



FIRMWARE RELEASE NOTES

VERSION 3.00 – August 9, 2022

New Features

- Added new amp models: "PVH 6160 Block Crunch" and "Diamante Fire" (based on a Diamond Del Fuego.)
- Added new Drive effect types "Klone Chiron", "Esoteric Bass RCB", and "BB Pre AT".
- Added new Setlists/Songs feature, which can be used with onboard footswitches or an FC Controller to access presets and scenes in custom order during live performance. A new area of the SETUP menu provides full access from the front panel, with a corresponding new area of FM9-Edit which also offers import/export and more. For additional details, please see the Setlists & Songs Mini-Manual, located at: <https://www.fractalaudio.com/ssss-manual>
- New "Block Mixer" algorithm results in faster/quieter scene and channel changes. This new algorithm allows placing Amp blocks in series without the concomitant sound bursts that would normally occur when switching scenes.
- New Speaker Drive algorithm in Amp block. This new algorithm more accurately models the frequency dependent distortion of guitar loudspeakers. The default value (upon resetting the block) is 2.0 which gives roughly 1 dB of compression. Setting the value to 0.0 defeats the speaker drive modeling. Higher values give a smoother and more focused sound, rounding off the "sharp edges" and yielding greater compression.
- Added Speaker Thump control to Amp block. Speaker Thump models the dynamic, nonlinear behavior of a guitar speaker. A value of 5.0 roughly corresponds to an amplifier running into a speaker rated at the same power as the amplifier, i.e., a 100W amplifier running into a 100W speaker. The reset value is a conservative 2.5 which represents, i.e., a 50W amp running into a 100W speaker. Note that the majority of the response is in the subsonic region and the effect is primarily tactile. Existing presets are not affected and the value will be zero
- Added ability to use Pre-Delay in Reverb block as a simple echo. Pre-Delay now features Tempo, Feedback and Mix parameters. The pre-delay time has also been increased to 1 second. Several new types have been added to demonstrate these capabilities.
- Added ten new speaker impedance curves in the Amp block.
- Added Depth control to Authentic/Tone page for Brit Super, Brit 800 Mod and JMP-1 amp models.
- Added "Scene Ignore" to most blocks. When set to ON, Scene Ignore causes the block to ignore scene changes. Scene Ignore is a per-channel parameter. This allows turning Scene Ignore to OFF on one or more channels which will then allow a scene change to set the block to a desired state if the block is on that channel.
- Factory default FC Layout #8 now contains a new Setlist/Song layout. To load this layout, you can either re-load all of the factory layouts from in **SETUP: FC Controllers: Reset**, or download the layout and instructions a la carte from: <https://www.fractalaudio.com/downloads/manuals/fas-guides/SSS-Sample-FC-Layouts.zip>
- Added "Aurora Delay" type to Multitap Delay also added new cross feedback to Quad Parallel type.
- Support for new FM9 Turbo hardware. <https://forum.fractalaudio.com/threads/announcing-fm9-turbo.185877/>

Updates

- Improved Amp block transformer/speaker interaction modeling. The "Voice Coil Resistance" parameter has been repurposed/renamed "Speaker Impedance". The various parameters work as follows: Transformer Matching: Sets the impedance ratio (square of the turns ratio) of the output transformer. Speaker Impedance: Sets the relative nominal impedance of the speaker. To simulate connecting, e.g., a 4-ohm speaker to an 8-ohm output you would set Speaker Impedance to 0.5. Conversely to simulate connecting a 16-ohm speaker you would set it to 2.0.
- Improved speaker impedance curve fitting algorithm. This results in more accurate and more "colorful" modeling as the previous algorithm tended to damp box resonances somewhat. All the speaker impedance curves have been updated using the new routine. Existing presets are automatically updated to use the updated curves based on the new global setting option "Update Pre-3.x"

Presets Spkr Imp Upon Load.” If you have modified the stock curve, i.e., changed the LF/HF Resonance parameters, then you will need to re-enter those values into your presets if set to “YES.”

