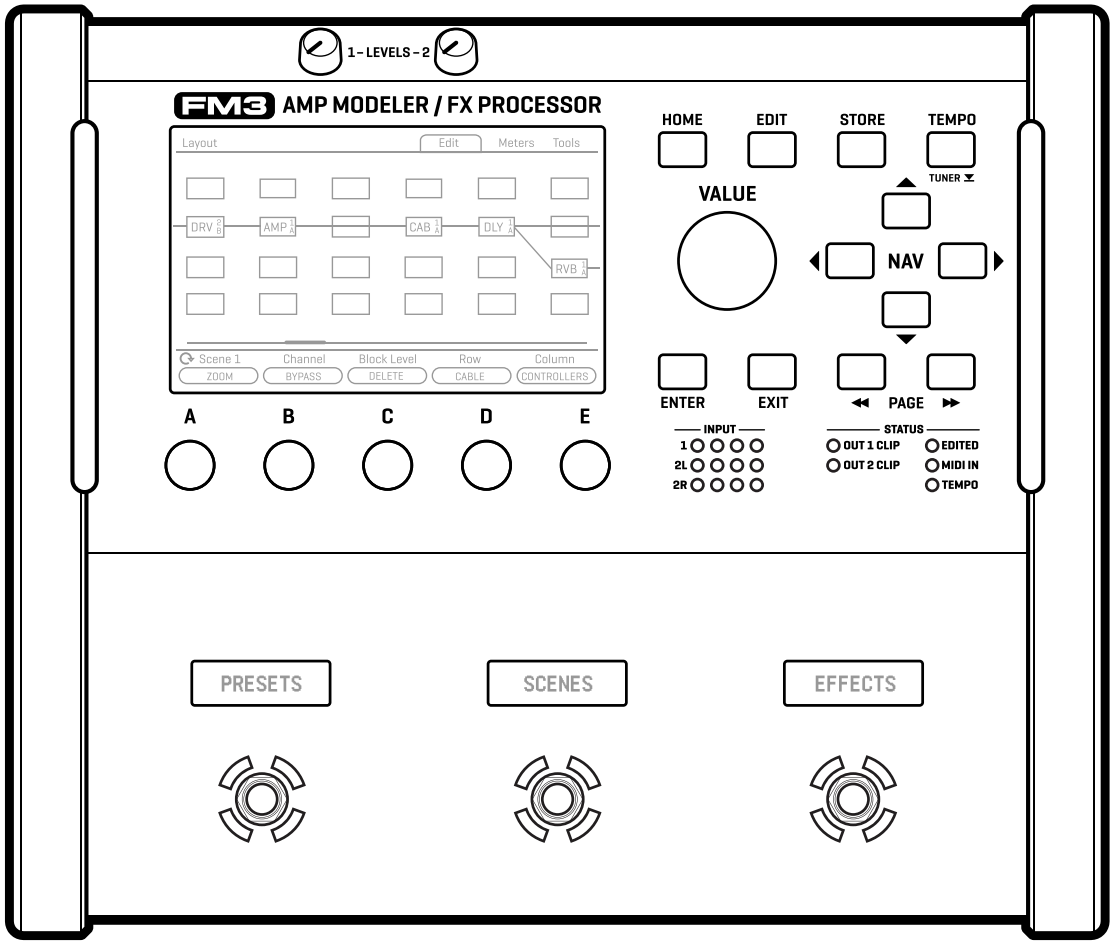
FRACTAL AUDIO SYSTEMS

FM3

OWNER'S MANUAL



Manual Version 1 for FM3 Firmware 1.x

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: **FM3** 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
January 22, 2018

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.

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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 FM3 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 FM3 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, because firmware updates tend to make older manual 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 only. 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: all 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

Thank you for choosing the Fractal Audio Systems **FM3,** an all-in-one **amp modeler, effects processor** and **foot controller** based on the award-winning Axe-Fx III and its companions, the FC-6 and FC-12. The new FM3 places some of our best technologies into a highly portable, "grab-and-go" format. It is ruggedly built to withstand the rigors of touring, while still delivering the **nuance, accuracy, and sound quality** that have earned Fractal Audio its place in the world's top studios and on stage with some of the biggest tours in the world. Never before have we offered so much in a unit so compact as the FM3.

Sonically, the FM3 is the direct descendant of our flagship, with an ultra-high quality signal path and the latest ARES amp models. FM3 also includes many of our most popular features like scenes, channels, modifiers, flexible routing, footswitch layouts, USB recording/re-amping/playback, and much more. It is **expandable** with a FASLINK™ II port supporting up to two **FC controllers** for up to 24 additional footswitches. It is also **cross-compatible: FM3-Edit** not only delivers everything you've come to expect from our best-in-class software, but even converts Axe-Fx III presets for the FM3 (and vice versa).

FM3 truly demonstrates that good things come in small packages. No other platform offers the same sonic performance while being as flexible and *fun*. This unique combination has made Fractal Audio the tool of choice for some of the world's mightiest guitar heroes, yet we also hear again and again from "weekend warriors" who tell us that our products make them "a better player," on a permanent honeymoon, in love with their tone.

Whether you want the pure simplicity of a great guitar straight in to a classic amp, or choose to venture into totally unexplored sonic territory, the FM3 delivers the legendary Fractal Audio experience — and fits it in a backpack.

We hope you enjoy using it as much as we have enjoyed creating it.

Fractal Audio Systems
January 2020

FEATURE SUMMARY

- The FM3 is powered by a 3-Core “Griffin” DSP with one ARM and two SHARC+ cores, plus a GPU. It is the only product of its kind to feature Fractal Audio’s ARES amp modeling, cab sims, and legendary stompbox and studio effects.
- Durable steel chassis with protective endcaps designed to withstand the rigors of touring.
- FM3 features an ultra-high-quality signal path for extremely low THD and noise floor.
- FM3 features our “crown jewel”: ARES amp modeling technology developed for the Axe-Fx III. ARES captures the sound and feel of real tube amps, with hundreds of models offering an impressive range of clean tones, elusive “edge of breakup”, and everything from warm, touch-sensitive overdrive to face-melting modern distortion.
- The FM3 Cabinet Simulator block loads up to two impulse responses for extremely accurate response and dynamic remixing including visual phase alignment. 2,048 factory cabs include every option from the Axe-Fx III 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. Compatible formats include, .ir, .syx, and .wav; Sixteen Scratchpad memories are provided for experimentation.
- As a multi-effects unit, the FM3 includes a superb selection of state-of-the-art “blocks” based on those from Axe-Fx III, including 42+ drives, 50+ reverbs, 30+ delays, compressors, EQs, filter, chorus, flanger, phaser, pitch shift, rotary, tremolo, synth, wah and many more.
- Input and Output blocks 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, the popular “four cable method”, and more.
- 512 Preset memories can each store an entire rig with its own amp, cab, effects, and much more.
- 12×4 layout grid, with “Zoom Out” option to show the entire grid on one page, including VU meters!
- Eight nameable “Scenes” per preset eliminate “tap dancing” and allow for quick sound changes – 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 with no extra CPU “cost.”
- Easy-to-read, precision full-screen tuner includes a bar graph and virtual strobe display.
- 4×4 USB audio capabilities allow for recording, playback, re-amping and more.
- FM3 features our latest interface and navigation controls, featuring the same custom color display as the flagship Axe-Fx III, with five knobs with on-screen labels providing instant access to both turn and push functions.
- Dedicated hardware navigation controls for NAV, VALUE and PAGE provide great ergonomics and efficiency, plus instant familiarity to those coming from another Fractal Audio product.
- Three onboard footswitches use our “FC” system for extreme flexibility, with nine layouts containing 12 switch definitions each. A new “Views” feature maximizes the utility of FC Layouts.
- Each footswitch has its own mini LCD display to show the function of the switch, plus a variable color LED ring which shows the category and status of the switch.
- Every switch can have its own fully-customizable tap and hold functions. Change presets, banks, scenes, effects, channels, operate the looper, tuner, tap tempo, and more.
- Per-Preset Switches: any preset can cleanly and easily override any footswitch in any layout, providing incredible flexibility.
- Modular Control! Those who wish for more footswitches can use FASLINK™ to connect one or two FC-6 or FC-12 controllers. These integrate seamlessly with onboard switches and also offer additional switch/pedal jacks.
- Two pedal jacks each allow connecting external switches or expression pedals like the Fractal Audio EV-1 or EV-2.
- Four top panel LED input meters plus two output “clip” LEDs provide visibility of critical levels. Onscreen animations show level for every block, input, output, and more.
- Input 1 is ultra-low noise, with a 1/4” mono Instrument input featuring “Secret Sauce IV” for optimized signal from your guitar or bass. Output 1 is Stereo, with Balanced XLR jacks, plus a stereo headphone out.
- Input 2 is Stereo, with balanced 1/4” inputs. Output 2 is Stereo, with 1/4” designed for “unity gain” with the knob “wide open”, and featuring Humbuster™ technology to help combat noise from ground loops.
- An independent SPDIF output can transmit a choice of signals.
- MIDI IN and combination OUT/THRU ports, backed by a rich MIDI implementation with extensive MIDI transmit and remote-control possibilities.
- “Client-Server” architecture allows multiple FC series foot controllers and FM3-Edit to control the FM3 and update each other seamlessly and instantly.
- A connected computer allows the use of FM3-Edit, our world-class editor for Mac and PC, and Fractal-Bot, for firmware updates plus backup and restore.
- FM3-Edit allows FM3 to load Axe-Fx III 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 FM3 has upgradeable firmware allowing for constant improvement and innovation.

THE SETUP MENU

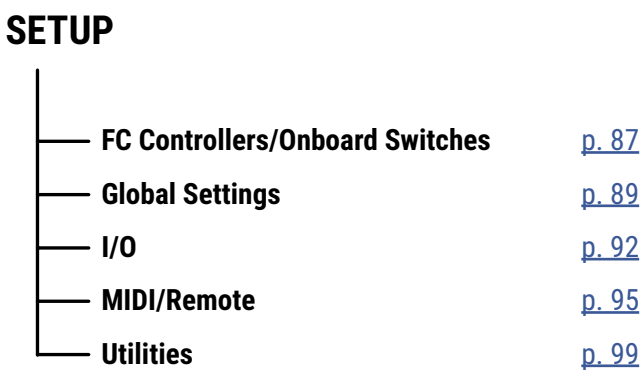
Throughout this manual, you will be directed to the **SETUP** menu of the FM3 for a range of options including I/O, MIDI, global settings, and more. The **SETUP** menu includes the following areas:

- The **FC Controllers/Onboard Switches** menu includes all settings for the onboard switches or a connected FC controller.
- The **Global Settings** menu includes options which govern the global behavior of the FM3.
- The **I/O** menu contains settings for all inputs and outputs, including levels, audio options, and switches or expression pedals connected directly to the FM3.
- The **MIDI/Remote** menu contains MIDI settings, plus several pages of remote controller assignments for the many remote-controlled functions of the FM3.
- The **Utilities** menu contains readouts, utilities, and a control to adjust screen brightness.

To access and use the **SETUP** menu:

- Press **HOME**.
- Push the "**E**" soft knob for the **SETUP** main menu.
- Use the **NAV** buttons to select a sub-menu and press **ENTER** to make a selection.
- Use **PAGE** and **NAV** buttons to get around. Use **VALUE** and knobs **A–E** to make changes.
- You never need to store changes to the **SETUP** menu. All changes take effect immediately.
- Press **HOME** at any time to return home.

Use these links for instant access to the **SETUP** menu topics in this manual:



QUICK CONNECT GUIDE

Perhaps the best and most flexible way to enjoy your FM3 is through a full-range system such as studio monitors, a high-quality PA, or full-range cabinets designed specifically for guitar. All of the factory presets are designed for this type of setup.

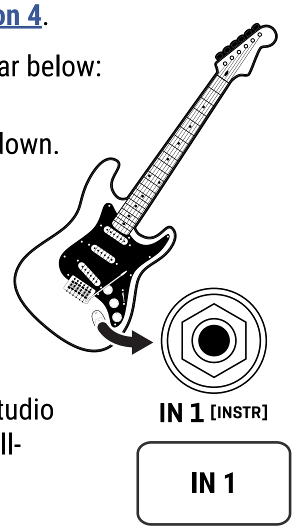
The FM3 is incredibly flexible, however, and many other types of setups are supported, including those which integrate with tube amps, USB recording, 3rd-party outboard equipment, and much more.

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 FM3 **Instrument** input (**Input 1**).

The FM3 is also perfect for bass and other instruments.



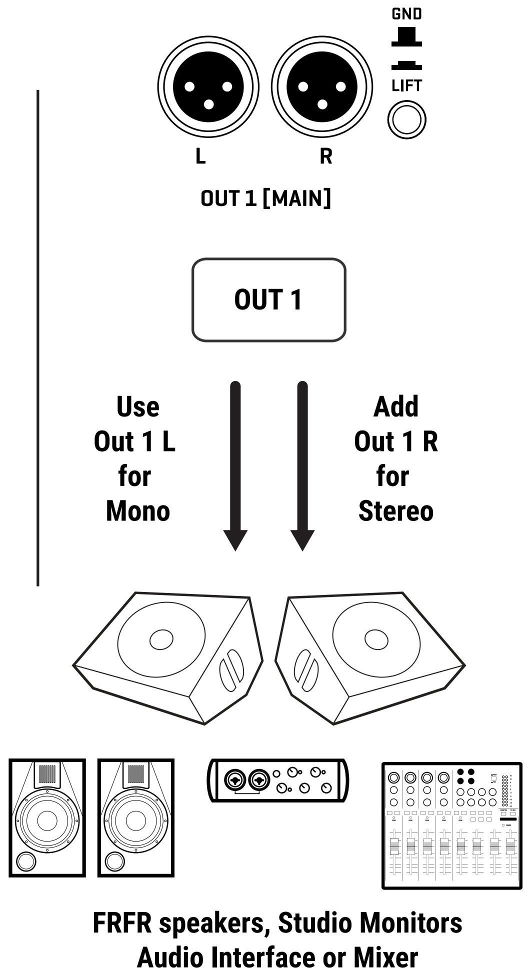
2 Connect **Output 1** to your mixer, studio monitors, audio interface, PA system, full-range speakers, power amp inputs, etc.

- For a mono rig, use **Out 1 Left**.
- For optional stereo, connect **Out 1 Right**.
- Use XLR-to-XLR cables or XLR-to-TRS cables when connecting to balanced inputs. Use XLR-to-1/4" (TS) cables for unbalanced inputs.

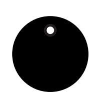
3 Slowly turn up the front panel **OUT 1** knob and adjust the level on your monitors as desired.

Explore factory presets by turning the **VALUE** wheel.

Select Scenes within a preset by using **NAV Up/Down**.



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," used to describe a system which aims to reproduce the entire audio spectrum without compromise. In comparison, most traditional guitar speakers have limited range -- they cannot reproduce extended lows and highs -- and are not at all "flat" -- meaning some frequencies are markedly louder or quieter. Full-range flat response studio monitors, high-quality PA speakers, and FRFR speakers designed specifically for guitar should be able to reproduce *anything* you send to them. Of course, even these may vary, depending on which brand and model you choose.

SETTING LEVELS

Setting proper levels is critical, but easy, with abundant meters to inform you about levels on the FM3.

INPUT LEVELS

The FM3 comes ready-to-use for the typical guitar with passive pickups. To check levels, connect a guitar to INPUT 1. Choose your loudest pickup setting and set all the guitar controls to "wide open." Play loud, open chords to push the levels as you watch the IN 1 [INSTRUMENT] meter LEDs. It's OK to tickle the red LED once in a while, but if actual clipping occurs, you must **pad** the input as follows:

- Open the **SETUP: I/O: Audio** menu page.
- Navigate to the **INPUT 1 PAD** parameter. Turn the VALUE knob to increase this setting. The possible values are 0dB, 6dB, 12dB, and 18dB. Be aware that as you increase this setting you also increase the noise floor, so set it as close to 0 as possible for the best signal-to-noise ratio.

Input 2 can be adjusted with its own **Input 2 Pad** parameter on the same menu page.

You can also monitor all levels on the **Meters** page of the **Home** menu (shown below).

Input Pad adjustments do not affect gain levels or what you hear. As you pad the input of the A/D converter, the output is boosted by the same amount. This eliminates clipping but ensures unity gain.

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. If you are clipping the outputs, you will need to lower the level INSIDE your presets. The top panel **OUT 1** knob comes after the converters and only affects the level of what you hear.

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

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

- Page **SETUP: I/O: Audio**
- Adjust **Output 1: Output Level** to +4dBu.

Learn more about the **I/O Menu** on p. 92

Section 7: 7 Leveling Presets is dedicated to the subject of adjusting preset levels.

Output 2 is designed so that turning the **OUT 2** knob all the way up produces a unity gain signal.

The Layout also has a Meters view showing block levels.

HUMBUSTER™ CABLES

For OUTPUT 1, use **XLR-to-XLR** or **XLR-to-1/4" TRS** cables when connecting to balanced inputs.

Use **XLR-to-1/4" (TS)** cables when connecting to unbalanced inputs.

For OUTPUT 2, standard 1/4" (guitar) cables may be used, but there is a better option. **Humbuster™** cables can significantly reduce unwanted hum due to ground loops. 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 FM3. 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.

MONO VS. STEREO

The FM3 comes pre-configured 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 may 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 FM3 in its default stereo configuration but connecting only one (Left) 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 FM3, a flexible block-based I/O system makes it easy to use different outputs with different settings. 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.

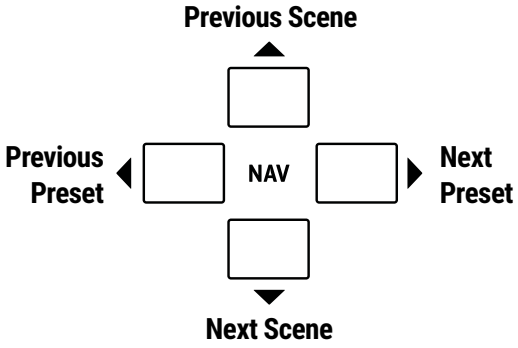
THE HOME PAGE: PRESETS

Once you have connected your FM3 you can begin to audition factory preset sounds. 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 FM3 contains 512 preset memories, each like a fully independent 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 contain extra **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. 65)
  - **FC Per-Preset** ("Per-Preset Switches" on p. 79; also "The Footswitch Functions Guide" on p. 18)
  - **Setup** (p. 3 and p. 87)
- Turning knob **E** changes between different foot control "**Layouts**" (p. 69).
- A **mini-Tuner** appears at the top of the **Home** page itself in the form of two green triangles. When both are shown, the note is in tune.

- 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 and returns to the **Home** page.
- The **Meters** page provides visual indication of all input and output levels, including USB.

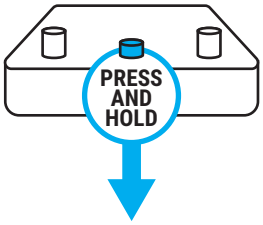
LAYOUTS

The FM3 is based on our popular **FC controllers**. The central concept behind all these products is the footswitch **Layout**. A layout is a set of 12 **footswitch definitions**. You can **change the layout** to change what the footswitches do. All layouts and switches can be completely customized. The FM3 provides eight layouts in total, plus one special "Master" layout (covered below). Layouts have both numbers and names to make them easier to manage.

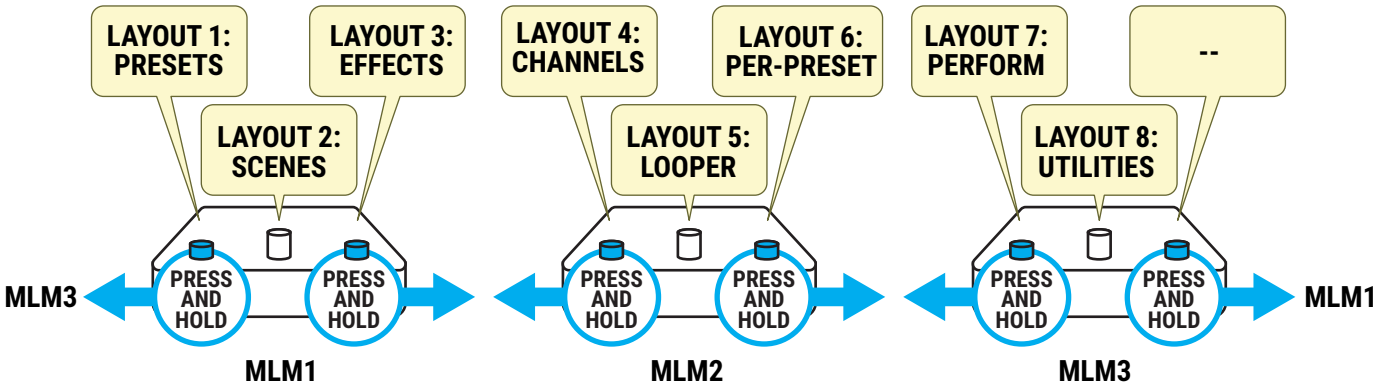
There are multiple ways to change the layout on the FM3. The easiest is probably to turn **knob E** from the Home page of the Home Menu. You wouldn't be able to do this easily while you are playing, however, so we created the **Master Layout Menu** and **Layout Switches** so you can select layouts with your feet.

THE MASTER LAYOUT MENU

Let's look at the Master Layout Menu or "MLM" and how to use it:



1. Press and hold footswitch 2 in any normal layout to enter the Master Layout Menu ("MLM").
2. TAP any footswitch on any MLM page to select a new layout and exit the MLM.
3. While you're in the MLM, hold the left or right switches to step through three different "views" -- each with its own menu choices shown below. The layouts themselves are detailed on p. 71.



Learn more in Section 10: Layouts & Switches.

FOOTSWITCHES

The FM3 has three 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 this subject in more detail.

SWITCHING PRESETS

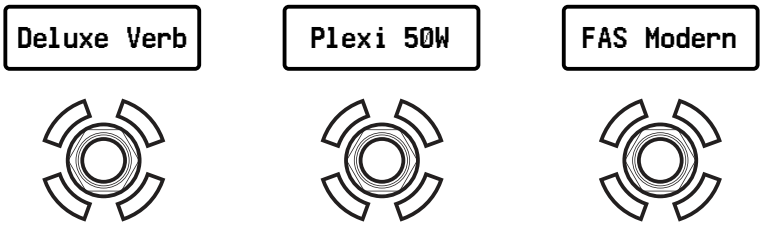
Let's begin with how to explore the factory presets using the footswitches.

When the FM3 starts up, it loads the PRESETS footswitch layout. In this layout, the three footswitches 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 three presets. To change to the next bank of three presets, press and hold the right footswitch. To change to the previous bank, press and hold the left footswitch.

The FM3 boots up to the Presets footswitch layout.

In this layout, three footswitches select three different presets.



Press and hold the left switch

to load the previous bank of three presets.

Press and hold the right switch

to load the next bank of three presets.

QUICK TIP

You can use the MANAGE PRESETS feature of FM3-Edit to drag and drop presets of the FM3 into any order you wish. Put your favorites in groups of three so you'll have what you need without a lot of bank changes!

FOOTSWITCH FUNCTIONS

Every footswitch in every layout (see next page) can have its own independent functions for **Tap** and **Hold Function**. Functions are arranged in Categories like "Presets", "Scenes", or "Effects".

LED RING COLORS

Every footswitch Category has its own default LED ring color. You can change these default colors on the **Ring Colors** page of the **FC Controllers/Onboard Switches** menu under **SETUP**. You can also change the color of any individual switch. See "Edit a Switch" on p. 78.

MINI DISPLAYS

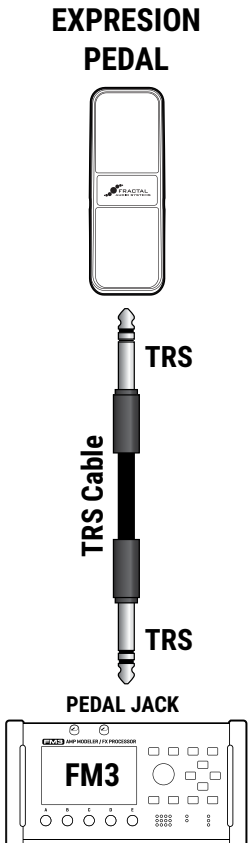
The Mini-Display for each switch shows a **label** for the Tap function. While the switch is depressed — even for a normal "tap" — the label changes momentarily to show the Hold function.

See "The Footswitch Functions Guide" for more information.

EXPRESSION PEDALS

This section is for pedals connected to the local "Pedal" jacks of the FM3.
For pedals connected to an FC Series controller, see your FC Owner's Manual.

Each of the two **Pedal** jacks of the FM3 support one expression pedal (or 1 to 2 switches).



TO CONNECT & CALIBRATE AN EXPRESSION PEDAL...

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

Connect your expression pedal to one of the FM3 Pedal jacks with a TRS cable, then follow these instructions:

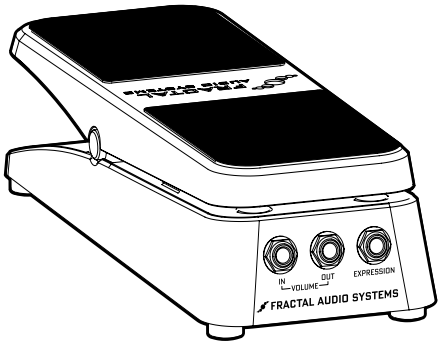
1. From the **Home** page, open **SETUP: I/O**: **Pedal**.
2. For pedal jack 1, set **Pedal 1 Setup** to "**PEDAL 1 (EXP/SW TIP)**" (or use **Pedal 2 Setup** if that's the jack you're connecting to)
3. Navigate down to the **Calibrate** function for your pedal and press the **ENTER**.
4. Follow the on-screen 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, check a different pedal or cable!

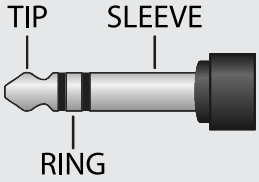
FRACTAL AUDIO EV PEDALS

The Fractal Audio Systems EV series of expression 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 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

FM3 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 (EXP/SW TIP)**
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 FM3 allows global remote control of the volume at any input or output via a pedal or MIDI CC of your choice. To set up a pedal for global volume, follow the instructions below. Be careful that you don't accidentally 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:

- **Input volume** affects gain/distortion and the behavior of level-dependent blocks like the compressor or gate.
- **Output volume** does *not* affect gain or level-dependent blocks, but scales *everything* you hear including effect tails.

