blipblox SK2

Owner's Guide

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INTRODUCTION

It's time to make some beats! Congratulations on your new Blipblox SK2 synthesizer. We are confident this device will provide years of fun for everyone in your home and demonstrate how easy it is to explore electronic music production.

The Blipblox SK2 is designed to be fun right out of the box. We encourage you to simply turn it on and start exploring the musical functions. The Blipblox was designed to quickly change the melodies and sounds so you can find the perfect groove to explore. The two best buttons for changing the Blipblox songs include the SEQ button and the RANDOMIZE button. Every time you press the SEQ button, a new melody and beat are randomly selected. With the RANDOMIZE button, all the synthesizer parameters are changed to produce a fresh sound.

The Blipblox has all the features of a real electronic instrument, providing countless opportunities to learn how synthesis works. We hope that through a combination of experimental play and browsing this manual, Blipblox maestros will learn exactly how synthesizers generate sound.   By investing just a little bit of time into understanding the details of the Blipblox, you will have greater control over your sound, and be well on your way to becoming a real music producer!

The Playtime Engineering team sincerely hopes you enjoy your new Blipblox. Feel free to contact us any time if you have any questions.

GETTING STARTED

Included in this package
- Blipblox SK2
- USB to 5.5 mm/2.1 mm 5 Volt DC Barrel Jack Power Cable
- Three (3) AA batteries

Compatible 3rd Party Components
- USB wall adapter
- MIDI cord
- External MIDI keyboard, sequencer, drum machine, or computer

Getting the Blipblox SK2 ready to play

- Peel the protective plastic film from the faceplate.

- Install batteries. The battery compartment is on the underside of the SK2. Use a Phillips screwdriver to open the battery cover. Place batteries in the order indicated below.
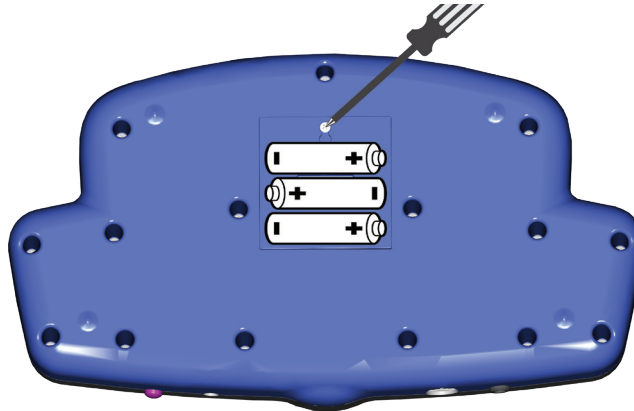
Warnings: ❶ Do not mix different types of batteries, or new and used batteries. **❷**Non-rechargeable batteries are not to be recharged. **❸**Rechargeable batteries are to be removed from the toy before being charged. **❹**Rechargeable batteries are only to be charged under adult supervision. **❺**Batteries are to be inserted with the correct polarity. **❻**Exhausted batteries are to be removed from the toy. **❼**The supply terminals are not to be short-circuited.

- As an alternative to batteries you can use the USB-DC adapter. Plug the round side of the adapter in the back of the SK2 where you see "DC5V" and the other side into any USB adapter.

- Batteries do not need to be removed to use power adapter, but adapter will not charge batteries.

- Press the purple button on the back of the unit to turn on.

- Battery levels. As soon as the unit is turned on, the LED on the upper left side will indicate if your batteries are low or dead.

  LED flashes yellow - batteries are running low, or you are using low-voltage rechargeable batteries. The SK2 will operate at slightly lower volume to conserve power.

