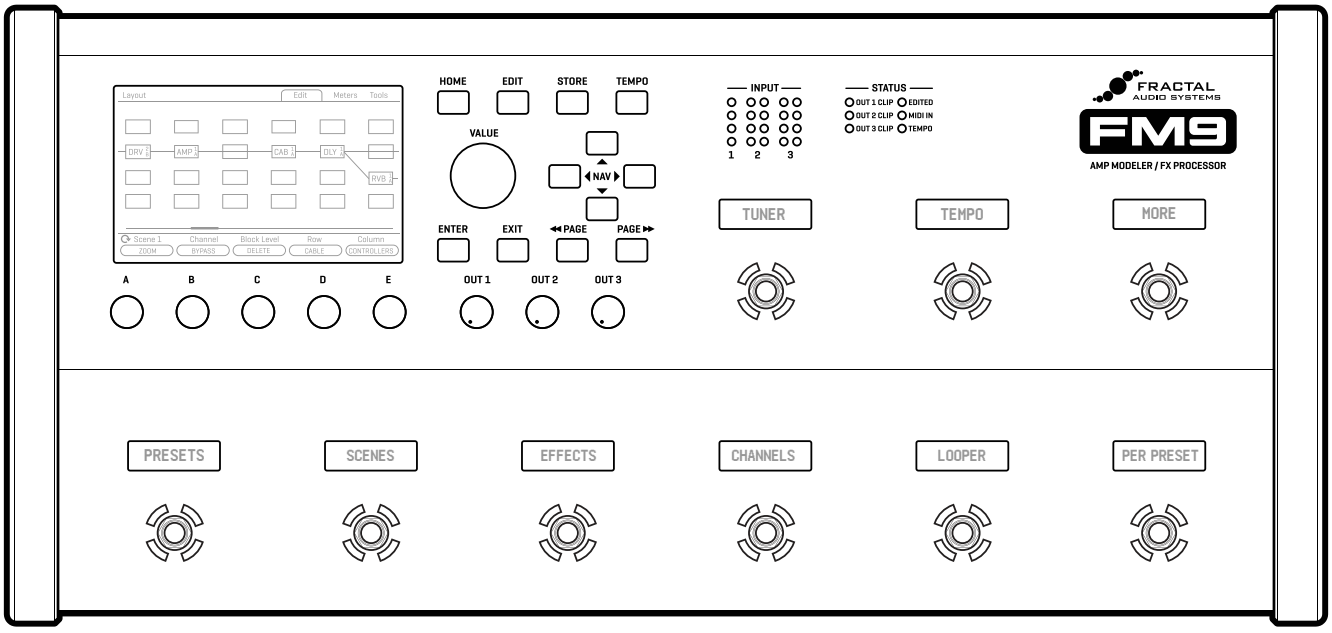
FRACTAL AUDIO SYSTEMS

FM9

OWNER'S MANUAL



Current as of FM9 Firmware 3.x

Original and TURBO versions

August 2022

Inside Front Cover

Declaration of Conformity

Manufacturer's Name: **Fractal Audio Systems, LLC**
Manufacturer's Address: **4 Wilder Drive, Plaistow, NH 03865 USA**

Declares that the product:
Product name: **FM9** Product option: **None**

Conforms to the following Product Specifications:

Safety: EN60065:2014
EMC: EN55013:2013
EN55020:2007+A11:2011
EN55024:2010
EN61000-3-2:2014
EN61000-3-3:2013

Supplementary Information:
The product herewith complies with the requirements of
the Low Voltage Directive 2006/95/EC
and the EMC Directive 2004/108/EC.

Clifford Chase
President / CEO
April 5, 2021

EMC/EMI

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

TABLE OF CONTENTS

TIP: Page numbers in this Manual are linked to the Table of Contents.

Legal Notices

Important Safety Instructions

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

CAUTION: To reduce the risk of fire or electric shock, do not remove screws. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

1. Obey all warnings on the FM9 chassis and in this User Guide.
2. Keep away from sources of heat such as ducts, registers or appliances that produce heat. Do not obstruct or cover over the side or bottom ventilation holes.
3. Connect only to a standard grounded AC outlet of 100–240V, 47–63 Hz.
4. Keep the power cord in good condition. Do not kink, bend, or pinch.
5. If the cord becomes damaged, discard and replace it.
6. If not using your FM9 for extended periods of time, disconnect from AC power.
7. Protect the unit from rain and excessive moisture.
8. Refer servicing to qualified personnel only.
9. Stop operation of the unit and obtain service if:
   - Liquids or excessive moisture enter the unit.
   - The unit operates incorrectly or performance is inconsistent or erratic.
   - The unit has been dropped and/or the enclosure damaged.
10. Prolonged exposure to high volume levels can cause hearing damage and/or loss. The use of hearing protection in high volume situations is recommended.

A Manual for Online and Print Use

This manual is intended for use in desktop, tablet, and smart phone readers. It includes clickable links and bookmarks to make navigation and cross-reference easy. We recommend against printing our manuals, because firmware updates tend to make older versions fall out of date. That said, considerations have been taken for those who prefer paper. You are granted permission to print this PDF for personal use. A copy center or online printer can print and bind a book for you from the PDF file. Hopefully those with screen readers can forgive the changes made herein to accommodate the print version: most links also include a page or section numbers, page spreads have extra margins towards the binding edge, and blank pages have been included to preserve page and chapter flow.

1 INTRODUCTION

WELCOME

The new FM9 from Fractal Audio Systems is an all-in-one amp modeler, effects processor, foot controller, audio interface—and more—designed for professional stage/studio use and personal enjoyment. With four DSP cores, the FM9 is the most powerful floor unit ever produced by Fractal Audio, and it features a impressive list of technologies and features from the award-winning Axe-Fx III, FM3, and FC Controllers: our industry-leading amp modeling, UltraRes™ IR speaker cab simulation, a suite of our legendary stompbox and studio effects, expandable FC foot switching, incredibly flexible I/O, 8x8 USB audio interface capabilities, a world-class Mac/PC editor, and more.

The centerpiece of the FM9 is "Cygnus", the latest version of Fractal Audio's critically acclaimed amp modeling technology. Cygnus uses Fractal's proprietary SpectrumTrack™ technology, which improves the response of amp models across the entire range of input levels, especially for amps with cascaded gain stages. The result is truer and more dynamic "voicing," plus exceptionally satisfying "chugs." The FM9's two "amp blocks" each have four channels which can run any of 280+ vintage, modern, and original models covering everything from pristine clean, to edge of breakup, from crunchy overdrive to modern distortion to insane gain. The FM9 also includes the entire Ultra-Res™ speaker cabinet collection from the Axe-Fx III, with 2,200+ "Factory" cabs including selections from the today's best producers, plus 1,024 "User" locations for loading your own Impulse Responses ("IRs").

The FM9 is an outstanding multi-effects unit, packed with hundreds of incredible stomp box and studio effects, with accurate recreations of many classics, plus exciting originals. Selections include 57+ drive pedal models, dozens of delays, numerous choruses, flangers, phasers, tremolo, and other modulation effects, 50+ reverb types from classic spring to real spaces and beyond, multiple compressors, wahs, EQs and filters, a 2-minute looper, an entire suite of pitch effects including detune, harmony, and virtual capo, plus rotary, synth, "plex" effects including shimmer, and much more.

The FM9 features the same audiophile signal path design as the Axe-Fx III for the utmost in sonic performance and signal integrity. Physically, it is built tough for the road, with a rugged 16-gauge steel chassis and protective endcaps that double as feet. The unit is remarkably easy to use, with intuitive and comfortable controls, plus the same large, full-color main display as the Axe-Fx III and FM3. Nine on-board footswitches, each with its own vari-color LED ring and mini LCD display, provide both tap and hold functions that can be customized to control countless aspects of your rig in realtime. "Layouts" then provide nine different complete sets of footswitch functions. At the same time, a FASLINK II port allows connecting up to two more Fractal Audio FC-12 or FC-6 foot controllers for extended foot control real estate or remote control.

The FM9 has numerous inputs and outputs for a great range of different setups. Analog inputs include Fractal Audio's "Secret Sauce" 1/4" instrument input, plus two separate stereo pairs of balanced 1/4" jacks for use as "aux" ins or "returns." The main stereo output is equipped with both XLR and 1/4" outs, plus a headphones jack. Two additional independent stereo outputs — one XLR and one 1/4" — can be used as "aux" outs or "sends." All 1/4" outs feature Fractal Audio's Humbuster™ technology to help combat noisy ground loops. Digital I/O includes 48k SPDIF in and out, plus 5-pin MIDI in and out/thru. Finally, three on-board jacks each allow you to connect an external switch or expression pedal such as the Fractal Audio EV-1.

The FM9 also serves as a high-quality USB Audio interface with "8x8" recording and playback capabilities. You can record processed signals, a "DI" for re-amping, and stereo aux inputs. Audio can be played back directly to the unit's outputs (for DAW monitoring or "backing tracks," for example) or routed through the FM9 for re-amping or for effects processing like a virtual plugin.

FM9-EDIT, a full-featured software editor, is included free. The FM9 is also fully compatible with Fractal-Bot for preset sharing, easy backups/restoration, plus firmware updates in the tradition of continual improvement that has become a hallmark of Fractal Audio.

Above all, the FM9 was designed — "by musicians for musicians" — to deliver Fractal Audio's uncompromising signature sound quality, fantastic features, and roadworthy reliability in a highly portable format that we trust you will both appreciate and enjoy. We thank you as always for choosing Fractal Audio Systems.

Fractal Audio Systems
August 2021

FEATURE SUMMARY

- The new FM9 from Fractal Audio is an all-in-one amp modeler, effects processor, foot controller, and audio interface for stage and studio use.
- The FM9 has a durable steel chassis with protective endcaps designed to withstand the rigors of touring.
- The FM9 is based on an impressive list of advanced technologies and easy-to-use features inherited from the award-winning Axe-Fx III.
- The centerpiece of the FM9 is Cygnus, the latest version of Fractal Audio's industry-leading physical amp modeling. Presets can use two independent amp blocks, each with four channels, running your choice of 290+ amp models covering the essentials and more, from pristine clean to edge of breakup, crunchy overdrive, modern distortion, or insane gain.
- Two Cabinet Simulator blocks load up to two UltraRes™ impulse responses each, for extremely accurate sonic performance, plus dynamic remixing including visual phase alignment.
- 2,048 factory cabs include everything from the Axe-Fx III and FM3, plus all 189 "Legacy" Cabs from the Axe-Fx II/ AX8. 1,024 "User Cab" memory locations allow you to load Cab Packs and other 3rd party IRs (.wav, ir, .syx). Sixteen "Scratchpad" memories are provided for experimentation.
- The FM9 is an outstanding multi-FX unit with hundreds of industry-leading stomp box and studio effects, including accurate recreations of many classics, plus exciting originals. Selections include 59+ drive pedal models, dozens of delays, numerous choruses, flangers, phasers, and tremolo effects, 60+ reverb types from classic springs to real spaces, multiple compressors, wahs, EQs and filters, an entire suite of pitch effects including detune, harmony, whammy, and virtual capo, plus rotary, looper, synth, plex effects including shimmer, and more.
- 512 Preset memories can each store an entire rig with its own amps, cabs, effects, and much more.
- 14×6 Layout grid, with "Zoom Out" option to show the entire grid on one page with VU meters.
- Eight nameable "Scenes" per preset eliminate "tap dancing" and make quick seamless sound changes possible – including easy "spill-over" of effects like delay and reverb, plus Scene MIDI messages for complete rig integration.
- "Channels" give each block up to four different sound settings. One drive block, for example, can provide four totally different drive pedal sounds without 4x the CPU burden.
- Three pairs of Input and Output blocks (plus USB) provide incredibly flexible routing, with setup diagrams included for FRFR, direct FOH plus "live" power amp and guitar cabs, creating an "FX Loop" for pedals, simultaneous electric and acoustic/piezo, "four cable method" (4CM), and more.
- FM9 features an audiophile quality signal path with an extremely low noise floor and THD.
- Top panel LED meters and status indicators offer great visibility of critical information. Onscreen animations show levels for every block, input, output, and more.
- FM9 features our latest interface and controls, featuring the same custom color display as the Axe-Fx III Mk II, and five knobs with on-screen labels providing instant access to turn and push functions.
- An easy-to-read, precision full-screen tuner includes a bar graph and virtual strobe display.
- Nine onboard footswitches use our "FC" controller switching system for extreme flexibility, with nine layouts containing 12 switch definitions each.
- Each footswitch has its own LCD "mini display" to show the switch function or a custom label, plus a variable-color LED ring which shows the category and status of the switch.
- Every fully-customizable switch has both tap and hold functions which can change presets, banks, scenes, effects, channels, operate the looper, tuner, tempo, and much more.
- Per-Preset Switches grant the utmost in flexibility: any preset can override any switch in any Layout for "one-off" switching needs.
- For even more footswitches, connect one or two FC-6 or FC-12 controllers via FASLINK™ II. These integrate seamlessly with onboard switches and also offer additional switch/pedal jacks.
- Each of three onboard pedal jacks allows connecting an external switch or an expression pedal such as the Fractal Audio EV-1 or EV-2.
- Input 1 is a 1/4" mono Instrument input featuring "Secret Sauce IV" for ultra-low noise and optimized signal from your guitar or bass. Two separate stereo pairs of balanced 1/4" jacks serve as as "Aux" ins or "FX returns."
- The main stereo output is equipped with both XLR and 1/4" outs, plus a headphones out.
- Two additional independent stereo outputs — one XLR and one 1/4" — can be used as "Aux" outs or "FX sends." All 1/4" outs feature Fractal Audio Humbuster™ technology to combat the noise of ground loops.
- The FM9 is also a robust 8x8 USB Audio Interface, able to record processed guitar, DI signals for re-amping, and stereo aux inputs. Computer audio can be played back directly to the outputs (as "backing tracks," for example) or processed for re-amping or effects like a virtual plugin.
- Digital I/O includes SPDIF in and out plus 5-pin MIDI in and out.
- "Client-Server" architecture allows multiple FC foot controllers and FM9-Edit to control the FM9 while updating each other seamlessly and instantly.
- A connected computer allows the use of FM9-Edit, our world-class editor for Mac and PC, and Fractal-Bot, for firmware updates plus backup and restore.
- FM9-Edit also allows the FM9 to load Axe-Fx III or FM3 presets (within the limits of local block and CPU resources).
- A built-in backup firmware ROM allows recovery in the event of complications during an update without the need for professional service.
- The FM9 has upgradeable firmware making constant improvement and innovation possible.

THE SETUP MENU

Throughout this manual, you will be directed to use the **SETUP** menu of the FM9 to make changes to I/O (Input/Output), MIDI, global settings, and more. To open the setup menu, push **HOME** and then press knob E.

The **SETUP** menu includes the following areas:

- **FC Controllers/Onboard Switches** - includes all settings for the onboard footswitches or a connected FC controller.
- **Global Settings** - includes options which govern the global behavior of the FM9.
- **I/O** - contains settings for all inputs and outputs, including levels, audio options, and switches or expression pedals connected directly to the FM9.
- **MIDI/Remote** - contains MIDI settings, plus several pages of remote controller assignments for the many remote-controlled functions of the FM9.
- **Utilities** - contains readouts, utilities, and a control to adjust screen brightness.

Paths within the setup menu are designated using colons as separators, so for example, the Reset page of the Utilities menu under SETUP will be notated as **SETUP : Utilities : Reset**

To access the **SETUP** menu:

- Press **HOME**.
- Push the "**E**" soft knob to open the **SETUP** main menu.
- Use the **NAV** buttons to select a submenu and press **ENTER** to make a selection.
- Use **PAGE** and **NAV** buttons to navigate. Use **VALUE** and knobs **A–E** to make changes.
- Changes in the **SETUP** menu take effect immediately and do not need to be stored or saved.
- Press **HOME** at any time to return home.

Use these hyperlinks to access to the **SETUP** menu topics in this manual:

SETUP

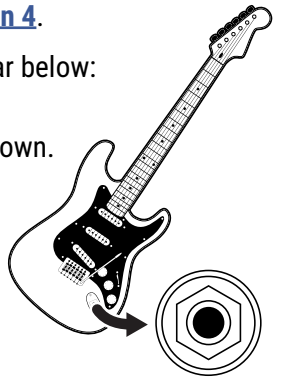
QUICK CONNECT GUIDE

Perhaps the best and most flexible way to enjoy your FM9 is through a full-range system such as studio monitors, a high-quality PA, or full-range speakers designed specifically for guitar. All of the factory presets are designed for this type of setup.

The FM9 is incredibly flexible, however, and many other types of setups can be used, including those based on tube amps, USB recording, 3rd-party outboard equipment, and more.

Find additional setup diagrams in **Section 4**.

The most basic setup instructions appear below:

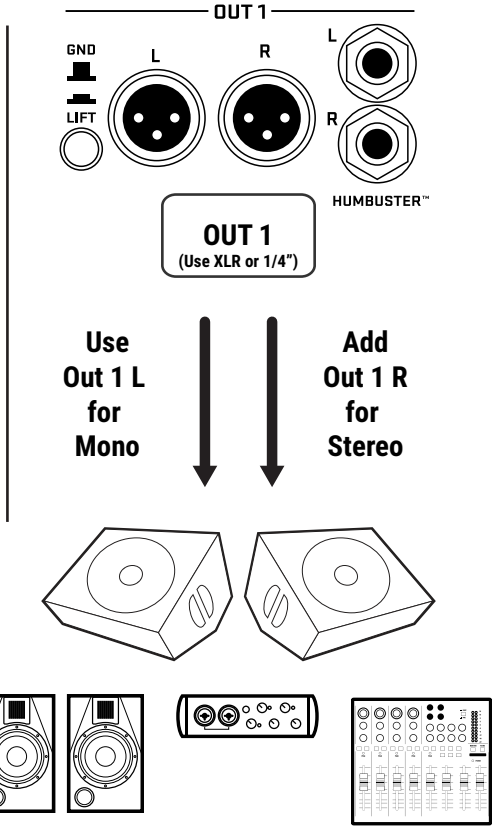


1 Begin with all level knobs turned down. Connect your guitar to FM9 **Instrument** input (**Input 1**).

The FM9 is also perfect for bass and other instruments.

2 Connect **Output 1** to your mixer, studio monitors, audio interface, PA system, full-range speakers, power amp inputs, etc. You can use either the XLR outs or the 1/4" outputs.

- For a mono rig, use **Out 1 Left**.
- For optional stereo, also connect **Out 1 Right**.
- Use XLR-to-XLR cables or XLR-to-TRS cables when connecting to balanced inputs.
- Use regular patch cords, XLR-to-1/4" (TS) cables, or Humbuster™ Cables (see p. 6) with 1/4" unbalanced inputs.



FRFR speakers, Studio Monitors Audio Interface or Mixer

3 Slowly turn up the front panel **OUT 1** knob and adjust the level on your monitors as desired.

- You can use the footswitches to explore factory Presets and Scenes (see p. 8) or turn **VALUE** to select presets and **NAV Up/Down** for Scenes.

OUT 1

The front **Out 1** knob adjusts the level of what you hear in this setup.

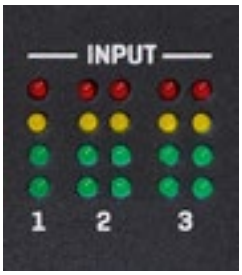
FRFR = "Full Range, Flat Response"

FRFR stands for “Full-Range, Flat Response,” a term used to describe a system which aims to accurately reproduce the entire audio spectrum. In comparison, traditional guitar speakers have limited range lacking extended lows and highs, and are not at all “flat,” meaning certain frequencies are markedly louder or quieter. FRFR systems such as studio monitors, high-quality PA speakers, and FRFR speakers designed specifically for guitar are designed to accurately reproduce *anything* played through them, making them ideal for a modeling processor like the FM9. Of course, even these may vary, depending on which FRFR you choose.

SETTING LEVELS

Setting proper levels is critical, but easy, with abundant meters to inform you about levels on the FM9.

INPUT LEVELS



The FM9 comes ready-to-use for the typical guitar with passive pickups.

Connect a guitar to the **Instrument** input. Choose your loudest pickup setting and set all the guitar controls to "wide open." Play loudly to push the levels as you watch the front panel **INPUT 1** meter LEDs. A red LED on the input meter indicates a level of -6dB, which is still safely below clipping. Adjust the input trim so your loudest playing "tickles the red." It is of course also fine if a lower output guitar never hits the red. In general, you should set input levels as high as possible without clipping:

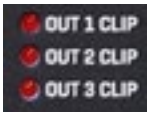
- Open **SETUP : I/O : Input** page.
- Adjust **Input 1/Instrument** input levels using the **A** knob.

Inputs 2 and 3 can be adjusted using the same method. Each has its own **Input trim** parameter on the **Input** page of the **I/O** menu under **SETUP**.

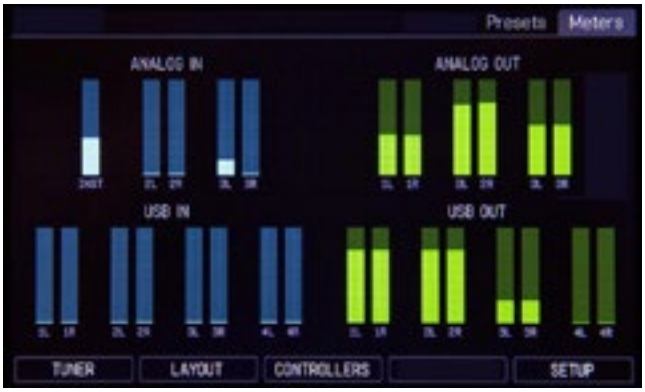
You can also monitor levels on the **Meters** page of the **Home** menu.

Except at the very lowest settings, Input level adjustments do not affect input gain. As you adjust the input level to the A/D converter, its output is compensated, so the overall level does not change.

OUTPUT LEVELS



Output levels are easy to monitor by paging to the **Meters** page of the **Home** page. Should your output levels be too high, the **OUT 1 CLIP** or **OUT 2 CLIP** LEDs on the front panel will light. This is a true indication of imminent clipping, and unlike inputs, outputs should NOT "tickle the red." To lower output levels, you can adjust the top panel knobs or adjust the level of your presets. (Section 7: Leveling Presets is dedicated to the subject of balancing preset levels.)



The Meters page of the Home menu shows all I/O levels.

Output 1 L/R and **Output 2 L/R** are ready to be connected to consumer line level inputs (-10 dbV). If you are connecting to professional-grade equipment operating at +4dBu, set the output levels as follows:

- Page **SETUP: I/O: Audio**
- Set the desired **Output Level (1 or 2)** to +4dBu.

Learn more about the **I/O Menu** on p. 94.

Output 3 is designed so that it operates at **unity gain** when the front panel **OUT 3** knob is fully clockwise.

The Layout also has a Meters view showing block levels.

HUMBUSTER™ CABLES

The 1/4" jacks of Output 1 and Output 3 on the FM9 feature Fractal Audio's proprietary **Humbuster™ Technology,** which can significantly reduce the unwanted hum of ground loops when used with special Humbuster™ cables.

A Humbuster™ cable has one **TRS** end (like a balanced cable) and one **TS** end (like a guitar cable). The TRS end connects to the FM9. The TS end connects to your amp or other device.

Humbuster cables are available from http:/www.fractalaudio.com/cables. You can make your own by following the diagram below. Be sure to use high-quality connectors and shielded cable.

Note: Use Humbuster cables only when connecting the FM9 to unbalanced 1/4" inputs on other devices. When connecting to a 1/4" balanced TRS input, use a standard 1/4" patch cable — or better still, connect the balanced XLR outputs of the FM9 via XLR-to-TRS cables or adapters.

MONO VS. STEREO

The FM9 comes preconfigured for **stereo** but you can connect it in **mono** with no issues. If you are NOT running in stereo, you may find that certain presets or settings produce unexpected results. For example, a panner sounds like a tremolo when one channel is missing. A ping-pong delay may "ping" but never "pong." Stereo enhancers or certain types of modulation may not be apparent at all. Tone can even change completely if amps or cabs have been hard panned. Here is an overview of several scenarios, with recommended settings for each.

- **Stereo:** *No special settings required.*
- **Half-Stereo:** Leaving the FM9 in its default stereo configuration but connecting only its left or output results in a "half-stereo" setup. This works fine, aside from the exceptions mentioned above (ping-pong, panning, etc). *No special settings required.*
- **Dual Mono:** If you want to force your rig to mono, dual mono is a good choice. Sonically, this is identical to half-stereo, with the same limitations, except that mono signal is produced at *both* the left and right jacks so you can connect to two monitors. To switch to dual mono, open **SETUP: I/O: Audio** and set **Mode** for the desired output to "COPY L->R".
- **Summed Mono**: In this setup, left and right channels are added together resulting in an identical mono signal at both left and right outputs. This has the advantage of not discarding half of the sound, but summing has its own issues. For example, short delays or phase differences between channels can result in strange artifacts or even cancellation. To switch to summed mono, open **SETUP: I/O: Audio** and set **Mode** for the desired output to "SUM L+R".

On the FM9, a flexible block-based I/O system makes it easy to use different outputs for different purposes. See the "The Fractal Audio Blocks Guide" for more on Input and Output Blocks.

All options of the **I/O** menu under **SETUP** are detailed in Section 13: Setup Menu.

THE HOME PAGE: PRESETS

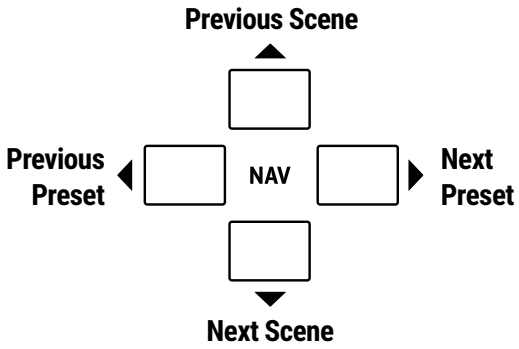
Once you have connected your FM9 you can begin to audition factory preset sounds. Of course, the footswitches provide a convenient way to do this, but you can also operate the unit from its top panel.

Remember that aside from a few templates, the factory presets are designed for use with full-range speakers / monitors / headphones. (See Section 4 for details on many other types of setups.)

The FM9 contains 512 preset memories. Each preset is a full "rig" with its own amps, cabs, effects, settings, controllers, and more. When you consider everything that is possible with Scenes and Channels, a single preset can cover an entire song, or even a whole show.

Here's how to explore the factory presets:

- Press **HOME** to show the **Home page**, where you can switch presets.
- To change presets, turn the **VALUE** knob or use the **NAV** buttons.
- Many factory presets have been set up with **Scenes**. You can switch between Scenes using the **NAV** buttons or by turning knob **A**. (See p. 15 for an introduction to Scenes.)



OTHER HOME MENU FUNCTIONS

- The push functions of the five knobs on the Home page of the Home menu provide access to other areas:
  - **Tuner**
  - **Layout grid** (p. 14 and p. 40)
  - **Controllers** (p. 67)
  - **FC Per-Preset** (p. 80)
  - **Setup** (p. 3)
- Turning knob **E** switches between different foot control "**Layouts**" (see p. 8).
- A **mini-Tuner** appears at the top of the **Home** page itself in the form of two green triangles. When both are lit, the note is in tune.

- Two **Performance Control Pages** let you assign the five top panel knobs of the FM9 for easy, hands-on access to any parameters you choose. Learn more on p. 114.
- The **Home** menu also provides access to the **Presets directory** page, listing all presets in a scrolling list sorted by number.
  - **PAGE** to the **Presets** page to show the directory.
  - To sort alphabetically by name, press the "**Sort A–Z**" button.
  - The **ENTER** key loads the selected preset.
- The **Meters** page provides visual indication of all input and output levels, including USB.

LAYOUTS

The FM9 is based on our popular **FC controllers**. The central concept behind all of these products is the **Layout**. A layout is a set of **footswitch definitions**. You can **change the layout** to change what the footswitches do. All layouts and switches can be completely customized. The FM9 provides eight layouts in total, plus one special "Master" layout (covered below). Layouts have both numbers and names to make them easier to manage.

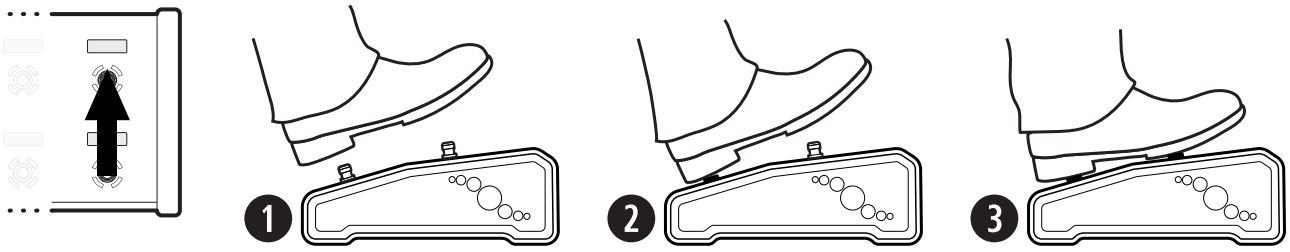
There are multiple ways to change the layout on the FM9. The easiest is probably to turn knob **E** on the Home page of the Home Menu. You wouldn't be able to do this easily while you are playing, however, so we created the **Master Layout Menu** and **Layout Switches** so you can change layouts with your feet.

The FM9 Factory Default Layouts also include some pre-programmed footswitches to change layouts in a way that is easy, convenient, and intuitive. See Section 10: Layouts & Switches for more on this subject.

THE MASTER LAYOUT MENU

Switching from one layout to another is the key to the versatility of the FM9. There are many ways to do this, but the built-in **Master Layout Menu** ("MLM" for short) will be the first method you'll want to understand. The Master Layout Menu grants instant access to other layouts, one per footswitch.

To show the Master Layout Menu, rock your foot from heel to toe over both of the two right-most footswitches on your FC, as shown in the following illustration of the "MLM Switch Combo."



The Master Layout menu automatically assigns different layouts to different footswitches in order. Footswitch 1 loads Layout 1, Footswitch 2 loads Layout 2, and so on. If your layouts have names, these will be shown in the Mini-Displays. When you activate any switch to select a layout, it is loaded immediately. The currently selected layout will be shown with a bright LED ring, while other options are dimmed. To exit the MLM without changing the current layout, just select the bright switch to go to the current layout again.

If the lower right switch has a Tap function, this function will not be activated by the MLM Switch Combo. If the lower right switch has a Hold function, you can still easily execute the MLM Switch Combo quickly, before the Hold function fires. If the Hold function should fire, the Master Layout Menu will still be displayed after you execute the combo stomp. Learn more in "Tap & Hold Functions" on p. 72

QUICK TIP

When you design your own layouts, avoid using a hold function on the lower right switch, or consider one that doesn't change your sound, just in case you accidentally fire it while activating the MLM.

QUICK TIP

A layout can also include Tap or Hold switches that change to other layouts without the MLM. You can also "piggyback" a layout change on another switch function using a "Layout Link."
Learn more in Section 10: Layouts & Switches.

FOOTSWITCHES

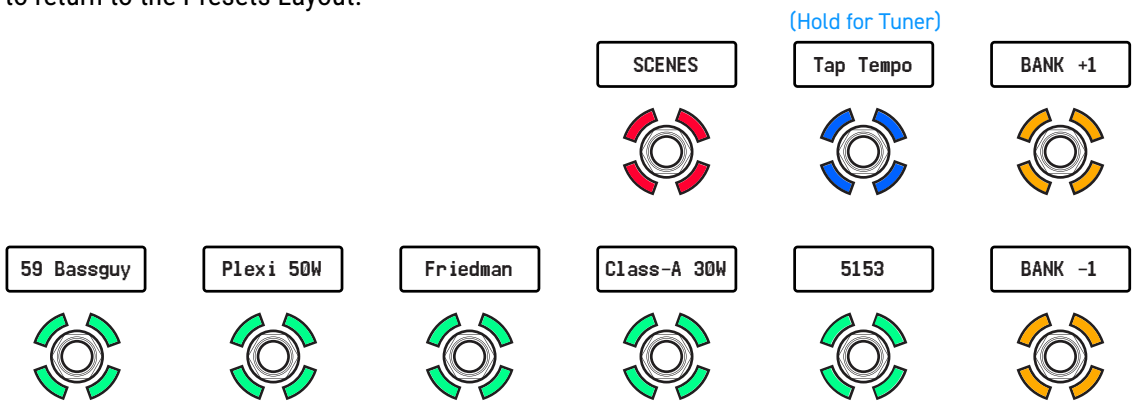
The FM9 has nine built-in footswitches, each with its own mini-display and vari-color LED ring. Footswitches can be used to change presets, select scenes, toggle effects, and much more. This page introduces the basic concepts, while Section 10: Layouts & Switches covers the topic in greater detail.

SWITCHING PRESETS

Let's begin with how to explore the factory presets and scenes using the footswitches. When the FM9 starts up, it loads the **Presets** Layout, shown below. In this Layout, the first five footswitches (green) each select a single preset. Preset names are shown in the mini-displays. The **current preset** will have a bright ring and the others will be dim.

A "bank" is a group of presets. To change to the next bank of five presets, tap the **Bank +1** footswitch. To change to the previous bank, tap the **Bank -1** footswitch.

The extra top two switches can be used to jump to the Scenes Layout and for Tap Tempo. Press and Hold the Tap Tempo switch to show the TUNER. Once you change to the Scenes Layout, the same switch that got you there can be used to return to the Presets Layout.



QUICK TIP *You can use the MANAGE PRESETS feature of FM9-Edit to drag and drop presets of the FM9 into any order you wish. Put your favorites in groups of five so you'll have what you need without a lot of bank changes.*

FOOTSWITCH FUNCTIONS

Every footswitch in every Layout can have its own independent Tap Function and Hold Function. Functions are arranged in Categories like "Presets", "Scenes", or "Effects". A special "EZ" mode makes these simple to assign.

LED RING COLORS

Every footswitch category has its own default LED ring color. You can change the default colors in **SETUP: FC Controllers: Ring Colors.** You can also change the color of any individual switch.

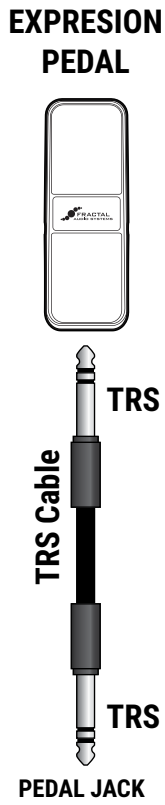
MINI DISPLAYS

The Mini-Display for each switch shows a label for the Tap function. While the switch is depressed — even for a normal "tap" — the label changes momentarily to show the Hold function. Each function has several options for the mini-display, and you can even use your own custom labels.

EXPRESSION PEDALS

This section is for pedals connected to the local "Pedal" jacks of the FM9.
For pedals connected to an FC controller, see your FC Owner's Manual.

Each of the three **Pedal** jacks of the FM9 support one expression pedal or one external footswitch.



TO CONNECT & CALIBRATE AN EXPRESSION PEDAL...

Expression pedals should have a linear resistance taper and a maximum resistance in the range of 10–100kΩ. Expression pedals must be connected using Tip-Ring-Sleeve ("TRS") cables.

Connect your expression pedal to one of the FM9 Pedal jacks with a TRS cable, then follow these instructions:

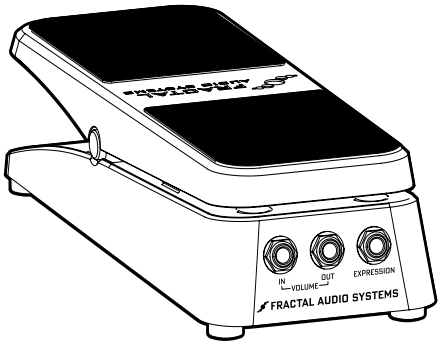
1. From the **Home** page, open **SETUP: I/O**: **Pedal**.
2. For pedal jack 1, set **Type** to "**EXPRESSION**"
   (or use **Pedal 2 Type** if that's the jack you're connecting to)
3. Navigate down to the **Calibrate** function for your pedal and press **ENTER**.
4. Follow the on-screen instructions to perform calibration. Press **HOME** to finish.

- Be sure to see the next page for instructions on assigning your new pedal.
- If something doesn't work, try a different pedal or cable.

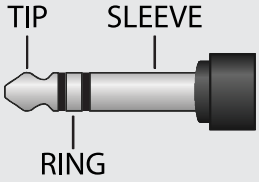
FRACTAL AUDIO EV PEDALS

The Fractal Audio Systems "EV" pedals are perfect for use with all Fractal Audio Systems products. The EV-1 is a full-sized expression pedal. The EV-2 is a compact version. These pedals feature rugged cast metal casings, a high quality 100kΩ linear potentiometer, and built-in analog volume pedal capability.

Learn more at https://www.fractalaudio.com



FAQ:



WHAT IS TRS? "TRS" stands for TIP-RING-SLEEVE and describes the configuration of a 1/4" end plug or jack with three connectors. Normal guitar cables are "TS" (Tip-Sleeve) since they lack the ring required for a third contact. Expression pedals require TRS cables because full control voltage is transmitted to them on one contact (the tip), while less than full voltage is returned to on another (the ring) so the host device is able to sense and utilize the pedal position. The third contact (sleeve) is connected to ground.

GLOBAL EXPRESSION SETUP

FM9 Pedal Jack 1 can be assigned as the "**External 1 Controller**" for use with factory presets as a Wah.

Follow the instructions below.

1. From the **Home** page, open **SETUP: MIDI/Remote**: **External**.
2. **NAV** down to **External Control 1**.
3. Turn the **A** or **VALUE** knob to select **PEDAL 1**
4. Press **EXIT** when finished.

You can test the pedal using Factory presets in the range 000–064.

External 1 can also easily be assigned as Volume, Whammy, or almost anything else on a per-preset basis. Learn more about assigning pedals and switches to sound parameters in Section 9: Modifiers.

GLOBAL VOLUME SETUP

The FM9 allows global remote control of the volume of any **Input** or **Output**. To set up a pedal for global volume, follow the instructions below.

Be careful not to assign the same pedal to both Volume and an External Controller as described above.

First you'll need to decide which global volume option you prefer:

- An **Input Volume** changes gain or distortion and the behavior of level-dependent blocks like the compressor or gate. This is like using a volume pedal between your guitar and amp.
- **Output Volume** does *not* affect gain or level-dependent blocks, but scales *everything* you hear including effect tails. This is like using adjusting the level of your guitar in the PA.

To set Global Volume:

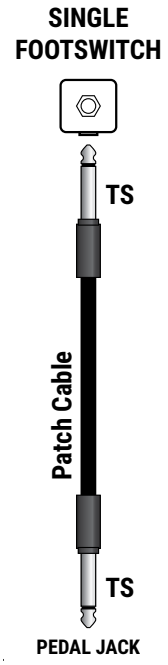
1. From the **Home** page, open **SETUP: MIDI/Remote**: **Other**.
2. **NAV** down to find the entry that you want to control: **Input Volume 1, 2**, or **3**, or **Output 1, 2**, or **3**.
3. Turn the **A** or **VALUE** knob to assign the pedal you want to use.
   Select "**PEDAL 2"** for the onboard Pedal jack (or #1 or #3 if you prefer).
4. Test and **EXIT** when finished.

Learn more about these options in "The MIDI/Remote Menu" on p. 97

EXTERNAL SWITCHES

This section is for switches connected to the local "Pedal" jacks of the FM9.
For switches connected to an FC Series controller, see your FC Owner's Manual.

Each of the two **Pedal** jacks of the FM9 can support a switch instead of an expression pedal. Any make-break switch type may be used with the FM9 in this way. Connect as shown below:



EXTERNAL SWITCH SETTINGS

External switches require a simple setup:

- Page to the **Pedal** page of the **I/O** menu under **SETUP**.
- Set **Pedal 1 Type** to "SWITCH" .
- Next, navigate down and set the **Polarity** and **Behavior** for your switch.
  - Polarity is based on whether the switch is normally OPEN or CLOSED.
  - Behavior allows you to set a momentary switch to behave as a VIRTUAL TOGGLE switch.
  - See "I/O: Pedal Page" on p. 96 for more on these settings.
- Press **HOME** to finish.

QUICK TIP

External Switches can be used with the options found in the MIDI/REMOTE MENU by selecting the option PEDAL 1, PEDAL 2 or PEDAL 3 (this label refers to the name of the jack on the FM9 and not what you have connected to it).

The STAND IN SWITCH feature (p. 81) makes external switches even more powerful, since it allows them to perform any of the the functions of an onboard switch.

USB AUDIO

USB provides the FM9 with a host of great audio features. With 8 input and 8 output channels, you can play backing tracks, record processed audio or DI signals, re-amp in real-time, and more.

See Section 3: USB for full details on the USB capabilities of the FM9.

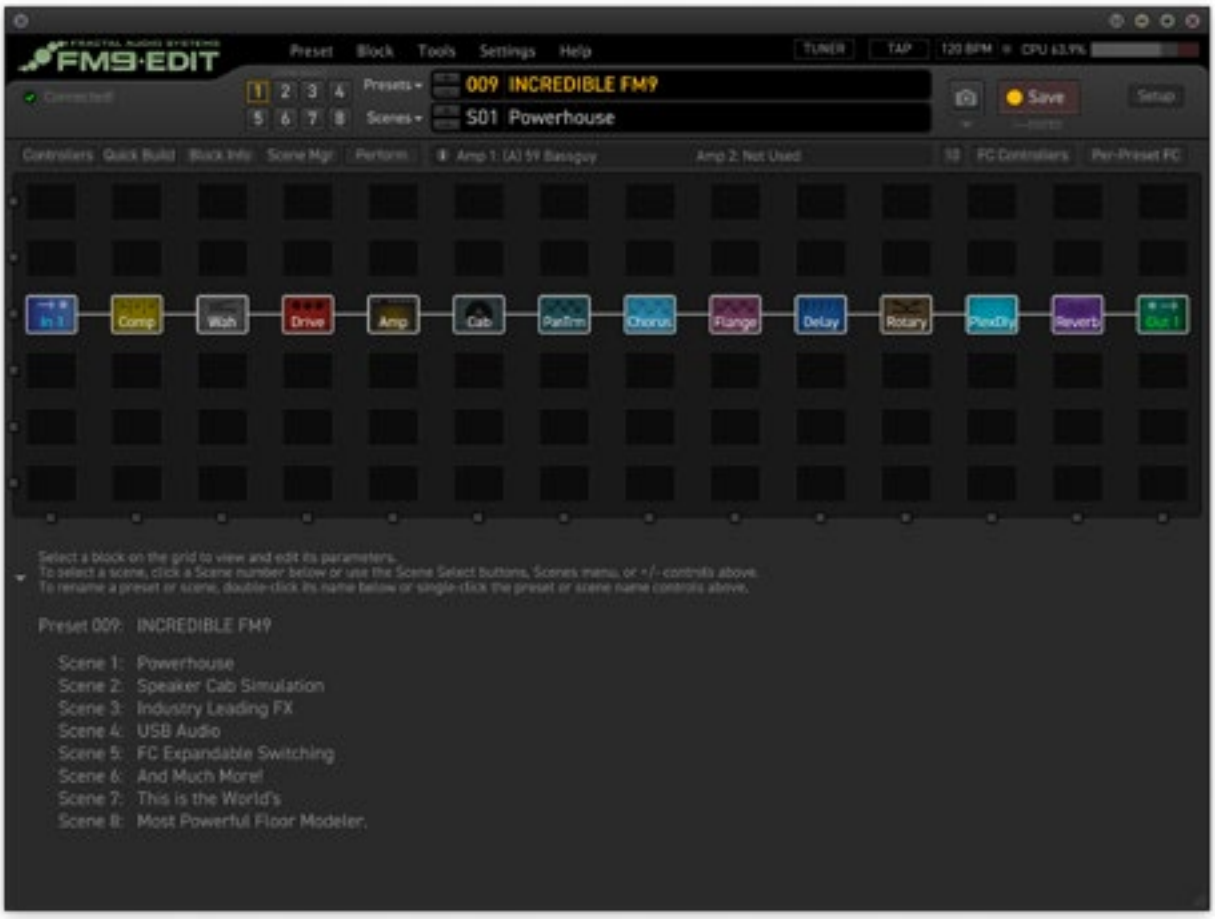
FRACTAL-BOT & FM9-EDIT

In addition to providing audio capabilities, USB allows you to use the FM9 with our companion software applications, **Fractal-Bot** and **FM9-Edit**.

