FRACTAL AUDIO SYSTEMS

AX8 AMP MODELER + FX PROCESSOR

FIRMWARE RELEASE NOTES

VERSION 4.01 — OCTOBER 6, 2016

AX8 V4.01 is a maintenance release containing the following fixes:

Fixes:

- Corrected a bug that allowed spurious SYSEX commands to be broadcast on the MIDI OUT port. This conflicted with attached 3rd party devices.
- Changed the behavior of the Control Switches (CS1 and CS2) blocks so that a refresh of AX8-Edit is no longer triggered.
- Changed the behavior of the Sticky Preset Footswitch so that the unit always returns to the main screen. This prevents display issues in effect blocks. It is also consistent with the behavior of the Single Preset Footswitch.

VERSION 4.00 — SEPTEMBER 16, 2016

AX8 V4.00 contains Quantum 4.0 and so much more!

Additions

- *Quantum 4.0:* Improved power tube plate current vs. grid voltage accuracy. New models more accurately reflect how the response is higher order at lower grid voltages and "relaxes" into a lower order response at higher grid voltages. This improves feel when the virtual power amp is overdriven and improves harmonic content accuracy.
- All operation of AX8-Edit is now separate from the operation of the front panel. NOTE: any changes made on the front panel of the AX8 while AX8-Edit is attached will still cause a refresh of the editor. This change dramatically reduces audio dropouts due to editor interaction.
- Removed the Footswitch grid restriction of allowing the same block on multiple footswitches. Now that footswitches have the ability to be latching or momentary, it can advantageous to attach both a latching (for both BYPASS and X/Y Toggle) to a block, while allowing the BYPASS to be assigned to a momentary switch at the same time.
- Removed PICK ATTACK parameter from the AMP Block. (The value was never processed on the AX8)
- Added TILTEQ, LOWSHELF2, HIGHSHELF2, and PEAKEQ2 to the Filter block.

Fixes

- Fixed a bug causing noise issues when attaching controller to some modifiers on the AMP block.
- CS1 and CS2 now correctly load the default state on a preset change.
- The Filter on Voice 2 of the Synth block works correctly now.
- Changing the BYPASS state of a block on the LAYOUT grid correctly lights the edit LED.
- Panning all the way right with Pan parameters other than the Balance no longer mutes the output on the following effect blocks:
    - Pitch
    - Multi-Tap
    - Enhancer
    - Delay

VERSION 3.52 — JULY 12, 2016

AX8 V3.52 is a maintenance release.

Fixes:

- Corrected Noise issue induced by placing a controller on the AMP block BOOST parameter modifier.
- Fixed a bug where CS1 and CS2 returned default state when TAP TEMPO was executed.

- Fixed a display bug that prevented the MIDI Channel from displaying properly under the CONFIG: MIDI menu.
- Optimized the MIDI port send subsystem to accommodate devices (Diezel Amps) with short MIDI timeouts.
- Fixed Recall Effect so effects saved in older presets are recalled correctly.

VERSION 3.51 JUNE 16, 2016

AX8 V3.51 is a maintenance release that mainly addresses a bug that can affect the AX8's ability to store SYSTEM PARAMETERS. This release should be used in lieu of V3.50 which introduced the storage bug. As always, please back up your unit before upgrading. If you are upgrading from any older revision, other than V3.50, please read the V3.50 release notes, as they detail important feature additions.

Additions

- BANK LOWER LIMIT and BANK UPPER LIMIT can now be set to the same value, limiting the use of the AX8 to 1 preset bank.

Fixes

- Correct a bug that prevented the AX8 from correctly storing the SYSTEM PARAMETERS
- Corrected a scrolling bug that corrupted the display on the CFG screen

VERSION 3.50 JUNE 14, 2016

AX8 V3.50 introduces some cool new features as well as a couple of bug fixes.

Additions

- Added the new "USA IIC++" amp model from the AxeFx Quantum V3.03
- Added new "Control Switch Blocks" CS1 and CS2 – NOTE: see instructions below
- Added new GLOBAL and PER-PRESET momentary switches – NOTE: see instructions below
- Added the BANK LIMIT feature – NOTE: see instructions below
- Modified the global parameter "DEFAULT SCENE" with the addition of "CURRENT SCENE".
  This allows the user to keep the current active scene when changing presets.
- Pressing the <EXIT> button on the VU tab now returns the AX8 to the FS tab

Fixes

- Fixed unwanted distortion in 65 BASSGUY, DWEEZIL B-MAN, DIZZY V4 SLVR 2, & DIZZY V4 SLVR 4 amp models (since v3.04).
- Adjusting the top panel LED-Ring amp knobs now properly notifies AX8-Edit.
- The AX8 now properly handles MIDI "Running Status" messages, allowing control by 3rd party products (e.g. Roland FC-200).
- Fixed a bug that was affecting controllers attached to the RUN, HALF, and REVERSE parameters of the LOOPER.