  LED flashes red - there is not enough power left in the batteries for the SK2 to operate. Replace batteries or connect USB power cable.
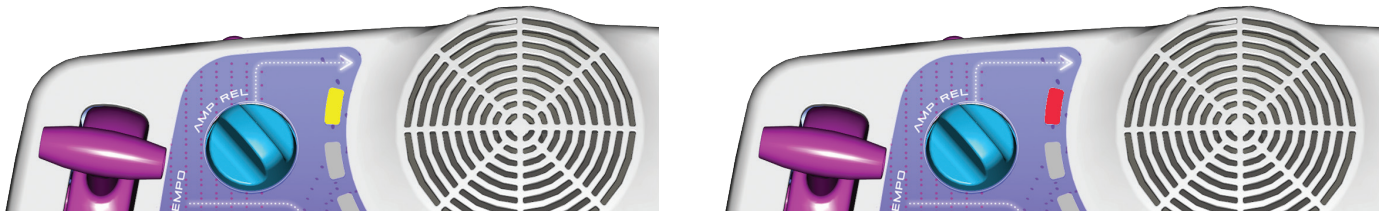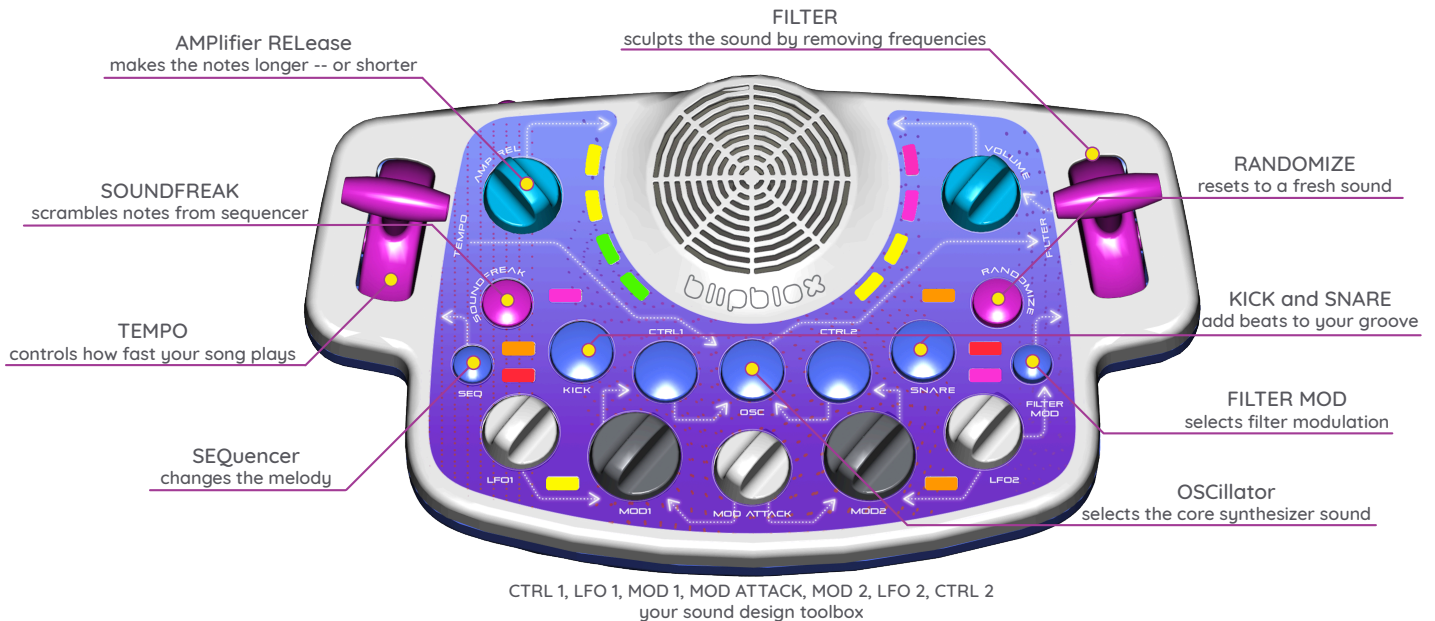
- Auto-shutdown. If no buttons are pushed, or no MIDI data is received for 30 minutes, the SK2 will automatically shut down to save power. Use the power switch to turn the SK2 off then on again to restart. This can be disabled using the instructions on page 11.

BASICS OF SYNTHESIZER PLAY

The SK2 was designed to be used right out of the box, without any prior knowledge of synthesizers. But knowing a few key controls will help you get started with making interesting sounds.

The most important of these is the SEQ which stands for sequencer. A sequencer creates the notes or melodies and is the best place for you to start. Click the SEQ button until you find a melody you like. The SK2 will continue to play the melody until you click it again. You may also notice that every other melody includes a drum beat.

Once you have your melody selected, you are ready to start sculpting your first sounds using the other controls outlined below.

AMPlifier RELease
makes the notes longer -- or shorter

FILTER
sculpts the sound by removing frequencies

SOUNDFREAK
scrambles notes from sequencer

RANDOMIZE
resets to a fresh sound

TEMPO
controls how fast your song plays

KICK and SNARE
add beats to your groove

SEQuencer
changes the melody

FILTER MOD
selects filter modulation

OSCillator
selects the core synthesizer sound

CTRL 1, LFO 1, MOD 1, MOD ATTACK, MOD 2, LFO 2, CTRL 2
your sound design toolbox

CONTROL CENTER


(1) TEMPO lever changes the speed of the music.