Fractal-Bot is a small, simple program used to update the FM9 when new firmware is released. It includes tools to backup or restore presets and other custom settings and more.

FM9-Edit is a full-featured software editor/librarian for the FM9. If you are comfortable with audio software or plug-ins, you will definitely enjoy this easy and powerful app. It can operate almost every aspect of the FM9 and even has some “power-user” routines that aren’t possible on the unit itself (e.g. Performance Page editor, Block Library, Scene Swap, etc.). FM9-Edit also provides great tools for managing presets and banks, installing Cab Packs, and more.

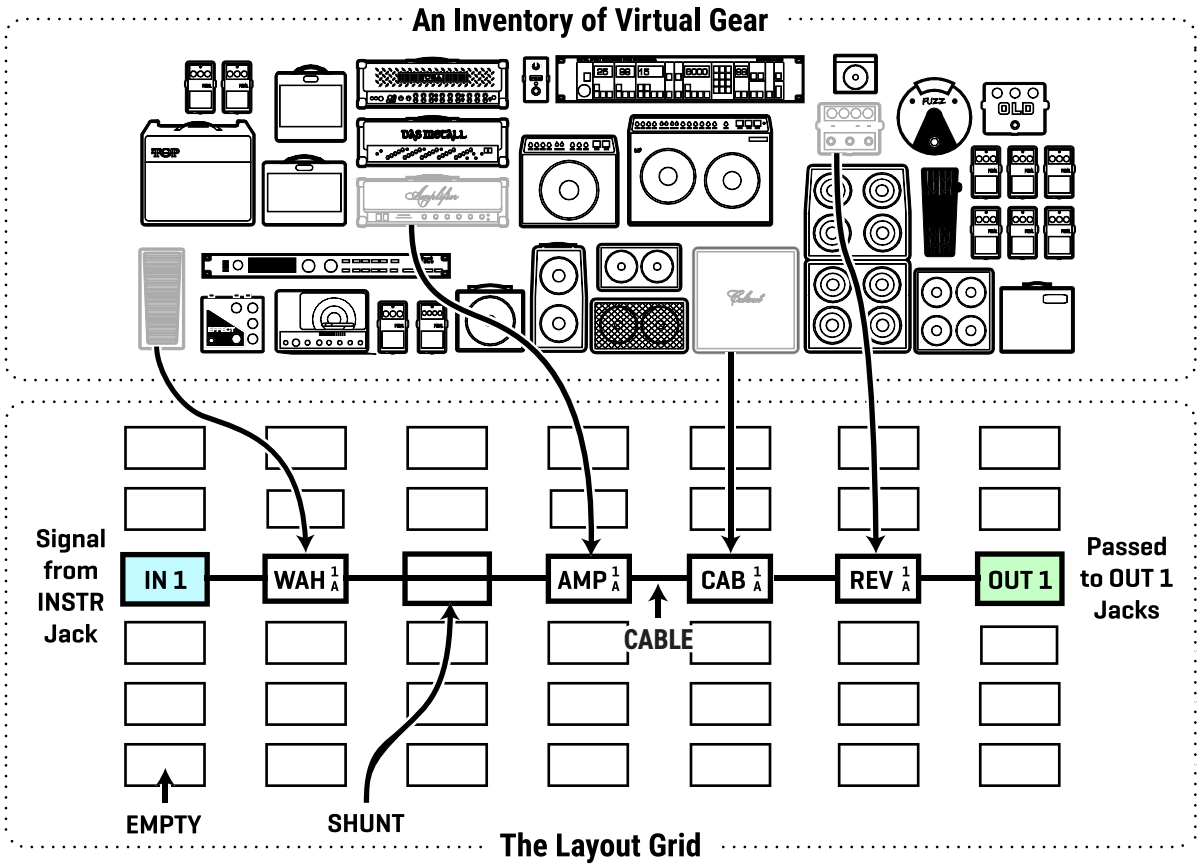
You can download FM9-Edit for Mac or Windows at https://www.fractalaudio.com/FM9-edit



INTRO TO THE LAYOUT GRID

At the heart of the FM9 is the **Layout Grid**, an array of rows and columns used to construct presets. In the world of traditional gear, our rig options are restricted by budget, space, weight, and the limits of the equipment itself. Building a rig means making hard choices. With the FM9 however, these limits are replaced by a vast and expansive "**inventory**" of virtual amps, cabs, effects, and more. Every single preset gives you the flexibility to design a unique rig composed of whichever components you choose.

So, in more detail: to create a **preset**, you will select virtual pieces of gear called **blocks** from the **inventory.** Each block represents a different component like a wah pedal, amp, or reverb unit. You place these on to the **Layout grid** and connect them together using virtual **cables**. You can split, merge, or create parallel paths as needed. Passive **shunts,** like cables, carry signal through empty grid spaces. Special **input** and **output** blocks connect to the various jacks and USB signals of the FM9. Here is an illustrated overview of this concept:



Let's review what's shown above. Signal flow begins at the **Input 1** block on the left (blue). It is connected by a cable to the **Wah** block, which in turn connects to a **shunt**. The shunt has no effect on the sound and is shown only to introduce the idea of how it can be used to carry signal from one block to another. The shunt is connected to an **Amp** block (we might set its type to "Plexi 100W High"), which in turn feeds a **Cab** (one of the many "4×12" options, perhaps). This is connected to a **Reverb** and then to an **Output** block (green). In this limited example, many grid spaces are empty, and only some of the columns are shown. In reality, the size of a preset is limited only by the size of the grid, block inventory, and total processing power ("CPU"). The FM9 can create presets large enough to cover a song, a set, or even an entire show.

QUICK TIP *The Layout "ZOOM" feature shows the whole grid at once. Look for the ZOOM button on Layout menu pages.*

INTRO TO SCENES AND CHANNELS

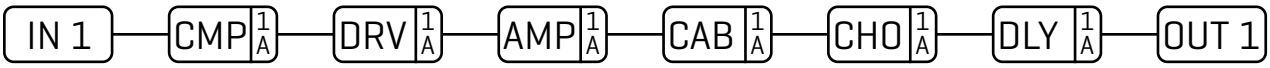
Imagine a professional rackmount system rig like the ones used by guitar heroes for decades. In such a rig, the various components — pedals, guitar amp, rack units — are usually connected to a central **switching unit** so they can be switched in groups without "tap dancing." Some components may also have settings that the switcher can change, like the channel of an amp, or the MIDI program of a delay unit. As described on the previous page, an FM9 **preset** is like this rig: it consists of "blocks" (amp, cab, effects) all connected together in a certain way.

In the traditional rig, you can set up and save different combinations and channels: Clean, Rhythm, Lead, etc. **Scenes** allow you to create saved combinations within a preset. Scenes don't rewire the rig or change what gear it contains; instead, they switch blocks **on** or **off** and change block "**Channels.**" Each preset contains eight scenes. Like presets, Scenes also have their own names.

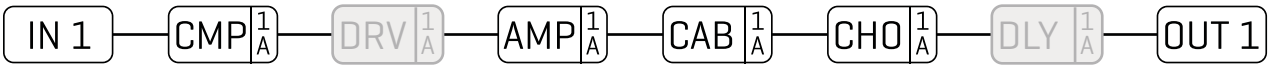
Scenes also offer an advantage over presets when making sound changes while you play. When you change scenes, the FM9 does not need to reload the entire "rig." Instead, it just sets the blocks and channels as needed for the new scene. This is not only faster, but also allows easy "spillover" of delay and reverb tails.

Channels on the FM9 make blocks extremely flexible. Each channel contains its own **fully independent** set of parameters for the entire block. For example, **Channel A** of a **Drive** block might be dialed in as a clean boost, **B** as an overdrive, **C** as a distortion, and **D** as a Fuzz. That's four completely different drive sounds from just block. This can be used to conserve CPU power when compared to using multiple blocks.

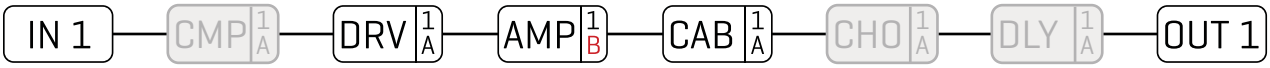
SCENES AND CHANNELS: A VISUAL EXAMPLE



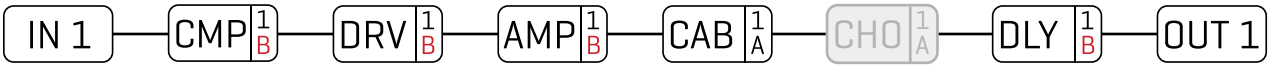
Here is our preset. The Input 1 block feeds a Compressor, which is connected to a Drive, then an Amp and Cab, then Chorus, Delay, and finally the Output 1 block.



SCENE 1 – "Clean": For scene 1, the Drive and Delay blocks are bypassed. We dial in the Compressor, Amp, Cab, and Chorus for a classic clean tone. Notice that the amp says "1A". This means we are using **Amp 1**, set to channel **A**. Let's imagine it as the "ODS-100 Clean" model. We name this scene "Clean".



SCENE 2 – "Crunch": To create scene 2, we bypass the Compressor, Chorus, and Delay and engage the Drive. The Channel of the Amp block is changed from "A" to "B", which we dial in as a "Euro Blue" model. Remember, each channel has a totally independent set of settings, so we can dial in every amp parameter exactly as we want it: Drive, Treble, Mid, Bass, Master, and many more. We then dial in Channel "A" on the drive block with a good "screamer" sound by selecting the "TS808 OD" type. Let's name this scene "Crunch".



SCENE 3 – "Lead": Here's our soaring lead. The Chorus is bypassed. We've changed the compressor to Channel "B" and dialed it in for sustain. The amp is the same as the "Crunch" scene but the Drive changes to "B", which we'll make a "Ruckus LED". The Delay is on channel "B" set for ping-pong echoes with higher mix and feedback. We name this scene "Lead".

Learn more about these topics in Section 5: Presets and Section 6: Scenes & Channels.

GRID EDITING: QUICK START

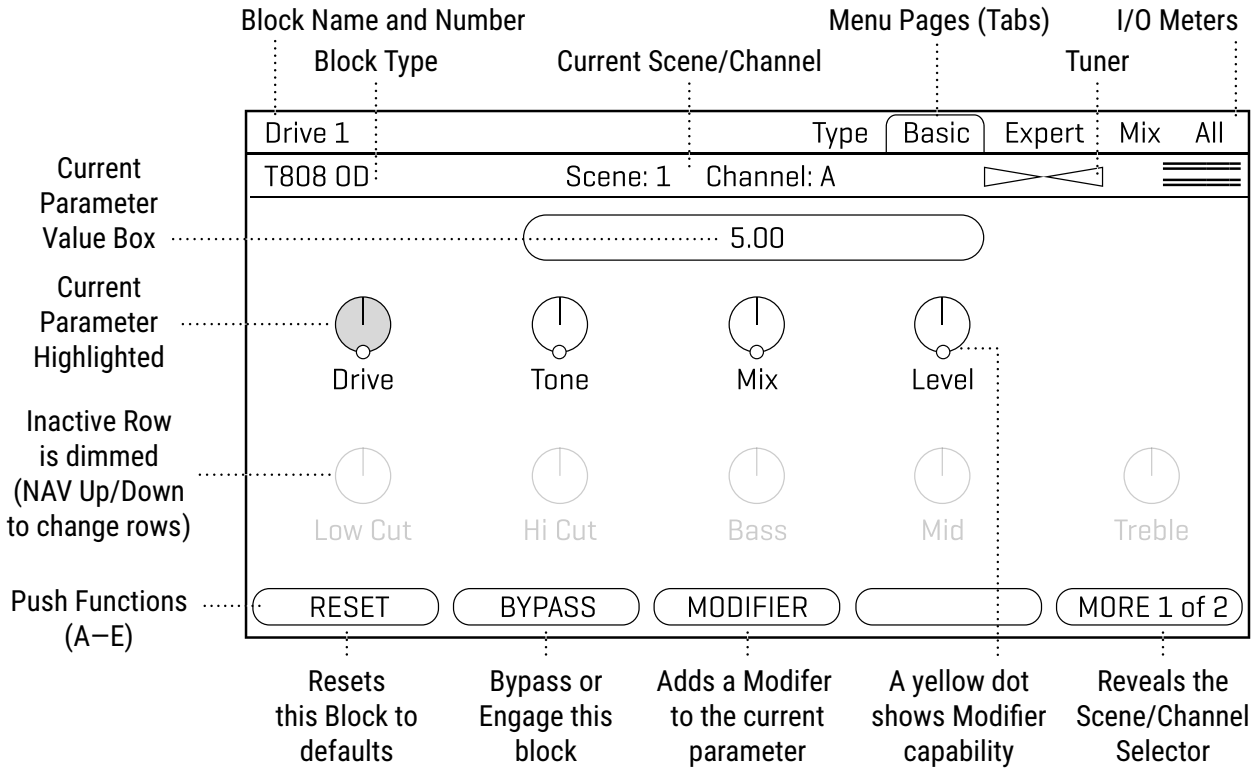
Learn more about the Layout grid in Section 5. Meanwhile, here's a very quick primer:

- From the **Home** page, press **LAYOUT** (knob **B**) or **ENTER** to show the grid (that is, the "Edit" page of the Layout menu).
- Use the **NAV** buttons to move the cursor around the grid.
- To change any block, turn the **VALUE** knob to cycle through the list of available blocks. When you find the block you want, press **ENTER** to confirm. Press **EXIT** to cancel changes.
- On the grid, "push" functions of the **B**, **C**, and **D** knobs allow you to toggle a block's **Bypass** state, **Delete** a block, or create/remove a connector **Cable** between any two blocks in adjacent columns.
- To save any changes, press **STORE, ENTER, ENTER.**

BLOCK EDITING: QUICK START

Learn more about editing blocks in Section 5: Presets. Meanwhile, here's a very quick primer:

- Open the Layout grid (see above), select the desired block and press **EDIT** to open its menu.
- Use the **PAGE** buttons to navigate menu pages.
- Many blocks have a **TYPE** page, which allows you to dial in multiple settings with one knob. Examples include setting an Amp to "USA Lead+" vs. "Tweed 5F1", or a reverb to "Cavern" or "Large Spring".
- Use the **A**, **B**, **C**, **D**, and **E** knobs to edit on-screen parameters. From any block's Edit menu, press **EXIT** to return to the grid.
- To save any changes, press **STORE, ENTER, ENTER.**
- The stylized diagram below shows a typical edit menu page with annotations:



THE FRACTAL AUDIO BLOCKS GUIDE

The FM9 is based on our flagship rackmount processor, the award-winning Axe-Fx III. Both the FM9 and the Axe-Fx III use presets built from **blocks**, and the blocks on both devices share many of the same parameters and settings. A separate manual covers these blocks in complete detail. More than a simple reference, it contains background information, tips, and extra material to help you make the most of your Axe-Fx or FM9.

The **Fractal Audio Blocks Guide** can be downloaded from https://www.fractalaudio.com/fas-bg

THE FOOTSWITCH FUNCTIONS GUIDE

Our current product lineup uses a shared system of **Layouts** and **Footswitches**.

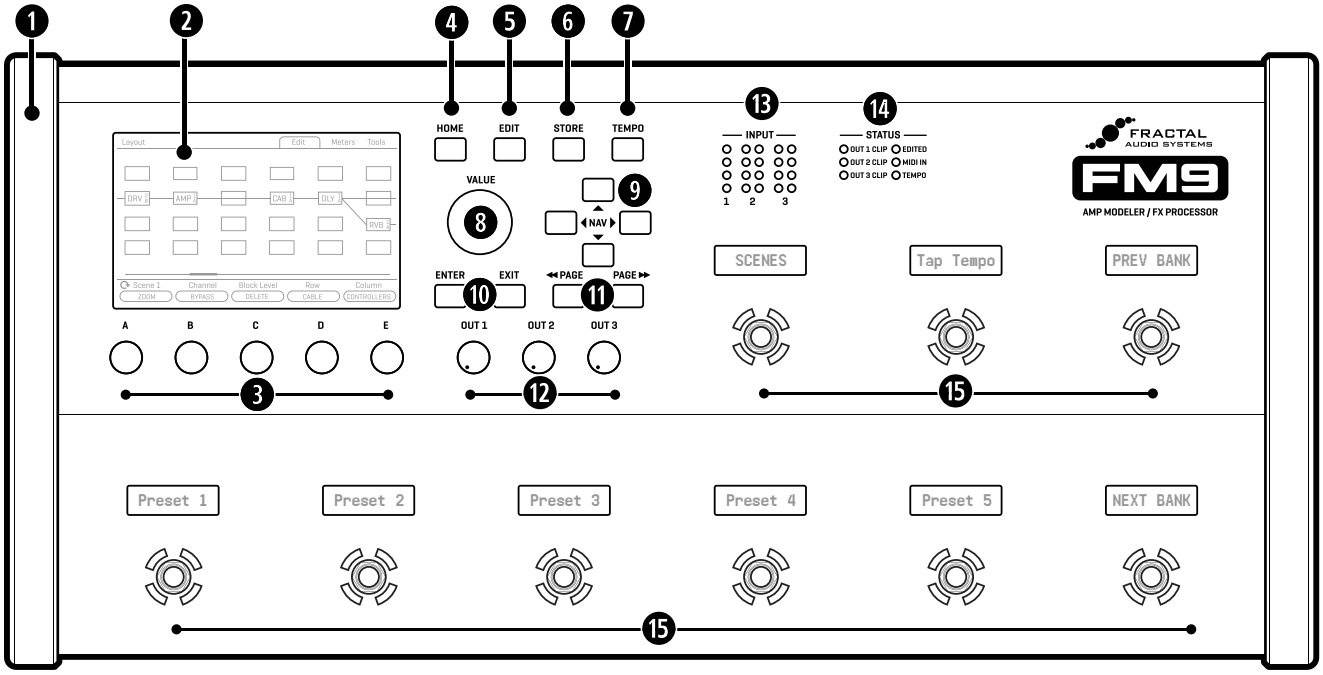
A Layout is like a preset for the footswitches, each with its pre-programmed settings for **Tap** and **Hold** functions. Changing the Layout on a device changes the functions for all of the footswitches on that device. You can change Layouts at will. There are many footswitch functions to choose from as you design your Layouts.

Additional details about Layouts and switches are included in Section 10: Layouts & Switches.

For a detailed guide to all of the available Footswitch Functions, download the **Fractal Audio Footswitch Functions Guide** from **https://www.fractalaudio.com/fas-ffg**

2 HARDWARE OVERVIEW

THE TOP PANEL



1. **Chassis** — The FM9 is housed in a rugged steel chassis with high-durability protective plastic end caps.

2. **Color Display** — A large 800×480 color display is optimized for readability even in the most difficult environments, with excellent brightness and contrast.

3. **A, B, C, D, and E knobs** — Five "endless rotary" push-knobs perform different functions in different areas of the FM9. Push functions are shown as "buttons" in the display above the knobs. Most Edit pages show one or two rows of five knobs for easy 1:1 operation. On vertical menu pages, knob functions have "A,B,C,D,E" labels on the left to indicate control mapping. (You can also use NAV and VALUE to edit any parameter.)

4. **HOME Button** — This button loads the **Home** menu, a convenient place to select presets, access the tuner, edit presets on the Layout grid, view Controllers, or turn the page to access meters, performance controls, or the presets directory.

5. **EDIT Button** — This is used to **Edit** blocks in the current preset. You can jump right to the current block from the home menu or any other page and then tap **EDIT** sequentially to step through all blocks in the preset (top-to-bottom, left-to-right), or select a block on the **Layout** grid first and then press **Edit**. See "Presets" on p. 39 for more on editing presets.

6. **STORE Button** — Enters the **Store** menu where you can save presets and also edit the names of presets and scenes. See "Saving Changes" on p. 47.

7 **TEMPO Button** — Tap this button once to show the **Tempo** menu page, or tap two or more times to set a new tempo. After setting the tempo, press **EXIT** to return to wherever you were.
TIP: The tempo can also be entered using a footswitch and by various other means. See Section 11: Tempo

8 **VALUE Knob** — The **VALUE** knob performs different functions on different menu pages.

- In the **Home** menu, it cycles through presets.
- In the **Layout** grid, it is used to add or change which blocks are on the grid.
- In **Edit** and **SETUP** menus, it changes parameter values, selects from lists, and more.

The Value knob also has a push function of opening the Layout Grid.

9 **NAV Buttons** — The four **NAV** buttons perform different functions on different pages. On the preset page of the **Home** menu, they select and load Presets (Left/Right) and Scenes (Up/Down). In other menu pages, they select between on-screen parameters or options, moving the "focus" of the **VALUE** knob, as indicated by a blue highlight and brighter blue text.

10 **ENTER and EXIT Buttons** — The **ENTER** button executes commands, commits changes, accesses sub-menus, and more. **EXIT** works for cancel, escape, and various other functions.
TIP: From the home page, ENTER is a shortcut to open the layout grid.

11 **PAGE LEFT** and **PAGE RIGHT** — These step through menu pages, shown as "tabs" at the top of the display.

12 **Output Level Knobs 1, 2 and 3** — These knobs independently control the volume of each of the corresponding rear panel outputs. As discussed in various setup diagrams in this manual, Output 3 is at unity gain when set fully clockwise.

13 **Meter Bridge** — Three LED meters — one mono and two stereo — show the levels at Inputs 1, 2, and 3. The red LED indicates -6dB. Adjust input levels as discussed in "Setting Levels" on p. 5

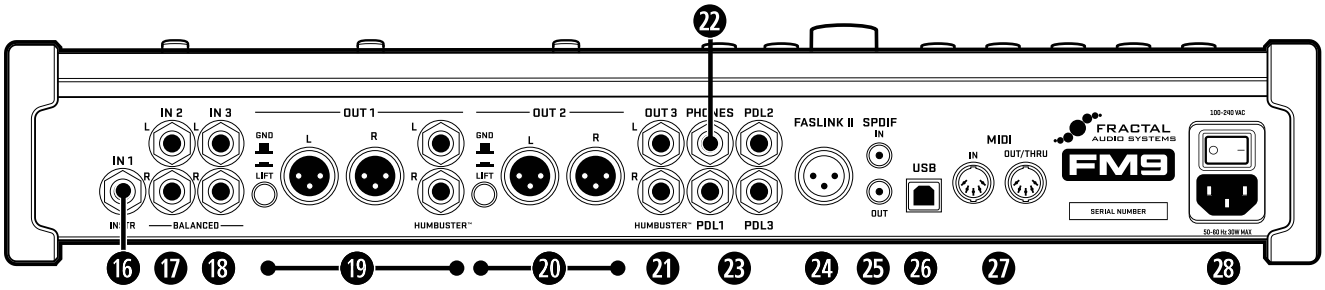
14 **Status LEDs** — Six LEDs show important information.

- The **OUT CLIP** LEDs (1, 2, and 3) indicate that internal signal levels are too high, which can be corrected by turning down the corresponding output knob or by lowering the level of your presets.
- The **Edited** LED lights whenever the current preset has been altered but not saved.
- The **MIDI In** LED lights while MIDI data is being received at the MIDI Input or via USB.
- The **Tempo** LED flashes to show the current Tempo.

TIP: You can also find on-screen meters on the Meters pages of the Home menu and the Layout.

15 **Footswitches** — The switches of the FM9 use our proprietary Solid State Switching (SSS™) technology, featuring extremely smooth, quiet, action, and no mechanical contacts to fail. Each footswitch can be assigned your choice of one "Tap" and/or one press-and-hold ("Hold") function. These can be different in different ways in different "Layouts". Learn more in Section 10: Layouts & Switches.

THE REAR PANEL



16 **Input 1 [Instrument] (mono)** — **(1) 1/4" Jack (unbalanced)** — Connect your guitar, bass or other "instrument level" outputs to this input featuring our proprietary "Secret Sauce IV" circuitry.

17 **Input 2** — **(2) 1/4" Jacks (balanced)** and **18** **Input 3** — **(2) 1/4" Jacks (balanced)**

Connect balanced or unbalanced line level signals here. Inputs 2 and 3 can be used as auxiliary inputs with any mono or stereo line level source like a guitar processor, mixer, synthesizer, backing track player, etc., or paired with Out 2 and/or 3 for "send and return" applications involving pedals, processors, preamps, and more. These inputs can also be used for guitar or bass but do not have the "secret sauce" circuit like Input 1.

TIP: Balanced audio connections are resistant to noise and interference. It is best to use XLR or TRS (3-conductor) cables when connecting balanced devices. Use regular TS-type cables or adapters (2-conductor) with the unbalanced outputs of guitars, preamps, and many other guitar products.

19 **Output 1 L+R (stereo)** — **(2) XLR-Male (balanced)** AND **(2) 1/4" Jacks (Humbuster™)** — This is typically the "Main" output. Use the XLR jacks to connect to balanced FRFR speakers, mixers, studio monitors, etc., using the **ground lift switch** if necessary to reduce 60-cycle hum. An additional pair of **Humbuster 1/4"** jacks produces the same signal as the XLR jacks and can be used at the same time.

20 **Output 2 L+R – (Stereo)** — **(2) XLR-Male (balanced)** — Use the XLR jacks to connect to the balanced inputs of FRFR speakers, mixers, monitors, etc., using the **ground lift switch** if needed to reduce 60-cycle hum. You can also use XLR to TS cables to connect to unbalanced inputs.

21 **Output 3 L+R (stereo)** — **(2) 1/4" Jacks (Humbuster™)** – Output 3 can be used for a variety of applications. It differs from Out 1 and Out 2 in that it is designed for unity gain applications such as the popular "Four-Cable Method" and other scenarios involving pedals, tube amps, analog DI recording, etc. Set the **OUT 3** Level knob fully clockwise for unity gain. **Section 4** covers some of these applications in detail.

22 **Headphones Output** — **1/4" Stereo Jack** — Connect headphones here to monitor **Output 1** (see above).

23 **Pedal Inputs** — **(1,2,3) 1/4" Jacks** — used to connect external expression pedals or switches to control various functions. See "Expression Pedals" on p. 10 and "External Switches" on p. 12.

24 **FASLINK II Connector** — This allows you to connect the FM9 with one or two FC-6 or FC-12 foot controllers. FASLINK™ uses a standard XLR cable for 2-way communication and also powers the first FC without an external "wall wart" adapter. (See your FC Owner's Manual for more on daisy chaining and other options.)

NOTE: *The FASLINK II port on the FM9 is designed for our FC Series of foot controllers and is NOT compatible with the FASLINK port on our MFC-101 MIDI foot controller.*

25 **SPDIF In** and **Out** — (Coaxial "RCA" type connectors) — Digital in and out ports allow the FM9 to interconnect

with other digital devices without the added latency of D/A or A/D conversions. These ports operate at a fixed clock rate of 48k with the capability to use the internal clock or to chase external clock signals detected at the SPDIF input. The SPDIF output can transmit your choice of signals as determined by the setting for **SPDIF Out Source** located in **SETUP: I/O: Audio.** (See "I/O: AUDIO Page" on p. 94.)

26 **USB** — This provides the FM9 with 8×8 USB audio capabilities when connected to a compatible Mac or PC for use with a DAW or other audio applications. In addition, MIDI-over-USB provides a 2-way connection for Fractal-Bot and FM9-Edit, and the FM9 MIDI ports appear in your DAW or MIDI program for automation and remote control. See Section 3: USB for important information on USB.

27 **MIDI Ports** — The MIDI IN port of the FM9 allows you to control various MIDI functions including preset and scene selection, effect bypass, channel changes, parameter changes, and more. The FM9 can also transmit various MIDI messages and features a soft MIDI THRU which can be enabled in SETUP: I/O: MIDI. See "Sending and Receiving MIDI" on p. 122 for more information on the various ways the FM9 works with MIDI.

28 **AC Power Receptacle** — Insert the supplied power cable and connect the other end to a grounded AC power receptacle. The FM9 has a universal power supply, which means it can be used around the world by simply changing the cable.

The power receptacle has an integrated **Power Switch** which turns the power on or off. The FM9 features pop suppression, but it is still advisable to turn down or mute connected devices when powering on or off.

3 USB

COMPUTER INTEGRATION

With a USB connection to a computer, the FM9 provides 8×8 audio interface capabilities, including computer audio playback, recording, and re-amping in your DAW or other audio applications. A driver is required for Windows operating systems. No driver is required for Mac operating systems.

In addition, a computer connection provides high-speed “MIDI-over-USB” for remote control of the FM9, plus backups, updates, editing, and more.

WINDOWS MINIMUM REQUIREMENTS

OS: Windows 7 SP1 or newer (all versions compatible with x86 or x64).

CPU: Intel Core 2 @1.6 GHz or better, or AMD equivalent.

Memory: 1GB minimum.

USB: USB 2.0 support required.

Driver: A USB driver is required for use under Windows operating systems.

The Windows drivers can be downloaded at http://www.fractalaudio.com/FM9

Step-by-step instructions are included with the installer.

MAC MINIMUM REQUIREMENTS

OS: OS X 10.9 or later required for USB audio. An issue in older OS X versions causes audio pops. Note: Older Mac OS versions may work for MIDI-over-USB (Fractal-Bot, FM9-Edit, etc.).

CPU: Intel or Apple M1 Processor.

Memory: 512MB minimum.

USB: USB 2.0 support required.

Driver: No driver is required for Mac OS.

Important: *If you are using a USB-C to USB adapter on a newer Apple computer, plug the USB-C adapter into a the port on your Mac first, allow it several seconds to “wake up” and **then** connect a USB cable and FM9 into the adapter.*

USB AUDIO

Each of the 8 input and 8 output audio channels is mapped to an audio signal or physical input/output.
As with all USB Audio devices, inputs and outputs are defined with respect to the computer.

Where an input or output has options, the required parameters can be found under SETUP: I/O: Audio.

Setup Parameter names are shown in the diagram in **PURPLE CAPS.**

RECORDING

Source	USB Channels	Applications
Out 1	1 2	Record Processed Audio
Out 2	3 4	Record Processed Audio
INST IN1	5 6	Record a DI for re-amping
L R IN2 or IN3 (USB OUTPUT 7,8 SOURCE)	7 8	Record a Stereo Source without processing

PLAYBACK

USB Channels	Destination	Applications
1 2	OUT 1 L+R	Play Computer Audio
Can be swapped (USB OUT MAPPING)		
3 4	OUT 2 L+R	Play Computer Audio
5 6 In 1	and/or IN 2 or 3	Route Audio to the grid for re-amping or processing (INPUT 1 SOURCE, INPUT 2 SOURCE, INPUT 3 SOURCE)
7 8 In USB	and opt: SPDIF OUT	As above, plus option for playback at digital output (SPDIF OUT SOURCE)

BASIC PLAYBACK

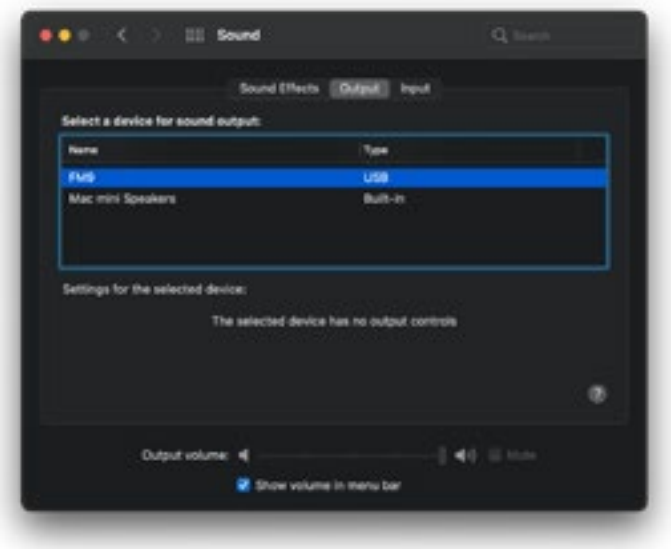
The specific steps for playback on a given computer will vary based on its operating system and software, but the basic idea is to select the FM9 as the audio interface and begin playback.

On Mac OS, no driver is needed.

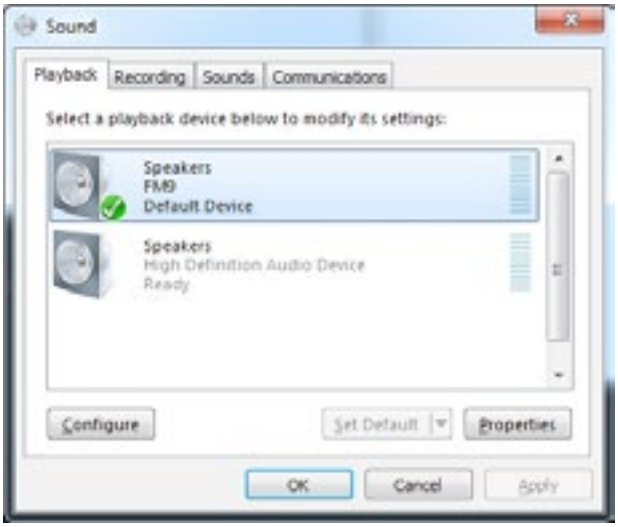
- Connect the FM9 to an available USB port.
- On your Mac, open **System Preferences: Sound** and select the **FM9** as the output device (shown below).
- System audio such as Apple Music will be be played back through FM9 **Output 1 (Left** and **Right**.)

On Windows you must install the driver first.

- Find **FM9 USB Audio Setup** at: https://www.fractalaudio.com/FM9-downloads/
- Once the drivers are installed, open **Sound** under **Control Panel**.
- Select the FM9 and then click “Set Default”.
- System audio such as Microsoft Music Player will be played back through FM9 **Output 1 (Left** and **Right**.)



Mac Sound Preferences



Windows Sound Preferences

Whichever OS you are using, you can confirm that the FM9 is receiving audio by viewing the **Meters** page of the **Home** menu, where you should see meter activity on **USB IN 1L** and **1R**. If you turn up the **OUT 1 LEVEL** knob, you will also see meter activity on **ANALOG OUT 1L** and **1R** and hear audio at the connected speakers.

BASIC RECORDING

The specific steps for recording on a given computer will vary based on its operating system and recording software, but the basic idea is to select the FM9 as your audio interface, set the project sample rate to 48k, create a track, assign the desired input, and begin recording. Remember that USB 1+2 will record what you hear at the main outs of the FM9.

USB RE-AMPING

The FM9 USB Audio capabilities are perfect for “re-amping,” a method in which the raw, unprocessed DI output of a guitar is recorded and then re-processed later through the amp, cab, and effects of your choice.

Re-amping has many benefits. First, it allows you to record when inspiration strikes, capturing a DI instead of obsessing over the final tone. Later, you – or a mix engineer – can redesign the sound as your track’s production advances. Punches and edits made on the DI track are also made virtually inaudible by the re-amping process.

The FM9 allows you to dial in new tones while simultaneously listening to the track for context.

STEP 1: RECORDING

The following tutorial assumes that you have connected **Output 1 L/R** to monitors or headphones and that SETUP>I/O parameters are at default values. The details may vary from one DAW to another, but this guide should be easy to adapt to your own environment.

1. In your DAW, select the **FM9** as the main audio interface. Set the main outputs to **FM9 Outputs 1+2**.
2. Create a new project in the DAW, and set its sample rate to **48kHz**.
3. OPTIONAL: Record or insert any backing tracks and test their playback at FM9 Output 1.
4. Connect your guitar to the **Instrument** input of the **FM9** and select any preset desired.
5. Now record the DI:
   - Create a **mono** track. Name this track something like “Guitar DI”. Set its input to **FM9 Input 5**. This will record the signal at the **Instrument** jack with no processing.
   - **Arm** the Guitar DI track for recording, making sure that **Software/Input Monitoring** is *NOT* enabled. Start **RECORDING**. You should hear the processed guitar but record the DI.
     Note: You can simultaneously record the processed guitar at the same time by arming a different stereo track to record **FM9 USB Inputs 1 and 2**.
   - Be aware: while a processed track will show “hot” levels, the level of a DI track will appear to be *very low*. This is NORMAL! You are recording the “raw” signal exactly as it comes out of your guitar.
   - Be aware that foot controller actions such as expression pedal and footswitch presses are not recorded.
   - YOU HAVE NOW RECORDED YOUR DI.

STEP 2: RE-AMPING

Before re-amping, you must first change some settings on the FM9. Press **HOME** and open **SETUP**. Navigate to the **I/O** menu, and change **Digital Input Source** to **USB (CHANNELS 5/6).** Then nav down a few rows and change **Input 1 Source** to “DIGITAL**”**. You must change this Input 1 Source back to “ANALOG” when you finish re-amping!

6. Change the output of your “DI” track to **FM9 Output 5.**
7. NOTE: You may wish to turn down the volume of your studio monitors before testing playback!
   To test playback, optionally solo the DI track, rewind to where the DI clip begins, and press PLAY. You should hear the DI being processed by your FM9 preset.
8. Now prepare to record the processed output of the re-amp:
   - Create a stereo track. Name it something like “Guitar Re-Amp 1”.
   - Set its inputs to **FM9 Inputs 1+2**.
   - Arm your re-amping track for **recording**, making sure that **Software/Input Monitoring** is *NOT* enabled.
9. Rewind, press **RECORD**, and roll the track. The DI plays into the FM9 and its output is recorded.
   YOU HAVE NOW RECORDED THE RE-AMPED TRACK.

This simple method can also be adapted for re-cabbing, adding effects to a printed track, etc.

4 SETTING UP

This section provides an overview of using the FM9 in various setups using third-party equipment. When you test any new setup, always proceed slowly with all level knobs turned all the way down. The FM9 features pop suppression on startup, but speakers or monitors should be powered on last whenever possible. A basic AC surge/spike protector is also recommended. Remember that the FM9 is extremely flexible. There are countless setups not detailed here.

GENERAL PRINCIPLES

INPUTS

- Setting **Input Levels** is important. See "Setting Levels" on p. 5.
- The **Input 1/Instrument** jack features "Secret Sauce IV" to lower the noise floor, but you can also safely connect guitars and other instruments to **Input 2 or Input 3** with good results.
- Inputs 2 and 3 are **balanced**. Use balanced 1/4" cables when connecting to balanced devices. Use normal TS guitar cables when connecting to unbalanced devices.

OUTPUTS

- Outputs 1 and 2 default to "-10" dBV, a lower level "consumer" format. Change to "+4" dBu when connecting to pro audio equipment. Find these settings under **SETUP: I/O: Audio**.
- Use **XLR cables** when connecting Out 1 or Out 2 XLR outs to the XLR inputs of other devices.
- Use **XLR female to TRS male cables** or adapters when connecting Out 1 or Out 2 XLR connectors to the balanced 1/4" TRS inputs of other devices.
- Use the Out 1/Out 2 **ground lift switches** if required to combat the hum caused by ground loops.
- Use **XLR female to TS male cables** when connecting Out 1 or Out 2 XLR connectors to the unbalanced 1/4" inputs of other devices.
- Use **Humbuster™ cables** (see p. 6.) or regular **guitar patch cables** (1/4" tip sleeve) when connecting Out 1 or Out 3 1/4" Humbuster outputs to to the unbalanced 1/4" inputs of pedals, amplifiers, and other devices.
- Output 3 operates at unity gain when the Out 3 Level knob is turned fully clockwise. The optional **Boost/Pad** setting can help lower the noise floor of Out 3 in some cases. See p. 95 for details.

MONO/STEREO

- Any setup can easily be adapted for mono or stereo with some simple changes to input and output settings.
- See "Mono vs. Stereo" on p. 6 for an introduction to this topic.

SPECIAL AMP BLOCK SETTINGS

- When using the FM9 amp block into traditional (*not* full range) guitar speakers, certain advanced amp parameters require consideration. Turn off **Speaker Drive** and **Speaker Compression**. Also consider setting **LF Resonance Frequency** to match the resonant frequency of your connected cab if you know it.
- The Amp block also includes an Output Mode setting which optimizes the output when using either speaker sims and FRFR speakers or a solid state power amp and real guitar speakers.

FC CONTROLLERS

- Any setup shown here also works great with one or more FC-6 or FC-12 foot controllers connected.

FRFR/DIRECT

Global Settings: Default
Presets: Factory or Custom

This setup takes advantage of the ability of the FM9 to recreate all aspects of an “end-to-end” guitar chain, including virtual stompboxes, amps, cabs, studio effects, and more. It is the most versatile, flexible, and popular setup.

Output 1 is connected directly to full-range, flat response (“FRFR”) speakers or a PA. A number of manufacturers offer FRFR products designed specifically for guitar, but any high quality PA speaker or monitor can be used. Some FRFR systems have a built in amplifier, while others have separate power amp and speaker components.

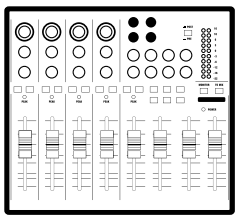
All Global and I/O settings on the FM9 can be left at default settings for this setup, and factory presets can be used without modification.

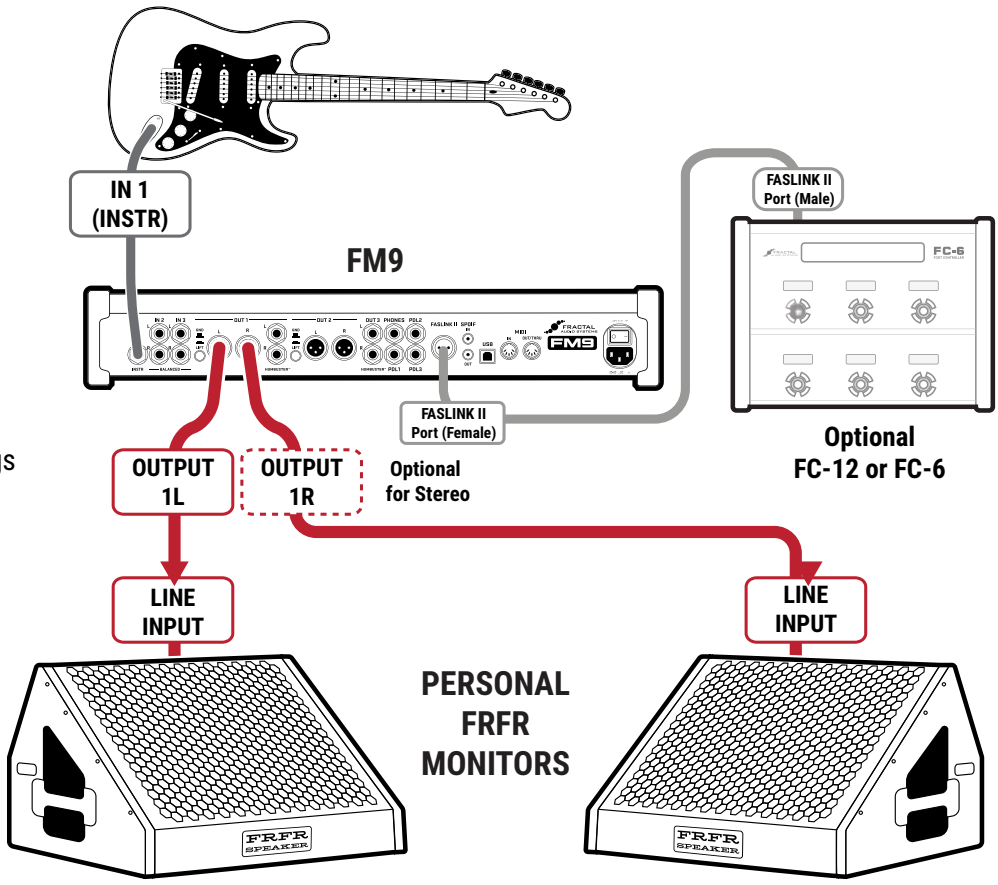
Adjust overall levels using the front panel **OUT 1** knob.

An optional FC-6 is shown in this diagram. The FM9 is designed to be expanded with up to two FC Controllers.

