



FKB-120 61-note keyboard

User manual

The information in this user manual is subject to change at any time without notice.

Version: 1.2 **Date of creation and author's initials:** 19-11-2018 RV **Revision date and author's initials:** 13-03-2025 EH

Introduction

Thank you for purchasing this Fazley keyboard. We advise that you read this user manual in its entirety before unpacking the contents of the box, so that you are familiar with all of the functionality that this product has to offer. Please be sure to check that all of the parts and accessories listed below under 'Box contents' are included in the package. In the event that the FKB-120 does not function properly, or if you have any issues while operating it, please remove the plug from the power socket and contact your dealer for assistance.

Box contents:

- Fazley FKB-120 keyboard
- power adapter
- sheet music holder

Please inspect the device and the included accessories.

Should you discover that either the device or one or more of the included parts have been damaged or rendered defective while in transit, please contact your dealer directly.

Please note that the pictures in this user manual serve illustrative purposes only and may differ slightly from the product you receive.

Contact:

Fazley musical instrument products and accessories
Verrijn Stuartweg 18
4462 GE Goes
The Netherlands

Please do not send any products to this correspondence address.

Should you wish to send in a product for repairs or for a refund, please contact your dealer for an RMA request (Return Merchandise Authorisation).

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

WARNING!

Keep this device away from moisture, water and rain to avoid the chance of electric shocks.

Safety instructions



Everyone involved with the installation, operation and maintenance of this device must:

- Be qualified



- Be skilled

- Have read the instructions in this user manual

- Be sure that neither the device nor the included accessories are damaged. Should the device or the included accessories be damaged, please contact your dealer for more information.

- Ensure that the device is in good working condition and is safe to operate. Please follow the advice and instructions as they are described in this user manual.

Damage caused by misuse and/or modifications made to the device are not covered by the warranty.

This device does not contain any parts that need to be repaired or replaced by the user. Should maintenance or repairs be necessary, they must be handled by a qualified technician.

Important information regarding health and safety:

- Do not remove any labels or stickers from this device.

- Do not leave any cables lying around.

- The device should not be opened up, and any hardware or software that may be present should not be modified.

- To achieve optimal performance, inputs on this device should not be fed with a signal higher than necessary.

- The outputs on this device should not be overloaded.

- The device should only be used indoors; contact with water, rain and moisture should always be avoided. Do not place any objects containing liquids on top of the device.

- Remove the device from any nearby flames or heat sources; do not place it near flammable fluids, gasses or objects.

- Disconnect this device from the power supply if it will not be used for a longer period of time, if maintenance is necessary, or if the device needs to be cleaned.

- Do not pull on the cable to remove a connector, as this could cause damage.

- Do not use any cables other than the ones described in this manual. Do not use defective cables. Please contact your dealer if the included or necessary cables do not function properly with this device.

- In the event that the device is exposed to extreme temperature changes (e.g. transported

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

through a cold outside environment into a warm indoor environment), it should not be turned on until it has reached room temperature. This is necessary to prevent moisture from forming in the device, which could lead to electric shocks.

Guidelines and operation of this device:

- This device is intended for indoor use by adults.
- This device can be used by children if accompanied by and/or supervised by an adult.
- This device should only be used in a suitable environment where no damage to the device can occur. Do not use the device in moist or dusty environments such as:
 - indoor swimming pools where chlorine is used
 - beaches where there is sand and salt
 - outdoors
 - indoors in spaces where intense heat sources are present, or where it reaches temperature levels that would be considered uncomfortable for a person
- Avoid impacts and collisions during use and transport. Do not transport the device while it is in use. Avoid using excessive force when installing and operating the device.
- The user should become familiar with the functions of the device before using it.
- Should the device not be used in the manner described in this user manual, damages or even injuries could occur. Fazley cannot be held responsible for any injuries or damages that occur as a result of improper use of this product.

Storage and transport:

This product is designed for mobile use. It should not be transported on its own, however, but either in its original packaging or in a suitable bag or flight case that protects it against impacts, shocks and bumps.

- This device is not designed for permanent (24/7) use. The expected lifespan of the device will not be affected by occasionally turning the device off. Disconnect the device or turn off the power when it is not actively in use.
- If the device will not be used for a longer period of time, it should be disconnected and stored in a dust-free environment.
- Do not expose the device to extreme temperature differences.

Housing

- Inspect the device's housing frequently, and always just before use. Avoid operating the device if there are large dents or cracks, or if screws are missing. Do not use the device if the housing is not in good condition.

Contact your dealer or a qualified technician if you are unsure about the state of the device.