(2) AMPlifier RELease knob changes the duration of a sound after the musical note has ended. Clockwise turn increases the duration of the sound. Counter-clockwise turn decreases the duration.

(3) VOLUME knob makes the sound louder or quieter.

(4) FILTER lever controls the cutoff frequency of the filter. Any sound frequencies that are higher, lower, or away from the cutoff frequency are removed, depending on the selected filter type.

(5) SEQuencer button selects the melody. Every other melody includes drums. The selected melody will continue to play until the SEQ button is pressed again.

(6) SOUNDFREAK button adds a crazy random effect to the musical notes.

(7)   KICK button plays a kick drum (and sometimes something fun and unexpected).

(8)   CTRL 1 button selects the input for the oscillator's first modulation. Each press cycles through: Modulation Envelope, LFO 1, LFO 2, and Knob Only modulation.

↓ Press and hold CTRL 1 button while adjusting FILTER lever to change the amount of delay effect.

(9)   OSCillator button selects the sound wave from 16 available oscillator types.

(10) CTRL 2 button selects the input for the oscillator's second modulation. Each press cycles through: Modulation Envelope, LFO 1, LFO 2, and Knob Only modulation.

↓ Press and hold CTRL 2 button while adjusting FILTER lever to change the amount of filter resonance.

(11) SNARE button plays a snare drum (and sometimes something fun and unexpected).

(12) RANDOMIZE button randomizes all the parameters that make the synthesizer sound except sequencer and drums.

↓ Press and hold RANDOMIZE button to return to the previous parameters.

(13) FILTER MOD button selects the modulation input for the filter. Each press cycles through: Modulation Envelope, LFO 1, LFO 2, and Lever Only modulation.

↓ Press and hold FILTER MOD button to toggle between the three filter types: low-pass, band-pass, high-pass.

(14) LFO 1 knob changes the speed of Low Frequency Oscillator number 1.

(15) MOD 1 knob controls how much modulation is applied to the oscillator's first modulation input.

(16) MOD ATTACK knob controls how quickly the Modulation Envelope ramps up. Clockwise turn ramps up the envelope slowly. Counter-clockwise turn ramps up the envelope quickly.

(17) MOD 2 knob controls how much modulation is applied to the oscillator's second modulation input.

(18) LFO 2 knob changes the speed of Low Frequency Oscillator number 2.

