SONICWARE

LIVEN
LoFi-12

User's Manual

Rev.2

LVN-040-UM-02-EN

FCC regulation warning (for USA)

Note: 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 a residential installation. 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. However, 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 into 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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Important safety precautions

You must read the following precautions in order to use the product safely and prevent accidents.

WARNING: Failure to follow these precautions could result in serious harm to the user or even death.

- Operation using an AC adapter

Do not do anything that could exceed the ratings of outlets and other electrical wiring equipment.

Disconnect the AC adapter from the outlet when lightning occurs and when not using it for a long time.

- Operation using batteries

Use-commercially available 1.5V AA batteries.

Carefully read the precautions of the batteries being used.

Be sure to insert the batteries with +/ − ends oriented correctly.

Do not use new and old batteries together. Do not use batteries of different types together.

Remove the batteries when they will not be used for a long time.

If a leak occurs, thoroughly wipe the battery compartment and battery terminals to remove the leaked fluid.

- Do not open the case and disassemble or modify the product.
- Do not drop, strike or apply excessive force to the unit.
- Do not put liquid on or in the unit.
- Do not put foreign objects into the case.
- Do not use at a loud volume. Doing so could generate loud volumes that might lead to hearing loss.
- When transferring this unit, use the individual packing box and cushioning material that it came with when purchased new.
- When the unit is powered on, do not wrap it in cloth, plastic or other materials.
- Do not step on or apply pressure to the power cord.
- Do not use in the following environmental conditions. Doing so could cause malfunction.

Locations in direct sunlight, environments that exceed 40° C, or near stoves and other heat sources

Locations with extremely low or high temperatures

Locations with extremely high humidity or where the product could become wet

Locations with frequent vibrations or much dust or sand

- If the unit becomes broken or malfunctions, immediately turn the power off and stop using it.

Usage Precautions

Failure to follow these precautions could cause injury to the user and physical damage.

- When connecting cables or working with the power of the unit, minimize the input levels of connected devices or turn them off.
- Cleaning

If the screen or the case become dirty, wipe them gently with a soft cloth.

Do not use chemicals, including alcohol, benzene, thinner or cleansers.

If this does not clean them, wipe them with a slightly damp cloth that has been wrung out well.

Do not turn the power on until the product is completely dry.

Introduction

Thank you very much for purchasing a SONICWARE LIVEN Lofi-12.

The LIVEN Lofi-12 is a compact groovebox that features a retro sampling, including a 12-bit sampler mode that gives any sound a pleasing low-fidelity feel, and a 4-track step sequencer with independent effects for each track as well as a master reverb. The 16 physical knobs enable intuitive operation, while battery power and a built-in speaker make it ready for live performance in any situation.

We hope you enjoy using it for many years.

Key features of the LIVEN Lofi-12

- **Retro sampling** gives any sound a lo-fi vibe
- Sampled sounds are automatically assigned to the keyboard and can be played with different pitches
- Powerful **4-track step sequencer** developed with the LIVEN series
- The **Laid-back knob** can delay sound timing for a the drunk beats
- **11 types** of effects independent for each track along with **8 types** of master effects

Jam in any situation

Battery power and a built-in speaker enable producing and performing anywhere

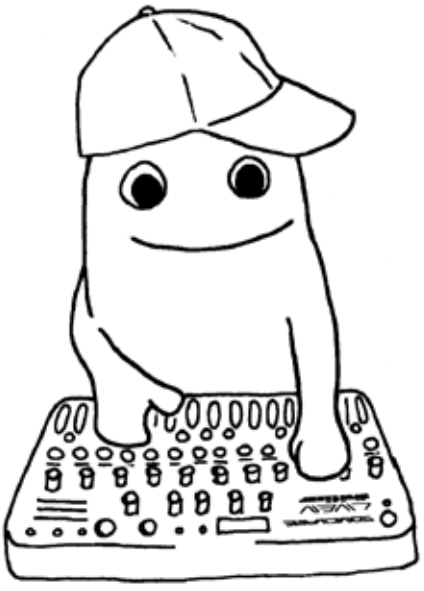
Synchronize with all kinds of devices

Clock synchronization is possible with devices that have MIDI or SYNC connectors.

The audio SYNC function enables synchronization with Teenage En-

gineering Pocket Operator devices using the LINE jack.

In addition, clock synchronization signals can be bridged between different connectors. For example, MIDI clock can be generated from an input SYNC clock signal.



Contents

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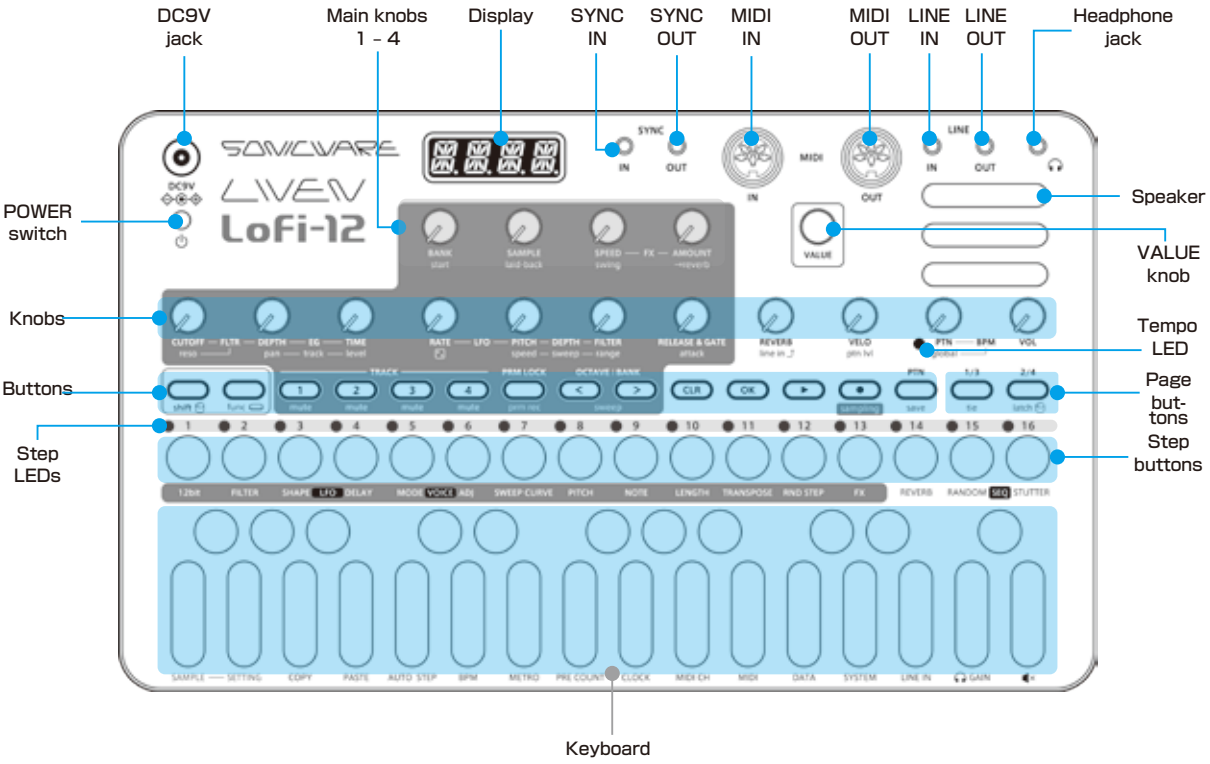
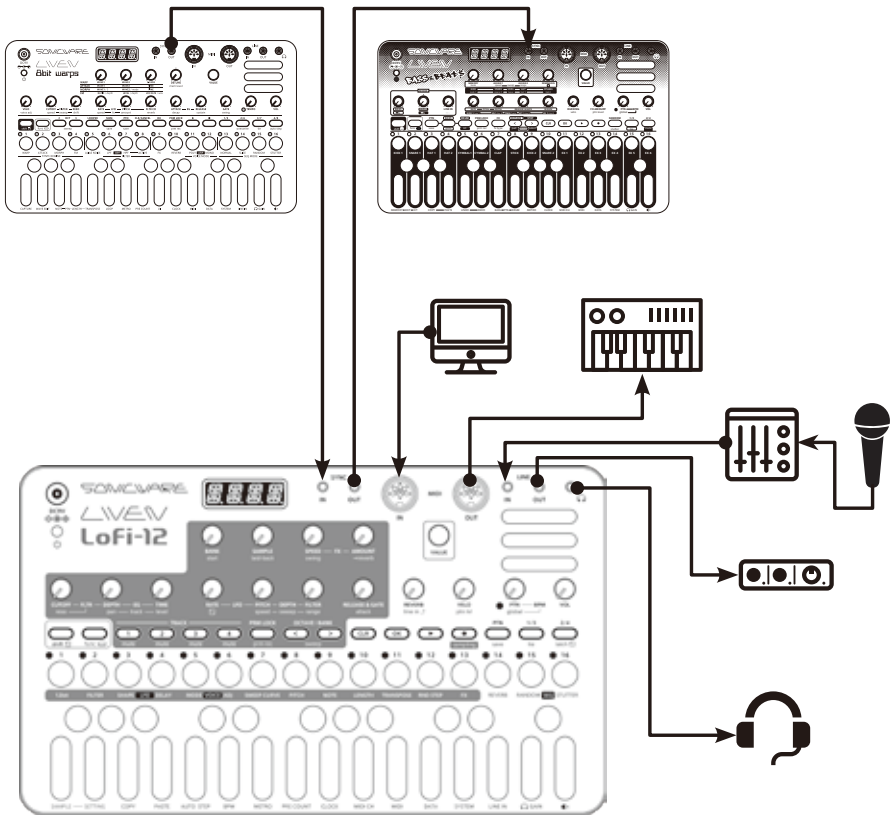
Names of parts



Connection example

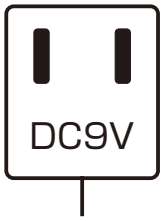


Note: Use connection cables that are 3 m or shorter.

Starting up and shutting down

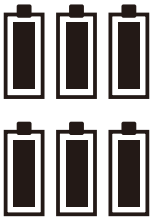
Preparing a power supply

AC adapter (sold separately)



or

6 AA batteries



Only use AC adapters that conform to the specifications. Using an AC adapter with different specifications could cause damage.

AC adapter specifications*

Voltage: 9V output
Current: 1A or higher
Connector: EIAJ-03 compliant
(1.7mm inner diameter,
4.75mm outer diameter)
Polarity: center+

*Equivalent to Korg Volca KA350 adapter

BT.LO will appear on the display if the remaining battery charge is low. Replace the batteries immediately.

When using nickel-metal hydride batteries or lithium batteries, change the battery setting.
(→P.87)

Starting up

1 Press and hold the POWER switch until LOFI (LIVEN **Lofi**-12) appears on the display.

Turning the unit off

1 Press and hold the POWER switch until the display turns off.

Recently made changes will be lost when the unit is turned off. Save the changes if necessary.

Basic operations

This section explains basic operations.

Adjusting the overall volume

The volume from the speaker, headphones and the LINE OUT can be adjusted.

Volume
0 - 127
This can be adjusted from −∞ to +6 dB with 0 dB as the middle value (63-64).

Turning on/off the speaker

The built-in speaker can be turned off manually if you want to mute it without connecting headphones (when only using the LINE OUT, for example).

Speaker	
MUTE	Speaker off
SPK	Speaker on

Basic operations

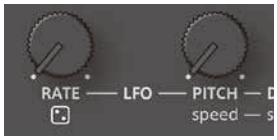
Using the func button

Some Lofi-12 buttons have two functions.

In the example above, the secondary functions of the PTN and 13 buttons are “save” and “FX” .
Pressing these buttons while pressing the func button will activate their secondary functions.
In this manual, operations while pressing the func button will be shown as follows.

Using the shift button

Many Lofi-12 knobs have both **uppercase** and **lowercase** names.