- Update PI Bias Excursion parameters for many Amp models based on new measurement technique.
- Improved Amp block output transformer modeling. This requires updated Transformer LF/HF values for the amp models. Existing presets are automatically updated to the new values upon recall.
- Changed Compressor block so that times display actual milliseconds for the various pedal types.
- Changed “Drive” to “Gain” for Amp block preamp gain control as this is more consistent with naming in real amps.
- Muting algorithm improved around FM9-Edit operations such as Block Library, Cabinet download, Patch download.
- Decreased minimum diffuser time in Delay block to 1%.
- The DRIVE effect is updated to correspond with the latest Axe-Fx III firmware release.
- Patch edited status is set to ‘On’ when an existing preset is loaded and the speaker impedance curve data has been updated automatically.
- Preset store functionality is improved. Presets take less time to write to storage. “Level & Save” FC functions will no longer cause a gap in audio.
- Presets created prior to version 3 will be loaded with updated default values for AMP Excursion Time and Recovery Time.
- AC/RC Boost and BB Preamp models now use accurate bass and treble controls.
- “PVH 6160 Block” AMP type is renamed as “PVH 6160 Block Lead”

Fixes

- FC: Layout Link will no longer unduly trigger when exiting the Tuner.
- FC: Fixed an issue that prevented the Hold function from working for some Stand-in Switches.
- FC: Preset: Select in Bank switches now stop flashing when the preset is changed by any means other than an FC footswitch (editor, front panel, etc.)
- FC: Preset: Select in Bank switches now flash consistently when used with Bank: Select switches.
- FC: Preset: Toggle in Bank switches now consistently and correctly load the “Primary” preset after changing the bank.
- FC: The STARTUP VIEW of the FM9 will now behave appropriately in all circumstances when an external FC-6 or FC-12 is present.
- Fixed wrong drive taper in Mr. Z Highway 66 model.
- Fixed wrong capacitor value in Friedman Smallbox model.
- Status messages on the main LCD will not immediately be cleared when viewing the Tuner GUI screen.
- Status messages on the main LCD display and clear properly in all cases when viewing the Setup menu.
- Text labels that would overrun the assigned text field on the LCD GUI are now truncated to fit.
- Selecting output configuration “MUTE” no longer causes USB signals to be summed to mono.
- Parametric EQ and Megatap blocks no longer cause a GUI hang if modifier attached to parameter and update rate is set to FAST.
- Adjusting a Custom Scale value no longer causes the next value to be zeroed despite the value shown in the edit field.
- Using the MLM switch combo on the FC-6 more than once changes between the MLM layout view windows.
- The speaker impedance graph updates correctly when “Reset Current Channel” is selected in FM9-Edit.
- Standard resolution cabinet graph data shows correctly in the “Align” interface.
- Scene MIDI LCD GUI screen updates correctly on scene change.

RELEASE NOTES HISTORY

VERSION 2.02 – April 20, 2022

FIXES & UPDATES

- Ten-Tap Delay effect bypass modes operation corrected.

VERSION 2.01 – April 15, 2022

*FM9 Version 2.01 is a massive upgrade featuring new amps, new effects, and much much more. It was first released in December 2021 as "public beta 2.0", but so many updates have been added since that a new beta was released as **2.01**, and now as official firmware version 2.01. The 2.0 beta release notes are integrated below. **NOTE:** You can upgrade to this version directly from firmware 1.0, or from public beta 2.0 or public beta 2.01.*

AMP BLOCK UPDATES

Version 2.01 represents the first use of the Chase Nonlinear Feedback (CNFB) technique in the FM9. The virtual power amp has been completely rewritten, providing improved accuracy, especially in the clipping and power supply sag behavior vs. frequency.