SYNTHESIS SIGNAL FLOW

Synthesizers make music by converting musical notes into synthesized sound. The route those electrical signals take is called signal flow. The SK2 signal flow is illustrated below:
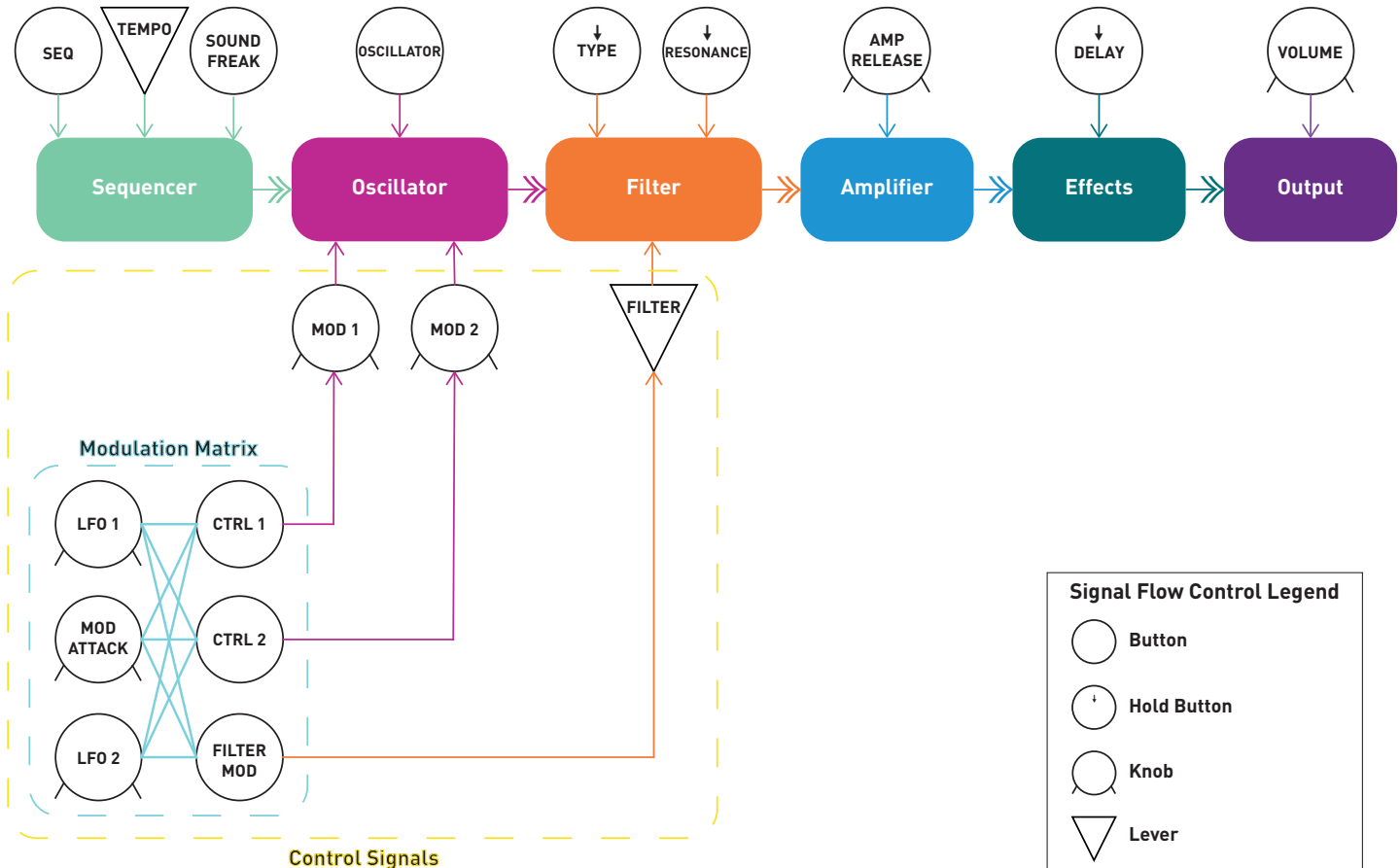
The sections below describe how each of the main building blocks of synthesis work together to complete the signal flow. To learn more about individual controls, special features and settings, refer to those chapters of this Manual.

SEQUENCER

The SK2 has hundreds of built-in melodies. Pressing the SEQ button randomly selects a new melody. Each time you press SEQ, the automatic drum machine turns on or off. The big purple TEMPO Lever on the left controls the speed of the melody. Pushing the lever forward increases the speed, pulling it closer to you decreases.

OSCILLATOR

The SK2 has 16 oscillator types. Pressing the OSCILLATOR button cycles between the types.

Each oscillator type accepts two modulation inputs, which we cover in more detail in the "Modulation Matrix" section below. The CTRL 1 and CTRL 2 buttons select which modulation source will be used, and the MOD 1 and MOD 2 knobs control how much of the selected modulation is applied to the oscillator. Clockwise turn increases the modulation and counter-clockwise decreases.

Each oscillator type uses the two modulation inputs to control different synthesis functions. These functions include pulse width modulation, detune, frequency modulation, hard sync, wavetable scan, wavetable morph and more.

After pressing the CTRL 1 button, the LED Display will show whether MOD ATTACK, LFO 1, LFO 2 or MOD 1 is the selected modulation source. After pressing the CTRL 2 button, the LED Display will show whether MOD ATTACK, LFO 1, LFO 2 or MOD 2 is the selected modulation source.

FILTER

A filter shapes the tone of the sound by removing certain frequencies generated from the oscillator.

The modulation source for the SK2 filter is selected by pressing the FILTER MOD button. The LED Display will show whether MOD ATTACK, LFO 1, LFO 2 or FILTER lever-only is the selected modulation source.

The SK2 has three filter types: high-pass, low-pass and band-pass. You can switch between these types by holding down the FILTER MOD button. Notice the red LEDs on the right animate to show the new filter type.

> High-pass filter type is selected: In this mode the filter will remove all sounds *below* the cutoff frequency. This means that as you increase the cutoff frequency, you will hear less and less of the low frequency portion of the sound.

> Low-pass filter type is selected: In this mode the filter will remove all sounds *above* the cutoff frequency. This means that as you reduce the cutoff frequency, you will hear less and less of the high frequency portion of the sound.