CONNECTIONS

- Connect your guitar to **Input 1 (Instrument)**.
- Connect **Output 1** to the input(s) of your FRFR System. Use Left for mono or Left and Right for stereo.
- If you’re using a mixer, be sure to connect the FM9 to line level inputs rather than mic level inputs. Also, “zero out” all other channel settings to begin. Contact your mixer’s manufacturer if you have any questions.





FM9 AS AUDIO INTERFACE

Global Settings: Default
Presets: Factory or Custom

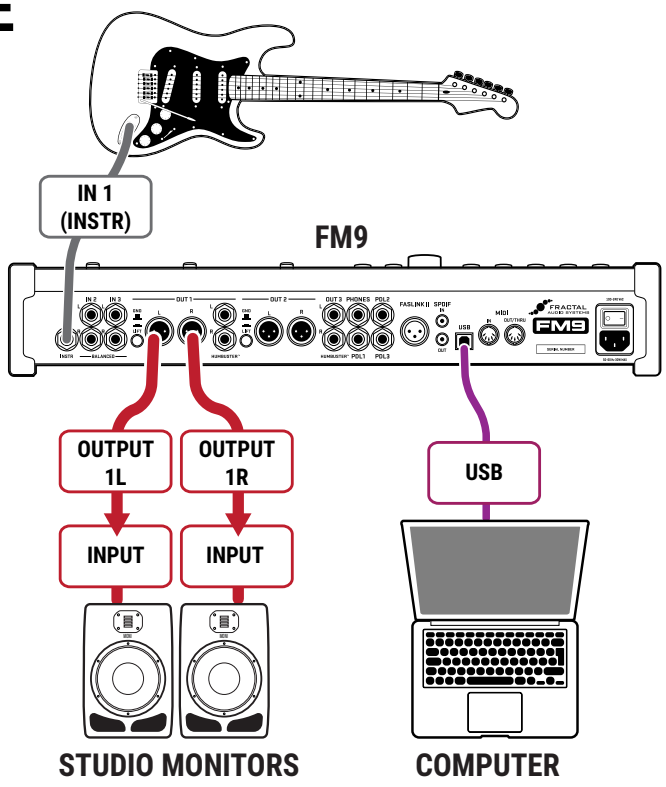
The FM9 is a high quality audio interface that can be used for recording or playback. The setup shown here has the advantage of allowing easy USB **re-amping**. Note that all computer audio and project settings must be set to 48 kHz, which is the fixed rate of the FM9.

Connect studio monitors directly to **Output 1 L+R**.

The top panel **OUT 1** level of the FM9 is the master volume, adjusting the overall levels of the FM9 and computer playback simultaneously. For USB audio playback level control, adjust levels inside the computer or use the level parameters of the FM9 found in **SETUP: I/O: USB**.

Besides Input 1, the other inputs of the FM9 can also be used to record microphones, keyboards, and more.

FM9-Edit and Fractal-Bot use the same USB connection.

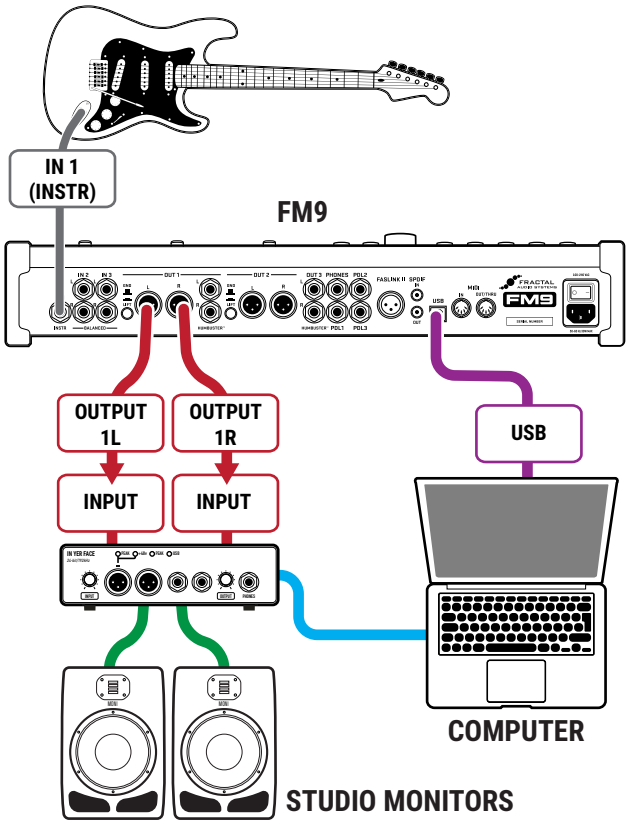


FM9 + THIRD-PARTY AUDIO INTERFACE

As detailed above, the FM9 is a high-quality, standalone USB audio interface, but it can also be used to add world-class guitar processing and effects to an existing studio setup with a third-party audio interface.

While this does not allow re-amping over USB, there are many reasons why you might prefer an existing interface, such as the ability to run at sample rates other than 48k, or to take advantage of additional inputs or outputs, mic preamps, etc.

- Connect your guitar to FM9 **Input 1 (Instrument)**.
- Connect your **studio monitors** and **computer** to your **audio interface** according to the instructions of its manufacturer.
- Connect FM9 **Output 1 L+R** to a stereo line level input pair on your audio interface.
- Connect the FM9 to the computer via USB to enable FM9-Edit and Fractal-Bot.



NEUTRAL (“FLAT”) POWER AMP & GUITAR CAB

Global Settings: Modified (see below)
Presets: Factory or Custom

This popular setup uses a full range flat response (“FRFR”) power amp with traditional guitar speakers. Such amps are usually solid-state and designed specifically for pro audio or FRFR guitar. They are ideally tonally neutral and dynamically transparent though some may have basic tone controls and/or some effect on “feel.”

The FM9 performs amp modeling but NOT speaker cab simulation. Effects can be used as desired in any position.

DISABLE SPEAKER CAB MODELING

Using real speakers and modeled speakers at the same time would be redundant, so this setup requires you to disable or remove the FM9 Cab blocks. You can do this manually in each preset, or take advantage of an easy global setting:

- Navigate to **SETUP**: **Global Settings**: **Config**.
- Change **Cabinet Modeling** to “BYPASSED”.

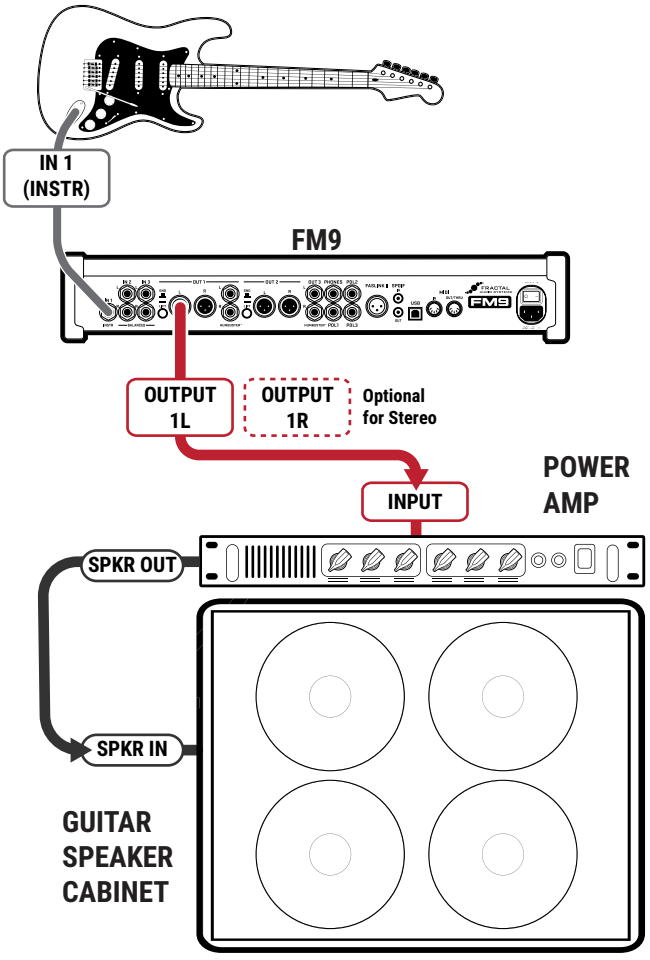
A “NEUTRAL” POWER AMP...

In comparison to the neutral power amp used here, the **power section** of most guitar amps has a very pronounced effect on tone and feel. Here, however, the FM9’s “Power Amp Modeling” simulates these characteristics. This has several benefits. First, since one amp’s power section can be so different from another’s, a modeled power amp ensures accuracy when you change amp model types. The power amp of a “deluxe” is extremely different the power amp of a “recto”, for instance. Therefore, do NOT disable power amp modeling on the FM9 when using a neutral power amp.

One setting you should change, however, is **Output Mode,** located near the top on the **Advanced** page of the Amp block’s edit menu. Set it to “SS PWR AMP + CAB”. In this mode, virtual speaker compression behaves differently, relying on the real speaker for compression while still simulating speaker interaction with the virtual power amp.

CONNECTIONS

- Connect your guitar to **Input 1 Instrument**.
- Connect **Output 1 L** to the input of your power amp, which will typically be balanced.
- For an unbalanced input, use a Humbuster™ cable.
- Connect the power amp to a speaker as directed by the manufacturer.



TRADITIONAL GUITAR POWER AMP & CAB

Global Settings: Modified (see below)
Presets: Factory or Custom

This setup uses traditional guitar speakers and a traditional guitar power amp—that is, one with a pronounced effect on tone and feel. This amp may be the "power section" of a head or combo, accessed via an "FX RETURN" input on the amp, or it may be a standalone power amp for guitar.

DISABLE POWER AMP MODELING

The "non-neutral" power amp in this setup contributes considerably to the overall sound. We will therefore disable "Power Amp Modeling" in the FM9 so as to not apply power amp characteristics twice! The FM9 will continue to model the preamp.

You can disable power amp modeling *manually* in the Amp blocks of your presets (this parameter is on the amp's Power Amp Page), or you can take advantage of an easy global setting:

- Navigate to **SETUP**: **Global Settings**: **Config**.
- Change **Power Amp Modeling** to "OFF".

(NOTE: Some power amps are in fact more subtle, and some players like to leave Power Amp Modeling ENABLED with this type of setup. Try it both ways and decide for yourself.)

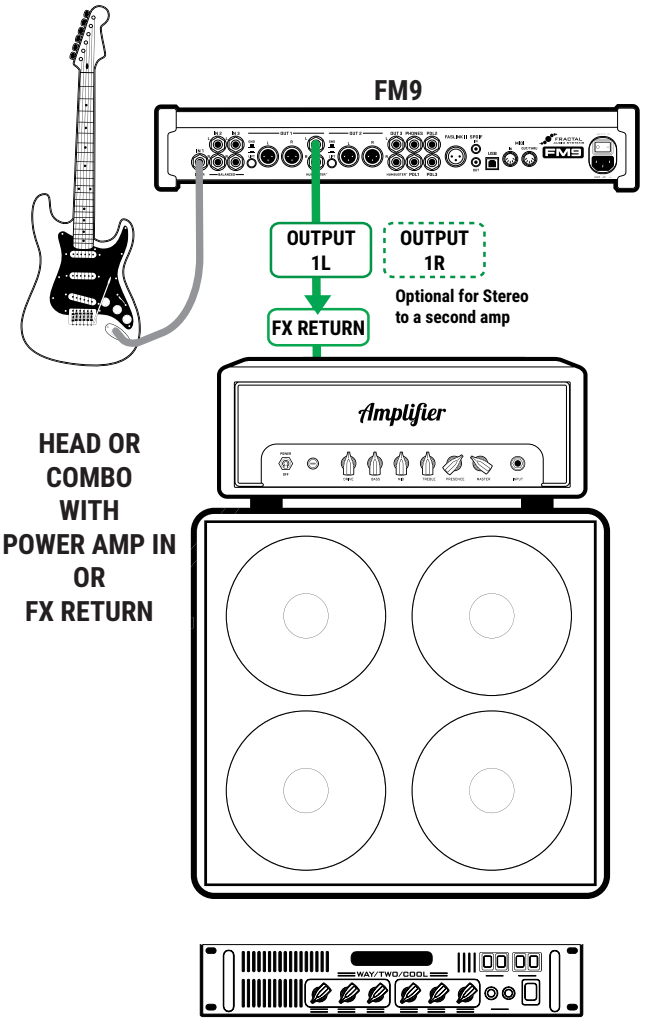
DISABLE SPEAKER CAB MODELING

This setup also uses traditional **guitar speakers**, which apply strong tonal coloration. Using modeled speakers at the same time would be redundant, so we must disable or remove the FM9 cab block. You can do this manually in every preset, or take advantage of an easy global setting:

- Navigate to **SETUP**: **Global Settings**: **Config**.
- Change **Cabinet Modeling** to "BYPASSED".

CONNECTIONS

- Connect your guitar to FM9 **Input 1 Instrument**.
- Connect the FM9 to the **power amp input** using FM9 **Output 1** (1/4" jack) using a Humbuster™ cable.
- Connect your power amp to a guitar speaker cabinet as directed by the manufacturer. (If it's a combo, the speaker is already connected.)



NOTE: Instead of the power section of a head or cab, you can also use tube power amp designed for guitar.

FRONT-OF-HOUSE + PERSONAL FRFR MONITOR

Global Settings: “Out 2 Copy Out 1” Turned ON
Presets: Factory or Custom

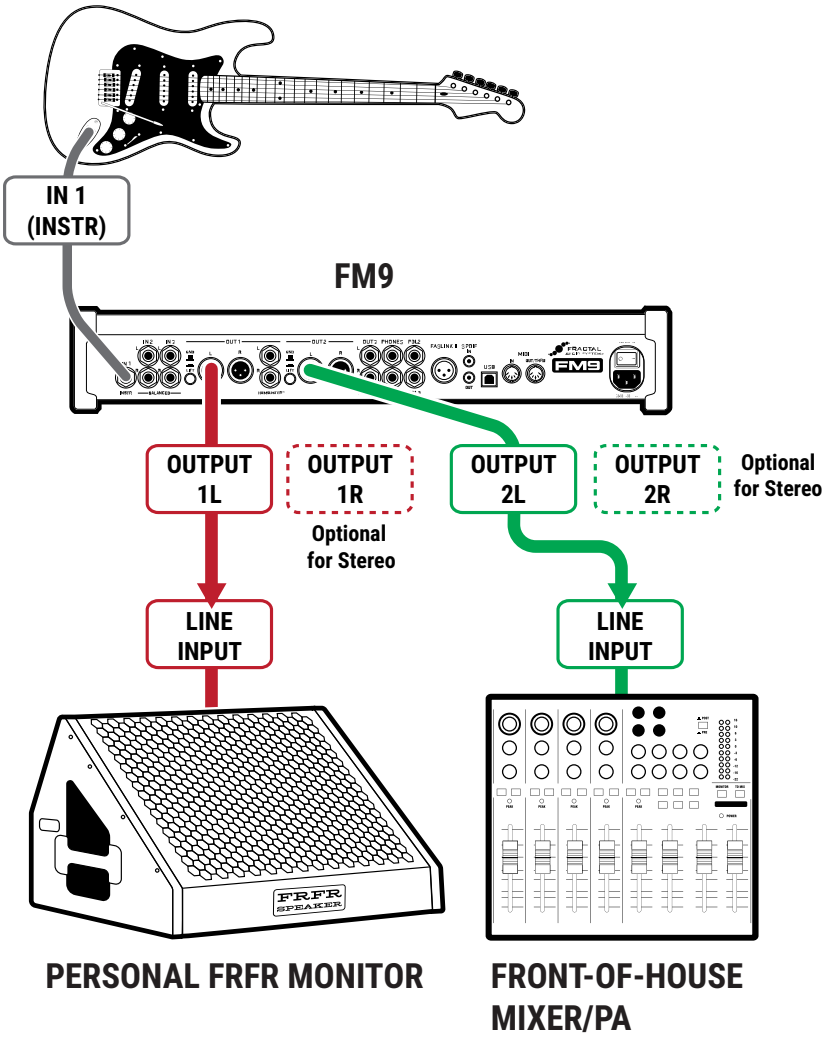
This setup sends identical signals to the front-of-house PA and your personal FRFR monitor, with separate level and global EQ controls for each. As in other Direct/FRFR setups, the FM9 creates a fully modeled end-to-end guitar sound for the ultimate in flexibility—stompboxes, amps, cabs, post effects, and more.

Output 1 is used for your personal monitor. It can be connected with XLR or using a Humbuster™ cable if the monitor does not have a balanced input. Set your personal levels using the front panel **OUT 1** knob.

Output 2 is sent to front of house as an independent copy of Out 1 with its own level control from the front panel **OUT 2** knob. (PRO TIP: Set it and forget it... make the sound tech happy!) Instead of inserting the Output 2 block manually in every preset, use this simple trick: navigate to **SETUP**: **I/O**: **Audio** and change **Output 2/Copy Output 1** to “ON”. Output 2 will now replicate the signal being at Output 1.

CONNECTIONS

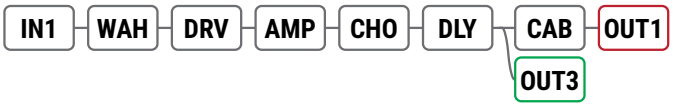
- Connect your guitar to FM9 **Input 1 (Instrument)**.
- Connect **Output 1** to the input of your FRFR monitor.
- Connect **Output 2** to the front-of house system.
  - If you are working with a sound technician, be sure to tell them that you are outputting a line level input — NOT a microphone level signal. They should use a balanced line input without a preamp.
  - Also tell them you are sending a fully processed “mix-ready” sound, and that they should “zero” the channel with no EQ or processing, at least to start.



FRFR FRONT-OF-HOUSE + GUITAR CAB BACKLINE

Global Settings: Default **Presets: Custom**

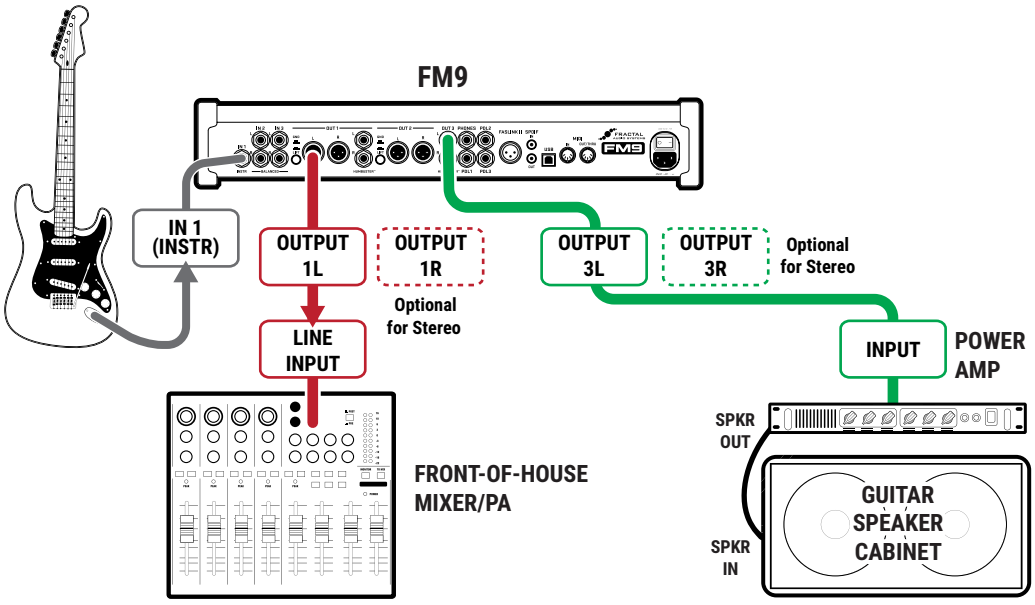
This setup sends one signal WITH cab sims to Out 1, and a second signal WITHOUT cab sims to Out 3. This is requires special presets to tap the signal path at two different points. The first signal goes direct to front-of-house. The second signal feeds a power amp and real guitar speakers for an authentic backline experience. (There is a factory preset "Template" for this setup towards the end of Bank C.)



Front of House - The signal with speaker sims is sent via **Out 1** to the PA. It has all the benefits of going direct: great, consistent tone at the perfect level controlled using the **OUT 1** knob. Remember, when connecting to a mixer, use line level inputs and avoid mixer settings that might undesirably color the sound. Notice that the Cab block above is shown after the "post amp" FX (Chorus and Delay). If a stereo signal is required at Output 1, the cab block must also be set up for to stereo. Learn more about the Cab block in "The Fractal Audio Blocks Guide".

Backline - This signal is basically identical to the first, but without speaker simulation which would be redundant with the real speaker. This provides all of the benefits of modeling the amp and effects, plus the familiar playing experience of loud guitar speakers ("stage level," sweet singing sustain, moving air, ringing ears…).

This requires a neutral power amp (see p. 30) since **power amp modeling** must be ENABLED for **Out 1** to send a direct signal to FOH. (You could use a more complex dual Amp block preset with a non-neutral power amp.)



CONNECTIONS

- Connect your guitar to **Input 1 (Instrument)**.
- Connect **Output 1** to the front-of-house PA.
- Connect **Out 3** to the input of your "neutral" power amp (see p. 30). If your power amp has balanced inputs, substitute **Out 2** for Out 3 wherever it is used in this setup.
- Connect your amp to a speaker cab as directed by the manufacturer.

FX PROCESSOR ONLY (“PRE”)

Global Settings: check I/O Mono/Stereo settings; See the tip about optimizing for low noise, below.

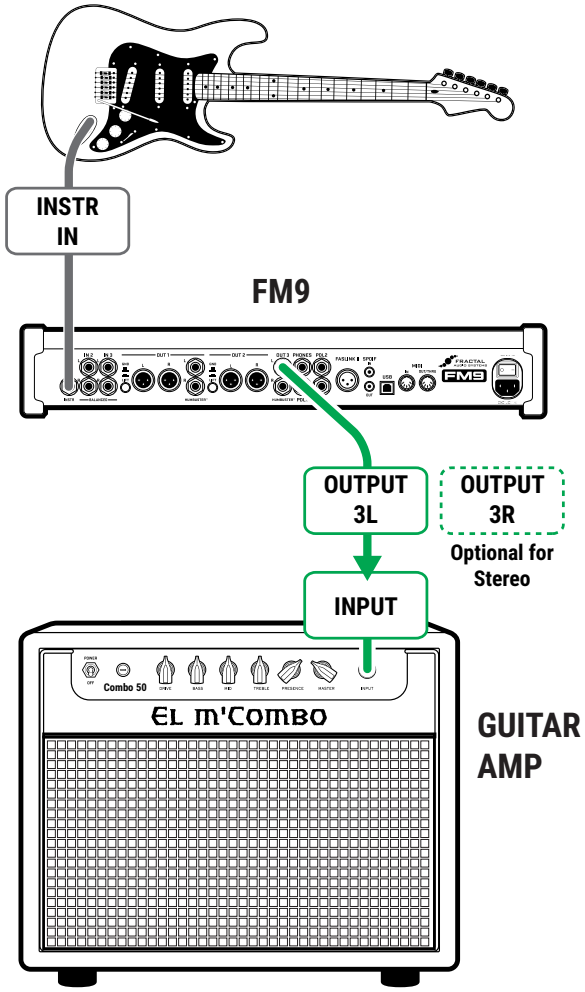
Presets: Custom

In this setup, the FM9 is used as a **virtual pedalboard**, providing access to our vast collection of industry-leading effects. It is placed between your guitar and amp like traditional pedals. You’ll need custom presets, but as with all FM9 setups, you are free to create what you need. Presets should NOT contain Amp or Cab blocks for this setup. They should be created with an understanding of how effects sound *in front of* your amp’s preamp and the distortion it generates. (You may wish to look into the term “pedal platform amp” for more on this subject.) FM9 Output 3 is used in this setup, because it is designed for unity gain operation. A sample preset is shown below:

CONNECTIONS

- Connect your guitar to FM9 **Input 1 (Instrument)**.
- Connect **Output 3 L** to the input of your amp. A **Humbuster™** cable is recommended.
  - To extend this configuration for optional stereo, connect **Output 3 R** to the input of a second amplifier.
  - You can in fact use the FM9 to select between two different amps by changing channels on its Out 3 block. Here are some sample settings:
    - Channel A: Balance Center (Both Amps)
    - Channel B: Balance Left (Left Amp)
    - Channel C: Balance Right (Right Amp)
    - Channel D: (Not used)

    (See “Scenes & Channels” on p. 49 for more info.)
- Set the FM9 **OUT 3** knob fully clockwise for unity gain if desired, and adjust your amp as you normally would.



TIP: OPTIMIZE FOR LOW NOISE

QUICK TIP

The optional **Boost/Pad** function of Output 3 can be used to lower the noise floor. Find this under **SETUP: I/O: Audio**. To find the right setting, adjust it to be as high as possible without clipping, as indicated by the red LED on the unit’s top panel. The volume won’t change as you make adjustments, but you should hear the FM9’s noise floor drop as you increase boost/pad.

FX PROCESSOR ONLY (“POST”)

Global Settings: check I/O Mono/Stereo settings; See the tip about optimizing for low noise, below.
Presets: Custom

The FM9 can be used as a processor in the loop of an amp, providing access to our industry leading effects for those who may not be not ready to make the jump to amp modeling. (Don’t worry, we still like you!)

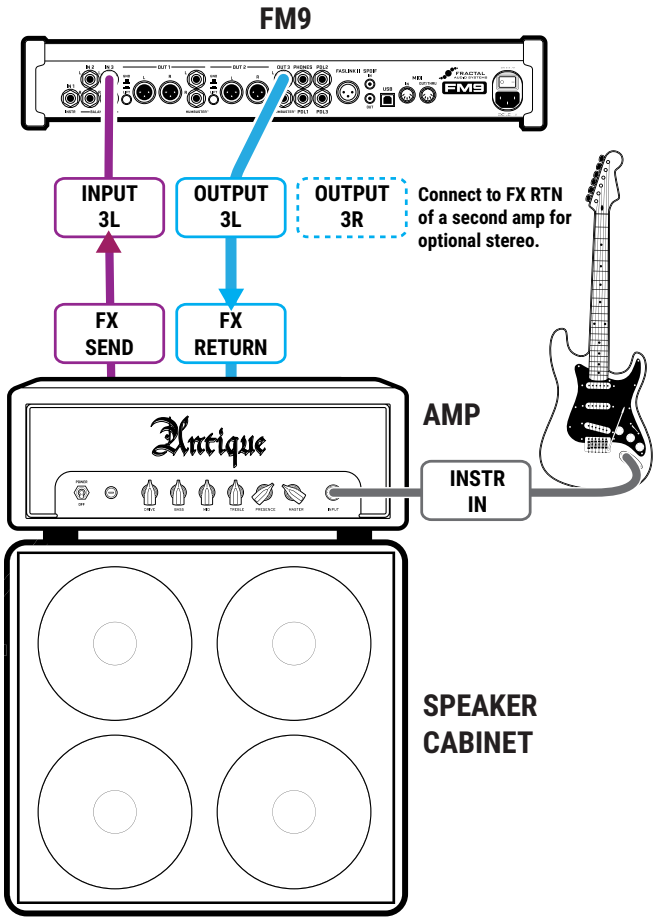
FM9 **Input 3** is used in this setup to accommodate your amp’s line level FX send.

FM9 **Output 3** is used in this setup, because of its unity gain capabilities.

You will need to create custom presets for this setup. These must have NO Amp or Cab blocks, and must contain only those effects that sound good to you *after* the distortion stage of your preamp. An example is shown below:

CONNECTIONS

- Connect your guitar to your amp’s instrument input as you normally would.
- Connect the FX Send of your amp to FM9 **Input 3 L**. Adjust Input trim on the FM9 if needed in **SETUP: I/O: Input**.
- For the setup shown here, set **Input 3 Mode** to “LEFT ONLY” under **SETUP: I/O: Audio**. (It is rare but not unheard of to use two preamps in stereo.)
- Connect FM9 **Output 3 L** to the FX Return of your amp. A **Humbuster™** cable is recommended.
- Set the front panel **OUT 3** knob fully clockwise for unity gain, or as desired for appropriate volume levels.
  - To extend this configuration for optional **stereo**, you would typically connect **Output 3 R** to the FX return of a second amplifier.



PARALLEL FX LOOP?

If your amp’s FX loop is **parallel**, your FM9 presets must be further customized so that no dry signal passes through the FM9. This generally limits the effects you can use, how they must be arranged, what their mix setting must be, and more. If your amp is switchable, a series loop is certainly easier to use in this setup.

TIP: OPTIMIZE FOR LOW NOISE

QUICK TIP

The optional **Boost/Pad** function on Output 3 can be used to lower the noise floor. To find the right setting, adjust this to be as high as possible without clipping, as indicated by a red LED on the front panel meters. The volume won’t change but you should hear the FM9’s noise floor drop as you increase boost/pad. Find this option under **SETUP: I/O: Audio.**

FOUR-CABLE METHOD (“4CM”)

Global Settings: Default, but see “Tip” Below **Presets: Custom**

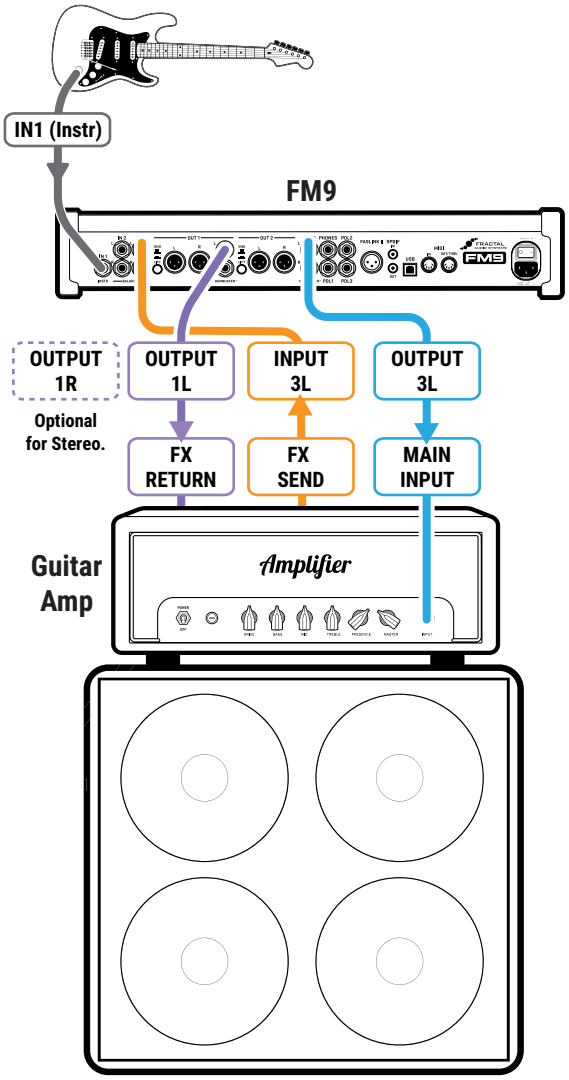
The Four-Cable Method (“4CM”) uses custom presets to insert the FM9 at two different points along a long signal chain. This setup was more popular years ago, but as amp modeling improves, fewer and fewer players use it.

First, a chain of “**pre**” effects like wah and drive are used between the guitar and your amp’s preamp section. Next, a chain of “**post**” effects like delay and reverb are placed in your amp’s FX loop. The 4CM preset therefore contains two independent paths, each requiring its own separate in, out, and FX blocks. A 4CM presets contain no Amp or Cab blocks. A stylized illustration appears below.

Signal hits the FM9 first, where it is processed by the **pre effects**. **Output 3** feeds the front of your amplifier. The amp’s FX Send is connected to **Input 3**, and a chain of **post effects** processes signal and passes it to **Output 1** and your amp’s FX Return. Note that the pre and post chains are not connected to each other at all on the FM9 grid. In fact, either chain can be as simple or as complex as desired.

CONNECTIONS

- Connect your guitar to FM9 **Input 1 (Instrument)**.
- Connect FM9 **Output 3 L** to the front input of your amp using a **Humbuster™** cable to combat hum from ground loops. Set the front panel **OUT 3** knob fully clockwise for unity gain operation.
- Connect your amp’s FX Send to **Input 3 L**. FM9 Input trim can be adjusted in **SETUP: I/O: Audio**. On the same page, set **Input 3 Mode** to “LEFT ONLY”. Also see the “Tip” below.
- Connect **Output 1 L** (1/4”) to the FX Return of your amp using a **Humbuster™** cable. Set the front panel **OUT 1** knob as desired for appropriate volume. To extend this configuration for optional stereo, connect **Output 1 R** to the FX Return of a second amplifier.



QUICK TIP

TIP: OPTIMIZE FOR LOW NOISE

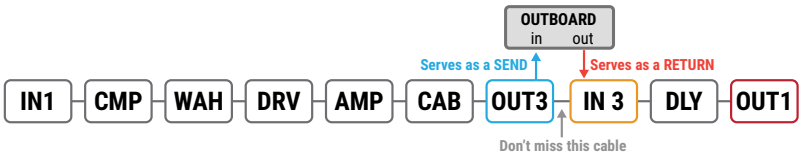
Even with Humbuster cables, the 4CM can be noisy. The optional **Boost/Pad** function on Out 3 can help to lower the noise floor. To find the right setting, adjust this to be as high as possible without clipping, as indicated by a red LED on the top panel. The volume won’t change but you should hear the FM9’s noise floor drop as you increase boost/pad. Find this option under **SETUP: I/O: Audio.**

If your amp has a **parallel FX loop**, please see the note on p. 35

INSERTING OUTBOARD GEAR

Global Settings: As per your usual setup, check I/O Mono/Stereo Settings
Presets: Custom

The extra ins and outs of the FM9 can be used in a "send-and-return" loop for outboard gear. Custom presets are required for this setup, with output and input blocks added for the send and the return (see illustration below).

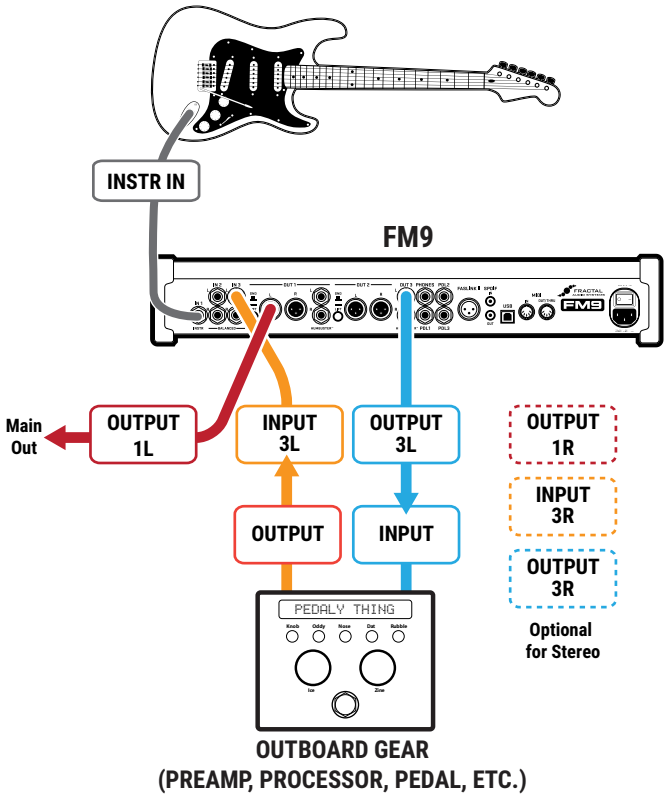


Signal passes through the grid to the OUT 3 block where it leaves the FM9 to be processed by the external device. The outputs of the external device are connected to **Input 3**. Additional blocks can be used before finally passing signal to Out 1. Notice that the Out 3 block IS connected to the IN 3 block. This is because Input 3 is specially designed to work as a bypass for the entire loop, allowing signal to flow even when the outboard gear is not in use. You can operate this with a footswitch, or control it with scenes.

One final comment: don't jump to the conclusion that an insert is the best way to use 3rd party gear. You can achieve great results simply by connecting things in series like traditional pedals. The FM9 works great when used with pedals between your guitar and its input. Similarly, you can connect FM9 outputs to the inputs of other processors. One advantage of using an insert, however, is that outboard gear can be controlled by FM9 presets, scenes, and footswitches, or even recorded via USB.

CONNECTIONS

- Connect your guitar to FM9 **Input 1 (Instrument)**.
- This example assumes **Output 1** is connected to a PA or FRFR monitors, but the principles you learn here can be applied to other rig designs as well.
- Connect **Output 3 L** as a "send" to the input of your outboard device using a **Humbuster™** cable. Use **Output 3 R** for optional stereo.
- Adjust output levels using the front panel **OUT 3** knob, remembering that setting it fully clockwise provides unity gain.
  - Use input trim and/or output level controls on your outboard device as needed for optimal gain staging.
- Connect the output of your outboard device to **Input 3 L** as a "return." Use **Input 3 R** for optional stereo. Use guitar cables or balanced cables as appropriate. Adjust Input 3 levels as needed in **SETUP: I/O: Audio**. Also see the TIP about noise optimization on the preceding page.
- NOTE: Other FM9 inputs and outputs can be used in the same way for additional inserts.



QUICK TIP

The FM9 can send MIDI to control 3rd party devices. Connect a MIDI cable from the MIDI Out of the FM9 to the MIDI IN of the connected device. Then program the required MIDI messages using either a "Scene MIDI Message" or a "Control Switch MIDI Message".

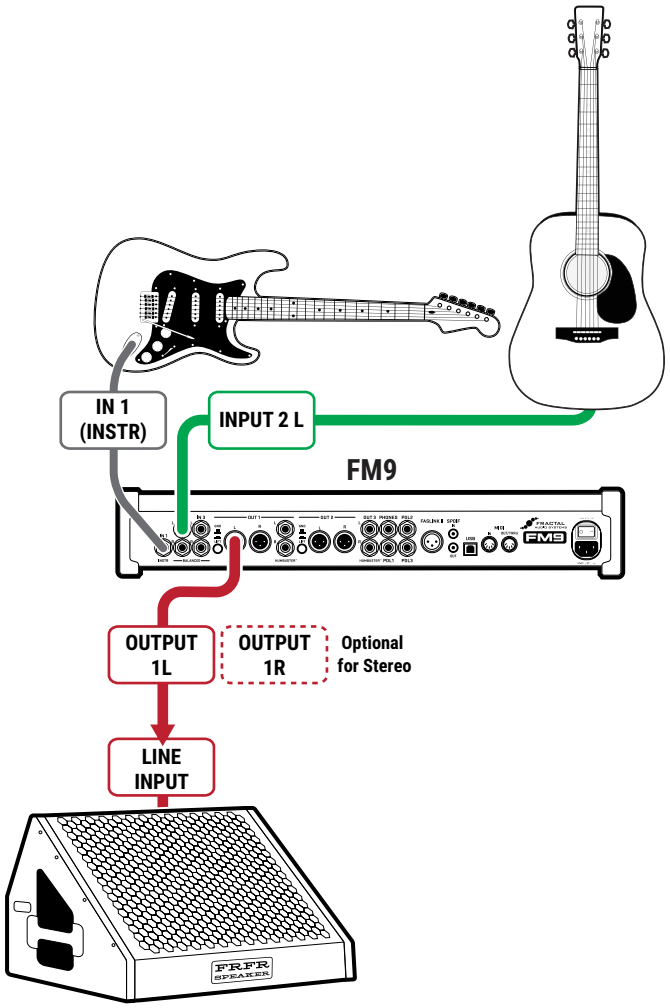
ELECTRIC AND ACOUSTIC

Global Settings: Set Input 2 Mode to "Left Only" under **SETUP: I/O: Audio**
Presets: Custom

This setup is provided for those who wish to use the FM9 to process an electric guitar and an acoustic guitar at the same time. It also works for guitars equipped with dual output magnetic and piezo pickups. Special presets containing the Input 2 block are required as illustrated below. For this setup, the electric and acoustic signals are combined into one stereo output, but if you learn to use Input and Output blocks, this will open other options such as different guitars appearing at different outputs.

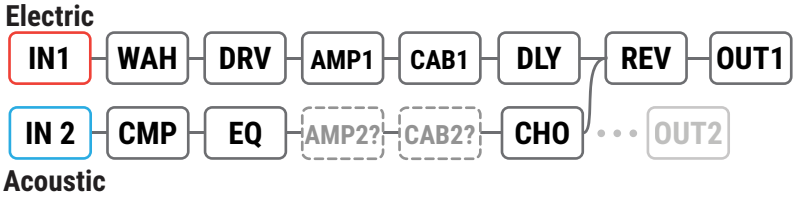
CONNECTIONS

- Connect your electric guitar to FM9 **Input 1 (Instrument)**.
- Connect your acoustic guitar (or the piezo side of your electric) to FM9 **Input 2 L**. Set **Input 2 Mode** to "LEFT ONLY" under **SETUP: I/O: Audio.**
- Connect FM9 **Output 1** to your PA, mixer, or monitors as you would in any other "direct" setup.
- Create a preset as shown below where IN 1 is the electric guitar and IN 2 is the acoustic/piezo.
- A variety of blocks can be used to process an acoustic guitar. In many cases, a bit of compression and EQ is all you need, but another good option is the TUBE PRE model in the amp block, with or without a Cab block loaded with a custom IR designed to enhance the piezo tone with the sound of a mic'd acoustic.
- Note that in the example, the two chains are sharing a reverb block, which sounds great and is also economical. It is also possible to share many other blocks.
- If you wanted the acoustic to go to its own output, you could insert the **OUT 2** block and connect to that instead.



P.A. or FRFR MONITOR

EXAMPLE PRESET



5 PRESETS

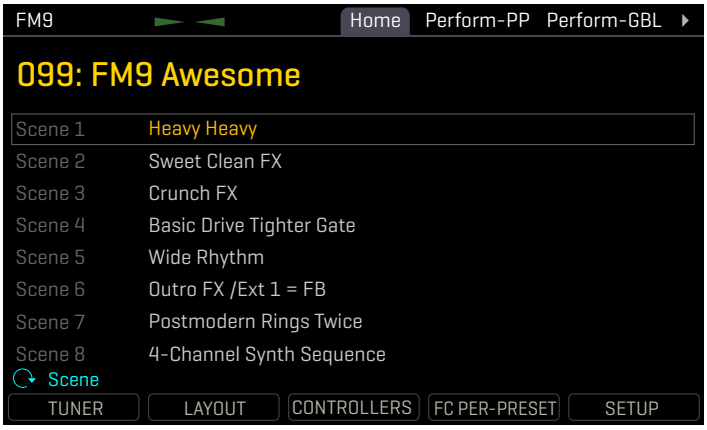
OVERVIEW

- Please review "Intro to Scenes and Channels" on p. 15 before reading this section.
- The FM9 contains 512 preset memory locations.
  Each preset is like a full rig with its own amp, cab, effects, and more.
- Every memory location, including the Factory Presets, can be modified and/or completely overwritten.
- If you want to restore the factory presets (or install the newer versions we sometimes release), you can download these from https://www.fractalaudio.com and install using FM9-Edit.
- Every preset has its own name that you can change as you store it.
- Presets are built on the **Layout Grid** by inserting, connecting, and dialing in **Blocks**.
- Every preset contains eight **Scenes**, each with its own name.
- Blocks contain **Channels**. Change the channel to dial in a completely different setting!
- FM9 Turbo has 10+% more DSP than FM9 Standard.
  Every FM9 has more CPU power than the FM3, but less than the Axe-Fx III.
  Still, a single preset can still potentially cover an entire song, or even an entire gig.

SELECTING PRESETS

Different areas of the FM9 provide different ways to select (or "load") presets:

- **On the Home page** – Use the **NAV LEFT** and **NAV RIGHT** buttons or turn the **VALUE** knob.
- **On the "PRESETS" directory page of the HOME menu** – Use the NAV buttons to select a preset and press **ENTER**. Presets in the directory are sorted in numerical order. To re-sort alphabetically, press the **SORT A–Z** button (Push-knob **E**).
- **Foot Switches** – FM9 footswitches have a range of "preset select" options.
- **MIDI** – MIDI Bank and PC messages may be used to select presets using the industry-standard "CC#0 + PC" method. See "MIDI Reference Tables" on p. 124. MIDI Custom PC Mapping is also supported, see "Program Change Mapping" on p. 53.