- Check the device and the screws for corrosion. Corrosion must not be present on this device. Contact your dealer or a qualified technician if you find any corrosion on the screws. Every power and signal connector should be securely mounted. Do not use the device if the connectors are not secure.

Avoid dust and dirt build-up. Clean the device once a month by disconnecting it from the power supply and wiping it down with a dry or slightly moist cloth. If the device is used frequently, the cleaning intervals should increase.

Symbol explanation:

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

	<p>WEEE: Ensure that this device is disposed of properly. This product falls under the WEEE (Waste Electrical and Electronic Equipment) directive. The requirements of this directive apply to all manufacturers and producers of electronic devices in the EU. Do not throw this product away with regular household waste. Please contact your local authority for more information about how to recycle and dispose of these products in your region. By recycling this product in the proper manner, we can work together to ensure that we can continue to enjoy these kinds of products and still protect the environment as much as possible from pollution.</p>
	<p>CE: The CE mark indicates that this product meets the norms and requirements to which it must legally conform in the European Economic Area.</p>
	<p>UKCA: The UKCA mark indicates that this product meets the norms and requirements to which it must legally conform in the United Kingdom.</p>
	<p>Suitable for indoor use only: This product is designed for indoor use only.</p>

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Battery danger:

PLEASE NOTE!

Risk of explosion if the battery is not replaced properly.

Only replace the battery with a new battery of exactly the same type.

Do not expose batteries to intense heat from sunlight, open fire, etc.

Do not leave batteries out in high-temperature environments. This could cause an explosion or flammable fluid or gas leaks.

Do not burn batteries or place them in a hot oven. Do not try to shape the battery or make incisions in it, as this could cause an explosion.

Do not expose batteries to extremely low air pressure levels (at high altitudes), as this could cause explosions or fluid or gas leaks.

If equipment has gone unused for an extended period of time (a few months for instance), then the battery should be removed.

Remove empty batteries from the device immediately.

Do not store batteries individually or carry them in your pocket, wallet, or bag. Contact with metal objects such as coins and keys can cause leaks, tears, or short circuits.

Keep batteries out of reach of children.

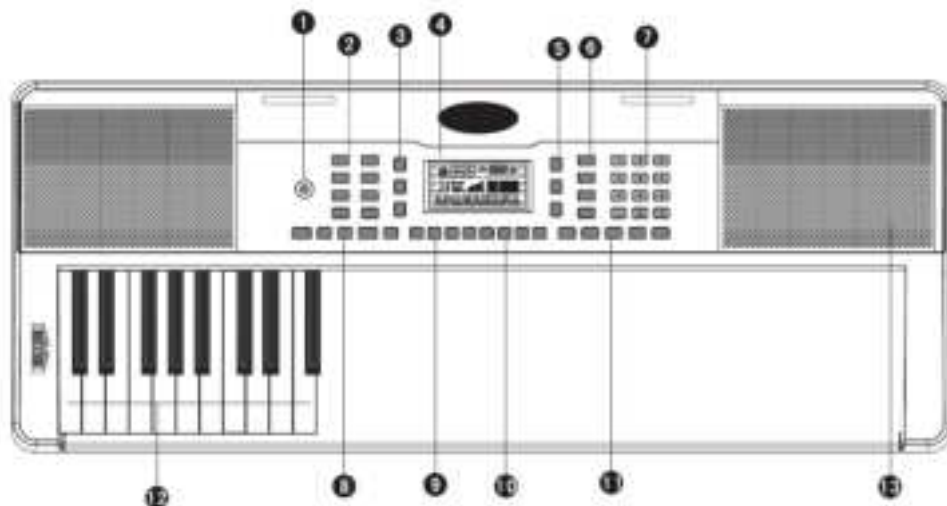
Recycling:

Never throw batteries away with the regular rubbish. Batteries contain substances that can be hazardous to the environment. When batteries are recycled properly, they become a valuable source of sustainable material. Contact your local authority about how to dispose of batteries in an eco-friendly way.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Guidelines and operation of this device