Turning a knob alone will adjust the uppercase parameter.
Turning the knob while pressing the shift button will adjust the lowercase parameter.
In this manual, operations while pressing the shift button will be shown as follows.

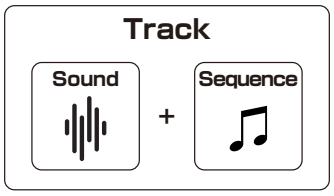
Using the shift button hold function

By pressing the shift button while pressing the func button, the shift button hold function can be activated. (The button lights orange.) When the hold function is activated, lowercase parameters can be adjusted without pressing the shift button.
Press the shift button again to deactivate the hold function.

Tracks and patterns

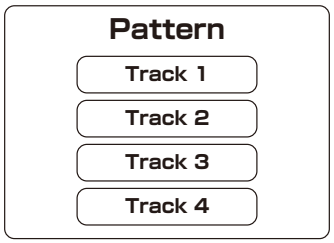
Track overview

The LIVEN Lofi-12 groovebox has a 4-track sequencer. **Tracks** contain both **sound** settings and **sequences** (performance data). The four tracks of the LIVEN Lofi-12 can each have different sounds and individual sequences created for them.



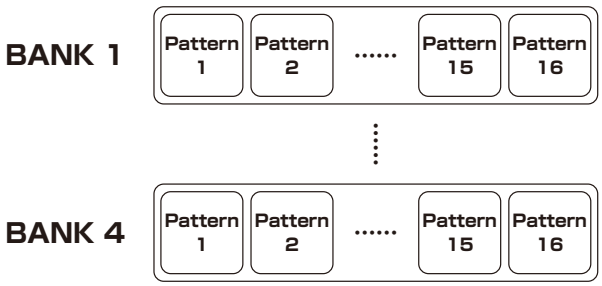
Pattern overview

A **pattern** is a combination of the four tracks described above. With lengths of 1–4 bars, patterns can be used as the smallest units in making songs.



Patterns and banks

16 patterns can be stored together in a single **bank**.
The LIVEN Lofi-12 has 4 banks enabling 64 patterns to be saved in total.



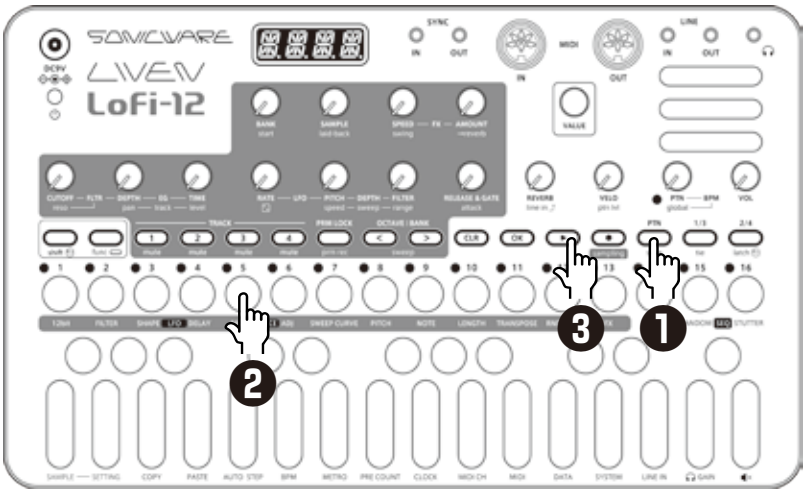
- BANK 1 contains present patterns. Following the instructions on the next page, try playing them.

Basic pattern operation

Selecting patterns

1 Press PTN.

2 Press 1 – 16.
→ This selects a pattern.
(STEP 1 for pattern 1⋯ STEP 16 for pattern 16)



Playing patterns

3 Press ▶.
Press it again to stop.

Selecting pattern 17 and higher

Press OCTAVE | BANK after procedure 1 to change the bank, enabling selection of pattern 17 and higher.

- If a different pattern is selected during pattern playback, it will be readied but will not start playing immediately.
  Playback will switch to the selected pattern after the playing pattern completes.

- After pressing PTN, VALUE can also be used to select patterns.

Basic pattern operation

Changing the tempo

PTN - BPM
40 - 250
When the tempo is shown on the display, the VALUE knob can be turned to change it in 0.1-beat increments.

Reloading patterns

1. Press PTN.

2. Press OK.
   This is useful for restoring sounds to their original states during live performances, for example.

Pattern chain playback

Selecting multiple patterns and playing them in order (chain playback)

1 Press PTN twice (lights orange).

2 Press 1 – 16.
Select patterns in the order that you want them to play.
Press 1 – 16 again to deselect.

3 Press ▶.
The patterns will play in the selected order.

- Press PTN again to end chain playback.
- Stutter mode (→ P.65) cannot be used during chain playback.

Adjusting the volume of individual patterns

1 Turn shift + ptn lvl.

Pattern Level
0 – 127
Pattern levels can be set in a range of −∞ – +6 dB.

Track selection and basic adjustments

Switch between the 4 tracks of the Lofi-12 to work with them.

Selecting tracks

1 Press TRACK 1 2 3 4 for the track you want to select.
The selected TRACK button will light red and its track number will be shown on the display. (The unselected TRACK buttons will light green.)
The parameters shown in the dark gray areas on the top of the unit can be controlled separately for each track.

Muting tracks

1 Press func + TRACK 1 2 3 4 for the track you want to select.

The muted TRACK buttons will light orange.

Press func + the button that is lit orange to unmute the track.

Adjusting track levels

1 Turn shift + level – track .
The level of the selected track can be set in a range of 0 – 127 (−∞ – +6 dB).

Adjusting track panning

1 Turn shift + pan – track .
The panning of the selected track can be set in a range of L63 – CNTR – R63.

Performing with the keyboard and voice modes

Performing

1 Play the keyboard.

Holding keyboard notes

1 Press OK + keys to hold them.

- Press the same key again to stop holding it.
- Press CLR + OK to stop holding all keys.

Changing the velocity

The velocity value used when playing keys can be set.

VELO

Velocity
0–127
The higher the value, the louder the notes will be played.

Performing with the keyboard and voice modes

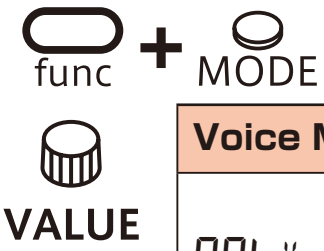
Changing the octave range

1 Press < / > .
This lowers/raises the range by an octave.

<	>	+3 octaves
<	>	+2 octaves
<	>	+1 octave
<	>	
<	>	− 1 octave
<	>	− 2 octaves
<	>	− 3 octaves

Changing the voice mode

1 Press func + MODE .
This selects the voice mode



Voice Mode		
POLY	Polyphonic	Up to 10 voices can be output simultaneously in this mode
MONO	Monophonic	In this single voice mode, each note retrig-gers the sound.
LGT	Legato	In this single voice mode, notes do not re-trigger the sound.
ARP	Arpeggiator	Pressed keyboard keys are played one at a time in this mode.

Changing the glide (in MONO/LEGATO mode)

1 Press func + ADJ.

2 Use VALUE to set the speed.

Glide
0 – 127
The time can be changed in a range of 0 – 10000 ms.

Performing with the keyboard and voice modes

Changing the arpeggiator type (in ARP mode)

1 Press func + ADJ .

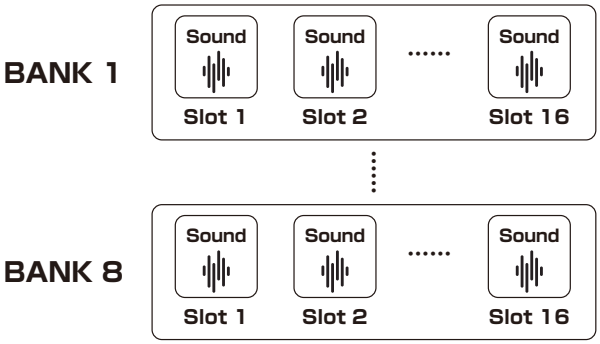
2 Use VALUE to select the arpeggiator type.

Arpeggiator		
UP	UP	↗
DOWN	DOWN	↘
U.D	UP DOWN	↗↘
D.U	DOWN UP	↘↗
U.A.D	UP & DOWN	↗↘
D.A.U	DOWN & UP	↘↗
RNDM	RANDOM	⟿
UP+1	UP +1	↗
UP+2	UP +2	↗
DN-1	DOWN − 1	↘
DN-2	DOWN − 2	↘
P.O	PLAY ORDER	Notes are sounded in the order played on the keyboard

Sample selection

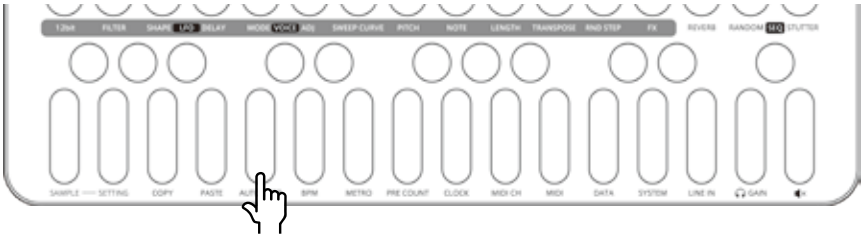
Overview

The Lofi-12 can store a total of 128 recorded samples in 8 banks with 16 slots each.



Selecting samples

1 Turn BANK and SAMPLE to select samples.
Sounds can be checked by playing the keys on the keyboard.



Play this key to hear the sample with its original pitch and length.

12-bit sampler mode

The Lofi-12 records samples at 16-bit/12kHz or 16-bit/24kHz, but it also has a mode that drops the bit rate to 12-bit and re-create the sound of vintage samplers.

1 Press func + 12bit .
Turning this on enables 12-bit sampler mode.

Changing the pitches of samples

In addition to changing pitches in semitones using the keyboard keys, the Lofi-12 has other ways of changing pitches.

Changing track pitch

1 Press func + PITCH .
Press this button to change the pitch 100 cents (1 semitone) at a time from −600 - +600.
Use VALUE to adjust it 1 cent at a time.

- Each sample pitch can be changed in SAMPLE & EDIT mode. (→P.41)

Changing track pitch by semitone (transposing)

1 Press func + TRANSPOSE .
Use VALUE to change the pitch in a range of −12 - +12 semitones.

- If the key is changed during pattern playback, the actual change of key will occur the next time the pattern begins.

Adjusting how samples sound

Adjusting sample start positions

1 Turn shift + START.

The sample start position can be set from 0 – 127.

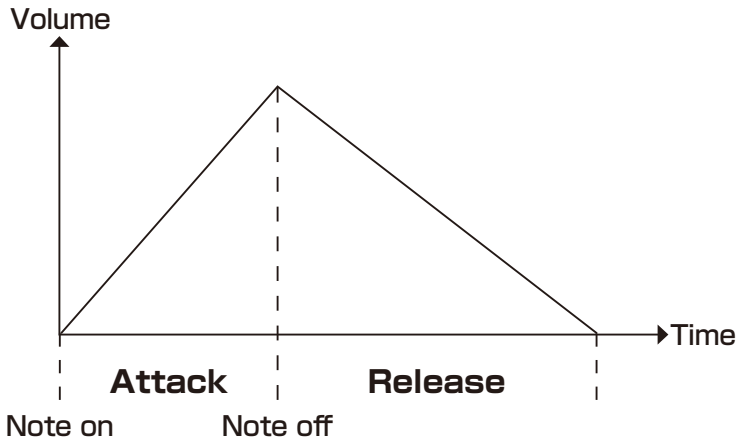
Adjusting sample attack and release

Use the envelope generator to adjust the attack that affects the beginning of the sound and the release that affects how the sound fades out.

1 Turn shift + attack or RELEASE & GATE.

attack (EG)
0 – 127
The attack time can be changed in a range of 0 – 4000 ms.

