

OWNER'S MANUAL

OrGigs FM-1

Three-manual organ, pipe organ and free-reed workstation with three MIDI Zones, for the M-VAVE FM-1.

Firmware package FM-1_674110

November 2026

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1 Welcome

OrGigs turns the M-VAVE FM-1 into a complete organ: tonewheel and 1960s combo organs, baroque and cathedral pipe organs, and French musette and tango bandoneon reeds. It plays on three manuals, and it works as a MIDI router between your keyboards and your synths.

Highlights

- **84 free-running tone generators** from C1 to B7. Every key gets its own sound, and no note is ever cut off to make room for another (no voice stealing).
- **Eight instrument models** in three departments: Vintage & Combo, Pipe, and Free Reed.
- **Three manuals** with independent registrations: Upper (9 drawbars), Lower (9 drawbars) and Pedal (4 stops).
- **Effects per manual, like a mixer**: each manual has its own tube drive, scanner vibrato and chorus or tremulant, its own rotary switch and its own sends to a shared stereo ping-pong delay and four reverbs up to a 7.5-second cathedral. Tonewheel percussion and a two-rotor rotary with real inertia. An **insert effect** slot with chorus, wah-wah, auto-wah, flanger, phaser, ring modulator and amp, and a **master EQ and compressor**.
- **One list of drawbar registrations**: 36 classic tonewheel registrations, pipe and free-reed registrations, a pedal list, and 16 user slots. **16 performance setups** store the whole instrument, one on each white key.
- **A MIDI mixer**: 16 channel volumes (CC 7), kept with each setup.
- **Panel lights** for dark stages: all keys and buttons can glow dimly, or light fully.
- **Three MIDI Zones**, one per manual: each takes its own MIDI channel and key range, plays its manual, and sends the notes on (with their velocity) to your synths, transposed, cloned to more channels, spread over nine harmonic channels or turned into chords.

How to read this manual

Panel buttons and encoders are written like `FX` or `PRESETS`. Text that appears on the FM-1's screen is written like `ROTARY FAST`. `SEL` + `KNOB 3` means: hold `SEL` and turn `KNOB 3`.

> **About SEL.** The FM-1's four knobs can't be pushed. OrGigs uses a held `SEL` button as the "push" instead, so every knob has a second function.

The full version. OrGigs is at heart a firmware for the M-VAVE SMK-37 Elite: its main features were designed there, and this FM-1 version is a compact edition of it. The Elite version has the same organ and effects and more around them: your own rotary cabinets, a mixer with pan, sends, mute and solo, an expression pedal, and five pad layouts. If you have an Elite, check it out. Both read each other's backups (chapter 8).

2 Quick start

Five steps from power-on to a full organ sound.

1. **Power on.** OrGigs starts as you left it. On a new install that is performance setup 1, a tonewheel jazz sound with percussion and chorus.
2. **Play.** The 27 keys cover F3 to G5. Use `OCT−` and `OCT+` to move the keyboard down two or up three octaves. Set the volume with the `MASTER` knob.
3. **Try the 16 factory setups.** Hold `SEL`: the 16 white keys (F3 to G5) light up. Press one of them: 1 tonewheel jazz, 2 cathedral, 3 Paris musette, 4 Brit Combo, 5 tonewheel rock, 6 Italo Combo, 7 baroque organ, 8 tango bandoneon, 9 British hard rock, 10 gospel, 11 baroque rock ballad, 12 60s transistor combo, 13 reggae, 14 cathedral trumpet, 15 musette master, 16 psychedelic space pad.
4. **Pull the drawbars.** `ENV`, then `KNOB 1`–`KNOB 4` move drawbars 1–4; `LFO` gives drawbars 5–8, `EDIT` drawbar 9. Or turn `PRESETS` for ready-made registrations, from the classic jazz lead to the Mixtur.
5. **Speed up the rotary.** Press `REC` to switch the rotary speaker between slow and fast, and listen to it ramp up. `PLAY` brakes it to a stop.

To try another instrument, turn `ALGORITHM` (models 1–8). To keep what you've built, hold `SAVE` and press one of the 16 white keys: the whole instrument is stored in that performance setup.

3 The panel

Every control of the FM-1 and what OrGigs does with it.

Three rules that hold on every screen

ENCODER	ALWAYS DOES
`SELECT`	Chooses the manual (and its MIDI zone): `UPPER`, `LOWER`, `PEDAL`
`ALGORITHM`	Chooses the instrument model 1–8
`PRESETS`	Turns through the drawbar list of that manual (chapter 8)

The buttons

The twelve buttons beside the screen sit in two rows of six. The FX, mixer, lights and MIDI screens draw the same two rows at their bottom edge, so you can see what each button does there.

	1	2	3	4	5	6
Top row	`FX`	`SEL`	`ENV`	`LFO`	`EDIT`	`GLO`
Bottom row	`HOME`	`SAVE`	`ARP`	`SEQ`	`PLAY`	`REC`

CONTROL	FUNCTION	WITH SEL HELD
`KNOB 1`–`KNOB 4`	The four parameters of the screen	The second row of the screen
`MASTER`	Output volume	—
`ENV`	Drawbars 1–4. FX: the upper manual's row. INSERT: the effect on the upper manual. MASTER: the EQ on and off. Mixer: row 1. In the MIDI Zones: a switch of the screen	In the MIDI Zones: a second switch
`LFO`	Drawbars 5–8. FX: the lower manual's row. INSERT: the effect on the lower manual. MASTER: the compressor on and off. Mixer: row 2. In the MIDI Zones: a switch	Ditto
`EDIT`	Drawbars 1, 3, 4 and 9 (drawbar 9 on `KNOB 4`). INSERT: the next effect. MASTER: the knobs hold the EQ or the compressor. In the MIDI Zones: a switch	INSERT: the effect before. Otherwise ditto
`FX`	The FX screen. Press again: back to the drawbars	The insert effect (INSERT); press again: the master (MASTER)
`GLO`	The MIDI Zones. Press again: the next of their five screens	The panel lights (chapter 4)
`HOME`	On the drawbars: the MIDI mixer; press again: back. Everywhere else: back to the drawbars	**Panic**: all notes off, inside and on all 16 MIDI channels

SAVE	Tap: store the drawbars of the manual into a user slot of the drawbar list. Hold + one of the 16 white keys: store the whole instrument into that performance setup	—
SEL	Held: the 16 white keys recall the performance setups. Pressing it also shows the processor load and the battery, `DSP 10% BAT 94%`	—
ARP	Vibrato / chorus of the manual on and off (tremulant on pipe and reed models). FX: the pedal's row. INSERT: the effect on the pedal. Mixer: row 3. In the MIDI Zones: a switch	In the MIDI Zones: a second switch
SEQ	Coupler II/I on and off (the upper keys also play the lower registration). FX: the manual through the rotary or not. INSERT: the effect on and off. Mixer: row 4. In the MIDI Zones: a switch	Ditto
PLAY	Rotary brake	—
REC	Rotary slow ↔ fast	The manual through the rotary or not
OCT− OCT+	Octave of the FM-1's keys, −2 … +3	—
Keys	Play the organ. In the clone and harmonic screens they become switches (chapter 10)	The 16 white keys: performance setups

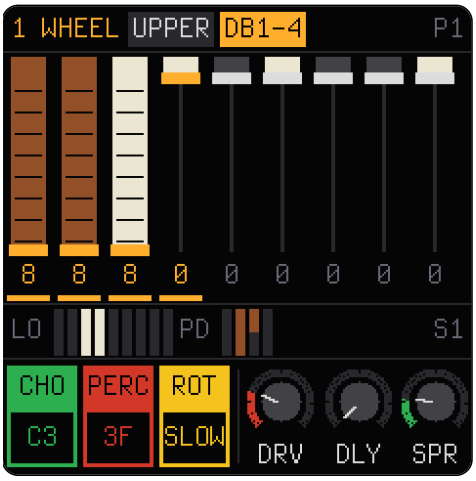
The button lights show what's active: the drawbar group (ENV / LFO / EDIT), the FX, mixer or MIDI screen (FX / HOME / GLO), vibrato (ARP), the coupler (SEQ), rotary brake (PLAY) and fast (REC), and a shifted octave (OCT− / OCT+). On the FX and mixer screens the row buttons glow and the chosen row is lit. In the MIDI Zones the five switch buttons light when their switch is on. For dark stages, the panel lights (chapter 4) let all keys and buttons glow.