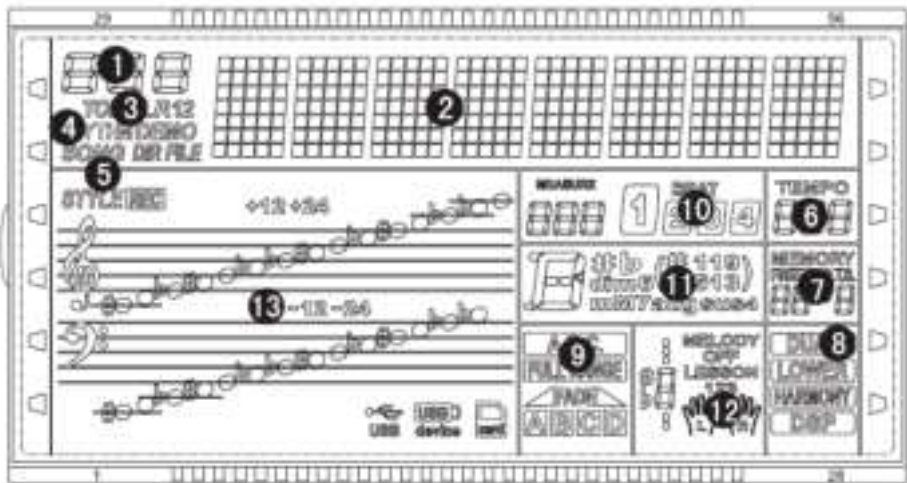


1. on/off switch
2. Master volume +/- | Rhythm volume +/- | Transpose +/- | Tempo +/- selection
3. Function menu | Sound console | Metronome selection
4. LCD display
5. Voice | Rhythm | Song selection
6. Sustain | Vibrato | Effect | Dual Voice
7. Number selection 0 - 9 and +, -
8. Start | Stop | Sync | Intro | Ending | Fill in | Auto Chord
9. MP3 player functionality
10. Status memory | M1 | M2 | Bank | Touch selection
11. Record | Play | Learn | Left hand | Right hand
12. Chord section
13. Speakers

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

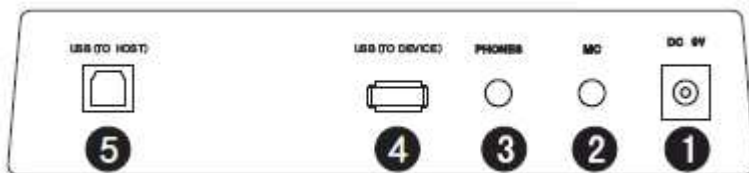
LCD display section



1. Display section
2. Character display (shows sound names among other things)
3. Voice indicator (lights up when sound is selected)
4. Rhythm indicator (lights up when rhythm is selected)
5. Song indicator ((lights up when song is selected)
6. Tempo indicator (shows tempo speed)
7. Status memory indicator
8. Dual voice indicator
9. Chord mode indicator
10. Metronome function indicator
11. Chord display section
12. Learning mode indicator
13. Note display

Rear connection panel

1.



power

adapter input

2. microphone input (mini jack)
3. headphone output (mini jack)
4. USB MP3 connector (for USB sticks up to 32 GB max.)
5. USB MIDI connector (for exchanging MIDI data with a computer)

The information in this user manual is subject to change at any time without notice.

Version: 1.2 **Date of creation and author's initials:** 19-11-2018 RV **Revision date and author's initials:** 13-03-2025 EH

Operating the device

The Fazley FKB-120 is an entry-level keyboard with touch-sensitive keys. This makes it perfect for beginning keyboard players who not only want to learn to play, but want to play with feeling because each passage can be played differently.

The FKB-120 is equipped with all of the features a beginning keyboardist needs to become familiar with playing the keyboard. It has a large range of sounds and accompaniments to choose from in lots of different music styles.

Follow the steps and instructions below to get the best out of the FKB-120.

Preparation

Practical information before playing

- If two people wish to play at the same time without using the built-in speakers, a headphone splitter should be connected to the headphone socket so that two pairs of headphones can be used.
- Ensure that the power adapter cable isn't rolled up too tightly and doesn't get tangled, exposed to excess forces, bent too excessively or damaged by sharp edges.

Keyboard positioning

It's important to place the FKB-120 on a stable surface at the correct height to ensure a comfortable playing experience without causing any physical discomfort. Fazley recommend investing in a good keyboard stand so that playing while standing or sitting can both be done in comfort.

Placing the keyboard on a table, desk or similar surface may result in an uncomfortable playing experience that could lead to physical discomfort.

A good playing position can be defined as follows:

- arms should hang freely next to the sides of the body (avoid tension in the shoulders to create more arm height)
- forearms should be horizontal to the floor
- hands and fingers should be in the same sort of position as they naturally are when your arms are hanging by your side
- elbows should be pushed forwards slightly towards the keyboard so that they are not completely parallel to the body

The ideal playing position is very similar to the one that should be used when sitting behind a desk and working with a computer. A keyboard like the FKB-120 is higher than a computer keyboard, however, so it's very important to make the necessary height adjustments.

This playing position should be used regardless of whether you're sitting or standing. That's why it's a good idea to choose a keyboard stand that's suitable for both.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

If you're planning on playing sitting down, you should use a keyboard bench or stool that's height adjustable so that you can find the perfect playing height. Ideally, it should have some padding and be flat to help you keep your back straight.