RELEASE & GATE (EG)
0 – 127
The release time can be changed in a range of 0 – 4000 ms.



Filters

Changing the filter type

1 Press func + FILTER to select the type.

Filter type		
LPF./\	LP /\	This filter cuts high frequencies using an envelope with attack and decay.
LPF.|_	LP |_	This filter cuts high frequencies using an envelope with decay.
LPF./|_	LP /|	This filter cuts high frequencies using an envelope with attack.
HPF./\	HP /\	This filter cuts low frequencies using an envelope with attack and decay.
HPF.|_	HP |_	This filter cuts low frequencies using an envelope with decay.
HPF./|_	HP /|	This filter cuts low frequencies using an envelope with attack.
BPF./\	BP /\	This filter only allows frequencies in a specific range to pass using an envelope with attack and decay.
BPF./|	BP /|	This filter only allows frequencies in a specific range to pass using an envelope with decay.
BPF.|\	BP |_	This filter only allows frequencies in a specific range to pass using an envelope with attack.

Filters

Changing the filter cutoff frequency

Cutoff
0 – 127
The cutoff frequency can be changed in a range of 70 – 21600 Hz.

Adjusting the filter resonance

Resonance
0 – 127
The resonance can be changed in a range of 0.1 – 10.
For BPF, the bandwidth can be changed in a 0.1 – 2.0 octave range.

Filters

Adjusting the filter envelope

Filter EG Depth
– 63 - 63
The envelope depth can be set from – 100 - 100%.

Filter EG Time
0 - 127
The time can be changed in a range of 13 ms - 20 s.

For LPF./\, HPF/\ and BPF./\, TIME changes the attack and the decay.
For LPF.¦_, HPF.¦_ and BPF.¦_, TIME changes the decay.
Filters of the same type (e.g. LPF./\ and LPF.¦_) share DEPTH and TIME settings.

LFO

Overview

Each track of the Lofi-12 has one **LFO** that can be used to modulate the pitch and the cutoff frequency.

Adjusting the LFO speed

Rate - LFO
0 - 127
The frequency of the LFO can be changed in a range of 0 - 30 Hz.

Adjusting the amount of LFO effect on pitch

Pitch Depth - LFO
0 - 127
This changes it in a range of 0 - 2 octaves.

Adjusting the amount of LFO effect on filter cutoff

Filter Cutoff Depth - LFO
0 - 127
The higher the value is, the greater the amount of change. Set to 0 for no change.

LFO

Selecting the LFO wave

1 Press func + SHAPE to select the LFO wave.

LFO Wave	
SINE	sine wave
SQAR	square wave
TRI	triangle wave
SAW	sawtooth wave
R.SAW	reverse sawtooth wave
RAND	random wave
LOG	logarithmic wave
R.LOG	reverse logarithmic wave

Setting the LFO starting delay

1 Press func + DELAY to set the LFO starting delay.

LFO Delay
0～127 (0～8000ms)

Sweep

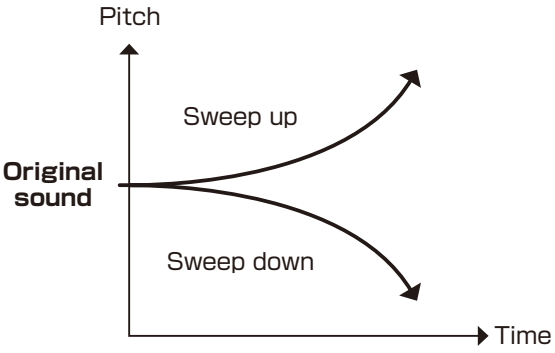
Overview

The Lofi-12 has a sweep sound function that changes the pitch at a set speed.

Sweeping notes while playing

1 Press func + < / > .

Sweep	
<	Sweep down
>	Sweep up



• Press func + < / > again to disable the sweep function.

shift + range – sweep		shift + speed – sweep	func + SWEEP CURVE	
Speed	**Range**		**Curve**	
Sweep speed	Sweep amount		Curve type	
0–31 The higher the value is, the slower the speed becomes.	1-11	1 – 11 semitones	LINE	Linear
			After input, the note changes linearly to the range amount.	
	1OCT	1 octave	EXP	Exponential
			After input, the note changes gradually at first and then rapidly in the latter half until it reaches the range amount.	
	2OCT	2 octaves	LOG	Logarithmic
			After input, the note changes rapidly at first and then gradually slows until it reaches the range amount.	

Effects

Effects can be set for each track of the Lofi-12.

Adjusting effects

1 Press func + FX to select an effect.

2 Use SPEED – FX and AMOUNT – FX to adjust the parameters.

func + FX		SPEED – FX	AMOUNT – FX
OFF	Off	----	----
CHRS	Chorus	Rate	Amount
FLNG	Flanger	Speed	Amount
DLY	Delay	Time	Amount
CRSH	Crush	Sample rate	LPF cutoff
DIST	Distortion	Gain	Tone
LPF	Low pass filter	Cutoff	Resonance
HPF	High pass filter	Cutoff	Resonance
ISO	Isolator	Frequency	Balance
TILT	Tilt EQ	Frequency	Balance
TRML	Tremolo	Rate	Amount
COMP	Compressor	Ratio	Threshold

- In step 1, VALUE can also be used to select the effect type.

Reverb

The Lofi-12 has a single high quality reverb effect.

The send levels for this reverb can be set individually for each track.

Adjusting the reverb

1 Press func + REVERB to select the effect.

2 Use REVERB to adjust the parameter.

VALUE

func + REVERB		REVERB
OFF	Off	----
HALL	Hall	Mix
ROOM	Room	Mix
ARNA	Arena	Mix
PLAT	Plate	Mix
TNNL	Tunnel	Mix
INF	Infinity	Mix
TAPE	Cassette Tape Simulator	Noise + wow flutter
VNYL	Vinyl Simulator	Noise + wow flutter

3 Use shift + →reverb to set the reverb send level for individual tracks.

Use shift + line in ⤴ to set the reverb send level for LINE IN input.

Quick sampling – Recording

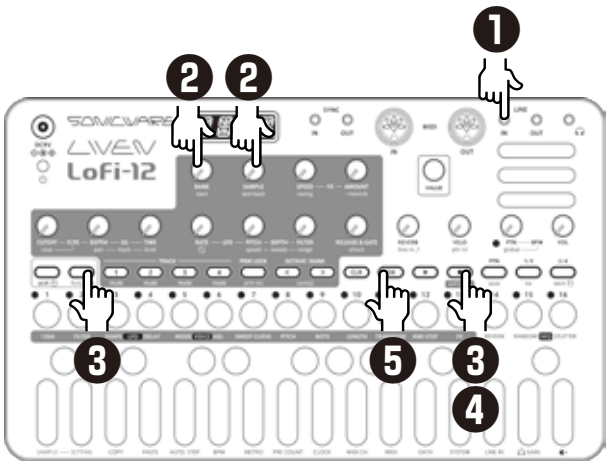
Connecting equipment to the LINE IN

1 Connect the output of the equipment you want to record to the Lofi-12 LINE IN.

- Mics and guitars cannot be connected directly. Use a mixer or other equipment to convert their outputs to line signals.

Select the recording slot

2 Use BANK and SAMPLE to select the slot where the sample will be recorded.



Enable recording

3 Press func + sampling.
sampling will blink red.
Use the step keys to check the recording level.

Start recording

4 Press sampling again.
sampling will light red and recording will automatically start when a signal is input.

The step keys show the recording progress.
When step 16 lights, recording will stop automatically.

5 Press OK twice.
This saves the sample.

- Press CLR to cancel the operation.
- Use SAMPLE & EDIT mode to rename and edit samples.
(→ P.44)

Sampling settings

The following settings are used for quick sampling.

Setting auto recording

1 Press func + SETTING to select A.R.LV. 

2 Turn VALUE.
This can be set to OFF or the input signal level that starts recording automatically (−60 - −20 dB).
If auto recording is off, press sampling when in recording standby to start recording.

Setting the sampling frequency

1 Press func + SETTING, and select S.FRQ 12K or 24K.

2 Turn VALUE to select one.

Sample quality	Sampling frequency	Maximum recording time
Lofi	12 kHz	4 seconds
Standard	24kHz	2 seconds

- Use func + LINE IN to adjust the LINE IN input gain.
- After recording completes, the volume of the sample will be normalized automatically.

LINE IN settings

Changing the gain

1 Press func + LINE IN to select GAIN.

2 Turn VALUE to change the gain.

VALUE

Gain
MUTE – 127

Setting mono/stereo

1 Press func + LINE IN to select MONO.

2 Turn VALUE to switch between ON and OFF.

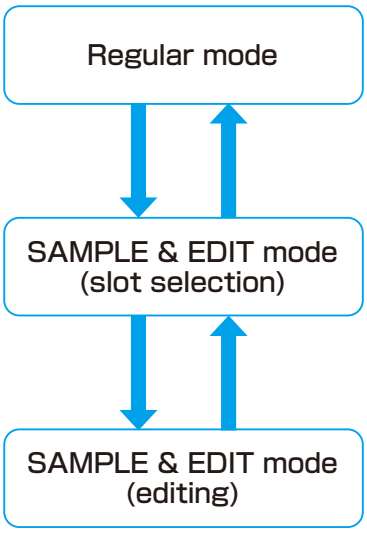
VALUE

Monophonic	
ON	Mono
OFF	Stereo

Activating and deactivating SAMPLE & EDIT mode

Activating SAMPLE & EDIT mode (slot selection)

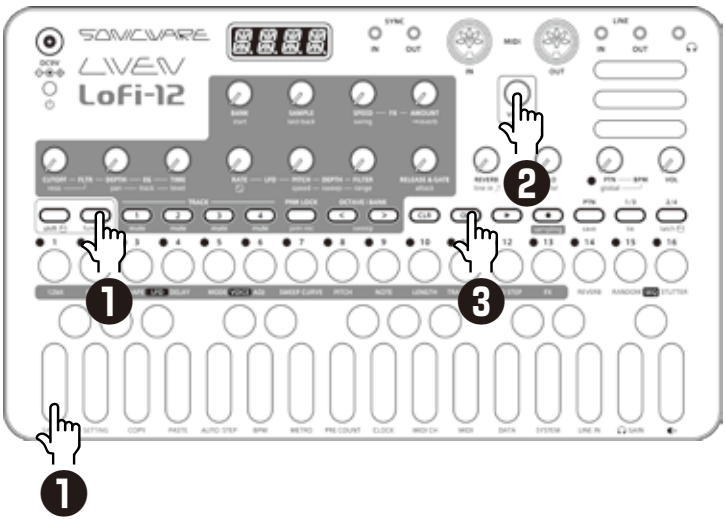
1 Press func + SAMPLE .



Selecting slots

2 Turn VALUE to select a slot and press OK .
→ This activates SAMPLE & EDIT mode (editing).

3 Press OK .



Place the included SAMPLE & EDIT overlay on the unit.

- When a slot is selected, the sample can be auditioned by playing the keyboard.

Activating and deactivating SAMPLE & EDIT mode

Deactivating SAMPLE & EDIT mode (returning to Regular mode)

1. Press CANCEL / CLR.
   This returns to slot selection.

2. Press CLR / EXIT again.
   This returns to regular mode.

SAMPLE & EDIT mode (editing) — Preparing to record

Connecting equipment to the LINE IN

1 Connect the output of the equipment you want to record to the Lofi-12 LINE IN.

- Mics and guitars cannot be connected directly. Use a mixer or other equipment to convert their outputs to line signals.
- The Lofi-12 records in mono. Stereo signals input to the LINE IN are mixed in mono by default.