> **Touch strips.** The FM-1's two touch strips can't be read by this firmware. Their jobs (rotary speed, bellows, pitch bend or rotary kick) are available from any external controller as MIDI CC 1 and pitch bend; see chapter 10.

4 The screens

The 240 × 240 display shows the drawbars, the FX, INSERT and MASTER screens, the MIDI mixer, the panel lights and the five screens of the MIDI Zones (the fifth: YST, the Yamaha SEQTRAK). At power-on the welcome screen lets the nine drawbars grow down before the OrGigs logo appears; any key or button skips it.

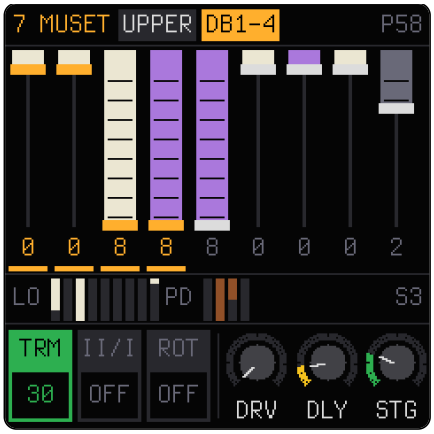
The drawbars



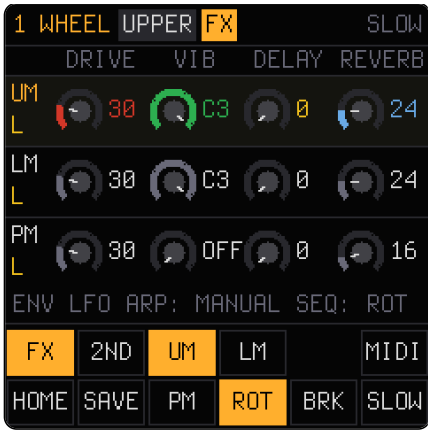
1. **Top bar.** Model number and short name (`1 WHEEL`), the manual (`UPPER`), the drawbar group the knobs hold (`DB1-4`, `DB5-8`, `DB9`), and on the right the drawbar preset (`P1`) and the battery. A star (`P1*`) means the drawbars have been moved since the preset was recalled.
2. **Drawbars.** The nine drawbars of the manual, 0–8. The colour shows the family. Vintage: brown sub-harmonics, white octaves, dark grey the in-between footages, as on a tonewheel organ. Pipe: gold principals, blue flutes, red strings and reeds. Reed: violet the detuned reeds, grey the air. The amber marks show the drawbars the four knobs move right now.
3. **Mini-bars.** The other two manuals, so you see the whole registration; `II/I` when the coupler is on, and the performance setup (`S1`). When you change something, its name and value cover this strip for about one and a half seconds, for example `DRIVE 70`.
4. **Tabs.** Three switches in the tonewheel-organ colours, lit when on. **Green**: vibrato/chorus (`V1`…`C3`), or the tremulant on pipe and reed models. **Red**: percussion on the tonewheel (`2F` = 2nd fast … `3S` = 3rd slow), the coupler `II/I` on the other models. **Yellow**: the rotary of this manual: its speed (`SLOW`, `FAST`, `BRK`), or `OFF` when the manual goes past it.
5. **Knobs**, of this manual. Red: drive (`DRV`). Yellow: delay send (`DLY`). Green: reverb send, labelled with the room: `SPR`ing, `STG` stage, `HAL`l, `CAT`hedral.



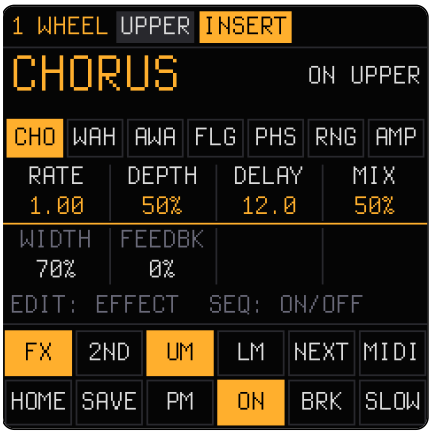
Cathedral organ, performance setup 2, just recalled



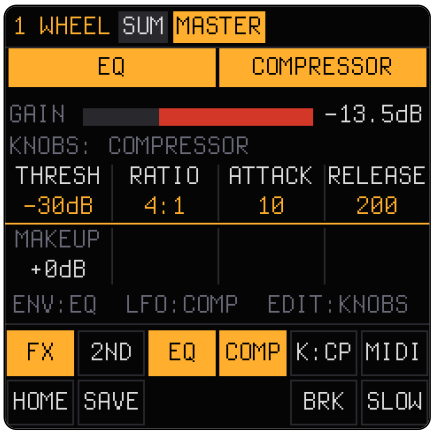
Paris musette: violet drawbars are the detuned reeds



The FX screen (chapter 9)



INSERT: the chorus on the upper manual (chapter 9)



MASTER: EQ and compressor, 13.5 dB taken off (chapter 9)

The FX, mixer, lights and MIDI screens

These screens all share one layout, so the screen matches the panel:

1. **Top bar**: what you're editing, and the manual (zone).
2. **Knob rows**: four columns, one under each of KNOB 1–KNOB 4, in the same order as the knobs. On the FX screen there is a row per manual, on the mixer a row per four channels; the row the knobs move is lit. On the MIDI screens the second row shows what the knobs do while SEL is held.
3. **Message line**: the last change, or a hint.
4. **Button map**: the twelve buttons in two rows of six, as on the panel, labelled with what they do on this screen. A lit button is a switch that is on.

The battery shows at the right end of every top bar. Below 20 % it turns red; below 10 % the message line warns BATTERY LOW, again every five minutes. A yellow **bolt** in the symbol means it is charging: the FM-1 is on a computer or the SEQTRAK, and there is no low-battery warning then. A plain USB charger charges too, but shows no bolt (nothing there talks to the keyboard). Pressing SEL shows the charge (BAT 94%). On the cable it reads full (charging raises the voltage).

The MIDI screens add a picture above the knob row: the key ranges of the three zones, the channels of the cloner, the footages of the harmonic mapper, or the stored chord (chapter 10).

The MIDI mixer

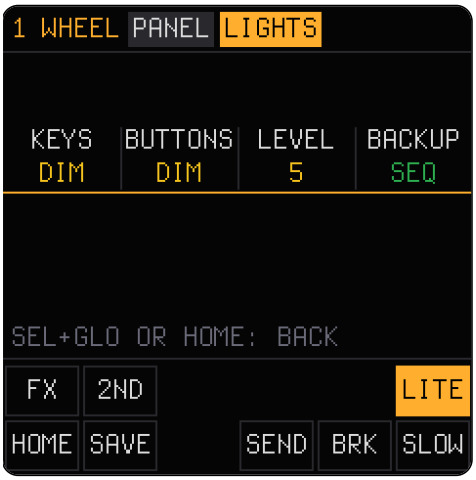


On the drawbars, press `HOME`: 16 knobs for the 16 MIDI channels, in four rows. Each sets the volume of its channel: turning it sends **CC 7** (channel volume) on that channel, so it acts at once, also on notes that already sound.

`ENV` `LFO` / `ARP` `SEQ` choose the row (channels 1–4, 5–8, 9–12, 13–16), as the four buttons sit on the panel; they glow, the chosen one is lit. `KNOB 1`–`KNOB 4` move its four channels. The channels the manuals send on are named `UM`, `LM` and `PM` (upper, lower, pedal manual); channels the zones play (out channels, clones, harmonic) are green. `HOME` again goes back.