Band-pass filter type is selected: Band-pass is a combination low-pass and high-pass. It only allows a narrow range of sound to go through the filter. At low cutoff frequencies, it allows a narrow band of low frequency sound to be heard. As you increase the cutoff frequency, you hear a higher and higher pitch band of sound coming through.

The filter also has a resonance control. Resonance boosts the sound at the cutoff frequency. This adds an interesting "squeaky" character to the sound. Adjust the resonance by holding down CTRL 2 button to activate RESONANCE. You can now use the FILTER lever to adjust the resonance. Resonance can be applied to any of the three filter types.

MODULATION MATRIX

The Modulation Matrix controls which of the three Modulation Sources are applied to the three modulation destinations.

These modulations are also referred to as Control Signals. Let's explain the difference between a Control Signal and an Audio signal. Audio signals are waves, but they are cycling very fast so we only hear them as tones, or pitch. Control signals cycle more slowly, so we can actually hear them move up and down when they are applied to a modulation destination.

The SK2 has three modulation sources, two Low Frequency Oscillators (or LFOs) and one Modulation Envelope. When applied to a modulation destination, an LFO creates a repeating "wah-wah-wah-wah" type of sound. An envelope makes a single wave each time a new musical note is played. Each note will generate a single "weee-oww" type of wave from the envelope.

Using the LFO 1 and LFO 2 knobs, the speed of the LFOs can be controlled.

Using the center MOD ATTACK knob, the speed of the attack can be controlled. With the attack time reduced (turning MOD ATTACK counter-clockwise), the Mod Envelope will make a fast "we-oww" sound to the destination it is applied to. When the attack time is increased (turning MOD ATTACK clockwise), the Mod Envelope will make a slower "weeeeeeeeee-oww" sound.

By pressing the CTRL 1 and CTRL 2 buttons, the Modulation Sources to the Oscillator are selected. Each press moves from Mod Envelope, to LFO 1, to LFO 2 to No Modulation When No Modulation is selected, only the static value of the MOD 1 and MOD 2 knobs are used to modulate.

The FILTER MOD button selects the modulation source for the Filter in the same way.

Notice each time the CTRL 1, CTRL 2 or FILTER MOD buttons are pressed, the LEDs animate to point to which modulation source was selected.

Note that a single modulation can be applied to multiple destinations. For example, LFO 1 can be applied to MOD 1, MOD 2 and FILTER MOD all at the same time.

AMPLIFIER

After the filter, the signal moves through the amplifier envelope. This envelope controls how long the sound stays on, or "releases" after a note ends. With the AMP RELEASE knob set to the minimum value (counter-clockwise), the sound ends instantly at the end of the musical note. If you increase the AMP RELEASE knob (clockwise), the sound lingers on and slowly decays at the end of the note.

EFFECTS

The SK2 includes a multi-tap stereo delay effect. This gives the sound a rich, spacey quality. The amount of delay can be controlled by holding down the CTRL 1 button. The LED display will direct you to the right of the unit, where you can use the FILTER lever to adjust the amount of delay in the sound.

OUTPUT

The VOLUME knob is the last stage in the synthesis engine, it controls the loudness of the sound.

CONTROL SETTINGS

Automatic Power Down On/Off - The SK2 automatically shuts down if untouched for 30 minutes. You can disable this feature for live performance or studio play.

STEP 1   ⊖ Turn off the SK2.

STEP 2   ↓ Hold RANDOMIZE and SNARE buttons.

STEP 3   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 4   ↻ Use the MOD 2 knob to turn auto power down on or off. Purple LED is on the left side: Auto-power down is ON. Purple LED is on the right: Auto-power down is OFF.

STEP 5   🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

Automatic Drum Machine On/Off - In normal default mode, the automatic drums toggle on and off each time SEQ is pressed. To keep automatic drums off all the time:

STEP 1   ⊖ Turn off the SK2.

STEP 2   ↓ Hold SEQ and OSCILLATOR buttons.

STEP 3   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 4   ↻ Use the MOD 2 knob to turn drum machine on or off. Blue LED is on the left side: Auto-drum machine is ON. Blue LED is on the right: Auto-drum machine is OFF.

STEP 5   🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

Kick Level Adjustment - The level of the kick drums are optimized for use with the SK2's built-in speaker. But if used with a larger, external amplifier or speaker, this kick drum level may be too loud or too soft. To adjust kick drum level:

STEP 1   ⊖ Turn off the SK2.

STEP 2   ↓ Hold SEQ and KICK buttons.