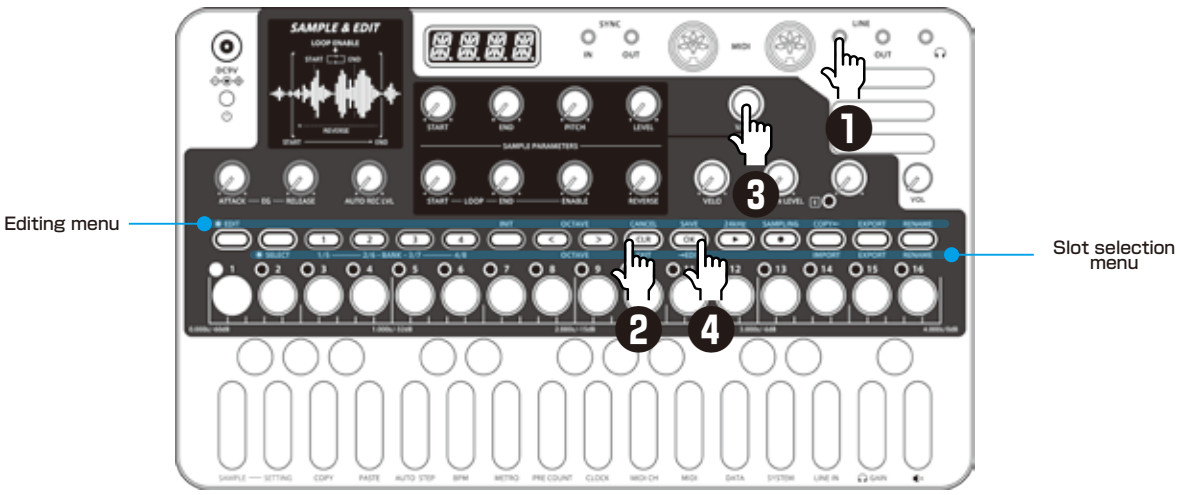
Select the recording slot

2 In SAMPLE & EDIT mode, press CANCEL (CLR). SELECT will light red.

3 Turn VALUE to select the slot where you want to record the sample.

- When a slot is selected, the sample can be auditioned by playing the keyboard.

4 Press OK (→EDIT) to enable editing. EDIT will light red.



SAMPLE & EDIT mode (editing) — Recording

Enable recording

1 Press SAMPLING.
It will blink red.
Use the step keys to check the recording level.

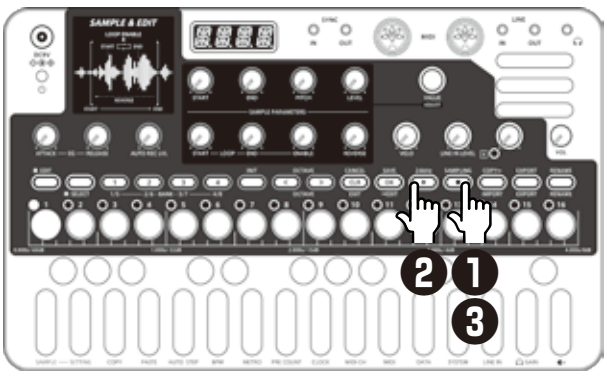
Press CANCEL to cancel.

- Use LINE IN LEVEL to adjust the input level.

Set the sample quality

2 Press 24kHz to select the sampling frequency.

When 24kHz is lit red, the setting is 24kHz (2 seconds of recording). When it is unlit, the setting is 12kHz (4 seconds of recording).



Start recording

3 Press SAMPLING again.
It will light and automatically start recording when a signal is input.

The step keys show the recording progress.
When step 16 lights, recording will stop automatically.

4 Press SAVE twice.
This saves the sample.

- AUTO REC LVL can be set to OFF or the input signal level that starts recording automatically (−60 – −20 dB).
  If AUTO REC LVL is OFF, pressing SAMPLING will start recording.

- After recording completes, the volume of the sample will be normalized automatically.

SAMPLE & EDIT mode (editing) — Basic operation

Adjust parameters

1 Turn a knob.

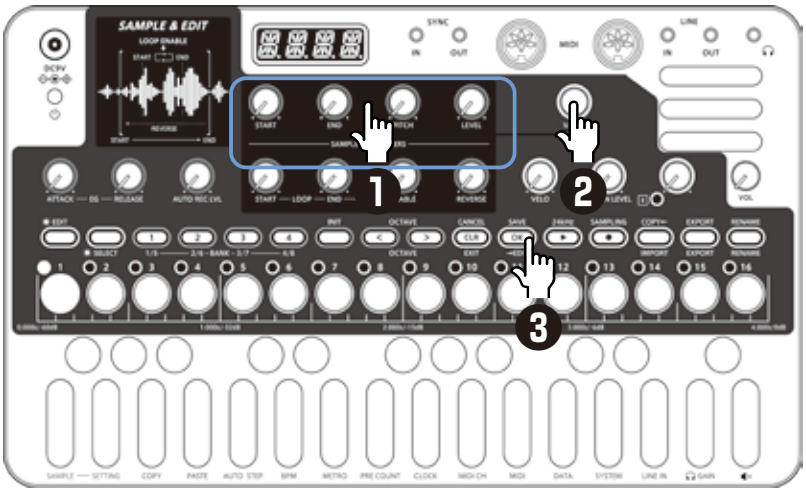
Adjust parameters precisely

2 Turn VALUE while the parameter is shown.

START	END	PITCH	LEVEL
Start	**End**	**Pitch**	**Level**
Start position in sample	End position in sample	Pitch adjustment	Level
0 - 9998	1 - 9999	−999 - +999*	0 - 127
VALUE	VALUE	VALUE	

VALUE Parameters that allow precise adjustment

*100 = 1 semitone



Save settings

3 Press SAVE OK twice.
It will be saved and return to slot selection.

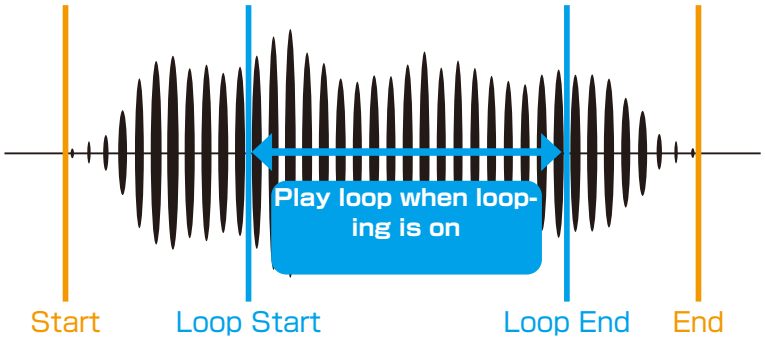
Discard settings

Press CANCEL CLR .

This will return to slot selection without saving.

Setting Sustain loops

The Lofi-12 has a sustain loop function that can play the desired interval in a sample as a loop.
Set a sustain loop if you want to have a sound play continuously like an organ as long as you press a key on the keyboard.



START – LOOP	END – LOOP	ENABLE
Loop Start	**Loop End**	**Loop Enable**
Start position of sustain loop	End position of sustain loop	Sustain loop activation
0 - 9776	420 - 9999	ON/OFF
Set the position of the 9,999 divisions of the sample in increments of 100.	Set the position of the 9,999 divisions of the sample in increments of 100.	This turns the sustain loop on/off.
VALUE	VALUE	
Adjust the position in increments of 1.	Adjust the position in increments of 1.	

The Loop Start and Loop End are connected by a crossfade.

Set an interval that does not have volume or tone changes in order to make the loop sound natural. Setting a natural-sounding sustain loop might not be possible for some waveforms.

SAMPLE & EDIT mode (editing) — Basic operation

Reversing sample playback

Reverse	
This turns reverse playback on/off.	
OFF	Played in regular direction
ON	Played in reverse

Setting sample fade out

The entire length of a sample is shown by the lit 1 – 16.

1 Press the step at the position where you want to start the fade-out.
For example, press 9 if you want to start to fade out in the middle of the sample.
Steps will blink for the length that is being faded out.

Press 16 to set no fadeout.

2 Press SAVE/OK twice.
This applies the fadeout to the sample.

- Fade-outs can only be set when LOOP ENABLE is off.

Chacking the attack, release, and velocity of the sound

 ATTACK – EG	 RELEASE – EG	 VELO
Time for sample to reach full volume after note is turned on	Time until sample becomes silent after note is turned off	Volume triggered when note is turned on
0–127	0–127	0–127

SAMPLE & EDIT mode (editing) — Renaming and copying

Renaming samples

1 In editing mode, press RENAME.

2 Use < and > to move the cursor left and right, and turn VALUE to select characters.

3 Press SAVE/OK.
This completes the setting.
DONE will appear on the display.

- During slot selection, RENAME can be pressed to rename a bank in the same way.

Copying samples

1 Use slot selection to select an empty slot

2 Press OK/→EDIT to enable editing.

3 Press COPY←.

4 Turn VALUE to select the sample you want to copy.

5 Press SAVE/OK.
The sample will be copied and DONE will be shown on the display.

- After completing a procedure, press SAVE/OK twice to save the changes.

- Press CLR during a procedure to cancel it.

SAMPLE & EDIT mode (editing) — Clearing

Clearing samples

1 In editing mode, press INIT.
This clears the sample.

- After completing a procedure, press SAVE twice to save the changes.
- Press CLR during a procedure to cancel it.

SAMPLE & EDIT mode (editing) — Exporting/importing samples

Recorded samples can be exported to or imported from a PC, Mac or similar device by MIDI. See page 81 for details about connection.

Exporting a single sample

1. Use slot selection to select the sample you want to export.
2. Press OK →EDIT to enable editing.
3. Press EXPORT.

4. Set your PC to receive MIDI data.
5. Press SAVE OK.
   This starts sample data transmission.
   The step LEDs will show the progress. When finished, DONE will appear on the display.

Importing a single sample

1. Use slot selection to select the slot you want to import to.
2. Press OK →EDIT to enable editing.
3. Start transmitting data from the transmitting device.
4. After receiving data has completed, press SAVE OK twice to save it.

SAMPLE & EDIT mode (editing) — Exporting/importing samples

Exporting sample banks

1 In the slot selection, press 1 1/5 - 2/6 - 2 BANK - 3 3/7 - 4 4/8 to select the bank you want to export.

2 Press EXPORT .

3 Set your PC to receive MIDI data.

4 Press OK →EDIT .
This starts sample data transmission.
The step LEDs will show the progress. When finished, DONE will appear on the display.

Importing sample banks

1 In the slot selection, press 1 1/5 - 2/6 - 2 BANK - 3 3/7 - 4 4/8 to select the bank you want to export.

2 Press IMPORT .

3 Start transmitting data from the transmitting device.

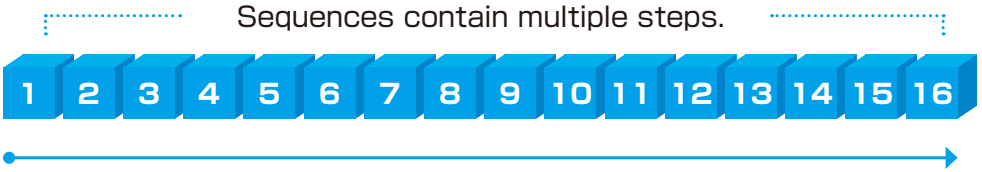
4 When BK.SV is shown, press OK →EDIT .

Step sequencer overview

Overview

The Lofi-12 step sequencer can play **multiple steps** in order (a sequence) with performance and parameter data.

Steps contain **note data** and **parameter data**.



Lofi-12 step sequencer features

The sequencer in the Lofi-12 has the following features.

Three input methods

Step recording

Record notes to each step with the sequencer stopped

Real-time recording

Record notes to steps by playing the keyboard

Direct recording

Record notes to steps directly during sequencer playback

Flexible sequencing

Sequences with up to 64 steps

The number of steps can be set from 1 – 64 as desired for each track

Support for various note lengths

The length of each step can be set from 1/32nd note to 1 bar.