ADDITIONAL NOTES:

GLOBAL and PER-PRESET Momentary Footswitches

Momentary switches do not "latch" when you step on them. They activate *while* your foot is down on the switch, and deactivate when you lift it up. Any of the numbered footswitches of the AX8 may now be designated as MOMENTARY.
This can be done either GLOBALLY, or PER-PRESET.

If a momentary footswitch is used to BYPASS/ENGAGE effects, the effect state will be *reversed* by the action of the switch.
A block that is saved as ENABLED will by momentarily bypassed. A block that is saved as BYPASSED will by momentarily enabled. The same is true for a momentary footswitch assigned to SCENE 1/2 Toggle: depending on whether Scene 1 or Scene 2 is selected, the switch will momentarily toggle to the other.

1. ***To Set Up a Global Momentary Switch***
   a. Navigate to the GLOBAL FOOTSWITCH ("GBL FS") page of the GLOBAL menu under SETUP.
   b. Set each switch as desired to one of the following options:
      i. PER-PRESET

ii. GLOBAL LATCHING (This is equivalent to the "GLOBAL" setting from older firmware versions).
iii. GLOBAL MOMENTARY

2. To Set Up a Per-Preset Momentary Switch

a. First, call up the preset you want to edit footswitches for.
b. From the main FOOTSWITCH ("FS") page of the AX8, page right to the CONFIG page.
c. Select the new FOOTSWITCH MODE ("FS MODE") option and press <ENTER>
d. Set Each footswitch as desired:
    i. LATCHING
    ii. MOMENTARY
e. Save the preset! (STORE -> ENTER -> ENTER

NOTE: The settings on the FS MODE page have no effect for a footswitch if it is set to one of the GLOBAL options on the GBL FS page!

Controller Footswitch Blocks CS1 and CS2

The AX8 now has the ability for footswitches 1-8 to operate as "Control Switches".
Control Switch 1 and Control Switch 2 now appear in the list of SOURCES on every MODIFIER page.
Using this feature, for example, you can create a BOOST footswitch (Volume Modifier) a WHAMMY effect (Pitch Block: Control Modifier) or a single footswitch that toggles two or more effects on or off in unison (BYPASS MODE modifiers).

CONTROL SWITCH 1 and 2 are *footswitch blocks* that can be assigned Globally or Per-Preset like any other Footswitch Block from the main Footswitch ("FS") page. Use NAV to select the desired location and turn "A" to step through the list of available footswitch assignments.

To Set Up a Control Switch Footswitch:

1. On the Footswitch ("FS") page of the AX8, use **NAV** and **A** knobs to assign CS1 or CS2 to footswitch 1 – 8
2. Add a modifier to the desired parameter, setting "CTRL SW1" or "CTRL SW2" as the SOURCE.
3. Adjust the modifier to work as desired.

Now, when you step on the footswitch, the modifier will change the value of the assigned parameter.
NOTE: Coupled with the new "Momentary Footswitch" options, Control Switches are quite powerful!

The **initial value** of each Control Switch is saved per scene. The initial values are set on the new Control Switches ("CTRL SW") page of the CONTROLLERS area of the CONFIG page.

To Set Initial Values for a Control Switch:

1. From the main FOOTSWITCH ("FS") page of the AX8, page right to the CONFIG page.
2. Select the CONTROLLERS option and press <ENTER>
3. Page to the CONTROL SWITCH ("CTRL SW") page.
4. Set the initial value of each switch for each scene to either "ON" or "OFF".

Bank Limit

Bank Limit is a new feature designed to prevent "oops" when stepping up or down through banks during a live performance.
It limits the available banks you can access through the footswitches with an UPPER and LOWER limit. For example, you could limit your AX8 to footswitch access to banks 1 through 4 for one gig, and banks 12 and 13 for another. Bank Limit is enabled through the global menu, and adds three new parameters to the GLOBAL SETTINGS menu.

To set up Bank Limit:

1. Navigate to the SETTINGS page of the GLOBAL menu under SETUP.
2. Set BANK LIMIT as desired: "NO", "WRAP", & "NO WRAP"
    a. NO – Banks are NOT limited. Lower and Upper limit settings are IGNORED.
    b. WRAP – Banks ARE limited and will wrap around from the highest back to the lowest (or vice versa).
    c. NO WRAP – Banks ARE limited and will NOT wrap.
3. Set BANK LOWER LIMIT: 1 – 64 as desired. Cannot be higher than the UPPER limit.
4. Set BANK UPPER LIMIT: 1 – 64 as desired. Cannot be lower than the lower limit.