STEP 3   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 4   ↻ Use the MOD 2 knob to change kick level. Yellow LED appears on lower left = max kick level. Yellow

LED appears top left (default): Kick optimized for built-in speaker. Yellow LED appears on upper right: Kick level reduced for larger external speakers.

STEP 5   🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

LED Light Show Animation Settings

For those sensitive to flashing lights, there are four modes that reduce LED animations:

STEP 1   ⊖ Turn off the SK2.

STEP 2   ↓ Hold CTRL 1 and OSCILLATOR buttons.

STEP 3   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 4   ↻ Use the MOD 2 knob to select the desired mode (see page 17 for LED references):

      LED (8) green: Default light show animations.

      LED (7) green: LEDs lock into "Synth Parameter Mode" (see page 17 for instruction).

      LED (6) green: Static rainbow with no flashing.

      LED (5) green: All LEDs off during play, except one to indicate power on.

STEP 5   🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

Volume Limit - The maximum volume of the SK2 can be reduced. This affects the volume from both the speaker and the Audio Output jack.

STEP 1   ⊖ Turn off the SK2.

STEP 2   ↓ Hold OSCILLATOR and CTRL 2 buttons.

STEP 3   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 4   ↻ Use the MOD 2 knob to set maximum volume level. Red LED is on the left side: normal volume mode. Red LED is on the right: reduced volume mode.

STEP 5   🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

PLAY MODES

The SK2 has several features that can be activated during normal operation, live performance, or play.

SEQUENCER

The sequencer starts generating melodies as soon as the SK2 is turned on. The sequencer can also be turned off so notes can be played by MIDI.

Toggle Sequencer On/Off

↓ Press and hold the FILTER MOD button, then press SEQUENCER button.

DRUMS

The SK2 has KICK and SNARE buttons to manually play the drums. There is also an automatic drum machine that plays kick and snare drums along with the selected sequence. Every time the SEQ button is pressed, the drum machine starts or stops, and new drum sounds are randomized.

Toggle Automatic Drum Machine On/Off

↓ Hold down the KICK and the SNARE buttons at the same time while the unit is on and playing. Repeat to turn the drum machine back on.

Toggle Drum Solo Mode On/Off

You can also turn off the synthesizer sounds, leaving only a drum solo.

↓ Hold down the KICK button then press the SEQ button while the unit is on and playing. Repeat to turn the synth back on.

Drum Edit mode

The kick and snare samples can be manually adjusted by entering the Drum Edit mode.

↓ Hold down the SNARE button, then press RANDOMIZE while the unit is on and playing.

NOTE: If you want to hear just drums while in Drum Edit mode, enter Drum Solo mode first using instruction above.

Once in Drum Edit mode:

↻ MOD 1: Turn the knob to select the kick drum sample you wish to edit.

↻ LFO 1: Turn the knob to change the pitch of the kick drum.

↻ MOD 2: Turn the knob to select the snare drum sample for editing.

↻ LFO 2: Turn the knob to change the pitch of snare drum.

↓ Exit Drum Edit in the same way it is entered: Hold down KICK button and press RANDOMIZE.

Select Filter Type

↓ Press and hold the FILTER MOD button to toggle
between filter types.
  - Low-pass = Dark Blue LEDs cascade up right side
  - Band-pass = Aqua LEDs cascade up right side
  - High-pass = Green LEDs cascade up right side

Adjust Filter Resonance

↓ Press and hold the CTRL 2 button, then move FILTER
lever forward or back to change the amount of
resonance.

Adjust Multi-Tap Delay

↓ Press and hold the CTRL 1 button, then move FILTER
lever forward or back to change the amount of delay.

RANDOMIZING + FREAKING THE SOUND

As previously discussed, the SEQ button will randomize a new synthesizer melody. It will also randomize new drum sounds and randomize new automatic drum patterns. There are also two controls you can use to change up all parameters of the sound at one time.

Randomize button

Randomizes all the synthesizer parameters including:
- Oscillator type
- CTRL 1 modulation source
- CTRL 2 modulation source
- FILTER modulation source
- FILTER type
- FILTER resonance amount
- LFO1 waveform
- LFO2 waveform
- Delay effect amount

Soundfreak button

Scrambles all the notes from the sequencer, creating a chaotic cascade of craziness!

SYNTH PARAMETER MODE

Out of the box, the LEDs display a light show syncronized to the music. But by holding Kick and pressing Soundfreak, the LEDs enter a Synth Parameter Mode, where each LED displays a specific synthesizer parameter. This visual guide connects the sounds with the adjustment of the controls.

