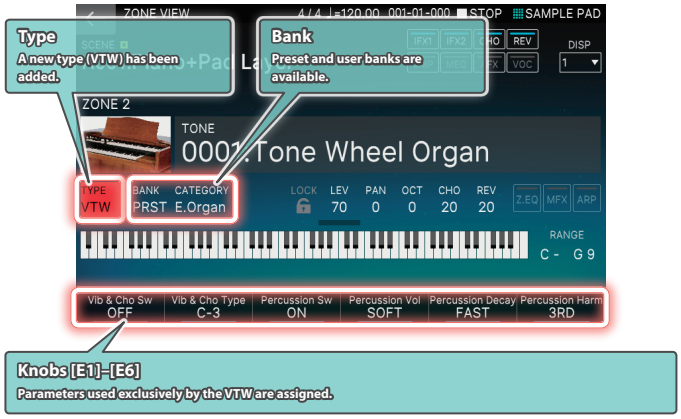
FANTOM Version 2.50 Supplementary Manual

This manual explains the new features that were added in FANTOM version 2.50. Read this along with the FANTOM Owner's Manual, Reference Manual (PDF) and the previous FANTOM Supplementary Manuals through version 2.10.

New VTW Organ Available

You can select the VTW (Virtual Tone Wheel) type only for zone 2.

* **The Tone Remain function is disabled.**



What's the virtual tonewheel sound generator?

Traditional tonewheel organs generate sound using 91 toothed wheels called "tonewheels."

Each tonewheel is a toothed, gear-like wheel with a different number of teeth that make it produce a specific pitch. A motor spins these wheels past magnetic coils which generate audio signals at the corresponding pitches. The settings of the harmonic bars in conjunction with the keys played on the keyboard determine which of these pitches are combined to produce the sound of the organ.

The virtual tonewheel sound generator uses digital technology to faithfully recreate the sounds produced by a tonewheel organ. The 91 "gears" are digitally rotated to instantly produce sound when you play the keyboard. This method of instantly producing sound is quite effective when you're playing organ parts like glissandos.

The way in which you can use different harmonic bar combinations and how the sound is generated when you play the keys works the same as a traditional tonewheel organ.

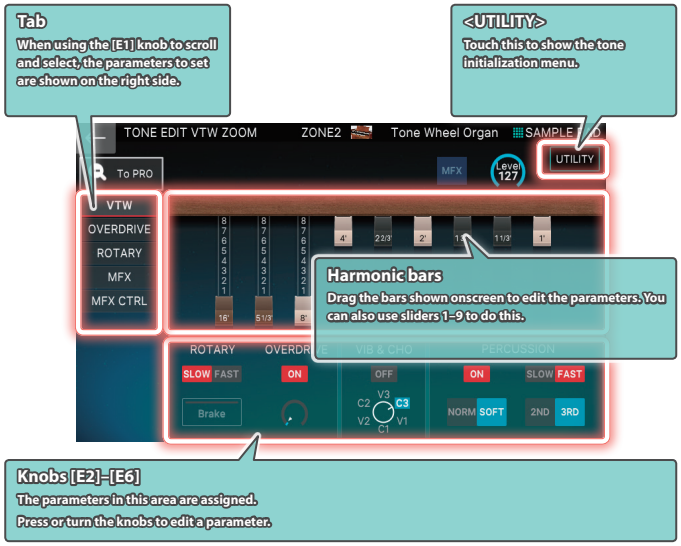
The organ sound consists of a base sound and eight harmonics, which are combined using the nine harmonic bars. Use the harmonic bars while you play to create tonal changes for a highly expressive performance.

With FANTOM v2.5, although you are limited to using just one part of the keyboard (for ZONE 2 only), this feature lets you use the latest in modeling technology to recreate the sounds of the most highly acclaimed tonewheel organs.