- New amp models: 59 Bassguy Normal, 5F8 Tweed Normal and 5F8 Tweed Jumped.
59 Bassguy and 5F8 Tweed models now include both "Normal" and "Bright" input drive controls.
- New amp models: JMPre-1 Clean1/2. Note: The real amp has a fixed, passive tone stack with an active 4-band EQ. Therefore, the Bass/Mid/Treble controls when using Authentic Tone Controls are mapped to the Graphic EQ. The passive tone stack itself, however, is adjustable. With all controls at noon the tone stack is equivalent to the real amp's fixed tone stack.
You can access these controls using the Advanced menu page or via FM9-Edit.
- Updated JMPre-1 OD1/2 models. As with the Clean1/2 models the Bass/Mid/Treble controls now are mapped to the Graphic EQ when using Authentic Tone Controls.
- New JMPRE-1 Output EQ type in Amp block. This type replicates the active EQ used in the JMP-1 preamp (see above).
- New Amp model: "FAS Buttery"
- Added 11 new power tube types from various manufacturers.
- Added "RCB Boost" to Amp block Boost types.
- Improved Phase Inverter Bias Excursion accuracy for some models (mostly non-MV types). *Note: The improved PI Bias Excursion accuracy results in an increase in bias excursion in most cases. Bias excursion primarily manifests as intermodulation distortion, particularly subharmonic distortion. This produces a chunkier tone with more growl and also yields a thicker tone when rolling off the volume or playing lightly. The amount of bias excursion can be adjusted using the PI Bias Excursion control in the Advanced menu.*
- The Amp block headroom meter is improved.
- Updated default cathode follower values for Matchbox D-30 model.
- Renamed "Speaker Impedance" to "Voice Coil Resistance" to more accurately describe the function of the control. Note that this includes all other "parasitic" resistances, i.e., speaker cable resistance, output transformer winding resistance, etc.
- Rearranged order of pages in Amp block so that "Input EQ" and "Output EQ" are after the "Tone" page.
- Fixed Amp block Transformer Match control not working properly.
- Fixed Bludojai Lead model missing resistor between last preamp stage and power amp.
- Fixed names of Dizzy V4 2 and Dizzy V4 3 swapped.
- Fixed wrong resistor value in Solo 88 Lead input circuit. Impact is probably negligible.
- Fixed wrong resistor value in USA Pre LD2 overdrive circuit. This increases gain slightly. You may need to audition any presets using these models and adjust gain accordingly.
- Fixed Amp block power tube "kvb" not being set correctly in rare circumstances. This caused the output level of the amp block to change depending upon the previous preset used.
- Fixed wrong B+ voltage for Tremolo Lux amp model.
- Added check to prevent excessive message queuing, i.e., when selecting an amp model using Value knob.
- Added global "Speaker Impedance Curve" option (Setup: Global Settings: Config page). The selected curve is whenever you change to a new amp model. When set to "DEFAULT", the default curve for a newly selected model is used. Also added several new Impedance Curves; thank you to Dr. Bonkers Soundlab for these.
- Improved Amp block transformer/speaker interaction modeling. The "Voice Coil Resistance" parameter has been repurposed/renamed "Speaker Impedance". The various parameters work as follows:
Transformer Matching: Sets the impedance ratio (square of the turns ratio) of the output transformer.

Speaker Impedance: Sets the relative nominal impedance of the speaker. To simulate connecting, e.g., a 4-ohm speaker to an 8-ohm output you would set Speaker Impedance to 0.5. Conversely to simulate connecting a 16-ohm speaker you would set it to 2.0.

- Update PI Bias Excursion parameters for many Amp models based on new measurement technique.

DRIVE BLOCK UPDATES

- New Drive Types: "Valve Screamer VS9" and "Maxoff 808" including a new diode SPICE model, "1S1588T" which is the Toshiba version of the 1S1588 and reportedly the "best sounding."
- New "Hi Mid" control in EQ section.
- Improved accuracy of "G-taper" used for tone control in some Drive models, i.e., T808, VS9, Super OD, etc. Impact on existing presets is likely negligible but any presets using Tube Screamer models and their variants should be auditioned.
- Renamed Timothy and Suhr Riot Drive models to clarify switch position.
- Fixed Blackglass 7K model as reference pedal was defective. Also added new "Grunt" and "Attack" controls (Grunt switch on pedal is a selectable low cut so knob duplicates Low Cut control).
- "Fixed" the "Attack" control of the "Horizon Precision Drive" so it matches the actual pedal (was reversed previously). Any presets using this model should be adjusted accordingly.
- Fixed wrong op-amp clip threshold for DS1 models in Drive block.
- Fixed DS-1 Drive types have no gain when Drive is at 0.0.
- Improved accuracy of Drive block Drive control for low settings.

COMPRESSOR BLOCK UPDATES

Overhauled the Compressor Block based on the latest Axe-Fx III updates:

- Added Input Level switch. When set to INSTRUMENT the detector is optimized for guitar-level signals, i.e., before an amp block. When set to LINE the detector is optimized for post-amp level signals.
- Added Emphasis frequency to the sidechain.
- Improved Pedal, Optical, Tube, Analog, JFET and Dynamicomp types in Compressor block. Auto Attack/Release has been removed from Pedal and Dynamicomp types as it is no longer applicable.
- Improved Auto-Makeup gain behavior for types with this option.
- Increased maximum sustain for various compressor types.

IMPORTANT: Due to these changes, the behavior and level of the Compressor may be different in existing presets.

It is recommended to audition any presets using the Compressor block and adjust as required.