Creating sequences – Preparation

Selecting tracks and setting sounds

1 Press one TRACK 1 2 3 4 button to select the track for sequence creation.

2 Turn BANK and SAMPLE to select the sound to use.

- The LIVEN Lofi-12 can generate a maximum of 10 notes simultaneously (10-voice polyphony).

- If the maximum polyphony is exceeded, notes will be turned off starting with notes on the lowest priority track. (The track priority is from 4 to 1 in order. However, sounds that are being released will be turned off first in track priority order.)

- The LIVEN Lofi-12 includes 8 banks of 16 sounds, allowing selection of up to 128 sounds.

Creating sequences – Settings

Setting the note length of one step

1 Press func + NOTE .

2 Use VALUE to select the note length.

Note	
1/1	Whole note
1/2	Half note
1/.4	Dotted quarter note
1/4	Quarter note
1/.8	Dotted 8th note
1/2T	Half note triplet
1/8	8th note
1/.16	Dotted 16th note
1/4T	Quarter note triplet
1/16	16th note
1/32	32nd note

Changing the sequence length

1 Press func + LENGTH .

2 Use VALUE to set the sequence length.

Length
1 – 64 (steps)

Creating sequences – Step recording

Using step recording, sequences can be created carefully while playback is stopped.

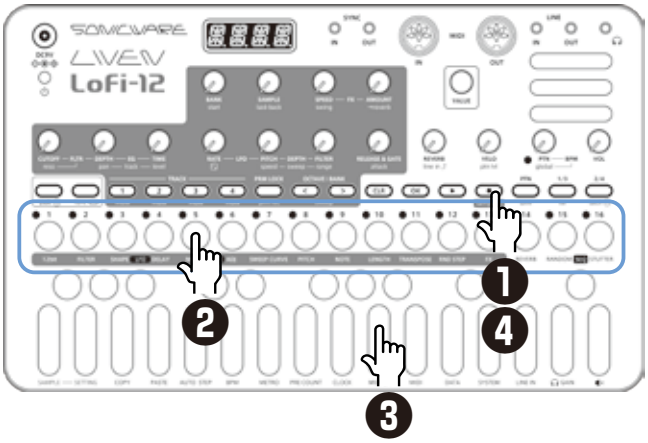
Basic operations

1 When stopped, press ⏺ (lights red).

2 Press 1 – 16 at the step where you want to input a note.
The LED for the current step will blink. The LEDs for steps that already have notes will light.

3 Play a note on the keyboard to input it at the step.
Press the same note again on the keyboard to remove it from the step.
Repeat steps 2 – 3 to create the sequence.

4 Press ⏺ to end step recording.



Selecting steps 17 and higher

After procedure number one, press 1/3 and 2/4 to select steps 17 and higher.

To select steps 1–16, press the 1/3 button.

To select steps 17–32, press the 2/4 button.

To select steps 33–48, press the 1/3 button twice.

To select steps 49–64, press the 2/4 button twice.

- In procedure 2, pressing 1 – 16 will cause the stored note to sound continuously. This is by design.
- VALUE can also be used to move between steps.
- Page buttons are enabled or disabled according to the length of the sequence.

Creating sequences – Step recording

Clearing steps

1 Press CLR + 1 _ 16.
During step recording, only the note information for that step will be cleared.

Copying steps

1 During step recording, press 1 _ 16 to select the step to copy.

2 Press func + COPY .

3 Press 1 – 16 to select the paste destination step.

4 Press func + PASTE .
The note and parameter lock data from the copy source step will be pasted to the destination step.

• Data for ties cannot be copied.

Automatically advancing steps during step recording (Auto Step mode)

In step recording mode, the step can be advanced automatically each time a key of the keyboard is pressed.

1 Press func + AUTO STEP to turn this mode on/off.

Creating sequences – Step recording

Tied-notes (long sounds) can be input with the Lofi-12.

Enabling tied-note (long sound) input

1 Press func + tie .
The button will light red, and tied-note input will be enabled.

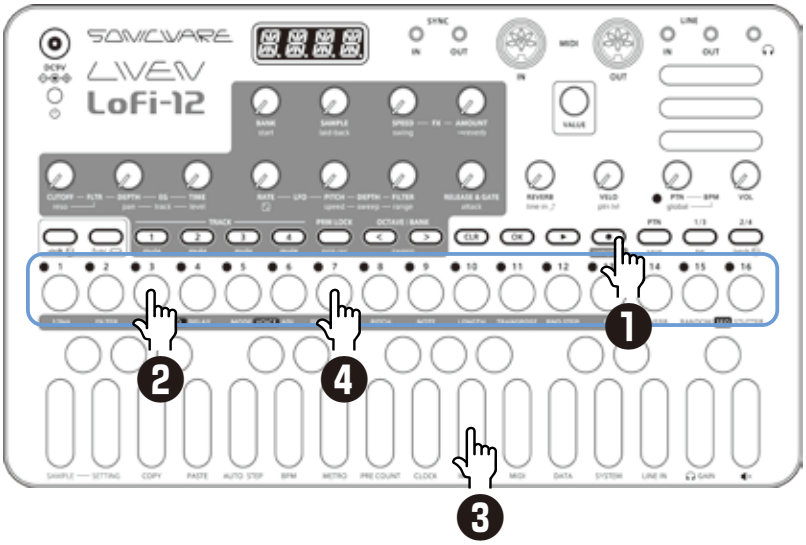
Inputting tied-notes (long sounds)

1 When stopped, press ● (lights red) to start step recording.

2 Press 1 – 16 at the step where you want to start note input.

3 Press and hold a key on the keyboard.

4 Press 1 – 16 at the step where you want to stop the note.
This inputs a tied-note from the starting step to the stopping step.



In the example above, a note (A) is input that starts on step 3 and ends on step 7.

- By pressing 1/3 and 2/4 during procedure 4, tied-notes that span pages can be input.

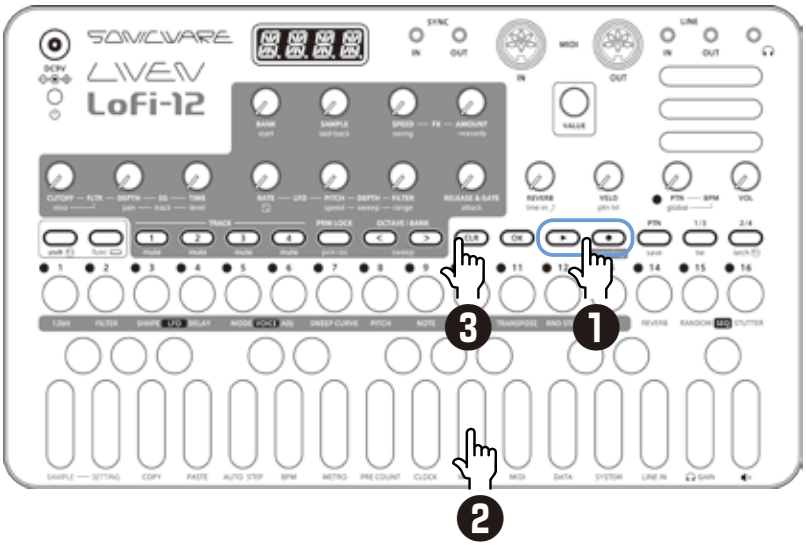
Creating sequences – Real-time recording

Sequences can be created in real time while playing the keyboard.

Basic operations

1 After pressing ●, press ▶.

2 The pattern will start playing, so play the keyboard when you want to input notes.



Clearing notes

3 Press CLR at the time when you want to clear notes. Notes will be cleared while this is being pressed.

- By pressing func + tie to enable the input of tied-notes, long notes that span steps can be input.

Creating sequences – Real-time recording

Setting the metronome

1 Press func + METRO to select MTRO.

2 Use VALUE to adjust the metronome volume.

VALUE

Metronome
0 – 15

Setting a pre-count

1 Press func + METRO to select PR.CT.

2 Use VALUE to change the pre-count.

VALUE

Metronome
OFF, 1 – 8

- When a pre-count is set, recording and playback will start after the pre-count.

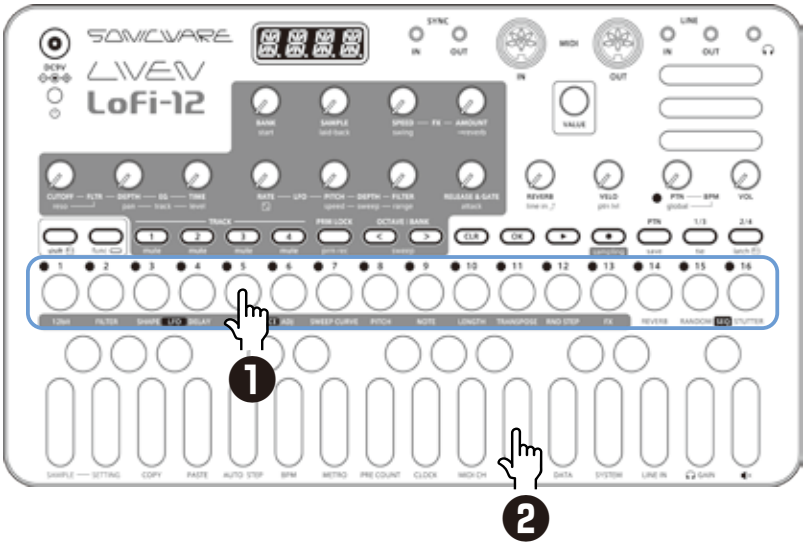
Creating sequences – Direct recording

With direct recording, notes can be input on steps directly when both stopped and playing back.
This is particularly suitable for building up sequences while performing by directly inputting notes during playback.

Basic operations

1 Press and hold 1 – 16 for the position where you want to input a note

2 Play a note on the keyboard to input it at the step.
Notes can also be input if procedures 1 and 2 are done in reverse order.



- By pressing 1/3 and 2/4 before procedure 1, pages with steps 17 and higher can be selected.

  To select steps 1–16, press the 1/3 button.

  To select steps 17–32, press the 2/4 button.

  To select steps 33–48, press the 1/3 button twice.

  To select steps 49–64, press the 2/4 button twice.

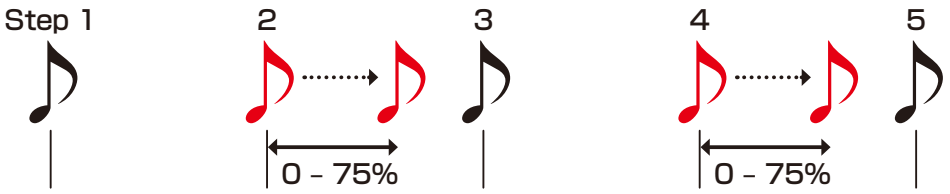
- During playback, pressing 1/3 or 2/4 will lock the page shown. Press OK to unlock the page.

Creating sequences – Groove settings

The Lofi-12 includes a swing function for creating offset rhythms and a laid-back function for delaying the timing of sample sounds.

Setting the swing

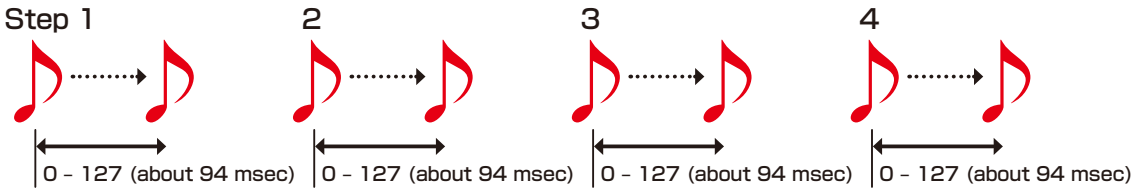
1 Turn shift + swing to adjust it.
Every even step (2nd, 4th, 6th, etc.) will be delayed.



This setting can be made separately for each track.

Setting the laid-back function

1 Turn shift + laid-back to adjust it.
This delays the timings of entire samples for the selected track.



- The timings of sounds can be changed independently for each step using the parameter locking function.
  The sound locking function can be used to create a drum track that has multiple samples on a single track, and these functions can be used to freely set the timing of bass drum and snare sounds, for example.