Editing the VTW

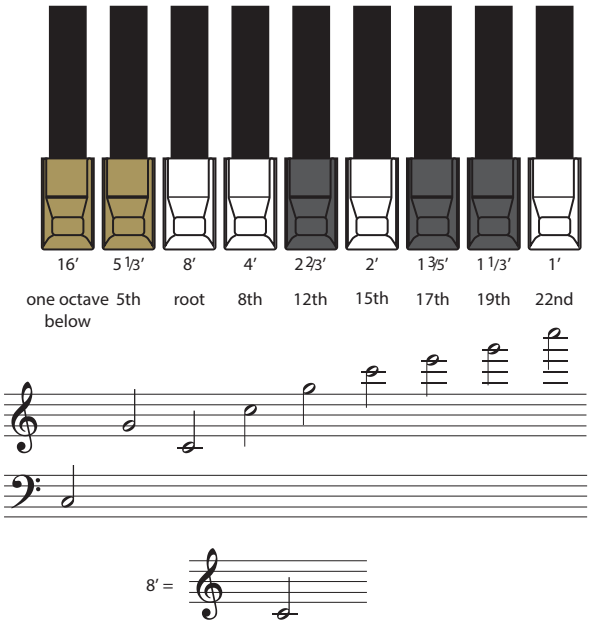
Use TONE EDIT or the [PARAM] buttons to edit the VTW.

ZOOM EDIT (WHEEL) screen



Harmonic bars and the pitch of the sound

When the middle C (C4) note is pressed, each harmonic bar will sound the following notes.



There are three different colors of harmonic bars. The octave bars are shown in white, centered around the 8′ stop. The bars for non-octave harmonics are shown in black, and the bars for the low range are shown in brown.

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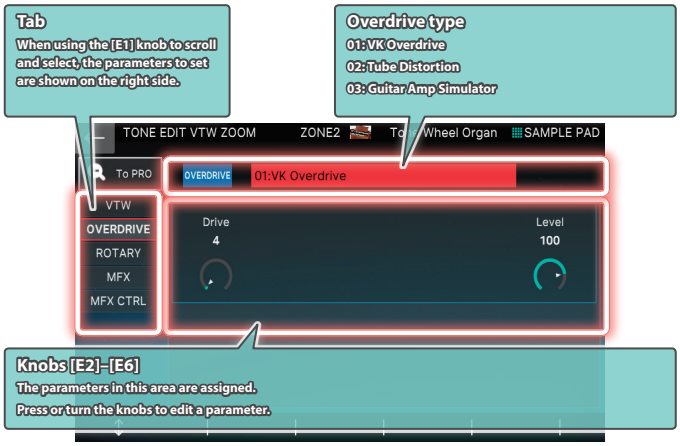
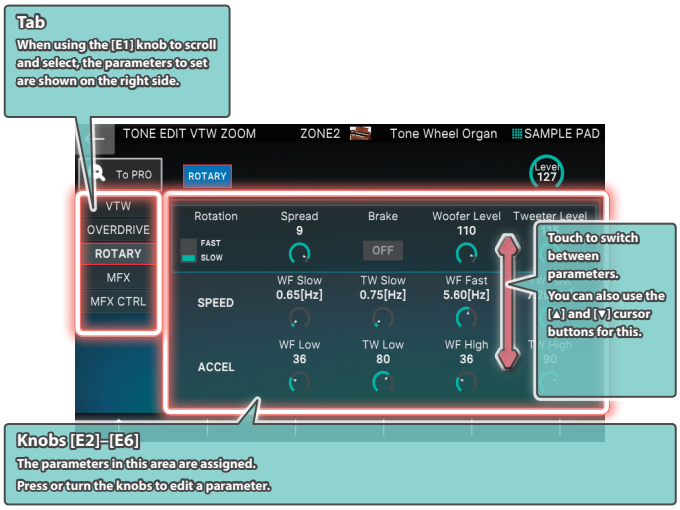
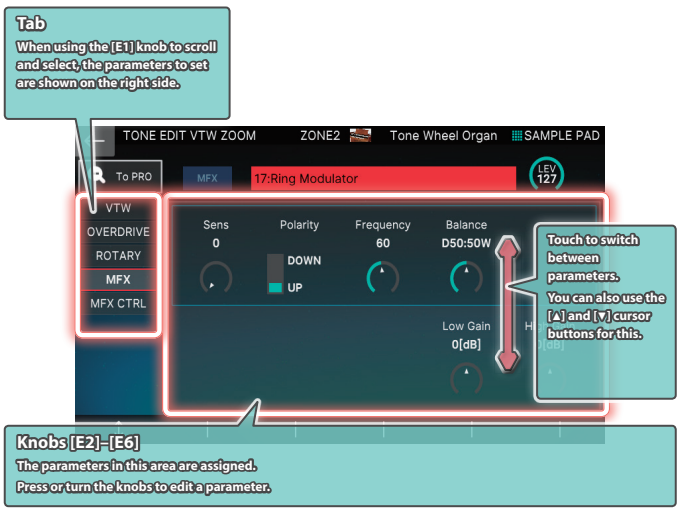
ZOOM EDIT (OVERDRIVE) screen