Connecting the keyboard

The FKB-120 comes with a power adapter that needs to be plugged into the keyboard and a power socket with the correct voltage. Only the adapter that comes with the keyboard should be used to power it.

Take care that connected cables are not in a place that someone could trip over them. Also ensure that cables are not subjected to excessive forces. If necessary, an extension cable can be used or, alternatively, the keyboard should be placed closer to the available power socket.

Cable binders should be used to manage excess lengths of cable. Under no circumstances should knots be tied in cables themselves.

Batteries

The FKB-120 can be powered by 8 D-cell (1.5V) batteries. They need to be inserted correctly according to the polarity shown in the battery compartment.

When the keyboard will not be used for a longer period of time, any batteries inserted should be removed to prevent potential leaks. Always use the same type of batteries from the same brand and don't mix old and new batteries.

Using the (built-in) speakers or headphones

The FKB-120 is equipped with built-in speakers that instantly play back whatever you play on the keyboard. Whenever you want to practise in silence, however, a set of headphones can be connected to a socket on the back.

The headphone socket is suitable for virtually all headphones that are designed for listening to music. In the event that your headphones have a connector of a different size, an adapter can be purchased. Consult your dealer for advice if you're unsure about what you need.

Before you put on your headphones and start playing, check the volume level. Pay particular attention to the volume level before allowing children to play the keyboard while wearing headphones. It's best to lower the volume on the keyboard before putting headphones on and only raising it to the volume necessary to hear what you're playing. This will greatly reduce the chance of any damage to hearing. The volume can be adjusted using the 'Master Vol' knob.

It's best to take regular breaks to give your hearing a rest and not play for hours on end.

It's also possible to connect external speakers to the keyboard for performance purposes. The built-in speakers are not intended to be played at full volume continuously and doing so may cause serious distortion and damage the speakers themselves.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Tuning the keyboard on

The keyboard can be turned on and off using the Power On/Off button. It should be turned off when you're finished playing.

Using a USB stick with music

The keyboard features a built-in MP3 player that allows you to play along with music from a USB stick with a maximum capacity of 32 GB. After inserting the USB stick, the keyboard's navigation keys can be used to select the song of your choice. These navigation keys are located at the bottom left of the display next to button 9. They can also be used to determine the volume of the MP3 player. You can do this by long press the + (plus) to increase the volume. Or to long press the – (minus) button to decrease the volume. By pressing the + (plus) button once, you select the next track on the USB stick. By pressing the – (minus) button once, the track starts from the beginning, or you select the previous track on the USB stick. You can adjust the master volume based on the desired volume of the track. Via these steps the ideal volume balance can be created.

USB MIDI

The FKB-120 also has USB MIDI functionality that can be used to do things like play MIDI chords into certain software, or trigger certain sounds in DAW software or plugins. Thanks to the bi-directional communication, it's also possible to send MIDI signals from a computer to the FKB-120 enabling sounds to be played.

A USB cable is not included. One can be purchased from your local dealer or a computer shop.

Sound selection

Selecting a voice (sound)

The FKB-120 has a large selection of voices to choose from. When you don't want to scroll through all of the available options, you can select your chosen sound by entering the appropriate number using the 0 - 9 number pads. In total, there are 422 different sounds on board!

By pressing the + and - buttons, you can easily scroll through all of the available sounds.

At the top of the keyboard, the number range of certain groups of sounds are indicated to help you find the type of sound you're looking for more quickly if you don't know the number.

Dual Voice function

Activating the Dual Voice function allows two different sounds to be layered on top of one another. This gives you the sound of two different instruments being played at the same time.

Selecting the first sound is done as described in the Selecting a voice section above. After this, activate Dual Voice mode by pressing the Dual Voice button and then a second sound

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

(R2) can be selected.

The display will show 'Dual' to indicate that Dual Voice mode has been activated.

Pressing the Dual Voice button again will de-activate Dual Voice mode and return the keyboard to its previous state.

Adding Effects

Sustain

Press the Sustain button to add the sustain effect. Pressing the Sustain button again will de-activate it.

Vibrato

Press the Vibrato button to add the vibrato effect. Pressing the Vibrato button again will de-activate it.

Effect (Echo)

Press the Effect button to add digital acoustics for a fuller sound from the keyboard when wearing headphones, for example. The display will show DSP to indicate that this function has been activated. Pressing the Effect button again will de-activate it. Pressing the button while playing a sound may result in the sound suddenly stopping due to the change of functionality.

Touch (sensitivity)

Press the Touch button to activate the touch-sensitive mode whereby sounds are played at different volume levels depending on how hard the player presses the keys. This allows more expressive playing. Pressing the Touch button again will de-active the touch-sensitive mode.