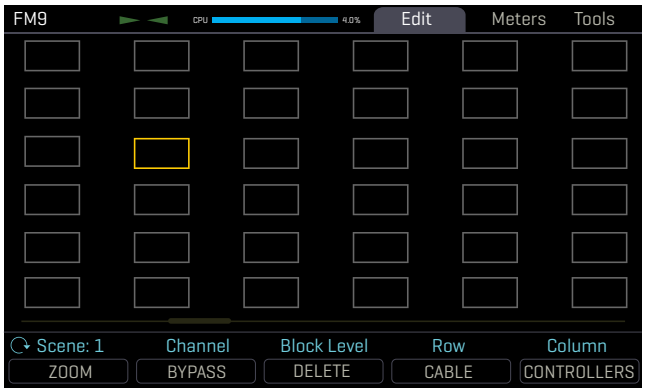
The Home Page of the Home Menu

THE LAYOUT GRID

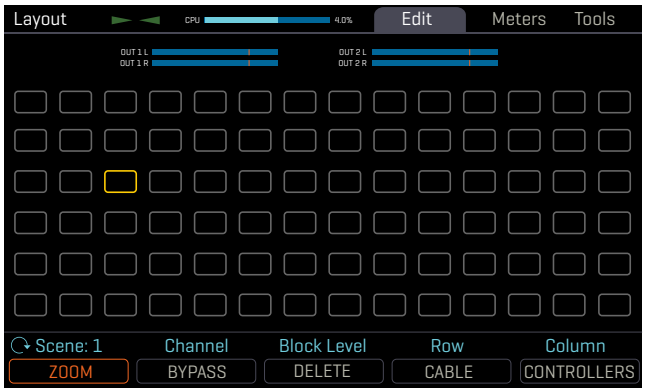
The grid is a 14×6 framework for building presets. Think of grid spaces as slots. **Blocks** are inserted on the grid and connected together to create a signal processing path. Each grid space and every cable is stereo (though not all blocks are). You don't need separate left and right paths!

Access the grid from the **Home** page by pressing the **ENTER** button or the **LAYOUT** Push-knob.

In the default view, the FM9 display shows only a 6×6 section of the grid. Navigate to off-screen areas using the **E** knobs, or the **NAV** buttons. A bottom scrollbar indicates where you are in the overall left-to-right layout. To show the entire grid at once, zoom out with the **ZOOM** button (Push-knob **A**).



The grid normally shows a partial view of its rows and columns. You can scroll left or right with navigation controls.



Zoom out to show the entire grid at once. This also reveals VU meters for leveling scenes and presets.

WORKING WITH BLOCKS

As explained in "Intro to the Layout Grid" on p. 14, FM9 presets are using **blocks** pulled from a large inventory of amps, cabs, stompboxes, studio effects, mixers, and more. To navigate around the grid you must move the **cursor** — a yellow rectangle controlled by the **NAV** buttons or the **D** or **E** knobs.

TO INSERT A BLOCK…

- **NAV** to the desired grid location.
- Turn the **VALUE** wheel to step through the list of blocks.
- Press **ENTER** to confirm or **EXIT** to cancel changes.
- As you insert blocks, they are removed from the list, but every preset has the entire inventory to begin with.

TO CHANGE OR REMOVE AN EXISTING BLOCK…

- To CHANGE a block, select it and turn **VALUE** to the desired type.
- To REMOVE a block, select it and turn **VALUE** until "None" is displayed.
- Press **ENTER** to confirm or **EXIT** to cancel changes.

DELETE

TIP: A shortcut makes it easy to remove an existing block or convert it to a shunt. Select the block and press the DELETE button (Push-knob C). A deleted block is replaced by a shunt. Delete a shunt to leave an empty space.

TO BYPASS OR ENGAGE A BLOCK ON THE GRID…

- Use **NAV** buttons to select the block.
- Press the **BYPASS** button (Push-knob **B**). Bypassed blocks are dimmed or "grayed out" on the grid.

RESETTING A BLOCK/CHANNEL

Blocks on the FM9 remember their last used settings, even as you place them on the grid. You may want a fresh start before or after making changes. **RESET** takes only two button presses and can be performed at any time.

RESET

- If it isn't already open for editing, select the desired block on the grid and press **EDIT**.
- Press the **RESET** button (Push-knob **A**). You are prompted to reset the *current channel*.
- Press **ENTER** to confirm. You can reset other channels in a block as they are used.

SHUNTS

A shunt is a sonically transparent block—like a cable which carries signal from one point to another. Like grid spaces, a shunt is stereo; you don't need two for left/right. You can use shunts to span empty space in any preset.

TO INSERT A SHUNT…

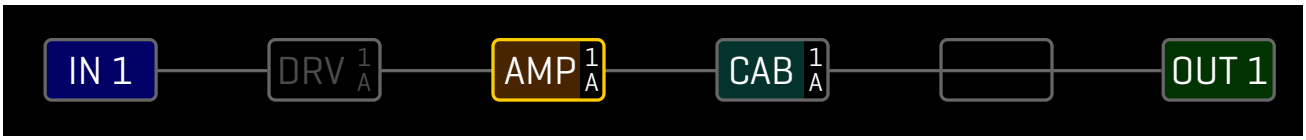
- **NAV** to the desired grid location and turn **VALUE** until "**SHUNT**" is displayed.
- Press **ENTER** to confirm or **EXIT** to cancel changes.

INPUTS AND OUTPUTS

Input and **Output** blocks are required to get signal to the grid or pass it to the outputs jacks. All factory presets use Input 1 and Output 1. Other setups may require different Input and Output blocks.
See Section 4 on "Setups" for examples. See "The Fractal Audio Blocks Guide" for more information.

BLOCK DISPLAY TYPES

The color display of the FM9 shows different grid block states as follows. Several examples appear below. Notice that the selected block has a bold yellow outline and the bypassed block is grayed out.



Input | Bypassed | Selected | Normal | Shunt | Output

MOVING BLOCKS, ROWS, AND COLUMNS

A special "**Tools"** page in the **Layout** menu contains various utilities to **MOVE** individual blocks or entire rows or columns UP, DOWN, LEFT, or RIGHT. When a block or a grid row or column is moved, it swaps places with the item in the space it is moved to. This may result in certain connector cables being modified or removed, so be sure to look over how the elements of your preset are connected before moving things around.

- Open the **Tools** page of the **Layout** menu.
- Select a function with the **FUNCTION** knob (**A**): Move Block/Column/Row, Left/Right/Up/Down.
- Use the **NAV** buttons to select the Block, Row, or Column you wish to move.
- Press **ENTER** or push knob **C** to execute the move.

CONNECTOR CABLES

Just like physical gear, the blocks in the FM9 need to be connected together for signal to flow. This is done using virtual cables, which run from one grid block to another. With even one cable missing, your preset may be totally silent! Like shunts, connectors are stereo and *totally* transparent.

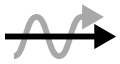
TO CREATE A CONNECTOR CABLE…

- On the grid, navigate to the block where you wish the cable to BEGIN. You can't start from an EMPTY space!
- Press the **CABLE** button (Push-knob **D**), or **ENTER**. The selected block and its neighbor to the right will alternatingly flash.
- If you wish to connect to a different ROW, use **NAV** up or nav down to select the desired destination. You can't skip columns!
- Press **ENTER** to make the connection. To cancel, press **EXIT** instead.
  - Be sure to select a destination that is not *already* connected to the block you started from, or you will REMOVE that cable (see below).

TO REMOVE A CABLE CONNECTOR…

Cables are removed in much the same way as they are created.

- On the grid, **NAV** to the block where the cable begins.
- Press the **CABLE** button (Push-knob **D**), or **ENTER**. The selected block and its neighbor to the right will alternatingly flash.
- **NAV** to select the "other end" of the cable you wish to remove. You can't skip columns!
- Press **ENTER** and the cable will be removed. To cancel, press **EXIT** instead.



SHORTCUT: To connect across multiple empty grid columns with a series of shunts and cables, select any block that is followed by a series of empty spaces, then **press-and-hold** the **ENTER** button. The intervening spaces will be automatically filled with shunts and connected with cables. Careful: any *existing* cables encountered along the way will be REMOVED!

Remember, on the FM9 grid, each component is STEREO. Shunts, cables, and many blocks are stereo in/stereo out. The grid allows up to six full stereo paths, and you do NOT need to create parallel grid paths for simple stereo! Some blocks internally process audio in mono (such as Amp or Drive) but even these generally have **Input Select** *and* **Output Balance** *parameters.*

THE RULES OF FM9 CABLES

- No cable = No sound. Even one missing link will break the chain.
- Signal flows from LEFT to RIGHT.
- A cable MUST originate from a BLOCK or a SHUNT. You cannot start from an EMPTY location.
- If you try to connect to an EMPTY location, a SHUNT will be created there.
- You can ONLY connect to blocks in the next column to the right.

The diagram below illustrates the above:

The ★ is the block where we will begin.

The ✔ shows valid possible destinations.

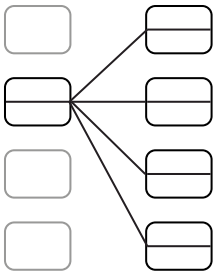
The ⃠ symbol shows destinations that are illegal/unavailable.

Any columns farther left or right would also be illegal/unavailable.

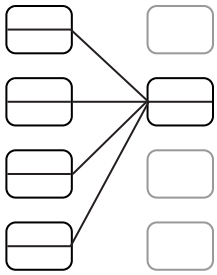
If the ★ were in a different ROW, every ✔ would still be in the same place.

- You may freely SPLIT or MERGE up to six ways at any point. This is sonically transparent and there is zero risk of signal degradation or phase problems. CROSSING is also possible. Here are some examples:

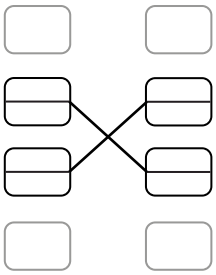
Split



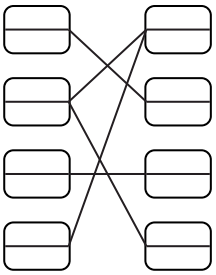
Merge



Cross



Complex



5 PRESETS

BLOCK INVENTORY

For a complete guide to all blocks and parameters, see "The Fractal Audio Blocks Guide"
The following table contains an overview of every block. Each preset has the entire inventory to choose from.

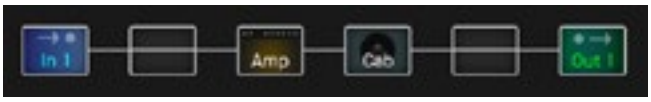
BLOCK		DESCRIPTION
AMP	**Amp**	Here it is! 289+ amp models in one block!
CAB	**Cab**	Speaker cab simulation with both "Factory" and "User" banks.
CHO	**Chorus**	Create classic mono and stereo modulation effects including vibrato.
CMP	**Compressor**	Control dynamics and add sustain.
XVR	**Crossover**	Divide a signal into low and high frequency bands.
DLY	**Delay**	Up to 8000 ms of delay, with types for analog, digital, tape, and more.
DRV	**Drive**	Types including boost, overdrive, distortion, fuzz, and many more.
ENH	**Enhancer**	Classic and modern modes to create and control spatialization.
FLT	**Filter**	Includes low pass, high pass, band pass, and many other types.
FLG	**Flanger**	Various types cover everything from subtle modulation to extreme jet.
FOR	**Formant**	Create dynamic vowel sounds with this multi-mode formant filter.
GTE	**Gate/Expander**	Useful for everything from subtle control to extreme effects.
GEQ	**Graphic EQ**	A variety of modes allow easy, flexible tone sculpting.
IN	**Input**	Injects the signal from physical inputs onto the grid.
LPR	**Looper**	A powerful looper with great remote control options.
MGT	**Megatap**	This 40-tap delay creates fantastic sonic patterns.
MID	**MIDI**	The Scene MIDI Block transmits MIDI when a scene is selected.
MIX	**Mixer**	Allows you to mix up to four stereo signals.
MTD	**Multi-Delay**	A variety of special delays including diffuser, quad-tap, and more.
MBC	**Multiband Comp.**	Three-band compressor that is great for mastering or dynamic EQ.
MUX	**Multiplexer**	This input selector routes one of many inputs to an output.
OUT	**Output**	Transmits signal to the corresponding physical output jacks.
PEQ	**Parametric EQ**	The 5-band parametric equalizer allows precise control of tone.
PHA	**Phaser**	A variety of vintage and cutting edge phaser effects, including 'vibe.
PIT	**Pitch Shift**	Includes detune, harmonizer (intelligent/custom), whammy, and more.
PLX	**Plex Delay**	Up to eight delay lines interacting in a matrix. Gorgeous!
RES	**Resonator**	Resonant comb filters in parallel can create cool resonant sounds or chords.
RTN	**Return**	Receives signal from the Feedback Send block.
REV	**Reverb**	World-class recreations of vintage springs, rooms, halls, and more.
RNG	**Ring Mod**	The extremely flexible ring modulator provides for a range of cool effects.
ROT	**Rotary**	Simulates a classic rotary speaker with multiple microphones.
SND	**Send**	Transmits signal to the Feedback Return block.
SYN	**Synth**	A 3-voice monophonic synth that tracks what you play.
TTD	**Ten-Tap Delay**	Set the time, pan, and spacing of one to ten separate echoes.
TRM	**Tremolo**	Creates classic trem, plus auto-pan or extreme psycho acoustic effects.
VOL	**Volume/Pan**	Simple volume block also offers channel input/output tools.
WAH	**Wah**	The classic wah, with multiple types based on classic originals.

Each preset also includes a **Controllers** block that is not placed on the grid.
Certain blocks found on the Axe-Fx III do not appear on the FM9.

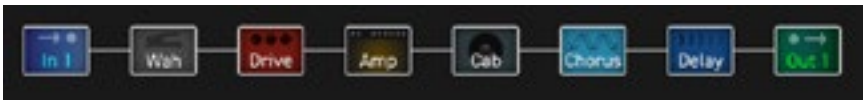
EXAMPLE PRESET GRIDS

These FM9-Edit screen captures show how blocks are combined to form presets.

Ex 1: Bare bones! Amp and Cab. No effects.



Ex 2: Here some effects are added before the amp and after the cab.



Ex 3: Here even more effects are used, filling up the grid.

Ex 4: A complex preset with multiple effects including a parallel chain of shimmer, chorus, and reverb.

Ex 5: A complex preset with some effects in parallel, plus separate outputs with and without cab simulation.

Ex 6: Here, the first row is for an electric guitar while the second processes acoustic at the same time.

EDITING EFFECT BLOCKS

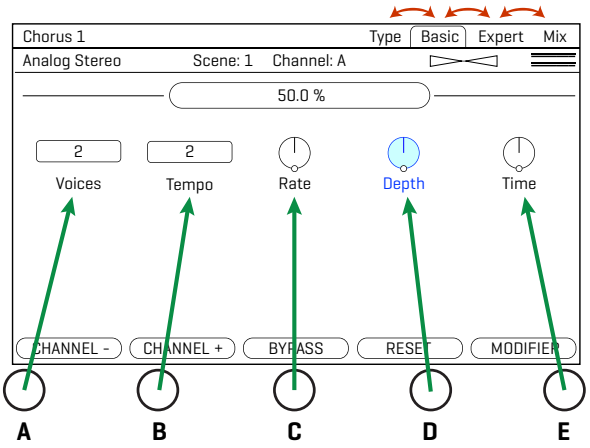
Blocks are fully programmable, allowing you to dial in every setting as desired. The **Edit** menu for every block contains one or more **pages,** each with multiple **parameters** which control various functions. The functions of push-knobs are indicated via on-screen labels. Here's a quick overview of how to access and work with the different types of block **Edit menus**.

OPENING AN EDIT MENU

- On the **Layout** grid, select the desired block and press **EDIT**.
- OR... from anywhere on the FM9, just press **EDIT** to jump right to the **Edit** menu for the selected block.

CHANGING PAGES

- Most Edit menus have multiple **pages**, shown as "tabs" at the top of the menu (red arrows, right).The color of the tabs matches the color of the block on the grid.
- Tap the **<<PAGE>>** buttons to page left or right.

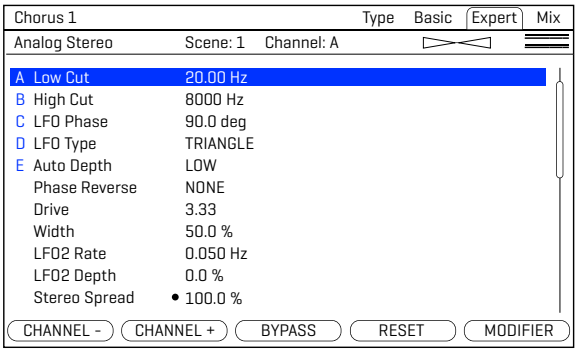


EDITING "KNOB" PAGES

- Most Edit menu pages show rows of five knobs, switches or selectors. To make changes, use the five physical knobs below the display (green arrows, right) or the **NAV** buttons and **VALUE** knob.
- You will hear all changes in real time.
- If a menu page has two rows of knobs, use **NAV UP/DOWN** to switch between them.

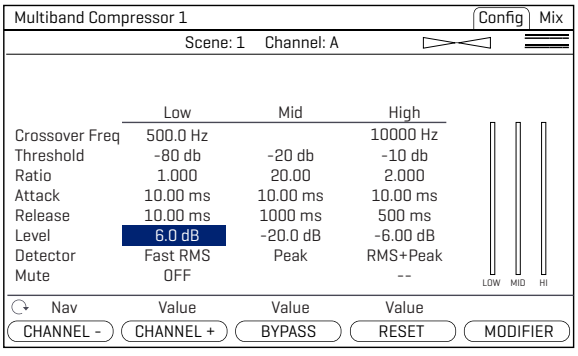
EDITING "MENU" PAGES

- Some pages have vertical lists of parameters.
- Use the **NAV UP/DOWN** buttons to step through the list or **NAV LEFT/RIGHT** buttons to jump.
- The **A** knob and the **VALUE** knob operate the selected parameter.
- **B**, **C**, **D**, and **E** knobs control other parameters in the list, as shown by blue labels on the list.



OTHER PAGE TYPES

- Some blocks have special Edit menus, with parameters arranged in rows and columns. Some of these include interactive meters or graphs. Use **NAV** and **VALUE** or **A**,**B**,**C**,**D**,**E** knobs to move around and make changes.
- For **TYPE** pages, such as Amp Type, just **NAV** through the list to make a selection and turn the page or press **EXIT** when finished. Selections take effect instantly.



SAVING CHANGES

After editing a preset, you may want to save the results.

Every preset in the FM9 can be modified. There are no permanent presets.

When you change a preset in any way, the front panel "EDITED" LED lights until you STORE or load a new preset.

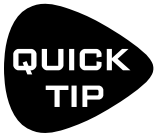
TO STORE A PRESET…

- Press **STORE** to show the STORE page.
- Turn the **VALUE** wheel or **B** knob if you wish to save to a different location.
- Press **ENTER** to display “Do you want to overwrite the Preset?”
- Press **ENTER** again to confirm, or **EXIT** to cancel.
- The message “**SAVED!**” is shown when saving is complete.

TO CHANGE PRESET OR SCENE NAMES…

The FM9 has 512 preset memory locations. You can edit the name of any preset while storing.

- Press **STORE** to show the STORE page.
- **NAV** down once to the PRESET line.
  - Turn the **B** knob to move the cursor.
  - The **C** knob selects **UPPER CASE** letters.
  - The **D** knob selects **lower case** letters.
  - The **E** knob selects **numbers**.
  - The **VALUE** knob selects ALL characters, including **symbols**.
  - You can use up to 31 characters in a preset name.
- You can also **NAV** to any **Scene** name to edit it in the same way.
- Press **ENTER** to Store, then press **ENTER** again to confirm.
- The message “**SAVED!**” is displayed and the new location (if any) is loaded.



Scene naming is a powerful capability. Aside from stating what a specific scene is intended for, the names of unused scenes can be used for short notes or reminders.

PRESET CPU LIMITS

The CPU of the FM9 is used mainly for sound processing. A preset with nothing but an Amp and Cab is less demanding than a preset with a Wah, Drive, Amp, Cab, Delay and Reverb.

You can check the current CPU level at any time by viewing the mini CPU meter at the top of the layout grid.

The maximum recommended load is approximately 80%. There are safeguards to prevent you from pushing the FM9 too far. Should CPU levels rise above the allowable limit, the FM9 will disable sound processing and flash the warning, "**CPU LIMIT - Muted**". This allows you to remove blocks or change settings to solve the problem.

The FM9 will also prevent you from inserting a block that would push the CPU over the limit. If this happens, you can make changes to reduce the current CPU load and try again. You might remove an effect that is less important. Adjusting certain parameters can also help.

Different blocks have a different impact on the CPU. Some blocks such as Amp, Delay, and Reverb have hardly any effect on the meter at all because they run on dedicated CPU cores.

Blocks basically use the same amount of CPU whether they are engaged or bypassed, but remember that the meter shows the CPU level for the current scene. Switching to a scene that uses a more CPU-intensive channel can increase the CPU load. Check various combinations of channels and scenes to avoid unwanted CPU overloads.

Aside from adding/removing blocks, here are a few common settings that have a pronounced effect on CPU:

- **Cab: Mute**: Using two IRs demands more CPU than using one.
  Set the mic **Preamp Type** to NONE and set **Room Level** to 0%.
- **Compressor**: Set **Type** to one of the "PEDAL" options to use less CPU.
- **Phaser**: **Stages**. Lower = less CPU.
- **Filter**: **Order** and **Q**. Lower = less CPU.
- **Multitap Delay**: **Type**. Different types have different CPU requirements.
- **Plex Delay:** Number of Delays affects CPU usage.
- **Synth:** Turn extra voice type parameters OFF to conserve CPU
- **Modifiers** also affect CPU usage.

TIP: The Fractal Audio Wiki keeps a list of CPU saving ideas.

AMP, REVERB, DELAY BLOCKS

On the FM9, Amp, Reverb and Delay blocks run in dedicated areas of CPU, so there is little change in the CPU meter when adding, removing, or editing these blocks. Rarely, with certain extreme settings, the dedictated CPU cores for the above blocks can also become strained, although this is not shown on the main CPU meter.

CPU & USB

On the FM9, CPU usage does not increase when USB is connected/disconnected.

6 SCENES & CHANNELS

Before reading this section, please review "Intro to Scenes and Channels" on p. 15.

A **Scene** is a bit like a preset within a preset. Scenes can turn blocks **on/off**, change block **Channels**, and more. Scenes don't need to be created—they're already there, ready to be set as desired. To save any changes to a scene, you must save the entire preset. There are many benefits to using scenes. By switching multiple blocks, they eliminate the need to "tap dance" on switches. They also offer the easiest way to ensure perfect "spillover" of effects like delay and reverb. Scenes can also change overall volume levels, send MIDI messages, and more. Each Scene also has a name.

WHAT SCENES DO...

Each Scene stores ALL of the following:

1. The current **Bypass** state of every block in the current preset: on or off.
2. The current **Channel** of every block in the current preset.
   Note that by changing the channel of the "Controllers" block, scenes can change the Tempo!
3. The current "Scene Level" of the **Output** blocks.
4. The settings of four **Scene Controllers** used as Modifier sources (see **Section 9**.)
5. Each scene also has its own **Name**.
6. Scenes can cause the **Scene MIDI block** to send up to 8 MIDI PC or CC messages. See the **Blocks Guide** for more information on this block.

CHANNELS

Most blocks have some number of channels (typically four). This feature will be instantly familiar if you've ever used an amp or effect with channels. Each channel of a block allows you to set every parameter of that block to any setting. It's like having multiple blocks in one. For example, **Channel A** of a **Drive** block might be dialed in as a "clean boost" while **Channel B** is dialed in as a heavy overdrive.

Remember, Scenes can't change individual parameter values, but they CAN change the channel of any block, and every channel has its own fully independent parameter values.

DON'T: Don't imagine that every parameter in every scene is fully independent. Changing one might affect all!

DO: Do change scenes, change the channel of a block, and then dial in the new channel as desired. Just remember that any changes you make will also apply to any other scenes that use the same channel.
(This concept is illustrated on p. 15.)

FAQ: WHY NOT JUST CHANGE PRESETS? Preset changes give you total flexibility. You can change anything and everything in every preset, but there are also drawbacks. Synchronizing multiple presets can be tedious, it takes care to get levels and spillover just right, and while preset changes are fast, Scene and channel changes are even faster and can be seamless.

HOW TO CHANGE A BLOCK'S CHANNEL

Different areas of the FM9 provide different ways to change block channels:

- **On the GRID** – Select the desired block and turn the **Channel** knob (**B**).
  The current Channel is shown above the knob.
- **While EDITING a BLOCK** – Use the **CHANNEL–/+** buttons (Push-knobs **A** & **B**) to select a channel.
  The current channel is shown near the top center of every page in the Edit menu.
- **Foot Control** – The onboard switches of the FM9, or those on a connected FC Controller offer a range of dedicated "Channel" options.
- **MIDI** – MIDI and other controllers such as a connected external footswitch can be used to change the Channel. See "Selecting Scenes & Channels While Playing" on p. 52
- FM9-Edit provides an easy one-click way to change the channel.

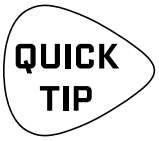
SETTING UP CHANNELS

Whenever you edit a block, you are already programming at least one Channel (usually Channel A). Programming additional channels is easy: simply select the desired channel as described above, set the various parameters to their new values, and then save the preset.

TO COPY ONE CHANNEL TO ANOTHER…

The **Tools** page of the **Layout** menu ("grid") provides a utility to copy one Channel to another. This works within a single block only; you can't copy a Channel from one block to another, or from one preset to another.

1. Navigate to the **Tools** page of the **Layout** menu.
2. Turn the **VALUE** wheel until "COPY CHANNEL" is shown on the display.
3. Use the **D** knob to select the channel you want to copy *from*. Channel letters are shown above the knobs.
4. Use the **E** knob to select the location you want to copy *to*.
5. Press **ENTER** or the on-screen **EXECUTE** button (Push-knob **C**) to complete the copy.
6. Test your preset and remember to **STORE** to make the changes permanent.



While you can't copy channels across blocks or presets on the FM9 itself, you can do this using FM9-Edit, the free companion software editor for the FM9.

SELECTING SCENES

Different areas of the FM9 provide different ways to select a Scene.

- **On the Home page** – Use the **NAV UP/DOWN** buttons or turn Push-knob **A**. The current scene is highlighted.
- **On the GRID** – Turn the **Scene** knob (Push-knob **A**). The current scene is shown above the knob.
- **Foot Control** – The onboard switches of the FM9, or those on a connected FC Controller offer a range of dedicated "Scene" options.
- **MIDI** – MIDI can be used to change the scene. See "Selecting Scenes & Channels While Playing" on p. 52
- FM9-Edit provides an easy, one-click way to change the Scene.

SETTING UP SCENES

Whenever you create a preset, you are already using at least one Scene. Programming additional scenes is easy. Here are step-by-step instructions for setting up scenes:

TO SET UP A NEW SCENE OR EDIT AN EXISTING ONE…

1. Load the desired preset and select the desired Scene.
2. Bypass or engage each block as desired.
   - On the Layout (grid) or while editing any block, use the **BYPASS** button (Push-knob **B**).
   - Or use any assigned footswitch or remote controller to bypass/engage the block.
3. Set the Channel for each block as described on the previous page.
4. Test and save your preset. On the **STORE** page, **NAV** to any new scenes and name them (see p. 47).

Always test ALL scenes in your preset—even those you think you might not use.
Ensure that there are no unpleasant volume jumps or other surprises in case of accidental missteps later.
A good rule of thumb is to copy a good scene into any unused locations.

TO COPY ONE SCENE TO ANOTHER…

The **Tools** page of the **Layout** menu contains a way to copy scenes within a single preset.

1. Navigate to the **Tools** page of the **Layout** menu (grid).
2. Turn the **VALUE** wheel until "COPY SCENE" is shown on the display.
3. Use the **D** knob to select the scene you want to copy *from*. Scene numbers are shown above the knob.
4. Use the **E** knob to select the location you want to copy *to*. You can also choose to copy one scene to "ALL".
5. Press **ENTER** or the on-screen **EXECUTE** button (Push-knob **C**) and the copy operation is completed.
6. Test your preset and remember to **STORE** to make the changes permanent.

See the FAQ on the previous page if you're wondering about copying scenes between presets.

SELECTING SCENES & CHANNELS WHILE PLAYING

Scenes and Channels can be selected via Footswitches, Global Controllers, or MIDI. Several options are provided.

FOOTSWITCHES

Scenes and **Channels** can be selected using the onboard footswitches. See Section 10: Layouts & Switches

SCENE INCREMENT AND DECREMENT

The **Scene Increment** and **Decrement** functions allow you to step up or down through scenes one at a time. You must first assign each of these function its own CC# or pedal/switch option in the **MIDI/Remote** menu under **SETUP**. The function is triggered by any value of the controller.

SCENE SELECT

Scene Select (found under SETUP: MIDI/Remote: Other) allows you to designate a MIDI CC message for selecting specific Scenes.

The scene is set by the *value* of the controller (not the controller number itself... see FAQ below). Values begin at 0, while Scenes are numbered from 1, so "**Value + 1 = Scene number**" (see table 1, right). The series continues, repeating scenes 1–8 across CC values up to 127[1].

EXAMPLE: Imagine you want MIDI to select scene 3. Open the **MIDI/Remote** menu and assign your desired CC# to "Scene Select". Let's use CC#34 in this example. To load Scene 3, send CC#34 with a value of "2" to the FM9 (Scene 3: 3 – 1 = 2)

TABLE 1

CC Values & Scenes

0 = Scene 1
1 = Scene 2
2 = Scene 3
3 = Scene 4
4 = Scene 5
5 = Scene 6
6 = Scene 7
7 = Scene 8

CHANNEL SELECT

This uses the value of a controller to select a specific Channel. Each block has its own dedicated setting for channel select, found across the listings on the **Channel** page of the **MIDI/Remote** menu under **SETUP**.

The Channel is set by the *value* of the controller (not the controller number itself... see FAQ below). Values begin at 0, which is Channel A, and it continues from there. (See table 2, right). As with Scene Select (above) the series continues, repeating Channels A–D across values to 127.

TABLE 2

CC Values & Channels

0 = Channel A
1 = Channel B
2 = Channel C
3 = Channel D

1 In mathematical terms, that's **Scene# = [(CC Value mod 8) +1]**

FAQ: MIDI CC Number and CC Value... What's the difference?

MIDI **Control Change** messages —aka "**CCs**"— have a **number** (0–127) and a **value** (0-127). The number is like an "ID" which is used to distinguish one CC from another and set its function in a receiving device. A simple example might be a MIDI expression pedal that sends CC#7 which is interpreted as "Volume" on the receiving end. The FM9 lets you designate CCs for various controllable items in several lists found in the **MIDI/Remote** menu under **SETUP**.

Once a CC# is set to control a function, the **value** of that CC tells the function what to do. Some functions—like Volume— interpret data across a continuous range from 0-127. Other functions—like Bypass—simply toggle OFF for a low value and toggle ON for a high one. Other functions might be triggered by *any* value.

Different types of physical controllers transmit values in different ways. A **pedal** that rocks continuously from heel-to-toe sends a stream of continuous values from 0–127. A **switch** sends a single value for OFF (typically 0) and another for ON (typically 127). Other MIDI controllers offer other options.

As described above, both the CC number and its value are the key to selecting Scenes and Channels via MIDI.

PROGRAM CHANGE MAPPING

Another way to select Scenes via MIDI is using **PC Mapping**, which allows a single incoming MIDI **Program Change** (PC) message to select your choice of both **Preset *and* Scene**. This is a popular option in cases where a connected MIDI foot controller lacks the sophistication to transmit the MIDI messages required for scene selection.

The **PC Mapping** parameter on the **General** page of the **MIDI/Remote** menu under **SETUP** must be enabled for custom mapping to be in effect. With this option set to "ON", an internal table remaps each incoming MIDI Program Change message so it can load your choice of preset and scene. The map is limited to 128 entries so MIDI BANK SELECT messages are d while PC Mapping is enabled.

With PC Mapping option set to "OFF", MIDI Program Changes load presets on a 1:1 basis and Bank Select commands are processed as usual as per "MIDI Reference Tables" on p. 124.

BUILDING THE MAP

The mapping table is on the **Mapping** page of the **MIDI/Remote** menu under **SETUP**.

To use it, follow this simple process:

1. **NAV** to the row for whichever Program Change message you want to remap.
2. Use the **B** knob to set the desired value for **Map to Preset**.
   This is the preset that will load when the selected Program Change message is received.
3. Use the **C** knob to set the desired value for **Map to Scene**. You can choose a scene by its number, or select "AS SAVED" to load the default scene saved in your preset. (see p. 54 for more on Default Scene).
4. Repeat steps 2 through 4 for any remaining Program Change messages you wish to remap.
5. **EXIT** when finished. You do not need to store settings in the **SETUP** menu.

The custom map parameters remain intact but not active when if you switch **PC Mapping** Off.

TRANSMITTING MIDI WITH SCENES

The Scene MIDI Block allows each scene to transmit up to eight MIDI messages.
See "The Fractal Audio Blocks Guide" on p. 17 for more on this block.

SCENE LEVELS

Each of the Output blocks includes eight parameters that allow you to cut or boost the level for any scene. Using these adjustments is a quick way to balance or boost scene levels when other level options are not available.

THE DEFAULT SCENE

When a new preset is loaded, it automatically starts on whichever Scene was selected when the preset was last saved. So, to set the **default scene** for any preset, simply select the desired Scene and then save the preset. If you'd rather override this behavior, you can change the Default Scene in **SETUP: Global Settings: Config**.

SCENES, CHANNELS & MODIFIERS

The Modifier system of the FM9, detailed in **Section 9**, provides remote control and automation options.

Here is a summary of the ways that Modifiers relate to Scenes and Channels.

SCENE CONTROLLERS

Remember that parameter settings cannot be changed by a scene. A Scene can change the Channel, but this isn't quite the same thing, and it's also possible that all of your channels are already in use. The **Scene Controller** system bridges the gap between these worlds, providing a way for individual parameters or groups of parameters to have different values in different scenes.

To learn more, see "Tutorial: Scene Controllers" on p. 70.

CHANNELS & MODIFIERS

By default, any modifiers are **shared** across all Channels of a block[1]. This is a great convenience in most cases, as it avoids the need to apply the same modifier multiple times as you change channels.

The option is also provided to limit a modifier to only ONE channel ("A" vs. "All", for example).

1 In some cases, you may notice that if you change an effect Type from one channel to the next, certain parameters are either not present at all, or appear with different names. For example, in the Delay block, the **Mono Tape** type has a parameter called "Head 2 Ratio". This same parameter is called "L/R Time Ratio" in the **Dual Delay**. A modifier on one will affect the other.

SCENE REVERT

Changes to a scene on the FM9 remain in effect until you save them or discard them by loading a different preset—or reloading the current preset. This last option can work differently, depending on a Global setting called **Scene Revert**. With Scene Revert turned on, changes are discarded as soon as you load any new Scene.
Here are two examples so you can compare how Scene changes work with Scene Revert OFF vs. ON:

Ex 1: SCENE REVERT OFF (default)

1. You load SCENE 1. DRIVE 1 is OFF.
2. You turn DRIVE 1 ON with a Footswitch.
3. You change to SCENE 2.
4. You change BACK to SCENE 1.
5. Drive will still be ON, as you last **left** it.

Ex 2: SCENE REVERT ON

1. You load SCENE 1. DRIVE 1 is OFF.
2. You turn DRIVE 1 ON with a Footswitch.
3. You change to SCENE 2.
4. You change BACK to SCENE 1.
5. Drive will be OFF as you last **saved** it.

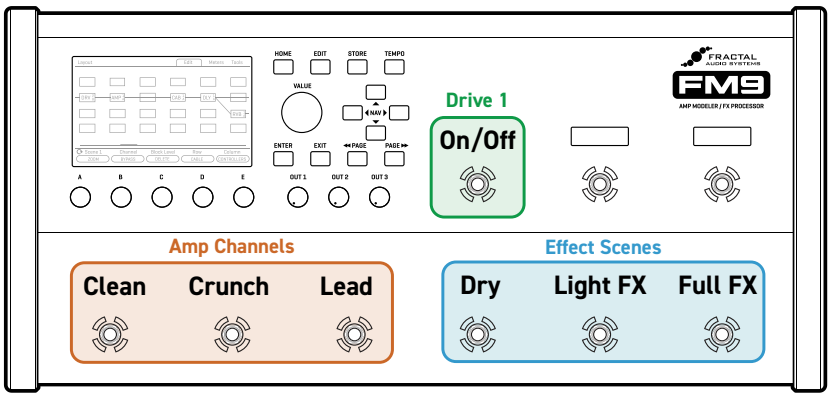
TO ENABLE/DISABLE SCENE REVERT…

1. Page to the **General** page of the **MIDI/Remote** menu under **SETUP**.
2. **NAV** to SCENE REVERT and set it “ON” or “OFF” as desired.
3. **EXIT** to finish. (You do not need to STORE changes in SETUP.)

SCENE IGNORE

FM9 Firmware 3.0 introduced **Scene Ignore**. You can find this option in the **Edit menu** of most blocks. Scene Ignore allows a new type of switching flexibility. It is based on the way some analog rigs work, where some pedals may be controlled by a programmed switcher, but others are not. With Scene Ignore ENABLED, a block is totally outside of the Scene system. If you want to change its channel or bypass state, you need to do this manually.

Here's an example. Imagine a tube amp used with a drive pedal, plus a separate "switching system" for wet effects. The amp will have its own set of footswitches for channels — maybe Clean, Crunch, and Lead. The drive pedal can be stomped on or off. The Wet effects system has its own "presets" —let's say Dry, Light FX (chorus and a little reverb), and Full FX (Chorus, Delay, and a lot of Reverb). It would be easy to replicate all of this in the FM9, but without Scene Ignore, the amp, drive, and effects would all ALWAYS switch when you load a new Scene. By setting the Amp and the Drive to Scene Ignore and using scenes to control the effects, you get indepenedent "mix and match" switching with a total of eighteen different combinations, all from just seven footswitches. Here's how it might look on an FM9. The three different colored zones are independently switchable. Only the blue "Effect Scenes" zone uses traditional scenes.



PER-CHANNEL

It is important to understand that Scene Ignore is in fact a per-channel setting. This allows a "hybrid" approach; some channels can be set to respond to scene changes while others ignore them. If this idea seems tricky, think of it as a radio control receiver. Enabling Scene Ignore switches the radio off and the block is no longer "listening" to scenes. No scene can then take control of the block, regardless of other settings. Only YOU can, using a footswitch, etc.

Example: Channels A, B, and C of a drive block have **Scene Ignore** turned OFF. They work in the usual way, with **Scenes** to bypass/engage and change the channel. Meanwhile, channel D has Scene Ignore turned **ON**. If any scene switches the block to Channel D—or if you switch to D manually—the block will **stop** responding to further scene commands. The "radio" is off. In this state, the block can still be switched manually using FC footswitches, MIDI, etc.—just like a fully independent pedal or amp could be. If you manually switch the block back to A,B, or C where Scenes are no longer being ignored, it will again begin to "listen" to scene instructions.

If you want a mixed scenario with Scene Ignore sometimes ON and sometimes OFF, you'll need a footswitch or some other way to change the channel of your block back to a channel that does not ignore scenes. Extending the example above, this might be an FC footswitch. TAP is set to Bypass the Drive, and HOLD is set to Toggle Channels A and D. Toggle to A for scene control. Toggle to D for manual control. Tap on or off at will.

TIP: If you always want full scene independence, a good safeguard is to turn Scene Ignore to ON in every channel. Similarly, if you want a block to be controlled only by scenes, make sure that Scene Ignore is OFF for all channels. If not, one of them may cause that block to stop responding to scene changes!

7 LEVELING PRESETS

This section is about **balancing levels** across Presets, Scenes and Channels. It is NOT about how to correctly set FM9 input or output levels to prevent clipping (compare "Setting Levels" on p. 5).

Musicians and audio technicians face an almost universal challenge of getting levels "right." Legions of techs and engineers mix bands in real time from the smallest basement jams to the biggest festival stages. The world has quickly realized that the advanced modeling technology created by Fractal Audio actually makes this job easier. (Front-of-house engineers are some of our biggest fans!) A tube amp often needs to be *too* loud to be controllable, and its tone can vary considerably from day to day. Speakers, mics and pedals are quirky and require constant control. In comparison, Amp modeling, speaker cab simulation, and virtual effects, give us cranked sound at low volume, precision control, accurate metering, and fewer overall compromises. A few simple rules of thumb will put you in total **control** over levels in the modeling world.

Control is not everything though: a second challenge remains. **Levels must be understood in context**. Our hearing, speakers, and surroundings are all variable. You can learn the basics in this overview, but consider exploring this subject further to delve deeper into the world of acoustics and audio engineering.

LEVELS IN CONTEXT

- Our ears deceive us. A phenomenon known as the "equal-loudness contour" effect (aka "Fletcher Munsen" effect) makes the same tones sound different when they are heard at different volume levels. At lower volumes, low and high frequencies seem to be relatively quieter. Learn more about this effect and compare your sound levels at "gig" volumes!
- Different speaker systems and performance spaces (including whether or not the venue is packed or empty!) can emphasize and deemphasize different frequencies. This changes our perceptions of tone and level. Set final levels on the system you will perform through, or ideally, use the best and most accurate speakers you can find—and then be prepared to make adjustments on other systems. This goes for your tone as well as your level. The global equalizers can be useful for this.
- Mix or context also changes our perceptions of loudness. Two guitar sounds may appear to be relatively equal in level when you audition them alone, but may sound totally different when "competing" in a mix against other instruments such as bass and drums. Adjust in context.

THE RULE OF THUMB

- There are a lot of different ways to adjust levels on the FM9. A good rule of thumb is to use the **Level** parameter of the **Amp** block. See "**A Method for Leveling**" on the next page for how to use this in a process for adjusting levels across Presets, Scenes and Channels.
- Above all, use common sense. Rely on meters, but don't set levels solely on how they look. **Use your ears too!**

EXCEPTIONS TO THE RULE

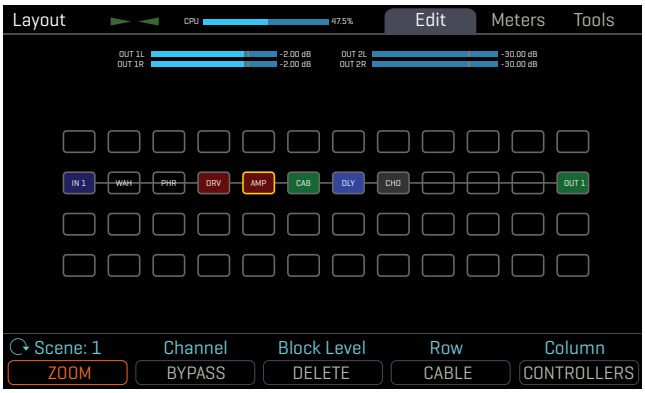
If level-dependent blocks follow the amp, be sure to readjust them after changing Amp levels. Alternately, move level adjustments farther downstream. Here are some common cases to consider:

- If you use **Drive**/**Saturation** in the **Preamp** section of the **Cab** block, adjust the **Level** of the Cab block instead.
- If level-dependent effects such as **drive** (or other effects containing drive), or dynamics (**compressor**, **gate**, or **ducking** effects) are used after the amp, make adjustments farther downstream instead of at the amp.