ZOOM EDIT (ROTARY) screen

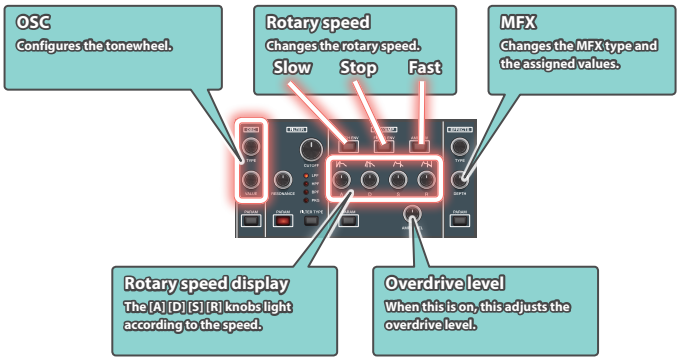


ZOOM EDIT (MFX) screen



VTW (Assigning to the Right-side Panel)

Use SYNTHCTRL to adjust even more parameters.



Knob	Operation	Parameter	Explanation
TYPE	Turn	TW TYPE	Tonewheel types **1 (VINTAGE-1):** A tonewheel used in the tonewheel organs of the 1970's. **2 (VINTAGE-2):** A tonewheel used in the tonewheel organs of the 1960's. **3 (SOLID):** A tonewheel that adds harmonics to the low range of VINTAGE-1 to emphasize the low end. **4 (CLEAN):** A tonewheel without leakage noise.
	Push	WHEEL BRAKE	**SPIN:** The tonewheel spins. **STOP:** The tonewheel stops spinning. * When stopped, the tonewheel makes no sound. Switch between STOP and SPIN to create unique changes in the tone.
VALUE	Turn	LEAKAGE LEVEL	**0–63** This specifies the amount of leakage noise (distinctive noise produced by a tonewheel organ).
	Push	TW SPEED UP	**OFF, ON** When this is ON, the tonewheel spins faster, changing the pitch.

Lekage noise

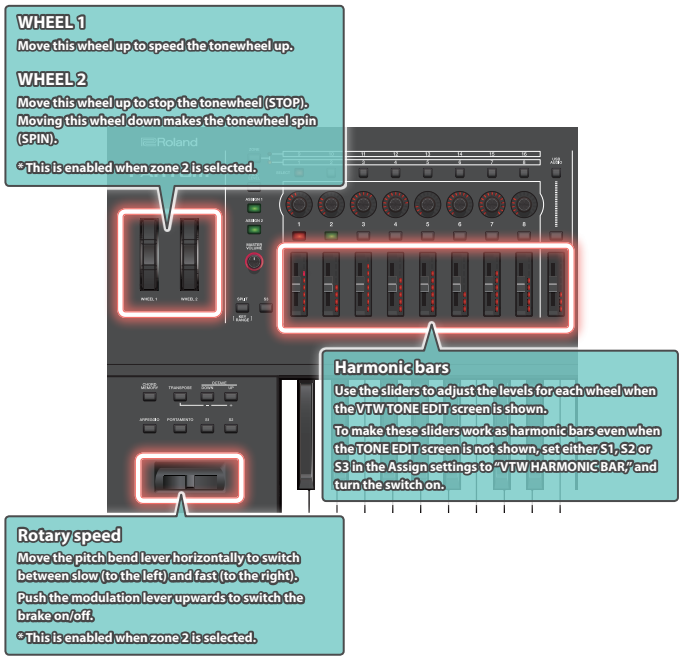
With traditional tonewheel organs, you can hear a slight but unique high-pitched noise when you play the keys, due to the influence of the surrounding electrical circuits. This is called "leakage noise."