Tempo

The tempo of accompaniment rhythms can be speeded up or slowed down as required. The tempo is specified in Beats Per Minute (BPM) and is set to 100 by default. Any value you set will only be retained whilst you're playing the keyboard. If it's turned off and on again, the value will be reset to 100.

Press the Tempo + button once to increase the tempo by 1 BPM and press the Tempo - button once to decrease the tempo by 1 BPM.

Pressing the Tempo + and Tempo - buttons at the same time will reset the tempo to 100 BPM.

Transpose

Press the Transpose + or Transpose - button to change the keyboard's pitch. The pitch can be changed by up to 12 semitones upwards or downwards. Pressing both Transpose buttons at the same time will reset the keyboard to its original setting.

Metronome

Press the Metronome button to activate the FKB-120's built-in metronome function. By

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

default, it's set to 4/4 time, but the time signature is adjustable. To change it, press the Function Menu button until Beat shows up in the display. Then press the + or - button to select one of nine different time signatures. The metronome function can also be activated after an accompaniment rhythm has been chosen.

Auto chord

The Auto Chord function automatically adjusts the accompaniment to the correct key. It can work with a single note or a chord.

Auto Chord can be switched between an A.B.C. mode and a Full Range mode. In A.B.C. mode, only playing the notes on the left-hand side of the FKB-120 will result in a key change of the accompaniment. In Full Range mode, playing chords across the entire keyboard will result in a key change of the accompaniment.

Note that in A.B.C. mode, it's only possible to play the notes C to C with your left hand. It's therefore not possible to play special keys that are outside the range of these notes. Bear this in mind when playing major, minors and sevenths, for example.

Pitch bend

The Pitch Bend wheel causes the pitch to go up or down by a certain amount depending on which way and by how much it is moved. As soon as it's released, it automatically jumps back to the middle position.

Rhythm and accompaniments

Rhythm selection

Now that we've learned about the sound functions, let's take a look at the standard accompaniment rhythm options.

Press the Rhythm button to activate one of the accompaniment rhythms that can be selected by entering the appropriate number using the 0 - 9 number pads or by pressing the + and - buttons to easily scroll through all of the available rhythms. At the top of the keyboard, the number range of different rhythm genres are indicated to help you find the type of rhythm you're looking for more quickly if you don't know the number.

To start an accompaniment, press the Start/Stop button and press the same button again to stop it.

Song

In addition to standard accompaniments, it's possible to play along with complete songs including Happy Birthday, Jingle Bells and House of the Rising Sun. Press the Demo button to play one of the demo songs that can be selected by entering the appropriate number using the 0 - 9 number pads or by pressing the + and - buttons to easily scroll through all of the available songs. Pressing the Start/Stop button will stop a song that's playing. Pressing the Demo button again or the Voice or Rhythm button will de-activate song mode.

Sync

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

After pressing the Sync button, it's possible to start an accompaniment rhythm whenever you like by pressing one of the first nineteen notes on the keyboard. Then you can simply play along.

If a rhythm is already playing, pressing the Sync button will prepare the accompaniment rhythm for a different song. You can also select a different accompaniment rhythm before activating the Sync function again if you like.

Intro/Ending

It's possible to add an intro and/or an ending to your song. To add an intro, press the Intro/Ending button and then press the Start/Stop button to start the intro which will be followed by the accompaniment rhythm you've chosen. To add an ending to your song, press the Intro/Ending button after which the accompaniment rhythm will stop.

Fill In

Press the Fill In button to add a fill to the accompaniment rhythm of your song. The fill played is determined by accompaniment rhythm selected.

After the fill, the selected accompaniment rhythm will continue playing. The Fill In function can be used as often as desired.

Rhythm volume

The volume of the accompaniment rhythm can be adjusted independently from the master volume. This means that the accompaniment rhythm can blend into the background more so that your playing can be heard more clearly, for instance.

The accompaniment rhythm volume can be set anywhere between 0 and 32 using the + and - buttons. The value will be shown on the display.

Record function

The FKB-120 has a recording function that allows you to record your playing. Press the Record button to activate the recording mode. Recording will then start as soon as you play your first note. Press Record again to stop recording.

The keyboard has an internal memory of 62K. Press the Play button to hear what you've recorded. Playback of recording will end automatically if the file has been played back completely.

Status memory

The FKB-120 has an internal memory where user presets can be stored. There are four banks with two presets each which can be accessed and cycled through via the 'Bank' mode. With M1 or M2, a preset can be accessed and loaded within a bank.