Parameter locking

The Lofi-12 has a **parameter locking** function that can record knob operations to steps.
This allows sounds to be changed over time and is useful for creating patterns with great expressiveness.
Parameter locking data can be input in the following three ways.

Direct input

Turn knobs while pressing 1 – 16 in this fundamental method of direct input.

Real-time input

Record the operation of knobs during playback in real-time in this method.

Sound locking input

When recording notes to steps by pressing keys on the keyboard, the state of the sound currently playing is simultaneously recorded to the step as parameter lock data in this input method.

Basic parameter locking operations

Turning parameter locking on

1 Press PRM LOCK.
Pressing PRM LOCK cycles through the following states.

PRM LOCK	Parameter locking off	Parameters do not change automatically
PRM LOCK	Parameter locking on	Parameters change automatically based on parameter lock data
PRM LOCK	Sound locking on	Sound lock recording enabled (→P.63)

Clearing parameter lock data

1 Press CLR + PRM LOCK.
This clears parameter lock data.

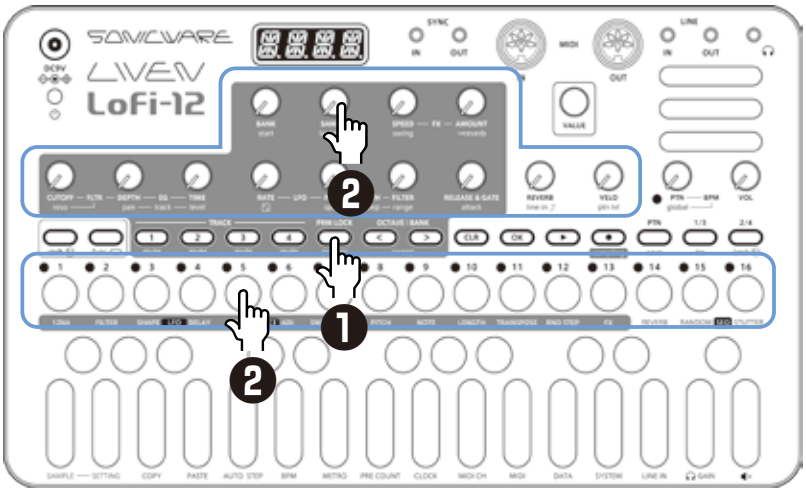
Parameter locking – Direct input

Turning parameter locking on

1 Press PRM LOCK (lights green).

Recording knob operations

2 While pressing 1 – 16, turn knobs.



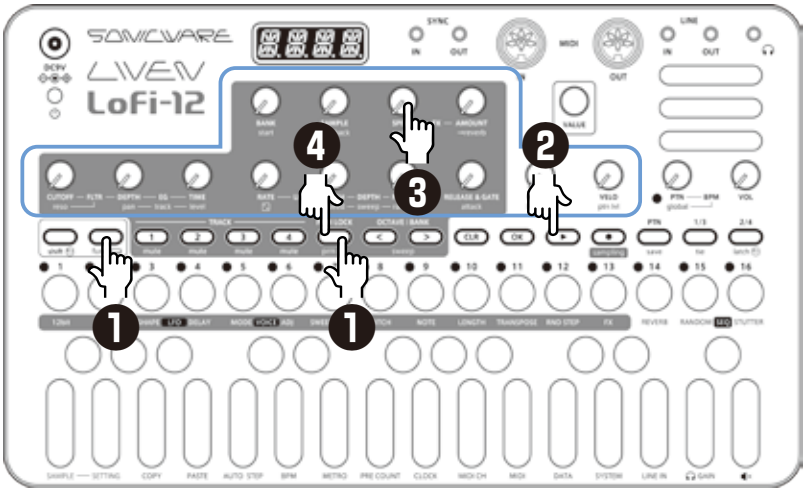
- By pressing 1/3 and 2/4 before procedure 2, pages with steps 17 and higher can be selected.

- Parameter locking cannot be used on REVERB, line in ↑, ptn level, PTN BPM, global BPM and VOL.

Parameter locking – Real-time input

Inputting in real time (parameter recording)

1. Press func + prm rec (lights red).
2. Press ▶ to play the pattern.
3. Turn knobs and record the changes.
4. Press PRM LOCK, making it light green, to end real-time input.



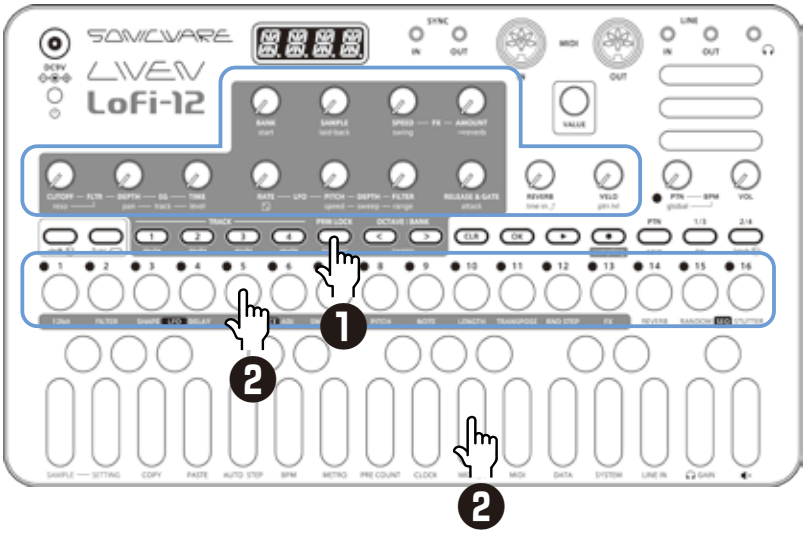
Parameter locking – Sound locking input

Turning sound locking on

1 Press PRM LOCK twice (lights orange).

Recording note input and parameter lock data at the same time

2 While pressing 1 – 16, play the keyboard.



- In procedure 2, direct recording is used for note input. The sound locking function can also be used with step recording and real-time recording in the same manner.

- The parameter lock data that is recorded using the sound locking function includes BANK, SAMPLE, start, RELEASE & GATE and attack.

Sequence effects

The Lofi-12 has sequence effect functions, including **Dice** that sets the probability of notes sounding, **Random** that can randomize phrases, and **Stutter** that repeats playback of pressed steps.

Random

1 Press func + RANDOM SEQ .
When this is on, a randomized sequence will be played back
Press func + RANDOM SEQ again to turn the random function off.

Random settings

The smallest unit used for randomization during random playback can be set (for example, 1 step or 4 steps).

1 Press func + RND STEP , and use VALUE to adjust.

Random step unit
OFF, 1, 2, 4, 8, 16 (steps)
If set to OFF, randomization will not occur even if the random playback function is on.

The random on/off setting is saved with the pattern, but random unit settings can be saved per track.

Dice

1 Turn shift + .
The probability of a note sounding can be set from 25 – 100% .

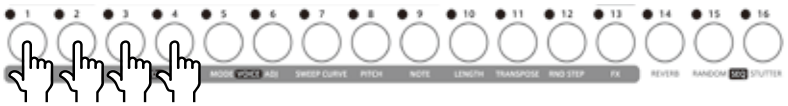
- The probability of notes sounding can be set independently for each step using the parameter locking function.

Sequence effects

Stutter

1 Press func + STUTTER SEQ .
Turning this on enables stutter mode.

2 Press 1 – 16 .
Only the pressed steps will be played.



Press func + STUTTER SEQ again to turn stutter mode off.

Deleting sequences

Clearing steps

1 Press CLR + 1 ～ 16 .
The note and parameter lock data from that step will be cleared.

- While pressing CLR , steps that have parameter lock data blink red.
- When recording notes (REC button lit red), only note data will be cleared.
- When parameter recording (PRM LOCK lit red), only parameter lock data will be cleared.
- Normally, when ● and prm rec buttons are lit red, both note and parameter data will be cleared.

Clearing all note data in a sequence

1 Press CLR + 1 TRACK 2 3 4 for the track with the sequence to be cleared.

2 Use VALUE to select NOTE,
and press OK .
This clears all notes on all steps of the sequence.

Restoring only track sounds to the last saved state

1 Press CLR + 1 TRACK 2 3 4 for the track with the sound to be restored.

2 Turn VALUE to select SND, and press OK .

Copying tracks

1 Press 1 TRACK 2 3 4 to select the track of the pattern to be copied.

2 Press func + COPY .

3 Press 1 TRACK 2 3 4 to select the track for the pattern to be pasted.

4 Press func + PASTE .

Pattern saving

Sequences created on every track can be saved as patterns.

Saving patterns

1 Press func + save .

2 Press OK .
DONE will appear, and it will be saved.

Changing the save destination or **copying the pattern**

1 Press func + save .

2 Use OCTAVE / BANK to select the save destination bank.

3 1 – 16 to select the save destination pattern.
DONE will appear, and it will be saved.

- In procedure 2, VALUE can also be used to select the save destination (execute with OK).
- Press CLR during a procedure to cancel it.

Initializing patterns

1 Select the pattern to be initialized.
(→ P.15)

2 Press CLR + PTN .
CLR will be shown, and pattern settings along with note and parameter lock data will all be cleared.

3 Save the pattern.

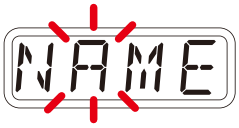
Pattern renaming

Renaming patterns

1 Press func + DATA multiple times to select P.N.ED (**p**attern **n**ame **ed**iting).

2 Use VALUE to select the pattern for renaming, and press OK .

3 Use < and > to move the cursor left and right, and turn VALUE to select characters.



Cursor position blinks

4 Press OK .
This saves the name and returns to pattern selection.
To rename other patterns, repeat from procedure 2.
To end renaming, press CLR .

Tempo overview

The Lofi-12 has two BPM modes.

Pattern BPM mode

Whenever a different pattern is selected, the BPM is reset using the tempo saved in that pattern.

Global BPM mode

The current global BPM value will continue to be used even when a different pattern is selected.

Select global BPM mode to maintain a consistent tempo during the jam session. Use pattern BPM mode when you want the tempo to change with each pattern.

Setting the BPM mode

1 Press func + BPM .

2 Use VALUE to select the BPM mode.

BPM	
BPM mode	
PTN	Pattern BPM mode
GLBL	Global BPM mode

Setting the pattern BPM

1 Turn PTN — BPM .

Pattern BPM
40 – 250
When the tempo is shown on the display, VALUE can be turned to change it in 0.1-beat increments.

Tempo overview

Setting the global BPM

1 Press shift + global — BPM.

Global BPM
40 – 250
When the tempo is shown on the display, VALUE can be turned to change it in 0.1-beat increments.

Clock synchronization with external devices — Clock settings

Overview

The Lofi-12 has the following synchronization capabilities.

SYNC

Use the SYNC IN/OUT jacks to connect and synchronize with devices that support SYNC (including the Korg Volca series).

MIDI

Use the MIDI IN/OUT jacks to connect and synchronize with devices that support MIDI.

Audio Sync

Use the LINE IN and headphone jacks to connect and synchronize with devices that support Audio Sync (including the Teenage Engineering Pocket Operator series).
When using Audio Sync, the audio exchanged will be mono.

The Lofi-12 can act as a clock master or receive clock from an external device.

Clock synchronization with external devices — Clock settings

Setting the clock source

When set to INT (internal), the Lofi-12 acts as a clock master.
When not set to INT, the external device will be treated as the clock master.

1 Press func + CLOCK to select SRC.

2 Turn VALUE to set the clock source.

Clock Source	
INT	Use internal clock of LIVEN Lofi-12
MIDI	Use clock from MIDI IN
SYNC	Use clock from SYNC IN
LNIN	Use clock from LINE IN

Setting Audio Sync output

Audio Sync output uses the headphone jack.
For this purpose, make the following setting to use Audio Sync output.