This feature has no effect on AX8 Edit.

VERSION 3.04 MAY 12, 2016

AX8 V3.04 addresses the issue of incorrect parameters appearing in AX8-Edit. As always, we recommend that you back up your system and presets using Fractal-Bot before proceeding with installation.

Additions

- None

Fixes

- In some rare cases, AX8-Edit mis-reported the CPU Load disabled state of effects. This has been corrected.
- Corrected an issue that caused sporadic effect parameter display issues in AX8-Edit.
- All Pan Right or Balance Parameters are no longer limited to 99.9% to prevent muting the output All Balance parameters now transition from -100 to 100.
- Increased CPU utilization introduced by V3.03 has been corrected back to normal.

VERSION 3.03 MAY 09, 2016

AX8 V3.03 has been created to fix a few issues discovered during the release of V3.02. As always, we recommend that you back up your system and presets using Fractal-Bot before proceeding with installation.

Fixes

- A small number of units have experienced sporadic boot failures at power up. This release fixes an initialization bug that was found to cause this issue.
- A bug fix in V3.02 intended to fix a crash bug related to incoming MIDI data over the standard MIDI port, was found to be corrupting data. This bug fix corrects the original crash bug, without the unintended data corruption.
- The Volume/Pan block was muting the outputs when panning 100% to the R. This has been corrected.
- In some cases, the AX8-Edit parameter buffer was not being populated correctly. This led to some rare cases of overwriting presets with incorrect data. This too has been remedied.

VERSION 3.02

AX8 Firmware 3.02 is based on the Quantum 2.04, 3.00, 3.01, and 3.02 firmware updates for the Axe-Fx II. This is a major release and may change the sound of existing presets (specifically, the AMP block) although RESET SYSTEM PARAMETERS should not be necessary. We always suggest that you backup your AX8 using Fractal-Bot before a firmware update.

Quantum Updates:

- Re-matched Friedman BE and HBE amp models using a newer reference amp, as the original reference amp is an early model and has questionable QC.
- Added Friedman BE/HBE V2 models based on a Friedman BE/HBE with the “Voice” switch toggled left. The original models (based on the switch toggled right) have been renamed Friedman BE/HBE V1.
- Reduced popping when changing Amp block Preamp Bias.
- Fixed Drive block “Plus Dist” type defaulting to wrong clipping type.
- Improved Amp block output transformer modeling. New model more accurately simulates dynamic core losses and leakage inductance. The “Xfrmr Grind” knob controls the intensity of the effect. Higher values result in more high frequency response and a more “open” sound. Very high values can yield a raspy, spitty tone common in vintage and/or low wattage amps. Modern “big iron” amps tend to have low values. Note that the audibility is dependent upon how hard the virtual power amp is driven and is more noticeable as the MV is increased. Also note that the effect in real amps is highly dependent on the speaker. Some speaker/transformer combinations exhibit significant high frequency dynamic boost while other combinations yield almost none. As always use your ears as the final determinant.

  Note: The Transformer Grind parameter will be set to a default value and the Dynamic Presence parameter will be reset to 0.0 for any presets created with previous firmware.

- Improved triode plate modeling for cases when plate load is complex.
- Improved Ruby Rocket models frequency response accuracy vs. Drive knob. Existing presets should be reset by both deselecting and reselecting the amp model or by turning the Low Cut Freq parameter to 10.0.
- Extended the range of the Amp block Hi Cut Freq parameter to 400 Hz to 40 kHz. As this changes the preset storage format, existing presets will be automatically updated to use default values.
- Added “Dweezil’s B-man” amp model based on a modified Fender Bassman as used by Dweezil Zappa.
- Fixed wrong default Tube Bias value in Recto1 and Recto2 amp models.