OTHER BLOCK UPDATES

For additional details about new features below, see the updated Fractal Audio Blocks Guide, available on our website.

- New "Types" in the Flanger, Plex Delay, and Multitap Delay. These provide instant access to exciting effect settings without the need to adjust individual parameters. Special thanks to Leon Todd, Simeon Harris and Cooper Carter for some of the new contributions.
- New Delay Block Types: Worn Tape, Zephyr, and Diffused Delay.
- New "LF03" in Delay block. This can be assigned to Level, Pan or Spread.
- New Megatap features including feedback, diffusion, and more. Maximum number of taps is now 64 on the FM9.
- New LFO in the filter section of the Plex Delay block allows creative modulation effects.
- New pitch shifting capability inside the Reverb Block. This can be used to create "Shimmer" more easily than using separate Pitch and Reverb blocks—and with less CPU usage. Several new types demonstrate this capability.
- New Pitch type, "Dual Detune Delay" offers exciting cross-feedback options with delays inside the feedback loop.
- New "Modern Gate" type in the Gate/Expander Block. This type is similar to the Classic Gate except it opens in a constant linear-in-dB manner. This makes the attack slower so this type can be used for both traditional gating and for special effects.
- Improved Input block gate performance.
- Improvement: Pitch Block and Pitch Follower use new pitch detection based on Axe-Fx III

- Added New "Max Loop Time" parameter to Looper. This sets the maximum recording time, allowing a loop time to be precisely pre-configured in advance of recording. When recording time reaches the maximum recording time the mode changes to that specified by Record 2nd Press (for the first pass of a new recording.)
- New "S-Taper" option in the Volume Block allows new and improved "Auto-Swell" sounds.
- Added Diffuser Modulation in the Multitap Delay.
- Added Spread control to Dual Delay and Tape types in Delay block. Spread acts as a "master pan" in this case and is modifiable.
- Added Modifier capability to LFO Enable and Mod Frequency in Filter block.
- Improved Tape preamp types in Cabinet block.
- Improved Stack/Hold implementation in Delay block so that "texture" is applied to audio when Stack/Hold is on.

FRONT PANEL DOUBLE-TAP

Improvement: The front panel now has various double-tap shortcuts:

- Double-tapping HOME enters the layout grid.
- Double-tapping EDIT edits the previous block.
- Double-tapping STORE prompts immediately.
- In the Home or Layout menus, double-tapping the A-E push-knobs does the following:
 - A enters the **Amp** 1 menu;
 - B enters the Drive 1 menu (think "**B**oost")
 - C enters the **Cab** 1 menu.
 - D enters the **Delay** 1 menu.
 - E enters the Reverb 1 menu (think "**rE**verb")

FOOT CONTROL UPDATES

- Added "Bank Switch Limits" ENABLE/DISABLE to the FC Config menu. These allow the FM9 to ignore the limits set on individual bank switches, thereby allowing access to ALL BANKS by default.
***IMPORTANT:** If you want the "Bank Limit" function of existing footswitches to take effect, you must enable this new option.*
- Added "Invert Mini-Displays" under the APPEARANCE section of the FC Controllers: Config page.
- Added "STARTUP VIEW" to the FC Controllers: Device page.
- Added an option for "2nd Press = Previous Bank" to **Bank: Select** function making it possible to toggle back to the previous entry.
- Added an option for "2nd Press = Previous Preset" to **:Preset: Select** and **Preset: Select in Bank** functions.
- Added the option "2nd Press" to **Effect: Select Channel** function. The two choices are "Smart Bypass" which is a pre-existing feature, and "Previous Channel" which toggles to the previously selected channel instead.
- New "Scene Level & Save" function increments/decrements the current SCENE LEVEL for selected output(s) and saves the preset.
- "Amp Level & Save" function now has an option for "0 dB" to allow saving a preset via a footswitch without also changing volume.
- Improvement: The FC functions "Amp Level + Save" and "Scene Level + Save" now wait 1.5 seconds before saving. This allows you to tap the footswitch repeatedly before the Save is executed. On-screen messages show the status.
- Added "Current" to the mini-display options for **Bank: Inc/Dec** function.
- Added "Current Name" and "Current #" to the mini-display options for **Preset: Inc/Dec** and **Scene: Inc/Dec** functions.
- Added "Current Channel" to the Mini-Display option for **Effect: Chan Inc/Dec**.
- Changed LED ring behavior for **Effect: Select Channel** function:
When "Smart Bypass" is enabled, the LED will be dim instead of off when the effect is bypassed.
- Fixed: Tuner now exits more gracefully and reliably when using an FC switch.
- Fixed some stand-in switches not executing the tap function correctly when a hold function is assigned.
- Fixed an issue when changing function to "Bypass" if current effect does not have a Bypass function (e.g., Mixer, Multiplex).
- Fixed an issue when changing FC effect type from "MultiPlex" to an effect containing fewer channels.
- Fixed: Switch Ring Color settings of "Off" now work correctly.
- Fixed: LED ring will properly be dim when an effect is bypassed using **Effect: Chan Select** function.