1 Press func + CLOCK and select A.OUT.

2 Turn VALUE to select ON.

- The sync signal will be output from the left channel and a mono mix of the audio will be output from the right channel of the headphone jack.

Clock synchronization with external devices — Clock settings

Setting SYNC IN polarity

1 Press func + CLOCK and select S.I.PO.

2 Turn VALUE to set the polarity.

VALUE

Polarity - Sync In	
FALL	Synchronize with falling of sync signal
RISE	Synchronize with rising of sync signal

Setting SYNC OUT polarity

1 Press func + CLOCK and select S.O.PO.

2 Turn VALUE to set the polarity.

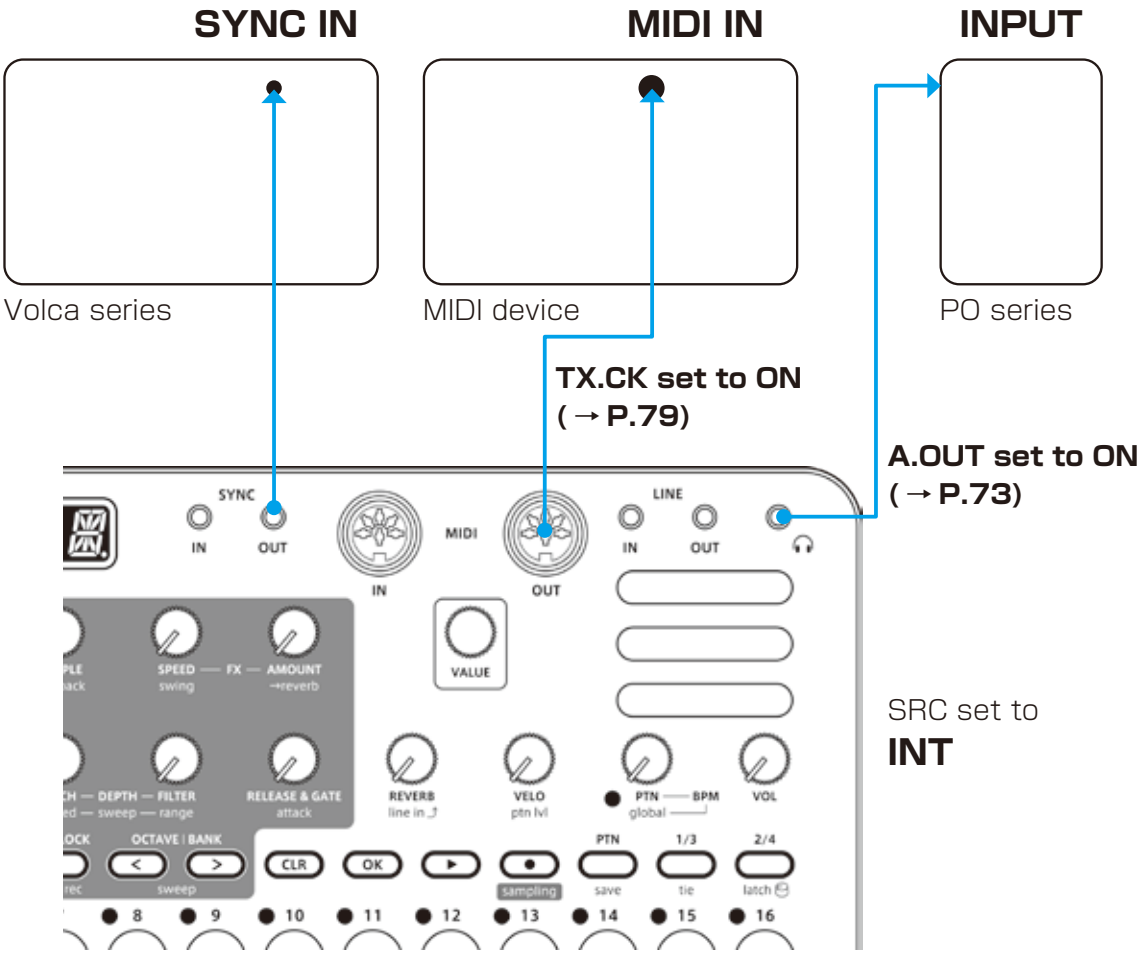
VALUE

Polarity - Sync In	
FALL	Synchronize with falling of sync signal
RISE	Synchronize with rising of sync signal

• See P. 78 for details about setting MIDI clock.

Clock synchronization with external devices — Connection examples

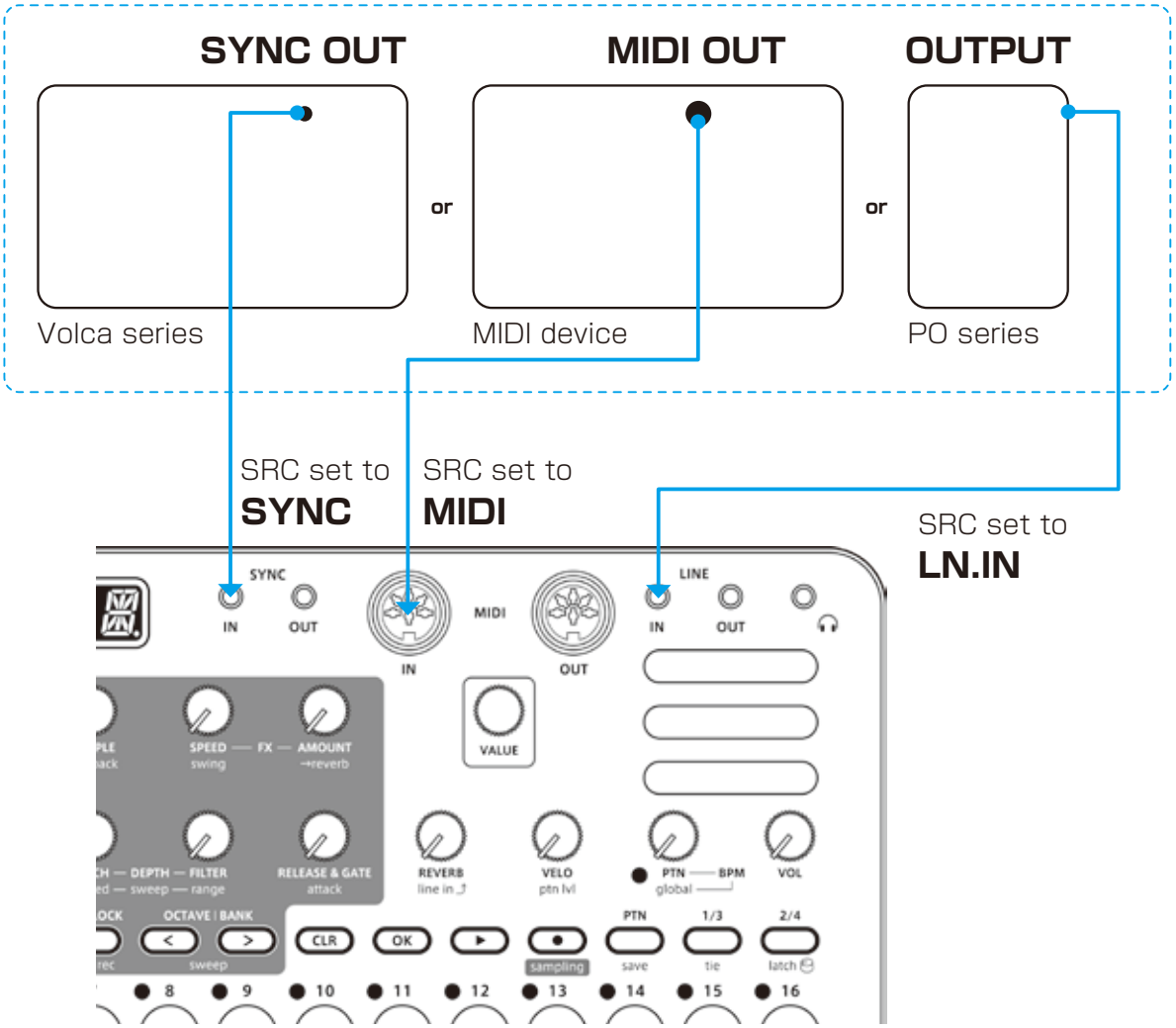
Lofi-12 as clock master



Clock synchronization with external devices — Connection examples

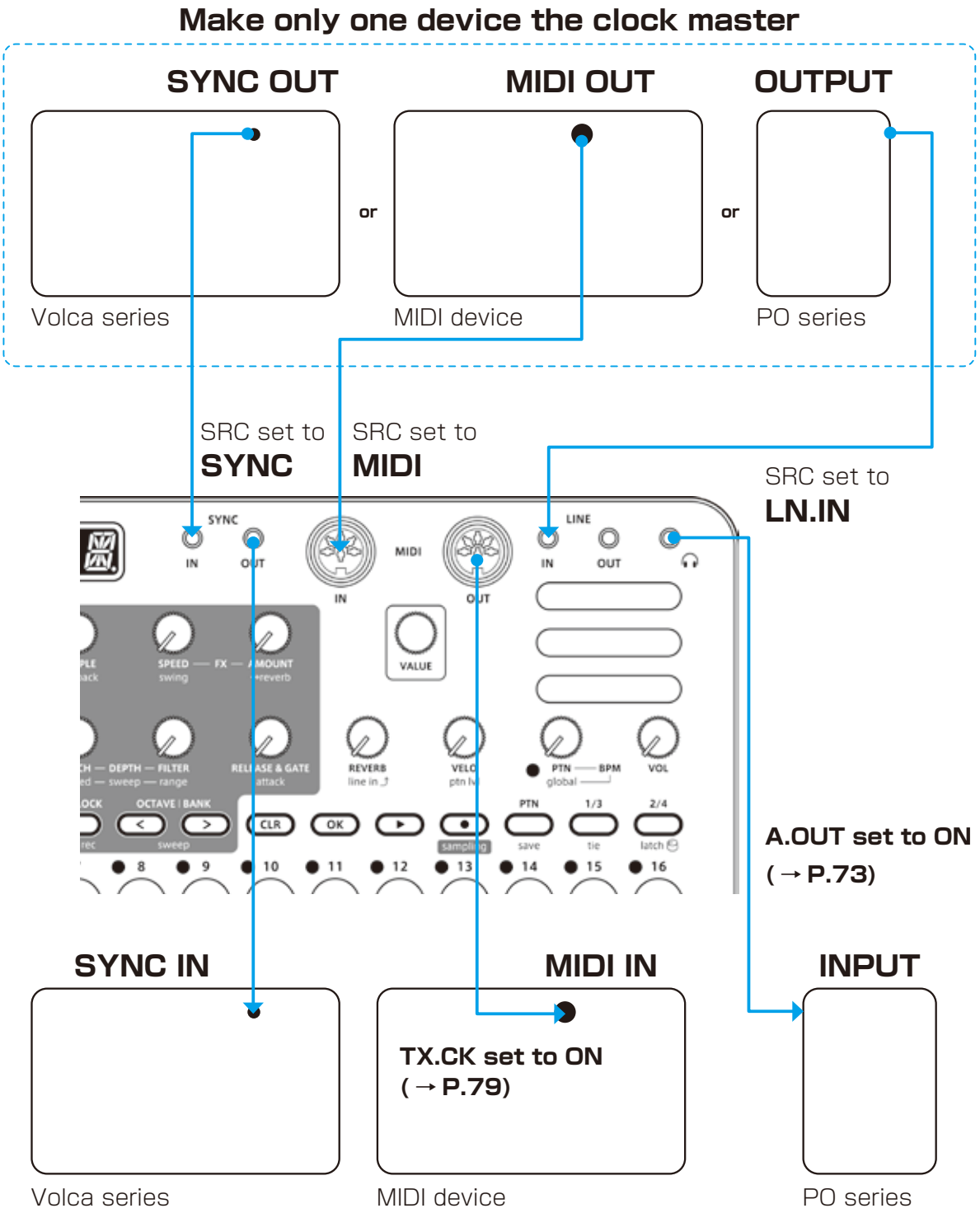
External device as clock master

Make only one device the clock master



Clock synchronization with external devices — Connection examples

Bridging clock signals to a different connector from an external device acting as the clock master

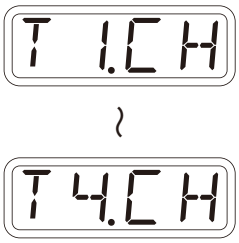


Using the bridging function, it is possible to synchronize devices with different connectors. For example, a Pocket Operator acting as a clock master can be used to synchronize a Volca or MIDI device connected to the Lofi-12.