(1)   LFO 1 speed. This LED flashes to show the speed of LFO 1.

(2)   Sequencer Indicator. This LED flashes on each beat when the sequencer is running.

(3)   MIDI status. This LED flashes when valid MIDI note on is received. Blue indicates a synthesizer note, green indicates a drum note.

(4)   Delay effect amount. This LED indicates the amount of delay that is applied to the output. Blue is no delay, red is maximum delay.

(5)　MOD ENV. The brightness of this LED corresponds to the value of the modulation envelope.

(6)　AMP ENV. The brightness of this LED corresponds to the value of the amplifier envelope.

(7)　MOD 2. The brightness of this LED corresponds to the amount of modulation going into the oscillator's modulation 2 input

(8)　MOD 1. The brightness of this LED corresponds to the amount of modulation going into the oscillator's modulation 1 input.

(9) - (12)　OSC TYPE. These four LEDs indicate the selected oscillator type. There are 4 color groups, and each color group has 4 LEDs to indicate the selected oscillator type. You can note desired oscillators by color (blue, orange, red, or green) and LED number, 9-12.

(13)　Filter resonance amount. The LED indicates the amount of resonance that is applied to the filter. Blue is no resonance, red is maximum resonance.

(14)　Filter Type. This indicates the current filter type. Green = High-pass, Aqua = Band-pass, Dark Blue = Low-pass

(15)　Filter Modulation. The brightness of this LED corresponds to the amount of modulation going into the filter's modulation input.

(16)　LFO2 speed. This LED flashes to show the speed of LFO 2.

Modulation Source Animations - These indicate the selected modulation sources for the oscillator and filter.
CTRL 1
- LFO 1 is source: lights cascade down left side of the SK2 and illuminate red at (1).
- LFO 2 is source: lights cascade down right side of the SK2 and illuminate red at (16).
- Mod Attack is source: lights cascade down both sides of the speaker and illuminate red at (5) and (12).
- No modulation: lights cascade down left side of speaker only and illuminate red at (5).

CTRL 2
- LFO 1 is source: lights cascade down left side of the SK2 and illuminate red at (1).
- LFO 2 is source: lights cascade down right side of the SK2 and illuminate red at (16).
- Mod Attack is source: lights cascade down both sides of the speaker and illuminate red at (5) and (12).
- No modulation: lights cascade down right side of speaker only and illuminate red at (12).

FILTER MOD
- LFO 1 is source: lights cascade down left side of the SK2 and illuminate red at (1).
- LFO 2 is source: lights cascade down right side of the SK2 and illuminate red at (16).
- Mod Attack is source: lights cascade down both sides of the speaker and illuminate red at (5) and (12).
- No modulation: lights flow counter-clockwise around speaker and illuminate red at (13).

MIDI FUNCTIONS

MIDI Channel Setting
The SK2 features a MIDI-IN port. Synthesis notes default to MIDI channel 1. Drum sounds default to MIDI channel 2. The default settings can be adjusted to allow you to daisy-chain the SK2 with other MIDI devices. Drums are always set to the SK2's MIDI channel +1. Example: If MIDI channel is set to 5, then synthesizer will play on channel 5, drums will play on channel 6. If the synthesizer MIDI channel is 16, drums respond on channel 1.

> STEP 1 ⊖ Turn off the SK2.
>
> STEP 2 ↓ Hold CTRL 1 and CTRL 2 buttons.
>
> STEP 3 ⊕ While continuing to press the buttons down, turn the SK2 back on.
>
> STEP 4 ↻ Use the MOD 2 knob to set the MIDI channel. MIDI channel selection follows the LED Display Guide on page 6. The selected channel (1)-(16) will illuminate green.
>
> STEP 5 🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

MIDI Sync / Disable MIDI Start
The SK2 will instantly synchronize to incoming MIDI START, MIDI STOP and MIDI TEMPO commands. This allows the SK2 to synchronize with external sequencers, DAWs or drum machines. This automatic sequencer start can be disabled with the following control setting:

> STEP 1 ⊖ Turn off the SK2.
>
> STEP 2 ↓ Hold SEQ and CTRL 1 buttons.
>
> STEP 3 ⊕ While continuing to press the buttons down, turn the SK2 back on.
>
> STEP 4 ↻ Use the MOD 2 knob to disable or enable MIDI start. Aqua LED is on the left side of the speaker: Sequencer starts with MIDI START command. Aqua LED is on the right: Sequencer does *not* start with MIDI START command.
>
> STEP 5 🔒 Hold down KICK and SNARE buttons to lock selection. Lower two LEDs flash green when setting is locked.

