3rd Wave OS 1.5 Addendum

3rd Wave OS version 1.5 adds a number of new features not covered in the main User's Guide.

New Features in OS 1.5

- Support for MPE (MIDI Polyphonic Expression). This enables the 3rd Wave keyboard to respond to MPE-driven controllers such as the Expressive E Osmose® and Roli Seaboard® series, to name just a few.

- Free running oscillators for enhanced virtual analog emulation

- Polyphonic unison mode, which allows you to assign a specific number of unison voices per note when playing chords

- Longer LFO Frequency values when an LFO is synced to the Arpeggiator/ Sequencer clock

- MIDI Program Change send capability

Checking Your Operating System Version

If you've just purchased your 3rd Wave new, OS 1.5 may already be installed. If not, and you want to use the new features just described, you'll need to update your OS to version 1.5 or later.

To update your 3rd Wave OS, you'll need a computer and a USB cable. To download the latest version of the 3rd Wave OS along with instructions on how to perform a system update, visit the Groove Synthesis website at:

https://www.groovesynthesis.com/support/

To check your OS version:

1. Turn on your 3rd Wave. The OS version number is displayed in the upper right corner of the display.

2. If your OS is out of date, download the latest version from the URL above and update your instrument using the instructions included with the download.

To update your 3rd Wave's operating system:

1. Download the new OS from the *Support* page of the Groove Synthesis website. The file type is "ldr" for the OS.

2. Connect the 3rd Wave to your computer using the USB connector on the back of the synth.

3. Once connected, the 3rd Wave will show up on your computer desktop as an external drive.

4. Copy the "ldr" file into the FIRMWARE folder on the 3rd Wave.

5. Once the file has finished copying, press the GLOBAL button on the 3rd Wave, then use Soft Knob 1 to locate the "Firmware Update" command.

6. Use Soft Knob 2 to select GO.

7. Press Soft Button 1 (REFRESH). The screen displays the name of the OS file that you copied to the FIRMWARE folder.

8. Eject the 3rd Wave icon from your computer desktop.

9. Disconnect the USB cable from the back of the 3rd Wave.

10. Press Soft Button 4 (OK).The display will alert you when the OS has finished updating.

11. Once the display indicates that it is finished, turn off the synthesizer briefly then turn it back on again. The updated OS version appears in the upper right corner of the display.

MPE Support

The 3rd Wave now responds to MIDI Polyphonic Expression (MPE). Although the 3rd Wave doesn't output MPE from its own keyboard, you can connect an MPE-capable MIDI controller such as the Expressive E Osmose to control the 3rd Wave. This opens up a new realm of expressive possibilities including polyphonic pitch bends, filter sweeps, volume swells, and more.

To enable MPE operation on the 3rd Wave:

1. Press the GLOBALS button.

2. Use Soft Knob 1 to scroll to the MIDI MPE MODE setting.

3. Use Soft Knob 2 to set MIDI MPE MODE to ON.

To set the 3rd Wave's MPE Pitch Bend range:

1. Press the MISC button.

2. Use Soft Knob 1 to scroll to the MPE VOICE PITCH BEND RANGE setting.

3. Use Soft Knob 2 to set the desired pitch bend range.

To set the MPE controller's Y-Axis Mode for the 3rd Wave:

1. Press the MISC button.

2. Use Soft Knob 1 to scroll to the MIDI MPE Y CONFIG setting.

3. Use Soft Knob 2 to set the desired Y-Axis mode for the 3rd Wave. Choices are unipolar or bipolar.

In unipolar mode, CC74 affects the destination by adding a range of 0-127. In bipolar mode it adds a range of -63/+63 with 64 as a the "0" point.

To set the MPE controller's Y-Axis as mod source on the 3rd Wave:

1. In the MODULATION section, press the SOURCE button.

2. Use Soft Knob 1 to select a modulation slot.

3. Use Soft Knob 2 to scroll to the MPE VOICE Y AXIS setting.

4. Use Soft Knob 3 to select a mod destination (filter cutoff, for example).

5. Use Soft Knob 4 to set a modulation amount.

Note that you can also use MPE Pitch Bend as a modulation source that you can route to any destination in the 3rd Wave's mod matrix.

To set the MPE controller's Pitch Bend as mod source on the 3rd Wave:

1. In the MODULATION section, press the SOURCE button.

2. Use Soft Knob 1 to select a modulation slot.

3. Use Soft Knob 2 to scroll to the MPE PITCH BEND setting.

4. Use Soft Knob 3 to select a mod destination (filter cutoff, for example).

5. Use Soft Knob 4 to set a modulation amount.

Free-Running Oscillators

By default, the virtual analog oscillators on the 3rd Wave restart their wave cycle each time you press a key. In contrast, fully-analog voltage-controlled oscillators are "free running" and are continuously generating their waveshapes. This means that when you strike a key, the waveshape can be anywhere in its wave cycle — and not necessarily at its beginning.

This significance of this is that when a sound is generated by two or more oscillators, their respective phases will most likely not be in sync. This can create a very "organic" sound which has subtle shifts in volume.

You can emulate this behavior on the 3rd Wave by enabling the FREE RUNNING ANALOG OSC parameter in the MISC menu. Be aware that this feature only applies to the virtual analog oscillators (the "A" waves) and not the wavetables (the "P" and "U" waves).