To set Global Volume:

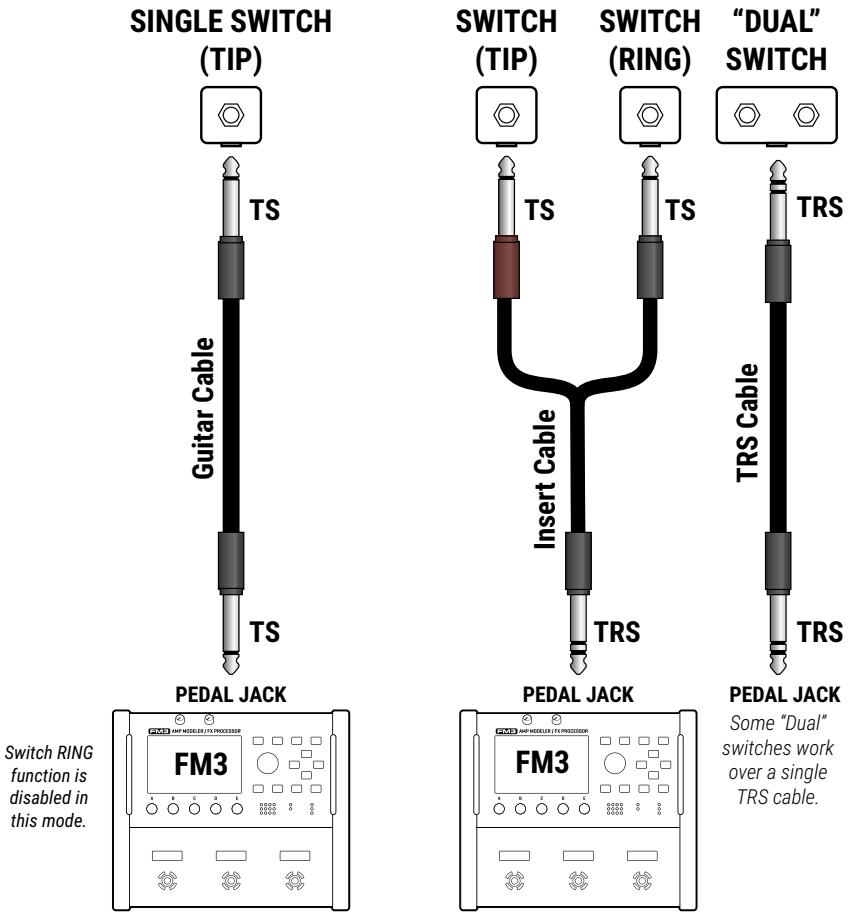
1. From the **Home** page, open **SETUP: MIDI/Remote**: **Other**.
2. **NAV** to the entry for whichever volume you want to control: **Input 1 or 2**, or **Output 1 or 2**.
3. Turn the **A** or **VALUE** knob to assign a controller to your selected entry.
   - Select "**PEDAL 1 (EXP/SW TIP)"** for the onboard Pedal jack (or #2 if you are using that one)
4. Test and **EXIT** when finished.

Learn more about the MIDI/Remote menu options on p. 95.

EXTERNAL SWITCHES

This section is for switches connected to the local "Pedal" jacks of the FM3.
For switches connected to an FC Series controller, see your FC Owner's Manual.

Each of the two **Pedal** jacks of the FM3 can support one or two switches instead of one expression pedal. This requires a simple setting change. Any make-break switch type may be used with the FM3 in this way. Connect switches in any of the ways illustrated 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 Setup** to "ONE SWITCH" or "TWO SWITCHES" depending on what you have connected (or use **Pedal 2 Setup** if that's the jack you're connecting to).
- Next, navigate down to the SWITCH SETTINGS section and select the TYPE and POLARITY for each of your switches. See p. 94 for more on this setting.
- Press **HOME** to finish.

SWITCH ASSIGNMENT

Since each jack supports TWO different switches, you'll find multiple options for assignment in the modifier source menu and the various MIDI/Remote menu pages.

Pedal 1 (EXP/SW TIP) is switch 1 tip.

Pedal 1 (SW RING) is switch 1 ring.

Pedal 2 (EXP/SW TIP) is switch 2 tip.

Pedal 2 (SW RING) is switch 2 ring.

QUICK TIP

External Switches can be used with many per-preset and global options found in the MIDI/REMOTE MENU. Even more powerful, however, is the STAND IN SWITCH feature, which allows them to perform the same functions as the onboard switches.

USB AUDIO

USB provides the FM3 with a host of great audio features. With 4×4 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 FM3.

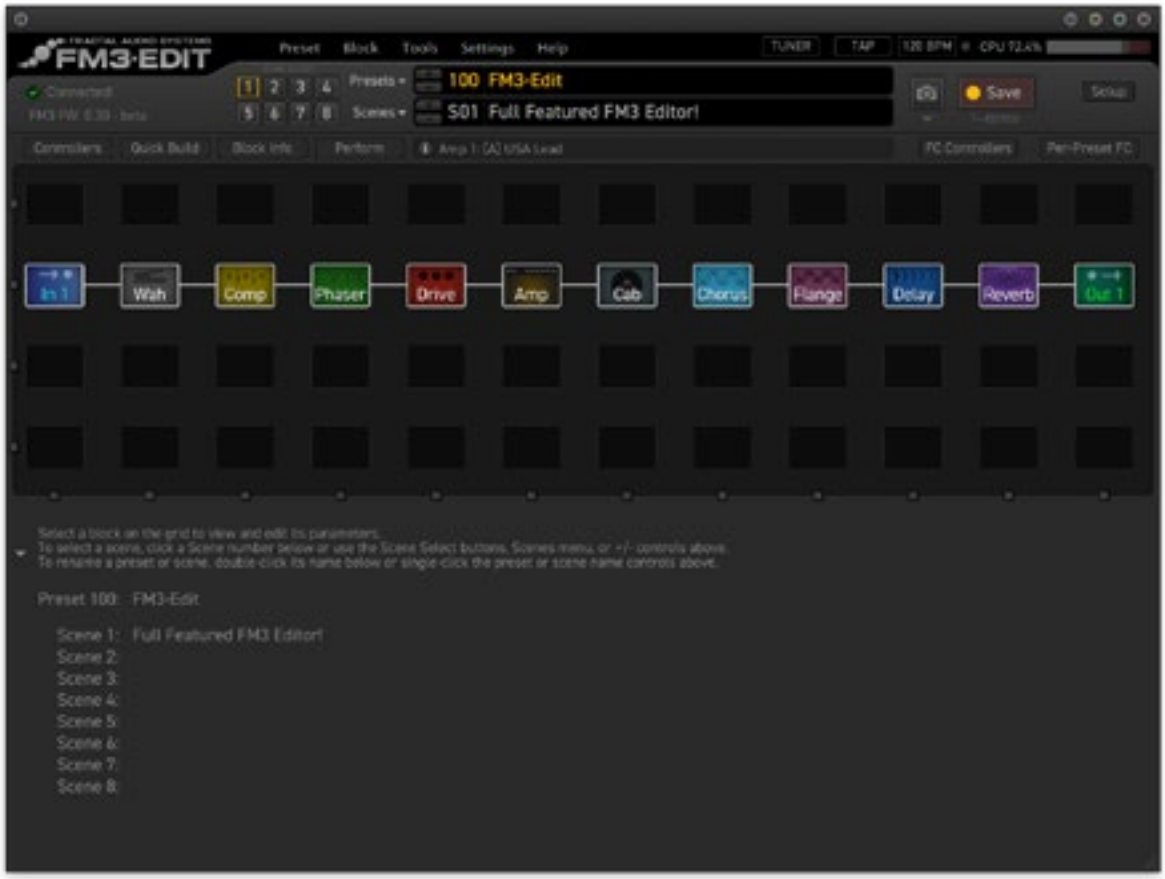
FRACTAL-BOT & FM3-EDIT

In addition to providing audio capabilities, USB allows you to use our companion software applications **Fractal-Bot** and **FM3-Edit**.

Fractal-Bot is a small, simple program used to update the FM3 when new firmware is released. It includes tools to backup or restore presets and other custom settings and can be used to install downloaded presets or cabs.

FM3-Edit is a full-featured software editor/librarian for the FM3. If you are comfortable with audio software or plug-ins, you will probably enjoy using this program. FM3-Edit offers great ease of use and convenience, plus some “power-user” routines that aren’t possible on the unit itself (e.g. Performance Page editor, Block Library, Scene Swap). It also provides great tools for managing presets and banks, installing Cab Packs, and more.

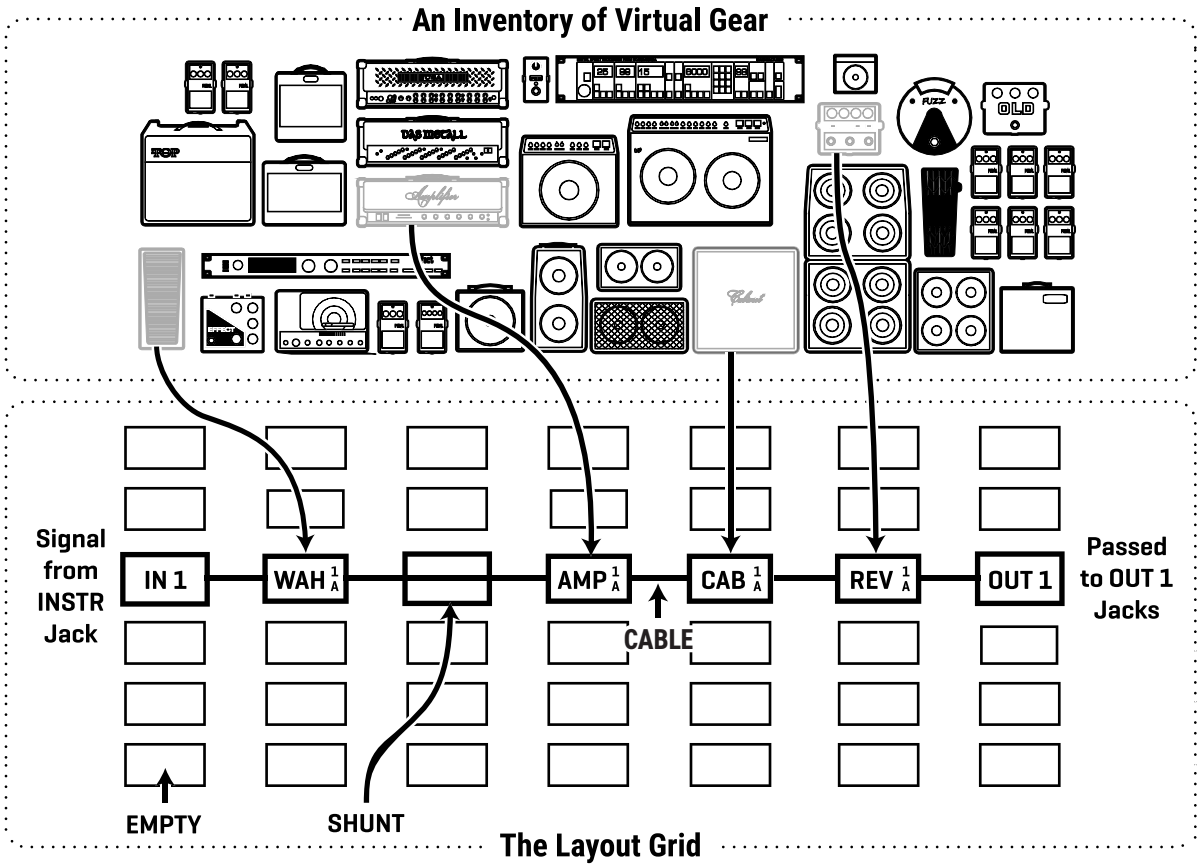
You can download FM3-Edit for Mac or Windows at https://www.fractalaudio.com/fm3-edit



INTRO TO THE LAYOUT GRID

Behind every preset is the **Grid**, a matrix of rows and columns that is the key to unlocking the true potential of the FM3. In the world of traditional gear, our options are restricted by budget, space, weight, and the limits of the equipment itself. Building a rig means making hard choices. With the FM3 however, these limits are replaced by a vast, ever-growing "**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.

To create a **preset**, virtual pieces of gear called **blocks** are selected from an **inventory** and placed into the slots of the **layout grid**. Each block represents a different component like a wah pedal, amp, or reverb unit. Blocks are connected 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 FM3. Here is an illustrated overview of the concept:



Let's review what's happening above. Signal flow begins at the **Input 1** block on the left. 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. 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 grid structure, block inventory, and total processing power ("CPU"). The FM3 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

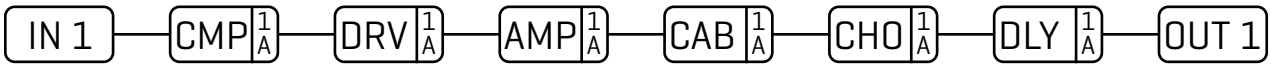
Imagine a professional rackmount system rig like the ones used by guitar heroes for decades. In such a rig, the various components — pedals, guitar amp, rack units — are usually connected to a central **switching unit** so they can be switched in groups without "tap dancing." Some components may also 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 FM3 **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** on the FM3 allow you to easily create these 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 set which "**Channel**" each component is set to. Each preset contains eight scenes and like presets, FM3 Scenes also have their own names.

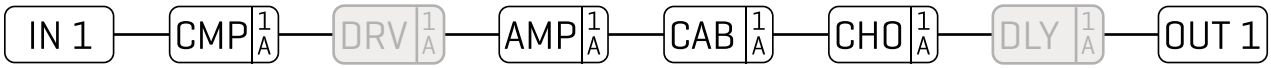
Scenes can also offer an advantage over presets in terms of sound changes. When you change scenes, the FM3 doesn't need to reload the entire "rig." Instead, it just sets the blocks and channels as needed for the new scene. This is not only faster, but also allows easy "spillover" of delay and reverb tails.

Channels on the FM3 make blocks extremely flexible. Each channel contains a **fully independent** set of parameters for the entire block. For example, **Channel A** of a **Drive** block might be a clean boost, **B** could be an overdrive, **C** could be a distortion, and **D** could be a Fuzz. That's four completely different drive sounds from just block. This can be used to conserve CPU power when compared to single-use blocks used one at a time.

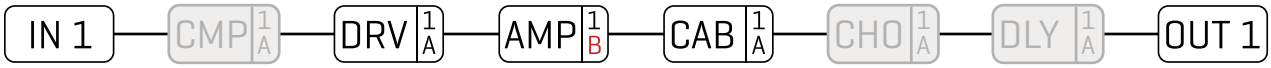
SCENES AND CHANNELS: A VISUAL EXAMPLE



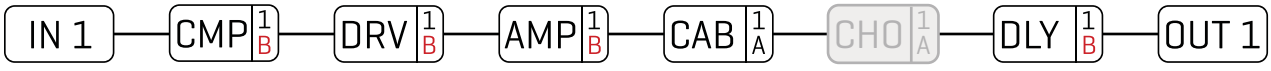
Here is our preset. The Input 1 block feeds a Compressor, which is connected to a Drive, then an Amp and Cab, then Chorus, Delay, and finally the Output 1 block.



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

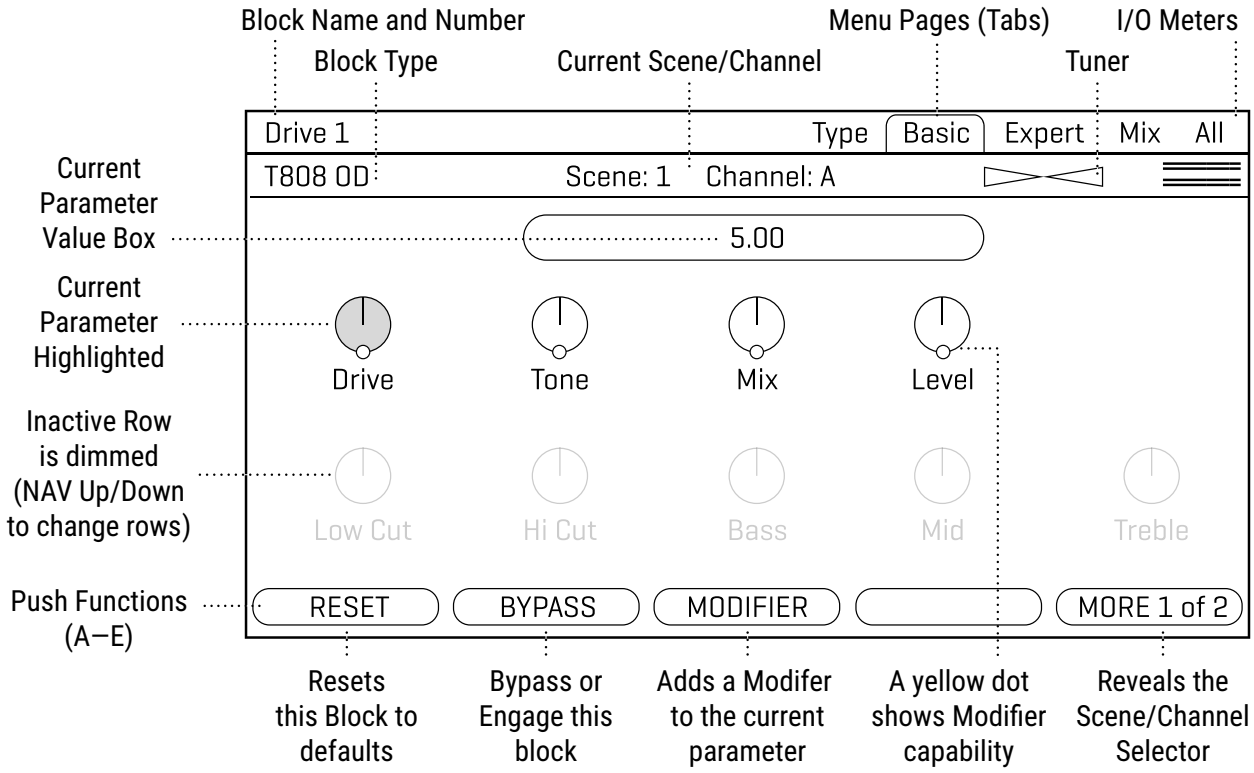
Learn more about the layout grid in Section 5. Meanwhile, here's a very quick primer:

- 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 FM3 is based on our flagship rackmount processor, the award-winning Axe-Fx III. Both the FM3 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 FM3.

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

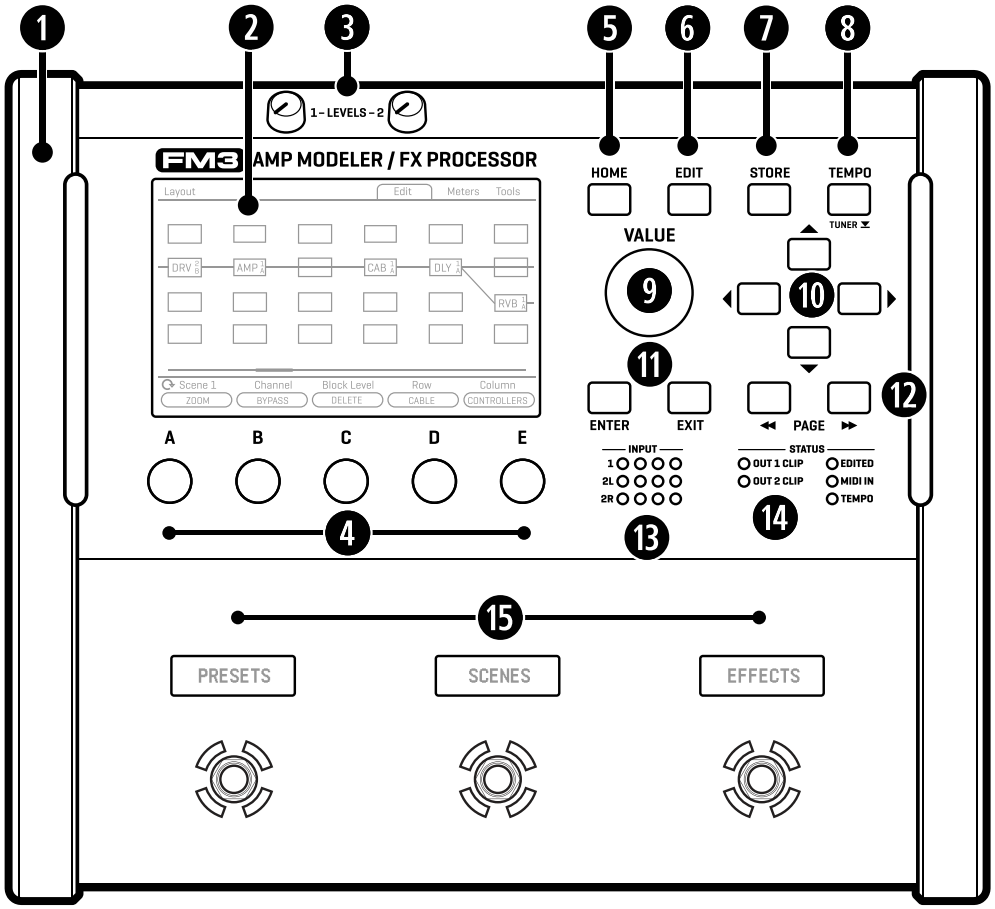
THE FOOTSWITCH FUNCTIONS GUIDE

The FM3 is also based on — and can be used with — the Fractal Audio **FC** series foot controllers. The FM3, the FC-6, and FC-12 all use a system of Layouts and Footswitches (p. 8) and in Section 10: Layouts & Switches. Each Footswitch has its own Tap function and a separate Hold function, drawn from a list shared by all of the above products. These are detailed in a separate manual, the **Fractal Audio Footswitch Functions Guide.**

Find this guide at https://www.fractalaudio.com/fas-ffg

2 HARDWARE OVERVIEW

THE TOP PANEL



1 **Chassis** — The FM3 is housed in a rugged 3U steel chassis with a sleek anodized aluminum front panel and protective end caps. A pair of high-strength handles make the unit easy to manage.

2 **Color Display** — A large 800×480 color display is optimized for readability in the most difficult conditions, with greater brightness and contrast than “off-the-shelf” displays.

3 **Output Level Knobs 1&2** — These knobs independently control the volumes at the corresponding rear panel outputs. Output 2 is at unity gain when set fully clockwise.

4 **A, B, C, D, and E knobs** — Five endless rotary push-knobs perform different functions depending on which page is shown in the display. Many pages show turn functions in blue and push functions as buttons. Most Edit pages show one or two rows of five knobs for easy 1:1 operation. On vertical menu pages, knob functions are indicated on-screen with labels (“A” through “E”).

5 **HOME Button** — This button shows the **Home** menu—a convenient starting point for loading or editing presets, and accessing the tuner, controllers, metering, global setup options, and performance pages.

6. **EDIT Button** — This button opens the **Edit** menu to edit blocks selected on the Layout grid. You can also tap **EDIT** sequentially to step through all blocks in the current preset (top-to-bottom, left-to-right). See "Presets" on p. 39 for more on editing presets.

7. **STORE Button** — Enters the **Store** menu where you can save presets and enter names for presets or scenes. See "Saving Changes" on p. 47.

8. **TEMPO Button** — Tap this button once to show the **Tempo** page of the Controllers menu, or tap 2+ times to set a new tempo. The tempo can also be entered using MIDI or a remote switch. After setting the tempo, press **EXIT** to go back to back to wherever you were. See "Tempo" on p. 83. Press and hold the Tempo button as a shortcut to access the tuner.

9. **VALUE Knob** — The **VALUE** knob performs different functions on different menu pages. In the **Home** menu, it selects presets. In **Layout** (grid) pages, it is used to add or modify blocks on the grid. In **Edit** menus, it changes parameter values, selects from lists, and more.

10. **NAV Buttons** — The four **NAV** buttons perform different functions on different menu pages. On the preset pages 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.

11. **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.

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

13. **Meter Bridge** — Four LED meters show the levels at input and output jacks. For input meters, the red LED indicates -6dB. As directed in the Introduction (p. 5) a Pad setting is provided for adjustment. For output meters, the red LED indicates -1 dBFS and is therefore a more immediate indication of clipping. When the outputs clip, this usually means that the levels inside your presets are too loud.
TIP: You can also find on-screen meters on the **Meters** pages of the Home menu and the Layout.

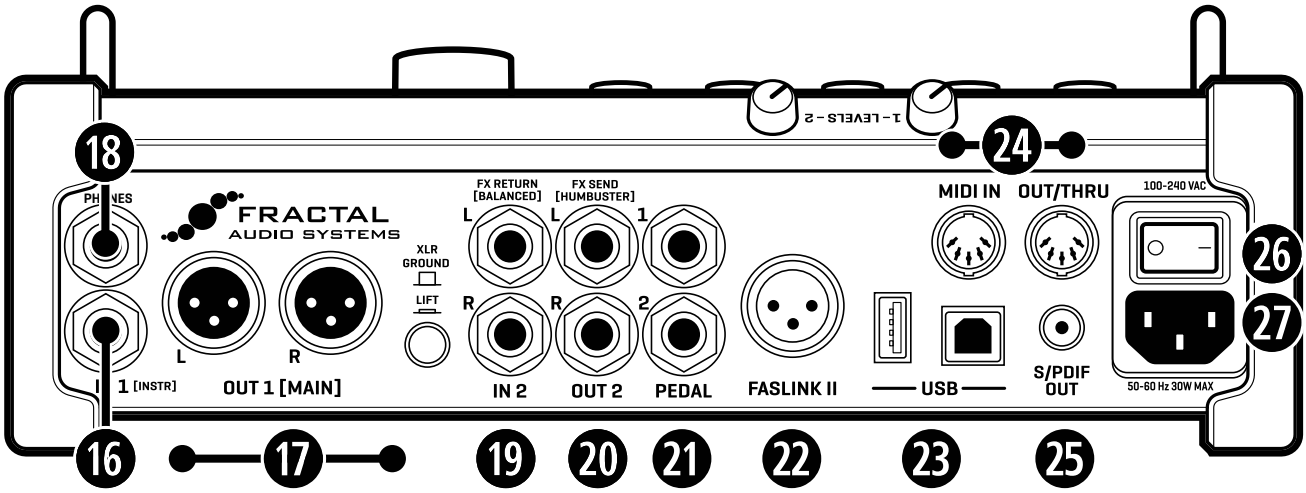
14. **Status LEDs** — Five LEDs indicate important information. The **Tempo** LED flashes to show the current Tempo. The **Edited** LED lights whenever the current preset has been altered but not saved. The **MIDI In** LED lights while MIDI data is being received at the MIDI Input or via USB. The **OUT 1 CLIP** and **OUT 2 CLIP** LEDs indicate that internal signal levels are too high. (See "**Meter Bridge**", above.)