To save presets, hold in the 'Status Memory' button and press M1 or M2. Bear in mind that the preset will be stored in whatever bank you are currently in!

M1 or M2 will then be displayed followed by the message 'MEN STOR' that confirms the preset has been saved. Presets include the selected accompaniment rhythm and its functions as well as the selected sound and any effects you're using. Any existing presets in the same slot on the same bank will be overwritten by the new preset.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

NOTE: Please note that the memory function only works as long as the device is powered. Stored memory presets will not be saved when the device is turned off or disconnected from its power source.

Function menu

Press the Function Menu button to activate the function menu where various parameters can be adjusted. These include various settings that affect the sound of the keyboard. You can choose between different effects like Reverb and Chorus, although you may not want effects like this at all when a piano sound is selected, for example. For this reason, they can be deactivated when required. When used with other instruments, however, effects like this, when set to the right levels, can enhance sounds by giving them an extra dimension.

All of the possibilities can be cycled through by pressing the Function Menu button multiple times. When you've found the function you want to adjust, you can do so using the + or - buttons. After the adjustment has been made or when no action has been taken for 3 seconds, the Function Menu will close again.

Any values you set within the Function menu can be reset to their default values by pressing the + and - buttons at the same time. Any values you set will only be retained as long as the keyboard is switched on. If the keyboard is switched off and on again, the default values will be automatically restored.

A overview of the functions:

Metronome type	Beat: 0 - 9
Tune	-50 - +50
Reverb type	1 - 10
Reverb depth	0 - 127
Chorus type	1 - 10
Chorus depth	0 - 127

Sound console

The Sound Console function provides more possibilities to adjust the volume balance between different sounds, in particular the sounds used for the accompaniment rhythms. The harmonies could be made more or less prominent, for instance, as could the percussion sounds. Settings can be adjusted using the + or - keys, just like they are in the Function Menu.

The values are set to 28 by default, but can be adjusted anywhere between 0 and 32.

A overview of the possibilities:

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Percussion backing track volume	0 - 32
Bass track volume	0 - 32
Harmony track 1 volume	0 - 32
Harmony track 2 volume	0 - 32
Harmony track 3 volume	0 - 32
Master voice track volume	0 - 32
Dual Voice track volume	0 - 32

Lesson function

The FKB-120 has a built-in lesson function that makes it possible to learn to play easy as well as more complex well-known songs.

It's possible to focus lessons on the left hand or right hand parts only.

To activate the lesson function, press the Demo button. This will start a song which you can stop by pressing the Start/Stop button.

Now press the Lesson button. The word Lesson will then appear above the hands shown on the bottom right.

Three different Lesson modes can be chosen by pressing the Lesson button multiple times. At the end of each lesson, feedback will be given by the virtual teacher. This will either be 'OK', 'Good', 'Very Good!' or 'Excellent!'. This feedback is designed to encourage players to improve.

Lesson 1:

This lesson mode is designed to help those who want to practise their timing.

In lesson 1, it's not so important which key you press, but it must be played at the right time to match the beat of the music that is being played.

It's possible to focus the lesson on the right or left hands only. If you choose to focus on the right hand only, that part will not be played so that you can do it yourself.

If you choose to focus on the left hand only, that part will not be played so that you can do it yourself.

If you choose to focus on both hands, neither part will be played so that you can do it yourself. Again, it's not so important which keys you press in this mode, but they must be played at the right time to match the beat of the music that is being played.

Lesson 2:

In Lesson 2, it's more important to play the correct note or chord. Whenever a mistake is made, the music will stop until the correct note or chord is played. As soon as it is, the song will continue.

It's also possible here to focus the lesson on the right or left hands only, so that you can play those parts yourself.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Lesson 3:

In Lesson 3, it's even more important to play the correct note or chord. In this mode, assistance is turned off which means it's entirely up to the keyboard player to play the correct notes or chords at the right time to match the beat of the music that is being played.

Playing along with own music

It's possible to play along with your own music by inserting a USB stick with MP3 files into the keyboard's USB port on the back. Using the MP3 navigation keys, which can be found underneath the display, you can select the track you want to play along with. This gives you many more possibilities in addition to the built-in songs.

Note that the lesson functions do not work with your own music.