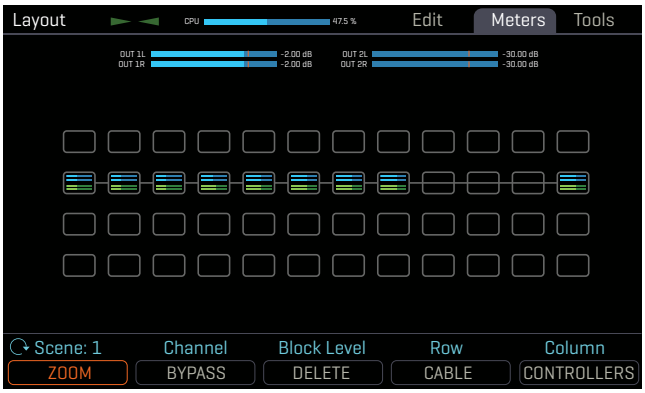
A METHOD FOR LEVELING

The Layout Grid grid provides an excellent environment for leveling presets, scenes, and channels. From the **Home** page, press **ENTER** to open the layout menu. The page buttons change between **Edit** and **Meters** pages, allowing you to see block names as well as block meters for input (blue) and output (green). when you press **ZOOM** (Push-knob **A**) , you will see two **VU meters** for **Outputs 1 and 2** at the top of the display. These meters are great for setting levels with a scale from -20 to +10 dB and a red line at 0. (This is the internal level, NOT a dBu reading.)

NOTE: *Each of the latest Fractal-Audio editors also includes a utility called "***Preset Leveling***" in the "Tools" menu. Use it to display large VU meters plus useful controls while using this method.*



The zoomed out grid shows VU meters atop the screen.



Page right to the Meters page for block meters.

To set levels, play your guitar and watch the VU meters. Adjust the output level of the **Amp** block by selecting it on the mini grid and turning the **Block Level** knob (**C**) until the level hovers near the red line. Different types of playing and different amp models and settings will excite the meter in different ways. Play chords and "chugs" as their bassy content may push the meters harder, and it is potentially OK to see some red when you do this. If you want to compare the levels of two presets/scenes/channels, play the same type of material while watching the meters. Remember that whenever you various amp, cab, or effect settings, you will need to revisit this process.

The **Layout** view allows you to change Scenes (knob **A**) and Channels (knob **B**), so you can compare and adjust everything all within a single page.

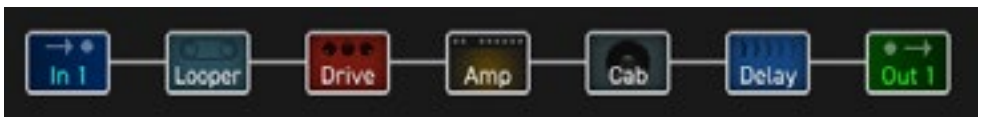
Remember this common sense principle: trust the meters, but rely on your ears!

LEAD/LOUD SOUNDS

You now know how to normalize levels across Presets, Scenes, and Channels, but what if you specifically want some sounds to be louder or quieter than others? A good approach is to begin with the loudest sound and then make the other sounds *quieter*. This helps ensure that you will have plenty of headroom to avoid clipping. It's fine for certain tones to be very quiet: all Fractal Audio products have an extremely low noise floor and do not easily suffer internally from the kinds of problems which plague analog gear at lower levels.

QUICK TIP

Make it easier to adjust levels by using the Looper block to "play" while you operate the level controls. Place the looper between the input and your first block.



BYPASS AND LEVEL

Block bypass settings also contribute to preset levels. Here are some tips to help you dial in effects so that levels can remain under control as you bypass or engage blocks.

- Sometimes, you WANT an effect to boost or cut levels. Other times, you want the volume to stay very much the same as an effect is switched in or out. In either case, there's an easy method you can use to make correct settings. First, with an effect engaged, set its **Mix** so the blend of wet and dry sounds just right to you. Then, with one hand on the block's **Level** parameter and the other on its **Bypass** button (Push-knob **B**), switch the effect on and off, making level adjustments until the desired volume is achieved when the effect is on or off. You can also use a footswitch if one is configured to control the effect.
- **Time-based effects** like delay and reverb are usually best in series with their **Bypass Mode** set to "MUTE FX IN". This ensures that the dry level remains constant ("unity") when you engage or bypass the block. Because this setting masks possible changes to your dry level, you should use the Meters page of the Layout menu to ensure that the level is roughly the same before and after these effects when they are bypassed.
- Parallel effects should have **Bypass Mode** set to "MUTE", "MUTE IN", or "MUTE OUT" to avoid increasing the dry signal level when the effect is bypassed.
- Pitch and certain other effects require special consideration. Depending on the particular type and settings, you may wish to treat them like a time-based effect with **Bypass Mode** set to "MUTE FX IN" , or you try a totally different approach with one of the other settings such as "THRU". Try it and see what works best for you.
- The various Bypass Modes are detailed in "The Fractal Audio Blocks Guide".
- **PRO TIP**: Unless you use multiple parallel paths to prevent effects from feeding into one another, time-based effects sound **exactly the same** in series or parallel. Using parallel effects, however, can make it easier to keep dry levels the same as you switch effects in or out, or adjust their settings.

8 BLOCKS

The “The Fractal Audio Blocks Guide” covers effect blocks and parameters for all current Fractal Audio products.

9 MODIFIERS

Modifiers are one of the most exciting features on the FM9. They allow sound parameters to be remote controlled or automated in real time. With modifiers, anything goes: an expression pedal might operate a wah or whammy. A step sequencer or LFO might sweep a filter. A footswitch or MIDI message might adjust effects, volume, and much, much more. Modifiers are easy to use, but have fantastic potential for those who want extreme creativity or control.

CREATING A MODIFIER

The process of creating a modifier begins right at the parameter you want to control. Parameters that can be controlled are marked with a yellow circular symbol (shown below on a knob and a switch). When a modifier is already present, the circle will be solid yellow, like an LED that has been turned ON. You will see the same symbol whether the target parameter is on a knob page, a text page, or any other type of menu.

The open circle means you can add a modifier here.

The filled circle means a modifier is already present.

Here, a switch instead of a knob allows a modifier.

This parameter has no option for a modifier.

TO CREATE A MODIFIER...

- Select any parameter that supports a modifier. 
- Press the **ENTER** button or the **MODIFIER** Push-knob to show the **Modifier** menu.
- The Modifier **Source** page will appear. Select a **SOURCE** to control the parameter. Learn more about Sources on p. 63.
- Press **PAGE RIGHT** to switch to the **Modify** page (you *must* select a source first!) This page contains all of the parameters related to the interaction between the source and the parameter. (Learn more on p. 64.) If nothing else, check that **MIN** and **MAX** are set to the lowest and highest values you want to hear as the source changes.
- Press **EXIT** to leave the modifier menu. You will notice that the dot is now solid. 
- Modifiers will animate on-screen knobs, faders switches and graphs. For text menu parameters, a bar graph shows the value of the source.
- You must **STORE** the preset to save any modifier changes.
- In FM9-Edit, **RIGHT-CLICK** or Control Click a modifiable parameter to show the modifier screen.

TO EDIT OR REMOVE A MODIFIER...

- To **edit** an existing modifier, use the same process as creating a modifier.
- To **remove** a modifier, change its **SOURCE** to “NONE”.

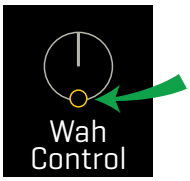
MODIFIER TUTORIAL: WAH PEDAL

Below you will find a basic step-by-step tutorial on setting up a modifier for a Wah pedal.

For this example, to work correctly, the following must be true:

- A **Wah block** must be in your preset (see Section 5: Presets).
- You have an **Expression pedal** set up (see "Expression Pedals" on p. 10).

Here are the steps:



1. On the Layout Grid, **NAV** to your Wah block and press **EDIT** to show its menu.
2. Page to the **Config** page of the Wah block's Edit menu.
3. Find the on-screen **Wah Control** parameter and notice the yellow Modifier dot symbol.
4. **NAV** to select that parameter, or just give its knob a twiddle. It will be highlighted (blue) when selected.
5. Press **ENTER** or the **MODIFIER** Push-knob to show the **Modifier** menu.
6. On the **Source** page, change the **SOURCE** to your pedal. Depending on how your pedal is connected this might be "Pedal 1 (Exp/Sw Tip)" (the on-board expression jack of the FM9), or it might be one of the "External Controllers" (p. 69), or it might be one of the "FC" pedal options.
7. Test! The Wah should work when you move the pedal. You'll also see the dot move on the graph. If it doesn't work, check your source or make sure the pedal is properly connected and calibrated.
8. Save the preset by pressing **STORE**, **ENTER**, **ENTER**.

The Wah in this example is controlled by an expression pedal. An expression pedal can be used to control other parameters like whammy control, rotary rate, delay feedback, and many more.

There are also many different sources we could use instead of a pedal. Try an LFO for a modulating auto-wah, or an Envelope Follower for some funky Mu-Tron action. MIDI opens up another world of controller options.

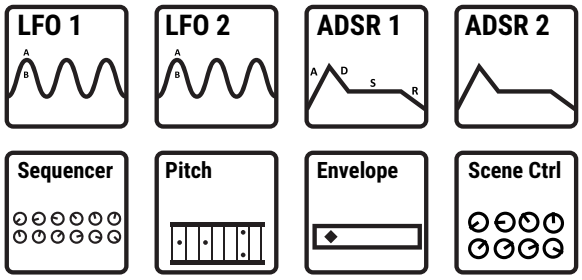
MODIFIER TIPS AND TRICKS

- The same source can be assigned to multiple modifiers at the same time. For example, one pedal might adjust Chorus Rate and Chorus Depth at the same time — even in different ways.
- The modifiers for a given block will normally be shared across all of the channels of that block, but you can also limit a modifier so it applies only to any one channel—your choice. Change the "Channel" setting inside the Modifier menu from "ALL" to just A, B, C, D.
- Modifiers use a very small amount of CPU power while you use them. Test any presets which seem close to the edge.
- Any block that can be bypassed also has a **Bypass** parameter that allows you to assign a modifier. (The modifier is placed on **Bypass** and not **Bypass Mode** as it was on some previous Fractal Audio products.)

MODIFIER SOURCES OVERVIEW

There are over 70 different choices to use for modifier sources. Learn about them in this overview.

INTERNAL CONTROLLERS



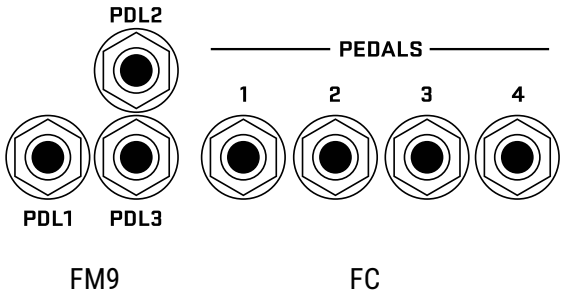
Internal controllers are part of every preset. To show the **Controllers** menu, press the **CONTROLLERS** button on the **Home** page (push knob **C**) or on the grid **Grid** (push knob **E**), or press the **TEMPO** button once.

Internal controllers have settings of their own which can be saved with every preset. All of the Internal Controllers (Tempo, LFOs, ADSRs, etc.) are part of a **Controllers** block. This block has four channels, so you can have up to four different sets of Controller values in one preset!

The Internal Controllers include one **Tempo**, two **LFOs** (Low Frequency Oscillators), two **ADSRs** (envelope generators), a **Sequencer**, an **Envelope Follower**, a **Pitch Follower**, five **Manual Controllers**, four **Scene Controllers**, and six **Control Switches**. See p. 67 for more on internal controllers.

ONBOARD & FC PEDALS & SWITCHES

The onboard **Pedal** jacks of the FM9 and the **Pedal** or **Switch** jacks of a connected **FC** series controller can be assigned directly as modifier sources. In comparison to previous products, it is no longer necessary to assign these to an **External Controller** first (though this is still possible, and even recommended).

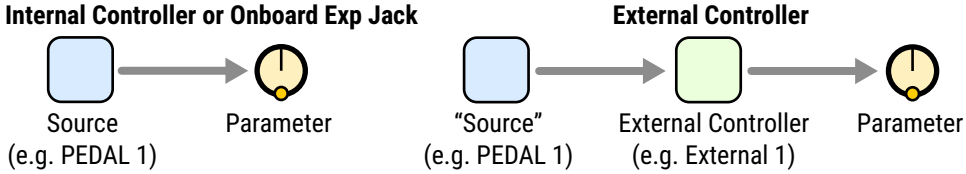


EXTERNAL CONTROLLERS

External Controllers are proxy or "go-between" sources. They each have their own global setting to determine *what controls them*. You can set them up to be controlled by your choice of:

- Any **MIDI Control Change** (CC#) message.
- One of the onboard **Expression** (Pedal) jacks.
- One of the **Pedal** or **Switch** jacks of a connected FC series controller.

In comparison to Internal Controllers or Onboard & FC Pedals and Switches, external controllers act like a "go-between" as illustrated below.



External Controllers are a great choice for presets you might share, because different people will use different controllers in different setups.

Example: you send your friend a preset containing a Wah operated by **External 1**. On your system, External 1 is globally assigned to "PEDAL 1"— one of the onboard expression jacks. On your friend's system, External 1 is assigned to "CC#16" because an older MIDI controller is being used. The Wah works perfectly on both rigs with no changes required! Learn more about External controllers on p. 63.

MODIFIER PARAMETERS

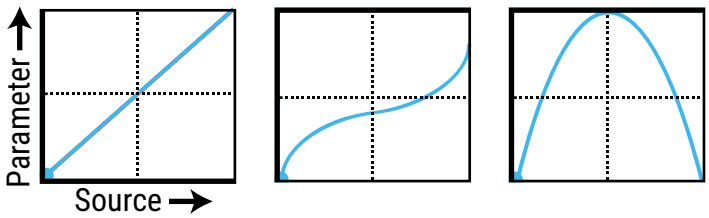
The **Modify** page of the modifier menu contains parameters to determine the nature of the relationship between the source(s) and the parameter. By default, a modifier is linear: the parameter value moves in direct proportion to the source. By changing this relationship, you can create a variety of desirable effects. For example, you might adjust the "taper" of the change, reverse its effect, or smooth the changes over time. Here is an overview of the additional parameters you can use to create these effects and many more.

The **Channel** setting determines whether the modifier will be enabled on ALL channels or just on one channel (A,B,C or D). There are many creative uses for this, including effects which auto-engage only when set to a particular channel where their modifier is active.

Min and **Max** set the **range** of parameter change. These are extremely important parameters.

> *EXAMPLE: The modifier for a pedal controlling* **Delay Feedback** *has Min at "10%" and Max at "50%". The feedback sweeps only from 10% to 50 as the pedal is moved, even though this parameter's range actually extends from -100% to +100%.*

Start, **Mid**, **End**, **Slope**, **Scale**, and **Offset** are used to create custom curves which re-map the source to the target. On the Modify page, a **graph** shows the relationship between the source (x-axis) and the parameter (y-axis). A dot on the graph tracks the source. The default settings (first graph below) create a 1:1 linear relationship (the blue line) between source and parameter. As the source changes, the parameter tracks it directly. The second two graphs below show just a few examples of the kinds of non-linear curves you can create using Slope, Scale, and Offset. The pages which follow contain more examples.



Damping, Attack and Release: These are used to slow the rate at which the target parameter value "chases" the source. At low settings, these add just a little smoothing. Try settings of about 5 ms to "relax" a pedal or to ease a square LFO to eliminate clicks and pops, or use higher settings for slow, lazy changes. Increase **Attack** to slow the change as the source is increased. **Release** controls the rate as the source decreases. The **Damping** type parameter determines if damping happens in a linear (constant) or exponential manner (slowing as the source reaches the extremes.)

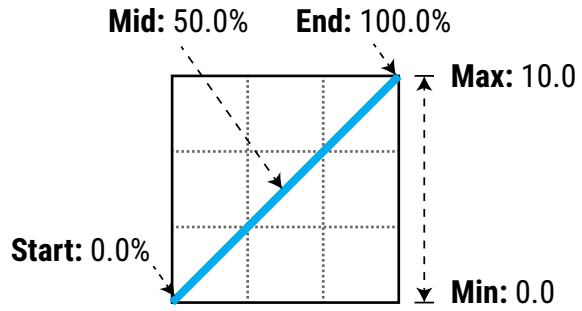
Auto-Engage works with **Off Value** to make the entire block turn ON or OFF automatically whenever the source controller is moved. This is typically used with a Wah pedal so you don't need a toe switch. (Follow the example on p. 62 and set AUTO-ENGAGE to "SLOW POS" to try it out!) Find more about **Auto-Engage** on p. 66.

PC Reset sets the value for an external source when a preset first loads. This allows you to override the actual position of an external controller until it is moved or updated. To set the default value: after applying the modifier, exit to the Edit page. Notice that the value of that parameter can be edited as usual. If **PC Reset** is ON, the value you set and then save will be used from preset load until the source is changed (i.e. the pedal has been moved).

Update Rate controls how often the modifier is refreshed. The setting of slow is actually very fast, and fine for the majority of applications. The faster settings require additional CPU but provide even smoother sound performance when ultra fast changes are required (while using a fast LFO for instance). Check this setting if you think you hear "zipper noise" while a modifier is in use.

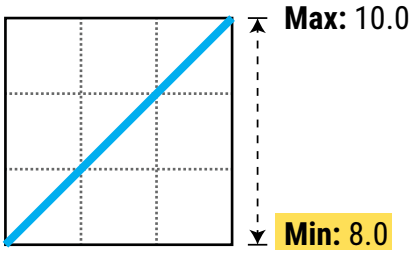
UNDERSTANDING MODIFIER MIN AND MAX

MIN and **MAX** set a range for the parameter under control. This lets you fine-tune modifiers in very cool ways. In the example below, imagine a volume pedal with different settings. Using the principles on this page, you should be able to achieve a wide range of modifier control scenarios.

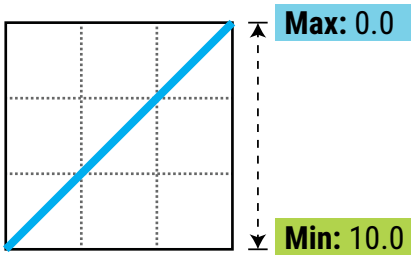


Here is your basic "vanilla" volume pedal.

The pedal "start" (heel position) sets the volume to Min: 0.00; silent. The pedal "end" (toe down position) has the volume at Max: 10 or all the way up.
As you rock the pedal forward, the dot follows the line. It moves up as it goes and the volume does too.



Now, something different: a "boost" pedal with Min set to 8 and Max still at 10. In the heel position, the volume will go only as low as 8, instead of 0 as in the previous example.

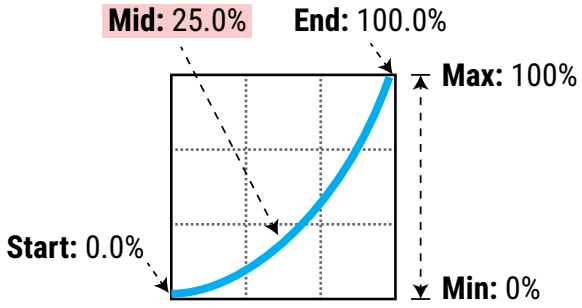


Here is a different twist: Min is at 10.0 — the loudest setting, while Max is at 0.0 — silent.

It looks the same, but this is a reverse volume pedal!

USING "MID" TO CREATE BASIC CURVES

Let's imagine a modifier on the feedback of a delay to demonstrate changes to **response curves**. By now you should be familiar with the default settings, so let's skip right to the curved version:

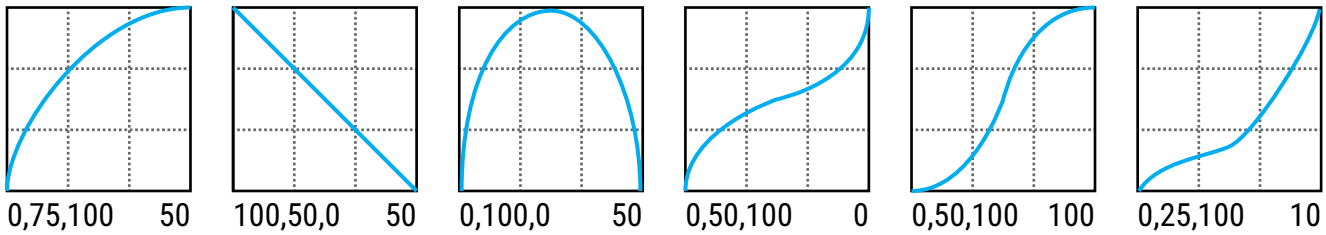


As we adjust Mid, the graph shows the curve. At 25%, the response is "tapered" so that with the pedal half way forward, Feedback is only 25% between Min and Max.

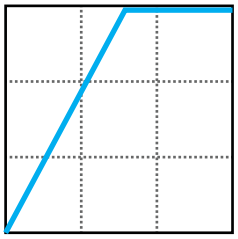
This type of curve provides gradual control of feedback across the lower end of the range, and then a more rapid change towards the top.

ADVANCED MODIFIER CURVES AND SHAPES

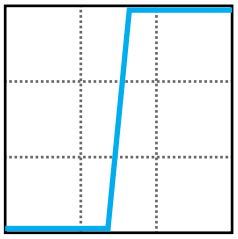
You can also adjust **Start**, **End**, and **Slope** (which introduces an "S" or "backwards S" shape). The numbers beneath each example below show the settings for **Start**, **Mid**, **End** and **Slope**. With a bit of experimentation, you will learn to achieve desired modifier effects quickly. Try dialing in the shapes below for practice:



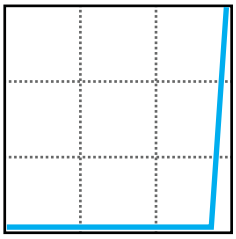
Scale and **Offset** also remap modifier response. **Scale** adds vertical exaggeration or compression, while **Offset** moves the entire curve up or down on the Y-axis. Segments outside the graph boundaries will be clipped and replaced by line segments. The examples below show some interesting possible applications.



START:	0.0%
MID:	50%
END:	100%
SCALE:	2.0
OFFSET:	100%



START:	0.0%
MID:	50%
END:	100%
SCALE:	10.0
OFFSET:	0%



START:	47.2%
MID:	0%
END:	60.6%
SCALE:	10.0
OFFSET:	-100%

AUTO-ENGAGE TURNS EFFECTS ON/OFF AUTOMATICALLY

If you have used a Wah pedal with no "toe switch," you will instantly understand the principle of "auto engage." This type of Wah turns on automatically when you rock it forward it and then bypasses automatically when you return the pedal to the heel position. That's the idea behind **Auto-Engage** — and it can even be reversed.

Auto-Engage engages or bypasses a block when the **Source** of a modifier changes. Once you try it, we believe you will quickly find that this capability comfortably eliminates the need for expression pedal toe switches.

Set it up using two parameters on the Modify page:

Auto-Engage – Determines whether or not the block will automatically engage or bypass. FAST, MEDIUM and SLOW settings determine how quickly the effect turns ON/OFF once Auto-Engage is triggered. Use SLOW settings to delay auto-engage, so your effect doesn't switch off too suddenly while you're still using it.

- The three POSITION ("POS") options trigger the effect based on **OFF VALUE** (see below).
- The three SPEED ("SPD") options engage the effect when the controller is moved quickly.
- Set to "OFF" to disable Auto-Engage.

Off Value – Sets the *position* threshold that the source must cross for auto-engage to occur. When **Off Value** is set below 50%, the effect is bypassed when the controller goes *below* that value. If **Off Value** is set to 50% or higher, the effect is bypassed when the controller goes *above* that value.

For "heel down = bypassed," set to 5%. For "toe down = bypassed," try 95%.

MODIFIERS AND CHANNELS

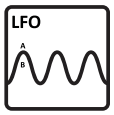
A modifier is normally shared across all of the channels of the block where it exists. However, you can also limit it to operating on just a *single* channel—your choice—using the **Channel** parameter in the modifier menu.

INTERNAL CONTROLLERS

Internal Controllers can be programmed per-preset for use as modifier sources. To access these parameters, push the **CONTROLLERS** button on the **Home** page (**D**) or press **TEMPO**. Save the preset to commit changes.

TEMPO Tempo appears in the Controllers menu. For more information, see Section 11: Tempo.

LFO1 + LFO2



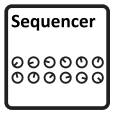
A Low Frequency Oscillator ("LFO") generates control signals in a variety of periodic and random wave shapes. Examples of LFOs in use include the pulse of a tremolo, the back and forth sweep of a phaser, or the random filter in *Ship Ahoy* by Frank Zappa.

Type sets the waveform or shape. You can set the **Rate** manually or sync it to the current **Tempo**. You can vary the overall **Depth** and **Duty**, or symmetry. LFO WAVEFORMS are illustrated in "The Fractal Audio Blocks Guide" The **Run** parameter starts and stops the LFO. This can be used to keep it from drifting out of time.

Each LFO outputs "A" and "B" signals, each of which is an independent modifier source on the list. You can change the **Phase** of output B with respect to A.

Quantize changes smooth waveforms into stepped ones. Try it on the "TRI" waveform for example.

SEQUENCER



The Step-Sequencer generates control patterns by looping through 2–32 "stages." You set the **Value** for each stage, the **Number** of stages, and the **Rate** or **Tempo**. The **Run** switch allows you to start or stop the sequence. Damping slurs the change between steps.

ENVELOPE FOLLOWER

This converts input level to a control signal, responding variably to your playing dynamics. The classic example is a touch-wah, where the frequency of the wah varies based on how hard you play. You can set **Attack** and **Release** times independently, set the trigger **Threshold**, and adjust the **Gain** at the trigger signal input, which can be set to Input 1 or Input 2.

ADSR1 + ADSR2

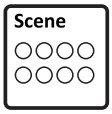
The two ADSR sources are envelope generators with **Attack, Decay, Sustain** and **Release** parameters (thus "ADSR"). The ADSR is triggered whenever the signal level exceeds its **Threshold** measured at the selected input (1 or 2). The envelope has three self-explanatory **modes (Once, Loop,** and **Sustain)** and can optionally be set to **Retrigger** every time the threshold is exceeded. A **Type** parameter selects between Linear and Exponential curves.

In comparison to the Envelope Follower, the ADSR envelope *generator* always creates the same control signal, but only triggers when you play hard enough.

PITCH FOLLOWER

The Pitch Follower analyzes the pitch of your (monophonic) playing and outputs a low value for a low note and a high value for a high note.

SCENE CONTROLLERS



Each of the four Scene Controllers is a "virtual knob" whose setting can programmed with a different value in every Scene. By assigning this knob as a modifier source, you can create "per-scene" parameters.

For example, you might assign Scene Controller 1 to **Input Drive** in the **Amp** block with a value of 30% in Scene 1, 50% in Scene 2, 66% in Scene 3, and so on.

As with any source, a scene controller can be assigned to multiple parameters at the same time, each with its own modifier settings.

A Scene Controllers tutorial appears on p. 70.
For more on Scenes, see Section 6 on p. 49.

QUICK TIP

The Internal Controllers menu offers four channels for four sets of independent settings for ALL of the items listed above: four tempos per preset, four sequencer settings, etc. When you change the channel, ALL of the controllers switch to the new channel and the new settings. FM9-Edit provides a way to copy/paste Controller channels.

MANUAL CONTROLLERS

Similar to Scene Controllers, the five Manual Controllers are virtual knobs whose values can only be changed manually. A Manual controller makes it possible, for instance, to create a "super control" where one knob operates multiple sound functions at the same time. For example, you might assign delay mix, reverb time and chorus depth parameters — all at the same time — to the "**Manual 1**" modifier source. Now, when you adjust **Manual 1**, all of the above parameters will change simultaneously as desired.

Another good use for Manual Controllers is to simulate an expression pedal when you do not have one handy.

TUTORIAL: MANUAL CONTROLLERS

In this tutorial, we will set up a Manual Controller to adjust the **Feedback** and **Mix** of a delay block. Load the factory preset "**#009 Plexi 100W**".

1. The first step in using a Manual Controller is to assign it as a **Modifier Source** to the parameter of your choice. Enter the **Layout** grid of the preset, navigate to the **Delay** block, and press **EDIT**.
2. Use the **PAGE** buttons to locate the **Config** page of the **Delay** block.
3. **NAV** to the **Feedback** parameter and note the open yellow modifier "ring" beneath the knob.
4. With the **Feedback** parameter highlighted, press **ENTER** to display the **Modifier** menu.
5. On the **Source** page, select **Manual 1**.
6. Page right to the **Modify** page. Set **Min** to 0% and the **Max** to 50%.
7. Press **EXIT** to return to the **Delay** menu. Notice that the open modifier symbol is now a **solid yellow dot**.
8. **NAV** to the **Mix** parameter and press press **ENTER** to display the **Modifier** menu.
9. On the **Source** page, select **Manual 1**.
10. Page right to the **Modify** page. Set **Min** to 5% and the **Max** to 65%.
11. Now let's try the Manual Controller. Press **HOME** to show the home page.
12. Press the **CONTROLLERS** button (Push-knob **C**).
13. Use the **PAGE** buttons to locate the **Manual** page of the **Controllers** menu.
14. Turn knob **A** to adjust **Manual 1** and listen to your delay settings change. As the knob approaches 100%, the Delay mix increases (louder echoes) and the Feedback increases (more repeats).
15. OPTIONAL: press **STORE, ENTER, ENTER** if you want to save your work.
    Not only will all of the modifier settings be saved, but the position of the Manual knob as well.

CONTROL SWITCHES

The six Control Switch sources can be used with the onboard footswitches or an FC controller. For more information, please refer to "The Footswitch Functions Guide" on p. 18.

METRONOME

A metronome is included for convenience. The Metronome is not technically a controller, but its settings are accessed through the Tempo page of the Controllers menu. To enable the metronome press the Tempo button and adjust the level for the desired output(s). Note: the metronome levels persist across presets and are reset to OFF at power on.

EXTERNAL CONTROLLERS

External Controllers are modifier sources that are in turn controlled via external MIDI or a connected expression pedal or switch. For example, if the source of a modifier on a Wah effect is set to “External 1” and External 1 is set to “MIDI CC#16”; a connected MIDI expression pedal transmitting CC#16 will operate the Wah.

This concept is illustrated on p. 63

The global assignments for External Controllers are set on the **External Control** page of the **MIDI/Remote** menu under **SETUP**. You can assign a MIDI CC#, an on-board Expression pedal or switch, or a Pedal or Switch on a connected FC series controller. Choosing an External Controller as the source of your modifier is the same as assigning any other source .

To change which CC# or pedal/switch operates an External Controller:

1. Open the **MIDI/Remote** menu in **SETUP** and page to **External Ctrl**.
2. Use **NAV** to select the External Controller you want to change (ex: “External Control 1”).
3. Use **VALUE** to change the assignment. You can also select “NONE” to disable the selected controller.
4. **EXIT** when finished.

EXTERNAL CONTROLLER INITIAL VALUES

External Controllers assigned to MIDI are given a value of “0” until some MIDI data is received to change them. You can imagine how a missing or broken MIDI controller might therefore present a big problem...

The **External Controller Initial Value** parameters can change the startup value for a controller to 100%. Then, when the Axe-Fx III is powered on, any modifiers assigned to the missing controller will be all the way *up* instead of all the way down. To change the initial value for an External Controller:

- Page to the **General** page of the **MIDI/Remote** menu under **SETUP**.
- Use **NAV** to select to whichever controller you want to change (ex: “External Control 1”).
- Use **VALUE** to change the setting.
- **EXIT** when finished.

MODIFIERS LIST

The last page of the **Controllers** menu lists all of the modifiers in the current preset. You can jump to edit each modifier from this list by pressing **ENTER**.

As you’ll gather from looking at the list, the maximum number of modifiers per preset is 24.

TUTORIAL: SCENE CONTROLLERS

This tutorial requires FM-9 Edit. It assigns a Scene Controller to adjust the Input Drive of an Amp block. While it is easy enough to achieve different amp sounds within a preset simply by switching the channel, this example provides an excellent and easy way to understand how Scene Controllers work.

1. Load the factory preset "#**030 Wreckers**".
2. To simplify this preset for our current needs, select Scene 1 "**Rocket**" if it isn't already selected. Then, from the **Scenes** ▾ dropdown (near the yellow preset name) choose **Copy: Copy Current Scene to All**.
3. Now let's create the modifier: Click on the **Amp** block in the grid and find the **Drive** parameter on the **Authentic** page. Notice the open yellow modifier "ring" beneath the knob? This means the parameter can be controlled by a modifier.
4. Right-click or Ctrl-Click the **Drive** knob to show the **Edit Modifier** screen.
5. Click the **Source** dropdown and select **Scene Controller 1**.
6. For this tutorial, you don't need any custom settings on the **Modify** page, so you may now close the modifier screen. Notice that the open yellow modifier symbol below Drive is now a **solid yellow dot**.
7. Now let's set some values for Scene Controller 1. Click the **Controllers** button in the upper left below the FM9-Edit logo.
8. Click the "**Scene Ctrl 1+2**" tab from the list in the second column of the bottom pane of the editor.
9. Notice the eight different values for **SCENE CONTROLLER 1**. These will set the value for our target parameter in each of the eight scenes. You can dial in these values now. Set Scene 1 to 15%. Set Scene 2 to 40%. Set Scene 3 to 60%. Set Scene 4 to 100%.
10. Click the Amp Block so we can see it in action. Watch the Drive knob change as you select scenes 1–4. Try it out with a guitar so you can hear it in action. Now would also be a good time to rename the scenes if you want to.
11. Feel free to assign other **Scene Controllers** to other parameters in your preset as desired.
12. If you want to save your work, use **Preset: Save to New Preset Number** to avoid overwriting a factory preset.

TIP: You can also edit **Scene Controllers** without using FM9-Edit. Create a **modifier** in the usual way and then find the scene controller values on the **Scene Ctrl** page of the **Controllers** menu (Press **HOME**, then Push-knob **C**).

10 LAYOUTS & SWITCHES

Footswitch operation of the FM9 is based on **Layouts**. A layout is a set of **footswitch definitions**, each with one **Tap** and one **Hold** function. You can change layouts on the fly to change what the footswitches do. For example, one layout might be used to select Presets, while a different layout selects Scenes. The FM9 provides eight layouts, plus one special “Master Layout Menu”. Any switch in any layout can be completely customized with your choice of functions, colors, and more. Layouts even have their own names to make navigating easier.

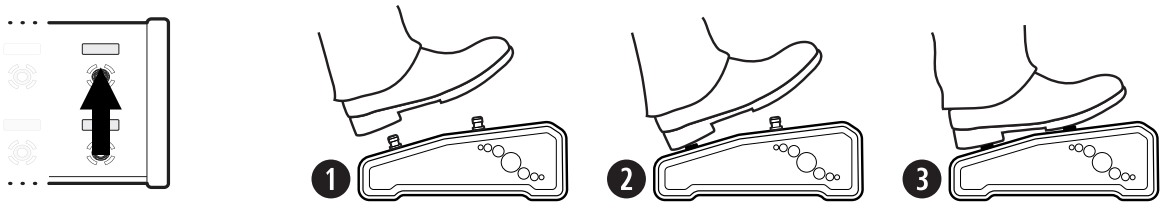
While not performing, you can also easily change the layout on the FM9 itself by turning the FC Layout knob on the Home page.

CHANGING LAYOUTS

Changing from one layout to another is key to the versatility of FM9 foot switches.

There are multiple ways to do change the layout:

- On the home page of the home menu, turn Knob E to change the layout.
- Use the **Master Layout Menu** (“MLM” for short). This special menu grants instant access to other layouts, one per footswitch. To show the Master Layout Menu, use the “combination stomp” shown below and in “The Master Layout Menu” on p. 8.



- Use a footswitch whose function is set to change the layout. The factory default layouts use this capability to provide an easy way to go from selecting Presets to selecting Scenes (and back).
- Use Layout Links: this advanced feature allows you to piggyback a layout change on the regular tap or hold function of a footswitch. You might use this, for instance, to change automatically to the Scenes layout whenever you select a Preset. Learn more in ”The Footswitch Functions Guide”.

TAP & HOLD FUNCTIONS

Every switch in every layout can have its own individual TAP and/or HOLD functions.

Tap functions – used throughout history for guitar effects and beyond, tap is best for changes that require tight timing. For example, a tap switch set to switch to a new Scene is ideal to change the sound right on cue.

Hold functions on the other hand, require a "long press" and are fired after a brief delay, so their timing can be less precise. Hold switches are perfect for functions like opening the Tuner, or accessing an alternate layout such as Looper Control.

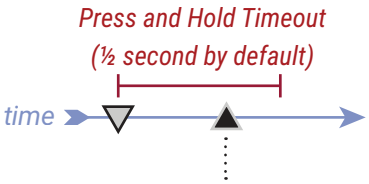
THE RULES OF SWITCH TIMING

Like every product with "hold" footswitches, the FM9 must follow rules for timing so it "knows" whether you are trying to activate the Tap function or the Hold function. If you're still holding after a short (and configurable) time delay, the Hold function fires. If you release the switch before the time runs out, the Tap function fires. Whenever there is a hold function assigned, the tap is activated when the switch is *released* instead of when it is *pressed*. The following illustrations help explain switch firing and timing:

TIMING FOR A TAP FUNCTION WITH NO HOLD FUNCTION

The Tap function fires at the moment the footswitch is depressed.

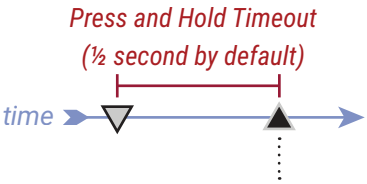
TIMING FOR A TAP FUNCTION WITH A HOLD FUNCTION



The Tap function fires when you *release* the switch, as long as this happens before the Press and Hold Timeout.

If not, the Hold function eventually fires...

TIMING FOR ANY HOLD FUNCTION



When you hold a switch, its HOLD function activates when the Press and Hold Timeout runs out—whether or not the switch has a Tap function. This does not cause the Tap function to fire.

An advanced option, found under **SETUP: FC Controllers: Config** allows you to change the **Hold Function Mode** so that any hold function is delayed until you *release* the switch. This allows you to to fire hold functions with precise musical timing.

QUICK TIP

If you need tight timing from a Tap switch that has a Hold function, tap and release very quickly—even a fraction of a second early, knowing that the change will occur as your foot comes up.

QUICK TIP

You can change the duration of the **Press and Hold Timeout** under **SETUP: FC Controllers: Config**. The default is 0.5 seconds. Make it *longer* if you find that you are activating Hold functions when you mean to activate Tap functions. Make it *shorter* to fire Hold functions sooner.

You can even have the hold function wait to fire until you release the switch, making it possible to have direct and perfect control over hold function timing.

FACTORY DEFAULT LAYOUTS

Factory default settings for the FM9 include various predefined layouts: one for selecting presets, one for changing scenes, one for the looper, and so on. These are illustrated on the following page.

The Factory default layouts are designed to be *very* simple. The idea was that they should require almost no explanation, so someone using the FM9 for the first time could easily understand its capabilities. In fact there is no such thing as an ideal layout—no "one-size-fits-all" solution. Those who desire to make changes will find it is very easy to change any switch on any layout to perform any function. See the "The Footswitch Functions Guide" for a complete reference covering all available functions.

QUICK TIP As a bonus, the FM9 also includes an alternate set of layouts based on the popular "OMG9" layouts used with the Fractal Audio FM3 and FC-6. Learn more "Optional OFM9G Layouts" on p. 106

WARNING! When you perform **Reset System Parameters** under **SETUP: Utilities** this clears all of your Footswitch layouts too!

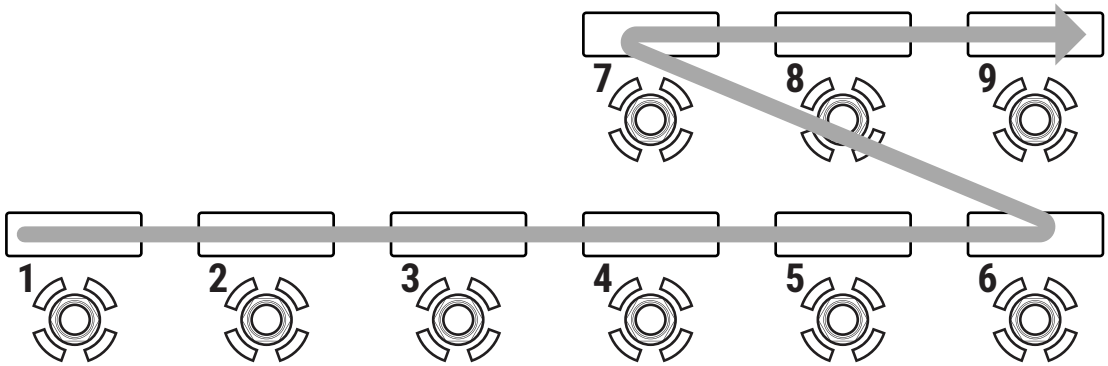
RESETTING THE FACTORY LAYOUTS

The FM9 includes a utility to reset the Factory Default Layouts to their default settings. To do this:

- Open **SETUP: FC Controllers/Onboard Switches**.
- Page to the **RESET** page.
- Select the desired option and press **ENTER** to Load FM9 Factory Default Layouts.
- Press **ENTER** again to confirm.
- Press **HOME** to exit.

SWITCH FLOW

Footswitches are not numbered, but the switch definitions in layouts are. The numbers flow is from left to right, bottom to top, as shown below.



While the FM9 has NINE onboard switches, you will notice that each layout actually contains TWELVE switch definitions. The extra definitions can be accessed when you connect an FC-12, or when you use the FM9 or an FC-6 and change the View. See "Layout Views" on p. 83 for additional information.

FM9 FACTORY LAYOUTS

The default layouts showcase the capabilities of the FM9 and also provide a solid basis for studio or live use.

1 PRESETS

			(Loads Layout 2) SCENES	TAP: Tempo HOLD: Tuner	Bank +1
P1	P2	P3	P4	P5	Bank -1

Layout 1: Presets is designed for switching presets, with switches for the NEXT and PREVIOUS **BANK**.
The **SCENES** switch changes to Layout 2.
Hold the **Tempo** switch to show the **Tuner**.

2 SCENES

			(Loads Layout 1) PRESETS	S7	S8
S1	S2	S3	S4	S5	S6

Layout 2: Scenes is designed for selecting scenes 1–8.
The PRESETS switch returns to LAYOUT 1.

3 EFFECTS

			Flanger 1	Rotary 1	(Loads Layout 4) MORE FX>>
Phaser 1	Drive 1	TremPan 1	Chorus 1	Delay 1	Reverb 1

Layout 3: Effects allows you to bypass or engage eight different effects.
The MORE>> switch loads layout 4, for access to eight more effects, plus a switch to return to the first FX layout.

4 MORE FX

			Enhance 1	RingMod 1	(Loads Layout 3) <<MORE FX
Comp 1	Drive 2	MultiDelay1	Plex 1	Delay 2	Pitch 1

Remember that the LED ring will be BRIGHT if an effect is engaged, DIM if an effect is bypassed, and OFF if an effect is not found in the current preset.

5 LOOPER

			Erase	---	Looper Bypass
Tap Tempo	Record	Play	Once	Half Speed	Reverse

Layout 5: Looper offers every control on the Looper block, plus Looper Bypass and Tap Tempo.

6 PER-PRESET

			PP#7	PP#8	PP#9
PP#1	PP#2	PP#3	PP#4	PP#5	PP#6

Layout 6: Per-Preset demonstrates per-preset "placeholder" switches (as compared to per-preset "overrides").
You will need to create switch definitions in your presets for this layout to work.
See "Per-Preset Switches" on p. 80

7 CHANNELS

			Delay 1 A/B	Drive 1C	Drive 1D
Amp 1A	Amp 1B	Amp 1C	Amp 1D	Drive 1A	Drive 1B

Layout 7 contains effect Channel switches for Amp 1, Drive 1, and Delay 1.

8 SETLIST-SONG

			Prev Song	Next Song	TAP: Tempo HOLD: Tuner
Section 1	Section 2	Section 3	Section 4	Section 5	Section 6

Layout 8 is ready for use with the Setlist/Song feature. Note that you must have songs in a set list for this to work. See p.

BONUS! Many who use the Fractal Audio FM3 with an FC-6 enjoy a special set of custom layouts cheekily called "**OMG9**." We created a special FM9 version of this system called "O**FM9**G" and it can be installed in just a few simple steps by anyone who wants to try this popular way of using the footswitches. See p. 106 for more information.