15. **Footswitches** — The switches of the FM3 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 on every "Layout," and there are eight different layouts, plus one special layout called the "Master Layout Menu". Learn more in Section 10: Layouts & Switches.

Three Footswitches.. Plus 6, or 12, or 24 more!

The FM3 has three onboard switches, making it the perfect compact all-in-one way to enjoy Fractal Audio's legendary amp models, speaker cab simulation, and effects. If you need additional footswitches, however, you can also connect up to two FC controllers, each with six or twelve additional switches with all the same fully-integrated capabilities as the onboard switches. In addition, each of the onboard PEDAL jacks of the FM3 can be used for one or two external switches instead of an expression pedal if you choose.

THE REAR PANEL



16 **Input 1 [Instrument] (mono)** — **(1) 1/4" Jack (unbalanced)** — Connect your instrument's output to this jack, intended specifically for use with electric guitars, acoustics, and basses, and other similar instruments. The FM3 uses our proprietary "Secret Sauce IV" circuitry from our Axe-Fx products.

17 **Output 1 L+R (stereo)** — **(2) XLR-Male (balanced)** — Use the XLR jacks to connect to the balanced inputs of FRFR speakers, mixers, studio monitors, etc. Use the **ground lift switch** if necessary to reduce 60-cycle hum.

TIP: Balanced audio connections are resistant to noise and interference. Use cables balanced at both ends when connecting to the balanced inputs of other devices. When connecting to unbalanced 1/4" inputs, use cables or adapters with an XLR (Female) on one end and an unbalanced 1/4" jack on the other.

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

19 **Input 2/FX Return L+R** — **(2) 1/4" Jacks (balanced)** — Connect balanced or unbalanced line level signals here. Input 2 can be used with the outputs of pedals or processors as an FX Return, or as an auxiliary input for use with stereo line level sources such as mixers, synthesizers, backing track players, and more. Another popular use is for inputting the second output of piezo-equipped guitars.
TIP: Balanced audio connections are resistant to noise and interference. It is best to use XLR or TRS (3-conductor) cables when connecting to the balanced outputs of other devices. Use regular TS-type cables or adapters (2-conductor) when connecting to unbalanced outputs like those on most guitar pedals.

20 **Output 2 L+R – (Stereo)** — **(2) 1/4" Jacks (Humbuster)** — Use these 1/4" unbalanced outputs to connect to unbalanced inputs, such as those on many guitar power amps and other devices.
Humbuster™ technology on Output 2 can significantly reduce hum from ground loops. This requires special Humbuster Cables, available at https://shop.fractalaudio.com/cables/ (Learn more on p. 6.)

Output 2 is designed for unity gain applications such as the popular "Four-Cable Method" and other scenarios. Set the **OUT 2** Level knob fully clockwise for unity gain. See **Section 4** for more.

21 **Pedal Inputs** — **(2) 1/4" Jack** — These are used to connect external expression pedals or switches to control various functions of the FM3. See "Expression Pedals" on p. 10 and "External Switches" on p. 12.

㉒ **FASLINK II Connector** — This allows you to connect the FM3 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 FM3 is designed for our FC Series of foot controllers and is NOT compatible with the FASLINK port on our MFC-101 MIDI foot controller. Connecting an FM3 to an MFC-101 via FASLINK should not cause any damage, but it will not work.*

㉓ **USB** — This provides the FM3 with 4×4 USB audio capabilities when connected to a compatible Mac or PC for use with a DAW or other audio applications. The FM3 is NOT a USB MIDI Device. It uses "COMM over USB" channels for Fractal-Bot and FM3-Edit, but will not appear as a MIDI device in a DAW or other MIDI program. See Section 3: USB for important information on USB.

㉔ **MIDI Ports** — The MIDI IN port of the FM3 allows you to control various MIDI functions including preset and scene selection, effect bypass, channel changes, parameter changes, and more. See "Sending and Receiving MIDI" on p. 113 for more information on the various ways the FM3 works with MIDI.

㉕ **SPDIF Out** — Digital Output — This transmits a digital output signal at a fixed rate of 48k. The SPDIF out can transmit your choice of signals as per the setting of the SPDIF Out Source parameter.
(See "I/O: AUDIO Page" on p. 92.)

㉖ **Power Switch** — This turns the power on or off. The FM3 features pop suppression, but it is still advisable to turn down or mute connected devices when powering on or off.

㉗ **AC Power Receptacle** — Insert the supplied power cable and connect the other end to a grounded AC power receptacle. The FM3 has a universal power supply, which means it can be used around the world by simply changing the cable.

3 USB

COMPUTER INTEGRATION

With a USB connection to a computer, the FM3 provides 4×4 audio interface capabilities, including computer audio playback, recording, and re-amping in your DAW or other audio applications. Two separate USB-Serial/Audio Drivers are required for Windows operating systems. No driver is required for Mac operating systems.

The FM3 is NOT a USB MIDI Device. It uses “COMM over USB” channels for Fractal-Bot and FM3-Edit, but will not appear as a MIDI device in a DAW or other MIDI program.

WINDOWS MINIMUM REQUIREMENTS

Two separate USB-Serial/Audio Drivers are required for Windows operating systems.

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: Two different drivers are required for use under Windows.

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

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, FM3-Edit, etc.).

CPU: Intel Processor.

Memory: 512MB minimum.

USB: USB 2.0 support required.

Driver: No driver is required for Mac OS.

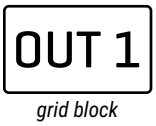
Important: *If you are using a USB-C to USB adapter on a newer Apple computer, plug the USB-C adapter into a the port on your Mac first, allow it several seconds to “wake up” and **then** connect a USB cable and FM3 into the adapter.*

USB AUDIO

RECORDING

COMPUTER INPUTS 1+2

Source: The output of the **OUT 1** block on the FM3's grid.
Application: Record the stereo processed output of the FM3.



grid block

COMPUTER INPUTS 3+4

The source is selectable in **Setup: I/O: Audio: USB 3,4 Record Source**

- **Source: INPUT 1:** (Default Setting) The Signal at the Input 1 Jack.
  Application: Record a DI for re-amping.

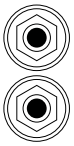
  Note: This mono signal appears at both USB 3 and USB 4 but would typically be recorded in mono.
  Note: If Input 1 Source is not set to ANALOG, this will result in silence!

IN 1/INSTR

-OR-

- **Source: INPUT 2:** The Signal at the Input 2 Jacks.
  Application: Record a stereo source with no processing.

IN 2



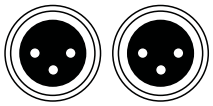
PLAYBACK

COMPUTER OUTPUTS 1+2

Destination: The **Output 1** jacks (and headphones).
Applications: Play stereo audio from the computer through the FM3.
NOTE: USB Audio is mixed with any signal from the grid and passed to the outputs.

OUTPUT 1

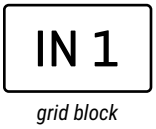
L R



COMPUTER OUTPUTS 3+4

The destination is selectable in **Setup: I/O: Audio**: **USB 3,4 Playback Destination**

- **Destination: INPUT 1 BLOCK:** (Default Setting)
  The input of the Input 1 block on the grid.
  Application: Transmit computer audio to the grid for re-amping/processing.

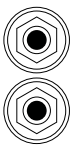


grid block

-OR-

- **Destination: OUTPUT 2:** The **Output 2** jacks..
  Applications: Play a second stereo track pair from the computer through the FM3.

OUT 2



BASIC PLAYBACK

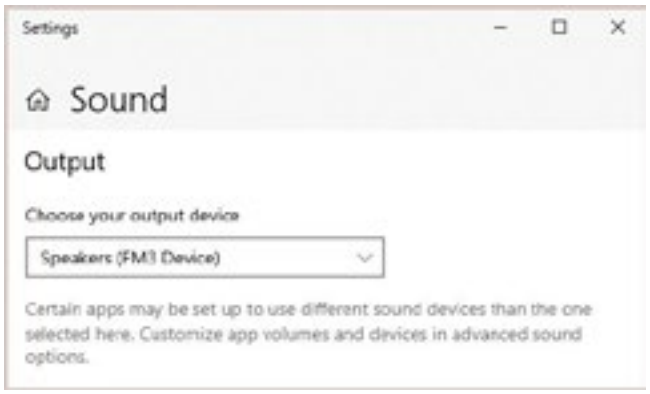
The specific steps for recording in your OS or DAW will vary based on your setup, but the basic idea is to select the FM3 as your audio interface, make any application-specific settings, and begin playback.

On Mac OS, no driver is needed.

- Connect the FM3 to an available USB port.
- Open **System Preferences: Sound** and select the **FM3** under “Output”.
- System Audio such as iTunes playback, should now appear at FM3 **Output 1 Left** and **Output 1 Right**.

On Windows you must install two separate driver files first.

- Find **FM3 USB Audio Setup** and **FM3 USB Serial Driver Setup** at: https://www.fractalaudio.com/fm3-downloads/
- Once the drivers are installed, open **Sound Settings** under **System Settings** and select the FM3.



Whichever OS you are using, confirm that the FM3 is receiving audio during playback 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 in your OS or DAW will vary based on your setup, but the basic idea is to select the FM3 as your audio interface, set the project sample rate to 48k, create a track, assign the desired input, and begin recording.

USB RE-AMPING

The FM3 USB Audio capabilities are perfect for “re-amping,” a method in which the raw, un-processed 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 FM3 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. 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 **FM3** as the main audio interface. Set the main outputs to **FM3 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 FM3 Output 1.
4. Connect your guitar to the **Instrument** input of the **FM3** 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 **FM3 Input 3**. This will record the signal at the **Instrument** jack with no processing.
   - **Arm** this Guitar DI track for recording, making sure that **Software/Input Monitoring** is *NOT* enabled.
   - Hit **RECORD** and roll the track. You will hear the processed guitar but record the DI. *Note: You can simultaneously record processed guitar on a different track at the same time if you want!*
   - 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.
   - YOU HAVE NOW RECORDED YOUR DI!

STEP 2: RE-AMPING

Before re-amping, we must first check some settings on the FM3. Press **HOME** and open **SETUP**. Navigate to the **I/O** menu, and change **Input 1 Source** to “USB (CHANNELS 3/4)**”**. (Remember to change this back when you finish re-amping!) Also make sure that you have not changed **USB 3,4 Playback** from its default setting of “INPUT 1”.

6. Change the output of your “DI” track to **FM3 Output 3.**
7. NOTE: You may wish to turn down the volume of the studio monitors before testing playback as follows: Solo the DI track, then rewind and hit PLAY. You should hear the DI being processed by your FM3 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 **FM3 Inputs 1+2**.
   - Arm your re-amping track for **recording**, making sure that **Software/Input Monitoring** is *NOT* enabled.
9. Rewind, hit **RECORD**, and roll the track. The output of the preset is recorded!

Again, the method described here is basic, but it should serve as a guide to get you started.

4 SETTING UP

This section provides an overview of common setups using the FM3. When setting up, begin with all level knobs turned down and all devices powered off. The FM3 features pop suppression on startup, but speakers or monitors should still be powered on last whenever possible. A basic AC surge/spike protector is also recommended.

Remember that the FM3 is extremely flexible and there are many options 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**.
- Input 2 is **balanced**. Use balanced 1/4" cables when connecting to balanced devices.

OUTPUT 1

- Output 1 defaults to -10 dBV, a lower level "consumer" format. Change this to +4 dBu when connecting to pro audio equipment. Find this setting under **SETUP: I/O: Audio**.
- Use female-to-male **XLR cables** when connecting Out 1 to the balanced XLR inputs of other devices.
- Use **XLR female to TRS male cables** when connecting Out 1 to the balanced 1/4" TRS inputs of other devices.
- Use **XLR female to TS male cables** when connecting Out 1 to the unbalanced 1/4" inputs of other devices.
- Use the FM3's **ground lift switch** if required to combat the hum caused by ground loops.

FM3 OUTPUT 2

- Use regular **guitar cables** to connect Out 2 to the inputs of pedals, amplifiers, and other devices.
- Use Fractal Audio **Humbuster™ cables** whenever possible to combat the hum of ground loops. (See p. 6.)
- Use **TS male to XLR male cables** when connecting Out 2 to the balanced XLR inputs of other devices.
- The optional **Out 2 Boost/Pad** setting can help optimize the noise floor in some cases. (See p. 93.)

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.

USING THE AMP BLOCK WITH TRADITIONAL GUITAR SPEAKERS

- When using the FM3 amp block into traditional (*not* full range) guitar speakers, certain advanced parameters require consideration. On the "Speaker" page of the Amp block, set **Speaker Drive** to zero. You may also wish to zero **Speaker Compression**. Also consider setting **LF Resonance Frequency** to match your connected cab if you know its resonant frequency.

FC CONTROLLERS

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

FRFR/DIRECT

Global Settings: Default
Presets: Factory or Custom

This setup takes full advantage of the ability of the FM3 to recreate all aspects of an “end-to-end” guitar chain, with virtual stompboxes, amps, cabs, rack effects, and more. It is the most versatile and popular setup, offering the greatest flexibility in terms of tone.

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 amp and speaker components.

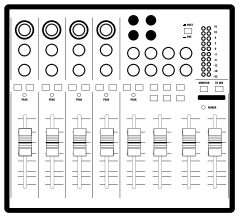
All Global and I/O settings on the FM3 can be left at default settings for this setup, and factory presets can be used without modification.

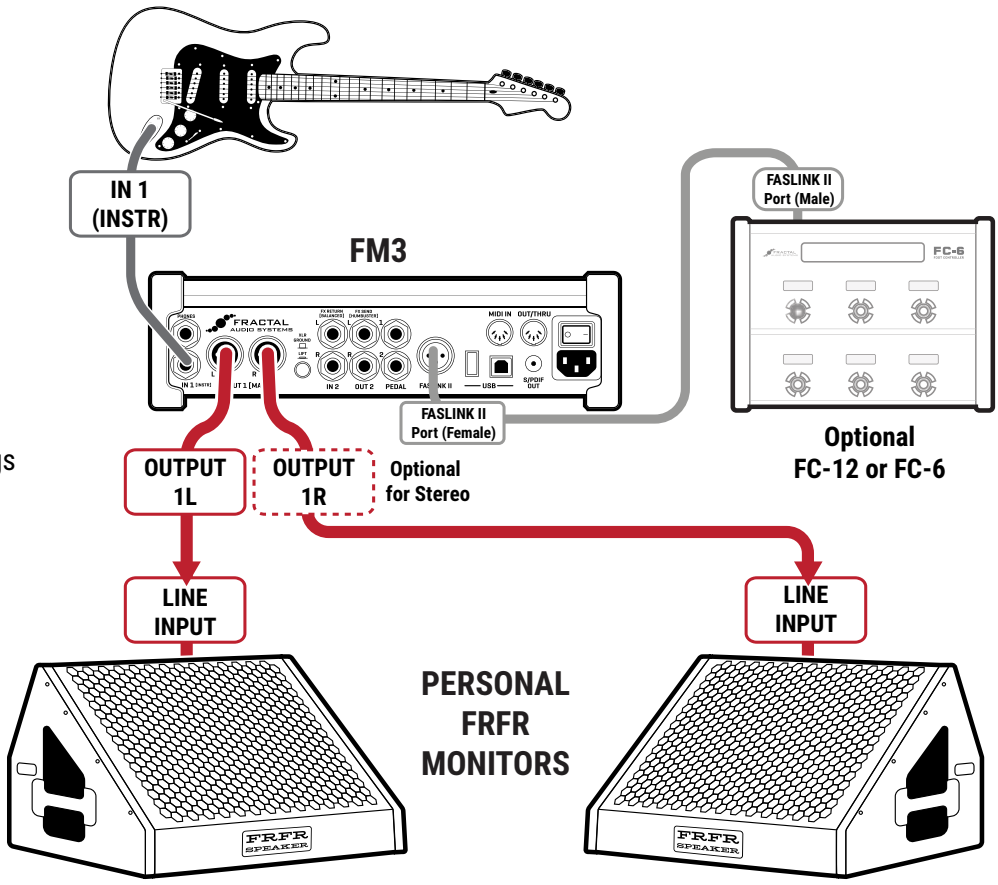
Adjust overall levels using the front panel **OUT 1** knob.

An optional FC-6 is shown in this diagram. The FM3 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 FM3 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.





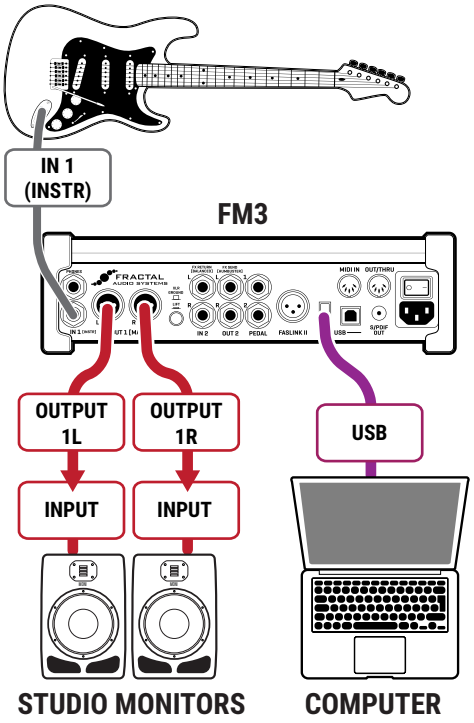
BASIC RECORDING SETUP

Global Settings: Default
Presets: Factory or Custom

The FM3 can serve as the heart of a recording rig. Connect studio monitors directly to Output 1 L+R. The setup shown here is identical to the FRFR/Direct Setup (previous page) with the exception that it adds a computer for playback and recording. This setup has the advantage of allowing easy **re-amping** over USB. Note that all computer audio and project settings must be set to 48 kHz, which is the fixed internal sampling rate of the FM3.

The top panel **OUT 1** level of the FM3 works as the master, adjusting the overall levels of the FM3 and computer playback simultaneously. For additional control, adjust levels inside the computer or use the **USB 1/2** Level parameter of the FM3 found in **SETUP: I/O: USB**.

FM3-Edit and Fractal-Bot use the same USB connection.

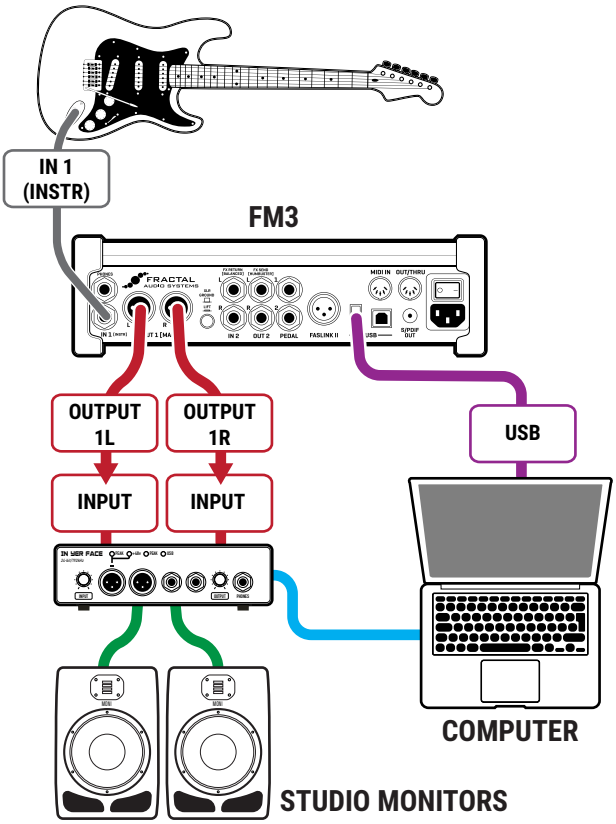


THIRD-PARTY AUDIO INTERFACE

As detailed above, the FM3 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 FM3 “native” re-amping over USB, there are many reasons why you might prefer to use an existing interface, such as the ability to run at sample rates other than 48k, additional input or output channels, mic preamps, etc.

- Connect your guitar to FM3 **Input 1 (Instrument)**.
- Connect your **studio monitors** and **computer** to your **audio interface** according to the instructions of its manufacturer.
- Connect FM3 **Output 1 L+R** to a stereo line level input pair on your audio interface.
- Connect the FM3 to the computer via USB to enable FM3-Edit and Fractal-Bot.



NEUTRAL (FRFR) POWER AMP & SPEAKERS

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

This popular setup uses both traditional guitar speakers and full range and flat response ("FRFR") power amp. Such amps are usually solid-state and designed specifically for pro audio or FRFR guitar. This is a "neutral" amp without tonal coloration. What goes in is what comes out — only louder.

This setup uses amp modeling in the FM3. Effect blocks can be used before and/or after the amp. Since we're using traditional guitar speakers, we don't need speaker cab modeling from a Cab block.

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 FM3 Cab block. You can do this manually in every preset you use, or take advantage of an easy global setting:

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

A "NEUTRAL" POWER AMP...

This setup uses a sonically "**neutral**" power amp. This will typically be a solid-state amp designed specifically for "FRFR Guitar" or pro audio applications. In comparison, the **power amp** in most tube amps is *not* flat at all. Power amps can have a very pronounced tone and dynamic feel, making up a huge part of the sound of a guitar rig.

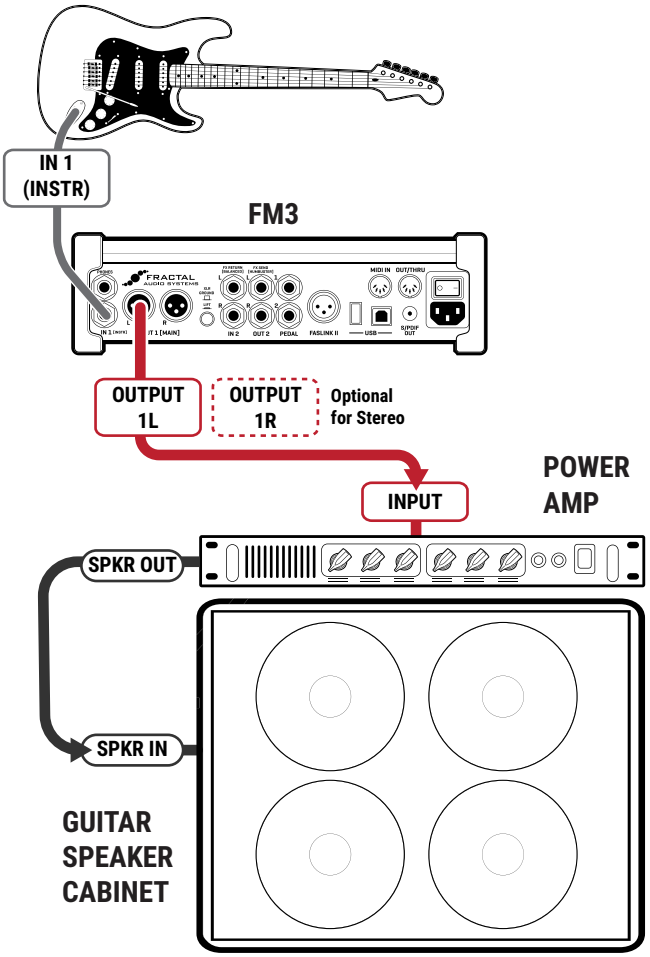
The FM3 is in fact capable of modeling both preamp and power amp tone. While other setups use just the preamp modeling (see next page) this setup also uses power amp modeling since our neutral power amp is contributing little to nothing in this regard.

Using power amp modeling in the FM3 has several benefits. First, since the power sections of different amps sound and feel very different from one another, modeling provides a very accurate experience as you change amp models. The power amp of a "deluxe amp" with no master volume is going to be extremely different from that of a "recto", for instance. Therefore, do NOT disable power amp modeling in the FM3 when using a neutral power amp.

One setting you should change, however, is OUTPUT MODE on the Advanced page of the Amp block edit menu. Set it to "SS PWR AMP + CAB". See the Blocks Guide (p. 17) for more on this parameter.

CONNECTIONS

- Connect your guitar to **Input 1 Instrument**.
- Connect **Output 1 L** to the input of your power amp, which will typically be XLR. You can also use an XLR to 1/4" cable if needed.
- Connect the power amp to a speaker as directed by the manufacturer.



TRADITIONAL GUITAR POWER AMP & SPEAKERS

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

This setup uses traditional guitar speakers with a "non-neutral" power amp designed specifically for use with a traditional guitar preamp. This might be the power section of a head or combo, or a rackmount tube amp.

DISABLE POWER AMP MODELING

This setup uses a "non-neutral" power amp, which contributes its own coloration and dynamic feel to the overall sound. Modeling these same power amp characteristics in the amp block of the FM3 would therefore be redundant, so you will want to disable **power amp modeling**. Some power amps, however, are more subtle, and some players like to leave power amp modeling in the FM3 turned on, even though their amp has its own coloration and feel. Try it both ways and let your ears be your guide.