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH

Built-in voices, rhythms and songs

Voice list

No.	English name	No.	English name	No.	English name
1	Acoustic Grand Piano	48	Glockenspiel	95	Charry Nylon Guitar
2	Piano Dark	49	Glockenspiel & Sine	96	Stereo Nylon Guitar
3	Octave Piano	50	Children's Song	97	Steel Guitar
4	Octave Piano 2	51	Analog Bell	98	12 String Guitar
5	Piano & Choir	52	Stereo Analog Bell	99	Detuned Steel Guitar
6	Grand Piano / W	53	Musical Box	100	Jazz Guitar
7	Analog E Piano	54	Vibraphone	101	Clean Guitar
8	Bright Piano	55	Vibraphone / W	102	Stereo Clean Guitar
9	Bright Piano 2	56	Vibraphone & Bell	103	Soft Clean Guitar
10	Stereo Bright Piano	57	Vibraphone & Harpsichord	104	Chord Clean Guitar
11	Detuned Piano	58	Marimba	105	Muted Guitar
12	Chorus Piano	59	Marimba / W	106	Stereo Muted Guitar
13	Bright Piano / W	60	Sine Marimba	107	Chord Muted Guitar
14	Bright Piano 2 / W	61	Stereo Marimba	108	Overdrive Guitar
15	Piano & Vibraphone	62	Marimba & Vibraphone	109	Dance Lead
16	Electric Grand Piano	63	Wood Drum	110	Distortion Guitar
17	Electric Grand Piano / W	64	Xylophone	111	Analog Distortion Guitar
18	Stereo Synth E. Piano	65	Tubular Bells	112	5th Distortion
19	Honky-Tonk Piano	66	Tubular Bells 2	113	Guitar Harmonics
20	Honky-Tonk Dark	67	Tubular Bells 3	114	Acoustic Bass
21	Honky-Tonk / W	68	Rotate Octave	115	Acoustic Bass 2
22	Honky-Tonk 2 / W	69	Synth Organ Staccato	116	Acoustic Bass Detuned
23	E. Piano	70	Dulcimer	117	Velocity Crossfade Bass
24	Stereo E. Piano	71	Drawbar Organ	118	Jazz Style
25	31's E. Piano	72	Stereo Drawbar Organ	119	A. Bass & Mute G.T.
26	E. Piano / W	73	Soft Stereo Drawbar Organ	120	Finger Bass
27	E. Piano 2 / W	74	Mellow Drawbar Organ	121	Finger Bass 2
28	E. Piano 3 / W	75	Bright Drawbar Organ	122	Dark Finger Bass
29	E. Piano 4 / W	76	Persuasive Organ	123	Detuned Finger Bass
30	E. Piano 2	77	Persuasive Organ Detuned	124	Velocity Bass
31	Detuned E.P.	78	Rock Organ	125	Bass & Distortion Guitar
32	Detuned E.P. 2	79	Church Organ	126	Pick Bass
33	Harpsichord	80	Detuned Church Organ	127	Pick Bass 2
34	Harpsichord / W	81	Octave Church Organ	128	Mute Pick Bass
35	Harpsichord Octave	82	Octave Church Organ 2	129	Pick & Finger Bass
36	Harpsichord Octave 2	83	Digital Organ	130	Pick Bass & Clean Guitar
37	Harpsichord Off	84	Analog Organ	131	Detuned Pick Bass
38	Clavichord	85	Reed Organ	132	Fretless Bass
39	Stereo Clavichord	86	Stereo Reed Organ	133	Fretless Bass 2
40	Clavichord / W	87	Accordion	134	Slap Bass
41	Clavichord Wah	88	Accordion 2	135	Slap Bass 2
42	Synth Clav.	89	Stereo Accordion	136	Slap Bass 3
43	Celesta	90	Harmonica	137	Slap Bass
44	Dark Celesta	91	Dark Harmonica	138	Synth Bass
45	Celesta & Sine	92	Tango Accordion	139	Synth Bass 2
46	Neecho Bell	93	Dark Tango Accordion	140	Synth Bass 3
47	Celesta & Musical Box	94	Nylon Guitar	141	Synth Bass 4

The information in this user manual is subject to change at any time without notice.

Version: 1.2 Date of creation and author's initials: 19-11-2018 RV Revision date and author's initials: 13-03-2025 EH

