Arcano NES Chiptune Synth R3 User Guide

Chiptune Synth LLC

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The Arcano NES Chiptune Synth R3 is a MIDI synthesizer that emulates the sound of the Nintendo Entertainment System's audio hardware, enabling musicians to create NES-style chipmusic. The synthesizer is designed to be used with a wide variety of MIDI controllers.

Power connection:

The Arcano NES Chiptune Synth R3 features a mini USB connector for power. The synth may be powered by a USB charger. It is possible to power the device through a PC USB port; however, this may add some noise to the audio signal. (The USB connector is for power only, not for programming or MIDI-over-USB control.) It is recommended to connect the audio and MIDI cables before connecting the USB power.

MIDI connection:

The Arcano NES Chiptune Synth R3 uses a standard 5-pin MIDI DIN connector for MIDI input. The device is designed to work with a variety of MIDI controllers and recognizes MIDI notes 0-115 on MIDI channel 1.

Audio connection:

The Arcano NES Chiptune Synth R3 features a 1/4 inch TRS unbalanced stereo audio jack and must be connected to an unbalanced stereo line input using an unbalanced stereo audio cable. (The synth features an unbalanced stereo connector with the same signal in both left and right channels.) Do not use a 1/4 inch TS cable (also known as an instrument cable or unbalanced mono cable) because this will result in both audio channels being shorted to ground. The device's audio output is not designed to directly drive headphones or devices that require a balanced audio signal.

Patch control buttons:

Preset patches on the Arcano NES Chiptune Synth R3 can be selected using the patch increment and patch decrement buttons.

LED display:

The 7-segment LED display on the Arcano NES Chiptune Synth R3 displays a unique number, letter, or symbol to indicate which preset patch is currently selected. The decimal point LED on the lower right corner of the display is a MIDI data indicator that flashes whenever MIDI data is received. (Please note: if the MIDI data indicator flashes when you play notes but no audio is produced, make sure your MIDI controller is set to output on MIDI channel 1.)

Custom patch editing:

To create your own custom patch, first select patch 63, which is indicated on the 7-segment LED display with an underscore "_". You can select patch 63 from patch 0 by simply pressing the patch decrement button (left button.) You can also select patch 63 (underscore symbol) by setting MIDI CC channel 31 to value 127. Once you are have selected patch 63, you can edit sound parameters using MIDI CC channels 20-30. (Please note: your custom patch will not be saved when you turn off the synth.) Below is a list of relevant CC channels with their corresponding sound parameters:

CC 20 : volume envelope attack - time from when note is triggered to maximum volume is reached (0-127)

CC 21 : volume envelope decay - time from maximum volume to sustain volume level is reached (0-127)

CC 22 : volume envelope sustain - volume sustain level while note key is depressed (0-127)

CC 23 : volume envelope release - time from when note key is released to zero volume is reached (0-127)

CC 24 : vibrato pre-delay - time from when note is triggered to vibrato attack is reached (0-127)

CC 25 : vibrato attack - time from when vibrato begins until maximum vibrato depth is reached (0-127)

CC 26 : vibrato frequency - frequency of vibrato LFO (0-127)

CC 27 : maximum vibrato depth - maximum amplitude of vibrato pitch (0-127)

CC 28 : initial waveform - waveform when note is triggered : 0 = 12.5% pulse, 1 = 25% pulse, 2 = 50% pulse, 3 = 4-bit triangle, 4 = 5-bit sawtooth (0-4)

CC 29 : final waveform - waveform after waveform-switch-delay threshold is reached : 0 = 12.5% pulse, 1 = 25% pulse, 2 = 50% pulse, 3 = 4-bit triangle, 4 = 5-bit sawtooth (0-4)

CC 30 : waveform switch delay - time from when note is triggered until waveform switches from initial to final (0-127)

CC 31 : patch select (values 0-127 mapped to 64 patches : 63 presets + 1 custom patch)

As an example, you can recreate patch 16 (C on LED display) with these CC setting:

CC 20 = 0

CC 21 = 0

CC 22 = 127

CC 23 = 45

CC 24 = 25

CC 25 = 10

CC 26 = 58

CC 27 = 35

CC 28 = 2

CC 29 = 0

CC 30 = 16