You can disable power amp modeling *manually* in the Amp blocks of your presets by setting the **Supply Sag** parameter in each one to 0.0, or you can take advantage of an easy global setting:

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

DISABLE SPEAKER CAB MODELING

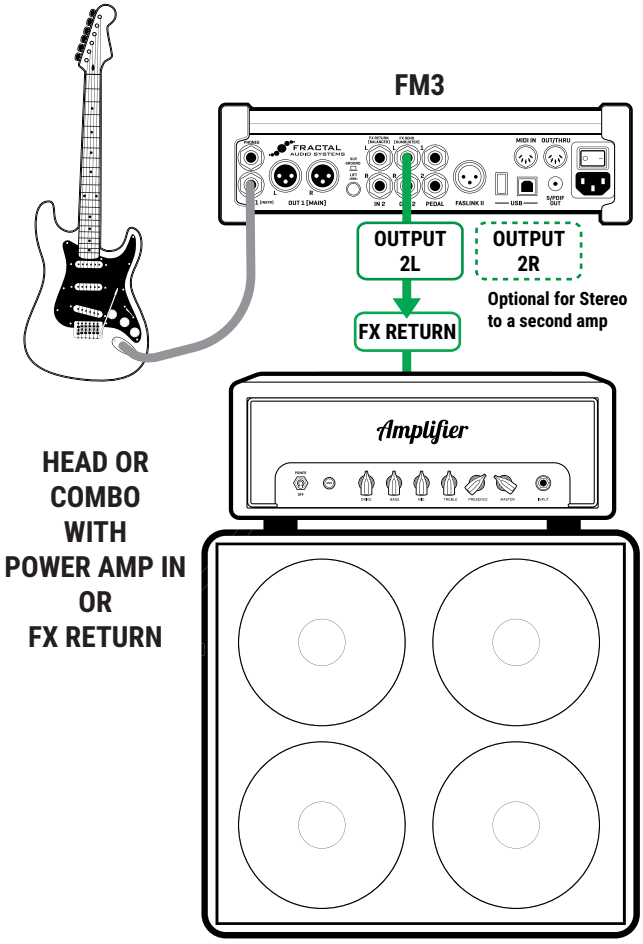
This setup uses traditional **guitar speakers**, which typically have strong tonal coloration. Using modeled speakers at the same time would be redundant, so this setup requires you to disable or remove the FM3 cab block. You can do this manually in every preset, or take advantage of an easy global setting:

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

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

CONNECTIONS

- Connect your guitar to FM3 **Input 1 Instrument**.
- Connect the FM3 to the **power amp input**. You can use FM3 **Output 1** with an XLR-to-1/4"" cable, or use FM3 **Output 2** instead, which has the added benefit of Humbuster™ technology to combat the hum of ground loops. To make the change, add the Out 2 block *manually* in every preset, or take advantage of an easy global setting:
  - Navigate to **SETUP**: **I/O**: **Audio** and change **Output 2/Copy Output 1** to "ON". Output 2 will now replicate the signal normally sent to Out 1.
- Connect your power amp to a guitar speaker cabinet as directed by the manufacturer. (If it's a combo, the speaker is already connected.)



FRONT-OF-HOUSE + PERSONAL FRFR MONITOR

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

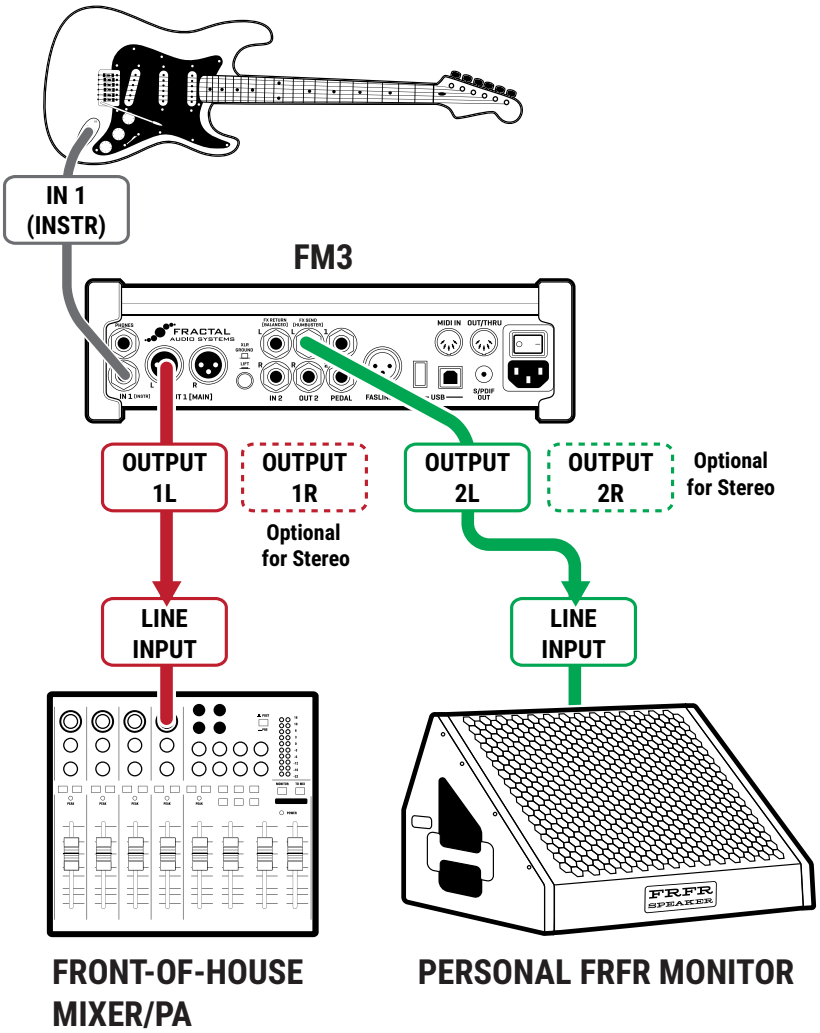
This setup sends identical signals to the front-of-house PA and your personal FRFR monitor, with separate level controls for each. The FM3 creates a fully modeled end-to-end guitar tone for the ultimate in flexibility—stompboxes, amps, cabs, post effects, and more.

Output 1 is used for the PA. This will presumably be a balanced connection, so use XLR cables. Set your levels using the front panel **OUT 1** knob (and leave them alone... keep the sound tech happy!)

Output 2 is used as an independent copy of Out 1 to feed your FRFR monitor. To produce the copy, you can use an easy global setting change instead of inserting the Output 2 block manually in every preset. Navigate to **SETUP**: **I/O**: **Audio** and change **Output 2/Copy Output 1** to “ON”. Output 2 will now replicate the signal being sent to Out 1.

CONNECTIONS

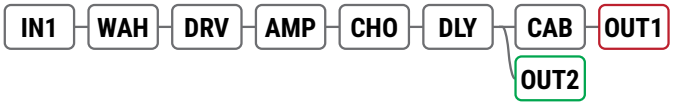
- Connect your guitar to FM3 **Input 1 (Instrument).**
- Connect **Output 1** to the front-of house system.
  - If you are working with a sound technician, be sure to tell them that you are outputting a line level input — NOT a microphone level signal. They should use a balanced line input without a preamp.
  - Also tell them you are sending a fully processed “mix-ready” sound, and that — at least to start — they should “zero” the channel with no EQ or processing.
- Connect **Output 2** to the input of your FRFR monitor. This is NOT a balanced output, so use Humbuster™ or regular guitar cables and adapters as needed.



FRONT-OF-HOUSE + GUITAR SPEAKER BACKLINE

Global Settings: Default, check I/O Mono/Stereo settings
Presets: Custom

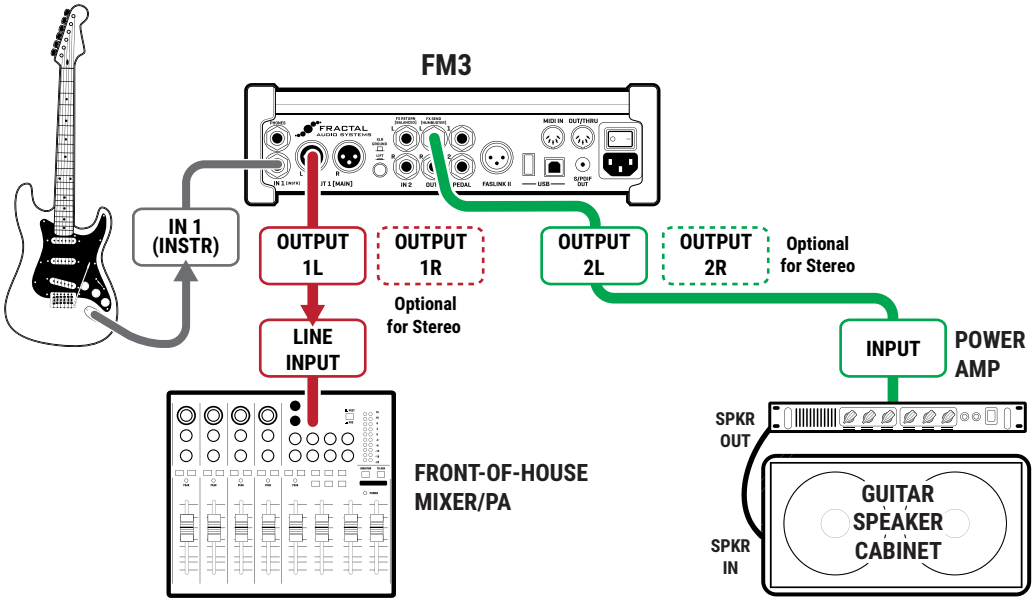
In this setup, custom presets simultaneously send two different signals at once to two different FM3 outputs. The first is a "direct" or "FRFR" signal for front-of-house, complete with speaker simulation. The second feeds a power amp — without speaker simulation — into real guitar speakers for an authentic backline experience. As shown below, this is achieved using the **Output 2 block**, which taps the signal prior to the cab block.



Output 1: Front of House - The signal with speaker sims is sent via Output 1 to a full-range PA system. This provides all the benefits of going direct, with versatile, consistent tone at very controllable volume levels. Set output levels using the **OUT 1** knob and leave them alone after soundcheck. Remember, when using a mixer, use line level inputs and avoid channel settings that might undesirably color the sound.

Note: Notice that the Cab block is placed after the "post" FX. If a stereo signal is required at Output 1, the cab block must also be set for stereo use. Learn more about the Cab block in the **Blocks Guide**.

Output 2: Backline - This signal is basically identical to the first, but without speaker simulation because it goes to a power amp and traditional guitar speaker. This provides a very familiar playing experience with great natural sustain feedback, and stage level ("moving air"). You must use a neutral power amp (see p. 30) since power amp modeling needs to be active for Out 1, and it cannot be both on and off at the same time.



CONNECTIONS

- Connect your guitar to **Input 1 (Instrument)**.
- Connect **Output 1** to the front-of-house PA. Inform the sound technician that the FM3 outputs a direct, line-level signal.
- Connect **Output 2** to the input of your power amp. Again, we are assuming a neutral power amp is in use (see p. 30).
- **Humbuster™** cables are recommended for output 2 to combat hum from ground loops.
- Connect your amp to a speaker cab as directed by the manufacturer.

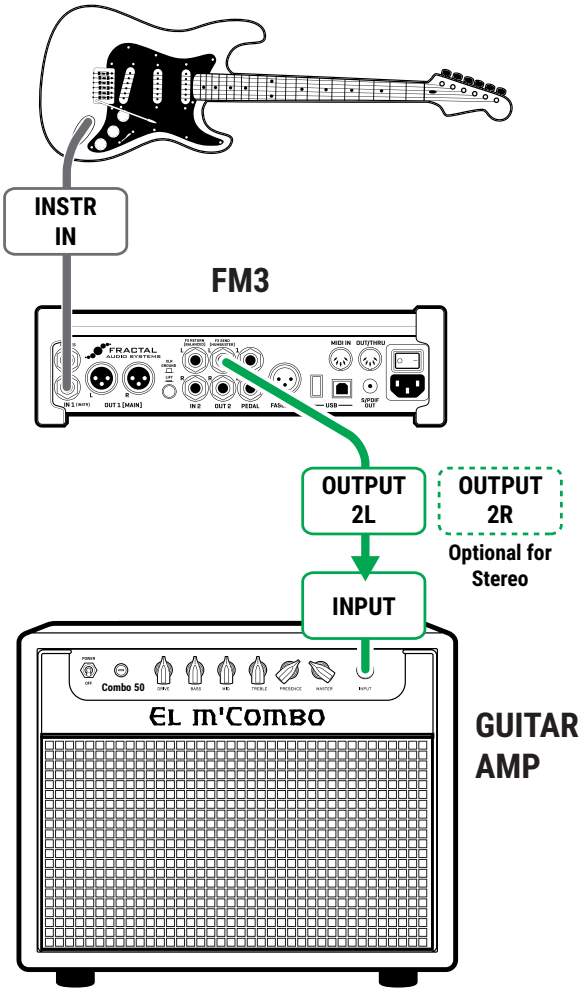
FX PROCESSOR ONLY (“PRE”)

Global Settings: check I/O Mono/Stereo settings, see also “Tip” below
Presets: Custom

In this setup, the FM3 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 a traditional stompbox. You’ll need custom presets, but as with all FM3 setups, you are free to insert effects in any order or arrangement. Presets must 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.) FM3 Output 2 is used in this setup, because it is designed for unity gain. A sample preset layout is shown below:

CONNECTIONS

- Connect your guitar to FM3 **Input 1 Instrument**.
- Connect **Output 2 L** to the input of your amp. A **Humbuster™** cable is recommended.
  - To extend this configuration for optional stereo, connect **Output 2 R** to the input of a second amplifier.
  - You can in fact use the FM3 to select between two different amps by changing channels on the Output 2 block. You might program this by making the following 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 FM3 **OUT 2** knob fully clockwise for unity gain if desired, and adjust your amp as you normally would.



TIP: OPTIMIZE FOR LOW NOISE

The optional **Boost/Pad** function on Output 2 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 FM3’s noise floor drop as you increase boost/pad. Find this option under **SETUP: I/O: Audio.**

FX PROCESSOR ONLY (“POST”)

Global Settings: check I/O Mono/Stereo settings, see “Tip” Below
Presets: Custom

The FM3 can be used as a multi-effects 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, it’s OK; you’ll get there someday).

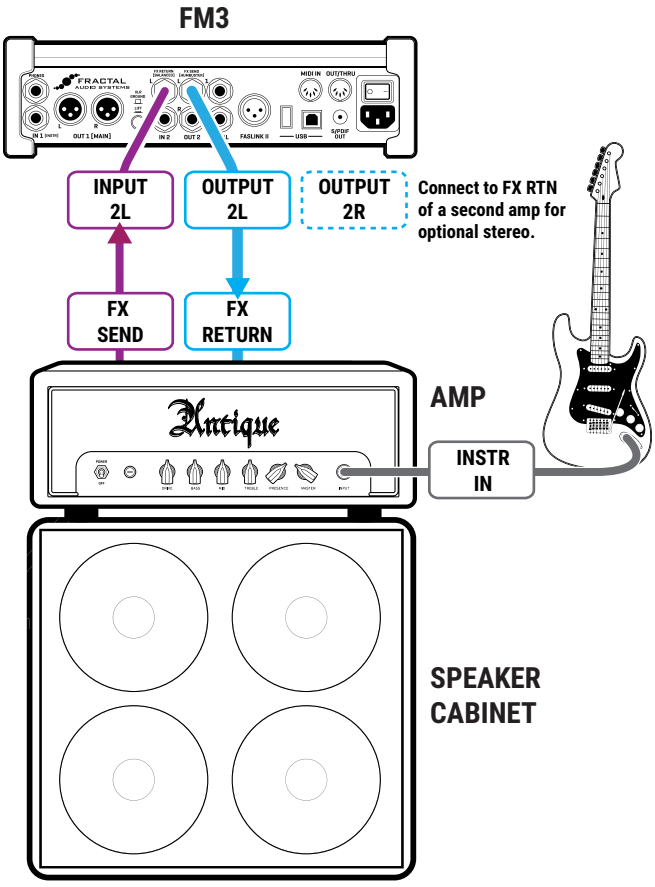
FM3 **Input 2** is used in this setup to accommodate your amp’s line level FX send.

FM3 **Output 2** is used in this setup, because it operates at unity gain when the **Out 2** knob is all the way up.

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 FM3 **Input 2 L**. Adjust Input trim on the FM3 if needed in **SETUP : I/O : Input**.
- For the setup shown here, set **Input 2 Mode** to “LEFT ONLY” under **SETUP: I/O: Audio**. (It is rare but not unheard of to use two preamps in stereo.)
- Connect FM3 **Output 2 L** to the FX Return of your amp. A **Humbuster™** cable is recommended.
- Set the front panel **OUT 2** 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 2 R** to the FX return of a second amplifier.



PARALLEL FX LOOP?

If your amp’s FX loop is **parallel**, your FM3 presets must be further customized so that no dry signal passes through the FM3. 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, the series setting is certainly easier to use in this case.

TIP: OPTIMIZE FOR LOW NOISE

The optional **Boost/Pad** function on Output 2 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 FM3’s noise floor drop as you increase boost/pad. Find this option under **SETUP: I/O: Audio.**

FOUR-CABLE METHOD (“4CM”)

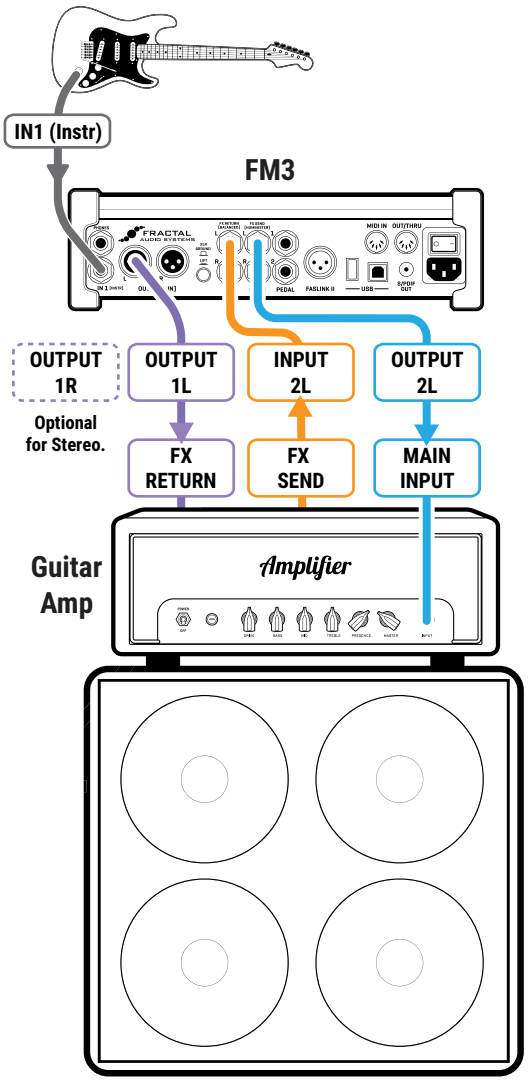
Global Settings: Default, but see “Tip” Below **Presets: Custom**

The Four-Cable Method (“4CM”) setup inserts the FM3 in two different places of the signal chain. Each of these requires its own separate blocks within a custom preset. First, the FM3 processes signal between your guitar and amp, where a chain of “pre” effects like wah and drive are used. Next, it processes signal in your effects loop, where a chain of “post” effects like delay and reverb appear.

A 4CM setup requires special presets with no Amp or Cab blocks. A stylized illustration appears below. (See also factory preset #382). Signal hits the FM3 first, where it is processed by the **pre effects**. **Output 2** feeds the front of your amplifier. The amp’s FX Send is connected to In 2, where 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 FM3 grid. In fact, either chain can be as simple or as complex as desired.

CONNECTIONS

- Connect your guitar to FM3 **Input 1 (Instrument).**
- Connect FM3 **Output 2 L** to the front input of your amp. Set the front panel **OUT 2** knob fully clockwise for unity gain operation. A **Humbuster™** cable is recommended to combat hum from ground loops.
- Connect your amp’s FX Send to **Input 2 L**. FM3 Input trim can be adjusted in **SETUP: I/O: Audio**. On the same page, set **Input 2 Mode** to “LEFT ONLY”.
- Connect **Output 1 L** to the FX Return of your amp. You will need an XLR-female to 1/4" TS (NOT TRS!) cable in most cases. 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.
- The 4CM is fairly intricate and has questionable benefits compared to the setup called “Traditional Guitar Power Amp & Speakers” on p. 31



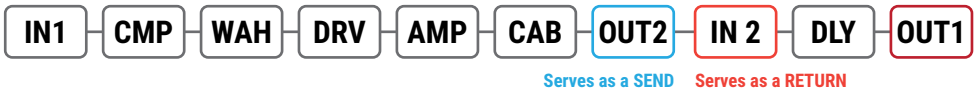
TIP: OPTIMIZE FOR LOW NOISE

The optional **Boost/Pad** function on Output 2 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 FM3’s noise floor drop as you increase boost/pad. Find this option under **SETUP: I/O: Audio.**

INSERTING OUTBOARD GEAR

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

The typical "direct" setup (p. 28) uses just Input 1 and Output 1 on the FM3. This leaves Input 2 and Output 2 available for a "send-and-return" insert 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).

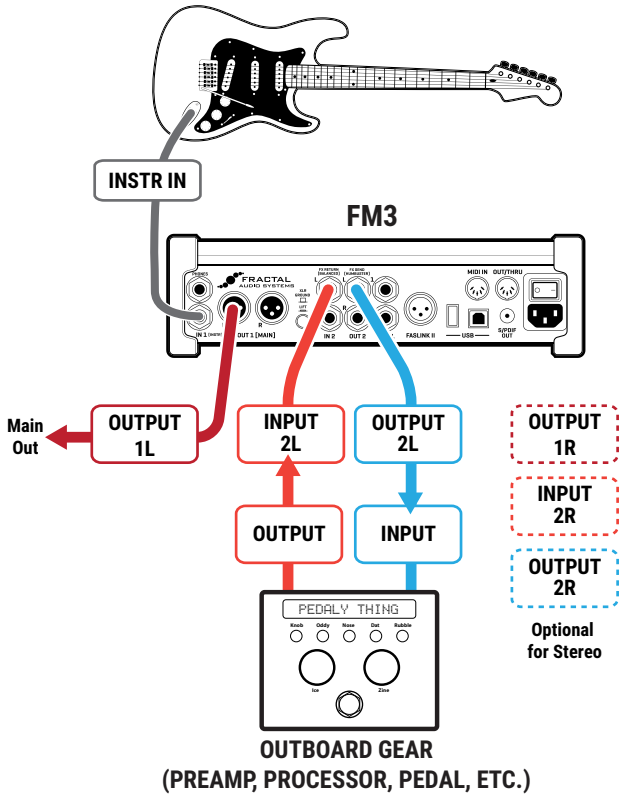


Notice that the Out 2 block IS connected to the In 2 block. This is because IN 2 is specially designed to work as a bypass for the entire loop, allowing signal to flow from In 1 to Out 1 even when the outboard gear is not in use. You can operate this with a footswitch, or control it with scenes.

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 FM3 works great when used with pedals between your guitar and its input. Similarly, you can connect its outputs to the inputs of other processors. One advantage of using an insert, however, is that outboard gear can be controlled by an FM3 presets scenes, or even recorded via USB.

CONNECTIONS

- Connect your guitar to FM3 **Input 1 (Instrument)**.
- This example assumes **Output 1** is connected to a PA or FRFR monitors.
- Connect **Output 2 L** as a "send" to the input of your outboard device. Use **Output 2 R** for optional stereo. Adjust output levels using the front panel **OUT 2** knob, remembering that Output 2 provides unity gain when the knob is fully clockwise.
  - You can also adjust the levels of any individual Output block, or on your outboard device.
- Connect the output of your outboard device to **Input 2 L** as a "return." Use **Input 2 R** for optional stereo. Adjust levels on your outboard device or pad Input 2 of the FM3 under **SETUP: I/O: Audio**.



QUICK TIP

The FM3 can send MIDI to control 3rd party devices. Connect a MIDI cable from the MIDI Out of the FM3 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.

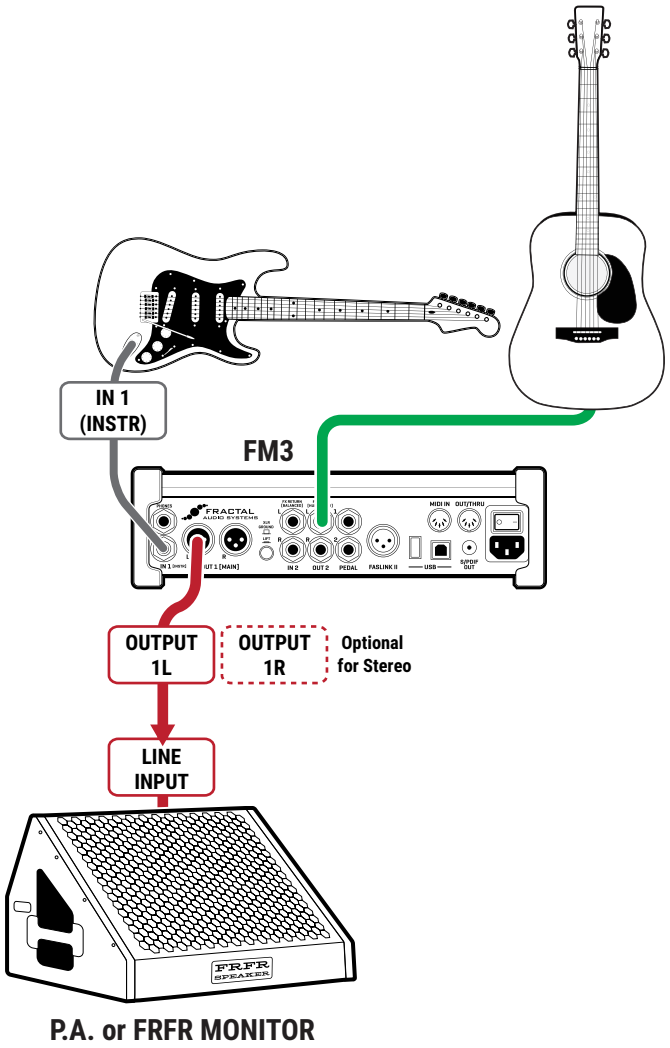
ELECTRIC AND ACOUSTIC

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 FM3 to process an electric guitar and an acoustic guitar at the same time. It also works for guitars equipped with dual output from 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 effectively, this will open other options such as different guitars appearing at different outputs.
See the **Blocks Guide** for more information.