This noise was originally seen as a defect in the sound, but has since become accepted as part of the overall sound, and is now considered to be part of the characteristic "flavor" of the sound of the tonewheel organ.

The FANTOM v2.5 recreates a number of different tonewheel types, each with different amounts of noise for their character. You can adjust the amount of this leakage noise.

VTW (Assigning to the Left-side Panel)

You can use a controller to adjust even more parameters.



Assigning the VTW Controllers

Use S1–3 Sw Assign and Pedal 1–3 Assign to control the VTW parameters that are assigned.

FANTOM VTW Control for SW/Pedal

Parameter	Explanation
VTW ROTARY SPEED	Alternates between SLOW and FAST.
VTW ROTARY BRAKE	Alternately switches the brake on/off for the rotary effect.
VTW ROTARY SW	Turns the rotary effect ON/OFF.
VTW OVEDRIVE SW	Turns the overdrive ON/OFF.
VTW WHEEL BRAKE	Alternately switches the brake on/off for the tonewheel.
VTW VIB/CHO SW	Turns the vibrato / chorus ON/OFF.
VTW HARMONIC BAR	You can also use the sliders as harmonic bars on other screens besides the edit screen. Settings can be made for only the [S1]–[S3] buttons.

FANTOM VTW Tone Parameter List

Common

Parameter	Value	Explanation
Category	0–N	Tone category
Level	0–127	Overall level of the VTW tones
Wheel Brake	SPIN, STOP	The tonewheel spins when this is set to SPIN. The tonewheel stops spinning when this is set to STOP. MEMO When stopped, no sound is made. Switch between STOP and SPIN to create unique changes in the tone.
Tone Wheel Speed Up	OFF, ON	When this is ON, the tonewheel spins faster, changing the pitch.

VTW

Parameter	Value	Explanation
Tone Wheel Type	VINTAGE-1, VINTAGE-2, SOLID, CLEAN	Tonewheel types **1 (VINTAGE-1):** A tonewheel used in the tonewheel organs of the 1970's. **2 (VINTAGE-2):** A tonewheel used in the tonewheel organs of the 1960's. **3 (SOLID):** A tonewheel that adds harmonics to the low range of VINTAGE-1 to emphasize the low end. **4 (CLEAN):** A tonewheel without leakage noise.
Leakage Level	0–63	This specifies the amount of leakage noise (distinctive noise produced by a tonewheel organ).
Vibrato Chorus Switch	OFF, ON	Vibrato/chorus on/off
Vibrato Chorus Type	V-1, C-1, V-2, C-2, V-3, C-3	**V-1:** applies a slight vibrato effect. **V-2:** applies a medium vibrato effect. **V-3:** applies a strong vibrato effect. **C-1:** applies a slight chorus effect. **C-2:** applies a medium chorus effect. **C-3:** applies a strong chorus effect.
Percussion Switch	OFF, ON	Percussion sound on/off
Percussion Harmonic	2ND, 3RD	**2ND:** produces a percussion sound at the same pitch as the 4' harmonic bar. **3RD:** produces a percussion sound at the same pitch as the 2 2/3' harmonic bar.
Percussion Decay	SLOW, FAST	**SLOW:** The percussion sound will decay slowly, producing a softer attack. **FAST:** The percussion sound will decay immediately, producing a sharper attack.
Percussion Volume	NORM, SOFT	**NORM:** The percussion will be at its normal volume, and the sound of the harmonic bars will be decreased. **SOFT:** The percussion sound will be decreased, and the harmonic bars will be at their normal volume.
Percussion Soft Level	0–15	Volume of percussion sound when PERCUSSION [SOFT] is on
Percussion Norm Level	0–15	Volume of percussion sound when PERCUSSION [SOFT] is off
Percussion Slow Time	0–127	Volume of percussion sound when PERCUSSION [SLOW] is on
Percussion Fast Time	0–127	Volume of percussion sound when PERCUSSION [SLOW] is off
Percussion Recharge Time	0–10	Percussion recharge time
Percussion H. Bar Level	0–127	Volume of harmonic bars when PERCUSSION [SOFT] is off
Upper Harmonic Bar 16'	0.. 8	Sets the volume of each harmonic bar.
Upper Harmonic Bar 5-1/3'	0.. 8	
Upper Harmonic Bar 8'	0.. 8	
Upper Harmonic Bar 4'	0.. 8	
Upper Harmonic Bar 2-2/3'	0.. 8	
Upper Harmonic Bar 2'	0.. 8	
Upper Harmonic Bar 1-3/5"	0.. 8	
Upper Harmonic Bar 1-1/3'	0.. 8	
Upper Harmonic Bar 1'	0.. 8	
Key On Click Level	0–63	This specifies the level of the click sound heard when you press a key.
Key Off Click Level	0–63	This specifies the level of the click sound heard when you release a key.