The mixer belongs to the performance setup. Recalling a setup sends its volumes to the channels that setup plays (not to the others, so the volumes of instruments you don't use stay as they are). The zones' velocity (chapter 10) is separate: it sets how hard the notes are played, the mixer how loud the channel is.

The panel lights



Hold `SEL` and press `GLO`. Without light the button labels of the FM-1 are hard to read; here you choose, separately for the 27 keys (`KNOB 1`) and the twelve buttons (`KNOB 2`):

- `OFF`: only what matters lights, as before.
- `DIM`: every key or button glows; what matters lights fully. `KNOB 3` sets how bright the glow is: `LEVEL` 1 is a faint glow, 10 as bright as FULL (then what matters no longer stands out).
- `FULL`: every key or button is lit; what matters blinks.

The octave buttons keep their own light. The lights are kept across power-off, not per setup. `SEL` + `GLO` again or `HOME` goes back.

`BACKUP`: `SEQ` sends all your settings to the computer over USB (see *Backing up your settings* in chapter 8).

5 The eight instruments

Choose a model with ALGORITHM, on any screen. The model sets the waveforms, the meaning of the drawbars, and the attack and release.

#	MODEL	CHARACTER	REVERB IN ITS SETUPS
DEPARTMENT I — VINTAGE & COMBO ORGANS			
1	**Tonewheel Organ** WHEEL	Tonewheel sine tones with a touch of odd harmonics in the bass, key click, harmonic foldback, single-trigger percussion on the upper manual.	Spring
2	**Brit Combo** BRIT	Triangle-and-pulse divider tone with bright highs and a snappy electronic attack.	Spring
3	**Italo Combo** ITALO	Bright sawtooth/pulse combo bite of the sixties.	Spring
4	**Tokyo Combo** TOKYO	Rich, punchy transistor combo tone.	Stage
DEPARTMENT II — PIPE ORGANS			
5	**Baroque Organ** BAROQ	Principals, flutes and reeds with pipe "chiff" at the attack and a slight natural detune between pipes.	Hall
6	**Cathedral Organ** CATH	Slower, grander speech and a long release. Under chords of more than eight notes the wind sags a few cents flat and slightly softer, like a real wind chest.	Cathedral
DEPARTMENT III — FREE REEDS			
7	**Paris Musette** MUSET	Accordion with a wet three-reed musette (one reed tuned up, one down), wooden cassotto body.	Stage
8	**Tango Bandoneon** BANDO	Bandoneon reeds tuned closer together: less beating, a tighter, more serious tango tone.	Stage

What changes with the department

	VINTAGE & COMBO	PIPE	FREE REED
FX, SEL + KNOB 1	Percussion (tonewheel)	Chiff (pipe attack noise)	Detune (musette width, in cents)
FX, KNOB 2	Scanner vibrato / chorus	Tremulant	Tremulant
ARP	Vibrato on / off	Tremulant on / off	Tremulant on / off
FX, KNOB 1 (drive)	The tube preamp itself	Tube saturation, blended in	Tube saturation, blended in
CC 1 / mod strip	PITCH: rotary slow / fast. ROTARY: slow / brake / fast	Same as vintage	Bellows (volume and brightness)
Pitch bend	PITCH: bends the pitch, ±2 semitones. ROTARY: up = rotary fast while held, down = tutti boost	Same as vintage	Bends the pitch

PITCH and ROTARY are the BEND setting on the zone screen (SEL + KNOB 4, chapter 10); it counts for every zone.

The effects belong to the manuals, not to the model: changing the model keeps drive, vibrato, rotary and sends as they are; a performance setup stores them. The drawbars stay where they are too; turn PRESETS to pick a registration (the first time a model is chosen, the list starts in its department's part).

6 Drawbars and stops

Each manual has nine drawbars (0 = off, 8 = full). What they mean depends on the department. When you turn one, the screen names it, for example `Oktave 4' 6`.

DB	VINTAGE & COMBO	PIPE ORGAN	FREE REED
1	16'	Bourdon 16'	Bassoon 16'
2	5 1/3'	Prinzipal 8'	Sub-fifth 5 1/3'
3	8'	Rohrflöte 8'	Clarinet 8'
4	4'	Gambe / Vox Celeste 8'	Violin 8' (tuned up)
5	2 2/3'	Oktave 4'	Musette 8' (tuned down)
6	2'	Spitzflöte 4' + Nasat 2 2/3'	Piccolo 4'
7	1 3/5'	Superoktave 2' + Terz 1 3/5'	Bandoneon 4' (detuned)
8	1 1/3'	Mixtur IV	Sheen 2 2/3' + 2'
9	1'	Trompete 8'	Valve & air noise

Which drawbars the knobs hold

BUTTON	TOP BAR	KNOB 1 – KNOB 4
`ENV`	`DB1-4`	Drawbars 1, 2, 3, 4
`LFO`	`DB5-8`	Drawbars 5, 6, 7, 8
`EDIT`	`DB9`	Drawbars 1, 3, 4 (16', 8', 4': the foundation) and 9 (1')

The lit button shows the group. Pressing it again changes nothing, so you always know where you are.

The pedal

The pedal has four stops, on `KNOB 1`–`KNOB 4` whichever group is chosen, when the manual is `PEDAL`:

KNOB	STOP	SOUND
KNOB 1	Sub 32'	The deep floor an octave below 16'
KNOB 2	Bourdon 16'	The main bass
KNOB 3	Octave 8'	Definition and pitch
KNOB 4	Posaune 16'	A reed for weight and attack

Chapter 8 lists the drawbar list, a good set of classic registrations to start from.

7 Manuals and coupler

OrGigs is a three-manual organ. From the FM-1's 27 keys you play the manual you choose; external keyboards play all three at once through the MIDI Zones.

The manual

Turn SELECT to choose UPPER, LOWER or PEDAL, on any screen. It decides:

- which manual's drawbars the knobs edit and the screen shows,
- which manual's place in the drawbar list PRESETS moves,
- which manual's effects the drawbar strip and the FX screen's lit row show,
- which zone the MIDI screens edit, and
- which manual the FM-1's keys play (unless the keys are set to play by zone ranges, chapter 10).

Split and auto-pedal

The keyboard split of earlier versions is now part of the MIDI Zones: give each zone a key range, set the FM-1's keys to play BY ZONE RANGES, and switch on the AUTO-PEDAL to have the lowest note of the lower zone play the pedal. Chapter 10 shows how.

Coupler II/I

Press SEQ. The upper keys now also play the lower manual's registration, adding its drawbars to your upper sound. II/I appears under the drawbars.

Octave

OCT− and OCT+ shift the FM-1's keys from −2 to +3 octaves. The lights show when it's shifted. The generators cover C1 to B7, so all 84 notes are reachable.

> Changing the manual first releases the notes held on the FM-1's keys, so no note is ever left hanging. Notes coming in over MIDI keep sounding.

8 Drawbar presets and performance setups

Two kinds of memory: the drawbar list keeps registrations of one manual, performance setups keep the whole instrument.

The drawbar list

All models share one fixed list of registrations, sorted by department, and 16 user slots at its end. The pedal has its own list with 8 user slots. An entry holds only the drawbars (the pedal's four stops), nothing else.

- **Recall:** turn `PRESETS`. The screen shows the manual, the number and the name, for example `UM 14 BRITISH HARD ROCK`; the top bar shows the number (`P14`). You can turn through the whole list on every model; the drawbars mean what the model's department makes of them (chapter 6).
- **Where it starts:** each model remembers per manual where in the list it was. The first time, it starts in its department's part: vintage upper at *Classic Jazz Lead*, lower at *Lower Manual Comping*; pipe upper at *Prinzipal 8'*, lower at *Begleitung*; free reed upper at *Clarinet*, lower at *Bass Chords*.
- **Save:** tap `SAVE`. On a user slot, the drawbars of the manual go into it; on a factory entry, into the first free user slot: `DRAWBARS SAVED UM USER 1`. When all user slots are taken, turn to the one to overwrite.

A star after the number in the top bar (`P3*`) means the drawbars differ from the entry shown.