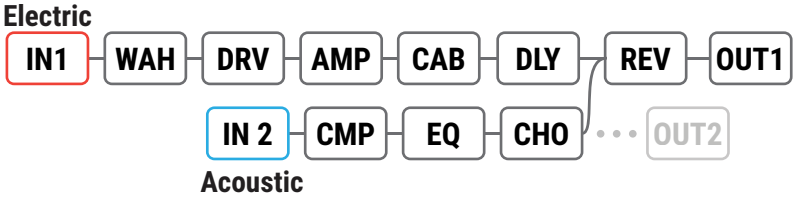
CONNECTIONS

- Connect your electric guitar to FM3 **Input 1 (Instrument)**.
- Connect your acoustic guitar (or the piezo side of your electric) to FM3 **Input 2 L**. Set **Input 2 Mode** to "LEFT ONLY" under **SETUP: I/O: Audio.**
- Connect FM3 **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.
- Compressor and EQ blocks are a great way to add level and tone controls to your acoustic or piezo signal.
- 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 output 2 block and connect to that instead.
- A basic starting template is provided in factory preset 380: "Mag & Piezo FM3"



P.A. or FRFR MONITOR

EXAMPLE PRESET



5 PRESETS

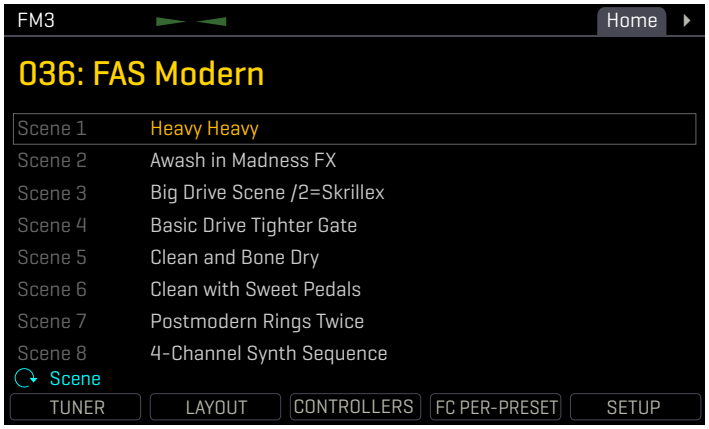
OVERVIEW

- The FM3 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 changed 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 re-install them using Fractal-Bot.
- Every preset has its own name that you can change as you store it.
- Presets are built on a "Grid" by inserting, connecting, and dialing in "Blocks."
- Every preset contains eight "Scenes", each with its own name.
- Blocks contain "Channels." See "Intro to Scenes and Channels" on p. 15.
- Compared to the Axe-Fx III, the FM3 will have smaller presets, but a single preset can still potentially cover an entire song, or even an entire gig.
- Please review "Intro to the Layout Grid" on p. 14 before reading this section.

SELECTING PRESETS

Different areas of the FM3 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** – FM3 footswitches have a range of "preset select" options.
- **MIDI** – MIDI Bank and Program Change messages may be used to select presets using the industry-standard "Controller 0 + PC" method. See "MIDI Reference Tables" on p. 115. MIDI Custom PC Mapping is also supported, see "Program Change Mapping" on p. 53.



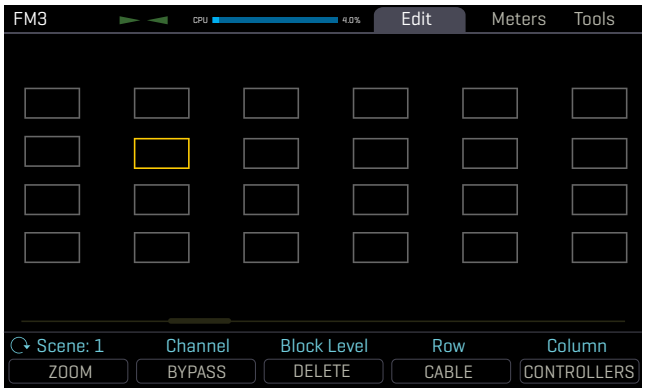
The Home Page of the Home Menu

THE LAYOUT GRID

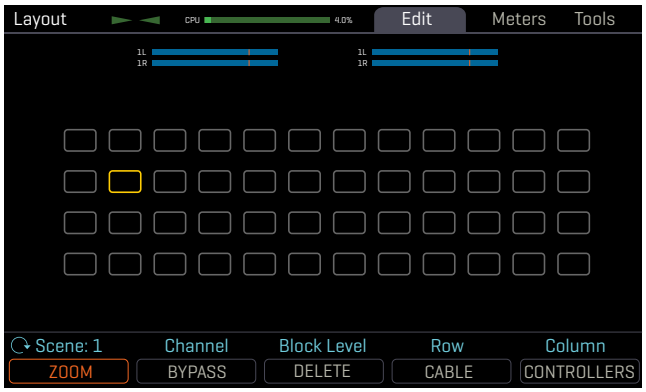
The grid is a 12×4 framework for building presets. Think of grid rectangles as slots into which **blocks** are inserted and connected together to create a signal processing path. Each grid space and every cable is stereo (though not all blocks are). You don't need separate left and right paths!

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

In the default view, the FM3 display shows only a 6×4 section of the 12×4 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 four rows and six 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, FM3 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 FM3 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…

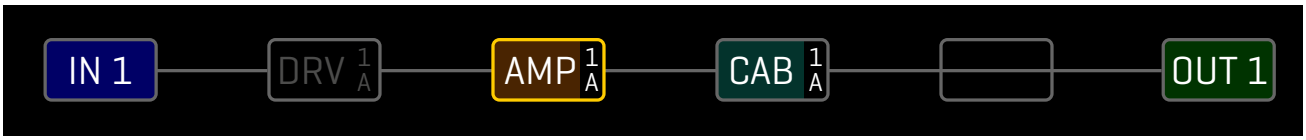
- **NAV** to the desired grid location and turn **VALUE** until "**SHUNT**" is displayed.
- Press **ENTER** to confirm or **EXIT** to cancel changes.

INPUTS AND OUTPUTS

Input and **Output** blocks are required to get input signals to the grid or pass signal to output 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 FM3 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 Effect/Column/Row, Left/Right/Up/Down.
- Use the **NAV** buttons to select the Block, Row, or Column you wish to move.
- Press **ENTER** to execute the move.

CONNECTOR CABLES

Just like physical gear, the blocks in the FM3 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 FM3 grid, each component is STEREO. Shunts, cables, and many blocks are stereo in/stereo out. The grid allows up to four full stereo paths, and you do NOT need to create parallel grid paths for 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 FM3 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.

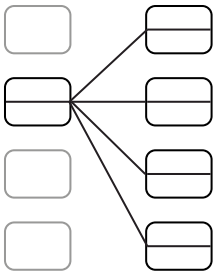
The ⃠ symbol shows destinations that are illegal/unavailable.

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

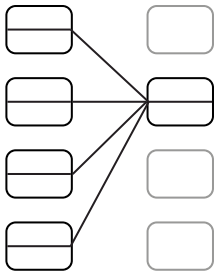
If the ★ were in a different ROW, every ✔ would still be in the same place.

- You may freely SPLIT or MERGE up to four 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:

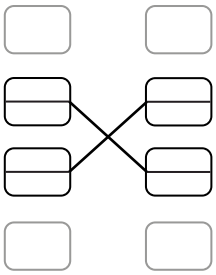
Split



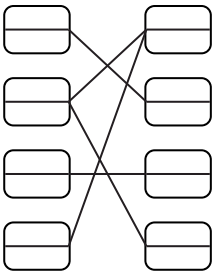
Merge



Cross



Complex



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.

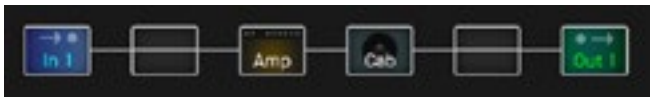
BLOCK		DESCRIPTION
AMP	**Amp**	Here it is! 260+ amp models in one block!
CAB	**Cab**	Speaker cab simulation with both "Factory" and "User" banks.
CHO	**Chorus**	Create classic mono and stereo modulation effects including vibrato.
CMP	**Compressor**	Control dynamics and add sustain.
DLY	**Delay**	Up to 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.
MIDI	**Scene MIDI**	Auomatically sends MIDI PC or CC messages whenever a scene is loaded.
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 FM3.

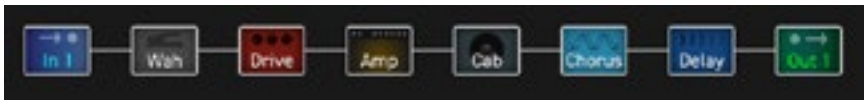
EXAMPLE PRESET GRIDS

These FM3-Edit screen captures show how blocks are combined to form presets.

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



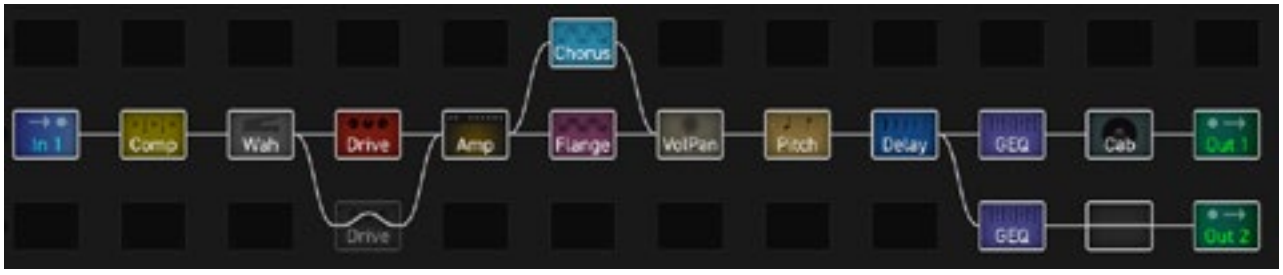
Ex 2: Here some effects are added before the amp and after the cab.



Ex 3: Here even more effects are used, filling up the 12-column grid.

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

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

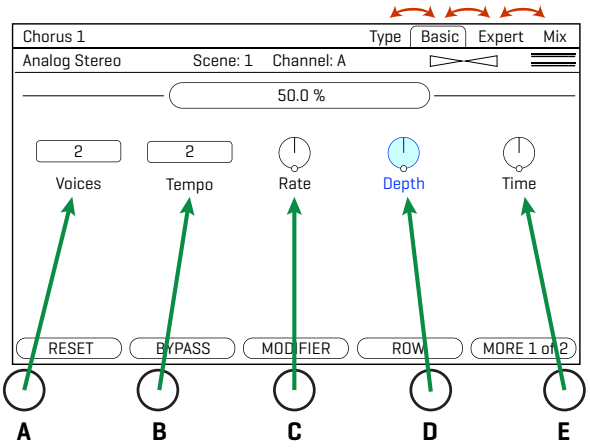
Blocks are fully programmable, allowing you to dial in every setting as desired. The **Edit** menu for every block contains one or more **pages,** each with multiple **parameters** which control various functions. Here's a quick guide covering how to access and work with the different types of Edit menu pages.

OPENING AN EDIT MENU

- On the **Layout** grid, select the desired block and press **EDIT**.
- OR... from anywhere on the FM3, 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.

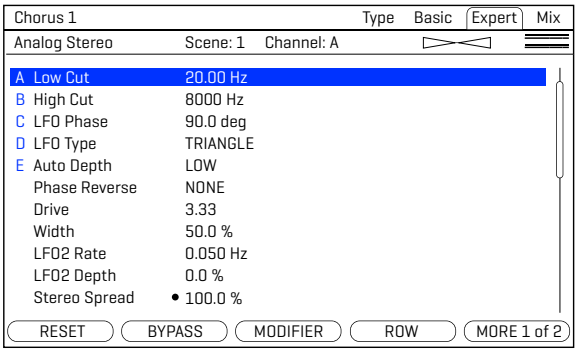


EDITING "KNOB" PAGES

- Most Edit menu pages show up to 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.

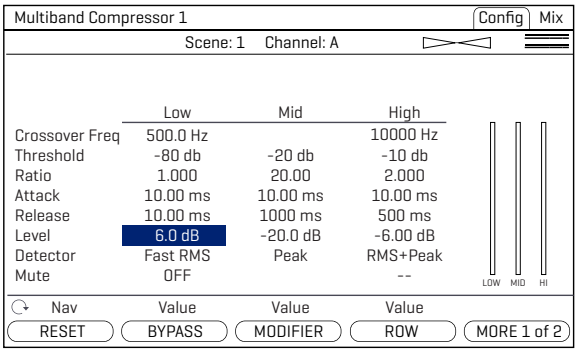
EDITING "MENU" PAGES

- 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 FM3 can be modified. There are no permanent presets.

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

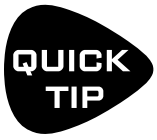
TO STORE A PRESET…

- 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 THE PRESET NAME…

The FM3 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 FM3 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 allowable load is approximately 80%. There are safeguards to prevent you from pushing the FM3 too far. Should CPU levels rise above the allowable limit, the FM3 will disable sound processing and flash the warning, "**CPU LIMIT - Muted**". This allows you to remove blocks or change settings to solve the problem.

Another safeguard is that the FM3 will 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.

Here are a few of the common block parameters whose settings have a notable effect on CPU usage:

- **Amp: Output Comp**: Set to "0" for the least CPU usage.
- **Cab: Mute**: Using two IRs demands more CPU than using one.
  Set the mic **Preamp Type** to NONE and set **Room Level** to 0%.
- **Reverb: Quality** and **Echo Density**. Lower = less CPU.
- **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.

CPU & USB

On the FM3, CPU usage does not increase when USB is connected.

6 SCENES & CHANNELS

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

A **Scene** can be thought of as a *preset within a preset*. Scenes can turn blocks on or 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 any 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 INCLUDE...

Each Scene stores ALL of the following:

1. The **Bypass** state of every block in the current preset: on or off.
2. The current **Channel** of every block in the current preset.
3. The current "Scene Level" of the **Output** blocks.
4. The settings of four **Scene Controller knobs** used as Modifier sources.

Scenes can use the **Scene MIDI block** to send up to 8 MIDI PC or CC messages each time a new scene is selected. See the **Blocks Guide** for more information.

Each scene also has its own Name.

CHANNELS

The **Channel** feature is almost self explanatory. Most blocks have some number of channels (typically four), and for each channel you can 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 a "clean boost", **B** could be a "screamer", and so on.

So, while Scenes can't change individual parameter values, they CAN change the channel, and each channel has its own parameter values.

DON'T: Set a parameter (for example, Amp Treble to "6") then change to a new scene and change the value of that parameter (ex: Amp Treble to "10"). The change will affect all scenes!

DO: Dial in a block (ex: the Amp) however you want it. Now, change the Scene AND set that block to a new Channel. Now you can now change ALL settings for that block. These will take effect whenever you load that same channel — whether in this scene or any other. (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 changes are even faster and can be seamless.

HOW TO CHANGE A BLOCK'S CHANNEL

Different areas of the FM3 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** – Press the **MORE** button (Push-knob **E**) to show the **Scene/Channel** strip.
  Use the **CHANNEL–/+** buttons (Push-knobs **C** & **D**) 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 FM3, 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 Remotely" on p. 52.

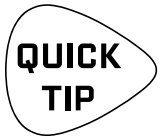
SETTING UP CHANNELS

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 (grid).
2. Turn the **VALUE** wheel until "COPY CHANNEL" is shown on the display.
3. Use the **D** knob to select the scene 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 FM3 itself, you can do this using FM3-Edit, the free companion software editor for the FM3.

SELECTING SCENES

Different areas of the FM3 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.
- **While EDITING a BLOCK** – Press the **MORE** button (Push-knob **E**) and then use the **SCENE –/+** buttons (Push-knobs **A** & **B**). The current scene is shown near the top center of every page in the Edit menu.
- **Foot Control** – The onboard switches of the FM3, 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 Remotely" on p. 52.

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.

SETTING UP SCENES

Whenever you create a preset, you are already using at least one Scene (usually scene 1). 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…

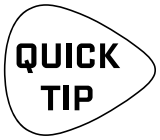
1. Load the desired preset and select the desired Scene.
2. Bypass or engage each block as desired.
   - On the Layout (grid) or while editing any block, use the **BYPASS** button (Push-knob **B**).
   - Or use any assigned footswitch or remote controller to bypass/engage the block.
3. Set the Channel 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 mis-steps later.

TO COPY ONE SCENE TO ANOTHER…

The **Tools** page of the **Layout** menu contains a way to copy one scene to another (not including the scene name). This works only 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.



Not even FM3-Edit can copy a Scene from one preset to another. This is because there is no way to ensure that the scene would work at all in its new home. You can copy certain parts of the sound of a given scene by copying blocks or channels, but this can be tricky.

SELECTING SCENES & CHANNELS REMOTELY

Scenes and Channels can be selected using MIDI or Global Controllers. Several options are provided.

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 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

The **Scene Select** option uses the value of a MIDI controller to select specific Scenes. You must first assign a CC# to **Scene Select** in the **MIDI/Remote** menu under **SETUP**.

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 FM3 (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 FM3 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 re-maps 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 ignored 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. 115.

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 re-map.
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. 51 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 can 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.

SCENES, CHANNELS & MODIFIERS

The Modifier system of the FM3 provides extensive automation and remote control options.

Modifiers are detailed in Section 9 on p. 59 but here is a summary of important information about Scenes, Channels, and modifiers.

SCENE CONTROLLERS

Remember that parameter settings cannot be changed by a scene. Of course, you can change the Channel, but this is not quite the same thing (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.

See "Tutorial: Scene Controllers" on p. 68.

CHANNELS & MODIFIERS

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

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** delay has a parameter called "Head 2 Ratio", while this same parameter is called "L/R Time Ratio" in the **Dual Delay**. A modifier on one will affect both.

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

SCENE REVERT

Scene changes made in the display of the FM3, or via Fm3-Edit, remain in effect until you save them or discard them by loading a different preset. Changes made via footswitches or MIDI, however, may work differently, depending on a Global setting called **Scene Revert**. With Scene Revert turned on, Scene changes are discarded as soon as you load a 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.)

7 LEVELING PRESETS

This section is about **balancing** levels across Presets, Scenes and Channels. It is NOT about how to correctly set FM3 input or output levels to prevent clipping (compare "Setting Levels" on p. 5).

Musicians and audio technicians face a 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. (Wise front-of-house engineers are some of our biggest fans!) A tube amp often needs to be *too* loud to be controllable. 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, PLUS precise controls, accurate meters, and fewer overall compromises. A few simple rules of thumb will put you in total control of your levels.

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.

THINGS TO KNOW

- Our ears deceive us. A phenomenon known as the "equal-loudness contour" effect (aka "Fletcher Munsen" effect) results in different perceptions of tonal balance 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 change our perceptions of relative volume. Set levels on the system you will perform through, or ideally, use the best and most accurate speakers you can find. Be prepared to make adjustments on other systems. (This goes for your tone as well as your level.)
- Our surroundings, or the context of playback, also change 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 you are "competing" in a mix against other instruments such as bass and drums, or when played in a problematic performance space. Adjust in context.

THE RULE OF THUMB

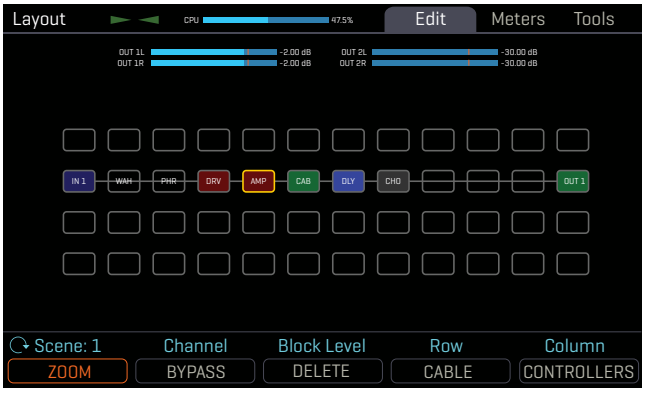
- There are a lot of different ways to adjust levels on the FM3. A good rule of thumb is to use the **Level** parameter of the **Amp** block. See "**The Method**" on the next page for an explanation of how to work through this process across Presets, Scenes and Channels.
- Above all, use common sense. Rely on meters, but don't set levels solely on how they look. **USE YOUR EARS!**

EXCEPTIONS TO THE RULE

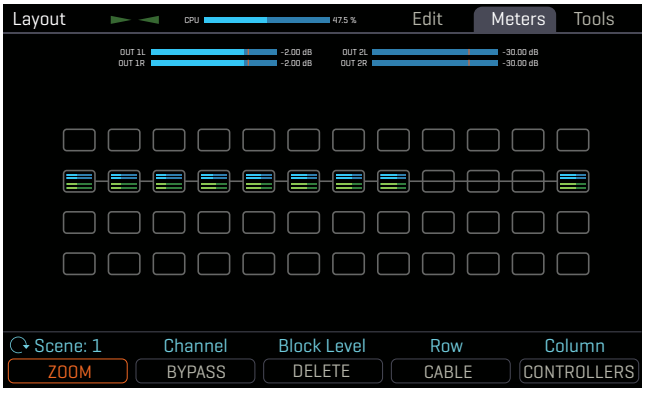
- When the Amp block is placed prior to a "level-dependent" or dynamic effect such as a **compressor**, **gate**, or **ducking** effect, bend the rule of thumb and adjust the output of the last dynamic block instead.
- This is also the case for any nonlinear effects such as **drive** which may in rare cases (such as Tape Saturation or Bitcrusher effects) be placed *after* the amp. Adjust **Level** for these blocks *instead* of the amp.
- If you have prominent **Drive**/**Saturation** in the **Preamp** simulation of the **Cab** block, adjust the **Level** of the Cab block instead.

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.)



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 at or below 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 adjust Drive, Master or other amp tone 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.

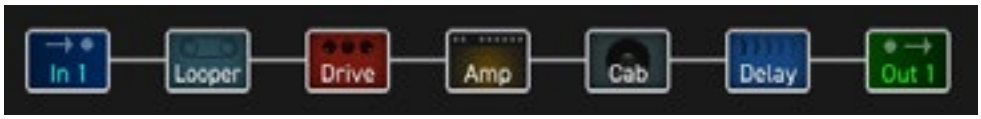
Remember this common sense principle: you must also use your ears. When you use the meters, a punchy clean amp may end up sounding louder overall than an overdriven amp with a ton of low end.

LEAD/LOUD SOUNDS

You now know how to normalize level 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 make the other sounds *quieter*. This helps ensure that you will have plenty of headroom and avoid clipping. It's OK for certain tones to be very quiet: 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 than "optimal" 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.

- Some effects specifically boost or cut levels. Other times, you want the volume to stay very much the same as an effect is dialed in. 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.
- When placed in series, **time-based effects** like delay and reverb are usually best 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".

8 BLOCKS

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

9 MODIFIERS

Modifiers can be one of the most exciting features on the FM3. They allow sound parameters to be remote-controlled or automated in real time. For example, you might use an expression pedal to operate a wah or whammy, or use an LFO (Low Frequency Oscillator) to auto-sweep a filter. MIDI can also be used to adjust effects, control volume, and more. Modifiers are easy to use, but offer incredible depth of power for those who like to push the limits.

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 press the **MODIFIER** button (Push-knob **C**) to show the **Modifier** menu.
- The Modifier **Source** page will appear. Select a **SOURCE** to control the parameter. Learn more about Sources on p. 61.
- Press **PAGE RIGHT** to switch to the **Modify** page (you *must* select a source first!)
- Learn more about Modifier parameters on p. 62. 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-only menu parameters, a bar graph shows the value of the source.
- You must **STORE** the preset to save any modifier changes.

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”.

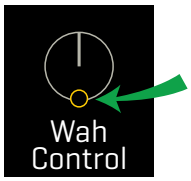
MODIFIER TUTORIAL: WAH PEDAL

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

For this example, let's assume:

- A **Wah block** is already in your preset.
- You have an **Expression pedal** ready (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. Notice the yellow Modifier dot symbol beneath the on-screen **Wah Control** parameter.
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 FM3), or it might be one of the "External Controllers" (p. 67), 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 a world of controller options.

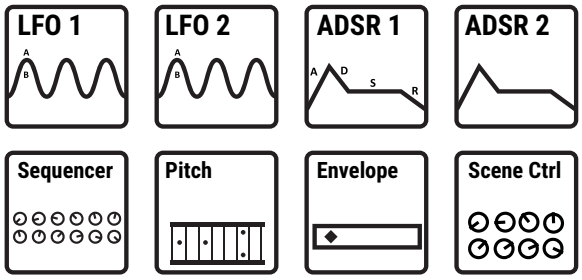
MODIFIER TIPS AND TRICKS

- 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 to do so.
- 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 in fact over 60 different choices to use for modifier sources. Learn about them in this overview.

INTERNAL CONTROLLERS

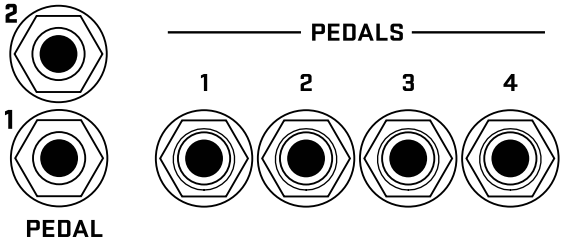


Internal controllers are built into the FM3. To show the **Controllers** menu, press the **CONTROLLERS** button on the **Home** page (Push-knob **C**) or **Layout** menu (**E**), or press the **TEMPO** button once.

The internal controllers can be used as modifier sources and also 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.

You will find 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. 65 for more on internal controllers.

ONBOARD & FC PEDALS & SWITCHES



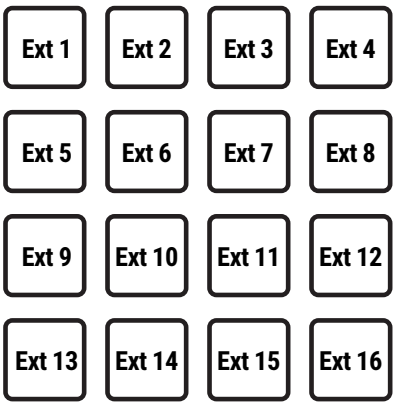
The onboard **Pedal** jacks of the FM3 and the **Pedal** or **Switch** jacks of a connected **FC** series controller can be assigned directly as modifier sources. In comparison to previous products, it is no longer necessary to assign these to an **External Controller** first (though this is still possible).

On the FM3, you will find two options per pedal jack: one for **Expression or Switch Tip** and another for **Switch Ring**.

EXTERNAL CONTROLLERS

External controllers are modifier sources with their own custom global assignments to determine *what controls them*. External Controllers are a great choice for presets you might share, because different people will use different controllers in different setups.