Disabling Internal Sequencer for MIDI Play
To disable the internal sequencer when using MIDI:

> At any time while the unit is on: ↓ Hold FILTER MOD button, then press SEQ button.

UPGRADE MELODIES USING MIDI

The SK2 comes with the ability to upgrade new melodies and drum sounds.

What you need:
- Blipblox SK2 (the original Blipblox is not upgradeable).
- Mac or PC computer.
- Qualified USB-MIDI interface cable.
- A free MIDI SYSEX utility must be downloaded onto a Mac or PC to transfer these packs into the SK2.

 Go to **afterdark.blipblox.com** for a list of qualified USB-MIDI interfaces, free software links, and upgrade packs.

Prepare for Melody Pack Update
STEP 1   ⊖ Turn off the SK2.

STEP 2   Connect the USB-MIDI interface cable to SK2 and your computer.

STEP 3   ↓ Press and hold SNARE and OSCILLATOR buttons.

STEP 4   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 5   Verify LED (12) is illuminated aqua. If not, repeat steps 1-4. Do not send SYSEX data until this is verified.

STEP 6   Send the MIDI SYSEX file via computer using online instruction.

STEP 7   When update is complete, LEDs (5)-(8) will flash green indicating the unit is ready to be power cycled.

Prepare for Drum Pack Update
STEP 1   ⊖ Turn off the SK2.

STEP 2   Connect the USB-MIDI interface cable to SK2 and your computer.

STEP 3   ↓ Press and hold RANDOMIZE and OSCILLATOR buttons.

STEP 4   ⊕ While continuing to press the buttons down, turn the SK2 back on.

STEP 5   Verify LED (12) is illuminated green. If not, repeat steps 1-4. Do not send SYSEX data until this is verified.

STEP 6   Send the MIDI SYSEX file via computer using online instruction.

STEP 7   When update is complete, LEDs (5)-(8) will flash green indicating the unit is ready to be power cycled.

WARRANTY - Purchases made in USA

(1) What is covered and for how long?

All products: Playtime Engineering, LLC ("Playtime Engineering") warrants to the original purchaser that Playtime Engineering products and all other accessories are free from defects in material and workmanship under normal use and service for the period commencing upon the date of purchase from an authorized Playtime Engineering dealer and continuing for the following period after that date for one (1) Year. Playtime Engineering warrants factory-refurbished merchandise to be free of material and operational defects for a period of ninety (90) days from the original date of retail sale. This refurbished merchandise warranty is not transferable.

(2) What is not covered? This Limited Warranty is conditioned upon proper use of the product by the purchaser. This Limited Warranty does not cover: (a) damage caused by improper installation or improper connection to any peripheral; (b) damaged caused by an external electrical fault; (c) damage from use of parts not manufactured or sold by Playtime Engineering; (d) product purchased from anyone other than an authorized Playtime Engineering dealer; (e) modifications to product not approved in writing by Playtime Engineering; (f) equipment that has the serial number removed or made illegible; (g) normal cosmetic and mechanical wear; (h) damage or loss during transit to an Authorized Playtime Engineering Repair Center; (i) units that are purchased and/or located outside of the continental U.S.A.

(3) What are Playtime Engineering's obligations? During the applicable warranty period, Playtime Engineering will repair or replace, at Playtime Engineering's sole option, without charge to the purchaser, any defective component part of the product. To obtain service under this Limited Warranty, purchaser must first contact Playtime Engineering and obtain a return authorization number (RA#). Purchaser must then return the product to Playtime Engineering in an adequate container for shipping, accompanied by product, the seller's name and address. To obtain and RA# and assistance on where to return the product, contact Playtime Engineering customer service at support@playtimeengineering. com. Upon receipt, Playtime Engineering will repair or replace the defective product. Playtime Engineering may, at Playtime Engineering's sole option, use rebuilt, reconditioned, or new parts or components when repairing any product or replace a product with a rebuilt, reconditioned, new or comparable product. Repaired products will be warranted for a ;period equal to the remainder of the original Limited Warranty on the original product or for 90 days, whichever is longer. All replaced parts, components, boards, and equipment become the property of Playtime Engineering. If Playtime Engineering determines any product is not covered by this Limited Warranty, purchaser must pay all parts, shipping, and labor charges for the repair or return of such product.

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