# Solaris v2.0 OS upgrade

Welcome to the new v2.0 OS, which brings 4-part Multimode functionality and a new Oscillator Type to your Solaris, as well as a number of other important changes. This has been many years in development, and I am eternally grateful to Jim Hewes for the thousands of hours he has dedicated to improving the Solaris operating system. Special thanks as well to Holger Drenkelfort at Sonic Core (for the phase distortion models from Scope) and Hrastprogrammer for coding the new Phase Mod/Phase Distortion oscillator type.

Instead of completely updating the original User Guide, I have decided to produce this addendum for 2.0. Since most of the synthesizer functions remain the same, I feel it is only necessary to describe the changes of the new multimode OS. So let's go!

Preset Mode

The biggest structural change is that each Multi Preset now is actually 4 layers deep, making it four times the size of a previous preset. All older presets will load as 4-part Multi Presets. Loading an older preset file automatically converts it into the new Multi Preset format. The new Multi Preset will populate Part 1 with all the parameters, including the Master FX, Output settings, Performance knob assignments, stored joystick position, SamplePool, arpeggiator settings, Assign switches, and BPM. As before, when the Preset LED is on, you are in Preset Mode. Touching any parameter knob will immediately jump out of Preset Mode and put the Solaris into Edit Mode. When in edit mode, the bottom line of the center display will display the current selected parameter, which now includes the part number as P1, P2, etc.

The first change to the Preset Mode display is that the labels for the 6 soft keys are now permanently assigned, instead of depending on whichever set of labels were displayed prior to entering Preset Mode. The labels from left to right are: Part #, ArpSeq, Multi, Utils, FX, and SysMid. This allows you to increment the current Part (for front panel editing) and have direct access to the Arpeggiator and Sequencer, Effects, and System/Midi page groups. It also adds a direct jump to the new set of Multi pages (there are 7!) as well as a Utilities group to help build and edit the Multi Preset:
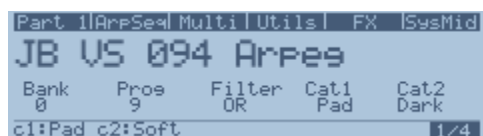

Note: These 6 soft key labels are also available when pressing the Home button.
There are also now 4 pages for Preset Mode. (As with everything in the Solaris, the current page is shown in the lower right corner of the center display. It's helpful to check this at times to remind yourself of the number of parameter pages there are for sections.)

The first 3 pages are the same as before, but a fourth page has been added to show the parts named that are contained in the new Multi Preset object:
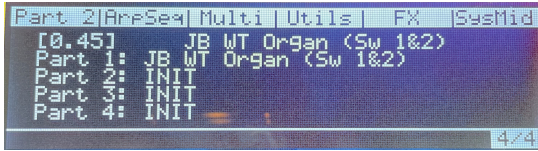
This screen shows an older preset converted to the new Multi Preset style. The original preset data is automatically stored in Part 1, and the name and FX are loaded as well. Parts 2-4 are loaded with the INIT patch. This is Bank 0, Program 45.
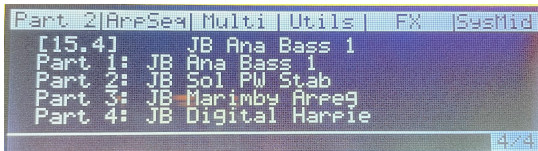
This screen shows a 4-Part Multi. This is from Bank 15, Program 4.

There's also a change to how you assign or clear the Performance controls on page 2 of Preset Mode:
1. To clear an assignment - hold Shift and turn the upper knob
2. To assign a parameter - first select a parameter. This will take you out of Preset Mode. Once you have turned the knob you want, go back into Preset Mode, hold Shift, and turn the lower knob you wish to assign.