Additional Enhancements:

- Moved the “VU” page to the main menu, including a new CPU indicator. (To access this page quickly from the main footswitch screen, simply tap SHIFT followed by PAGE.)
- Greatly improved the performance/efficiency of modifiers.
- INPUT 1 PAD now defaults to “12dB” (when you perform RESET SYSTEM PARAMETERS).
- The AX8 now clears a CPU overload when you change scenes, so any disabled effects can be re-enabled if possible.
- Optimized MIDI input. (This change does not affect MIDI over USB.)
- Added Large Preset Display: The Global Parameter “DISPLAY LARGE PRESET” with the values “NO”, “1 SEC”, “2 SEC”, “3 SEC”, and “4 SEC” was added. When set to any value other than “NO” the Large Preset Name will display for the period of time specified every time the preset is changed by the user.
- Added the Preset Recall Display. Both SINGLE PRESET/BANK and STICKY PRESET/BANK now display a list of the 8 presets in the current selected bank. If the current selected bank contains the active preset, then the active preset is displayed in reverse video. When in STICKY PRESET/BANK mode, this screen is persistent.
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AX8 Specific Fixes

- Fixed EMPHASIS on the Pedal Compressors so it behaves like the same parameter in the Axe-FX.
- FX BYPASS support (SHIFT->EDIT) now works on the “LAYOUT” page of the main menu, and from *within* the edit menu of the LOOPER block.
- Previously un-configured MIDI PC SCENE no longer produces the wrong MIDI Channel Output.
- Fixed a bug preventing PROXIMITY from processing the RIGHT channel in a stereo CAB block.
- Removed the CAB block’s “MIC” parameter since it never worked (and microphones are now “baked in” to all pro-quality IRs anyway!)
- Added “PROXIMITY FX” (Enable/Disable) to the Advanced Menu in the CAB block to control whether the PROXIMITY parameter is active or not. When importing an Axe-Fx Cab block with “Mic” set to “NONE”, this parameter will be set to “disabled” and the PROXIMITY control will do nothing.
- Fixed a bug in INPUT DRIVE: Attaching a controller no longer causes crackling on some models (particularly the “JR BLUES” and “5153 50W BLUE”).
- Fixed a bug in INPUT DRIVE: Turning the INPUT DRIVE knob fully counterclockwise no longer causes oscillations in some models (particularly Angle Severe, Friedman BE/HBE models).
- CPU load no longer spikes 35% when placing a modifier on the REVERB TIME parameter.
- Fixed a crash bug, where a flood of incoming MIDI messages would crash the AX8
- Fixed a bug affecting the clipping algorithm of the “BRIT SILVER” amp model.
- Fixed a bug that allowed AMP models imported from the AxeFx to leave a controller attached to the OUTPUT LEVEL parameter modifier (not supported in the AX8). NOTE: the controller is now removed by the AMP block.
- Reduced audio dropouts when editing with AX8-Edit.

VERSION 2.02

This release is based on the modifications made to the AxeFX II Quantum V2.02, hence the jump in version numbers. This is a major release, and we strongly urge you to RESET YOUR SYSTEM PARAMETERS upon successful installation of this firmware.