Parameter	Value	Explanation
Organ Expression Curve	NORMAL, SOFT	Sets the expression pedal depth for the VTW tone. **NORMAL:** Since the volume will change significantly as you vary the angle of the expression pedal, this setting is appropriate for songs with significant and clear-cut dynamics. **SOFT:** Since the degree of expression is more gentle than NORMAL, this setting is appropriate for quieter songs that do not have intense dynamic variation.

Overdrive

Parameter	Value	Explanation
Overdrive Type	VK Overdrive, Tube Distortion, Guitar Amp Simulator	**01 (VK Overdrive):** A distortion effect that works the same as the overdrive built into the VK-7. **02 (Tube Distortion):** A distortion effect that models the vacuum tube amp that was built into rotary speakers in the past. **03 (Guitar Amp Simulator):** Simulates a guitar amplifier.
Overdrive Switch	OFF, ON	Overdrive on/off

FANTOM VTW Overdrive Parameter List

01: VK Overdrive

Parameter	Value	Explanation
Dry Mix Level	0–127	Sets the volume of the direct sound mixed with the overdrive.
Drive	0–127	Degree of distortion. Also changes the volume.
Level	0–127	Output Level

02: Tube Distortion

Parameter	Value	Explanation
Dry Mix Level	0–127	Sets the volume of the direct sound mixed with the overdrive.
Distortion	0–127	Degree of distortion. Also changes the volume.
LPF Freq	2000Hz, 2500Hz, 3150Hz, 4000Hz, 5000Hz, 6300Hz, 8000Hz, 10000Hz, BYPASS	Sets the center frequency at which the high range is attenuated.
Level	0–127	Output Level

03: Guitar Amp Simulator

Parameter	Value	Explanation
Dry Mix Level	0–127	Sets the volume of the direct sound mixed with the overdrive.
Pre Amp Sw	OFF/ON	Turns the amp switch on/off.
Pre Amp Type	JC-120, CLEAN TWIN, MATCH DRIVE, BG LEAD, MS1959I, MS1959II, MS1959I+II, SLDN LEAD, METAL 5150, METAL LEAD, OD-1, OD-2 TURBO, DISTORTION, FUZZ	Type of guitar amp
Pre Amp Drive	0–127	Volume and amount of distortion of the amp
Pre Amp Master	0–127	Volume of the entire pre-amp
Pre Amp Gain	LOW, MIDDLE, HIGH	Amount of pre-amp distortion
Pre Amp Bass	0–127	Tone of the bass/mid/treble frequency range
Pre Amp Middle	0–127	
Pre Amp Treble	0–127	
Pre Amp Presence	0–127	Tone for the ultra-high frequency range
Pre Amp Bright	OFF/ON	Turning this "On" produces a sharper and brighter sound. * This parameter applies to the **"JC-120," "CLEAN TWIN," "MATCH DRIVE,"** and **"BG LEAD"** Pre Amp Types.
Speaker Sw	OFF, ON	Selects whether the sound will be sent through the speaker simulation (ON) or not (OFF)
Speaker Type (0–15)		**Cabinet** / **Speaker** / **Microphone**
	SMALL 1	small open-back enclosure / 10 / dynamic
	SMALL 2	small open-back enclosure / 10 / dynamic
	MIDDLE	open back enclosure / 12 x 1 / dynamic
	JC-120	open back enclosure / 12 x 2 / dynamic
	BUILT-IN 1	open back enclosure / 12 x 2 / dynamic
	BUILT-IN 2	open back enclosure / 12 x 2 / condenser
	BUILT-IN 3	open back enclosure / 12 x 2 / condenser
	BUILT-IN 4	open back enclosure / 12 x 2 / condenser
	BUILT-IN 5	open back enclosure / 12 x 2 / condenser
	BG STACK 1	sealed enclosure / 12 x 2 / condenser
	BG STACK 2	large sealed enclosure / 12 x 2 / condenser
	MS STACK 1	large sealed enclosure / 12 x 4 / condenser
	MS STACK 2	large sealed enclosure / 12 x 4 / condenser
	METAL STACK	large double stack / 12 x 4 / condenser
	2-STACK	large double stack / 12 x 4 / condenser
	3-STACK	large triple stack / 12 x 4 / condenser
Mic Setting	1–3	Adjusts the location of the mic that is recording the sound of the speaker. This can be adjusted in three steps, with the mic becoming more distant in the order of 1, 2, and 3.
Mic Level	0–127	Volume of the microphone
Direct Level	0–127	Volume of the direct sound
Level	0–127	Output Level