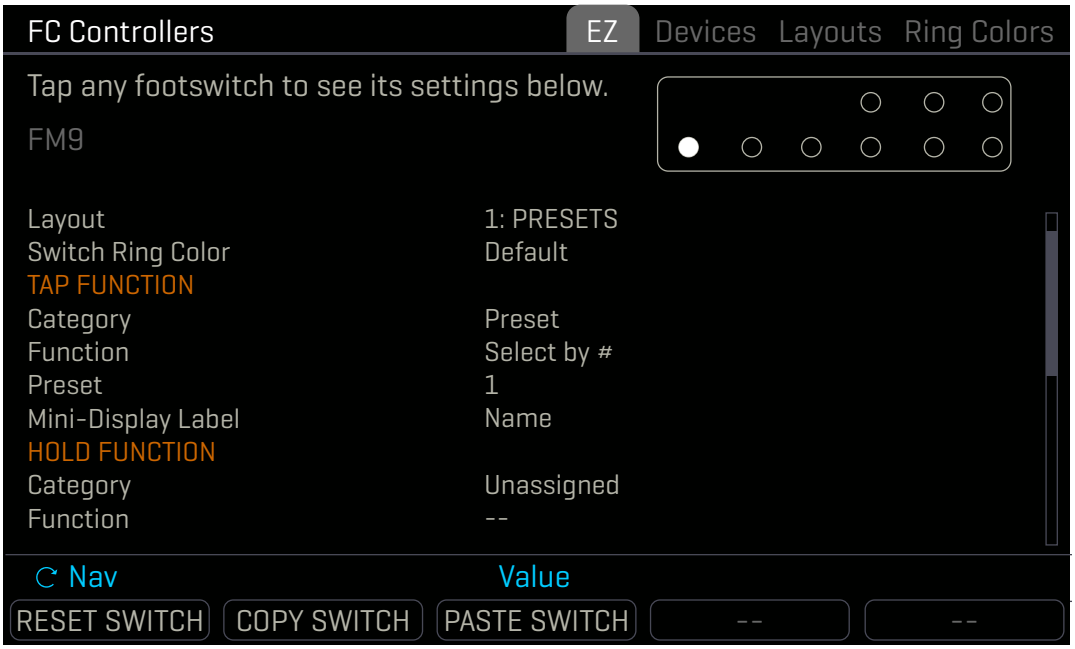
EASY ("EZ") EDITS

The FM9 makes it simple to change any footswitch in any layout to perform any function.
The easiest way to do this is with the "**EZ**" Switch edit page as described below.

IMPORTANT: To avoid annoying screen jumps and sonic mishaps, all footswitches are DISABLED while you are on the EZ page. To test switch edits, change to a different menu page or press EXIT.

TO USE THE EZ EDIT PAGE:

- On the FM9, open **SETUP: FC Controllers/Onboard Switches** and page to the "**EZ**" tab if it isn't already selected.
- Press the footswitch you want to edit.
- An onscreen graphic shows which footswitch you have selected.



- You can edit both **TAP** and **HOLD** functions for any switch.
- Use the **A** knob or **NAV** buttons to navigate the list and **C** or **VALUE** knobs to make changes.
  - Set the desired **Category** and the **Function.**
  - Set any **parameters** for the selected Function as desired. For example, when you choose **Preset: Select by #**, a parameter appears to let you set the desired preset number.
  - You can also customize the ring color for an individual switch, overriding the defaults which are assigned to the current Category.
  - You can also select from different automatic "labels" for the Mini-Display, or enter Custom text.
- The EZ page also provides buttons to **RESET** (clear with confirmation), and **COPY**/**PASTE** switches.
- Press another footswitch to move on, or press EXIT when finished.

☞ Reminder: All changes in the **FC Controllers** menu take effect immediately with no need to store.

For more information on functions and their parameters, please see "The Footswitch Functions Guide".

THE LAYOUTS LIST

EZ editing is certainly easy, but the FM9 also provides a deeper way to set up layouts and switches. The **Edit Layout** page of the Foot Controllers menu provides an overview of all layouts, plus the ability to drill down into any switch, with all of the settings from EZ page and more.

On the FM9, open the **Setup: Foot Controllers** and page to the "**Layouts**" tab.

- Use the **A** knob or **NAV** buttons to select the desired layout.
- Select any layout and press **ENTER** or **EDIT LAYOUT** (Push-knob B) to open that layout for deeper editing.
- The push-knobs offer additional functions:
  - **RESET ALL** sets all functions for all switches in all layouts to "Unassigned" and clears all customization. (A confirmation screen requires you to press **ENTER** first.)
  - **EDIT NAME** allows you to rename the layout (see "Naming Layouts" on p. 79).
  - **COPY LAYOUT** and **PASTE LAYOUT** allow you to duplicate layouts across numbered locations.

Number 9... As you review or edit layouts, you will notice "Layout 9" in the list. Layout 9 is in fact the **Master Layout Menu** used to access other layouts. Do not edit this layout unless you understand what it is, what you're changing, and how it works.

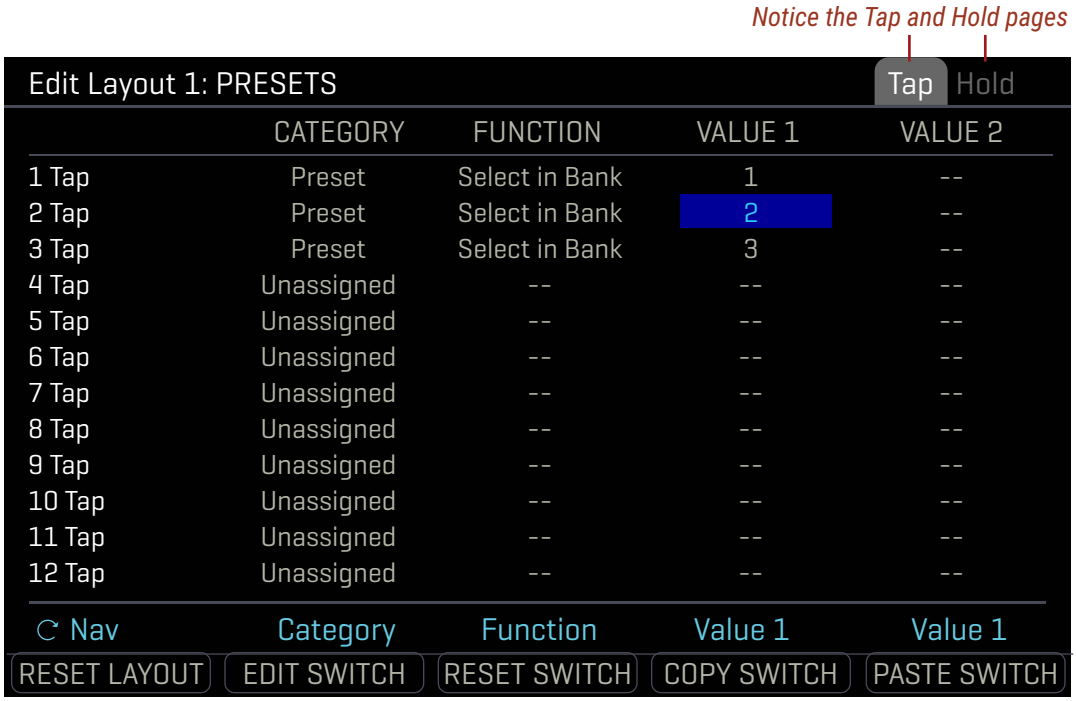
If you modify the Master Layout Menu — intentionally or otherwise — you can easily reset it to factory default settings without resetting anything else. Just use the "**RESET LAYOUT**" button on the **Edit Layout** page (p. 77). Unlike all other layouts, #9 reverts to factory settings instead of being completely cleared.

As you get deeper in to the FM9, you may find the ability to modify the MLM quite useful, with options like "Layout Link" or the ability to add functions instead of unused menus.

EDIT A LAYOUT

Select any layout on the **Layouts** page (p. 76) and press **ENTER** or **EDIT LAYOUT** (Push-knob B) to open that layout for editing in the **Edit Layout** view.

The **Edit Layout** view has two pages: one for the **Tap** functions and one for the **Hold** functions. Each shows the **Category** and the **Function** for all 12 switches, plus values for the first two parameters of each. Note that many functions have more than two parameters, available on the deeper "Edit Switch" screen (p. 78).



- Use the A, B, C, D, and E knobs, or the **NAV** buttons and **VALUE** knob to make changes.
- Select any switch and press **ENTER** or the **EDIT SWITCH** button (Push-knob B) to open that switch for deeper editing (see p. 78).
- The push-knobs offer additional functions:
  - **RESET LAYOUT** sets all switches in the current layout to "Unassigned" and clears all customization. (A confirmation screen requires you to press **ENTER** first.)
  - **RESET SWITCH** clears the Tap or Hold function from the current switch.
  - **COPY SWITCH** and **PASTE SWITCH** provide a means to replicate a switch to a new location.

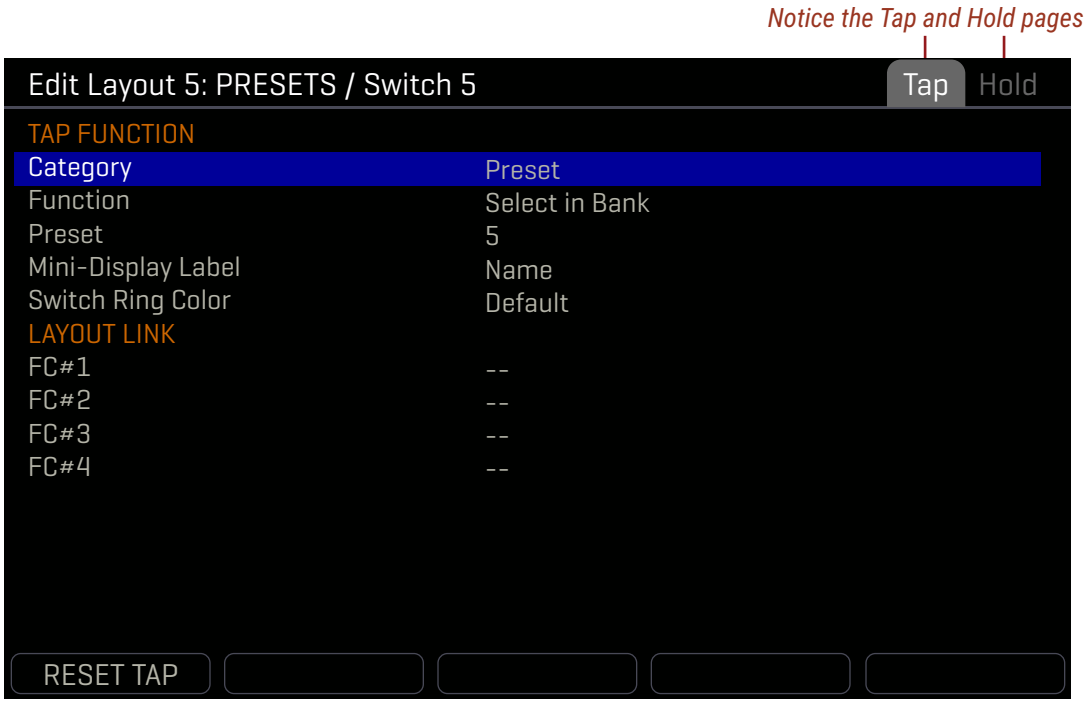
See "The Footswitch Functions Guide" for details on all categories, functions, and parameters.

EDIT A SWITCH

Select any switch on the **Edit Layout** page (p. 77) and press **EDIT SWITCH** or **ENTER** to open the selected switch for deep editing.

The **Edit Switch** view has two pages: one for its **Tap** function and one for its **Hold** function. Each page shows the current **Category** and the **Function** for the switch, plus any and all parameters for the current function.

- Use the **A**, **B**, **C**, **D**, and **E** knobs or the **NAV** buttons and **VALUE** wheel to make changes.
- On the **Tap** page, you can also change the **Switch Ring Color** for an individual switch, overriding the usual default Category color.
- You can select from different automatic "labels" for the Mini-Display, or even enter custom text. Details on the various label options can be found in "The Footswitch Functions Guide"



- The **LAYOUT LINK** parameters allow the Tap or Hold function of the switch to also change the **Layout** and **View** of the FM9 and up to two connected FC units. See "The Footswitch Functions Guide" for more on Layout Links.
- The RESET button (Push-knob **A**) clears the function and all customization from the current page. (A confirmation screen requires you to press **ENTER** first.)

A NOTE ON PRESS & HOLD LABELS IN THE MINI DISPLAYS

The Mini-Display for each switch shows the label for its **Tap** function. When a switch is pressed down — even briefly for a normal "tap" — it changes to show the label of the **Hold** function, even if you don't keep holding the switch down until its Hold function fires.

A special "**Reveal Hold**" utility switch can also cause all mini-displays to persistently show the Hold functions for their switches. See "The Footswitch Functions Guide" for more on this.

NAMING LAYOUTS

Every Layout has a name, which appears in the Master Layout Menu and can also appear on dedicated Layout footswitches. Changing the name of a layout is simple with the same interface used to name presets and scenes.

NAME A LAYOUT:

- On the FM9, open the "**Layouts"** page of the **FC Controllers/Onboard Switches** menu under **SETUP**.
- Use the **A** knob or **NAV** buttons to select the desired layout.
- Push the **EDIT NAME** button (Push-knob **C**).
- Enter the desired name, up to ten characters:
  - Turn the **B** knob or use **NAV** buttons to move the cursor.
  - The **C** knob selects upper case letters.
  - The **D** knob selects lower case letters.
  - The **E** knob selects numbers.
  - The **VALUE** knob selects ALL characters, including symbols.
  - Press **D** or **E** for INSERT and DELETE functions.
  - Press **ENTER** to commit the name or **EXIT** to cancel.

☞ Reminder: All changes in the **FC Controllers** menu take effect immediately with no need to store.

STARTUP LAYOUT

The FM9 and each connected FC Controller have a **Default Startup Layout** that loads automatically when you power on the FM9. You can change the default startup layout for any device as follows.

SET DEFAULT LAYOUTS:

- On the FM9, open the "**Devices"** page of the **FC Controllers/Onboard Switches** menu under **SETUP**.
- Use the A knob to select the desired Device.
- Use the **NAV** buttons and **VALUE** wheel to set the desired **Default Layout**.
- You can also manually change the **Current Layout** and **Current View** (p. 83) for both the FM9 itself and any connected FC controllers.

The Devices page also allows you to set up **Mirroring** the FM9 to an FC controller.

See the **FC Controller Owner's Manual** for more on mirroring.

BACKING UP LAYOUTS

All layouts are included in any backup of the unit's system, but you can also back up or restore Layouts individually or all at once using FM9-Edit. Find these options in the Edit dropdown of the Layouts section of the "FC Controllers" area. (shown at right).

PER-PRESET SWITCHES

Like the Axe-Fx III and FM3, the FM9 supports two ways of having the footswitches in any layout change on a per-preset basis. The first is "**Placeholders**" and the second is "**Overrides**." Both of these methods rely on the special set of "**Per Preset Switch Definitions**" that are part of every preset. Find these definitions in the "Per-Preset FC" area of the Home menu (Push-knob D).

Numbered **Placeholder** switches (like those in the FM9 factory "Per Preset" layout) are inserted just like any other function in any Layout. They do nothing, however, unless the correspondingly numbered Per-Preset Switch Definition is populated. For example, the first switch in Layout 6 is set to always perform the first **Per-Preset** switch definition ("PP#1") in the current preset. This might be "Drive 2: Bypass" in one preset and "Flanger 2: Bypass" in another.

Overrides are less polite. Each preset also has the ability to commandeer any switch in any layout. Whatever global definition that switch normally has is instead replaced by a PP# of your choice. For example, a given preset might force "Layout 1, Switch 1" to show PP#2. Imagine you have your whole board set up around five scenes but then suddenly realize you need a 6th scene in just one song. You dial in "PP#2" to "Select Scene 6" and then override the Tempo switch in your main layout with PP#2 in the preset for that one song. Very cool.

Critically, both Placeholders and Overrides draw from the same list of 24 numbered per-preset definitions ("PP#) found in any preset. In the case of Placeholders, the footswitch asks for one by its number. In the case of Overrides, the preset forces a designated switch into a designated position.

Learn more about Per-Preset Switches in the **Footswitch Functions Guide** available on our web site:

https://www.fractalaudio.com/fas-ffg

CREATING PER-PRESET SWITCH DEFINITIONS

Here's how to create the definitions used by both types of Per-Preset switches:

1. Load the desired preset and navigate to its list of per-preset switch footswitch definitions:
   - Press **HOME**, then use Push-knob **D** to open the **FC Per-Preset** menu.
   - Page to the **Per-Preset FC** tab if it isn't already selected.
2. Nav to the top of the list and then turn the **VALUE** knob to select your choice of per-preset switch definitions (numbered "PP# 1–24.). The first twelve of these appear as placeholders in layout 6.
3. Define the PP# switch. The interface is basically identical to that used by the "EZ" footswitch page.
   - You can set Tap Function, Hold Function, LED ring color, Mini-Display settings, and Layout Links.
4. Repeat this process from step 2 for any other PP# switches you wish to define.
5. OPTION: If you want to create any overrides, turn the page to "Overrides". **NAV** to the Layout and Switch you want to override and turn the **VALUE** wheel to the desired PP#.
6. You must save the preset to commit any changes: **STORE, ENTER, ENTER.**
7. Press **HOME** when finished.

STAND-IN SWITCHES

Stand-In Switches allow an external switch to fire the function of a switch in any layout. This requires you to have one or more external switches. These can be connected directly to the FM9 (see p. 12) or to an FC Controller (see your FC Owner's Manual).

Without the **Stand-In Switch** feature, the capabilities of an external switch are very limited. Modifiers and global functions, for instance don't have any press-and-hold capabilities, and they can't, for instance, change a Bank, switch a Layout or View, or have any kind of per-preset capability.

To make such switches more powerful, we created Stand-In Switches. This feature allows a connected external switch to operate like a remote control for any switch that you have already programmed in a layout on your FM9.

For example, you might normally have **Layout 3, Switch 12** set to bypass/engage the **Trem Pan 1** block on **tap**, and toggle the block's channel from A to B on **hold**. When you set up an external switch Stand-In for **Layout 3, Switch 12**, it now performs these functions. This even allows an external switch to perform **per-preset** functions as described on the previous page. Be aware that the stand-in is just a pointer. If you change the switch under remote control, the function of the stand-in will change too.

TO CREATE A STAND-IN SWITCH:

1. From the Home page, open **SETUP: FC Controllers/Onboard Switches**
2. Page to the **Stand-In Switches** tab.
3. Navigate up or down to the switch you want to set up. For example, "**FM9 SW2 Tip**"
4. Select the desired **Layout** and **Switch** using the B and C or Value knobs.
5. Set up any other Stand-In Switches and press Home when finished.
6. Test your switch.

USING THE FM9 WITH AN FC CONTROLLER

The FM9 has a FASLINK port to connect up to two Fractal Audio FC-6 or FC-12 foot controllers. Using an FC controller expands the number of footswitches to increase your options on the floor — including jacks for 4 additional expression pedals and 4 external switches per FC. No special configuration is required; simply connect the FC to the FM9 and it begins working.

Up to two FC controllers can also be daisy chained from the FM9, increasing the total maximum number of simultaneous footswitches to 33!

Remember that when daisy-chaining, the second FC Controller will require an AC adapter. It is not powered by the FASLINK "thru" connector on the first FC Controller.

When adding an FC, you will need to create custom layouts, since all the factory default options have been designed around nine footswitches. The usual way to do this will be to have some layouts dedicated to the FM9 and others dedicated to the FC-6 or FC-12.

The Layout Link feature becomes especially important in this type of setup, since it allows one foot controller to change the layout on another controller. See "The Footswitch Functions Guide" for more on this feature.

An additional benefit of using the FM9 with an FC Controller is that each attached controller supports an additional four expression pedals and four external switches!

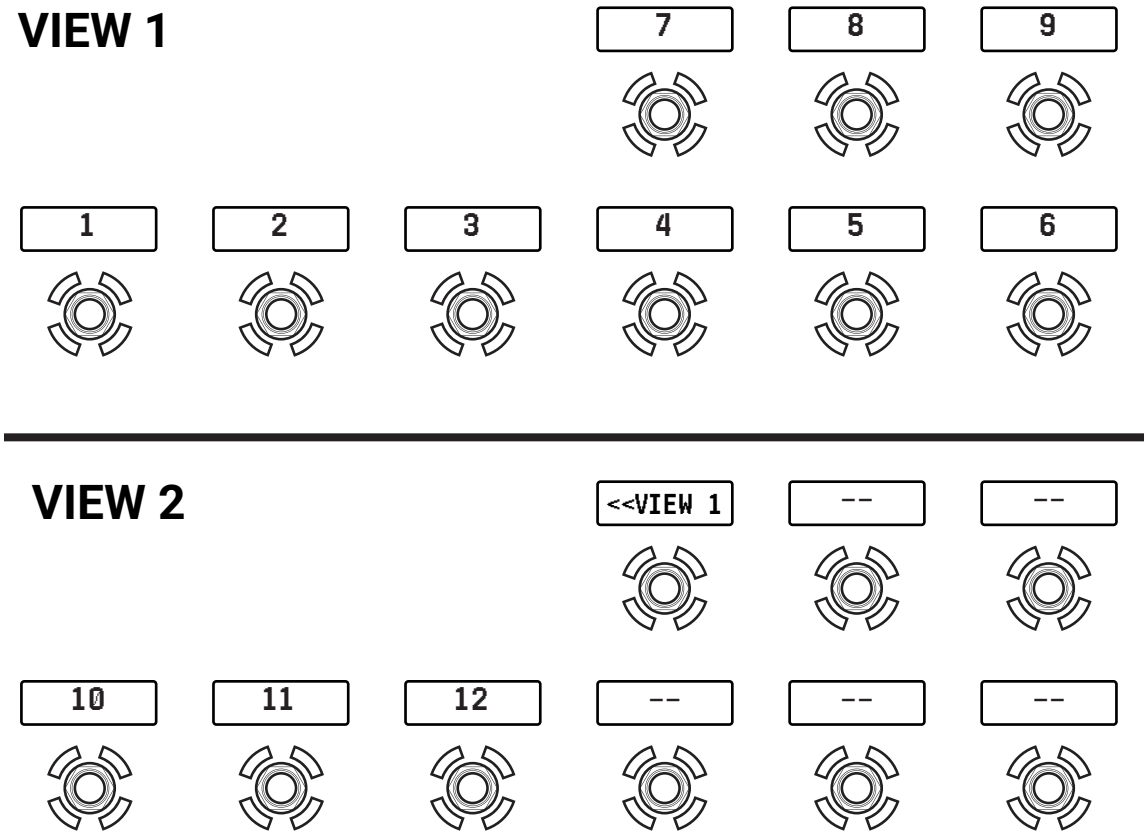
LAYOUT VIEWS

You will recall that a layout consists of twelve footswitch definitions, only nine of which are displayed when that layout is used on an FM9[1]. Views allow you to take advantage of the remaining three switches, and also allow a connected FC-6 to show switches 1-6 or 7-12, thereby maximizing the utility of each layout.

You typically change the view by using a footswitch function, but there are other ways as well. On the Home page of the Home menu, knob D changes the View, as does a parameter found in Setup: C Controllers: Devices.

The allocation of switches between View 1 and View 2 is illustrated below.

1 A connected FC-12 can show all 12 at once.



On the FM9, View 2 shows only three switches — those “left over” from View 1. To maximize their utility without the need to sacrifice a tap or hold function, a switch in the top row is **hard-coded** to change back to View 1.

In **SETUP: FC Controllers : Devices**, you can also set the default startup view for the FM9 or a connected FC. See p. 79 for more on this menu page.

FM9 FOOTSWITCH FAQ

As mentioned throughout this manual, the "The Footswitch Functions Guide" covers everything there is to know about the many categories and functions that can be assign to Tap or Hold on FM9 switches.

Here is a quick summary of common questions.

Q: How do the LED rings for EFFECT switches work?

A: The LED Rings show up-to-the-moment information about the assigned effect. If the ring is DIM, the effect is OFF. If the ring is BRIGHT, the effect is ON. If the ring is completely OFF, then the assigned effect is NOT AVAILABLE in the current preset.

TIP: One of the most common uses for "Per Preset Footswitches" is to override an unused effect switch with one for an effect that *is* used in that preset.

Q: How do I assign presets to footswitches?

A: This can be done using the **PRESET: SELECT** function, but this approach is really only appropriate if you use very few presets in total. Instead, BANKS make it easy to get to get to many presets using few switches. In fact, the preset Footswitches in the default FM9 layouts use a function called "**PRESET: SELECT IN BANK**" to automatically load presets in the order in which they are stored in the FM9. It is easy to reorder presets using the **Manage Presets** area of FM9-Edit, where you can copy/paste or use drag-and-drop to swap preset locations. (Don't forget to press "Save" to commit your changes.)

TIP: While using Manage Presets, turn on the "FC Banks" option at the top so you can easily see which presets will map to which footswitches. The FM9 includes many empty preset memories, providing lots of room for you to store additional creations.

Q: Can I back up, share, or restore my Footswitch Layouts?

A: Yes. Perhaps the most common way to back up your footswitch layouts is to receive a backup of your SYSTEM using Fractal-Bot (p. 13). The system file contains all of the layouts and FC settings.

FM9-Edit is even more flexible, with options to export or import individual layouts or the entire set. Find these choices in the Edit menu dropdown located in the LAYOUTS panel of the FC Controllers area of FM9-Edit.

11 TEMPO

Tempo is used in electronic music for synchronizing different rates and times, whether inside one machine or across several. Tempo on the FM9 allows for both internal and external synchronization, providing effects with a central BPM clock that can either work standalone or chase incoming MIDI Clock from 5-pin or USB. The FM9 does not transmit MIDI Clock. The Tempo can be set to any whole number value in the range 20–250 BPM. The FM9 flashes its current tempo on a front-panel LED and any footswitch assigned to Tempo.

THE GLOBAL TEMPO

The **Global Tempo** is a system setting outside of any presets, scenes or channels.
You can change it in any of several ways:

1. Tap any onboard or FC footswitch assigned to the **Utility: Tempo** function.
2. Tap two or more times on the front panel **TEMPO** button.
3. Tap the **TEMPO** button once and use the **Tempo** knob (**B**).
4. Use an external MIDI device to transmit **MIDI Clock** to the FM9 over 5-pin or USB.
5. Use a MIDI CC# or external switch assigned to **Tempo Tap**.
   Find this assignment in **Setup: MIDI Remote: Other.**

Be aware that whenever you change the Global Tempo, you are also changing the current Preset Tempo, which will be saved if you store the current preset (see below). Be on guard not to over-write saved tempos.

TIP: By default, Tap Tempo uses an "AVERAGE" of ten taps, which is forgiving but gradual. You can change this so it uses only the "LAST TWO" — a more abrupt but precise method.
Find this Tap Tempo option under **SETUP: Global Settings: Config: Tap Tempo.**

PRESET TEMPO

By default, a given preset will *ignore* the Global Tempo and use its own saved **Preset Tempo** instead. Tap the top panel tempo button (not a footswitch) and notice that a preset's **Tempo** page contains two parameters: one is an actual **Tempo** (BPM) value, and the other is a setting called **Tempo To Use**, which determines what happens whenever that preset is loaded.

When you load a preset whose **Tempo To Use** is "PRESET," the saved **Preset Tempo** takes over: the tempo display updates and all tempo-dependent time/rate parameters are recalculated. In fact the Global Tempo has not changed; it remains in the background and will be used when you load a different preset with **Tempo to Use** set to "GLOBAL".

NOTE: Be aware that whenever you manually change a preset Tempo, you are also updating the Global Tempo.

Remember that each of the four channels of the **Controllers** block has its own settings for both **Tempo** (BPM) and **Tempo to Use**. You can use this to have some Scenes or Channels change the tempo while others do not.

TO SET "TEMPO TO USE"...

1. Load the preset.
2. Tap once on the **TEMPO** button.
3. Change **TEMPO TO USE** as desired to either "GLOBAL" or "PRESET".
4. STORE the preset.

SYNCHRONIZING SOUND PARAMETERS

Many rates and times on the FM9 can synchronized to the Tempo by setting their corresponding **Tempo** parameters. This is done by selecting from a list of values, ranging from 1/64-note-triplets to double whole notes, with 76+ options in all. For example, to set the **Time** of a Delay block to follow the quarter note pulse of the tempo, find the **Tempo** parameter on the **Config** page of the Delay block's **Edit** menu and set this value to "1/4."

The moment you assign a value for Tempo (other than "NONE"), its associated rate or time parameter is overridden and may not be changed manually — as indicated by its appearance in parentheses. To regain control of an overridden parameter, set its corresponding Tempo parameter back to "NONE".

TO SYNCHRONIZE A DELAY TO THE TEMPO...

- Navigate to any type of Delay block and press **EDIT** to show its Edit menu.
- Find the **Tempo** parameter and set it to "1/4". Feel free to choose/explore other options. "1/8th dot" is also very useful and popular. Note that some delay types have more than one Tempo parameter.
- STORE the preset.

Remember that once a **Tempo** has been set, you will be unable to adjust **Time** manually or with a Modifier.

TO SYNCHRONIZE A TREMOLO OR OTHER RATE TO THE TEMPO...

- Navigate to the effect and press **EDIT** to show its Edit menu.
- Find the **Tempo** parameter and set it as desired. A typical value here might be "1/8th" or "1/16th". Feel free to choose/explore other options.
- STORE the preset.

Remember that once a **Tempo** has been set, you will be unable to adjust **Rate** manually or with a Modifier.

Note that syncing an LFO to the tempo does not align the phase of that LFO to the Tempo LED, to MIDI song position pointer, or to other synchronized LFOs. You can synchronize various LFOs together by setting their RATE knobs fully counterclockwise to "LFO1 SYNC" and then syncing the **LFO1 Controller** to the **Tempo** (p. 67).

12 TUNER

The FM9 has a built-in Tuner—an essential tool for the performing or recording musician. The tuner is easy to use and has high-resolution automatic pitch detection, a calibration control, offsets for modified tuning schemes, and the option to mute audio while tuning. Find the Tuner on the **Home** page by pressing **TUNER** (Push-knob **A**) or on various foot switches in the footswitch layouts.

The tuner features a note name display, a “zero-center” meter, a spinning “strobe” type display and triangular indicators for sharp and flat.

ADVANCED TUNER FUNCTIONS

The actual tuner is on the **Tune** page of the **Tuner** menu.
The **Config** and **Offsets** pages provide options for advanced tuner functions.

Configuration Parameters

PARAMETER	Description.
Source	Selects which physical input the tuner should listen at.
Mute OFF/INPUT/OUTPUT	Determines how the tuner mute function works. ▪ OFF: No mute. All signal is passed as usual when the tuner is engaged. ▪ OUTPUT: The signal is muted at the output. Tails are silenced. ▪ INPUT: The signal is muted at the noise gate. Tails ring out.
Display Mode MIXED/ALL FLATS/ ALL SHARPS	Determines whether the tuner shows note names for accidentals as Sharps, Flats, or a mix of both.
Calibration 430.0 – 450.0 Hz	Calibrates the tuner by setting the frequency of A4 (in the octave above middle C). The tuner defaults to A440.
Downtune 0 – 4 Semitones	The Downtune control allows for simplified tuning when tuning down one to four semitones. The Tuner display will read the non-downtuned equivalent note, i.e. if tuning down two semitones, the D will still show E. While Downtune is set to any value other than None, any blocks that utilize pitch information will also be transposed accordingly.
Use Offsets OFF/ON	Determines whether the **Offset** settings (see below) are applied or ignored.

OFFSET PARAMETERS

PARAMETER	Description
E1, B2, G3, D4, A5, E6 +/- 25.00 Cts	Offsets allow the tuner to be calibrated so individual notes diverge from standard concert tuning by a defined amount. Use this for example for Buzz Feiten tuning.

MINI TUNERS

For convenience, mini-tuners appear throughout the FM9. These consist of two green triangles to indicate when a note is flat (left lit), sharp (right lit) or in tune (both lit). A small line helps display tuning progress.

FOOTSWITCH TUNER MODE

This option, which you can enable in **SETUP: FC Controllers: Config** uses the onboard LED rings of the FM9 to help you tune visually.

13 SETUP MENU

Open the menu by pressing the **SETUP** button (Push-knob **E**) on the **Home** page. The current **Firmware Version** is shown at the top of the page. To enter a menu, select it with **NAV** and press **ENTER**. All changes take effect immediately without needing to be stored. The settings for Setup parameters are included in a backup of the System (see "Backing Up & Restoring" on p. 103)

FC SETLISTS/SONGS MENU

"Setlists & Songs" on p. 110

FC CONTROLLERS/ONBOARD SWITCHES MENUS

FC: EZ PAGE

"Easy ("EZ") Edits" on p. 75

FC: DEVICES PAGE

"Startup Layout" on p. 79
See also "Mirroring" in the FC Controllers manual.

FC: LAYOUTS PAGE

"Edit a Layout" on p. 77

FC: RING COLORS PAGE

"Footswitches" on p. 9

FC: REMOTE PAGE

Covered in the Owner's Manual for the FC Controller

FC: STAND-IN SWITCHES PAGE

"Stand-In Switches" on p. 81

FC: CS MIDI

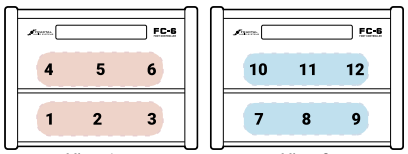
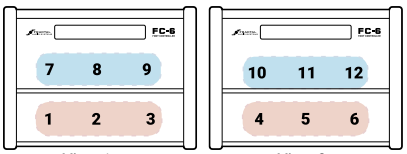
Covered in "Control Switches" in
"The Footswitch Functions Guide"

FC: RESET

Provides options to load factory layouts.

FC: CONFIG PAGE

PARAMETER	Description
Bank Size 1–12	"Preset in Bank" footswitch functions group presets into dynamic "Banks" whose size is set by this parameter. Factory Layouts set Bank Size automatically, but you can change it for use with custom layouts. Bank Size should typically correspond to the number of "Preset in Bank" switches in your layout(s).
Bank Switch Limits DISABLED, ENABLED	"Bank Inc/Dec" footswitches have "Upper Limit" and "Lower Limit" settings (detailed in "The Footswitch Functions Guide"). Setting Bank Switch Limits to DISABLD will cause such limits to be ignored, allowing access to ALL banks.
MLM Switch Combo ENABLED, DISABLED	The **Master Layout Menu** (aka "MLM", aka "Layout 9") provides access to other layouts. This setting disables or enables the special "foot rocking" switch combination used to display this menu on the FM9 and any connected FC controllers. See also "The Master Layout Menu" on p. 8.
Hold Function Timeout 0.25–2.00 seconds	This sets the time limit before a Hold function is automatically fired, beginning from the moment the switch is depressed. When a Hold function is assigned, a Tap function fires if the switch is released before the press and hold timeout elapses. See also "The Rules of Switch Timing" on p. 72.

PARAMETER	Description
Hold Function Mode AUTOMATIC, SWITCH UP	Normally, Hold functions fire automatically after a timeout (above). With this setting changed from AUTOMATIC to SWITCH UP, they wait for the switch to be released, granting precise control over the timing of a hold function. Now, you can use HOLD, for example, to change a Scene on the downbeat.
Per-Preset Overrides ENABLED, DISABLED	Any preset can **override** the function of any footswitch in any layout. This offers extreme flexibility, making it possible to handle exceptions in the global layouts. This allows you to globally DISABLE Per-Preset overrides to prevent 3rd party presets from taking over essential footswitches. See "The Footswitch Functions Guide" for more on per-preset functions.
Footswitch Tuner Mode ENABLED, DISABLED	Turn this feature ON to enable a special mode where the first three footswitches visually enhance the tuning process.
FC-6 Layout Mode	This changes how layouts are displayed on a connected FC-6. Normally, the FC-6 shows switches 1–6 from any layout — just as you would expect. If you design layouts on an FC-12 and then load them on an FC-6, however, this results in things being arranged differently, especially when Views are used. To counter this, you can enable FC-12 mode on the FC-6 (Formerly called "FC-6/FC-12 Compatibility Mode"), illustrated below: **FC-6 Default Mode**  View 1 View 2 **FC-6 in FC-12 Mode**  View 1 View 2
FC MAIN DISPLAY **Show Preset Numbers,** **Show Scene Numbers** ON/OFF	The main display of a connected FC controller shows the name and number of the current preset and current scene. These two options allows you to individually hide the numbers so a greater number of characters can be dedicated to the names. This has no effect except on a connected FC.
Main LCD Display Mode	Can be used to force a connected FC to show preset/scene names instead of Song/Section names when using the Setlist/Song feature.
Message Hold	This determines the duration for special footswitch messages to be shown in the main display of the FM9 or the display of a connected FC controller. Example: Effect BYPASSED or ENGAGED)
Ring Intensity Bright, **Ring Intensity Dim** 25–100%, 1–50%,	Each FC footswitch has its own LED ring. These rings change between off, dim, and bright to show switch states. The Ring Intensity parameters allow you to independently adjust the brightness of dim and bright states.
Mini-Display Contrast	This sets the contrast in the onboard mini-displays.
Mini-Display + Ring Brightness	This sets the master brightness of the onboard mini-displays and LED rings.
Invert Mini Displays	Turning this ON causes the mini displays to show light text on a dark background.
CS1 Exclusive, etc.	Six options allow you to add each of the six Control Switches to a mutually exclusive group. Any switch with Exclusivity enabled becomes a member of a group in which only ONE switch can be turned on at once. Turning any switch in the group ON will turn all others in the group OFF automatically. For more on Control Switches, see the **Footswitch Functions Guide** (p. 18)

THE GLOBAL SETTINGS MENU

☞ Reminder: You do not need to store settings in the **SETUP** menu. **EXIT** twice when finished.

GLOBAL SETTINGS: CONFIG PAGE

PARAMETER	Description
Output 1 EQ Type **Output 2 EQ Type** **Output 3 EQ Type**	These settings change the global EQs (p. 93) to Graphic EQ, Parametric EQ, or disabled.
Power Amp Modeling ON/OFF	This parameter globally disables power amp simulation in all Amp blocks in all presets. This can be useful when the FM9 is used with a guitar-oriented/tube power amp that contributes significantly to tone and dynamics. Having these characteristics applied twice to the sound—once in the virtual power amp and once in the real power amp—would result in an over-processed sound. All of the Amp block parameters that are NOT part of the virtual power amp continue to work normally while Power Amp Modeling is turned off. Presence and Depth are disabled, and Master Volume becomes a simple volume control. Remember that like a real amp, the FM9 has separate preamp and power amp sections. When you disable Power Amp Modeling, the Amp block still models the preamp, which includes distortion, the tone stack, and more. It is also possible to disable power amp modeling in an individual preset using a switch in the Amp block. See "The Fractal Audio Blocks Guide" for more information.
Cabinet Modeling ON/OFF	This parameter conveniently enables or disables Cab block processing in all presets. Globally disabling the Cabinet Modeling will not cause the Cab block to appear bypassed on the grid, but it will have no effect on the sound in any way.
Tone Control Display AUTHENTIC/IDEAL	This parameter governs the "Tone" page of the amp block. When set to "AUTHENTIC", (default) only those controls present on the actual amp are displayed. When set to "IDEAL", all tone controls are displayed. In Authentic mode, the Bass, Mid and Treble controls are reset to default values when changing models to ensure accuracy for models that may not have these controls.
Speaker Impedance Curve	Determines how the Speaker Impedance curve is set when changing **Type** (Amp Model) in the Amp Block. When set to "DEFAULT ", the usual matching impedance curve for the new Type is used. When any other value is set here, this type will be pre-selected whenever the Amp Type is changed.
Spillover OFF/DELAY/REVERB/BOTH	Allows delay and reverb “tails” to ring out or spill over across Preset changes. You can select whether “DELAY”, “REVERB”, or “BOTH” effects will spill over. Setting to “OFF” causes effect tails to be cleared upon preset change. Spillover when switching Scenes or using “IA” Switches is not affected by this parameter. See also "Spillover" on p. 121

PARAMETER	Description
Reverb Mix +/- 50%	This boosts or cuts the Mix for all Reverb blocks in all presets. Note that this offset is not reflected in the value shown for the actual Reverb Mix parameter. This feature is provided because certain dead or lively performance spaces may require more or less reverb across all presets. Remember that Mix generally applies only to Reverb blocks which are wired in *series*. Parallel reverbs typically require Mix to be at 100%.
Effects Mix +/- 50%	This boosts or cuts the Mix of all blocks in which the **Global Mix** switch is set to "ON". This switch must be enabled on a per-block/per-preset basis and is available on the Mix page of the Edit menu for the following blocks: **Chorus** **Formant** **Pitch** **Ring Mod** **Delay** **Multitap Delay** **Plex Delay** **Rotary** **Flanger** **Phaser** **Reverb** **Ten-Tap Delay** This feature is provided because certain performance spaces may require more or less of certain effects across all presets.
Noisegate Offset +/- 40.00 dB	Globally raises or lowers the THRESHOLD of the Noise Gate for all Input blocks. If the THRESHOLD for a given preset is set to "OFF", the global Offset will have no effect. See "The Fractal Audio Blocks Guide" for more on the noise gate.
Prompt on Edited Preset Change OFF/ON	When set to ON the unit will prompt before changing an edited preset. This may save you from accidentally losing your edits. NOTE: Be sure to change this to OFF before performing!
Indicate Edited on Scene Change OFF/ON	This determines whether or not the EDITED top panel LED (and corresponding graphic in the editor) is triggered by Scene changes or not. Even if the LED is disabled, the current scene will still be saved whenever you store a preset.
Display Offset 0, 1	(Also appears in the MIDI/Remote menu) Causes presets numbers to begin at 001 instead of 000. This only offsets the display, meaning that it does not change which preset is actually loaded by a given footswitch or MIDI message.
Default Scene AS SAVED, SCENES 1–8	When set to "As Saved" the scene selected when recalling a preset is the scene that was active when the preset was last saved. When set to a particular scene value that scene will always be selected when any preset is recalled.
Tap Tempo AVERAGE, LAST TWO	Determines how the tempo changes when tapping the front panel TEMPO button or an external tap tempo controller (see p. 100). "AVERAGE" sets the tempo based on the average of ten taps, meaning taps are more forgiving but changes are more gradual. "LAST TWO" considers only the time interval between the last two taps, which means taps must be more precise but changes occur more quickly.
Value Knob Push Function	By default, pushing the main "VALUE" knob shows the layout grid. To disable this feature, change the setting of this parameter to "NONE".
AC Line Frequency	The Noise Gate in the **Input Block** uses smart EMI filtering to reduce hum and buzz. For this to work correctly, you must set this parameter to match the power line frequency of your country (i.e. 60 Hz for North America, 50 Hz for EU, etc.).

GLOBAL SETTINGS: OUT 1, OUT 2, OUT 3 EQ PAGES

Each of the main output pairs passes through its own global equalizer, with the option for Graphic, Parametric, or disabled (p. 91). Each EQ also features a master LEVEL adjustment control**.** Use the global EQs to make adjustments to the tone or level of ALL presets. This is convenient when you need to compensate for using a different amp or speakers, or if a particular performance space is overly bright or boomy. The master LEVEL fader should be used with care as it can cause clipping or sub-optimal signal-to-noise ratio. **Global EQ** settings apply to all instances of the analog signal, including the balanced jacks, unbalanced jacks, and headphones jack, but NOT signals routed to USB or digital outs.

GLOBAL SETTINGS: CUSTOM SCALES PAGE

The **Scales** page is used to configure scales for the **Custom Shifter** type in the **Pitch** block.

See "The Fractal Audio Blocks Guide" for more on this effect.

Scales can also be edited, exported, and imported in the Setup area of FM9-Edit.

PARAMETER	Description
Custom Scale Number 1–32	Selects from among the 32 global custom scales available to edit using the 12 parameters which follow.
___ SHIFT (+/- 24)	These 12 parameters are used to set the shift amount for each of the 12 steps of the chromatic scale. Range is +/-24 semitones (+/- two octaves). To set up a custom scale, select its number in the field above and then set each of the 12 pitch values as desired. Changes take effect immediately, with no need to STORE. Soft-buttons provide options to reset a selected value or all values in the current scale to the default value of +/- 0 semitones.

THE I/O MENU

☞ Reminder: You do not need to store settings in the **SETUP** menu. **EXIT** twice when finished.