For example: you send your band mate a preset containing a Wah operated by **External 1**. On your system, External 1 is globally assigned to "**PEDAL 1 (EXP/SW TIP)**"— 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 preset works perfectly on both rigs with no changes required!



The FM3 allows 16 external controllers.
Each one can be operated by to your choice of:

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

Learn more about External controllers on p. 67.

MODIFIER PARAMETERS

The default modifier settings are linear. You change the source and the parameter follows in direct relationship. Modifier parameters allow you to change this relationship. You might tune the taper of a pedal, or make it work in reverse. Maybe you want the parameter attached to a footswitch to glide instead of snap. Here is an overview of the additional parameters you can use to create these effects and many more. Find these options on the **Modify** page when you set up any modifier.

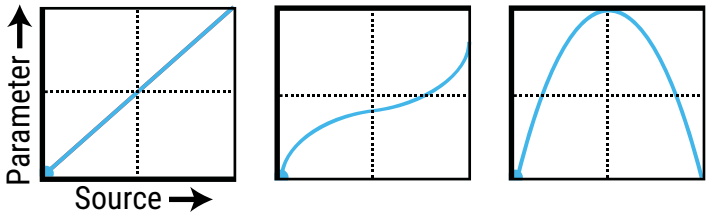
Min and **Max** determine the range of parameter change. These are extremely important parameters.

> *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 actual range is from -100% to +100%.*

Start, **Mid**, **End**, **Slope**, **Scale**, and **Offset** are used to create custom curves which re-map the relationship between the modifier source and the value of the target parameter. 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 examples of the kinds of non-linear curves you can create using Slope, Scale, and Offset. The pages which follow contain more examples.



Attack and Release: These values apply "damping" to slow the rate at which the target parameter value chases the source. **Attack** determines the rate of change as the source is increased, and **Release** controls the rate as it decreases. At low settings, these add just a little smoothing. Try settings of about 5 ms to "relax" a pedal or to ease the edges of a square LFO to eliminate clicks and pops. Higher settings can cause sound changes to be extremely slow and lazy.

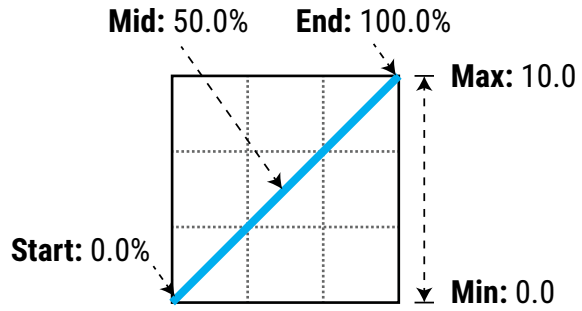
Auto-Engage works with **Off Value** to create effects which turn ON or OFF automatically whenever the source controller is moved. This is typically used with a Wah pedal so you don't need a toe switch. (Follow the example on p. 60 and set AUTO-ENGAGE to "SLOW POS" to try it out!) Find additional information on **Auto-Engage** on p. 64.

PC Reset sets the value of 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. Here's how it works: after applying the modifier, exit to the parameter again on its 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 vast 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.

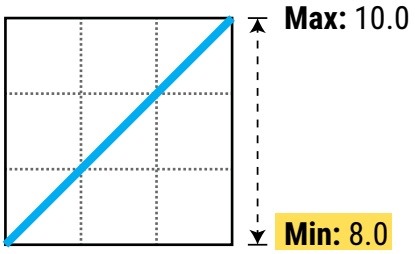
UNDERSTANDING MODIFIER MIN AND MAX

MIN and **MAX** set the range of a modifier. 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.

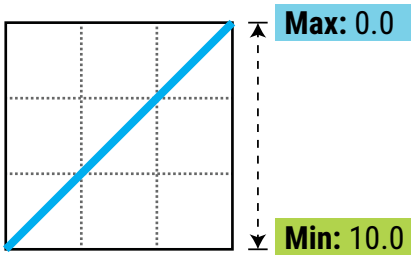


Here is your basic "vanilla" volume pedal.

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.

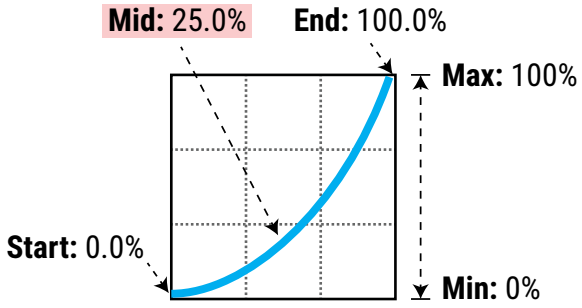


Here is a different twist: Min is at 10.0 — the loudest setting, while Max is at 0.0 — silent.

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:

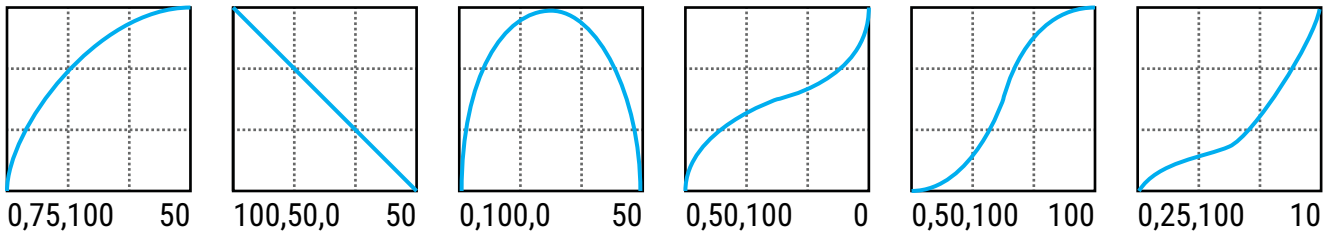


As we adjust Mid, the graph shows the curve. At 25%, the response is "tapered" so that with the pedal half way forward, Feedback is only 25% between Min and Max.

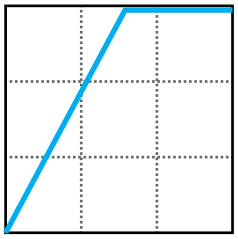
This type of curve provides gradual control of feedback across the lower end of the range, and then a more rapid change towards the top.

ADVANCED MODIFIER CURVES AND SHAPES

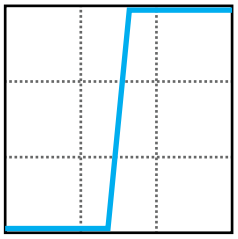
You can also adjust **Start**, **End**, and **Slope** (which introduces an "S" or "backwards S" shape). The numbers beneath each example below show the settings for **Start**, **Mid**, **End** and **Slope**. With a bit of experimentation, you will learn to achieve desired modifier effects quickly. Try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



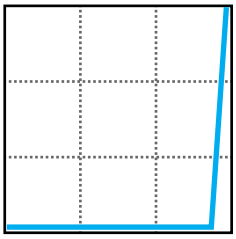
Scale and **Offset** also re-map modifier response. **Scale** adds vertical exaggeration or compression, while **Offset** moves the entire curve up or down on the Y-axis. Segments outside the graph boundaries will be clipped and replaced by line segments. The examples below show some interesting possible 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 when you pull it back. That's the idea behind **Auto-Engage**.

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 "relax" 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.

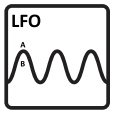
INTERNAL CONTROLLERS

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

TEMPO

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

LFO1 + LFO2



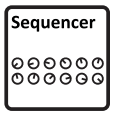
A Low Frequency Oscillator ("LFO") generates control signals in the form of a variety of periodic wave shapes. Examples of LFOs in use include the pulse of a tremolo, the back and forth sweep of a phaser, or the random filter in *Ship Ahoy* by Frank Zappa.

Type sets the waveform or shape. You can set the **Rate** or lock the LFO to the current **Tempo**. You can vary the overall **Depth** and **Duty**, or symmetry. 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

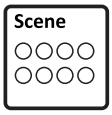
The two ADSR sources are envelope generators with **Attack, Decay, Sustain** and **Release** parameters (thus "ADSR"). The ADSR is triggered whenever the signal level exceeds its **Threshold** measured at the selected input (1 or 2). The envelope has three self-explanatory **modes (Once, Loop,** and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

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 DETECTOR

The Pitch Detector analyzes the pitch of your playing and outputs a low value for low notes and a high value for high notes.

SCENE CONTROLLERS



The four Scene Controllers provide a way to change sound settings from one Scene to another. Think of each Scene Controller as 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 10% in Scene 1, 50% in Scene 2, 75% 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. 68.
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. FM3-Edit provides a way to copy/paste Controller channels.

MANUAL CONTROLLERS

The five Manual Controllers are virtual knobs with no function other than to serve as modifier sources. 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 "#022 Super Verb."

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 notice 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** down 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 75%
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. Press **STORE, ENTER, ENTER** 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 are 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 themselves 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 then operates the Wah.

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 (see “To Create a Modifier...” on p. 59). 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 FM3 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

In this tutorial, we will set up 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.

We will begin with the Wrecker Rocket preset (#030), though any preset with an amp block could be used. For this example, we chose an amp model where the Drive parameter setting will be more pronounced, and no pre-existing scenes are set up.

1. Load the factory preset "#030 Wrecker Rocket."
2. The first step in using a Scene 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 **Amp** block, and press **EDIT**.
3. Use the **PAGE** buttons to locate the **Tone** page of the **Amp** block.
4. **NAV** to the **Input Drive** parameter and notice the open yellow modifier "ring" beneath the knob.
5. With the **Input Drive** parameter highlighted, press **ENTER** to display the **Modifier** menu.
6. On the **Source** page, use the NAV buttons to select **Scene Controller 1.**
7. For this tutorial, you don't need any custom settings on the **Modify** page, so press **EXIT** to return to the **Amp** menu. Notice that the open yellow modifier symbol is now a **solid yellow dot**.
8. Now let's set the values for our Scene Controller; press **HOME** to show the home page.
9. Press the **CONTROLLERS** button (Push-knob **E**).
10. Use the **PAGE** buttons to locate the **Scene Ctrl** page of the **Controllers** menu.
11. Reading down, the **Controller 1** column shows eight different values. These will set the value for our target parameter in each of the eight scenes. You can dial in these values now...
12. ...but it's better if you change scenes as we dial thing in! Press the **MORE 1 of 2** button (Push-knob **E**) to reveal the Scene +/- and Channel +/- push functions.
13. Notice the that the current scene is shown above the table at the top of the page. If this isn't "Scene 1", use the Scene +/- buttons to select select Scene 1 now.
14. Dial in the **Scene Controller 1** value for Scene 1. Let's set it to about 20% for a "cleanish breakup" type of sound. Use your ears!
15. Use the **Scene +** button (Push-knob **B**) to switch to **Scene 2**.
16. **NAV Down** to select the **Scene 2** row in the **Controller 1** column. Dial in the **Scene Controller 1** value for Scene 2. Let's set it to about 45% for more crunch. Again, use your ears.
17. Using the process in the previous step, set the value for Scene 3 to 75% and Scene 4 to 100% (or as desired).
18. Press **HOME** to return to the **Home** page. Test your first four scenes using the **NAV UP/DOWN** buttons.
19. Press **STORE, ENTER, ENTER** to save your work. If desired, enter **Scene Names** as outlined in "Saving Changes" on p. 47.
20. Feel free to assign other **Scene Controllers** to other parameters in your preset as desired.

TIP: Most poeple find that FM3-Edit makes this process even easier, with all scenes and scene controller changes just one or two mouse clicks away. Find the Scene Controllers in FM3-Edit under the "CONTROLLERS" section below the main FM3-Edit logo.

10 LAYOUTS & SWITCHES

Footswitch operation on the FM3 is organized around **Layouts**. A layout is a set of up to 12 **footswitch definitions**, each with one **Tap** and one **Hold** function. You can change layouts on the fly to change what each of the footswitches does. For example, one layout might be used to select Presets or Scenes, while a different layout operates the Looper. The FM3 provides eight layouts, and any switch can be completely customized to your choice of functions, colors, and more. Layouts even have their own names to make navigating easier.

While not performing, you can easily change the layout on the FM3 itself by turning the FC Layout knob on the Home page.

THE MASTER LAYOUT MENU

Switching from one layout to another is the key to the versatility of the FM3. There are many ways to do this, but the built-in **Master Layout Menu** ("MLM" for short) is very powerful. The Master Layout Menu grants instant access to other layouts, one per footswitch.

To show the Master Layout Menu, press and hold the middle footswitch from any of the factory layouts.

For an introduction, see "The Master Layout Menu" on p. 8.

TAP & HOLD FUNCTIONS

Every switch in every layout can be programmed with individual TAP and/or HOLD functions.

Tap functions — used throughout history for guitar effects and beyond — are best for changes that require tight timing. For example, a tap switch set to SELECT SCENE is ideal to change the sound precisely as a solo begins.

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

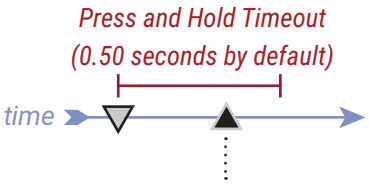
THE RULES OF SWITCH TIMING

Like every guitar product in history with "hold" footswitches, the FM3 must follow rules for timing so it "knows" whether you are trying to activate the Tap or the Hold. A switch with a Hold function must wait until it can determine which one you are trying to activate. When this is the case, the tap is activated when the switch is *released* instead of when it is *depressed*—unless you continue holding the switch past the "Press and Hold Timeout" window. 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.

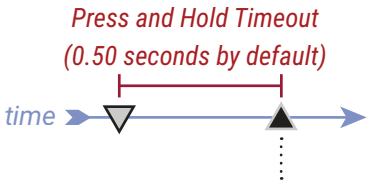
TIMING FOR A TAP FUNCTION WITH A HOLD FUNCTION



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 at the moment 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.

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** on the **Config** page of the **FC Controllers/ Onboard Switches** menu under **Setup**. 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 FM3 include various pre-defined 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 FM3 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 new **Footswitch Functions Guide** for a complete reference covering all available functions.

RESETTING THE FACTORY LAYOUTS

The FM3 includes a utility to reset the FM3 Factory Layouts. You can do this any time you want to erase any and all changes you've made to the layouts, whether because you get stuck or simply want a fresh start. To do this:

- Open **SETUP: FC Controllers/Onboard Switches**
- Page to the **RESET** page
- Select the desired option (future firmware versions may allow more than one choice) and press **ENTER** to Load FM3 Factory Default Layouts.
- Press **ENTER** again to confirm.
- Press **HOME** to exit.

WARNING! When you perform **Reset System Parameters** under **SETUP: Utilities**, this clears all of the layouts too. See p. 99 for more on this.

FM3 FACTORY LAYOUTS

1: PRESETS

TAP:P1	TAP:P2	TAP:P3
HOLD: Bank-1	HOLD: MLM	HOLD: Bank+1

Layout 1: Presets is designed for switching presets. It shows three presets at once, with press and hold functions for BANK UP and BANK DOWN on the left and right switches.
Hold the middle switch for the Master Layout Menu (MLM).

2:SCENES

TAP:S1	TAP:S2	TAP:S3
HOLD: View -1	HOLD: MLM	HOLD: View +1

Three Views cycle through the remaining scenes: [4,5,6] then [7,8]
The unused switch contains a TUNER.

Layout 2: Scenes shows scenes 1, 2, 3, with hold functions on the left and right switches to change the "View" to show scenes 4, 5, 6 or 7, 8, and Tuner.
Hold the middle switch for the Master Layout Menu.

3:EFFECTS

TAP:Drive 1	TAP: Delay 1	TAP: Reverb 1
HOLD: View -1	HOLD: MLM	HOLD: View +1

Four Views cycle through three effects each:
[Chorus 1, Flanger 1, Rotary 1] [Pitch 1, MultiDly 1, Plex 1] [Comp1, Phaser 1, TremPan1]

Layout 3: Effects is used to engage or bypass effects. The defaults are Drive 1, Delay 1, Reverb 1, with hold functions on the left and right switches changing the View to reveal other effects as shown.
Hold the middle switch for the Master Layout Menu.

4:CHANNELS

TAP:AMP 1A	TAP:AMP 1B	TAP:AMP 1C
HOLD: View -1	HOLD: MLM	HOLD: View +1

The Views cycle through channel switches for four different effects:
Amp 1, Drive 1, Drive 2, Delay 1

Layout 4: Channels is used to change the channel on designated blocks. The default is AMP 1 (A, B, C) with hold functions on the left and right switches changing the View to reveal other effects as shown.
Hold the middle switch for the Master Layout Menu.

5:LOOPER

TAP:Record	TAP:Play/Stop	TAP:Undo
HOLD: View -1	HOLD: MLM	HOLD: View +1

A second View contains tap functions: ONCE, REVERSE, and HALF SPEED.

Layout 5: Looper offers essential Looper controls.
Hold the middle switch for the Master Layout Menu.

6:PER PRESET

TAP:PP1Tap	TAP:PP2Tap	TAP:PP3Tap
HOLD: View -1	HOLD: MLM	HOLD: View +1

Four Views cycle through 12 total Per-Preset Tap "Placeholder" functions.
Per-Preset Hold functions are not supported in this layout.

Layout 6: Per-Preset shows the first three per-preset switches ("placeholders") with hold functions on the left and right switches changing the View to reveal a total of 12 per-preset switches. You will need to add per-preset switch definitions (see p. 79) for this layout to work. The first few factory presets include some of these as examples.
Hold the middle switch for the Master Layout Menu.

7:PERFORM

TAP	TAP	TAP
HOLD	HOLD	HOLD

Layout 7 is an example to accompany a short tutorial. It represents one possible idea for a simple FM3 performance layout. There is no switch in this layout to return to the MLM, though you can easily add one yourself or use the front panel "E" knob.

8:UTILITIES

TAP: Tempo	TAP:--	TAP: Tuner
HOLD: --	HOLD: MLM	HOLD: --

Layout 8 contains utilities: Tap Tempo and Tuner.

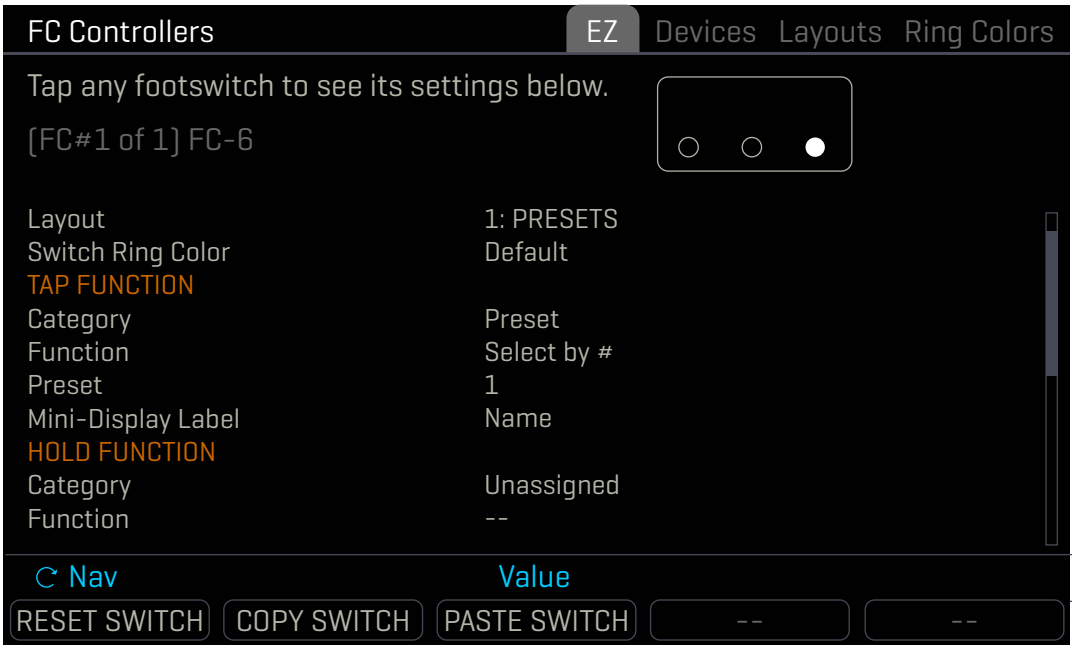
EASY ("EZ") EDITS

The FM3 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 FM3, 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 select **Category: Preset** and **Function: Select by #**, a "Preset" parameter appears to let you dial in the desired preset number.
  - You can also customize the ring color for an individual switch, overriding the defaults which are assigned to the switch Category.
  - You can also select from different automatic "labels" for the Mini-Display, or even 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 you are finished.

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

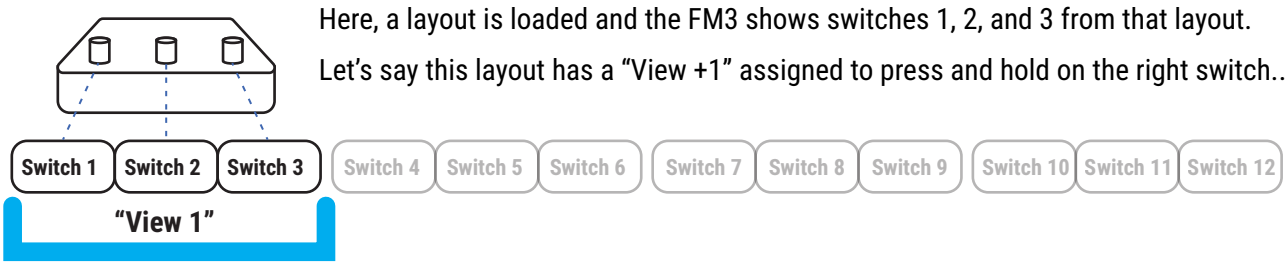
For more information, please see "The Footswitch Functions Guide".

LAYOUT VIEWS

On an FC-12 controller, all 12 switch definitions of any layout are shown one-to-one across the 12 footswitches. On an FC-6 controller, only the first six are normally shown. On the FM3, only three.

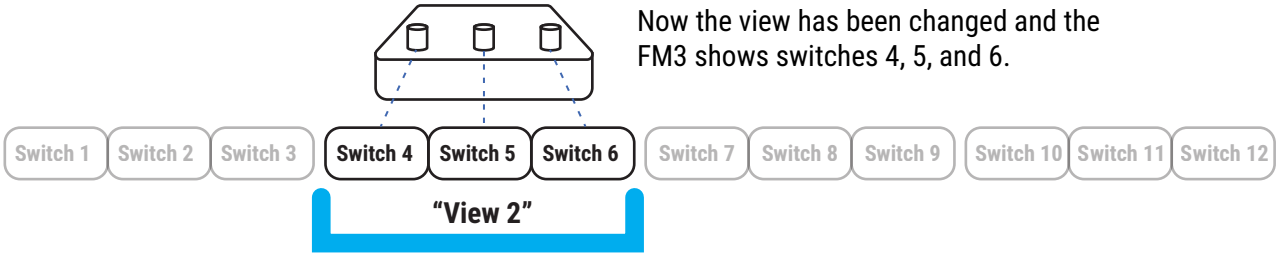
Rather than being wasted, however, the inaccessible switch definitions can be put to use by changing the layout **view**. If we think of the FM3 as a window just large enough to show three switches, changing the view moves this window to show a different set. This concept is illustrated below.

Several of the default layouts — including the Master Layout Menu — use this new feature. For example, when you press and hold the left or right footswitches in the Scenes layout, a different set of scenes is offered across the switches of the FM3. In the Effects layout, the same press and hold feature on the outer two switches is used to change which three effects are controlled by the footswitches.



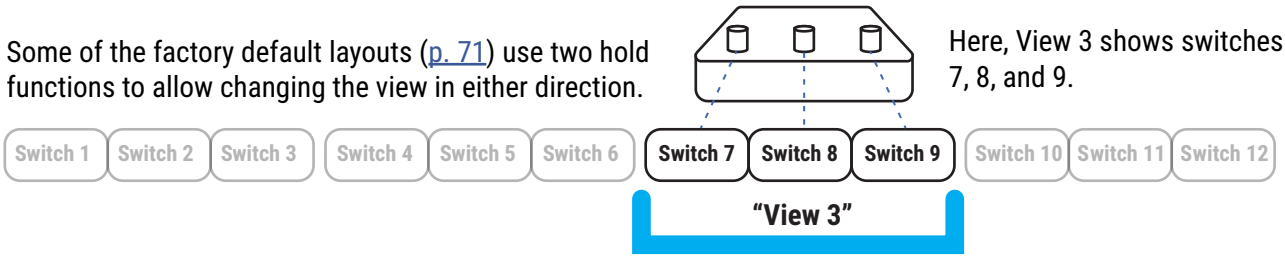
Here, a layout is loaded and the FM3 shows switches 1, 2, and 3 from that layout.

Let’s say this layout has a “View +1” assigned to press and hold on the right switch...



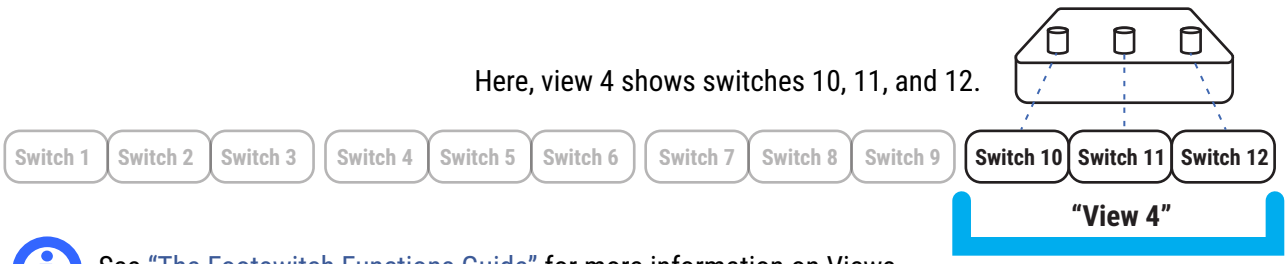
Now the view has been changed and the FM3 shows switches 4, 5, and 6.

Some of the factory default layouts (p. 71) use two hold functions to allow changing the view in either direction.



Here, View 3 shows switches 7, 8, and 9.

Here, view 4 shows switches 10, 11, and 12.