- Improved tube modeling. New algorithms uses more accurate plate current formulas based on actual measurements rather than theoretical values. This results in smoother, thicker distortion and better dynamic response.
- Improved power supply modeling. New algorithms improve sag and feel. For convenience the virtual power supply voltage (B+) can now be monitored on the PWR DYN tab of the amp block. When the Supply Sag control is selected the gain reduction meter will display the supply voltage in dB relative to the idle voltage.
- Improved cathode bias algorithm for “Class-A” amp models (i.e. Class-A 30W, AC-20 Dlx, etc). In conjunction with this the Cathode Squish parameter has been repurposed as “Cathode Bias” and controls the value of a virtual cathode resistor. A value of 50% is “optimum” and biases the power tubes at true Class A operation (neglecting any bias shifting due to supply sag, screen droop, etc.). Values greater than 50% increase the resistance and therefore bias the power tubes “colder”. Values less than 50% bias the tubes beyond Class A. In a real amp this would probably destroy the tubes but that limitation does not exist in our virtual amp. Most real amps of this type actually operate far below Class A and the default values for the models will reflect this. Note that the Power Tube Bias value should be set to 1.00 for these amp types (since that parameter controls the grid voltage and the grid voltage is at a maximum in these types of amps). Existing presets will be automatically updated with new default Cathode Bias and Power Tube Bias values.
- Improved Phaser block CPU usage.
- Added “Filter Slope” parameter to Cabinet block. This can be used to select between first-order (6 dB/octave) or second-order (12 dB/octave) filters for the Low Cut and High Cut filters.
- Improved Plexi “Jump” models to account for interaction between Drive controls.
- Renamed Plexi 50W High amp model to “Plexi 50W Hi 1” (see below).
- Added “Plexi Hi 2” amp model which is similar to Plexi 50W Hi 1 except the second triode stage has a 0.68uF cathode bypass capacitor. The second bypass capacitor was added in the early 70’s and gives a slightly brighter tone.
- Added “Plexi 100W 1970” based on a 1970 Marshall 1959SLP 100. This particular amp has a darker, smoother sound than earlier Plexis.
- Added “Ruby Rocket” amp model based on a Paul Ruby Rocket with the Bright switch in the down position. The existing model has been renamed “Ruby Rocket Brt” to reflect the state of the Bright switch being in the up position.
- Added “AC-20 12AX7 B” amp model based on an AC-20 Deluxe with the rear switch set to 12AX7 and the Bass/Treble switch set to Bass. The existing models have been renamed AC-20 EF86 B, AC-20 EF86 T, and AC-20 12AX7 T.
- Added “Spawn Nitrous 1” amp model based on the OD-1 mode of a Splawn Nitro with KT-88 power tubes.
- Fixed Spawn Nitrous model broken by earlier firmware update. If you are using this model in your presets you should reset the model by deselecting and reselecting the amp type. This model has been renamed “Spawn Nitrous 2” to indicate that it is the OD-2 mode (see above).
- Fixed wrong default Negative Feedback value in all “Dizzy” models. Note that the Presence control in these models has more range than the actual amp as the amps have a limiting resistor that the models do not have. Turning the Presence all the way up on the real amps is equivalent to around 7-8 on the models.
- Fixed wrong Bass taper in Recto2 amp models. Previous taper was Log30A. Taper is now Log10A. Existing presets should be auditioned as the amount of bass will be less.
- Improved power tube saturation modeling. This yields warmer, “tubier” distortion. The PA Hardness parameter is automatically set for each power tube type but may be overridden if desired.
- Improved virtual output transformer saturation modeling.
- Change “Thru” bypass mode so that effect input is muted. This prevents, for example, delays from creating echoes when engaged.
- Added “Invert” mic type to Cabinet block. This inverts the signal allowing for interesting effects in conjunction with the delay parameter.
- Fixed Reverse Delay being modulated slightly for long delay times.
- Fixed Mr Z MZ-8 amp model sounding “off”.
- Added Bright Knob Control to all amp models.
- Fixed a bug where the hardware TREBLE knob did not correctly control the Treble on some amp models.
- GATE/EXP block now correctly stores and loads the Y parameters.
- Added access to the Balance Knob in the GATE/EXP block.
- Fixed a bug where attaching a controller to Volume Increment or Decrement could potentially corrupt a preset.
- Fixed Bypass Toggling when using Y on the Multi-Delay block.
- Fixed a bug on the Layout grid; placing a block no longer automatically connects to a previous empty block.
- Fixed a user reported bug: Dialing the AMP Block Drive parameter to zero quickly using the dedicated "DRIVE" knob would cause a loud oscillation on the Angle Severe amp models.
- Modified Scene Revert so selecting the current scene will revert to saved settings.
- Fixed a bug where the Looper Control did not like to be initially triggered by the F-switches

- The user is no longer restricted from inserting blocks that create CPU overload. Unit now continues disabling the highest load effects.
- Fixed a bug that produced unpredictable behavior when pressing <ENTER> on an empty block on the layout grid.
- Fixed Crash bug using AX8-Edit: placing shunt in upper left corner, and then editing Input Gate.

NOTE: This firmware represents a significant update in the amp modeling and the amp models themselves. Many models have been redone. Although care was taken to ensure as much compatibility with existing presets as possible, your presets may be altered.

V1.01

V1.01 is a maintenance release, and contains the following BUG fixes:

- Added FAS Boost to the DRIVE Block.
- Fixed Modifiers on the PAGE3 of the WAH Block.
- FXLOOP Block correctly restores it state on Preset and Scene change.
- Metronome in the TEMPO now works.
- Controllers no longer cause an audible pop or click.
- Scene Changes made on the LAYOUT GRID, such as Effect BYPASS, are now correctly saved to the preset.
- Replacing a CPU intensive block with a less intensive block (such as a SHUNT) is no longer blocked by the unit.
- Global Controllers Volume Increment and Decrement now work
- *Fixed a bug where setting Tap Tempo to the "SCENE" function switch disabled the "LOOPER" and "TEMPO" LEDs.*
- *Fixed a bug where setting Tap Tempo to the "LOOPER" function switch disabled the "TEMPO" LED.*
- Single TAP TEMPO will now timeout correctly and return you the main screen
- Compressor Side Chain now works correctly.
- Both channels of the stereo CABINET block now output the same level.
- Attaching a controller to the DRIVE parameter of the AMP block no longer causes a +25% increase in CPU utilization.
- PHASER LFO phase now works correctly

NOTE: Version 1.01 was the first update. 1.0 was the initial release, so there is nothing prior to the notes above.