I/O: INPUT PAGE

The **Input** page of the **I/O** menu contains three parameters that scale the input to the A/D converters: **Input 1/Instrument Level, Input 2 Level, and Input 3 Level.**

Remember that, except at very low settings (5% or less), input level adjustments do not affect gain levels or what you hear. This is because as you adjust the level to the input of the A/D converter, the output of the converter compensates accordingly, so your guitar signal level remains exactly the same when it reaches the grid and any virtual amps or effects.

The global **Input 1 Gain** control adjusts the gain globally for **In 1/Instrument**. Use this, for example, to compensate for a lower output guitar. This adjustment happens prior to the IN 1 **Gate**. The default is 1.000.

I/O: AUDIO PAGE

PARAMETER	Description
Word Clock INTERNAL SPDIF IN	This selects the clock source for the A/D and D/A converters as follows: “INTERNAL”: uses the internal clock. “SPDIF IN”: uses the clock from the current digital input. A valid 48 kHz data stream must be present at the SPDIF input for the FM9 to operate properly.
Digital Input Source	Sets the digital input signal to SPDIF, or USB Channels 5/6. See "Input Source" parameters, below, for more on this.
SPDIF Out Source Output 1 or 2, Input 1, USB 7/8	This allows you to specify which signal should be transmitted at the SPDIF digital output. Options include Output 1, Output 2, Input 1 or USB 7,8. See "Digital Output Sources" on p. 117 for details.
USB 7,8 Record Source Input 2, Input 3	This determines whether USB 7,8 inputs of the host will record the signal from FM9 Input 2 or Input 3.
USB Output Mapping	Determines whether the first two pairs of computer USB audio playback outputs are mapped to Out 1 L+R and Out 2 L+R (in that order) or vice versa.
USB Buffer Size 8–256	Set this to lower values for less latency with USB Audio, set to higher values if you are experiencing distorted audio. Stop USB audio streaming when changing this value so as to allow the buffer to reset properly. Streaming can be stopped by closing the application sending data to the FM9 or by disconnecting the USB cable.
Input Source (1, 2, 3) ANALOG, DIGITAL	These three settings determine whether each input grid block is fed by the corresponding analog input jacks, or by the current digital input source (see above). See "Digital Output Sources" on p. 117 for details.
Input 2 Mode **Input 3 Mode** STEREO LEFT ONLY RIGHT ONLY SUM L+R	These settings determines globally how the FM9 handles signals received at the Input 2 or Input 3 jacks, determining whether they should be processed in stereo or mono—and, if mono, how. The outputs of a connected device and the nature of the source material will determine which setting is best. It is important that you choose the setting which corresponds to your actual physical connections. Setting an input to “STEREO” and then not connecting one of the two jacks will result in reduced levels.

PARAMETER	Description
Output 1 Mode **Output 2 Mode** **Output 3 Mode** STEREO, SUM L+R COPY L>R	These parameters determine how signals at the corresponding outputs will be processed. This control makes it easy to use the same presets in a variety of stereo and mono performance or recording environments. The decision between the mono options “SUM L+R” or “COPY L>R” should be based on the source material. See "Mono vs. Stereo" on p. 6 for more information on these options. USB Audio goes directly to the converters and is NOT affected by this setting.
Output 1 Level **Output 2 Level** -10dBV +4 dBu	These parameters set the nominal levels of their respective outputs. Use “-10 dBV” for consumer-grade equipment including many guitar products. Use “+4 dBu“ with professional audio equipment. The product manual for your connected device should indicate whether it operates at +4 dBu or -10 dBV (Default). (Some devices are switchable.) USB Audio levels are affected by this setting.
Output 1 Phase **Output 2 Phase** **Output 3 Phase** NORMAL, INVERT	These parameters determine whether signal at the corresponding outputs will be normal or phase-inverted. This lets you compensate for unwanted inversions elsewhere in the signal chain.
Output 3 Boost/Pad 0, 6, 12, or 18dB	This engages a boost/pad combination which can help lower the noise floor of Output 3. This can be useful when connecting to a "gainy" tube amp or modeler, where even a low noise floor can be greatly amplified. Boost/Pad helps optimize D/A performance without affecting levels, since a boost at the converter’s input is paired with a corresponding cut at its output. Be watchful, however, as boosting makes it easier to clip the converters. Watch the meters and if clipping occurs, reduce levels within your preset or turn this setting down.
Output 2 | Copy Output 1 OFF/ON	Enabling this option creates a copy of the Output 1 signal at Output 2. Use this for the convenience of having an extra copy of the Output 1 mix with separate front panel level control—without the need to insert an additional output block. This setting does NOT copy USB audio, and only works when the Output 2 block is NOT present on the grid for the current preset!
Output 3 | Copy Input 1 OFF, ON	Enabling this option creates a copy of the Input 1 signal at Output 3. Use this for the convenience of having an extra copy of Input 1 or to create an analog DI. This setting only works when the Output 3 block is NOT present on the grid for the current preset.

I/O: USB PAGE

The **USB** page of the **I/O** menu contains parameters to adjust the levels of USB inputs.

USB 1/2, 3/4, 5/6, 7/8 – These parameters adjust USB playback levels from -40 to +20 dB. Normally you would set computer audio playback levels in the computer, but these controls are handy when you need a boost or cut.

SPDIF – This scales levels at the SPDIF input.

I/O: PEDAL PAGE

The **Pedal** page of the **I/O** menu contains parameters to set up expression pedals or switches at the Pedal jacks on the rear panel of the FM9. Expression pedals should have a linear resistance taper and max resistance of 10kΩ to 100kΩ. Fractal Audio Systems EV-1 and EV-2 expression pedals are recommended. An external switch can also be used, as long as its contacts make and break the connection between tip and sleeve. A regular 1/4" guitar cable can be used with switches. Expression pedals must be used with Tip-Ring-Sleeve (TRS) cables. See "Expression Pedals" on p. 10 for more.

PARAMETER	Description
Pedal # Type EXPRESSION SWITCH	Set this according to whether you are connecting an expression pedal or an external footswitch.
Calibrate PEDAL #	Calibrate expression pedals connected to an onboard Pedal jack. First select this menu choice, then: ▸ Press **ENTER**. ▸ Move the pedal through its full range of motion several times. ▸ Press **ENTER** again when finished. Switches, unlike pedals, do not need to be calibrated.
Switch Polarity OPEN (Momentary Make) CLOSED (Momentary Break)	Match the setting for any switch to the type of switch connected.
Switch Behavior FOLLOW HARDWARE VIRTUAL TOGGLE	This determines how a connected switch interacts with the FM9. Use the "virtual toggle" setting to cause a connected momentary switch to behave like a latching/toggle switch. See also "External Switches" on p. 12

THE MIDI/REMOTE MENU

The **MIDI/Remote** menu contains global MIDI-related settings, and allows you to make assignments for Global Controller functions including Block Bypass, Block Channels, Looper, External Controllers, and more.

☞ Reminder: You do not need to store settings in the **SETUP** menu. **EXIT** twice when finished.

LEARN MODE

The MIDI Remote menu features a hidden **Learn Mode** function for controller assignments. Rather than using the knobs to assign a pedal, switch, or MIDI CC, you can use Learn Mode. This is quick and also potentially saves you from needing to know which MIDI CC is assigned to a button or pedal on a remote device. Here's how it works:

Navigate to the entry you want to assign: for example, "External Control 1" or "Tempo Tap".

1. Press **ENTER** to activate **Learn Mode**.
2. Move the remote pedal, knob, switch, etc. so Learn Mode can detect its activity.
3. The controller will be assigned automatically to your function.
   If not, try again, troubleshooting the remote device as necesary, or press Exit to cancel.

MIDI/REMOTE: GENERAL PAGE

PARAMETER	Description
MIDI Channel 1–16, OMNI	Sets the channel on which the FM9 will receive MIDI messages. “OMNI” causes the unit to respond to incoming messages on *any* channel.
MIDI Thru Off, On	This enables or disables MIDI thru, which causes messages received at the 5-pin MIDI In port to be merged with any internally generated MIDI and forwarded to the MIDI Out/Thru port.
Display Offset 0, 1	(Also appears in the **Global** menu) Causes presets numbers to begin at 001 instead of 000. This only offsets the display, meaning that it does not change which preset is actually loaded by a given footswitch or MIDI message.
Scene Revert ON/OFF	Selects between two different ways for scenes to work when you change them via a Footswitch or MIDI: “OFF” (Default): Scene edits are RETAINED across Scene changes as long as you do not change PRESETS. So if you tweak Scene 1, switch to Scene 2, then switch back to Scene 1, your tweaks will still be intact. “ON”: Scene edits are LOST if you change the Scene without saving. So if you tweak Scene 1, switch to Scene 2, then back to Scene 1, Scene 1 will have reverted to its previously saved state. This makes Scene changes feel more like traditional preset changes. See also "Scene Revert" on p. 55
Effect Bypass Mode VALUE/TOGGLE	This setting determines how MIDI messages set the Bypass State of a block. When set to “Value” the bypass state is controlled by the CC value (0–63=OFF, 64–127=ON). When set to “Toggle” the bypass state toggles whenever the CC message is received, regardless of the value (0–127).
Send Realtime Sysex	Causes the FM9 to transmit MIDI messages for Tap Tempo and Tuner so a 3rd party MIDI controller can display this information.

PARAMETER	Description
Program Change ON/OFF	Determines whether the FM9 will process or ignore incoming MIDI Program Change messages.
Ignore Redundant PC ON/OFF	This setting determines whether the FM9 should ignore an incoming PC message that would reload the current preset. With this setting “OFF”, a preset will be reloaded and all changes discarded. This allows you, for instance, to load a preset, use various “Instant Access” switches to bypass effects, and then reload the preset to have it revert to its saved state. With this setting “ON”, redundant PC messages are ignored. When PC mapping is used, if the current Scene has changed, the preset will not reload but the Scene will still change back to the scene that is set in the map.
Send MIDI PC 1–16 OMNI OFF	Determines whether or not the FM9 will automatically transmit a MIDI Program Change message at its MIDI OUT port when a new preset is loaded. This is the easiest way for most people to operate a single connected MIDI device while changing presets on the FM9. Any custom MIDI mapping is left to the downstream device. To use this feature you simply select which channel you want the message to be transmitted on. The “OMNI” setting transmits the message on *all* channels.
MIDI PC Offset	Adds a specified value to all incoming MIDI Program Change requests before they are processed. This makes it possible, for instance, to address alternate presets in different “registers.” You might use the same MIDI messages to access presets 1–16 for a gig with one guitar, and —by specifying an offset of +16— use presets 17–32 for a different guitar without reprogramming your controller.
PC Mapping	PC Mapping determines whether incoming MIDI Program Change messages load presets 1-for-1, or load other presets and scenes instead. With PC Mapping turned “OFF”, presets are loaded 1:1 based on incoming MIDI bank Select and Program Change messages. With custom PC Mapping enabled, incoming Program Change messages are remapped according to the values in the table on the Custom page of the MIDI/Remote menu (see below).
INITIAL VALUE: External Control 1–16	These sixteen parameters specify the initial value to be used for each of the 16 External Controllers (p. 69) when the FM9 is powered on. This value persists until data is received from the MIDI controller. This is especially useful when an external MIDI controller is absent. For example, if you normally use an expression pedal to control the volume in your presets, a missing pedal might make the preset get “stuck” in a muted position. Setting an initial value of 100% for the External Controller mapped to that pedal would ensure that when the pedal is not connected, the volume will stay at 100% instead of 0%. This setting is only for controllers with a MIDI CC# assignment. It does not apply to local or FC pedals or switches.

MIDI/REMOTE: MAPPING PAGE

With PC Mapping(previous page) set to ENABLED, incoming Program Change messages are remapped according to the values in the table in this section.

PARAMETER	Description
Map to Preset **Map to Scene**	When PC Mapping is turned “ON”, the parameters in this table specify which preset and scene are loaded for each incoming MIDI PC message. See also "Program Change Mapping" on p. 53

MIDI/REMOTE: BYPASS PAGE

The **Bypass** page of the **MIDI** menu allows you to map MIDI CC messages—or connected pedals and switches—to bypass or engage blocks. CC messages can be sent by a MIDI controller or computer connected to the MIDI IN jack. Each of these settings is global. In every case, the method for mapping a controller to one of these functions is the same:

1. Use the **NAV** knob to select the desired function.
2. Use the **VALUE** knob to assign a controller to the function:

- Select "NONE" to remove all assignments from the selected item.
- **PEDAL 1, 2, 3** - for an expression pedal or a switch connected at the corresponding jack.
- **FC__ PEDAL 1–4** to assign a pedal connected to the corresponding **pedal** jack of the designated FC controller.
- **FC__ SW 1–4** to assign a switch connected to the corresponding **switch** jack of the designated FC controller.
- **1—127** to assign a MIDI CC#.

MIDI/REMOTE: CHANNEL PAGE

The **Channel** page works exactly like the **Bypass** page except the entries are used to set the Channel of each block instead of its bypass state. The *value* of the CC message sets the channel as follows:

0 = Channel A 1 = Channel B 2 = Channel C 3 = Channel D

The series continues, repeating A, B, C, D for values up to 127 (D).
For additional information, see "Selecting Scenes & Channels While Playing" on p. 52

MIDI/REMOTE: EXTERNAL PAGE

Controller assignments for the sixteen **External Controllers** used in Modifiers (See Section 9: Modifiers).

MIDI/REMOTE: LOOPER PAGE

Controller assignments for the functions of the Looper.

MIDI/REMOTE: OTHER PAGE

Controller assignments for various other functions of the FM9.

PARAMETER	Description
Tempo Tap	Provides the ability to tap the tempo using an external controller. Learn more in Section 11: Tempo.
Tuner	Use this to remotely enter or exit the Tuner. See Section 12: Tuner.
Tuner on Heel Down	This causes a controller such as an expression pedal to automatically display the tuner when the value of the controller is less than 5%. This allows the tuner to be activated, for example, whenever a volume pedal is pulled all the way back.
Preset Inc/Dec **Preset Inc/Dec Start/Stop**	These allow you to step up or down through a sequence of presets with pre-defined start and end points. Preset mapping and offsets are ignored. Don't confuse this with the Preset Inc/Dec function of the FM9's onboard footswitches. This setting is used only for changing presets via MIDI.
Scene Select	This assigns a controller for the selection of specific Scenes. The controller *value* (NOT the CC number) determines which Scene is loaded: **0** = Scene 1 **2** = Scene 3 **4** = Scene 5 **6** = Scene 7 **1** = Scene 2 **3** = Scene 4 **5** = Scene 6 **7** = Scene 8 The series continues, cycling through scenes 1–8 for values up to 127 (Scene 8). For more, see "Selecting Scenes & Channels While Playing" on p. 52
Scene Increment **Scene Decrement**	The Scene Increment and Decrement functions allow you to step up or down through scenes. These functions are triggered by CC data values above 63.
Input 1,2,3 Volume **Output 1,2,3 Volume**	These parameters allow you to globally control the levels of the corresponding Input or Output blocks.
Output 1 Volume Increment, **Output 1 Volume Decrement,** **Output 2 Volume Increment,** **Output 2 Volume Decrement**	These options provide a convenient way to permanently increase or decrease the MAIN output volume for the Out 1 or Out 2 Blocks in the currently loaded preset. Each time **Volume Increment** is triggered, the MAIN is increased by 1.0 dB and the preset is saved. This is the same for **Volume Decrement**, except it decreases volume. ⚠ IMPORTANT! Any unsaved changes such as altered effect parameters or bypass states will also be stored when either of these functions is triggered! ⚠ These functions are designed for use with momentary footswitches set up to send a CC# value of 127 for “ON” and 0 for “OFF.” Do not use an expression pedal or you may change levels +/-20 dB with a single sweep!

THE UTILITIES MENU

UTILITIES: DISPLAY PAGE

Provides a slider to adjust contrast/viewing angle for the built-in LCD display.

UTILITIES: ADC LEVELS PAGE

Shows Analog-to-Digital Converter levels for the front panel Level knobs and rear panel Expression jacks for troubleshooting. You can set the output level here at an exact percentage. The internal temperatures are also displayed.

UTILITIES: RESET PAGE

This page provides a tool to set parameters in the **SETUP** menu back to factory default values.

Reset system parameters is one of the first steps of troubleshooting. It never deletes or modifies your presets but it DOES clear all footswitch layouts. You will be prompted to press ENTER to confirm.

Be very careful with this option. Resetting system parameters is irreversible!

A utility provides the ability to **Clear all Presets.** You will be prompted to press ENTER to confirm.

Be very careful with this option. Erasing presets is irreversible!

A utility provides the ability to **Clear all User Cabs.** You will be prompted to press ENTER to confirm.

Be very careful with this option. Erasing cabs is irreversible!

UTILITIES: USB

Two meters show USB buffer levels, used for troubleshooting.

UTILITIES: VERSION PAGE

This page indicates which firmware version the FM9 is running.

USB firmware version is also shown.

This page is left blank to preserve facing in the printed manual.

14 ADDITIONAL TOPICS

FRACTAL-BOT

Fractal-Bot is required for **Updating Firmware** (p. 104) and can also be used for **Backing up and Restoring** sounds and settings (below), **Transmitting Presets,** and **Installing User Cabs** (p. 108). FM9-Edit also covers these latter functions.

Fractal-Bot is self-explanatory and has instructions built in.

Windows users will need to install a driver to enable USB communications.
The Windows driver is available at https://www.fractalaudio.com/FM9-downloads/

Computers running OS X do not require a driver.

Fractal-Bot is built in to FM9 Edit: https://www.fractalaudio.com/fm9-edit
A standalone version is also available on our web site at https://www.fractalaudio.com/fractal-bot

BACKING UP & RESTORING

It is strongly recommended that you back up your FM9 regularly. Fractal-Bot makes it very easy to do this.

BACKING UP

Fractal-Bot automates the backup process. Select the **RECEIVE** tab and follow the built-in instructions. Here are some things to consider when using Fractal-Bot:

- The FM9 itself doesn't make a clear distinction, but its **Presets** are actually divided into banks of 128. To backup all of your presets, backup all of the banks: **A** (0–127), **B** (128-255), **C** (265–383) and **D** (384–511).
- A backup of the **SYSTEM** includes all of the custom settings in the **SETUP** menu: **FC Controllers, Global**, **I/O**, **MIDI/Remote**, and **Tuner** settings.
- **User Cabs** are backed up in one bank.
- In Fractal-Bot, you will need to specify a location for the backup files. It is wise to prepare this in advance. We recommend a consistent naming system for backup folders: "**yymmdd - FM9**" (two digit year, two digit month, two digit day). In addition to the backup files, a text file stating which firmware version was installed when the backups were created can be helpful in case you forget.

RESTORING

Fractal-Bot is also used to restore backup files to your FM9. The process is less automated but still very easy. Simply send each of the files from your backup set one by one. When the first file completes, send the next file, and so on, until all files have been sent. Remember to **reboot** the FM9 after the **System** file has been sent to it. (Fractal-Bot will remind you.)

You can use the same process to install presets or cab files you download.

MIDI

On the FM9, backing up is not supported over 5-pin MIDI. You can try to restore files to the unit this way, but because the transfer rate is so slow, this can take a long time and is not recommended.

FIRMWARE UPDATES

Fractal Audio Systems products are upgradeable, and we use this capability to deliver continual improvements. Our highly anticipated updates add new amps, cabs, effects, features, fixes, and more. We recommend keeping the firmware in your FM9 up to date as new versions are released. Firmware is technically software — the "operating system" of your FM9 — tracked using version numbers: 1.00, 1.01, 2.00, etc. Every FM9 is shipped from the factory with the latest version installed. You can check your version any time by pressing the **SETUP** button (Push-knob **E**) on the **Home** page. The version is displayed at the top left of the **SETUP** menu.

UPDATING

Updating is safe, easy, and quick with Fractal-Bot (see previous page). Use the version built in to FM9-Edit or quit FM9-Edit before using Fractal-Bot standalone. Quit any other applications which might interfere, including any DAW software or audio/MIDI applications.

1. **Download** the latest firmware from https://www.fractalaudio.com/FM9-downloads/
2. **Unzip** the download file. The archive may contain various documents in addition to the actual firmware—a MIDI System Exclusive or "SysEx" file. Unzip the **.syx** file where you can easily find it (Desktop? Downloads?). **Do not double-click the .syx file**. Fractal-Bot will prompt when it is needed.
3. Read the **Release Notes** included with the firmware download. They'll let you know what's new and alert you to anything you may need to be know before updating to the new version.
4. Before performing a major firmware update, it is recommended to **back up** your FM9 (see previous page).
5. Launch **Fractal-Bot** and proceed through the self-explanatory steps.
6. Firmware updates will occasionally be accompanied by new versions of the FM9 Factory Presets. These will be available on our web site support page and can also be installed using Fractal-Bot.

FIRMWARE Q&A

Q: How do I know the upgrade worked?

A: Check your firmware version anytime by pressing the **SETUP** button (Push-knob **E**) on the **Home** page. The version is displayed at the top of the **SETUP** menu.

Q: Can I skip versions to go from a very old firmware version to a much newer one?

A: Yes, you can upgrade from any version to any other version. When you skip versions it is recommended that you also read the Release Notes for all interim versions, all of which are included with every firmware release.

Q: Will updating my firmware erase, modify or upgrade my presets?

A: Firmware updates do not erase customized presets. However, firmware updates may alter the sound of existing presets. Always read Release Notes before updating.

- Saving presets after a firmware update can render them incompatible with previous versions
- We sometimes also update the factory presets. These are released as a separate update on our web site .

Q: The firmware update failed mysteriously. What should I do?

A: If the FM9 still boots normally, just try the update again. If successive failures occur, please delete and re-download the update file before trying again. Trying a different USB port or cable can also solve issues.

Q: After updating, my FM9 will no longer boot normally.

A: Don't worry: see "Recovery" on the next page.

RECOVERY

PROBLEMS DURING/AFTER FIRMWARE UPDATE

The FM9 has a built-in recovery system known as the “Emergency Boot Loader” to protect you against mishaps during firmware update. To boot from the emergency boot loader:

1. Power down the unit and wait five seconds.
2. Power on holding **both** **PAGE LEFT** and **PAGE RIGHT** buttons until the **Emergency Utility** page appears.
3. Update as you normally would using **Fractal-Bot**.

PROBLEMS WITH A SINGLE PRESET

If your FM9 will not boot normally, the problem may be just the current preset.
You can force the unit to load an empty initialized preset as follows:

1. Power down the unit and wait five seconds.
2. Power on holding **HOME** until the boot-up progress bar first appears.

The FM9 will boot with an empty initialized preset in location “000”. You can STORE this to any other location to overwrite a problematic preset.

PROBLEMS WITH GLOBAL SETTINGS OR PARAMETERS

It is very unlikely that System Parameters could prevent the FM9 from booting normally, but the following process is provided to allow you to perform Reset System Parameters without using the SETUP: Reset page.

1. Power off the unit and wait five seconds.
2. Power on holding **EDIT** until the boot-up progress bar first appears.

You can hold both **HOME** and **EDIT** at the same time to reset the current preset *and* reset System Parameters.

GETTING HELP

Our forum is a source of great advice ranging from product Q&A to tutorials and more. Fractal Audio staff participate in the conversations, and response times can be very fast. Find it at https://forum.fractalaudio.com

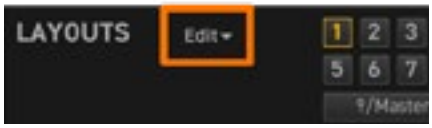
Our wiki, maintained by members of the Fractal Audio community, is also an excellent resource: https://wiki.fractalaudio.com

You can get support directly from Fractal Audio Systems at: https://support.fractalaudio.com
or internationally via our dealers listed at https://www.fractalaudio.com/international-ordering.

OPTIONAL OFM9G LAYOUTS

Many who use the Fractal Audio **FM3** with an FC-6 enjoy a special set of custom layouts cheekily called "**OMG9**". We created a special FM9 version of this system called "OFM9G" and it can be installed using these simple steps.

Loading OFM9G will overwrite your current footswitch layouts. If you're using the Factory Default layouts, those can be reinstalled easily using using **SETUP: FC Controllers: Reset**. If you are using customized layouts, you can back them up by choosing "Export All Layouts" in FM9-Edit.



AUTOMATIC INSTALLATION

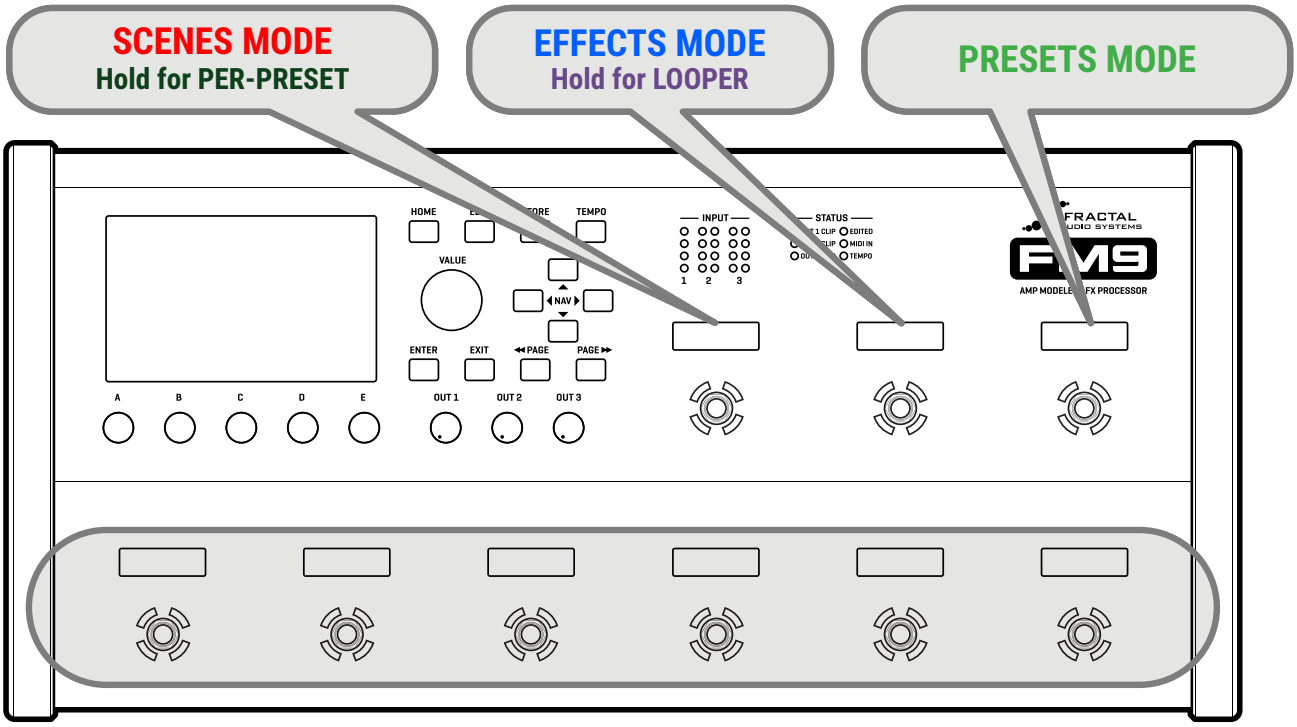
On the FM9, select **SETUP: FC Controllers: Reset: Load "OFMG9" Footswitch Layouts Layouts & Settings**

THE BASIC IDEA

The basic idea behind the OMG9 and this FM9 version is that the footswitches are divided into two "zones." In OFM9G, the top three footswitches are used to change the functions of the bottom six footswitches. The Master Layout Menu is not used: OFMG9 is entirely self-contained. Despite all of its power, it is very simple to use. There are almost no "press and hold" functions, so there's less to remember, and sound changes fire on the switch "downstroke" for tight musical timing. The use of color reduces the need to read. In other words, this is a setup for those who live by the dictum, "Don't make me think!"

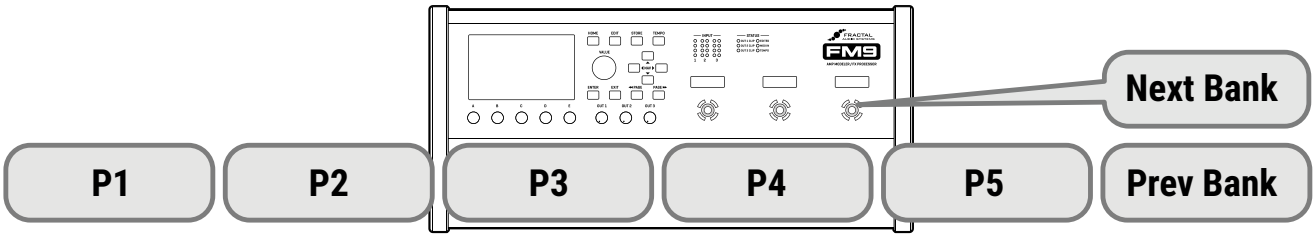
The basic idea is illustrated below, and individual layouts used are shown on the next page.

Press THESE three switches...

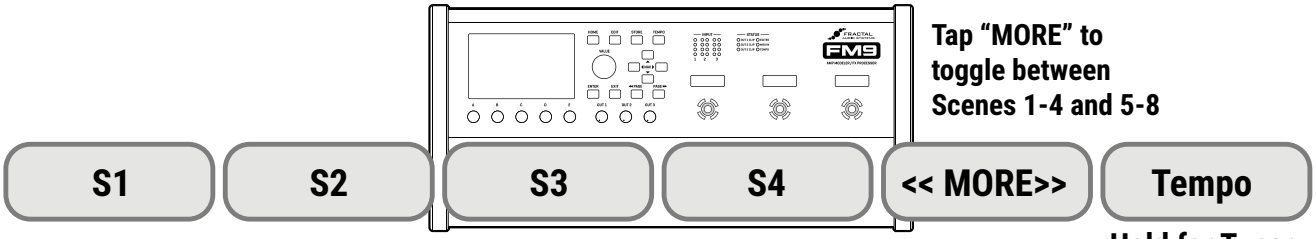


...to change what THESE six switches do.

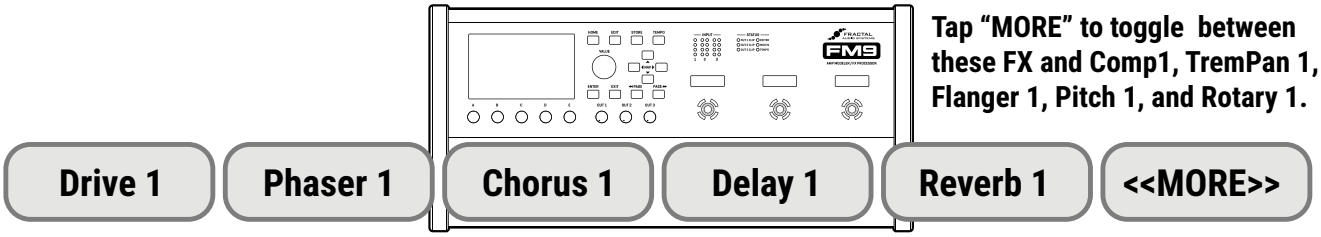
PRESETS MODE



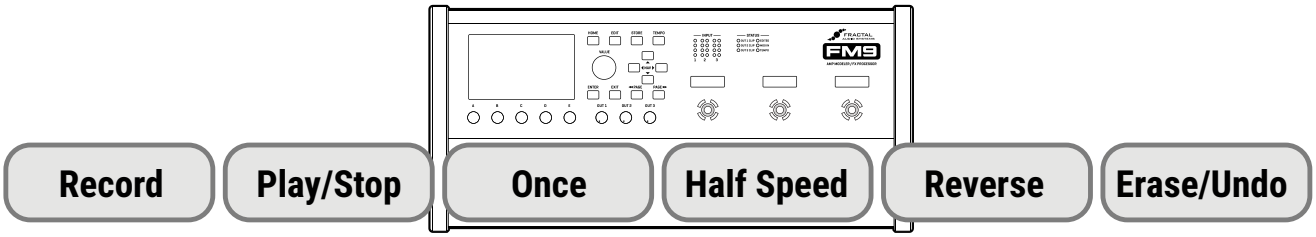
SCENES MODE



EFFECTS MODE



LOOPER MODE



PER-PRESET MODE

In Per-Preset Mode, the six bottom switches are “Per-Preset Placeholders” for PP#1—PP#6 with both tap and hold.

LOADING USER CABS

In addition to thousands of onboard cabs preloaded in its factory banks, the FM9 allows you to store up to 1,024 cab Impulse Responses (“IRs”) in user memories. “User Cabs” allow you to personalize your FM9 with custom tones. They can be transferred to the FM9 easily:

1. First, you’ll need an impulse response file in SysEx format (.syx). FM9-Edit can also load .wav and .ir formats.
   - Fractal Audio Systems offers various professional Cab Packs at https://shop.fractalaudio.com
     These include creations by Fractal Audio as well as third-party producers.
   - Axe-Change, our file sharing site, is a great resource for FREE cabs. https://axechange.fractalaudio.com
2. Using **Fractal-Bot** or **FM9-Edit**, transmit the file to your FM9.
   - **Fractal-Bot** – This basic utility can send individual SysEx files or entire Cab Banks. To transmit a file IR, Launch Fractal-Bot and make sure the FM9 is the selected device. Then Browse to the file and click “Begin”. For single IRs, Cab-Lab will ask you to select a User location by its number.
   - **FM9-Edit -** The easiest way to import a single IR is to click the Cab block, select a user location, and then drag and drop your cab file to the name field (the green “<empty>” text or the green or violet name of an existing User Cab if you want to overwrite one).
   - FM9-Edit also has a tool called **Manage Cabs.** This allows you to drag and drop user cab files one at a time or in bulk to numbered memory slots. You can also manage entries already in the memory of the FM9 with operations like copy, paste, rename, and drag-and-drop reordering. When you purchase a Cab Pack, this is the best and easiest way to load multiple IRs at once into your FM9, audition the results, and organize your favorites. When you finish importing or rearranging, press the “Save” button to commit your changes.
3. To select a user cab, click the Cab block in FM9-Edit and use the “Picker” to select it. You can also load User IRs from the front panel of the FM9 by selecting the Cab block on the grid, pressing EDIT, changing to the “Cabs” menu page, selecting the User bank and choosing the desired IR.

NOTE: In comparison to older Fractal Audio systems products, user cabs are NOT included in a backup of the SYSTEM area of the FM9. This also means that restoring a System backup will never overwrite user cabs.

Cab-Lab is a full-featured 8-channel IR mixer and toolbox in standalone and plug-in formats.

For decades, artists, producers and engineers have created tones using a mixer to blend the sounds of different mics or speakers. While the FM9 provides two mixer slots, Cab-Lab has EIGHT, and has additional options and tools, with the ability to export Cab files and save mix sessions.

Learn more at:

www.fractalaudio.com/cab-lab-3

AXE-CHANGE

Axe-Change is the official source for sharing or downloading shared Preset and Cab files for Fractal Audio Systems products. You can upload your own FM9 presets or browse what others have contributed including some high profile artists. Axe-Change is also a great source for free Cabs!

Find Axe-Change at https://axechange.fractalaudio.com

SETLISTS & SONGS

INTRODUCTION

Firmware 3.0 added this exciting new feature to the FM9. In the world of musical performance, a “Setlist” is a list of songs to be performed in order. A setlist creates the structure for a show, letting you plan ahead how to start strong, avoid lulls, and finish memorably. A setlist also helps band members (and crew/techs) to be ready instead of asking questions or struggling with settings on the fly. A short “singer/songwriter” Setlist might contain 4 songs. A typical modern rock/pop concert setlist might have from 12-25 entries. A working cover band might play four different sets covering a total of 100+ songs.

The Fractal Audio Setlist/Song feature provides a way to prepare an ordered **Setlist** of named **Songs**. FC footswitches can then change songs in order and present the various sounds needed for their named **Song Sections** (intro, verse, solo, etc.). **Song footswitches** allow you to select songs. **Section footswitches** load sections from the current song. **Setlist footswitches** allow you to change the “Active Setlist”.

Like FC Layouts, Setlists and Songs can be edited through the front panel of your product, or in its editor software, which also includes convenient utilities for import, export, and more.

The Setlists/Songs feature requires an FM9 firmware 3.0 or newer.

CREATING SONGS & SETLISTS

The Setlists/Songs feature can be accessed through a new area of the global SETUP menu called **FC Setlists/ Songs**. To use this feature, you must first create one or more **Songs**, then add them to a **Setlist** in the desired order. Assign FC Switches to any FC layout to access the various **Sections** of the current Song.

NOTE: Setlists, Songs and Sections are like other areas of “Setup” in that all changes take effect immediately and they do not need to be stored. They are also included in a Fractal-Bot “System” backup.

SONGS & SECTIONS

- Each song has a **number**, a **name** (10 chars) and contains six numbered **Sections**.
- Each section has a **number**, a **name** (10 chars), and a designation of one **Preset** and one **Scene** (1-8 or DEFAULT).
- Up to 128 songs can be created in total.

For Example, imagine Song 1, named “I Want”

- Section 1: named “**Intro**” loads Preset 1, Scene 1
- Section 2: named “**Verse**” loads Preset 1, Scene 2
- Section 3: named “**B-Section**” loads Preset 3, Scene 1
- Section 4: named “**Chorus**” loads Preset 510, “Default Scene”
- Section 5: named “**Solo**” loads Preset 1022, Scene 6
- Section 6: is not used in this song. Its “Preset” is “NONE”, which disables the section.

TO CREATE A SONG:

Creating a song is easy: enter a name and define up to six sections:

- Open **SETUP: FC Setlists/Songs** and page right to "**Songs**".
- Navigate to any Song and press **NAME SONG** (push knob C). Enter a name using controls that work identically to those for presets and scenes.
- Next, press Enter or **EDIT SONG** (push knob B). Define each of up to six **Sections** by using the controls to enter a PRESET number, a SCENE number, and a section NAME.
- Press **Exit** when finished to return to the master Songs list.

Fig 1: The **Songs** page of the **Setlists/Songs** menu, aka the "Master Songs List"

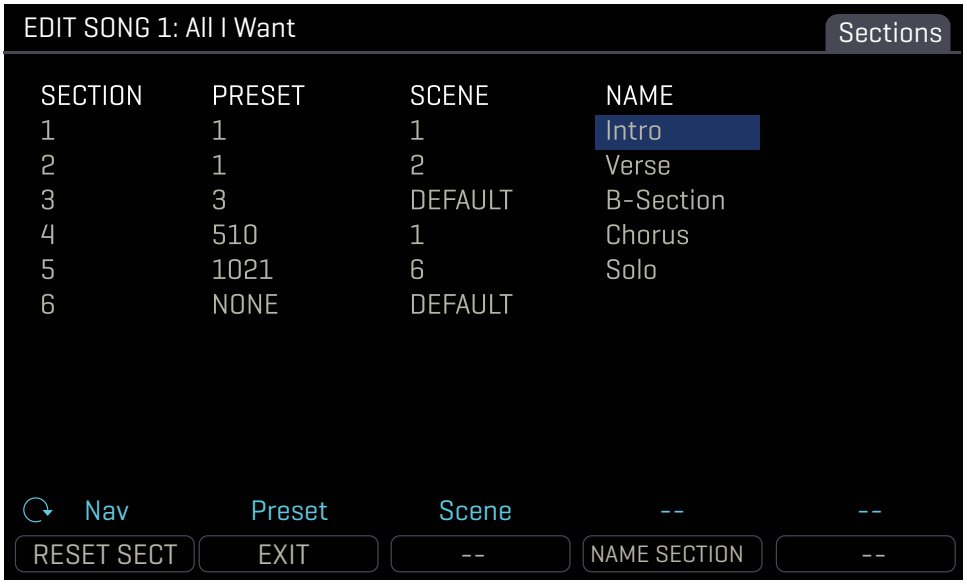


Fig 2: The **Edit Song** page of the Setlists/Songs menu, where **Song Sections** are created.

ABOUT SETLISTS

Each of the four Setlists contains up to 32 songs in numbered positions. A particular song can appear more than once in the list. Empty slots are permitted only at the end.

- Each Setlist has a **number** and a **name** (10 chars).
- The “ACTIVE!” Designation makes any one setlist “active,” determining which list of songs will be used to populate FC footswitches. Most people will only ever use one Setlist. Others might use different Setlists for different bands/gigs. Others might play epic shows and need to activate different set lists as the show proceeds.
- To change the active Setlist, open SETUP/FC Setlists/Songs, and turn Knob C to move the “ACTIVE!” marker, or use FC “Setlist” footswitches.

Fig 3: The **Setlists** page of the **Setlists/Songs** menu, where you can access setlists for editing or change the Active Setlist.

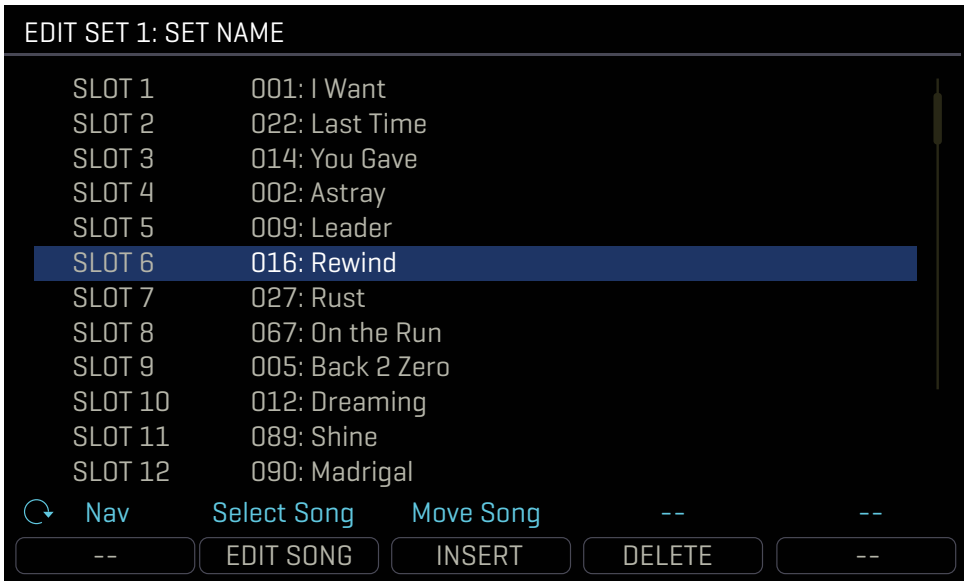


Fig 4: The **Edit Setlist** page of the **Setlists/Songs** menu allows you to easily insert, remove, or re-order the songs in a Setlist.

FC SETLIST/SONG FUNCTIONS

The Setlist/Song feature uses three new categories of FC footswitch functions: SETLIST, SONG, and SECTION. Each function has one or more self-explanatory parameters, plus various options for the FC footswitch "Mini-Display". These are fully detailed in the Fractal Audio Footswitch Functions Guide, but a short overview follows.

SETLIST FUNCTIONS

Three "SETLIST" functions change the Active Setlist:

- **SETLIST: SELECT** : This makes the designated Setlist "Active" by its number, 1–4.
- **SETLIST: TOGGLE** : This toggles between two setlists, making them "Active".
- **SETLIST: INC/DEC. :** This incrementally steps through the Setlists to select one as Active.
- You can also change the Active Setlist on the Setlists page of **SETUP: FC Setlists/Songs**, or in Axe-/FM9-Edit.

SONG FUNCTIONS

Three "SONG" functions load Songs based on their numbered positions within the Active Setlist.

- **SONG: SELECT IN SET** : This loads a song by its numbered position (1–32) in the Active Setlist.
- **SONG: TOGGLE IN SET** : This toggles between two songs by their numbered positions in the Active Setlist.
- **SONG: INC/DEC IN SET** : This incrementally steps forward or backward through all of the non-empty songs in the Active Setlist. (Empty songs are skipped automatically, and any empty songs at the beginning or end of the list are skipped when the list "wraps.")

SECTION FUNCTIONS

Three "SECTION" functions load sections from the current song. Whenever a Song Section is loaded, the main display of the FC changes to show the **name of the current song**, and the **name of the current section**.

Three functions select songs from within the current Active Setlist.

