect sent to the outputs. The spring signal is mixed into both the left and right output channels. A higher setting makes the output "spring-ier."

REVERB Output Level Slider – Controls the amount of stereo reverb signal sent to outputs. A higher setting yields more reverb signal.

PRESET Management

PRESET/FREE MODE Slide Switch–When in Preset Mode, programs can be saved and loaded. When in Free Mode, all preset capability is disabled and all parameters are derived from their slider values. (What you see is what you get!) In Free Mode, the Preset A and B Footswitches have no function.

PRESET BANK Slider – Selects the bank (1-4) to use when saving or loading presets. In Free Mode, this slider has no function.

PRESET A Footswitch – Tap this footswitch to load Preset A. Hold down the footswitch for approximately 5 seconds to save a preset to position A.
PRESET B Footswitch – Tap this footswitch to load Preset B. Hold down the footswitch for approximately 5 seconds to save a preset to position B.

Preset A LED – Lit solid when Preset A is loaded. Blinks when saving to Preset A.
Preset B LED – Lit solid when Preset B is loaded. Blinks when saving to Preset B.

-BYPASS -

STATUS LED On/Off– If lit, the reverb is active. If not, the unit is in True Bypass.

BYPASS Footswitch– Toggles between processed sound and True Bypass. When the Holiest Grail is in True Bypass mode, the Input Jack will be connected to the Main Output Jack so the Bypassed signal will exit through the Main Output Jack. There will be no output on the Stereo Output Jack when in True Bypass mode.

- Jacks -

INPUT - This ¼" jack is the audio input.

MAIN OUTPUT - This ¼" jack is the Main or left audio output. When the unit is bypassed, this output contains the true bypass signal.

STEREO OUTPUT - This ¼" jack is the right audio output or silence when in bypass.

EXP. PEDAL INPUT — This ¼" input accepts an Expression Pedal with a TRS connection or a Control Voltage (Between 0 and 5V) on TS connection. The Exp. Pedal Input controls the level of signal into the reverb, useful for fades, swells, and other effects.

MIDI IN - Standard 5pin DIN jack, MIDI Input.

MIDI OUT - Standard 5pin DIN jack, MIDI Output.

PWR - This 2.5mm barrel jack supports a 9VDC/500mA external power supply adapter which is supplied with Holiest Grail.

- PRESET MODE -

When the unit is in Preset Mode, eight presets are available where one can store and recall their very own personal sound settings. There are four banks each containing two presets. The Preset Banks, 1 through 4, are selected using the Preset Bank Slider. The Presets, A & B, within each bank are selected using the Preset Footswitches. Selecting a preset to load or save requires choosing a combination of the bank slider and one of the preset

footswitches. The preset LEDs, above the Footswiches, indicate which preset is loaded. All of the slider settings except Input Gain are stored in memory.

Loading a preset: First, move the Preset Bank slider to the appropriate bank (1-4). Then tap the footswitch corresponding to the desired preset, either Preset A or B. The LED for that preset will light.

Saving a preset: Once a memorable sound has been created, saving it in a user preset location is simple. First choose a bank (1-4) to store the sound. Then, press and hold down the footswitch denoting which of the presets to overwrite. The corresponding preset LED will blink until the preset is saved, then the preset LED will light solid. Releasing the footswitch before the blinking stops will abort the save operation.

Preset fun facts:
- After loading a preset, the Preset LED above the corresponding footswitch will light solid. If the bank slider is then moved to a different bank, the preset LED above the footswitch will go off. The Preset LED will light **only** when the Preset Bank slider is pointed to the bank that the current preset resides.
- Changing into Free Mode from Preset Mode unloads the current preset and resets all parameter values to their slider positions.
- Changing into Preset Mode from Free Mode does not immediately load a preset, it simply makes it possible to save the current settings or load a different preset.
- You cannot Load or Save a Preset while in Free Mode. You must be in Preset Mode.
- If a slider is moved after a preset is loaded, the value of the parameter will jump to the slider's new setting.
- If you load a preset while in Bypass Mode, it will not bring you out of Bypass. So you can load/save a preset while in Bypass.

Factory Presets:

The Holiest Grail comes pre-loaded with Factory Presets. Here is a brief description of each preset:

Preset 1A: Short Spring – A spring reverb with a short decay time.
Preset 1B: Long Spring – A spring reverb with a long decay time.
Preset 2A: Short Hall – A clean reverb with a short decay.
Preset 2B: Long Hall – A huge reverb with a very long decay.

Preset 3A: Short Room – A short decay reverb with a good amount of damping.
Preset 3B: Long Room – A long decay reverb with some damping.
Preset 4A: Echo Verb – An echo effect made out reverb. The Pre-Delay Time and Feedback are turned up but the reverb decay is turned down.
Preset 4B: Resonator – With the Pre-Delay Feedback turned up to its maximum and the Pre-Delay Time nearly at zero, certain notes will cause the reverb to resonate. Try moving the Pre-Delay Time slider to accent different pitches.

If at some point you decide that you would like to restore the factory presets, this is how you do it:

Warning: This will erase all of the presets you have created!
1. With power disconnected from the Holiest Grail, press and hold down all three Footswitches simultaneously.
2. While holding the Footswitches, apply power to the Holiest Grail.
3. Keep holding the Footswitches down. After applying power, you will see the Preset A and Preset B LEDS blink for about 2 seconds.
4. After the LEDs have stopped blinking, release the Footswitches and power cycle the unit. The Holiest Grail will now have the factory presets loaded into memory.

MIDI

Real Time Control
The Holiest Grail can send and receive MIDI continuous controller messages, allowing external sequencers to record and automate parameters. The Holiest Grail sends and receives MIDI CC over **Channel 1 only**.
Each slider (except Input Level) has an associated MIDI CC code:

Pre-Delay Time	MIDI CC #20
Pre-Delay Feedback	MIDI CC #21
Reverb Decay	MIDI CC #22
Reverb Damping	MIDI CC #23
Reverb Diffusion	MIDI CC #24
Dry Output Level	MIDI CC #25
Spring Output Level	MIDI CC #26
Reverb Output Level	MIDI CC #27
Bank Selector	MIDI CC #28 (CC is not saved and does not affect program load)
Footpedal/CV Input	MIDI CC #30

Each time you load a Preset, all of the slider values for that preset will be sent out as MIDI CC messages. So you will receive 10 MIDI CC messages every time a preset is loaded.

MIDI Program/Patch Change
The Holiest Grail accepts MIDI Program Change messages to load any of the 8 presets. The Holiest Grail receives MIDI Program Change on **Channel 1 only**. Sending any of the following MIDI Messages to the Holiest Grail will load the corresponding Preset:

MIDI PGM 0   Bank 1, Preset A
MIDI PGM 1   Bank 1, Preset B
MIDI PGM 2   Bank 2, Preset A
MIDI PGM 3   Bank 2, Preset B
MIDI PGM 4   Bank 3, Preset A
MIDI PGM 5   Bank 3, Preset B
MIDI PGM 6   Bank 4, Preset A
MIDI PGM 7   Bank 4, Preset B

- Block Diagram -

Input

Analog INPUT GAIN

Footpedal (CV IN)

Pre-delay (TIME)

Predelay FEEDBACK

High-Quality Stereo Reverberation Algorithm (DECAY, DAMPING, DIFFUSION)

Spring Simulation

Stereo Output Mixer

Dry Output Level

Reverb Output Level

Spring Output Level