Rotary

Parameter	Value	Explanation
Rotary Switch	**OFF, ON**	Turns the Rotary on/off.

MFX

Parameter	Value	Explanation
Type	**00: THRU– 90: Script 100**	Select the MFX type. The default value is "17:Ring Modulator."
Switch	**OFF, ON**	Turns the tone MFX on/off.

FANTOM VTW Rotary Parameter List

Parameter	Value	Explanation
Rotation	SLOW, FAST	Rotational speed of the rotating speaker.
Brake	OFF, ON	Stops the speaker rotation. (When this is turned on, the rotation will gradually stop. When it is turned off, the rotation will gradually resume.)
Woofer Slow Speed	0.05–10.00 [Hz] (1–200)	Low-speed rotation speed of the woofer
Woofer Fast Speed	0.05–10.00 [Hz] (1–200)	High-speed rotation speed of the woofer
Woofer Acceleration High	0–127	Adjusts the rate at which the woofer rotation speeds up when the rotation is switched from Slow to Fast.
Woofer Acceleration Low	0–127	Adjusts the rate at which the woofer rotation speeds up when the rotation is switched from Fast to Slow.
Woofer Level	0–127	Volume of the woofer
Tweeter Slow Speed	0.05–10.00 [Hz] (1–200)	Low-speed rotation speed of the tweeter
Tweeter Fast Speed	0.05–10.00 [Hz] (1–200)	High-speed rotation speed of the tweeter
Tweeter Acceleration High	0–127	Adjusts the rate at which the tweeter rotation speeds up when the rotation is switched from Slow to Fast.
Tweeter Acceleration Low	0–127	Adjusts the rate at which the tweeter rotation speeds up when the rotation is switched from Fast to Slow.
Tweeter Level	0–127	Volume of the tweeter
Spread	0–10	Sets the rotary speaker stereo image. ?The higher the value set, the wider the sound is spread out.
Level	0–127	Output Level

FANTOM VTW Control

VTW Control

Category	Parameter	Value	MIDI	Explanation
ROTARY	Rotary Speed	SLOW, FAST	CC#80	Alternates between SLOW and FAST.
	Rotary Brake	OFF, ON	CC#81	Alternately switches the brake on/off for the rotary effect.
TONE WHEEL	Tone Wheel Brake	OFF, ON	CC#17	Alternately switches the brake on/off for the tonewheel.
	Tone Wheel Speed Up	OFF, ON	CC#18	Speeds up the tonewheel.
HARMONIC BAR		0-8	CC#70–78	Use this to edit the harmonic bar value.
EXPRESSION		0-127	CC#11	Use this to edit the expression value.

NOTE

When VTW is selected, the zone offset parameters (Cutoff/Reso/Atk/Dcy/Rel/Vib: CC#70–78) are disabled.

About the keyboard action (quick firing)

One of the characteristics of the keyboard on a traditional tonewheel organ is that the instrument makes a sound just by playing the keys with a small amount of force (a light key touch). This kind of action makes it easy to string notes together smoothly when playing glissandos, or to play ghost notes in faster passages, giving you that unique organ groove.

Although the form of the keyboard on the FANTOM v2.5 hasn't physically changed, we've made it possible to achieve the unique playability and groove of an organ by focusing on the key depth at which the instrument generates its sound when the keys are pressed, to simulate the extremely light touch (quick firing) of an organ.