The manuals' list

NUMBERS	REGISTRATIONS
1–12 Vintage: jazz, soul, gospel	Classic Jazz Lead `888000000`, Warm Jazz Comp `848000000`, Lower Manual Comping `008400000`, Hollow Funk `800000888`, Memphis Soul `888800000`, Whistle / Soul Solo `888000008`, Gospel Shouting `668848588`, Gospel Simmering `830000378`, Real Gospel `800000678`, Mellow R&B Ballad `803600000`, Modern Jazz Solo `888400000`, Big Band Punch `888888000`
13–22 Vintage: rock, pop, reggae	Full Organ (All Out) `888888888`, British Hard Rock `888800000`, Baroque Rock Ballad `688600000`, Latin Rock Groove `886400000`, 60s Brit Soul `888880000`, Heavy Biker Rock `888686868`, Kingston Reggae Bubble `808000000`, Psychedelic Space Pad `008642000`, 70s Arena Rock `888888800`, 60s Transistor Combo `004888642`
23–36 Vintage: classical imitations	Stopped Flute 8', Dulciana 8', French Horn 8', Salicional 8', Flutes 8' & 4', Oboe 8', Swell Diapason 8', Trumpet 8', Full Swell, Cello 8', Flute & String 8', Clarinet 8', Theater Tibia 8', Vox Humana 8'
37–55 Pipe	Prinzipal 8', Prinzipal 8' 4', Begleitung, Rohrflöte 8', Flöten 8' 4', Flöte 4', Gambe Celeste, Streicher, Pianissimo, Trio, Cornet, Bourdon 16' 8', Trompete 8', Trompete + Prinzipal, Choral, Mixtur, Plenum, Organo pleno, Tutti
56–75 Free reed	Clarinet, Bass Chords, Musette, Violin, Bassoon, Piccolo, Organ, Bandoneon, Bando 4', Tango, Oboe, Accordion, Master, Harmonium, Bright, Dark, Soft, Whisper, Air, Full + Air
76–91	USER 1–16

Numbers 1–36 are the 36 classic tonewheel registrations of the list *drawbar_presets_36*; 23–36 imitate classical organ stops on the tonewheels.

The pedal's list

NUMBERS	REGISTRATIONS (SUB 32', BOURDON 16', OCTAVE 8', POSAUNE 16')
1–8 Vintage	16' 8', 16', Soft, Full, 32' 16', Punch, Walking, Rock
9–16 Pipe	Plenum, Subbass 16', 32' 16' 8', Posaune 16', Oktavbass 8', Soft 16', Cantus firmus, Tutti
17–24 Free reed	Bass, Deep, Reedy, Tango, Sub, Light, Ballad, Dark
25–32	USER 1–8

Performance setups

A performance setup is the whole instrument, ready for a song. There are 16, one on each white key from F3 to G5.

- **Recall:** hold SEL. The 16 keys glow and the active one is lit. Press a key: `PERFORMANCE SETUP 3`. While SEL is held the keys don't play.
- **Save:** hold SAVE and press one of the 16 keys: `SETUP STORED 3`. Releasing SAVE after that does not also store the drawbars.

What a setup stores

- The instrument model, and all drawbars of all three manuals, including the pedal stops
- The effects of each manual: drive, vibrato or chorus, tremulant, rotary on or off, delay send and reverb send
- The shared effects: percussion, chiff / detune, delay time and feedback, reverb room; the coupler
- The MIDI mixer's 16 volumes
- The manual, the octave and the places in the drawbar list shown
- The complete MIDI Zones: channels, ranges, transpose, velocity, filters and the clone, harmonic and chord settings

Not stored in a setup: the rotary speed, the panel lights, and the MIDI rate (`USB-FAST` / `TRS-SAFE`), which belongs to your cables.

Factory setups

#	KEY	NAME	SOUND
1	F3	Tonewheel Jazz	Tonewheel Organ, upper `888000000`, 3rd percussion fast, chorus C3, rotary, spring reverb
2	G3	Cathedral Plenum	Cathedral organ: bourdon, principal, octave, super-octave and mixture; pedal 32' 16' 8'; cathedral reverb
3	A3	Paris Musette	Three wet 8' reeds with a little air, tremulant, a touch of delay, stage reverb
4	B3	Brit Combo	Brit Combo 8' 4' 2 2/3' 2', vibrato V2, rotary, a little delay
5	C4	Tonewheel Rock	Tonewheel Organ, all drawbars out, heavy drive, chorus, stage reverb
6	D4	Italo Combo	Italo Combo, bright, a short slapback delay
7	E4	Baroque	Baroque organ, principals 8' 4', flutes on the lower manual, hall
8	F4	Tango	Tango bandoneon, bassoon + clarinet, a light tremulant

9	G4	British Hard Rock	Tonewheel `888800000` hard into the tube, no vibrato, rotary
10	A4	Gospel	Tonewheel Gospel Shouting `668848588` over Lower Manual Comping, chorus
11	B4	Baroque Rock Ballad	Tonewheel `688600000`, chorus, rotary, hall
12	C5	60s Transistor Combo	Brit Combo `004888642`, vibrato V2, no rotary
13	D5	Reggae Bubble	Tonewheel `808000000`, chorus C1, a delay on the upper manual
14	E5	Cathedral Trumpet	Plenum with Trompete over the accompaniment, pedal with Posaune, cathedral reverb
15	F5	Musette Master	All reeds of the musette, wide detune
16	G5	Psychedelic Space Pad	Tokyo Combo `008642000`, chorus, rotary, a long delay into the hall

All 16 start with the standard MIDI Zones (upper on channel 1, lower on 2, pedal on 3, full key range, velocity through) and the mixer at 100.

What is kept after power-off

Everything: the instrument as you left it, the 16 setups, the user slots of the drawbar lists, the insert effect and the master, the panel lights and the MIDI rate.

> OrGigs writes to its memory about 2 seconds after your last change, and only when nothing is sounding, because writing would interrupt the audio for a moment. Before switching off, take your hands off the keys for a couple of seconds.

Backing up your settings

Everything OrGigs keeps (the 16 setups, the instrument as you left it, the user drawbars, the lights, the insert effect and the master) fits into one small backup file, sent over the USB cable as MIDI SysEx. Keep one before you install another firmware: BoGigs, for example, uses the same memory and starts OrGigs from the factory settings afterwards. The FM-1 and the SMK-37 Elite read each other's backups.

On the computer, `tools/orgigs_backup.py` (Python with mido and python-rtmidi, as the installer) does it; close other programs that use the OrGigs MIDI port first.

COMMAND	WHAT IT DOES
`orgigs_backup.py --save my.syx`	Fetches everything into `my.syx`
`orgigs_backup.py --save s3.syx --setup 3`	Fetches setup 3 alone
`orgigs_backup.py --listen my.syx`	Waits, then keeps what you send from the panel: **SEL** + **GLO**, then **SEQ**
`orgigs_backup.py --load my.syx`	Sends the backup to OrGigs: it replaces everything
`orgigs_backup.py --load my.syx --setup 3 --to 7`	Takes setup 3 out of a whole backup and loads it into setup 7; the rest stays
`orgigs_backup.py --show my.syx`	Tells what a file holds

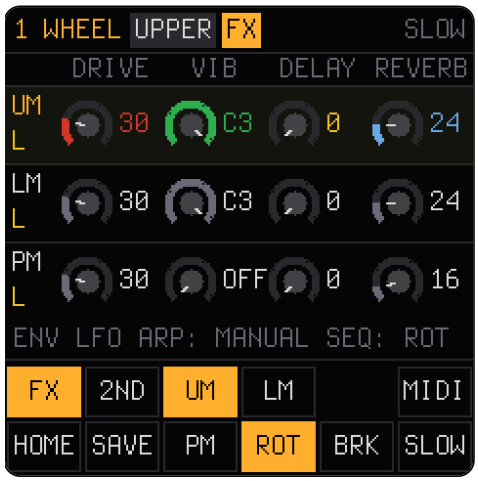
A backup coming in never loads by itself. The screen asks `LOAD BACKUP? SAVE: YES` (or `LOAD INTO SETUP 7?`): `SAVE` loads it, any other button keeps everything as it is; after a minute without an answer nothing is loaded. Before it loads, OrGigs sends back everything as it was, and the tool keeps that as `my-before-DATE.syx`, so one `--load` of that file undoes it.