Enable Part Buttons

It's <u>very</u> <u>important</u> to note that these buttons no longer reflect the number of VCA elements that are 'on' for the current part, but rather, exactly as labeled, enable the Part. To see what the Part consists of regarding this former function, just hold down Shift, and you will see the Enable Part buttons change to reflect the number of VCA elements that are **on** for the current Part.

 (Note that with v2.0.1 OS, this behavior can be reversed using the Enable Part (EnblPrt) parameter on page 2 of the System pages. You can select Ver 1 to use the Enable Part buttons as they were before. In this case, you must hold SHIFT to perform the v2 functions.)

Selecting Parts

There are several ways to select a Part. The currently selected Part is reflected on the front panel, and is the sound that you will be editing if you adjust any of the parameter knobs.
1. From the Preset Mode, Home, and Utils soft key 1 - with the leftmost button, you can see the current part number listed, and by pressing this button one can step through the parts.
2. With the Shift key - holding Shift + the page Up or Down buttons (above the Shift key).
3. With the Enable Part buttons - when set ON, the part is selected. If already ON but not the current Part, a double click will do it.
4. Using Shift + the keypad numbers 1,2,3,4

5. From the Multi pages - there are 7 new Multi pages, and you can select the part from the upper left knob of the center display for pages 1 and 2, or the lower left knob for pages 3-7. Also for the Utils Part Load page, using the lower left knob.

Soloing Parts

At times you may want to solo one or more parts to check them quickly. Solo mode is entered by holding down the Enable Part button for a ½ second or so. The button will start blinking, indicating the Part is soloed. Multiple Parts can be soloed. You can also solo parts using the Assign 1 or 2 buttons or Foot pedals. Soloing a part will also make it the current part, in case you want to start editing it as it is being soloed. Pressing Enable Part again will un-solo the Part.

Edit Mode and Creating Multi Presets

As you know, once you select the Home button or any of the soft keys, or touch any of the knobs below the five text displays to select a parameter, you will be in Edit Mode. When a parameter is selected, its name appears on the bottom line of the center LCD.

It is important to note that there are some parameters that are global to a Preset, and **not available** on a *per part* basis. These are: all Master FX parameters and Output routings, SamplePool, ClockSync (see Home pages), BPM, and Joystick position.

Utilities (Utils)

To start creating a Multi Preset, you will most likely want to start by loading sounds from other current presets. The Utilities button (Utils) will take you to the four functions that deal with managing the structure of a Multi Preset. The ->Multi button returns to Multi page 1. (If you are on a Multi page, pressing the More button will take you to the Utilities page group.)

Here are the four Utilities functions:

Part Load

This is the Part Load Browser. On the left side, you are seeing a list of all the presets in the current bank (Bank 0 in this case). Turning knobs 1 & 2 on the upper row will scroll through all the presets. Turning knob 1 on the lower row will change the destination part number where the sound will be loaded. Turning knob 2 changes the Bank you are browsing. Knobs 3 in either row do nothing.
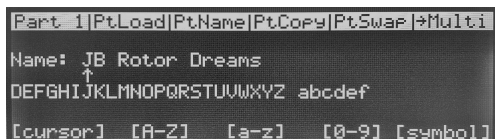
The box to the right is showing the names of the individual parts that are in the selected preset in the browser. (Note: these are NOT from the current preset that you are editing; rather, they show the various parts from whichever preset you have selected via the browser.) In this case, there are no other parts for this preset, just the INIT data. If more than Part 1 is occupied, knobs 4 & 5 in both rows will scroll the part names so that you can load a part from any preset into the current part location. (The current part is indicated by the upper left button and bottom left corner of the display.)

Note: When you load a part, the following are **not** loaded or changed:
- All parameters in the Multi pages
- The performance knob targets and values
- BPM parameter
- The Assign button modes
- The Assign button on/off state
- The clock sync parameter (Home page)
- All ribbon parameters
- All parameters on the Output page
- All FX parameters
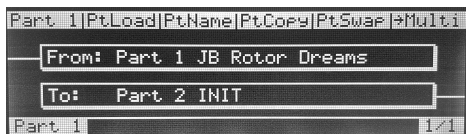- The SamplePool
- The joystick position

When copying or swapping a part the parameters on the Multi pages ARE copied/swapped unless you press Shift. Pressing Shift+Enter will cause the Multi page parameters to NOT get copied/swapped.