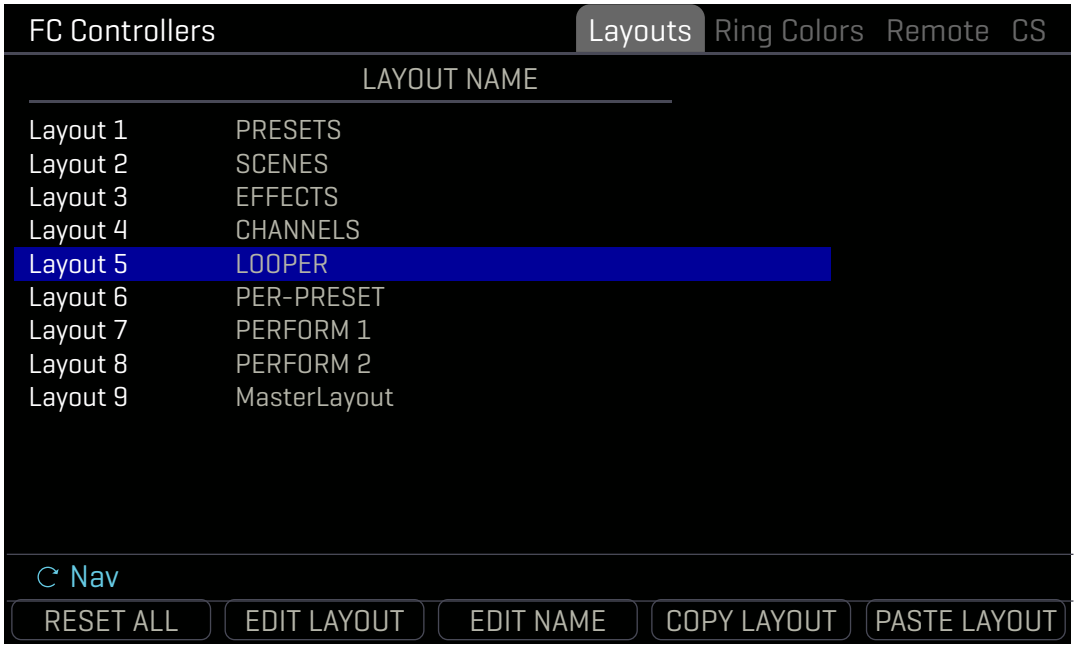
See “The Footswitch Functions Guide” for more information on Views.

THE LAYOUTS LIST

EZ editing is (you guessed it…) easy, but the FM3 also provides a deeper way to manually edit layouts and switches. The Edit Layout page of the Foot Controllers menu provides an overview of 12 switches, and also allows deep editing of individual footswitches, with all of the settings from EZ page and more.

On the FM3, open the **Setup: Foot Controllers** and page to the "**Layouts"** tab.

- Use the **A** knob or **NAV** buttons to select the desired layout.



- 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. 77).
  - **COPY LAYOUT** and **PASTE LAYOUT** provide a means to replicate a layout to a new location.
- Select any layout and press **ENTER** or the **EDIT LAYOUT** button (push-knob B) to open that layout for deeper editing.

Number 9… As you review or edit layouts, you may notice "Layout 9" in the list. Layout 9 is in fact the **Master Layout Menu** used to access other layouts (see p. 69). 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 (see p. 76). Unlike all other layouts, #9 reverts to factory settings instead of being completely cleared.

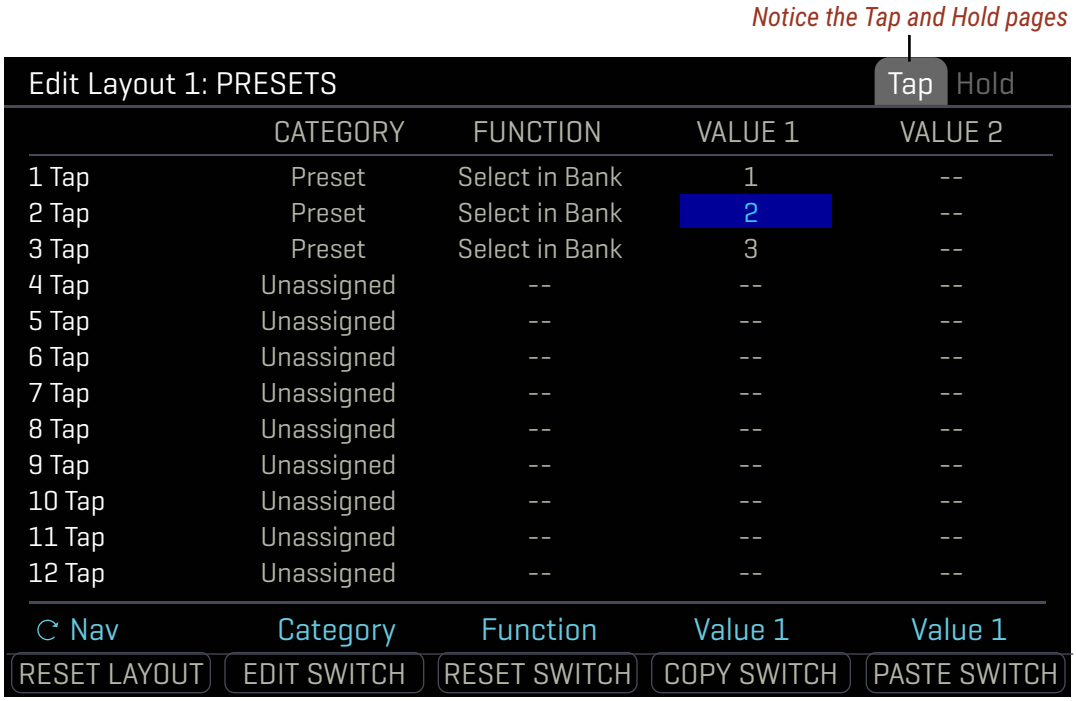
As you get deeper in to the FM3, you may find the ability to modify the MLM quite useful, with options like "Layout Link" or the ability to add functions instead of unused menus.

EDIT A LAYOUT

Select any layout on the **Layouts** page (p. 75) and press **EDIT LAYOUT** or **ENTER** to open the selected layout for deeper editing.

The **Edit Layout** view has two pages: one for the **Tap** function and one for the **Hold** function. Each shows the **Category** and the **Function** for all 12 switches, plus values for the first two parameters of the current function.

- Use the A, B, C, D, and E knobs, or the **NAV** buttons and **VALUE** knob to make changes.



- 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.)
  - **EDIT SWITCH** opens a single switch for deeper editing.
  - **COPY LAYOUT** and **PASTE LAYOUT** provide a means to replicate a layout to a new location.
- Select any switch and press **ENTER** or the **EDIT SWITCH** button (push-knob B) to open that switch for deeper editing.

On the FM3, the middle switch in every layout has its Hold function assigned to the Master Layout Menu. It is certainly possible that you won’t need this, but think carefully before changing it.

See “The Footswitch Functions Guide” for information on all categories, functions, and parameters.

NAMING LAYOUTS

Layout Names appear in the Master Layout Menu and can also appear on dedicated Layout footswitches. Changing the name of any layout is simple with the same interface used to name presets and scenes.

NAME A LAYOUT:

- On the FM3, 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 LAYOUTS

The FM3 itself and each connected FC Controller have their own default layout which load automatically when you power on. You can change the default layout as follows.

SET DEFAULT LAYOUTS:

- On the FM3, open the **"Devices"** page of the **FC Controllers/Onboard Switches** menu under **SETUP**.
- Use the **C** knob or **NAV** buttons and **VALUE** wheel to set the desired **Default Layout**.
- You can also manually change the **Current Layout** and **Current View** (p. 74) for both the FM3 itself and any connected FC controllers.

The Devices page also allows you to set up **Mirroring** the FM3 to an FC controller.

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

BACKING UP LAYOUTS

FM3 layouts are included in any backup of the unit's system (p. 100), but you can also back up or restore these individually or all at once using FM3-Edit (p. 13). Find these options in the Edit dropdown of the Layouts section of the "FC Controllers" area. (shown at right).

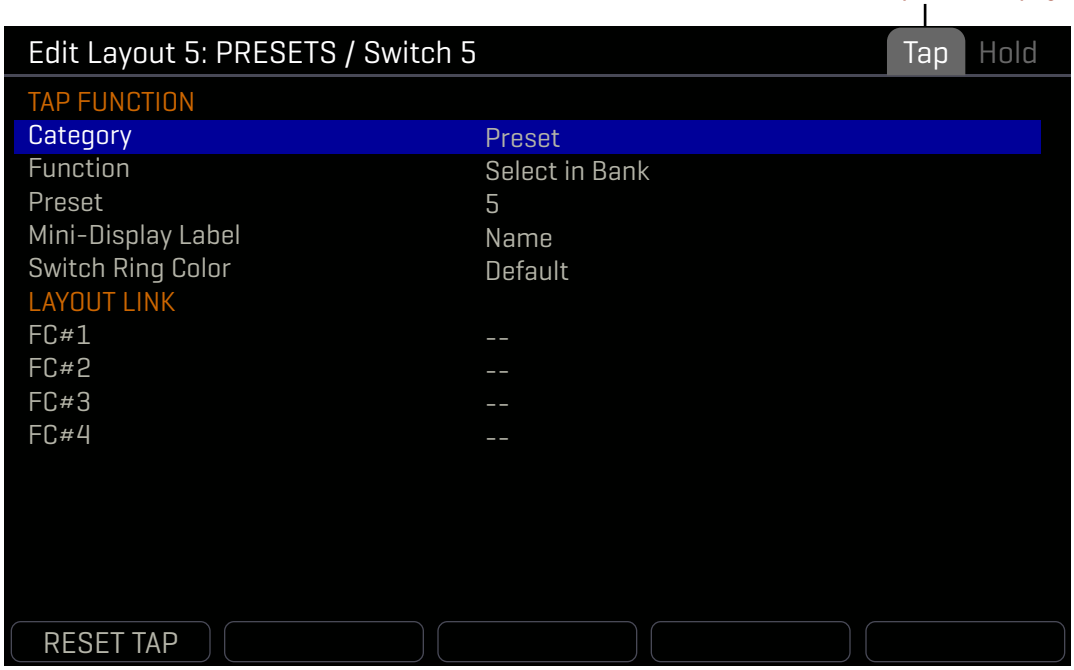
EDIT A SWITCH

Select any switch on the **Edit Layout** page (see p. 76) and press **EDIT SWITCH** or **ENTER** to open the selected switch for deeper 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 also 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"

Notice the Tap and Hold pages



- The **LAYOUT LINK** parameters allow the Tap or Hold function of the switch to **also change the Layout** on the FM3 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 normally shows the label for the **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.

PER-PRESET SWITCHES

The current lineup of Fractal Audio products support two ways of doing Per-Preset footswitches.

Placeholder switches, like those in FM3 factory layout 6, look through the current preset and automatically place its custom switch definitions on the floor. For example, the first switch in Layout 6 will always show the first **Per-Preset** switch definition ("PP#1") from the current preset.

Overrides happen when a preset takes over one of the switches on a connected controller, effectively clobbering whatever global definition you have given a switch and instead showing the override instead. For example, a given preset may be set to force Layout 1, Switch 1 to show "Tap Tempo" instead of its normal function.

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

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

Here is a quick introduction covering how to create the definitions used with Per-Preset switches.

CREATING PER-PRESET SWITCH DEFINITIONS

1. Load the desired preset and navigate to its list of per-preset switch footswitch definitions as follows:
   - 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. Turn the **VALUE** knob to select your choice of per-preset switch definition "slots" (numbered "PP# 1-24.). The first twelve per-preset definitions are used by FM3 layout 6.
3. Define the 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 for any other switches you wish to define.
5. Press Home when finished.

STAND-IN SWITCHES

This section requires you to have one or more external switches. These can be connected directly to the FM3 (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 more limited than the onboard switches of the FM3. 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 show the tuner.

To make external 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 FM3.

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 it is remote controlling, its function 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, "**FM3 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 FM3 WITH AN FC CONTROLLER

The FM3 has a FASLINK port to connect a Fractal Audio FC-6 or FC-12. 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 FM3 and it begins working.

Up to two FC controllers can also be daisy chained from the FM3, increasing the total maximum number of simultaneous footswitches to 27!

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 customize all FM3 layouts, which have been designed around three footswitches. The usual way to do this will be to have some layouts dedicated to the FM3 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.

Similarly, Layout **Views** (p. 74) can help you get the most from each layout, especially in combination with Layout Links.

An additional benefit of using the FM3 with an FC Controller is that each attached controller supports an additional four expression pedals and four external switches!

FM3 FOOTSWITCH FAQ

As mentioned many times thoughout 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 any switch.

Here is a quick summary of common questions.

Q: What do the LED rings show for EFFECT footswitches?

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 FM3 layouts use the function "**PRESET: SELECT IN BANK**". Banks show presets in the order in which they are located on the FM3. It is easy to re-order presets using the **Manage Presets** area of FM3-Edit, where you can copy/paste or use drag-and-drop to swap preset locations. TIP: While using this tool, turn on the "FC Banks" option at the top of the manager so you can easily see which presets will map to which footswitches. Press "Save" when finished.

Q: The FM3 includes many empty preset memories, providing room for you to store additional creations. Why do the preset and bank switches of layout 1 allow me to enter these "Emtpy" preset banks areas of the FM3?

A: The two press and hold BANK function switches in Layout 1 have options for Upper Limit and Lower Limit. By default, these step through ALL of the preset memory locations on the FM3. In some cases, you may want to set these differently. Remember that these limits show BANK numbers and not preset numbers, so you'll need to do a little mental math. To limit your FM3 to presets in 000–383, set the "Upper Limit" of both bank switches to "127". (384 presets ÷ 3 presets per bank = 127 banks).
If you want to use only, say, 15 gigging presets, you might set these limits to 5. (15 ÷ 3 = 5).

Q: Help! I can no longer press and hold the middle switch to get to the Master Layout Menu!

A: Don't panic. You may have accidentally changed this function, and it is easy to re-assign if you know which switch is misbehaving. The middle switch of almost every Factory layout has its hold function set to **Layout: Select: 9, View 1**. (Layout 9, as you may recall, *is* the Master Layout Menu.) If you changed a switch and want to set it back, open EZ Edit (p. 73), tap the desired switch, then navigate down and set its Hold function back to **Category: Layout, Function: Select, Layout:9, View:1**.
FM3-Edit makes this even easier. Use the "FC Controllers" area to make these changes.
A more "Brute Force" way of doing this would be to reset the factory layouts (See p. 73).

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

A: Yes. Perhaps the most common way to back up is to receive a backup of your SYSTEM using Fractal-Bot (p. 13). The system file contains all of the layouts and FC settings. Another way is to use **FM3-Edit**, which includes options to export or import one or all of your layouts. Find these choices in the Edit menu dropdown located in the LAYOUTS panel of the FC Controllers area of FM3-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 FM3 allows for both internal and external synchronization, providing effects with a central BPM clock that can stand alone or follow MIDI Beat Clock from a connected device. The FM3 does not transmit MIDI Clock itself. The Tempo can be set to any whole number value in the range 20–250 BPM. The FM3 flashes its current tempo on a front-panel LED.

THE GLOBAL TEMPO

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

1. Tap two or more times on the front panel **TEMPO** button.
   *NOTE: By default, the tempo averages across ten taps, but you can set it to use only two taps with an option found under **SETUP: Global: Config: Tap Tempo**.*
2. Tap an onboard or FC footswitch assigned to the **Utility: Tempo** function.
3. Tap the **TEMPO** button once and use the **Tempo** knob (**B**).
4. Use an external MIDI device to transmit **MIDI Clock** to the **MIDI IN** port of the FM3.
5. Use a MIDI CC# or external switch assigned to **Tempo Tap**, located on the **Other** page of the **MIDI/Remote** menu under **SETUP**. (See NOTE under #1 above).

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.

PRESET TEMPO

By default, a given preset will *ignore* the Global Tempo and use its own saved **Preset Tempo** instead. 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 will happen when that preset is loaded.

When you load a preset whose **Tempo To Use** is "PRESET," the saved **Preset Tempo** takes over: the tempo LED flashes accordingly and all tempo-dependent time/rate parameters are re-calculated. 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".

Be aware that whenever you alter a preset's own Tempo, you are also updating the Global Tempo.

Remember that each of the four channels of the **Controllers** menu 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

Rates and times in a preset can be set to sync rhythmically 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".

Almost every LFO rate and delay time parameter on the FM3 can be synced to the tempo.

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.
- 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. 65).

12 TUNER

The FM3 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 by pressing and holding the front panel **TEMPO** button.

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 FM3. These consist of two green triangles to indicate when a note is flat (left lit), sharp (right lit) or in tune (both lit).

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. 100)

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

FC CONTROLLERS/ONBOARD SWITCHES MENU

Most of the pages and functions of the FC Controller menu are detailed elsewhere in this manual:

FC: EZ PAGE

"Easy (“EZ”) Edits" on p. 73

FC: DEVICES PAGE

"Startup Layouts" on p. 77

See also "Mirroring" in the FC Controllers manual.

FC: LAYOUTS PAGE

"Edit a Layout" on p. 76

FC: RING COLORS PAGE

"Footswitches" on p. 9

FC: STAND-IN SWITCHES PAGE

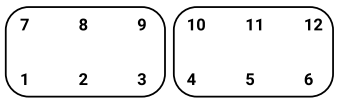
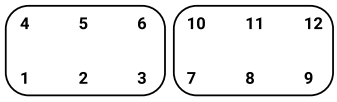
"Stand-In Switches" on p. 80

FC: CONTROL SWITCH MIDI

See "The Footswitch Functions Guide"

FC CONTROLLERS: CONFIG PAGE

PARAMETER	Description
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. 70.
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 precisely on the downbeat.
FC Master Layout Menu “Switch Combo” ENABLED/DISABLED	The **Master Layout Menu** (aka “MLM”, aka “Layout 9”) provides access to other layouts. On the FM3, the MLM is normally assigned to the Hold function the middle switch. However, a connected FC Controller will have a special "Switch Combination" that can be used to show the MLM. This setting disables or enables the switch combination. See your FC Owner's Manual for more.
Per-Preset Switch Overrides ENABLED/DISABLED	Any FM3 preset can **override** the function of any footswitch in any layout. This offers extreme flexibility, making it possible to handle exceptions easily in a system where everything is normally global. This setting allows you to DISABLE Per-Preset overrides so only the global switch functions appear. See "The Footswitch Functions Guide" for more on per-preset functions.

PARAMETER	Description
Bank Size 1–12	Certain footswitch functions automatically map FM3 presets dynamically in “Banks” across the switches. The FM3 defaults to 3 presets per bank but you can change this setting for use with custom layouts . The Bank Size number should correspond directly to the number of “Preset: Select in Bank” switches used.
Preset Number/ Scene Number in FC Main Display ON/OFF	The main display of a connected FC controller shows both Preset number/Name, and Scene number/name. This option allows you to individually hide these numbers, so a greater number of characters can be dedicated to the names. It has no effect unless an FC is connected.
Ring Intensity (Bright, Dim) 25–100%, 1–50%,	Each FC footswitch has its own segmented LED ring. The rings change color to show switch function, and change between two brightness levels (and “off”) to show switch states. These parameters allow you to adjust the intensity of both dim and bright ring states.
Main LCD Notification Hold	The FC normally displays Preset and Scene names. It sometimes changes, however, to show other status messages (such as when you toggle an effect on or off). This parameter sets how long these alternate messages remain on the screen before the preset/scene display returns.
Mini-Display Contrast	This sets the contrast in the onboard mini-displays.
Mini-Display+Ring Brightness	This sets the master brightness of all mini-displays and LED rings on the FM3.
Main Display Messages	This determines how long special footswitch messages will be shown in the main display of the FM3, for example, when turning an effect on or off.
	Although the switches on the FM3 or FC are not numbered, they do correspond to the 12 switch definitions of any layout in a certain order. Normally, the FC6 shows the first six switches in two rows, but the FC12 places these across one row, on the bottom. Therefore, if you create a layout for the FC12, it will re-arrange itself when viewed on an FC-6, which can be a bit confusing. To prevent this from happening, you can enable "FC-6/FC-12 Compatibility Mode. This parameter canges switch mapping as illustrated below. **FC-12 Compatibility Mode**  **Normal** 
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
Power Amp Modeling ON/OFF	This parameter globally enables or disables power amp simulation in all Amp blocks in all presets. This capability is provided for cases when the FM3 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 those 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 FM3 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.
Cabinet Modeling ON/OFF	This parameter conveniently enables or disables Cab block processing in all presets. The Cab block will not physically appear to be bypassed, but acts exactly as if it had been replaced a shunt. Use this when you are using the FM3 with an amp powering a traditional guitar speaker cabinet, or the sound will be muffled, muddy, and boomy.
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. Also, when set to Authentic, 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.
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. 112.
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 block 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 run with MIX at 100%.)

PARAMETER	Description
Effects Mix +/- 50%	Boosts or cuts the MIX of all blocks for which the GLOBAL MIX parameter 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 these block types: **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	When set to ON the unit will prompt before changing presets if the current preset has been edited. This spares you from accidentally losing your edits. NOTE: Be sure to change this to OFF before performing!
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. 98). “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.
AC Line Frequency	The “Intelligent” Noise Gate type found in the **Input Block** provides smart EMI filtering which reduces hum and buzz. For best results, 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 EQ PAGE

OUT 1 EQ provides a 10-band graphic EQ, plus a master GAIN adjustment control**.** Use these to make global 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 seems overly bright or boomy. The master GAIN fader should be used with care as it can cause clipping, and lowering it can affect the signal-to-noise ratio. This EQs affect ONLY the Analog outputs. SPDIF and USB are not affected.

Output 1 Global EQ settings apply to all instances of the Output 1 mix signal, including the Output 1 balanced jacks, unbalanced jacks, headphones jack, and signal which might be 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.

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: AUDIO PAGE

PARAMETER	Description
SPDIF Out Source Output 1, Output 2, Input 2	This allows you to specify which signal should be transmitted at the SPDIF digital output.
USB 3,4 Record Source Input 1, Input 2	This determines whether USB 3+4 in a connected computer will record the signal from FM3 Input 1 or Input 2.
USB 3,4 Playback Destination Input 1, Output 2	This determines how the FM3 routes playback from USB 3+4 of a connected computer. The default option of INPUT 1 is designed for re-amping. The Output 2 option is provided so you can have backing tracks from the computer appear at a different set of outputs from your main guitar signal.
Input 1 Source ANALOG USB [CHANNELS 3/4]	This selects which signal source should be routed to the Input 1 block on the grid. “ANALOG” selects the Input 1 Instrument jack. When “USB (CHANNELS 3/4)” is selected, the FM3 will process signals sent from FM3 Outputs 3 and 4 of a connected computer so you can process computer audio on the FM3 (as when re-amping).
Input 1 Pad 0, 6 dB, 12 dB, 18 dB	This pads the signal from IN 1 [INSTRUMENT] jack before it reaches the A/D converter to prevent clipping. The pad is offset by a corresponding but opposite boost at the output of the converter, so “what you hear” remains the same at all settings. Run this at the lowest possible setting for your guitar, starting at 0 dB and increasing padding if required to eliminate Input 1 clipping as indicated on the front panel LEDs.
Input 2 Mode STEREO LEFT ONLY RIGHT ONLY SUM L+R USB (Channel 4) +R	This setting determines globally how the FM3 handles signals received at the input 2 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!
Input 2 Pad 0, 10 dB, 18 dB	This pads the signal at INPUT 2 jacks before it reaches the A/D converter to prevent clipping. Run this at the lowest possible value for your setup, starting at 0 dB and increasing padding if required to eliminate Input 2 clipping as indicated on the front panel LEDs.
Output 1 Mode **Output 2 Mode** STEREO, SUM L+R COPY L>R	These determine how output signals are processed. This control makes it easy to use the same presets in a variety of stereo and mono performance or recording environments. See "Mono vs. Stereo" on p. 6 for more information.

PARAMETER	Description
Output 1 Level -10dBV +4 dBu	This sets the nominal levels of the output 1 analog jacks. 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.)
Output 1 Phase **Output 2 Phase** NORMAL, INVERT	Determines whether signal at the corresponding outputs will be normal or phase-inverted relative to the actual output of the grid. This lets you compensate for unwanted inversions elsewhere in the signal chain.
Output 2 Boost/Pad 0/6/12/18 dB	These settings engage a boost/pad which can help lower the noise floor of Output 2. This may be useful when outputting to a tube amp or modeler or with the Four-Cable Method. 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 INPUT 1, OUTPUT 1, NONE	Enabling this option creates a copy of the Output 1 or Input 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 block. Use the Input 1 setting to create an analog DI. This setting works only when the Output 2 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 – 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.

I/O: PEDAL PAGE

The **Pedal** page of the **I/O** menu contains parameters to set up and use expression pedals or a switches through the Pedal jacks on the rear panel of the FM3. Expression pedals should have a linear resistance taper and max resistance of 10kΩ to 100kΩ. The Fractal Audio Systems EV-1 and EV-2 expression pedals are recommended. An external switch may 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 and "External Switches" on p. 12.

PARAMETER	Description
Pedal 1 Setup **Pedal 2 Setup** EXPRESSION PEDAL, 1 SWITCH (TIP) 2 SWITCHES (TIP + RING)	Set this according to the what you have connected. For 1 expression pedal, choose EXPRESSION PEDAL For 1 switch, connect the switch to the TIP and SLEEVE of a TRS connector. With this setting active, the RING function is disabled as a Modifier/External source to avoid mishaps. For 2 switches, connect one to Tip and Sleeve and the other to Ring and sleeve.
Calibrate PEDAL 1 **Calibrate PEDAL 2**	Calibrate expression pedals connected to an on-board 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 1 Tip Behavior **Switch 1 Ring Behavior** **Switch 2 Tip Behavior** **Switch 2 Ring Behavior** FOLLOW HARDWARE, VIRTUAL TOGGLE	A switch with the default setting of "Follow Hardware" behaves exactly as you might expect: a latching switch latches, and a momentary switch is momentary. If you want a momentary switch to behave like a latching/toggle switch instead, use the "Virtual Toggle" option. Now, every time you tap the switch, its state on the FM3 will flip from ON to OFF, or OFF to ON. So for example, imagine a momentary switch mapped to EXTERNAL 1 and assigned to the Rate of a Rotary. While you press down on the switch, the Rotary rate increases. When you step off the switch, the rate slows. With the Behavior changed to "Virtual Toggle", you would tap once for a fast rate, and then tap again to toggle the rate to slow. Note that if you accidentally apply the Virtual Toggle setting to a physical latching switch, you'll need to tap the switch twice (or more) for it to toggle.
Switch 1 Tip Polarity **Switch 1 Ring Polarity**, **Switch 1 Tip Polarity** **Switch 1 Ring Polarity** NORMAL, REVERSE	The FM3 offers the option to reverse the polarity of any connected switch. The option “Normal” assumes a “momentary make” switch. Use the option “Reverse” when using a “momentary break” switch, or for creative applications.