The files are plain SysEx: any SysEx program (MIDI-OX, SysEx Librarian, …) can receive and keep them, and send them back with about 50 ms between the messages. A damaged file, or one from another OrGigs settings version, is refused (`BACKUP: DAMAGED` / `OTHER VERSION`).

> **Updating from an earlier OrGigs.** The eight setups of version 2 become setups 1–8 (their one effect chain goes to all three manuals; the pedal without vibrato); setups 9–16 start from the factory. Drawbar presets you stored in version 2 are not carried over: the list and its user slots start fresh. From the first version, the four registrations become setups 1–4.

9 Effects and the FX screen

Press FX. The effects work like a mixing desk: every manual has its own channel strip, and all share the rotary, the delay and the reverb.



A row per manual: UM upper, LM lower, PM pedal. The lit row is the manual the knobs move; choose it with ENV, LFO, ARP (or SELECT). The L under the name lights when the manual goes through the rotary; SEQ switches it.

KNOB	TURN: THE MANUAL'S	SEL + TURN: SHARED
KNOB 1	Drive	Percussion (tonewheel), chiff (pipe), detune (reed)
KNOB 2	Vibrato & chorus (vintage) or tremulant (pipe, reed)	Delay feedback
KNOB 3	Delay send	Delay time, 20–1000 ms
KNOB 4	Reverb send	Reverb room

While SEL is held the screen shows the shared values. PLAY brake and REC slow/fast stay as always; FX or HOME go back to the drawbars.

The effects stay with the manuals when you change the model; a performance setup stores them (the insert effect and the master are not part of a setup: they stay as they are when you recall one). The sound passes through these stages, in this order:

```
each manual:  body + drive ─▶ vibrato / chorus / tremulant ─▶ [insert effect] ─▶ rotary or past it
                                                                  └─ sends ─▶ delay, reverb
all together: rotary ─▶ + delay + reverb ─▶ [master EQ ─▶ compressor] ─▶ expression ─▶ volume
```

1 · Body and drive (per manual)

- **Vintage & Combo:** asymmetric tube overdrive into a speaker cabinet. More DRIVE gives more growl, especially with full drawbars.
- **Pipe:** a clean limiter; DRIVE blends tube saturation in. The CHIFF (SEL + KNOB 1) is the breathy "spit" of a pipe as it starts speaking.
- **Free reed:** the wooden cassotto chamber of an accordion, with brightness following the bellows; DRIVE blends tube saturation in. SEL + KNOB 1 sets the musette DETUNE C (in cents): wider is wetter.

2 · Vibrato, chorus and tremulant (per manual)

Vintage models have the classic scanner settings V1 V2 V3 (vibrato, increasing depth) and C1 C2 C3 (chorus, vibrato mixed with the dry sound). Pipe and reed models have a 4.8 Hz TREMULANT with adjustable depth instead. ARP on the drawbars switches it off and back on for the manual shown.

3 · Percussion (tonewheel only)

SEL + KNOB 1 on the FX screen: 2ND FAST, 2ND SLOW, 3RD FAST, 3RD SLOW or OFF. The percussion adds a decaying 4' (2nd) or 2 2/3' (3rd) on the upper manual. Fast decays in about 0.2 s, slow in about 1 s. It is single-

trigger, like the original: it only sounds when all upper keys were released before the new note, so it disappears under legato.

4 · Rotary speaker (shared)

A horn and a drum turn against each other, each with its own inertia. The horn speeds up in about 0.8 s and the heavy drum in about 3 s, which gives the famous "ramp". The drum pumps the bass deeply as its baffle turns past the microphones, so the speed change is heard on dark registrations too. Each manual goes through it or past it, on every model: a cathedral organ through a rotary is possible.

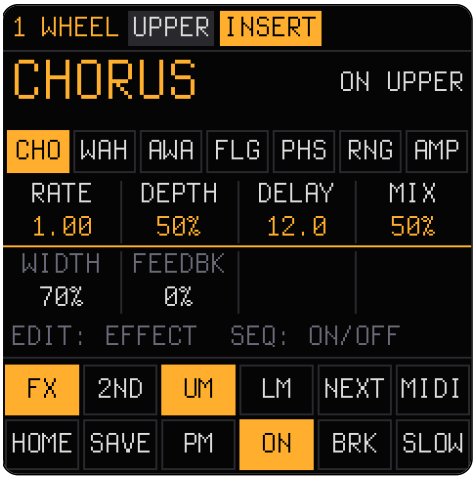
ACTION	RESULT
REC	ROTARY SLOW ↔ ROTARY FAST
PLAY	ROTARY BRAKE: rotors coast to a stop. Press again for slow
SEQ on the FX screen, or SEL + REC	The manual through the rotary or past it: LM ROTARY OFF
MIDI CC 1	BEND PITCH (factory): low half = slow, high half = fast. BEND ROTARY: low = slow, middle = brake, high = fast
Pitch bend up	With BEND ROTARY: fast while held, back when released ("kick")
Pitch bend down	With BEND ROTARY: tutti boost while held, coupler on and about 2 dB louder (vintage and pipe models)

5 · Delay and reverb (shared, fed by the sends)

Each manual sends to a stereo ping-pong delay (20–1000 ms, with feedback) and to the reverb, each with its own amount: a dry pedal under a wet upper manual is two knobs. The sends are taken after the manual's vibrato, before the rotary. The four reverb rooms are:

ROOM	CHARACTER
SPRING	The spring tank of an organ amp: short and slightly "boingy"
STAGE	A small club or stage, 0.9 s
HALL	A concert hall, 2.8 s
CATHEDRAL	A stone church, 7.5 s with 45 ms pre-delay

6 · The insert effect (one manual): SEL + FX



Hold SEL and press FX: INSERT. One effect at a time, on one manual, after its vibrato and before its rotary. EDIT chooses the next effect (SEL + EDIT: the one before), SEQ switches it off and on again, ENV, LFO, ARP put it on the upper, lower or pedal manual. The row of seven shows which one is chosen.

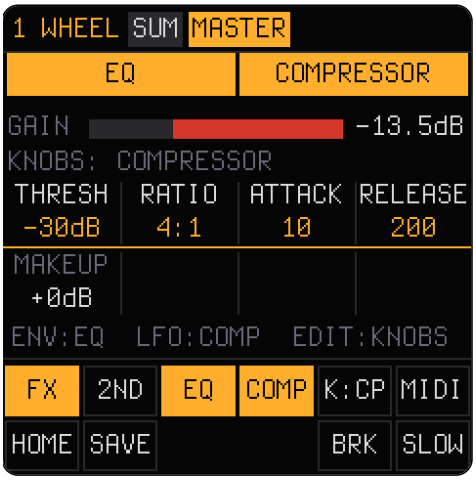
KNOB 1–KNOB 4 are the effect's values 1–4, SEL + KNOB 1–KNOB 4 the values 5–8. Each effect keeps its own, also after power-off and while another effect is chosen. FX or HOME go back to the drawbars.