Part Name

```
Part 1|PtLoad|PtName|PtCopy|PtSwap|→Multi
Name: JB Rotor Dreams
      ↑
DEFGHIJKLMNOPQRSTUVWXYZ abcdef
[cursor]  [A-Z]   [a-z]   [0-9] [symbol]
```
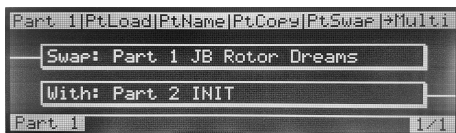
The naming system is new in v2.0. The bottom row of knobs allow for faster selection of characters within specified groups: Upper case, Lower case, Numbers, and Symbols. The leftmost knob moves the cursor left and right. Insertion or deletion is still done with Shift+Inc/Dec (the buttons below the Master Volume).

Part Copy

```
Part 1|PtLoad|PtName|PtCopy|PtSwap|→Multi
─┌From:  Part 1 JB Rotor Dreams      ┐
 └To:    Part 2 INIT                 ┘─
Part 1                           1/1
```

This function allows copying of all information from one part to another (unless Shift is held when pressing Enter, as noted above). For the page, all upper knobs select the Copy From Part, and all lower knobs to Copy To Part. Press Enter (when it's blinking) to perform the Copy function.

Part Swap

```
Part 1|PtLoad|PtName|PtCopy|PtSwap|→Multi
─┌Swap: Part 1 JB Rotor Dreams      ┐
 └With: Part 2 INIT                 ┘─
Part 1                           1/1
```

This function allows swapping of all information from one part to another (unless Shift is held when pressing Enter, as noted above). For the page, all upper knobs select the Swap Part number, and lower knobs the 'With' Part number. Press Enter (when it's blinking) to perform the Swap function.

Multi Pages

The Multi pages are where you set up all of the parameters that control how a Part is handled. During the beta test period, we tried out two different ways to display the parameters, and it was a 'split decision' as to which one was best, so in the end, I decided to include both options. That is why there are 7 pages! The first three pages are the first option, where you have all parameters for the current Part displayed. The remaining four pages show all 4 Parts at once.

In all pages you can adjust any of the parameters. For pages 1 & 2, you can use the **upper leftmost** knob to change the current Part; for pages 3-7, use the **lower leftmost** knob to change the Part. For pages 4-7, only the upper row of knobs will adjust the highlighted Part parameters.

Multi Page 1

Page 1 shows the current Part name and number. The upper leftmost knob can change the displayed part number. The Enable parameter reflects the Enable Part button status. The number of voices assigned are in pairs, as each of the voice DSPs produce 2 identical voices. Maximum number is 10. All older presets will be loaded with 10 voices assigned for Part 1. You need to reduce the voice count in Part 1 to 'free up' voices in the voice pool to play other parts.

Volume scales all VCA levels of the Part.

LowKey and HighKey can be set from the keyboard by first turning the knob to select the parameter, then holding Shift, then playing the keyboard. Low and High Velocity is only adjustable by the knob.

Multi Page 2

Page 2 shows the current Part name and number. The upper leftmost knob can change the displayed part number. Channel is the MIDI channel the Part is set to play, and the default is the Global MIDI channel of the synthesizer, which is set in the Sys/Midi page.

Transpose adjusts by semitones +/- 63 steps. Tune adjusts by +/- 100 cents.

Pan adds or subtracts from all pan values of the Part.