Expression pedal

The expression pedal of an organ is called "expression," as it is not only for controlling the volume, but is an integral part of the performing expressively with the instrument.

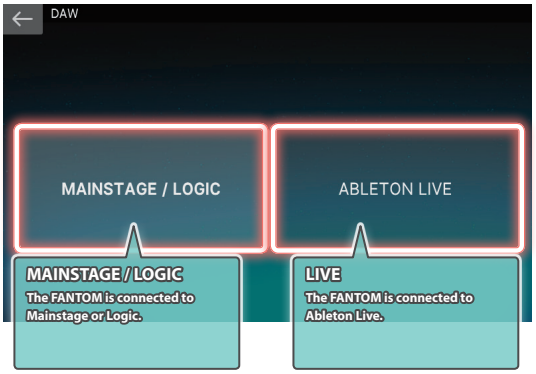
This is used to adjust not only the volume but also to change the tone and the changes in tonal curves. For this reason, the instrument still produces sound even when the pedal is at minimum position.

The FANTOM v2.5 also models how the expression pedal behaves with the organ sound.

Controlling Ableton Live

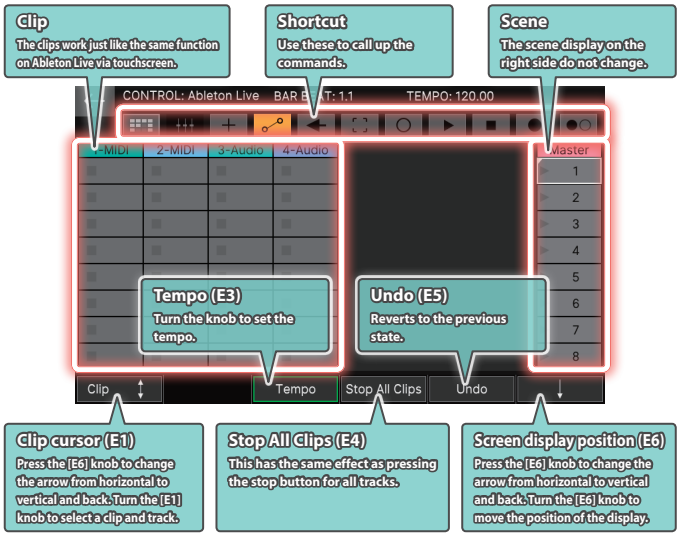
Connecting

Select the "type" to connect using DAW CTRL.



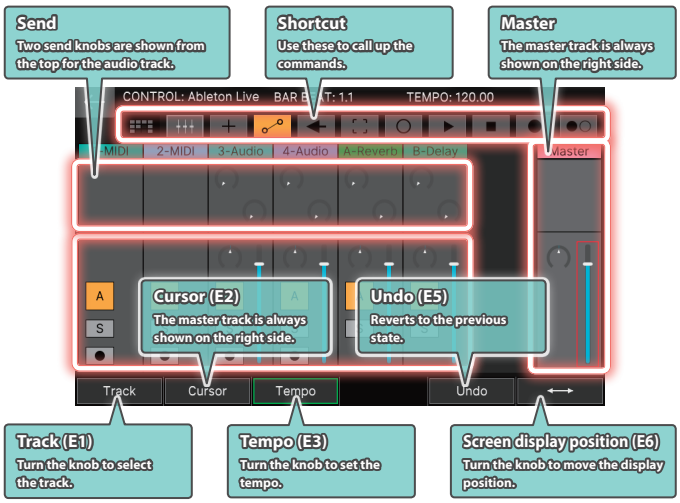
Session View

SESSION VIEW screen



Mixer View

MIXER VIEW screen



DAW CTRL (ASSIGN1+ASSIGN2)

You can use a DAW CTRL controller to adjust even more parameters.

PAD MODE (DAW CTRL)

The drum rack can be played using DAW CTRL in PAD mode.

Other Changes

- The zone for playing the rhythm pattern is now selectable.
- USB IN and USB OUT parameters have been added to MIXER.
- On the MIXER screen, you can now switch between three screens by pressing the buttons: "16 VIEW," "8 VIEW" and "OUT/USB."