EFFECT	KNOB 1	KNOB 2	KNOB 3	KNOB 4	SEL + 1	SEL + 2	SEL + 3	SEL + 4
Chorus	Rate 0.10–5 Hz	Depth	Delay 3–25 ms	Mix	Width	Feedback		
Wah-wah	Pedal	Low 200–800 Hz	High 1–4 kHz	Resonance 1–10	Mix	Level		
Auto-wah	Sensitivity	LFO rate (0 = off)	Low	High	Resonance	Decay 20–2000 ms	Mix	Level
Flanger	Rate	Depth	Delay 0.5–5 ms	Feedback ±90 %	Mix	Width		
Phaser	Rate	Low 100–1000 Hz	High 1–6 kHz	Stages 2–8	Feedback ±90 %	Mix	Width	
Ring mod	Frequency 20–2000 Hz	Mix	LFO rate (0 = off)	LFO depth	Width			
Amp	Model	Gain	Tone ±10	Cabinet	Level	Mix		

- **Chorus**: a lush stereo chorus, kept at the level of the dry sound. Feedback makes it richer.
- **Wah-wah**: while it is chosen, **MIDI CC 1 is the wah pedal** (the mod wheel of a keyboard on the USB, or the simulator's mod strip), not the rotary switch; `KNOB 1` sets the pedal too. Low and High set the travel of the pedal, Resonance how vocal it is.
- **Auto-wah**: the wah follows how loud you play: chords open it, and it closes with the Decay. Sensitivity sets how far it opens. With an LFO rate above 0 it also sweeps by itself.
- **Flanger**: the jet sweep. Negative feedback sounds hollow, positive metallic.
- **Phaser**: notches sweeping between Low and High; more stages, more notches.
- **Ring mod**: the sound multiplied with a sine: bells and robots. Small frequencies turn into a tremolo. The LFO wobbles the frequency.
- **Amp**: a guitar amp for the organ. Models `CLEAN`, `CRUNCH`, `LEAD` (two stages) and `FUZZ`; Tone tilts dark to bright; Cabinet `OFF`, `1X12`, `2X12`, `4X12`. The level holds when you turn up the gain.

Mix is the share of the effect (100 % = only the effect), Width how far it spreads in stereo, Level the effect's loudness. Rates are in Hz.

7 · The master: EQ and compressor (the whole sound)



On the INSERT screen, `SEL` + `FX` once more: `MASTER`. A three-band EQ and a compressor on the whole sound, after the delay and the reverb, before the expression and the volume. `ENV` switches the EQ, `LFO` the compressor (lit: on). The bar shows how many dB the compressor takes off right now (`-13.5dB`). `EDIT` chooses what the knobs hold. Both are kept for all setups.

KNOB	EQ	COMPRESSOR (AFTER `EDIT`)
KNOB 1	Low, ±12 dB	Threshold, −40–0 dB
KNOB 2	Mid, ±12 dB	Ratio, 1:1–20:1
KNOB 3	High, ±12 dB	Attack, 1–100 ms
KNOB 4	—	Release, 20–1000 ms
SEL + KNOB 1	Low frequency, 50–400 Hz	Make-up gain, 0–12 dB
SEL + KNOB 2	Mid frequency, 200–5000 Hz	—
SEL + KNOB 3	High frequency, 2–12 kHz	—

> **Processor load.** The effects only cost time while they are on. Press `SEL` to see the load (`DSP 10%`) with your heaviest registration; it should stay well below 100.

10 MIDI Zones

The FM-1 connects over USB as a MIDI device. Three MIDI Zones, one for each manual, take the notes that come in, play them on the organ and send them on to your synths: OrGigs is a MIDI router and mapper as much as an organ.

What a zone does

Each zone belongs to one manual: upper, lower, pedal. A zone

1. listens to its **MIDI-in channel** (factory: 1 upper, 2 lower, 3 pedal),
2. takes only the notes in its **key range**, lowest to highest key. Zones may overlap: a note in two ranges plays both manuals, so you don't need a split,
3. plays them on its manual inside (unless its internal sound is off),
4. sends them out on its **MIDI-out channel**, **transposed** and shifted by **octaves** if you like, with the **velocity** they came with or a fixed one,
5. and, switched on per zone, passes them through three modules: **chord memory** (one note plays a chord), the **cloner** (the notes also go out on more channels, each with its own octave) and the **harmonic mapper** (nine channels, one per drawbar footage).

CC, aftertouch and program changes go out on the zone's channels too, unless you filter them. Pitch bend always does. A sustain pedal (CC 64) holds the notes that came in on its channel, on the organ and on the out channels, until you lift it.

The organ's own sound is never velocity-sensitive. Transpose and octave shift the MIDI output only; the organ plays the note you play.

A typical setup

```
keyboard ── USB ──▶ MIDI host (e.g. CME H4MIDI WC) ──▶ FM-1 (USB MIDI in)
FM-1 (USB MIDI out) ──▶ MIDI host ──▶ synth, sequencer (USB or 5-pin DIN)
```

The FM-1 has one USB port for MIDI in and out. A MIDI host routes the keyboard into the FM-1 and the FM-1's output on to your synths. Use `TRS-SAFE` when the far end is a 5-pin DIN cable.

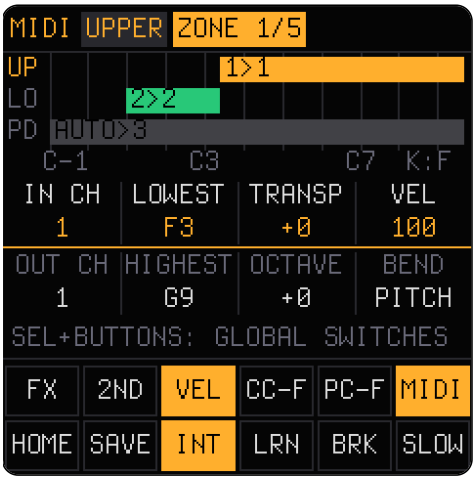
> **Avoid loops.** Don't route the FM-1's output back into the FM-1 (in the MIDI host, or with "MIDI thru" in a DAW): every note would come back and go out again, without end.

The five screens

Press `GLO`: the zone screen. Each further press of `GLO` goes to the next screen: `ZONE` → `CLONE` → `HARMONIC` → `CHORD` → `YST` → `ZONE`. `HOME` goes back to the drawbars, `FX` to the effects. On every screen but YST `SELECT` chooses the zone you edit: `UPPER`, `LOWER`, `PEDAL`.

`ENV` `LFO` `EDIT` `ARP` `SEQ` are the screen's switches; the button map at the bottom of the screen names them and lights the ones that are on. `PLAY` and `REC` stay the rotary.

ZONE: channels, range, transpose, velocity



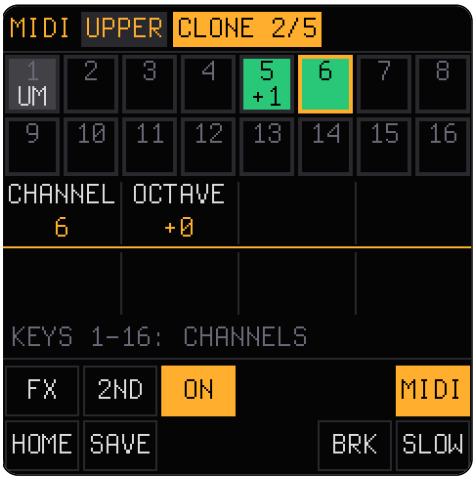
The bars show the key range of each zone over the whole MIDI range (C-1 to G9), with its in and out channels (`1>1`). The zone you edit is amber. Here the lower zone takes C1–E3 and the upper zone F3 and up: a split for an external keyboard. The pedal is played by the auto-pedal.