To enable free-running oscillators:

1. Press the MISC button.

2. Use Soft Knob 1 to scroll to the FREE RUNNING ANALOG OSC setting.

3. Use Soft Knob 2 to scroll to set this parameter to ON.

There are two things to be aware of when using free running virtual analog oscillators. First, as noted earlier, when two or more oscillators are running at the same time, the phase of the waveforms will not be reset and could start at any position. As a result, there will be some phase cancellation compared to having the oscillators always start at the same point. You will hear the notes change their volume level slightly as the oscillators start and drift in and out of phase with each other.

Second, in the default mode, the 3rd Wave's virtual analog oscillators always start at zero. But in free-running mode, the oscillators could start at any point in their phase position. In some cases, depending on the phase position, this can cause a click at the beginning of a note. It is noticeable mostly if you are using a sine wave, and less noticeable when you are using a sawtooth or square wave. If you want to avoid a potential click, try use setting the Amp Envelope's ATTACK parameter to +20 or higher.

Polyphonic Unison Mode

By default, when UNISON is on, the 3rd Wave behaves monophonically and can stack as many as 24 voices on a single note, depending on how many voices you choose to stack (and how many multi-parts are active).

With OS 1.5, Unison has a new mode called "poly unison" in which you can play chords and set a specific number of voices to stack per note when you play polyphonically.

Page 1 of the Unison menu

B1-P020 Big Brass	OS v1.5
Unison	**part 1**

Off	**2 note**
LEGATO	POLY COUNT

<--
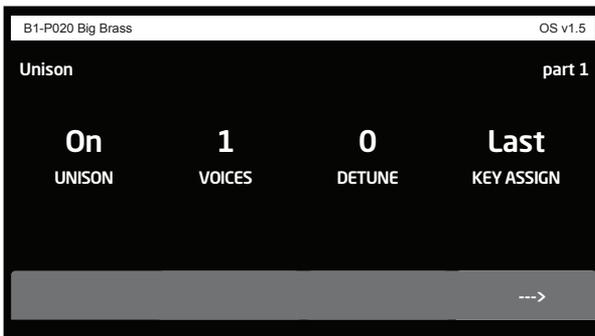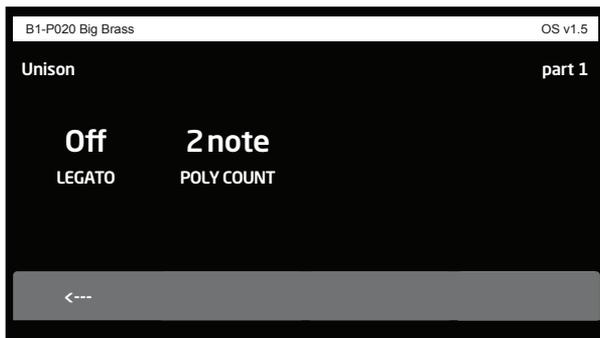
Page 2 of the Unison menu

To use Poly Unison mode:

1. Press the UNISON button on the front panel.

2. In the display menu, press Soft Button 4 (the arrow symbol) to show page 2 of the Unison menu.

3. Use Soft Knob 2 (POLY COUNT) to set the number of voices assigned per note when unison is enabled. If you play more notes that can be allocated in poly unison, the 3rd Wave will allocate voices as available.

Note that when POLY COUNT is set to 0, poly unison mode is off and the active multi-parts will play monophonically (if in unison mode).

Longer LFO Frequency Values In Sync Mode

The four LFOs on the 3rd Wave now feature additional longer Frequency values when.synced to the Arpeggiator/Sequencer clock. Previously the longest frequency setting was "whole" (whole note). The following additional values have been added:

- 6 beats
- 8 beats
- 16 beats
- 32 beats

To use longer LFO frequency values in sync mode:

1. Press one of the four front-panel LFO buttons.

2. In the display menu, press Soft Button 2 (MISC) to show the miscellaneous parameters.

3. Use Soft Knob 3 (SYNC) to set LFO sync to ON.

4. Press Soft Button 1 to show the main WAVE parameters.

5. Use Soft Knob 1 (FREQ) to select the desired LFO frequency.

Note that the longer LFO frequencies are available only when the LFO is synced to the Arpeggiator/Sequencer clock.

MIDI Program Change Messages

The 3rd Wave can now send MIDI Program Change messages. When enabled in the GLOBAL menu, changing Banks or Programs on the 3rd Wave will change Banks and Programs on a MIDI instrument that supports MIDI Program Change messages and is connected to the 3rd Wave.

To enable sending MIDI Program Changes on the 3rd Wave:

1. With a MIDI cable, connect the MIDI OUT of the 3rd Wave to the MIDI IN of the desired MIDI instrument.

2. Enable RECEIVE MIDI PROGRAM CHANGES on the connected instrument.

3. On the 3rd Wave, press the GLOBALS button.

4. Use Soft Knob 1 to locate the MIDI SEND PROGRAM CHANGE setting.

5. Use Soft Knob 2 to set MIDI SEND PROGRAM CHANGE to ON.

Changing Banks or Programs on the 3rd Wave will now change Banks and Programs on the connected MIDI instrument.