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 Channel, the 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. 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 FM3 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 data at 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. 54
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 FM3 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 FM3 will process or ignore incoming MIDI Program Change messages.
Ignore Redundant PC ON/OFF	This setting determines whether the FM3 should re-process or ignore a Program Change message that corresponding to the current preset. With this setting "OFF", a preset will be reloaded—all changes discarded—when it is selected again via PC. This allows you, for instance, to load a preset, use various "Instant Access" switches to bypass effects, and then stomp the footswitch that originally selected 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 revert to that set in the map.
Send MIDI PC 1–16 OMNI OFF	Determines whether or not the FM3 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 FM3. 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 re-programming 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 re-mapped 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. 67) when the FM3 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 enabled (see above), incoming Program Change messages are re-mapped according to the values in the table in this section.

PARAMETER	Description
Map to Preset **Map to Scene**	When PC Mapping (above) 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.
- The following assignments work with a pedal or switch connected to the on-board expression jacks of the FM3:
  - **PEDAL 1 or 2 (EXP/SW TIP)** - for an expression pedal or a switch connected to the tip of a TRS cable.
  - **PEDAL 1 or 2 (SW RING)** - for an external switch connected to the ring of a TRS cable.
- **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 Remotely" 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 FM3.

PARAMETER	Description
Tempo Tap	Provides the ability to tap the tempo using an external controller. Learn more about Tempo in **Section 11**.
Tuner	Provides a way to remotely enter or exit the Tuner. Learn more in **Section 12**.
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/wrap points. Preset mapping and offsets are ignored. Don't confuse this with the Preset Inc/Dec function of the FM3's onboard footswitches. These switches have their own settings and ignore this value, which is used only for changing presets via MIDI.
Scene Select	Selects 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 Remotely" 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 Volume **Output 1,2 Volume**	Four individual 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.

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. You will be prompted to press ENTER to confirm.

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

A second 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!

UTILITIES: FIRMWARE PAGE

This page indicates which firmware version the FM3 is running.

USB and FPGA firmware versions are also shown.

14 ADDITIONAL TOPICS

FRACTAL-BOT

Fractal-Bot is required for **Backing up and Restoring** sounds and settings (below), **Updating Firmware** (p. 101) and can be used for **Transmitting Presets,** or **Installing User Cabs** (p. 107).

The program is self-explanatory and has instructions built in.

To be able to use Fractal-Bot, Windows users will need to install a driver to enable communication between the computer and the FM3. The Windows driver is available at https://www.fractalaudio.com/fm3-downloads/

Computers running OS X do not require a driver to communicate with the FM3.

Download and install **Fractal-Bot** from our web site at https://www.fractalaudio.com/fractal-bot

BACKING UP & RESTORING

You are encouraged to back up your FM3 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 FM3 doesn't emphasize this 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: **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. Many pros we work with use a consistent naming system for their backup folders: "**yymmdd - FM3**" (two digit year, two digit month, two digit day). In addition to the backup files, create a text file to remind you what firmware version was installed when the files were created.

RESTORING

Fractal-Bot is also used to restore backup files to your FM3. In this case, the process is less automated but still very easy. You will need to send over all of the files from your backup set individually. Once the first file completes, send the next file over, and so on, until they are all finished. Remember to *reboot* the FM3 immediately if a **System** file has been transmitted to it! (Fractal-Bot will remind you.)

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

MIDI

On the FM3, backup and dumping are not supported over 5-pin MIDI. You can transmit backup files to the unit this way, but because the transfer rate is so slow, this can take a LONG time and is advised against.

FIRMWARE UPDATES

Our products are upgradeable, and we are committed to continual improvement. These highly anticipated updates add new amps, cabs, effects and features, fix issues, and more. We recommend keeping the firmware in your FM3 up to date as new versions are released. Firmware is technically software — the "operating system" of your FM3 — tracked using version numbers: 1.00, 1.01, 2.00, etc. Every FM3 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). Before you begin, please QUIT any other applications which might interfere, including FM3-Edit and any DAW software or audio/MIDI applications.

1. **Download** the latest firmware for your FM3 from https://www.fractalaudio.com/fm3-downloads/
2. **Unzip** the download file. The archive may contain various documents in addition to the actual firmware file, which is a MIDI System Exclusive or "SysEx" file. Extract the **.syx** file to a location you can easily find when required. **Do not double-click the .syx file**. Fractal-Bot will prompt you for its location when it is needed.
3. Please 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 aware of before updating to the new version.
4. Before performing a major firmware update, it is recommended to **back up** your FM3 (see previous page).
5. Launch **Fractal-Bot** and proceed through three self-explanatory steps.
6. Firmware updates will occasionally be accompanied by new versions of the FM3 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: 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 factory 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. It is always wise to create a full back up using Fractal-Bot before a major update.

Firmware updates do *not* upgrade Factory Presets. Updated Factory Presets, when offered, are released as a separate update on our web site support page. Fractal-Bot can be used to transmit this update in the same way it is used to update firmware.

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

A: If the FM3 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 FM3 will no longer boot normally.

A: See "Recovery" on the next page.

RECOVERY

PROBLEMS DURING/AFTER FIRMWARE UPDATE

The FM3 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 normal using **Fractal-Bot**.

PROBLEMS WITH A SINGLE PRESET

If your FM3 will not boot normally, the problem may just be the current preset. You can force the unit to load an empty initialized preset as follows:

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

The FM3 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

In the very unlikely event that a problematic system parameter prevents the FM3 from booting normally, you may use the following procedure to recover:

1. Power down the unit and wait five seconds.
2. Power on holding **EDIT** until the boot-up progress bar first appears.
3. Enter **SETUP**, open the **Utilities** menu, and page to **Reset.**
4. Execute **Reset System Parameters** as indicated on-screen (Push-knob **A** followed by **ENTER**).
   WARNING! Do NOT accidentally perform CLEAR ALL PRESETS!!!
5. Follow the on-screen instructions to execute. Press HOME when finished.

You can in fact hold both **HOME** and **EDIT** at once to reset the current preset *and* prevent the loading of global settings and parameters.

GETTING HELP

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

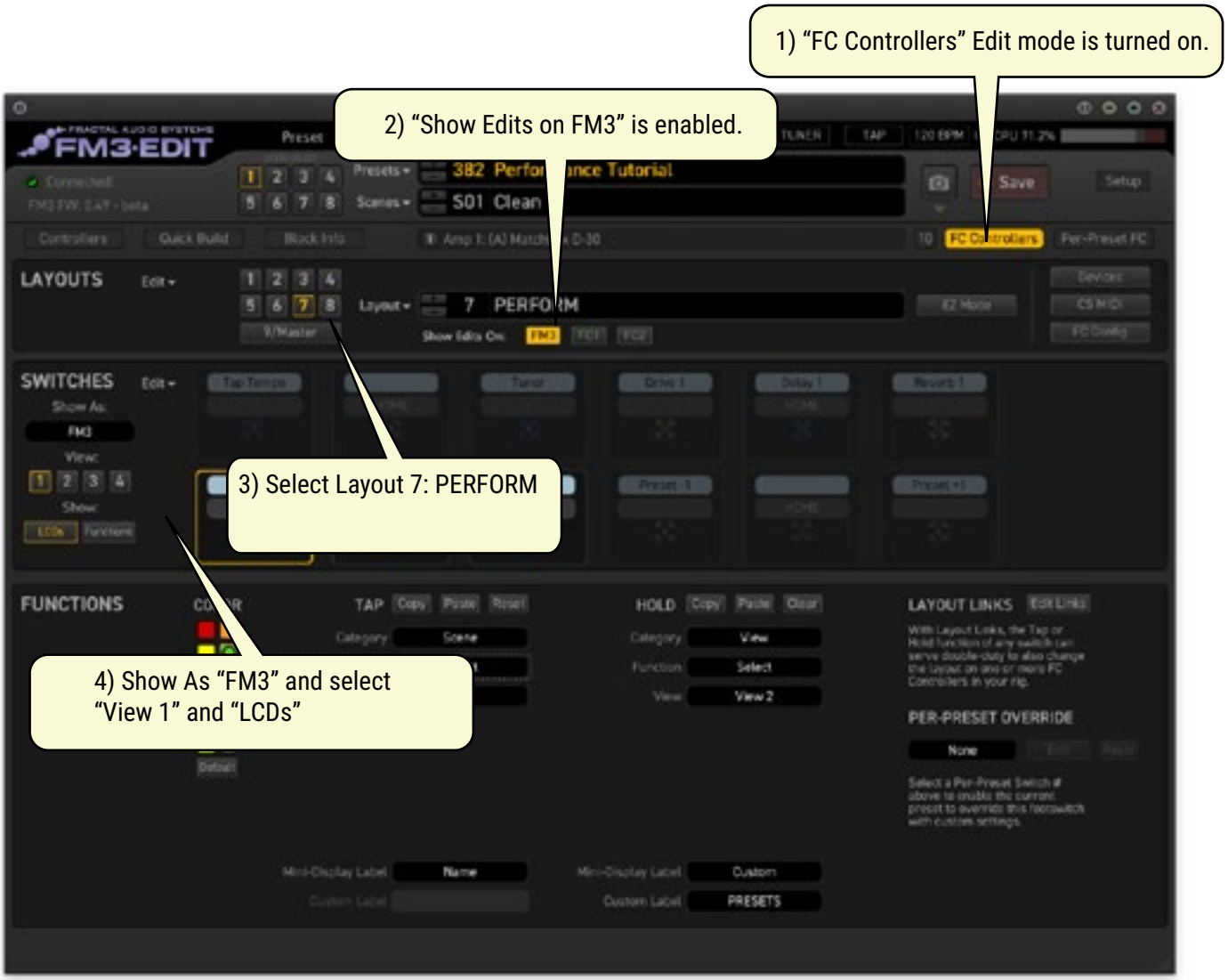
Our wiki, maintained by members of the Fractal Audio community, is also an excellent resource: https://wiki.fractalaudio.com

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.

FOOT CONTROL TUTORIAL

The following tutorial explores the factory default layout #7, named “Perform” because it is intended to show one possible very simple way to use the FM3 while performing. This tutorial will use FM3-Edit but you could perform all of these operations from the front panel just as easily.

To begin, load preset 382: **Performance Tutorial** and set up FM3-Edit as shown below.



QUICK TIP

Remember that under Windows, you will need to install drivers before using FM3-Edit.

See Section 3: USB.

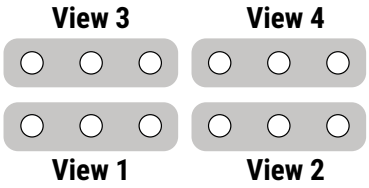
Continued on next page.

UNDERSTANDING VIEWS

This layout uses four different views, each set up like a self-contained mini layout.

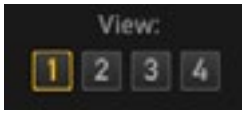
Views are detailed on p. 74 but here's a simple summary.

- The FM3 is based on "Layouts", each containing programming for twelve footswitches.
- Unlike the larger FC-12 controller, the FM3 can only show three of these "Switch Definitions" at once.
- The view determines WHICH three switches are shown on the FM3.



In FM3-Edit, switches are shown in two rows of six. Views are arranged as shown.

Try using FM3-Edit to change the view now.



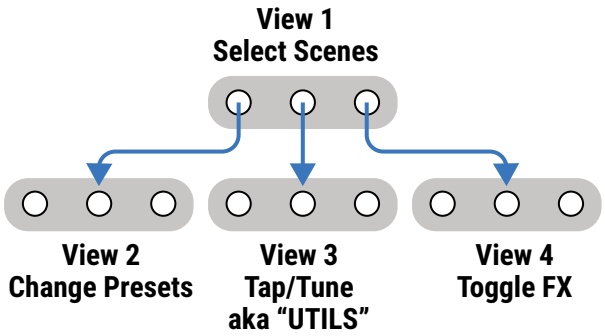
ABOUT LAYOUT 7: PERFORM

Layout 7 is designed as a "minimal" performance controller. Each view has its own purpose:

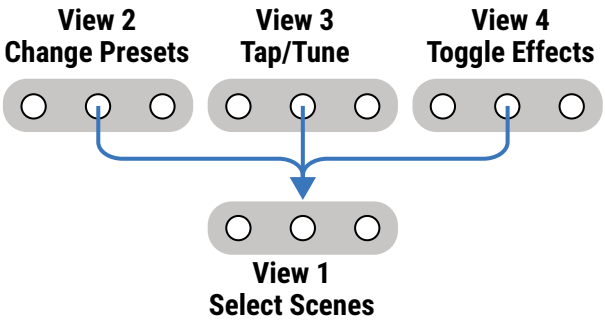
- View 1 selects three scenes. Our example preset contains Clean/Crunch/Lead.
- View 2 allows you to change presets. (The idea is that you might use one preset per song.)
- View 3 contains Tap Tempo and Tuner.
- View 4 is set to toggle three different effects on or off.By default, these are Drive 1, Delay 1 and Reverb

CHANGING VIEWS

View 1 changes the Scene. This layout is based on the idea that you might rely mostly on scene changes for different sound settings within a song. Here, three switches are forced to Green, Yellow, and Red, making it easy to recognize this layout. (See also "LED Ring Colors" on p. 9).



From within View 1, you can **Press and Hold** any switch to change the view as shown.



From any other view, **Press and Hold** the middle switch to go back to **View 1** ("Home").

Try changing views with your feet now.

Continued on next page.

Continued from previous page.

MAKING A CHANGE FROM THE FM3

In this next section, we'll use EZ Edit on the FM3 to make a change to one of the footswitches. We're going to change the Reverb footswitch to one for Chorus. **EZ Mode** allows us to tap the footswitch we want to change and make simple edits on the spot, but remember that while you're in EZ mode, the normal functions of the footswitches won't work! Therefore, if you want to test a switch you first need to exit from **EZ Mode**!

1. To begin, use your feet to change to the **Effects View** as shown on the previous page. (You should see three footswitches labeled "Drive 1" "Delay 1" and "Reverb 1")
2. On the FM3, open the **SETUP** Menu (Push Knob **E**).
3. NAV to the **FC Controllers/Onboard Switches** menu choice and press **ENTER**.
4. Make sure the "**EZ**" page tab is selected. If not, use the << **PAGE** >> buttons to select it.
5. On the FM3, tap the Reverb 1 footswitch. Notice the "TAP" settings for this switch in the FM3 main display: **Category** is set to "Effect", **Function** is set to "Bypass", and **Effect** is set to "Reverb 1"
6. Nav to **Effect** and turn the **VALUE** knob until "Reverb 1" changes to "Chorus 1".
   (Remember that you never need to STORE changes in any SETUP area. They take effect immediately.)
7. Press **EXIT** twice and test your new Chorus Footswitch on the FM3.

MAKING A CHANGE IN FM3-EDIT

Now we'll use FM3-Edit to change the Chorus switch back into a reverb switch.

1. In FM3 Edit, change to View 4.
2. Click the upper right switch (which is now set to "Chorus 1" if you did the steps above).
3. In the "TAP" section of the lower panel, change the **Effect** from "Chorus 1" back to to "Reverb 1".
4. As when using the FM3 front panel, there is no need to STORE. Test your switch on the FM3.

QUICK TIP

The "Show As" and "View" controls in FM3-Edit are visual aids. They help you focus on those switches that you need to see. Be aware however, that when you select "FC6" , the **order** of switches on the screen is different from the order for "FM3" or "FC12". This is indicated with small numbers shown inside the LED rings in FM3-Edit.

CONCLUSION

- In this tutorial, you learned about **Layout 7: Perform**. We covered how it uses VIEWS to create different sets of controls on the FM3.
- You learned to change the view in an "out and back" arrangement.
- You used EZ Mode to make a change on the FM3 itself, followed by a similar change through FM3-Edit.

ABOUT THE TUTORIAL PRESET

- The tutorial preset is set up with three scenes: 1: Clean, 2: Crunch, and 3: Lead
- These scenes are set up in such a way that you can dial in the amp, cab and drive pedal sounds fully independently. This provides one possible model for designing your own FM3 presets.
  - Scene 1 uses Amp Channel A, Cab Channel A and Drive Channel A.
  - Scene 2 uses Amp Channel B, Cab Channel B and Drive Channel B.
  - Scene 3 uses Amp Channel C, Cab Channel C and Drive Channel C.
- Delay and Reverb are set so that the tail will spill over between scenes, or when you turn these effects on or off.
  - The Lead sound uses Delay Channel C, which is a copy of channel A with different mix levels.
  - Differences across channels can sometimes alter spillover — changing the Delay **Type** or the Reverb **Size**, for example. See "Spillover" on p. 112.
- Other blocks and settings in this preset are shared across all scenes. This replicates the way real pedals work. A phaser, for instance, will be either on or off and any change to its knobs will be heard no matter which amp channel you are using.
- A nice "Clyde" Wah pedal is included. It uses External 1 as described in "Global Expression Setup" on p. 11.
- The LOOPER is included in this preset so that you can try it out. Just remember that the Performance layout does not include an "Exit" to the Master Layout Menu, so you will need to press HOME and then change the layout Manually to operate the looper.
- If you wanted to add a switch in Layout 7 to show the Master Layout Menu, you could place it on the un-used Tap function of the middle switch in View 2 or View 3. Follow the steps on the previous page of this tutorial, choosing **Category: Layout, Function: Select, Layout: 9.**

NEXT STEPS...

- Once you have completed this tutorial, we recommend that you explore the other topics presented in Section 10: Layouts & Switches.
- The "The Footswitch Functions Guide" is an essential companion to making the most of the FM3.
- As you learn more, use your imagination to decide how you want the FM3 to work for you.
  - If you need help, our forum is a great resource. Fractal Audio staff members participate in the conversation, and response times can be very fast. Find it at https://forum.fractalaudio.com
  - You can also 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

LOADING USER CABS

In addition to thousands of onboard cabs in its factory banks, the FM3 allows you to store up to 1,024 cabs in user memories. These "User Cabs" allow you to personalize your FM3 with unique tones.

User Cabs — also know as "Impulse Responses (IRs)" — may be transferred to the FM3 as follows:

1. First, you'll need an impulse response file in SysEx format (.syx).
   - 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
   - Don't confuse the newer ".IR" file format, which is intended for re-mixing in Cab-Lab (see below).
2. Using **Fractal-Bot** or **FM3-Edit**, transmit the file to your FM3, noting which numbered **Slot** you are sending it to. (Example: #215.)
   - **Fractal-Bot** – This basic utility can send individual cabs to any location or transmit entire banks. To import a single IR, open a Cab block on the grid and set **Cab 1** to the **Bank** and **Number** you want to transmit a cab to. Then send the sysex file to the FM3 using Fractal-Bot and the unit will save the IR to that location.
   - **FM3-Edit** – The **Manage Cabs** tool allows you to drag and drop user cab files into memory slots. Don't forget to press **SAVE**! You can also manage entries already in the memory of the FM3 with operations like copy, paste, rename, and drag-and-drop re-ordering. When you purchase a Cab Pack, this is the best and easiest way to load multiple IRs at once into your FM3, audition the results, and organize your favorites.
3. Once the IR has been transmitted to your FM3, select the **Cab** block in your preset and press **EDIT**.
4. Change the cab to the **User Bank** and **Number** that your IR was transmitted to. (Example: "USER, #215").

NOTE: In comparison to older Fractal Audio systems products, user cabs are NOT included in a backup of the SYSTEM area of the FM3. Conversely, 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 FM3 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 Preset and Cab files for Fractal Audio Systems products. You can upload your own FM3 presets or browse what others have contributed including some high profile artists (though regrettably many artists treat their presets as guarded secrets). Axe-Change is also a great source for free Cabs!

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

FREQUENTLY ASKED QUESTIONS

Q: Why all the technical terminology?

A: The language of the FM3 is for the most part the universal language of professional audio. This allows the FM3 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 FM3. Understanding them will help you to master the craft of pro audio and to communicate with others. At the same time, the FM3 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 FM3?

A: Use Fractal-Bot. See p. 100.

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

A: Yes! Axe-Edit and FM3 Edit have both been updated for cross compatibility. The FM3 will do its best to interpret larger Axe-Fx III presets but you should always check the results.

- The top 4 rows and first 12 columns of an Axe-Fx III preset are imported first. This aligns the top-left of the FM3 grid with the Axe-Fx III grid. Any incompatible block will be replaced by a shunt.
- Blocks in rows 5 and 6 as well as columns 13 and 14 of the Axe-Fx III preset are added to the first available spaces of the FM3 preset. Incompatible blocks will not be imported.
- When converting an Axe-Fx III preset to an FM3 preset it is possible to have more blocks than the CPU can handle. If this happens, the FM3 device will display a blinking red banner in the top-left of the HOME screen that reads "CPU Limit - Muted". The FM3 will stop processing audio but allow you to delete and/or reconfigure the blocks as needed.
- In regards to the CAB block, an Axe-Fx III preset that has bank USER 2 selected will be changed to USER 1 as the FM3 does not have a User 2 bank. Also note, that only "Cab 1" and "Cab 2" selections from the Axe-Fx III preset will be imported as the FM3 only has two selectable cabinets.

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 FM3.

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 FM3? Is it actually an expression pedal? Did you set up a Modifier as described in **Section 9**?

Q: My FM3 won't start up correctly.

A: Please see "Recovery" on p. 102.

Q: My FM3 seems quiet at default settings.

A: By default, analog outputs 1 is set to -10dBV. To change to +4dBu, use the **Output Level** parameters for Out 1 on the **Audio** page of the **I/O** menu under **SETUP**.

Q: Can I use a computer or external MIDI controller to remote control the FM3?

A: Yes. The FM3 has a rich MIDI spec which allows it to be remote controlled. Using a computer, you can use the built-in USB connection for "MIDI-over-USB", rather than relying on a third-party MIDI interface. See "The MIDI/Remote Menu" on p. 95 and "MIDI Implementation" on p. 120 for more on this.

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 FM3 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 block 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? Most of the time, the problem is a faulty or disconnected cable. Checking the FM3 with headphones can help rule this possibility out. Using the DELETE button (Push-knob **C**), try changing each block to a SHUNT, ending with the Amp and Cab blocks. 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? 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% (see p. 96).
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 picked 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 FM3 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. Check out the "FM3 Footswitch FAQ" on p. 82

SHORTCUTS

The FM3 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** 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 **ENTER** to flatten the EQ.
- 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 the Cab Picker for the selected.

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 changes to delay time, reverb size, etc, may cause a “sweep” in the tail.

WHEN SWITCHING SCENES...

Switching Scenes provides one of the best ways for sound changes to have perfect 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.

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 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. The moment you change to a new preset, the parameter settings can change. 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 likewise hear a difference in the tail, for instance, if that delay was 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. FM3-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 FM3. Use 5-pin MIDI cables between the FM3 and the MIDI ports of other devices.

RECEIVING MIDI

The FM3 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 — and will sync internal tempo to MIDI clock messages for use with delay time, LFO rates, etc.

The FM3 is NOT a USB MIDI Device. It uses COM ports over USB for Fractal-Bot and FM3-Edit, and will not appear as a MIDI device in a DAW or other MIDI program.

MIDI THRU

The FM3 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. 95.

SEND MIDI PC

The simplest MIDI capability of the FM3 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 MIDI channel.

THE SCENE 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 FM3 to send a burst of MIDI messages. See the "The Fractal Audio Blocks Guide" for more on the Scene MIDI Block.

CONTROL SWITCH MIDI

Another way for the FM3 to transmit MIDI messages using **Control Switches**. The primary function of a Control Switch is to operate as a **Modifier** source to control FM3 parameters. Beyond this, however, each of the six Control Switches has the capability to transmit a custom "payload" of MIDI data every time the switch is turned on ON or OFF. Because this isn't tied to another event such as a Preset or Scene change, Control Switch MIDI is more flexible and dynamic.

Because Control Switches can be momentary or latching (and even mutually exclusive), 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.

Here is a summary of the MIDI Capabilities of a Control Switch:

- The Control Switch function can be placed in any FC Layout.
- Control Switches 1–6 appear in the list of **Modifier** sources on the FM3. 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 FM3 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 the **SETUP** | **FC Controllers/External Switches** menu 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.

Remember, Control Switches can be switched 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 FM3 presets.
MIDI Bank Select (CC#0) Value , Midi Program Change = FM3 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 INPUTS

Connectors:	Rear 1/4" phone jack, unbalanced, with “Secret Sauce”
Impedance:	1 MΩ
Max. Input Level:	+16 dBu

ANALOG INPUT 2

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*
Impedance:	600 Ω
Max Output Level:	+20 dBu

ANALOG OUTPUT 2

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:	20 – 20kHz, +0 / -1 dB

DIGITAL 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:	4 input, 4 output
USB Audio Clock:	48 kHz fixed

MIDI INTERFACE

Input Connector:	(1) 5-pin DIN
Out/Thru Connector:	(1) 5-pin DIN

PEDAL INTERFACE

Connectors:	(2) 1/4" TRS phone jack
Format:	Pedal: 10–100 kΩ max Tip-Ring Switch: make/break; momentary or latching Sleeve-Ring Switch: make/break; momentary or latching

FASLINK II INTERFACE

Connectors:	(1) XLR-F

WARNING: Connect ONLY to the FASLINK II connector on a Fractal Audio FC Series controller

GENERAL

Finish:	Powder-coated steel chassis
Controls:	12 buttons, 8 knobs *(5 with additional "push" functions)*
Display:	800×480 high contrast color LCD
Dimensions:	11.1" W. × 4.05" H. × 9.3" D. 281mm W. × 103mm H. × 236mm D.
Weight:	7 lbs 1.6 oz (3.22 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 FM3 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 FM3 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 FM3-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	FM3 Global Tempo syncs automatically to MIDI Beat Clock. FM3 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 1.00 - February 2020 - First Version.