KNOB	TURN	SEL + TURN
KNOB 1	MIDI-in channel 1–16, OFF	MIDI-out channel 1–16, OFF
KNOB 2	Lowest key	Highest key
KNOB 3	Transpose, ±24 semitones	Octave, ±3
KNOB 4	Fixed velocity 1–127	`BEND`, for all zones: what pitch bend and CC 1 do on the organs. `PITCH` (factory): bend ±2 semitones, CC 1 rotary slow/fast. `ROTARY`: bend up = rotary kick, down = tutti; CC 1 slow/brake/fast. The reed models always bend, and CC 1 is their bellows

BUTTON	SWITCH	SEL + BUTTON (FOR ALL ZONES, EXCEPT EXPR)
`ENV`	`VEL` Velocity through: the velocity of the incoming note goes out. Off: the fixed velocity	`EXPR` Velocity × expression: scaled by CC 11 / the bellows
`LFO`	`CC-F` Filter CC and aftertouch: they're not sent on	`THRU` Channels no zone listens to pass through unchanged (with clock and start/stop)
`EDIT`	`PC-F` Filter program changes	`USB`/`TRS` MIDI rate: USB-FAST or TRS-SAFE
`ARP`	`INT` Internal sound of the zone on/off. Off: the zone only sends MIDI	`K:FL`/`K:ZN` The FM-1's keys: follow the manual, or play by zone ranges
`SEQ`	`LRN` Learn the range: play the lowest and the highest key (on the FM-1 or on the zone's channel)	`AUTO` Auto-pedal: the pedal zone plays the lowest note held in the lower zone (within the pedal zone's range)

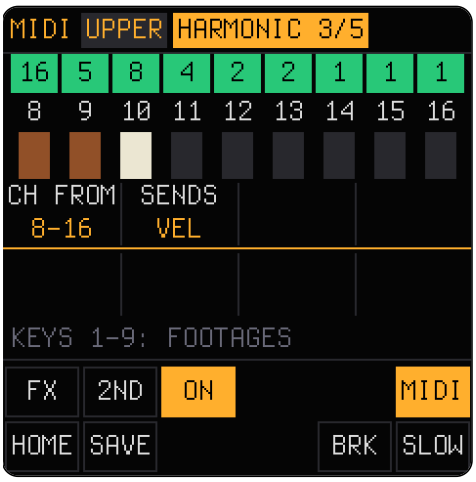
Leaving the out channel at `OFF` makes a zone internal only; switching `INT` off makes it MIDI only. Notes on a channel no zone listens to are dropped, unless `THRU` is on.

CLONE: more channels



`ENV` switches the cloner of the zone on and off. Keys 1–16 (F3 to G#4) switch channels 1–16; the zone's notes go out on each of them as well as on its own out channel, marked with the manual's name (`UM`, `LM`, `PM`, as in the mixer). `KNOB 1` chooses a channel, `KNOB 2` its octave (±3); pressing a key also chooses it. Here the upper zone also plays channel 5 an octave up and channel 6.

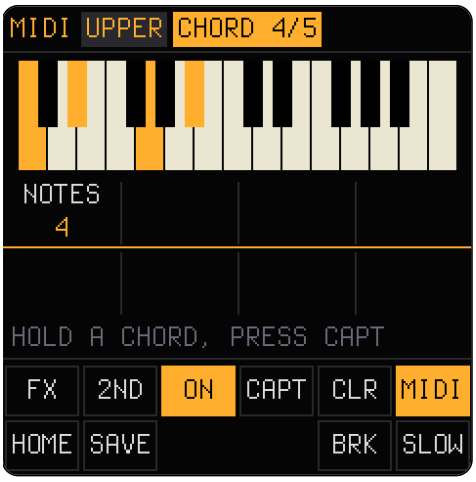
HARMONIC: nine channels, one per drawbar



Turns the zone's drawbars into a MIDI additive synth. `ENV` switches it on. Nine channels, from the one set with `KNOB 1`, each get the note transposed to their drawbar's footage. Keys 1–9 switch the footages. `KNOB 2`: the drawbar sets each note's velocity (`VEL`), or moving a drawbar sends that channel's volume (`CC7`/`CC11`), so the mix changes while notes hold. Only footages that are switched on and whose drawbar is above 0 sound. Not for the pedal zone.

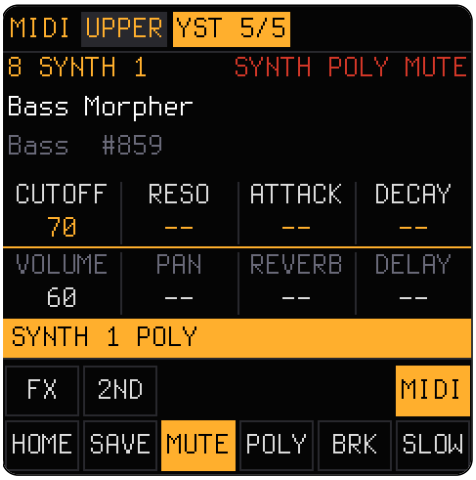
FOOTAGE	16'	5 1/3'	8'	4'	2 2/3'	2'	1 3/5'	1 1/3'	1'
Semitones	−12	+7	0	+12	+19	+24	+28	+31	+36

CHORD: one key, one chord



Hold a chord of up to eight notes (on the FM-1 or on the zone's channel) and press `LFO` (`CAPT`): `CHORD NOTES 4`. With `ENV` on, every single note then plays that chord shape from its own root, on the organ and on all the zone's channels. `EDIT` (`CLR`) clears it. The keyboard shows the chord over its lowest note; here C minor 7.

YST: the Yamaha SEQTRAK



Connect a SEQTRAK with a USB-C cable: it is the host, the FM-1 its keyboard. YST is off from the factory; `ENV` switches it on (the setup keeps it, as the other modules). Then OrGigs asks the SEQTRAK what its 11 tracks hold (`SEQTRAK CONNECTED`, `TRACKS READ`), and again whenever the cable is plugged in. After loading another project on the SEQTRAK, press `LFO` (`RFSH`) to read it again. In between OrGigs asks nothing, but it follows what the SEQTRAK sends when you play it: its sounds, its knobs, a drum track turned into a synth track (OS 2.0). The tracks sit on channels 1–11: `KCK SNR CLP HH1 HH2 PC1 PC2` (drums), `SY1 SY2`, `DX`, `SMP` (sampler); the clone grid, the mixer and the zone screen show these names.

`SELECT` chooses the track, and the zone you edit (the manual) now plays it: its MIDI out channel follows. Whether the organ sounds along is the zone's `INT` switch. `PRESETS` steps through the sounds the track can load (the drum, synth, DX or sampler list, 2424 in all, by name). `KNOB 1–4`: cutoff, resonance, attack, decay; `SEL` + `KNOB 1–4`: volume, pan, reverb and delay send. `ARP` mutes the track, `SEQ` switches a synth or DX track between mono, poly and chord. A value shows `--` until it has been turned once, here or on the SEQTRAK.

> While the SEQTRAK is connected, everything it sends on channels 1–11 (its knobs, sound changes, the notes of its keys and patterns) and its clock belong to YST: none of it plays the organ or goes back out. The zones listen on channels 1–3 from the factory, and they would send the SEQTRAK's own notes straight back to it, doubled notes that hang.
>
> If the SEQTRAK does not answer, the screen says so and counts the questions that could not be sent and those that got no answer; `LFO` tries again. Close the SEQTRAK app (Bluetooth) while you play it from OrGigs: the SEQTRAK may answer the app instead. OrGigs never waits for the SEQTRAK: whatever it does, the keys and the organ keep playing.

The FM-1's own keys

By default (`K:FL`, follow) the FM-1's keys play the zone of the manual chosen with `SELECT`, ignoring its range, and go out on its channels like any note. Set `SEL` + `ARP` to `K:ZN` and they play by the zone ranges instead, like an external keyboard. The keys have no velocity: they always send the zone's fixed velocity (scaled by expression with `EXPR`).

Example: a split with bass on the FM-1

1. On the zone screen, choose `LOWER` with `SELECT`, press `SEQ` (`LRN`) and play F3 and B3.
2. Choose `UPPER`, learn C4 and G5.
3. `SEL` + `ARP`: `K:ZN`, and `SEL` + `SEQ`: `AUTO`. The left hand plays the lower manual and its lowest note the pedal.
4. Hold `SAVE` and press a setup key to keep it.

MIDI in: what else comes in

MESSAGE	EFFECT

CC 12–20	Drawbars 1–9 of the zone's manual (0–127 → 0–8); pedal: CC 12–15
CC 1	Mod strip: rotary slow / fast (`BEND ROTARY`: slow / brake / fast), or the bellows on the reed models
CC 11	Expression (volume swell)
Pitch bend	Pitch strip: bends the pitch ±2 semitones (organs with `BEND ROTARY`: rotary kick / tutti)
CC 64	Sustain: the notes of that channel keep sounding until the pedal lifts
CC 120 / 123, 121	All notes off on that channel; 121 (reset controllers) lifts the sustain

Each is also sent on to the zone's channels (CC unless filtered). A nine-fader MIDI controller on CC 12–20 makes a real set of drawbars.