- **SONG SECTION: SELECT** : This loads a Section by its number in the current Song.
- **SONG SECTION: TOGGLE** : This toggles between two Sections of the current Song.
- **SONG SECTION: INC/DEC** : This incrementally steps forward or backward through all of the Sections in the current Song. (Empty Sections are skipped automatically, and any empty Sections at the beginning or end of the list are skipped when the list "wraps.")

PERFORMANCE CONTROL PAGES

INTRODUCTION

The FM9 is easy to edit with its intuitive system of menu pages and parameters, but you can't really do this mid-performance. Musicians sometimes do adjust their equipment while playing, however (during a break or even mid-song). Traditional analog gear is very accommodating: amp knobs are at arm's length, and you can easily reach down and tweak a pedalboard effect.

The Performance control pages of the FM9 are designed for exactly this kind of easy, direct adjustment without menu-diving. Each of the two **Performance Control Pages** (aka "**Perform Pages**") hosts ten controls of your choice. The FM9s five "ABCDE" knobs provide instant access to five parameters, with a second five just one button tap away. 5 knobs x 2 rows x 2 pages = twenty controls in all! You can even add custom labels. Performance Control pages stay conveniently "parked" on the screen when you change presets or scenes, creating an experience just like what you get with dedicated hardware controls.

The **Global Performance Control Page** (Perform-Gbl) stays the same even when you change presets. Factory default settings show basic amp controls here: Bass, Mid, Treble, Depth, Presence, Drive, Master and Level.

The **Per-Preset Performance Control Page** (Perform-PP) uses assignments stored in the current preset. One preset might show Drive pedal controls, while a different preset shows various effect Mix controls. It's totally up to you. Most Factory Presets already have "Perf-PP" assignments for you to explore and try.

DISPLAYING A PERFORMANCE PAGE

Displaying a Performance page is easy: just press **Home** followed by **Page Right** to the Per-Preset or Global perform page. These pages stay "parked" on the screen until you manually change to another page, so you can change presets or scenes and still have your custom Performance Control options ready to use.

In summary, Performance Control pages provide an easy and intuitive way to interact with your FM9 just as you would with traditional analog gear.

ADJUSTING PERFORMANCE CONTROLS

Using these controls is easy. They behave exactly like the knobs, switches and selectors of the normal edit pages. While displaying a Performance Page, just use the **A**,**B**,**C**,**D** or **E** knobs or **NAV** and **VALUE** to make changes. Use the **NAV** up or down keys to change rows.

A performance control is a stand-in or "alias" for the same control in its usual place. For example, adjusting Amp Level on the global performance control page is the same as adjusting Amp Level wherever else it may be found in the edit menu of the amp block. If you change on a Performance control and then store the preset, the change is saved.

TUTORIAL: HOW TO SET UP PERFORMANCE CONTROLS

Performance Controls must be set up using **FM9-Edit**, the companion editor/librarian software for the FM9. The following tutorial includes multiple examples.

1. First, let's edit the Global Performance page. To display it, tap Home, then tap Page Right twice. Notice that the factory default settings place the basic knobs of the AMP block here: Bass, Mid, Treble, Presence, Depth, Drive, Master Volume, Level. There are also two empty spots. We'll fill one of them here with the Delay Mix control so you can quickly adjust delay levels when you play.
2. Connect your FM9 over USB to a compatible Mac or Windows computer and Launch **FM9-Edit** (see p. 13). (Remember, you will need a driver if you are running Windows. See Section 3: USB).
3. In FM9 Edit, load Factory Preset 001 or any preset that contains the Delay 1 block.
4. Once this preset loads, click on the delay block to select it in the grid.
5. Switch to the Performance Page editor in FM9 Edit by clicking the **Perform** button above the grid.
6. **Drag and Drop** the **Mix** parameter of the delay block to an empty slot in the **Global Performance Controls** area.
7. You can exit the Perform Page editor now by clicking again on the **Perform** button above the grid

NOTE: Since we've only changed a **Global** Performance Control, there is no need to store anything. In comparison, when you edit the **Per-Preset** Performance page you must save the preset to commit changes.

8. Let's add **Reverb Mix** to the remaining empty slot on the **Perform-Gbl** page. We must first change to the reverb block to drag-and-drop from its edit menu. Of course we could mometarily return to the grid, but there's a way to change the current block without doing this. A dropdown menu in FM9-Edit lists every block in the current preset. Find it left of the large block icon in the lower panel of FM9-Edit (shown at right, highlighted in green). Select Reverb 1 from this list and then drag its Mix parameter to the Performance Page editor as you did with the Delay Mix.

9. You can also use drag-and-drop to rearrange controls on performance pages. Drag one control onto another to swap them. Try this out on the Reverb Mix and Delay controls. Decide how you like this and then move on.
   TIP: To remove a control, click it and then press Delete/Backspace on your keyboard.
10. You can change the two line **label** for any control by double-clicking on the existing name. Type your desired text and then press Enter/Return on your keyboard to confirm. Test this by changing the first line of the delay control to "DELAY" instead of "DLY1".

You have reached the end of this tutorial. Test your changes on the FM9.

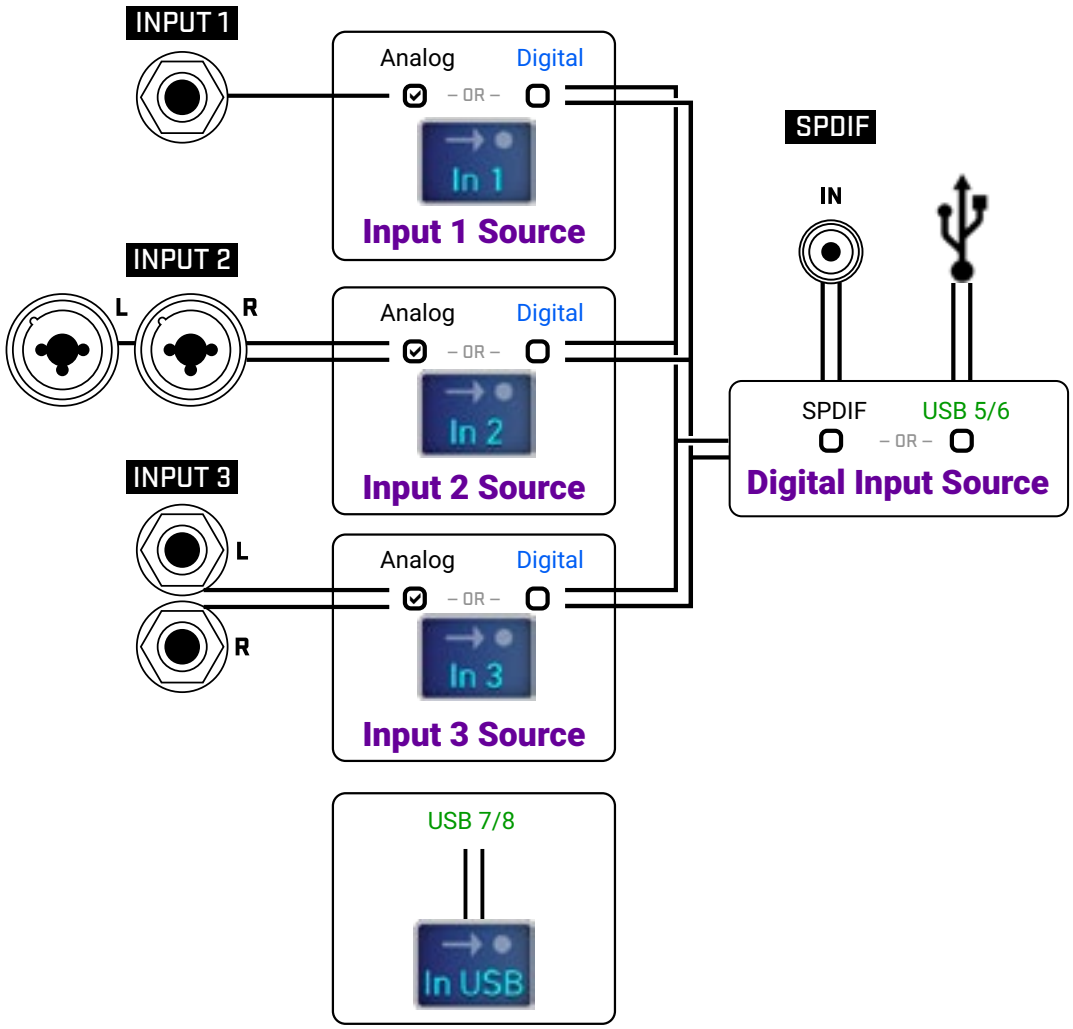
DIGITAL INPUT SOURCES

The FM9 allows incoming digital signals from SPDIF or USB 5/6 playback to be routed to your choice of input blocks 1, 2 and/or 3 on the Layout grid. This supports a range of applications such as digital reamping, digital send and return, and processing of digital sources.

Each FM9 input has a corresponding **Input Source** parameter found in the INPUT CONFIGURATION section of **SETUP: I/O: Audio.** Set a source to “ANALOG” if you want the corresponding grid block to utilize signal from the analog input jacks. Set a source to “DIGITAL” for digital input, and then set the global **Digital Input Source** to your choice of “SPDIF” or “USB 5/6”. Multiple inputs can be set to use the same digital source at the same time. All inputs default to ANALOG. The diagram below illustrates these options.

A fourth grid input block, “**IN USB**” always uses **USB 7/8** as its source. Additional USB input options are detailed in Section 3: USB

Optimal performance of multiple digital devices requires synchronized clocks. See the FAQ on the next page.



DIGITAL OUTPUT SOURCES

The FM9 can produce both USB and SPDIF digital output signals. USB is detailed in Section 3: USB

The SPDIF out can transmit your choice of signals derived from **Output 1**, **Output 2**, **Input 1**, or **USB 7,8**.

OUTPUT 1 - Outputs the signal from the **OUT 1** grid block. This will be the most common setting, where the SPDIF output is used instead of or in addition to the main analog outs. This might be used when connecting the FM9 to the SPDIF inputs of an audio interface, digital mixing console, or other device.

OUTPUT 2 - Outputs the signal from the **OUT 2** grid block. Use this option when you want a digital signal that differs from the signal at analog output 1. This might be the case when you're using a SPDIF send and return, or when you want to use different processing options on analog and digital outs.

INPUT 1 - Outputs the signal from **IN 1** instrument jack without any processing. Use this option when you want a digital copy of the input for recording or reprocessing using a 3rd party device over SPDIF.

USB 7/8 - Outputs incoming **USB 7/8** playback signals from a connected computer directly to the SPDIF Out.

FAQ: WHAT IS SPDIF WORDCLOCK?

Interconnected digital devices require synchronized clocks to work correctly. Wordclock makes this possible with the correct connections and settings on both the FM9 and the connected device.

WHEN USING THE FM9 SPDIF OUTPUT

When the SPDIF output of the FM9 is connected to the SPDIF input of another device, there are two options:

1) Use the FM9's internal clock. Set **SETUP: I/O: Audio: Word Clock** to "INTERNAL". Set the connected device to use external clock and it should lock to the 48 kHz clock of the FM9.

2) Use the clock of the connected device: Set the external device to use its own internal clock. Connect a second SPDIF cable from the output of the second device to the SPDIF input of the FM9. On the FM9, set **SETUP: I/O: Audio: Word Clock** to "SPDIF". A valid 48 kHz data stream must be present at the SPDIF input for the FM9 to operate properly.

WHEN USING THE FM9 SPDIF INPUT

When the SPDIF output of another device is connected to the SPDIF input of the FM9, there are two options:

1) Use the clock of the connected device. Set the external device to use its own internal clock. On the FM9, set **SETUP: I/O: Audio: Word Clock** to "SPDIF". A valid 48 kHz data stream must be present at the SPDIF input for the FM9 to operate properly.

1) Use the FM9's clock. Set **SETUP: I/O: Audio: Word Clock** to "INTERNAL". Connect a second SPDIF cable from the output of the FM9 to the SPDIF input of the second device. Set the connected device to use external clock and it should lock to the FM9's 48 kHz clock.

FREQUENTLY ASKED QUESTIONS

Q: Why all the technical terminology?

A: The language of the FM9 is for the most part the universal language of professional audio. This allows the FM9 to be used by casual and professional players, producers, engineers, and beyond. The terminology and concepts you will use and learn are accordingly not unique to the FM9. Understanding them will help you to master the craft of pro audio and to communicate with others. At the same time, the FM9 is easier than ever, with dedicated controls and a clear interface that doesn't distract or disrupt the creative flow.

Q: What is "FRFR"?

A: FRFR stands for "full-range, flat response." This acronym is used to describe a "neutral" speaker or speaker system that is designed to reproduce the entire audible spectrum of 20 Hz – 20kHz without emphasis. Examples of FRFR systems would include high-quality studio monitors and properly designed PA systems or monitors. Many manufacturers are also now offering FRFR systems designed specifically for direct guitar applications.

Q: How do I upgrade the firmware of my FM9?

A: Use Fractal-Bot. See p. 103.

Q: Can I load my presets from the Axe-Fx III or FM3 into the FM9 (or vice versa)?

A: Yes! Axe-Edit, FM3-Edit, and FM9 Edit are mostly cross-compatible. The FM9 will do its best to interpret larger Axe-Fx III presets but you should always check the results.

- The Axe-Fx III has a larger inventory. Any missing blocks will be replaced by shunts.
- When converting an Axe-Fx III preset it is possible to have more blocks than the CPU can handle. If this happens, the FM9 will display a blinking red banner in the top-left of the HOME screen that reads "CPU Limit - Muted". The FM9 will stop processing audio but allow you to delete and/or reconfigure the blocks as needed.
- Certain CAB block settings must also be considered. An Axe-Fx III preset that has bank USER 2 selected will be changed to USER 1 since the FM9 has only one bank. Also note, that "Cab 3" and "Cab 4" settings from an Axe-Fx III preset will NOT be imported since the FM9 allows only two IRs per Cab block.

Q: What about presets from the Axe-Fx II, AX8 or FX8?

A: No, these presets are not cross-compatible, but you can generally transfer parameter settings by hand with good results. As of this writing, all of the same amp models are present, and "factory" speaker cabs of the older products are present in the "Legacy" bank on the FM9.

Q: My expression pedal isn't working. What should I do?

A: Expression pedals need to be calibrated and assigned to a parameter, controller or remote function. See "Expression Pedals" on p. 10 for a basic overview. Are you using a TRS cable? Is it connected to the correct port on the FM9? Is it actually an expression pedal? Did you set up a Modifier as described in **Section 9**.

Q: My FM9 won't start up correctly.

A: Please see "Recovery" on p. 105.

Q: My FM9 seems quiet at default settings.

A: By default, analog outputs 1 and 2 are set to -10dBV. To change to +4dBu, use the **Output Level** parameters in **Setup: I/O: Audio.**

Q: Can I use a computer or external MIDI controller to remote control the FM9?

A: The FM9 has a rich MIDI spec which allows it to be remote controlled. Any 3rd party MIDI controller can be used, but please note that an FC-6 or FC-12 connected via FASLINK offers many advantages over traditional 5-pin MIDI. The FM9 is also a computer USB MIDI Interface. A third-party MIDI interface is required for a DAW or other computer application to control the FM9.

Q: I'm hearing click and pops.

A: First, check all cables. You'd be surprised by how often a short can be found in a brand new or trusted cable. Then, check to see whether you are clipping the FM9 inputs or outputs (p. 5).
Excessive CPU usage may also be to blame. Is the CPU meter at or near 80%? If so, you've overloaded the current preset. Try removing one or more blocks and review "Preset CPU Limits" on p. 48 for useful tips.

Q: One or more of my presets produces no sound.

A: This might be any one (or several) of a number of things. Is every other component in your rig working correctly? Are the FM9's top panel LEVEL knobs turned up? Often, problems like this turn out to be caused by a faulty or disconnected cable. Checking the FM9 with headphones can help rule out a lot of possibilities. Do some presets work? If so, have you double-checked to ensure that each has a complete path from the input to the output? Does every preset begin and end with Input and Output blocks corresponding to inputs and outputs connected to other equipment? Could the problem be the setting in one block? Try replacing them one-by-one with shunts (save Cab and Amp for last). Is there a Modifier assigned to a volume or level control while the pedal or external switch is not present? You may simply need to change the INITIAL VALUE for an external controller from 0% to 100% (p. 98). Does the preset require a USER CAB which is not loaded? Try changing the Cab block to a Factory cab.

Q: Why would I place certain effects *before* or *after* an Amp and Cab?

A: Sonically speaking, the main reason to care about effect placement is that a given effect will sound different when placed before or after distortion.

How does this difference sound? If you've ever switched the sequence of traditional drive and wah pedals, you've heard an excellent example. In the case of wah before overdrive, the resonant filter of the wah "excites" the overdrive in a cool way while still retaining a natural overall tone. When the wah follows distortion, you might hear a more dramatic sweep that almost sounds synth-like and might be considered less "classic." It's not surprising then that wah would traditionally be a run as a "pre" effect between guitar and amp. The amp's distortion follows the wah. Many other effects fall in this same category.

A different example is found in overdrive with reverb or delay. In the natural world, reverb and echo occur because of open spaces around your guitar amp – like a club or concert hall. These effects would therefore NOT be heard *before* a distorted amp, but *after* it. Recording studios often add these kinds of effects "post," i.e. at the console—after the mic has recorded up the distorted sound from the guitar amp. If you wanted to simulate this natural sounding reverb or delay these effects would likely be run "post." This is not to say that delay or reverb before distortion is a "no-no." Many "legendary" tones came from echo units in front of an amp—but this is very different from "post" delay, both tonally, but also in terms of dynamics.

The good news is that the FM9 allows you to experiment easily and find what combinations of pre- and post-effects work best for you. Creativity begins where conformity ends.

Q: Anything else I should know?

A: The **Layouts and Footswitches** section includes its own FAQ. See "FM9 Footswitch FAQ" on p. 84

SHORTCUTS

The FM9 has several shortcuts and hidden features. These are summarized below.

IN GENERAL

- Press **EDIT** to jump to the Edit menu for the currently selected block. Press repeatedly to step through all blocks.

ON THE HOME PAGE

- Press **ENTER** or push the **VALUE** knob to show the Layout Grid for the current preset.
- Use **NAV LEFT/RIGHT** to select presets and press **NAV UP/DOWN** or turn knob **A** to select scenes.

IN THE AMP BLOCK

- On the Output EQ page, press **NAV UP/DOWN** to change the number of bands.

IN THE CAB BLOCK

- **NAV** to the Cab Number field and press **ENTER** to enter a “Cab Picker” for the selected slot.

ON THE GRID

- With any block selected, **press-and-hold ENTER** to create a series of shunts and cables to bridge empty space to the right. This will also CLEAR existing connectors between a series of blocks.

TO OPEN THE CONTROLLERS MENU

- Press the **TEMPO** button once.

ON THE SEQUENCER PAGE OF THE CONTROLLERS MENU

- With any **Stage** selected, press **ENTER** to randomize the values of all stages.

SPILLOVER

Spillover allows delay and reverb tails to “ring out” when an effect is bypassed or when you change channels, scenes, or presets. This section covers how to set up spillover in different scenarios.

WHEN BYPASSING AN EFFECT...

Effect block spillover is easy and requires only a particular setting in the block. For tails to ring out when an individual block is bypassed, set that block’s **Bypass Mode** to “MUTE FX IN”. If an effect is running in parallel, use “MUTE IN” instead. Be aware that different channels share effect memory, so **channel changes** that affect delay time, reverb size, etc, may cause a glitch or “sweep” in the tail. For best results, use multiple blocks.

WHEN SWITCHING SCENES...

Switching Scenes provides one of the most commonly used ways to achieve spillover. Since Scenes simply bypass or engage blocks one-by-one or in groups, just refer to the instructions above for all blocks in your preset.

Note that this also provides a great way to get gapless amp changes: set each Amp block’s bypass mode to MUTE and then switch between amps—one for clean, for example, and one for dirty.

WHEN CHANGING PRESETS...

Spillover across different presets is a bit more involved. The first step is to open the **SETUP: Global Settings: Config** and set the **Spillover** parameter to determine whether “DELAY”, “REVERB”, or “BOTH” will spill over when you change presets. This setting is OFF by default.

You must then also ensure that the same Delay or Reverb blocks exist in each of your presets where you want spillover. These need to be the same block *and* the same number (i.e. **Delay 1** spills over only through **Delay 1**, **Delay 2** through **Delay 2**, etc.).

For spillover to work perfectly, the blocks must also have similar settings and placement on the grid. As mentioned above regarding channel changes, using different setting such as time, size, etc. can cause glitches or sweeps. For example, if you change from a preset where Delay 1 has a time of 500 ms to a preset where Delay 1 time is 100 ms, the tails will suddenly be heard as 100 ms echoes instead. You would also hear a difference in the tail, for instance, if a delay were placed *after* a clean amp block in one preset, and *before* an overdriven amp block in another. Bypass states and Bypass Mode settings must also be considered.

For a simple preset spillover experiment, create a preset, then save an exact copy to a new location and test spillover. Then begin making changes as needed to settings outside of those blocks that you want to spill over. FM9-Edit also makes it easy to copy and paste a block from one preset to another.

SENDING AND RECEIVING MIDI

MIDI Messages are received at the MIDI In port and transmitted at the MIDI OUT/THRU port of the FM9.
Use 5-pin MIDI cables between the FM9 and the MIDI ports of other devices.

RECEIVING MIDI

The FM9 responds to MIDI Program Change Messages, MIDI CC messages — which can be used for a wide variety of purposes including Scene Select, Effect Bypass/Engage, Modifier Control, and more.

The FM9 also synchronizes its own Tempo value to incoming MIDI beat clock signals.

The FM9 is a USB MIDI Device. It will appear as a MIDI device in a DAW or other MIDI program. You can use automation and other MIDI messages to control the FM9.

MIDI THRU

The FM9 MIDI Out port also features a soft "MIDI Thru" capability. This merges any data received at the MIDI In port with any generated MIDI messages at the MIDI Out port.
This option must be enabled. See "The MIDI/Remote Menu" on p. 97 for more on this feature.

TRANSMITTING MIDI PC WHEN YOU CHANGE PRESETS

The simplest MIDI capability of the FM9 is transmitting a single MIDI program change message ("PC") each time a new Preset is loaded—whether via the front panel, using an FC Footswitch, or in any other way. To enable this, open the **SETUP** | **MIDI/Remote** menu and page to the "**General"** tab. Set **Send MIDI PC** to the desired channel.

TRANSMITTING MIDI PC AND/OR CC MESSAGES WITH THE MIDI BLOCK

A more sophisticated MIDI tool is the **Scene MIDI Block**. Once you place this block on the grid, it transmits MIDI messages automatically whenever a new scene is loaded—whether via the front panel, with a footswitch, or by any other means. The Scene MIDI block can transmit up to eight total custom PC or CC messages. Remember that a "default scene" loads automatically when you select a new preset, so any FC footswitch that selects a new Preset or a new Scene can also cause the FM9 to send a burst of MIDI messages.
See "The Fractal Audio Blocks Guide" for more on the Scene MIDI Block.

TRANSMITTING MIDI WITH A CONTROL SWITCH

Another way for the FM9 to transmit MIDI messages using **Control Switches**. While the primary function of a Control Switch is to operate as a **Modifier** source to control FM9 parameters, each of the six Control Switches also has the capability to transmit a custom "payload" of MIDI data every time the switch is turned ON or OFF. This isn't tied to another event such as a Preset or Scene change, so Control Switch MIDI is more flexible.

Control Switches can be momentary or latching (and even mutually exclusive), so the CS MIDI system is very versatile. You might change a connected MIDI-controlled amp, operate a remote processor, control a sequencer, switch a lighting system, and more.

See "The Fractal Audio Blocks Guide" for more about Control Switches. Here is a summary:

- The Control Switch function can be placed as TAP or HOLD of any switch in any FC Layout.
- Control Switches 1–6 appear in the list of **Modifier** sources on the FM9. The role of a switch as a modifier source is not compromised if you also use it to transmit MIDI. The same switch can simultaneously control the FM9 and a connected device. See Section 9: Modifiers to learn more.
- Each Control Switch has its own global **MIDI Payload** containing up to four Program Change ("PC") or Control Change ("CC) messages on any MIDI Channels, with custom values from 0–127, or disabled ("--") for both the ON and OFF states of the switch.
- Each MIDI Payload also has a "master switch" allowing it to be enabled or disabled.

SETTING UP THE MIDI PAYLOAD FOR A CONTROL SWITCH:

- Open **SETUP**: **FC Controllers** and page to the "**CS MIDI"** tab.
- Use **NAV** buttons and the **VALUE** wheel to get around the page.
- Select the desired control switch at the top of the menu. (CS1, CS2, etc.)
- Make sure ENABLED is set to "YES" if you want the switch to send MIDI.
- NAV through the table and create your desired MIDI Payload of up to four commands, with different values for ON and OFF.
  - For each command, select whether you want a Program Change (PC) or Control Change (CC) message.
  - Set the MIDI Channel for that command as desired from 1–16.
  - If you chose a CC Command, set the CC Number.
  - Set the desired Values for when the switch is ON and when it is OFF.
  - You can select values from 0–127, or "--" which means "send nothing."
- There is no need to save CS MIDI settings. They take effect immediately.

Control Switches can be triggered manually using a footswitch, or automatically by Scenes. See the "The Footswitch Functions Guide" for more on Control Switches.

MIDI REFERENCE TABLES

MIDI BANK & PROGRAM CHANGE

The following table lists the MIDI Bank and Program Change messages required to select FM9 presets.
MIDI Bank Select (CC#0) Value , Midi Program Change = FM9 Preset Number.

0, 0 = 0	0, 42 = 42	0, 84 = 84	0, 126 = 126	1, 40 = 168
0, 1 = 1	0, 43 = 43	0, 85 = 85	0, 127 = 127	1, 41 = 169
0, 2 = 2	0, 44 = 44	0, 86 = 86	1, 0 = 128	1, 42 = 170
0, 3 = 3	0, 45 = 45	0, 87 = 87	1, 1 = 129	1, 43 = 171
0, 4 = 4	0, 46 = 46	0, 88 = 88	1, 2 = 130	1, 44 = 172
0, 5 = 5	0, 47 = 47	0, 89 = 89	1, 3 = 131	1, 45 = 173
0, 6 = 6	0, 48 = 48	0, 90 = 90	1, 4 = 132	1, 46 = 174
0, 7 = 7	0, 49 = 49	0, 91 = 91	1, 5 = 133	1, 47 = 175
0, 8 = 8	0, 50 = 50	0, 92 = 92	1, 6 = 134	1, 48 = 176
0, 9 = 9	0, 51 = 51	0, 93 = 93	1, 7 = 135	1, 49 = 177
0, 10 = 10	0, 52 = 52	0, 94 = 94	1, 8 = 136	1, 50 = 178
0, 11 = 11	0, 53 = 53	0, 95 = 95	1, 9 = 137	1, 51 = 179
0, 12 = 12	0, 54 = 54	0, 96 = 96	1, 10 = 138	1, 52 = 180
0, 13 = 13	0, 55 = 55	0, 97 = 97	1, 11 = 139	1, 53 = 181
0, 14 = 14	0, 56 = 56	0, 98 = 98	1, 12 = 140	1, 54 = 182
0, 15 = 15	0, 57 = 57	0, 99 = 99	1, 13 = 141	1, 55 = 183
0, 16 = 16	0, 58 = 58	0, 100 = 100	1, 14 = 142	1, 56 = 184
0, 17 = 17	0, 59 = 59	0, 101 = 101	1, 15 = 143	1, 57 = 185
0, 18 = 18	0, 60 = 60	0, 102 = 102	1, 16 = 144	1, 58 = 186
0, 19 = 19	0, 61 = 61	0, 103 = 103	1, 17 = 145	1, 59 = 187
0, 20 = 20	0, 62 = 62	0, 104 = 104	1, 18 = 146	1, 60 = 188
0, 21 = 21	0, 63 = 63	0, 105 = 105	1, 19 = 147	1, 61 = 189
0, 22 = 22	0, 64 = 64	0, 106 = 106	1, 20 = 148	1, 62 = 190
0, 23 = 23	0, 65 = 65	0, 107 = 107	1, 21 = 149	1, 63 = 191
0, 24 = 24	0, 66 = 66	0, 108 = 108	1, 22 = 150	1, 64 = 192
0, 25 = 25	0, 67 = 67	0, 109 = 109	1, 23 = 151	1, 65 = 193
0, 26 = 26	0, 68 = 68	0, 110 = 110	1, 24 = 152	1, 66 = 194
0, 27 = 27	0, 69 = 69	0, 111 = 111	1, 25 = 153	1, 67 = 195
0, 28 = 28	0, 70 = 70	0, 112 = 112	1, 26 = 154	1, 68 = 196
0, 29 = 29	0, 71 = 71	0, 113 = 113	1, 27 = 155	1, 69 = 197
0, 30 = 30	0, 72 = 72	0, 114 = 114	1, 28 = 156	1, 70 = 198
0, 31 = 31	0, 73 = 73	0, 115 = 115	1, 29 = 157	1, 71 = 199
0, 32 = 32	0, 74 = 74	0, 116 = 116	1, 30 = 158	1, 72 = 200
0, 33 = 33	0, 75 = 75	0, 117 = 117	1, 31 = 159	1, 73 = 201
0, 34 = 34	0, 76 = 76	0, 118 = 118	1, 32 = 160	1, 74 = 202
0, 35 = 35	0, 77 = 77	0, 119 = 119	1, 33 = 161	1, 75 = 203
0, 36 = 36	0, 78 = 78	0, 120 = 120	1, 34 = 162	1, 76 = 204
0, 37 = 37	0, 79 = 79	0, 121 = 121	1, 35 = 163	1, 77 = 205
0, 38 = 38	0, 80 = 80	0, 122 = 122	1, 36 = 164	1, 78 = 206
0, 39 = 39	0, 81 = 81	0, 123 = 123	1, 37 = 165	1, 79 = 207
0, 40 = 40	0, 82 = 82	0, 124 = 124	1, 38 = 166	1, 80 = 208
0, 41 = 41	0, 83 = 83	0, 125 = 125	1, 39 = 167	1, 81 = 209

1, 82 = 210	2, 6 = 262	2, 58 = 314	2, 110 = 366	3, 34 = 418	3, 86 = 470
1, 83 = 211	2, 7 = 263	2, 59 = 315	2, 111 = 367	3, 35 = 419	3, 87 = 471
1, 84 = 212	2, 8 = 264	2, 60 = 316	2, 112 = 368	3, 36 = 420	3, 88 = 472
1, 85 = 213	2, 9 = 265	2, 61 = 317	2, 113 = 369	3, 37 = 421	3, 89 = 473
1, 86 = 214	2, 10 = 266	2, 62 = 318	2, 114 = 370	3, 38 = 422	3, 90 = 474
1, 87 = 215	2, 11 = 267	2, 63 = 319	2, 115 = 371	3, 39 = 423	3, 91 = 475
1, 88 = 216	2, 12 = 268	2, 64 = 320	2, 116 = 372	3, 40 = 424	3, 92 = 476
1, 89 = 217	2, 13 = 269	2, 65 = 321	2, 117 = 373	3, 41 = 425	3, 93 = 477
1, 90 = 218	2, 14 = 270	2, 66 = 322	2, 118 = 374	3, 42 = 426	3, 94 = 478
1, 91 = 219	2, 15 = 271	2, 67 = 323	2, 119 = 375	3, 43 = 427	3, 95 = 479
1, 92 = 220	2, 16 = 272	2, 68 = 324	2, 120 = 376	3, 44 = 428	3, 96 = 480
1, 93 = 221	2, 17 = 273	2, 69 = 325	2, 121 = 377	3, 45 = 429	3, 97 = 481
1, 94 = 222	2, 18 = 274	2, 70 = 326	2, 122 = 378	3, 46 = 430	3, 98 = 482
1, 95 = 223	2, 19 = 275	2, 71 = 327	2, 123 = 379	3, 47 = 431	3, 99 = 483
1, 96 = 224	2, 20 = 276	2, 72 = 328	2, 124 = 380	3, 48 = 432	3, 100 = 484
1, 97 = 225	2, 21 = 277	2, 73 = 329	2, 125 = 381	3, 49 = 433	3, 101 = 485
1, 98 = 226	2, 22 = 278	2, 74 = 330	2, 126 = 382	3, 50 = 434	3, 102 = 486
1, 99 = 227	2, 23 = 279	2, 75 = 331	2, 127 = 383	3, 51 = 435	3, 103 = 487
1, 100 = 228	2, 24 = 280	2, 76 = 332	3, 0 = 384	3, 52 = 436	3, 104 = 488
1, 101 = 229	2, 25 = 281	2, 77 = 333	3, 1 = 385	3, 53 = 437	3, 105 = 489
1, 102 = 230	2, 26 = 282	2, 78 = 334	3, 2 = 386	3, 54 = 438	3, 106 = 490
1, 103 = 231	2, 27 = 283	2, 79 = 335	3, 3 = 387	3, 55 = 439	3, 107 = 491
1, 104 = 232	2, 28 = 284	2, 80 = 336	3, 4 = 388	3, 56 = 440	3, 108 = 492
1, 105 = 233	2, 29 = 285	2, 81 = 337	3, 5 = 389	3, 57 = 441	3, 109 = 493
1, 106 = 234	2, 30 = 286	2, 82 = 338	3, 6 = 390	3, 58 = 442	3, 110 = 494
1, 107 = 235	2, 31 = 287	2, 83 = 339	3, 7 = 391	3, 59 = 443	3, 111 = 495
1, 108 = 236	2, 32 = 288	2, 84 = 340	3, 8 = 392	3, 60 = 444	3, 112 = 496
1, 109 = 237	2, 33 = 289	2, 85 = 341	3, 9 = 393	3, 61 = 445	3, 113 = 497
1, 110 = 238	2, 34 = 290	2, 86 = 342	3, 10 = 394	3, 62 = 446	3, 114 = 498
1, 111 = 239	2, 35 = 291	2, 87 = 343	3, 11 = 395	3, 63 = 447	3, 115 = 499
1, 112 = 240	2, 36 = 292	2, 88 = 344	3, 12 = 396	3, 64 = 448	3, 116 = 500
1, 113 = 241	2, 37 = 293	2, 89 = 345	3, 13 = 397	3, 65 = 449	3, 117 = 501
1, 114 = 242	2, 38 = 294	2, 90 = 346	3, 14 = 398	3, 66 = 450	3, 118 = 502
1, 115 = 243	2, 39 = 295	2, 91 = 347	3, 15 = 399	3, 67 = 451	3, 119 = 503
1, 116 = 244	2, 40 = 296	2, 92 = 348	3, 16 = 400	3, 68 = 452	3, 120 = 504
1, 117 = 245	2, 41 = 297	2, 93 = 349	3, 17 = 401	3, 69 = 453	3, 121 = 505
1, 118 = 246	2, 42 = 298	2, 94 = 350	3, 18 = 402	3, 70 = 454	3, 122 = 506
1, 119 = 247	2, 43 = 299	2, 95 = 351	3, 19 = 403	3, 71 = 455	3, 123 = 507
1, 120 = 248	2, 44 = 300	2, 96 = 352	3, 20 = 404	3, 72 = 456	3, 124 = 508
1, 121 = 249	2, 45 = 301	2, 97 = 353	3, 21 = 405	3, 73 = 457	3, 125 = 509
1, 122 = 250	2, 46 = 302	2, 98 = 354	3, 22 = 406	3, 74 = 458	3, 126 = 510
1, 123 = 251	2, 47 = 303	2, 99 = 355	3, 23 = 407	3, 75 = 459	3, 127 = 511
1, 124 = 252	2, 48 = 304	2, 100 = 356	3, 24 = 408	3, 76 = 460	
1, 125 = 253	2, 49 = 305	2, 101 = 357	3, 25 = 409	3, 77 = 461	
1, 126 = 254	2, 50 = 306	2, 102 = 358	3, 26 = 410	3, 78 = 462	
1, 127 = 255	2, 51 = 307	2, 103 = 359	3, 27 = 411	3, 79 = 463	
2, 0 = 256	2, 52 = 308	2, 104 = 360	3, 28 = 412	3, 80 = 464	
2, 1 = 257	2, 53 = 309	2, 105 = 361	3, 29 = 413	3, 81 = 465	
2, 2 = 258	2, 54 = 310	2, 106 = 362	3, 30 = 414	3, 82 = 466	
2, 3 = 259	2, 55 = 311	2, 107 = 363	3, 31 = 415	3, 83 = 467	
2, 4 = 260	2, 56 = 312	2, 108 = 364	3, 32 = 416	3, 84 = 468	
2, 5 = 261	2, 57 = 313	2, 109 = 365	3, 33 = 417	3, 85 = 469	

CC VALUE TO SCENE

When selecting Scenes using the global options found on the **Other** page of the **MIDI/Remote** menu under **SETUP**, the *value* of the designated CC# determines the Scene:

0	1	16	1	32	1	48	1	64	1	80	1	96	1	112	1
1	2	17	2	33	2	49	2	65	2	81	2	97	2	113	2
2	3	18	3	34	3	50	3	66	3	82	3	98	3	114	3
3	4	19	4	35	4	51	4	67	4	83	4	99	4	115	4
4	5	20	5	36	5	52	5	68	5	84	5	100	5	116	5
5	6	21	6	37	6	53	6	69	6	85	6	101	6	117	6
6	7	22	7	38	7	54	7	70	7	86	7	102	7	118	7
7	8	23	8	39	8	55	8	71	8	87	8	103	8	119	8
8	1	24	1	40	1	56	1	72	1	88	1	104	1	120	1
9	2	25	2	41	2	57	2	73	2	89	2	105	2	121	2
10	3	26	3	42	3	58	3	74	3	90	3	106	3	122	3
11	4	27	4	43	4	59	4	75	4	91	4	107	4	123	4
12	5	28	5	44	5	60	5	76	5	92	5	108	5	124	5
13	6	29	6	45	6	61	6	77	6	93	6	109	6	125	6
14	7	30	7	46	7	62	7	78	7	94	7	110	7	126	7
15	8	31	8	47	8	63	8	79	8	95	8	111	8	127	8

CC VALUE TO CHANNEL

When changing Channels using the global options found on the **Channel** page of the **MIDI/Remote** menu under **SETUP**, the *value* of the designated CC# determines the Channel:

0	A	16	A	32	A	48	A	64	A	80	A	96	A	112	A
1	B	17	B	33	B	49	B	65	B	81	B	97	B	113	B
2	C	18	C	34	C	50	C	66	C	82	C	98	C	114	C
3	D	19	D	35	D	51	D	67	D	83	D	99	D	115	D
4	A	20	A	36	A	52	A	68	A	84	A	100	A	116	A
5	B	21	B	37	B	53	B	69	B	85	B	101	B	117	B
6	C	22	C	38	C	54	C	70	C	86	C	102	C	118	C
7	D	23	D	39	D	55	D	71	D	87	D	103	D	119	D
8	A	24	A	40	A	56	A	72	A	88	A	104	A	120	A
9	B	25	B	41	B	57	B	73	B	89	B	105	B	121	B
10	C	26	C	42	C	58	C	74	C	90	C	106	C	122	C
11	D	27	D	43	D	59	D	75	D	91	D	107	D	123	D
12	A	28	A	44	A	60	A	76	A	92	A	108	A	124	A
13	B	29	B	45	B	61	B	77	B	93	B	109	B	125	B
14	C	30	C	46	C	62	C	78	C	94	C	110	C	126	C
15	D	31	D	47	D	63	D	79	D	95	D	111	D	127	D

15 SPECIFICATIONS

INSTRUMENT INPUT

Connectors:	Rear 1/4" phone jack, unbalanced, with “Secret Sauce”
Impedance:	1 MΩ
Max. Input Level:	+16 dBu

ANALOG INPUTS 2 & 3

Connectors:	(2) 1/4" phone jack balanced (TRS)
Impedance:	1 MΩ
Max. Input Level:	+20 dBu

A/D CONVERSION

Bit Depth:	24 bits
Sample Rate:	48 kHz
Dynamic Range:	114 dB
Frequency Response:	20 – 20kHz, -0.01 to +0.01 dB
Crosstalk:	110dB (typ) Interchannel Isolation

ANALOG OUTPUT 1

Connectors:	(2) XLR balanced with Ground Lift *Selectable between -10 dBV and +4 dBu in software* and (2) 1/4” phone jack unbalanced (Humbuster™)
Impedance:	600 Ω
Max Output Level:	+20 dBu

ANALOG OUTPUT 2

Connectors:	(2) XLR balanced with Ground Lift *Selectable between -10 dBV and +4 dBu in software*
Impedance:	600 Ω
Max Output Level:	+20 dBu

ANALOG OUTPUT 3

Unity Gain with Out 3 knob turned fully clockwise

Connectors:	(2) 1/4” phone jack unbalanced (Humbuster™)
Impedance:	600 Ω
Max Output Level:	+20 dBu

HEADPHONE OUTPUT

Connector:	1/4" stereo phone jack
Impedance:	35 Ω

D/A CONVERSION

Dynamic Range:	114 dB
Frequency Response:	20Hz–20kHz, +0 / -1 dB

DIGITAL INPUT & OUTPUT

Connectors:	RCA Coaxial Type for S/PDIF
Format:	Uncompressed PCM
Sample Rate:	48 kHz fixed

USB AUDIO

Format:	USB Audio Class 2.0 compliant
Channels:	8 input, 8 output
USB Audio Clock:	48 kHz fixed

MIDI INTERFACE

Input Connector:	(1) 5-pin DIN
Out/Thru Connector:	(1) 5-pin DIN
MIDI Over USB	YES

PEDAL INTERFACE

Connectors:	(3) 1/4" TRS phone jack
Format:	Pedal: 10–100 kΩ max or Switch: SPST, momentary or latching

FASLINK II INTERFACE

Connectors:	(1) XLR-F

WARNING: Connect ONLY to the FASLINK II connector on a Fractal Audio FC controller

GENERAL

Finish:	Powder-coated steel chassis
Controls:	12 buttons, 9 knobs *(6 with "push" functions)*
Display:	800×480 high contrast color LCD
Dimensions:	20.2" W. × 3.5" H. × 9.3" D. 51.3cm W. × 8.9cm H. × 23.7cm D.
Weight:	11 lbs 15.8 oz (5.44 kg)
Input Voltage:	90–264 VAC, 47 – 63 Hz *(universal input)*
Power Consumption:	<40 W
Backup Battery Life:	>10 years
Backup Battery Type:	CR-2032
Ventilation:	Onboard fan with side and bottom venting. WARNING: Do not block vent holes!

ENVIRONMENTAL

Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-22 to 167 °F (-30 to 70 °C)
Humidity:	Max. 90% non-condensing

MIDI IMPLEMENTATION

The FM9 features a robust MIDI implementation detailed below.

Function		Tx	Rx	Remarks
Basic Channel	Default	1	1	
	Changed	1-16	1-16	
Note Number	True Voice	X	X	
Velocity	Note ON	X	X	
	Note OFF	X	X	
After Touch	Keys	X	X	
	Channels	X	X	
Pitch Bend		X	X	
Control Change		O	O	Receivable CCs are globally soft-assigned to functions via the MIDI/Remote menu under SETUP. These include Input and Output volumes, Tap Tempo, Tuner, 16 “External Controllers” (assignable as modifiers to one or more parameters on a per-preset basis), some Scene functions, all Looper functions, and all block BYPASS and CHANNEL switches. MIDI CC Transmit is performed using the Scene MIDI Block or Control Switch MIDI.
Program Change	True Number	O	O	The FM9 can transmit PC messages upon preset change, or via the Scene MIDI Block or Control Switch MIDI.
	Bank Select	X	O	
System Exclusive	Fractal Audio	O	O	SysEx is used extensively for FM9-Edit.
	Real time	O	X	
	Non-Real time	X	X	
System Common	Song Position	X	X	
	Song Select	X	X	
	Tune Request	X	X	
System Real time	Clock	X	O	FM9 Global Tempo syncs to MIDI Clock. FM9 does not transmit MIDI clock.
	Commands	X	X	
Auxiliary Messages	Local ON/OFF	X	X	
	All Notes OFF	X	X	
	Active Sense	X	X	
	Reset	X	X	

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CHANGE LOG

Version 1 - July 2021

Version 2 - June 2022

Version 3 - August 2022