ADDITIONAL UPDATES

- New 'MUTE' options for OUTPUT 1 MODE and OUTPUT 2 MODE cause only FM9 processed audio to be muted. USB audio will still be routed to and heard at a muted output, enabling certain applications when using a DAW with input monitoring. See the FM9 Owner's Manual for additional details.
- New option "ALL" for "Spillover" in SETUP: Global Settings: Config. In addition to Delay and Reverb, this includes Plex Delay, Multitap-Delay, Megatap Delay, and Ten-Tap Delay blocks, allowing spillover when switching presets. See the FM9 Owner's Manual for more on spillover.
- Performance Enhancements: General improvements of GUI, FM9-Edit Communications and IR Management.
- Scene changes where the channel is changed for two Amp Blocks are now as fast when one amp block is used.
- In the Edit menu of any block, the controls for Channel, Bypass and Reset have been consolidated into a single page.
- Added Damping control to Modifiers. The default, EXPONENTIAL, is the classic damping style where the modifier value has an exponential attack/decay. LINEAR selects a linear attack/decay.
- Added "Type" control to ADSRs. The default, EXPONENTIAL, is an analog style where the ADSR has an exponential attack/decay. LINEAR selects a linear attack/decay.
- The Tuner now displays note frequency and cents. Tuner indicator motion is also smoother.
- Improved scene switching to prevent signal "leaking" into bypassed blocks.
- New Delay and Reverb CPU use meter. Features added to the Delay and Reverb effects can overtax the effects' processor in extreme use situations. When viewing a Delay or Reverb effect editing GUI screen on the FM9 hardware a CPU meter will appear on the display if the cpu usage moves past 75%. As with the primary effects core, the recommended maximum cpu use value is 80% to ensure best performance.
- Fix: Modifiers now update correctly on Preset/Scene changes. This fixes, for example, an issue which could cause a burst of sound when a volume pedal was used across sound changes.
- Fixed: Knob for "USB/Digital" Metronome level now works correctly.
- USB In/Out meters on the Home menu Meters tab are now labeled 1 through 8.
- Fix: FM9 now correctly loads IRs created by exporting Tone Match data from Axe-Fx III.
- Fix: Home menu screen will update when the scene is changed from any source, including MIDI.
- Fix: MIDI over USB messages are now detected in MIDI Learn mode in the Setup Menu.
- Fix: Amp block copy/paste in FM9 Edit will correctly transfer level, pan, and bypass settings.
- Fix: Onboard Pedal 2 and Pedal 3 jacks now allow independent "Switch Behavior" settings
- Fix: Preset "SAVED!" message is now shown reliably in all expected cases.
- Fix: Tuner-on-heel-down was causing artifacts in the main display.
- Fix: Amp block output transformer turns ratio is now being correctly calculated.
- Fix: Stand-in switches will now work correctly when assigned to a footswitch configured as a Per-Preset: Placeholder.
- Fix: Incoming MIDI now works to select preset bank.
- Fix: Amp block Input EQ and Speaker displays now update correctly when the channel is changed.
- Fix: Corrected an issue with reverb sound that appeared in the previous beta.
- Fix: Corrected a display problem that could happen on Reverb and Delay screens when the default saved channel was not 'A'
- Fix: Delay and Reverb parameters Mix, Level, and Bypass are again controllable via modifier.
- Fix: Parameter settings for Delay and Reverb that are controlled with a modifier will no longer carry over to the next recalled preset.
- Fix: Settings for an FC switch could be replaced with another's after firmware update is corrected.
- Fix: FC Per-Preset GUI menu scrolls up/down to keep selected item on screen always.
- Fix: AMP Speaker Impedance Curve name label will always be visible in the GUI.
- Other small fixes based on those made on the Axe-Fx III.

VERSION 1.0, FEB 11, 2020

- First public release. See the FM9 Owner's Manual for details.