Multi Page 3

```
| Arp | SeqA | SeqB | SeqC | SeqD |Multi |
  Pitch   Joy X   Ribbon1  AfterT  Sustain
   On       On       On       On       On

           Joy Y   Ribbon2  ModWhl  ExprPed
            On       On       On       On
| Part 1 |                            3/7 |
```

Page 3 shows MIDI controller settings. Pitch wheel, Joystick values, Ribbon values, Aftertouch, Sustain, Mod Wheel, and Expression pedal. The lower leftmost knob selects the part.

Multi Page 4

```
| Arp | SeqA | SeqB | SeqC | SeqD |Multi |
   Voices    Vol   Transp  LowKey   HiKey
1:   10      100      0      C-1      G9
2:    0      100      0      C-1      G9
3:    0      100      0      C-1      G9
4:    0      100      0      C-1      G9
| Part 1 |                            4/7 |
```

Page 4 displays all four parts' settings for Voices, Volume, Transpose, Lowkey and Highkey. Turning the low or high key knob, then holding Shift and playing a note on the keyboard will set the value (as well as just adjusting by hand). The lower leftmost knob selects the part.

Multi Page 5

```
| Arp | SeqA | SeqB | SeqC | SeqD |Multi |
  Channel    Pan    Tune   LoVel   HiVel
1: Glb        C       0       0      127
2: Glb        C       0       0      127
3: Glb        C       0       0      127
4: Glb        C       0       0      127
| Part 1 |                            5/7 |
```

Page 5 displays MIDI channel, Pan, Fine Tune, Low and High Velocity for all four parts.The lower leftmost knob selects the part.

Multi Page 6

```
| Arp | SeqA | SeqB | SeqC | SeqD |Multi |
   Pitch   ModWhl  Joy X   Joy Y   AfterT
1:  On       On       On       On      On
2:  On       On       On       On      On
3:  On       On       On       On      On
4:  On       On       On       On      On
| Part 1 |                            6/7 |
```

Page 6 displays Controller options for Pitch and Mod wheels, Joystick, and Aftertouch.The lower leftmost knob selects the part.

Multi Page 7

```
| Arp | SeqA | SeqB | SeqC | SeqD |Multi |
      Ribbon1 Ribbon2 Sustain  Expr
1:       On      On      On      On
2:       On      On      On      On
3:       On      On      On      On
4:       On      On      On      On
| Part 1 |                            7/7 |
```

Page 7 displays Controller options for the Ribbon, Sustain, and Expression pedals.The lower leftmost knob selects the part.

Other screen changes

There are a number of smaller functional additions and changes to various screens, as follows:

Home Pages

Pressing the Home button now switches the soft key menu to the same as the Preset Mode menu. This sets up the same shortcuts without having to reach over to turn on the Preset button.
This menu is only slightly different from the MORE button shortcut menu (press and hold More, and you get a set of softkey labels for shortcuts), which adds the FX shortcut.

Page 2 - a new function called 'solo' has been added for the assign buttons and foot pedals. Since the Home parameters are per Part, you can solo a part using the Assign switches and/or foot pedals.

Page 3 - a new function called Clock Sync (ClkSync): when ON, Clock Sync, makes sure all Parts' arpeggiators and sequencers will clock together. Also, Sample Pool assignment is done here.
NOTE: There is only one Clock Sync setting per Preset. This is also true of the saved Joystick position and SamplePool, which are saved with the Preset, not *per part*.

System/MIDI Pages

The System pages have been slightly modified and increased:

Page 1
1. RemapAT - allows you to remap the incoming MIDI aftertouch so that all incoming PolyAT will be routed to where Channel AT is programmed. When you set it to "AT->PlyAT", it means wherever you have a mod source set to AT it will act as if you have it set to PolyAT. If you are using a PolyAT controller, this allows you to use it with the Solaris without having to re-program all the presets to use PolyAT. "PlyAT->AT" means that everywhere PolyAT is set as a mod source, it will act as though it is set to AT.
2. LoadSamp - if ON, will automatically load the SamplePool listed in the Home page when a preset is selected.