MIDI rate

`SEL` + `EDIT` on the zone screen chooses `USB-FAST` (normal) or `TRS-SAFE`. Choose TRS-SAFE when the FM-1's output reaches a 5-pin DIN cable through a MIDI host: messages are then paced to what the cable can carry, so nothing is lost in big chords or with the cloner.

11 Installing, updating, going back

OrGigs is installed over USB from a web page, the OrGigs installer: the **Install** button on OrGigs's card on The Firmware Hub (`thefirmwarehub.com`) leads there. It runs in Chrome, Edge or Firefox on a computer; nothing else needs to be installed.

Install or update

1. Connect the FM-1 with a USB **data** cable (not a charge-only cable). Close other programs that use its MIDI port (DAWs, other browser tabs with Web MIDI).
2. Open the installer and press **Install**. Allow MIDI access, with SysEx, when the browser asks.
3. The page finds the FM-1, picks its package and checks it, switches the FM-1 to update mode, writes the firmware and restarts it. It ends with `Done. OrGigs is installed.`

Your setups and presets are kept; when a new version changes their format, it takes over what it can (chapter 8). Coming from another firmware, OrGigs starts with its factory settings. If the page finds an older M-VAVE firmware or another model, it says so and writes nothing.

> **During installation** don't unplug the FM-1. If the write is cut off anyway, plug it in again and press **Install**: it goes on where it stopped.

Without a browser

OrGigs's source also has an installer script, `tools/fm1_install.py` (Python 3.12 with `mido` and `python-rtmidi`). In the source folder, `py -3.12 tools\fm1_install.py --info` only reads and shows the running firmware, for example `FM-1_674110 [running]`; `py -3.12 tools\fm1_install.py orgigs-1.1.fwsc` installs a package.

Going back to the original firmware

- Use **The Firmware Hub** at `thefirmwarehub.com` to install the factory firmware (or any other) again.
- If the FM-1 doesn't start normally, hold `OCT-` while switching it on. It starts in USB rescue mode, ready for the installer or the Firmware Hub.

Installing custom firmware is at your own risk.

12 The browser simulator

The same OrGigs code also runs in Chrome or Edge, with the FM-1 panel drawn on screen. Use it to explore sounds or prepare setups without the hardware.

```
cd ~/orgigs/orgigs-fm1
sim/serve.sh            # then open http://localhost:8099
```

- Click **Start audio**, then play with the mouse or the computer keyboard (`Z` … `/` and `Q` … `U`, piano layout). `Shift` is `SEL`.
- Turn knobs with the mouse wheel or by dragging.
- The two touch strips are drawn as sliders.
- **Enable Web MIDI** to play from a MIDI keyboard and to send the zones' output to a synth or DAW. The log shows every outgoing message.

> Setups and presets made in the simulator stay in the simulator; they aren't transferred to the FM-1.

13 Specifications and limits

ITEM	VALUE
Tone generation	84 free-running generators, C1–B7; full polyphony, no voice stealing
Waveforms	8 wavetables, each in 4 band-limited versions (no aliasing up to B7)
Models	8, in 3 departments
Manuals	Upper 9 drawbars, Lower 9 drawbars, Pedal 4 stops
Keyboard	27 keys (F3–G5), octave −2…+3
Effects	Per manual: drive / limiter / cassotto, scanner vibrato & chorus or tremulant, rotary on/off, delay and reverb sends. Shared: percussion, two-rotor rotary, stereo delay up to 1 s, 4 reverbs up to 7.5 s. Insert: chorus, wah-wah, auto-wah, flanger, phaser, ring modulator, amp. Master: 3-band EQ, compressor
Audio	44.1 kHz stereo, 256-sample blocks (5.8 ms)
Memory	16 performance setups; a drawbar list of 75 registrations + 16 user slots, a pedal list of 24 + 8; kept across power-off
MIDI mixer	16 channel volumes (CC 7), per setup
MIDI	USB MIDI in and out; 3 zones with channel, range, transpose, velocity, filters; cloner, 9-channel harmonic mapper, chord memory per zone; up to 48 incoming notes held at once
Firmware package	FM-1_674110

Known limits

- **Touch strips** aren't read by this firmware. Use MIDI CC 1 and pitch bend from an external controller instead.
- **MIDI in and out are USB only**, over the one USB port. The FM-1 platform has no TRS-MIDI output and no Bluetooth MIDI. For DIN gear use a MIDI host with `TRS-SAFE`.
- **The FM-1's keys aren't velocity sensitive.** They send the zone's fixed velocity; notes coming in keep theirs.

A MIDI implementation chart

FUNCTION	RECEIVED	TRANSMITTED
Channels	Each zone's in channel (factory 1 upper, 2 lower, 3 pedal); others dropped or passed through (THRU)	Each zone's out channel, plus its clone and harmonic channels
Note on / off	Yes, within each zone's key range	Yes. Note-off as note-on velocity 0 in TRS-SAFE
Velocity	Passed on (organ sound ignores it)	Through, fixed 1–127, or scaled by expression; per drawbar in the harmonic mapper
Pitch bend	Bend ±2 semitones, or rotary kick / tutti (`BEND ROTARY`)	Passed on to the zone's channels
CC 1 Modulation	Rotary speed / bellows	Passed on unless filtered
CC 7 Volume	—	Harmonic mapper with `CC7`; passed on unless filtered
CC 11 Expression	Expression	Harmonic mapper with `CC11`; passed on unless filtered
CC 12–20	Drawbars 1–9 of the zone's manual (pedal: CC 12–15)	Passed on unless filtered
CC 64 / 120 / 121 / 123	64: sustain. 120, 123: all notes off on that channel. 121: sustain lifted	Passed on; on all 16 channels at panic (SEL + HOME)
Aftertouch	—	Passed on unless CC is filtered
Program change	—	Passed on unless filtered
Clock, start, stop	—	Passed on with THRU
Running status	Yes	In TRS-SAFE

B Troubleshooting

PROBLEM	SOLUTION
No sound	Turn up MASTER. Check that some drawbars of the manual you're playing are above 0. In the clone and harmonic screens the keys are switches; press HOME. On the zone screen check INT (lit = the zone sounds). Is the master compressor's make-up or the EQ far off?
An external keyboard plays nothing	Check the zone's in channel and key range on the zone screen, and that the MIDI host routes the keyboard to the FM-1.
Some keys of the external keyboard are silent	They're outside the zone's range. Widen it with KNOB 2 / SEL + KNOB 2 or learn it (LRN).
The sound is very different from before	Another setup, model or drawbar preset is active. Check the top bar; hold SEL to see which setup key is lit. The insert effect and the master are not part of a setup: check them with SEL + FX.
CC 1 doesn't switch the rotary	The insert effect is WAH-WAH: CC 1 is its pedal. Choose another effect or switch it off (SEL + FX, then SEQ).
No percussion	Percussion only works on the Tonewheel Organ model, on the upper manual, and only on detached (non-legato) playing.
No rotary effect	Pipe and reed models bypass the rotary. Press SEL + REC to turn it on.
A synth receives nothing	Check the zone's out channel (not OFF) and the filters. In the harmonic mapper only footages that are switched on and whose drawbar is above 0 send.
Notes repeat without end, or the MIDI host's lights flicker	A MIDI loop: the FM-1's output is routed back into the FM-1. Remove that route in the MIDI host or DAW.
Notes missing on a DIN synth via a MIDI host	Set TRS-SAFE with SEL + EDIT on the zone screen.
Settings were lost after switching off	OrGigs saves 2 s after the last change, and only while nothing sounds. Release all keys for a moment before switching off.
The installer reports `FM-1 not found`	Use a USB data cable, close other programs that use the FM-1's MIDI port, and try again.
A note keeps sounding (stuck note)	Hold SEL and press HOME (PANIC ALL NOTES OFF). Everything stops at once, the reverb and delay tails included, and all 16 MIDI channels get *all notes off*.
Crackles under heavy playing	Press SEL to see the processor load (DSP 10%). If it is near 100, lower the reverb or rotary use, or play fewer manuals at full registration.