MIDI

Setting channels for transmitting and receiving MIDI

1 Press func + MIDI CH, and select the track for which you want to set the MIDI channel.



2 Turn VALUE to set the channel.

VALUE

MIDI Channel
OFF, CH.01 – CH.16

Setting the MIDI channel for pattern parameters

1 Press func + MIDI CH and select PT.CH.

2 Turn VALUE to set the channel.

VALUE

MIDI Channel
OFF, CH.01 – CH.16

Setting the MIDI channel for accessing the selected track (automatic channel)

1 Press func + MIDI CH and select AT.CH.

2 Turn VALUE to set the channel.

VALUE

MIDI Channel
OFF, CH.01 – CH.16

MIDI

Setting the MIDI channel used to output keyboard playing

1 Press func + MIDI CH and select O.CH.

2 Turn VALUE to set it.

VALUE

MIDI Channel
TRCK (track), AUTO

Turning control change transmission on/off

1 Press func + MIDI and select TX.CC.

2 Turn VALUE to set it to on/off.

VALUE

Control Change
ON, OFF

- Control change reception is always enabled.

Turning MIDI clock output on/off

1 Press func + MIDI and select TX.CK.

2 Turn VALUE to set it to on/off.

VALUE

MIDI Clock
ON, OFF

MIDI

Setting MIDI OUT

1 Press func + MIDI and select M.OUT.

2 Turn VALUE to set MIDI OUT.

VALUE

MIDI OUT
OUT, THRU

Setting MIDI command transmitting and receiving

1 Press func + MIDI and select M.CMD.

2 Turn VALUE to set MIDI command transmitting and receiving.

VALUE

MIDI Commands	
OFF	Neither transmit nor receive
Rx	Only receive
Tx	Only transmit
Rx.Tx	Transmit and receive

Turning active sensing transmission on/off

1 Press func + MIDI and select TX.AS.

2 Turn VALUE to set it to on/off.

VALUE

Active Sensing - Transmit
ON, OFF

MIDI

Turning on/off active sensing reception

1 Press func + MIDI and select RX.AS.

2 Turn VALUE to set it to on/off.

VALUE

Active Sensing - Receive
ON, OFF

Setting the channel for transmitting and receiving program changes

1 Press func + MIDI CH and select PC.CH.

2 Turn VALUE to set the program change channel.

VALUE

Program Change - Channel
AUTO, CH.01 - CH.16

Turning on/off program change transmission

1 Press func + MIDI and select TX.PC.

2 Turn VALUE to set it to on/off.

VALUE

Program Change - Transmit
ON, OFF

Turning on/off program change reception

1 Press func + MIDI and select RX.PC.

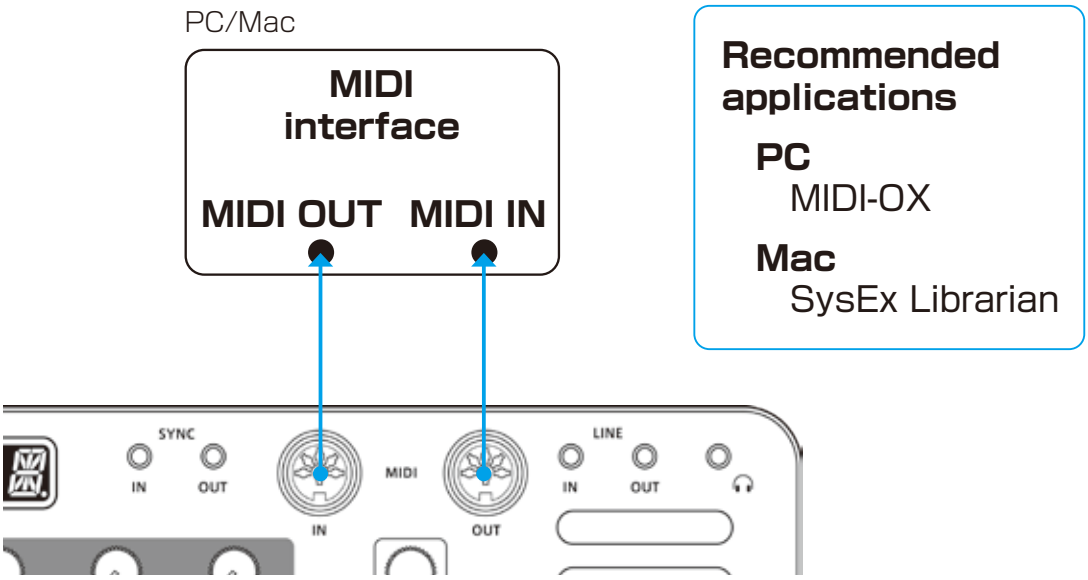
2 Turn VALUE to set it to on/off.

VALUE

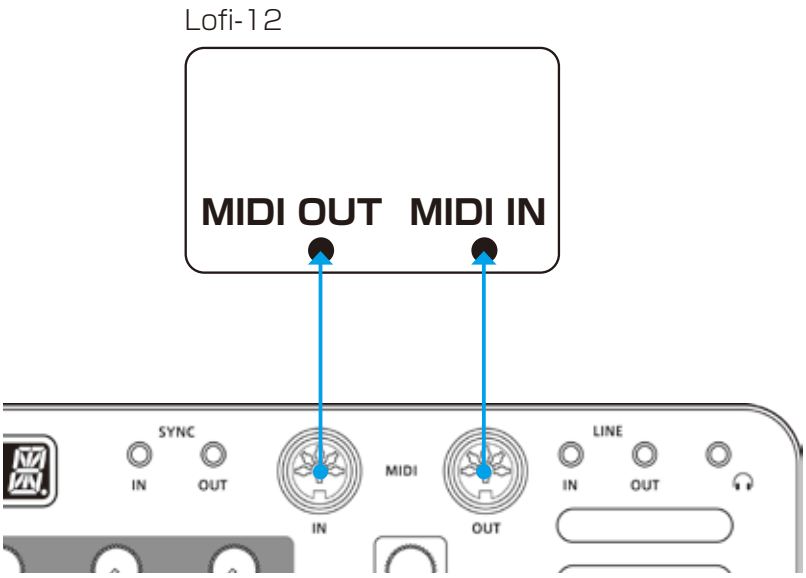
Program Change - Receive
ON, OFF

Exporting/importing user data

Connecting
– Exporting/importing to/from a PC/Mac



Connecting
– Exporting/importing to/from another Lofi-12



Exporting/importing user data

Exporting a single pattern

1 Select the pattern you want to export. (→P.15)

2 Press func + DATA and select P.EXP.

3 Set your PC to receive MIDI data.

4 Press OK .

- Press CLR to cancel.

Importing a single pattern

1 Put the unit into regular mode, and start transmitting data from the transmitting device.

- The received pattern will not be saved automatically. Save the pattern as necessary. (→P.68)

Exporting/importing user data

Backing up all user data at once

1 Press 4 + **the POWER switch** to turn on the Lofi-12.

2 Turn VALUE to select EXPT.

3 Press OK .

- The step LEDs show the progress. (They light from 1 in order. Transmission is complete when 1 – 16 have all lit.)
- Press CLR to cancel.
- The size of the backup data is 69,908 messages - 16.7MB.
- If the size of the data is different, the backup might have failed. If this occurs, before step ③ , while pressing shift , turn VALUE to increase the transmission interval. (The default value is 0.)

Exporting/importing user data

Restoring (importing) user data

1 Press 4 + **the POWER switch** to turn on the Lofi-12.

2 Turn VALUE to select IMPT.

3 Press OK. This makes the unit ready to receive data.
Start exporting from the sending device.

4 When SAVE appears on the display after receiving completes, press OK to restore (load) the received data.

- The step LEDs show the progress. (They light from 1 in order. Transmission is complete when 1 – 16 have all lit.)

- Press CLR to cancel.

System settings

Setting the battery type

1 Press func + SYSTEM to select BATT.

2 Turn VALUE to select the battery type.

VALUE

Battery	
ALKL	Alkaline dry cell
NIMH	Nickel-metal hydride rechargeable
LTHM	Lithium dry cell

- Please set this correctly because it effects operation time.
- The remaining charge shown could be higher than the actual amount depending on the type of rechargeable battery.

Setting the automatic power down function

1 Press func + SYSTEM and select A.PWR.

2 Turn VALUE to select the automatic power down time.

VALUE

Automatic power down time	
OFF	Automatic power down is disabled.
0.5H	Power will turn off automatically after 30 minutes without operation.
1H	Power will turn off automatically after 1 hour without operation.
3H	Power will turn off automatically after 3 hours without operation.
6H	Power will turn off automatically after 6 hours without operation.

System settings

Setting the headphone gain

1 Press func + GAIN .

Headphone Gain	
LOUD	Louder output
NORM	Factory default
SOFT	Quieter output

Setting the master tuning

1 Press func + SYSTEM to select TUNE.

2 Turn VALUE to set the master tuning.

Master Tuning
– 75 – 0 – +75 (cents)

System settings

Setting knob movement behavior

1 Press func + latch to set whether or not latching is used for knob operation.

Latching		
latch	Jump	When a knob is moved, the parameter changes immediately.
latch	Latch	The knob does not affect the parameter value until its position reaches that value. Then, the value follows the knob.

- When set to Latch, the dots on the display will be animated to show how much the knob position and parameter value differs to the left or right.
  The dots will appear to flow to the left when the parameter value is lower than the knob position and to the right when the value is higher than the position. The flow will be faster for higher values.

System settings

Restoring to factory default settings (factory reset)

1 Press and hold 3 + **the POWER switch** to turn on the Lofi-12.

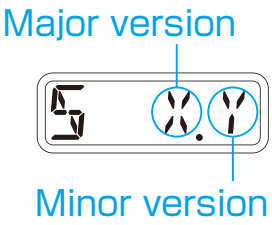
2 Press OK.
The step LEDs will show the progress.
When finished, OK will appear on the display.

- Press CLR to cancel.
- This will not restore sample waveform data to the factory default. To restore the sample waveform data, download it from the SONICWARE website and import it.

Checking the system versions

1 Press and hold 2 + **the POWER switch** to turn on the Lofi-12.

2 Press 1/3, 2/4 and PTN to check the versions.



Firmware Versions		
1/3	S x.y	System version
2/4	B x.y	Boot version
PTN	P x.y	Preset version

- Press the same 1/3, 2/4 or PTN again to show the build number.

System settings

Updating the firmware

1 Press and hold shift + **the POWER switch** to turn on the Lofi-12.

2 Transmit the firmware (Sys Ex data) from a PC/Mac.

- The step LEDs show the progress of data transmission. (They light from 1 in order. Transmission is complete when 1 – 16 have all lit.)

3 After transmission completes, press OK to execute the update.

- If the update occurred properly, OK will be shown. (If a problem occurred, an error code will be shown.)

4 Restart the unit.

- Use new batteries or an AC adapter.
- Never interrupt the power during a firmware update.
- Press CLR to cancel the update and start up normally.

System settings

Error codes

ER.10	System error
ER.11	Low battery
ER.20	Data receiving error
ER.21	Invalid data
ER.22	No need to update (Boot)
ER.30	Update Failed

Appendix

Figure1. Sound architecture