Page 2
1. Global Expression and Sustain - allows override of all Preset assigned pedals with a global function.
2. PageDir (Page Direction) - determines the paging operation for all up/down page buttons. Normal increments pages with Page Down; Reverse increments with Page Up.
3. EnblPrt (Enable Part button mode) - allows user to select version 1 OS or version 2 OS mode. If using Ver 1, you must hold down SHIFT for Ver 2 functions.

Page 3 - Contains settings for Global Velocity and Global Aftertouch, overriding programmed values.

Page 4 - No longer in the Home page group, here is the Info Page, showing the internal serial number and installed OS version.

New Oscillator Type: PhaseMod (PhsMod)

In addition to all of the new Multimode features, a 7th Oscillator Type has been added. This features both "DX7-style FM" (otherwise known as Phase Modulation or PM) and Phase Distortion (PD, from the Casio family of CZ synths). The waveshapes provided are as follows:

For PM - Sine, Morphing Saw (Morph1), Morphing Square (Morph2)
For PD - CZSaw, CZSquare, CZPulse, CZSawPulse, CZReso1, CZReso2, and CZReso3.

For Phase Modulation, use PMod as the mod destination. For Phase Distortion, use the Shape knob and destination. (You can have both types of modulation going on, of course.)

On the oscillator's page 2, you will find Sync and Quant(ization) parameters. For the PhaseMod Type, the only sync value is Gate. For certain PM sounds, you need to 'lock' the start of the phase to make sure you have a consistent attack to the sound, or you don't want to have phase cancellation with stacked oscillators. Gate works with the Phase setting, to restart the phase at a specific point for every note-on event.

Quantize reduces the bit resolution of the PhaseMod oscillator. The range is 0-31 (with 31 = 1 bit). Results are very subtle until you are in the 27-30 range.

SHIFT Key Combinations

Here are all of the Shift key actions:

1. Shift - By itself shows what VCA sections are ON in the current Part
2. Shift+graphic LCD page up/down buttons - Selects Parts
3. Shift+Home - Turns off all arpeggiated notes if Arp and Hold is ON; leaves those functions ON
4. Shift+Seq On - Turns OFF all sequencers
5. Shift+Arp On - Turns off all Arpeggiators
6. Shift+Hold - Turns off all Hold buttons
7. Shift+Keypad 1,2,3,4 - Selects same numbered Part
8. Shift+Period on keypad - Plays C4
9. Shift+note - Sets High or Low Key for key zones in Multi pages
10. Shift+Inc Button - Inserts a space when naming a Part or Preset
11. Shift+Dec Button - Deletes current character when naming a Part or Preset
12. Shift+Enter when copying or swapping Parts - ignores Multi parameters with operation
13. Shift+upper knob in Program Mode, page 2 (for assigning performance controls) -clears assignment
14. Shift+lower knob assigns parameter for performance controls

Additional key combination - Hold both **Octave** buttons and play the keyboard to transpose the Solaris (affects System Transpose parameter). C4 represents no transposition, and intervals above or below C4 set the transpose range. Reset to zero must be done manually.

Button relabeling - **Lag** has been moved to position 6 in the VS/AM group. **Ribbon** has been moved to position 6 in the KeyTable group. (Pressing the **More** button steps through the different soft key groups. Holding down the More button brings up the More shortcuts, replacing the currently displayed soft keys with ArpSeq, Multi, Utils, FX, VS/AM, and Sys Mid. The KeyTable group is the only one that does not have a shortcut soft key in any of the menus. It is the next one following the VS/AM group.)

One last thing - the OS version number and internal serial number info has been moved, from Home page 4 to System page 4.

That is all for the new v2.0 Operating System. Please let me know if you come across any bugs or issues that you'd like to see in future versions. And thank you so much for supporting the Solaris OS development!

Cheers,
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