Voice list

No.	English name	No.	English name	No.	English name
142	Violin	189	Trumpet 2	236	Shakuhachi 2
143	Violin 2	190	Corn Trumpet	237	Whistle
144	2 Violin	191	Wah Trumpet	238	Whistle 2
145	Viola	192	Trombone	239	Ocarina
146	Viola 2	193	Trombone 2	240	Ocarina 2
147	2 Viola	194	Tuba	241	Square Lead
148	Cello	195	Tuba 2	242	Square Lead 2
149	Cello 2	196	Muted Trumpet	243	Square Lead 3
150	Contrabass	197	Muted Trumpet 2	244	Analog Lead
151	Contrabass 2	198	Horn	245	Lead Sine
152	Tremolo Strings	199	Horn 2	246	Analog Electric
153	Tremolo Strings 2	200	Stereo Synth Brass	247	Slow Square Lead
154	Pizzicato Strings	201	5th Horn	248	Analog Classic Lead
155	Pizzicato Strings 2	202	Brass Ensemble	249	Thick Square
156	Orchestral Harp	203	Majestic Union	250	Quint
157	Orchestral Harp 2	204	Synth Brass	251	Sine Solo
158	Stereo Harp	205	Synth Brass 2	252	Pulse Lead
159	Timpani	206	Synth Brass 3	253	Mellow Wind
160	Timpani 2	207	Synth Brass 4	254	80's Digital
161	Strings Ensemble	208	Synth Brass 5	255	Classic TRI
162	Strings Ensemble	209	Octave Synth Brass	256	Stereo Analog Wind
163	Stereo Strings	210	Soprano Sax	257	Sawtooth Lead
164	Stereo Strings 2	211	Soprano Sax 2	258	Sawtooth Lead 2
165	Synth Strings	212	Alto Sax	259	Stereo Sawtooth
166	Synth Strings 2	213	Alto Sax 2	260	Stereo Sawtooth 2
167	Synth Strings 3	214	Tenor sax	261	Electronic Lead
168	Stereo Synth Strings	215	Tenor sax 2	262	Psychedelic
169	Stereo Synth Strings 2	216	Baritone Sax	263	80's Synth
170	Analog Orchestra	217	Baritone Sax 2	264	5th Analog
171	Analog String	218	Oboe	265	Vitality
172	Slow Strings	219	Sweet Oboe	266	5th Sawtooth
173	Choir Aahs	220	English Horn	267	Comedy
174	Dark Aahs	221	English Horn 2	268	Fast Lead
175	Stereo Aahs	222	Bassoon	269	80's Sawtooth
176	Stereo Aahs 2	223	Bassoon 2	270	Wind Chimes
177	Mellow Choir Aahs	224	Clarinet	271	5th Digital Age
178	Aahs & SynStr	225	Clarinet 2	272	5th Square
179	Big Aahs	226	Piccolo	273	Stereo Pulse
180	Analog Sound	227	Flute	274	Analog Signal
181	Voice Ooh	228	Flute 2	275	Stereo Electronic Lead
182	Synth Voice	229	Recorder	276	Callopo Lead
183	Synth Voice 2	230	Recorder 2	277	Callopo Lead 2
184	Stereo Synth Voice	231	Pan Flute	278	Grand
185	Orchestra Hit	232	Pan Flute 2	279	Octave Pad
186	Orchestra Hit Stereo	233	Blown Bottle	280	Classic Lead
187	Orchestra Hit Octave	234	Blown Bottle 2	281	Sawtooth Wah
188	Trumpet	235	Shakuhachi	282	Chef Lead

The information in this user manual is subject to change at any time without notice.

Version: Date of creation and author's initials: Revision date and author's initials:
 1.2 19-11-2018 RV 13-03-2025 EH

Voice list

No.	English name	No.	English name	No.	English name
283	Chiff Lead 2	330	Bowed Pad 2	377	Windbells
284	Charing Lead	331	Metallic Pad	378	Artistic
285	Charing Lead 2	332	Dream	379	Digital Effect
286	Fruity Lead	333	Opsey	380	Abysa
287	Voice Lead	334	Digital Pad	381	Abysa 2
288	Voice Lead 2	335	Pipe Organ Pad	382	Spectrum
289	Fifths Lead	336	Scene Pad	383	Spectrum 2
290	Bass & Lead	337	Halo Pad	384	Sitar
291	Bass & Lead 2	338	Background	385	Detuned Sitar
292	Classic Synth	339	Background 2	386	Banjo
293	Electron Impact	340	Sweep Pad	387	Banjo 2
294	Single Sawtooth	341	Star Trek	388	Shamisen
295	Analog Wind	342	Digital Wah	389	Shamisen 2
296	Electron Saw	343	Warm Wah	390	Koto
297	Analog Pulse	344	Pulse Wah	391	Koto 2
298	New Age Pad	345	Digital Distortion Wah	392	Kalimba
299	New Age Pad 2	346	Pulse	393	Kalimba 2
300	Rise	347	Pulse 2	394	Bagpipe
301	Praise	348	Rain	395	Fiddle
302	Irresistible	349	Mysterious	396	Shans
303	Pump Sawtooth	350	Clusters of Stars	397	Tinkle Bell
304	Phase Shift	351	Additive Synthesis	398	Agogo
305	Phase Shift 2	352	Want To Go	399	Steel Drums
306	Warm Pad	353	Soundtrack	400	Bass Drum
307	Warm Pad 2	354	Lost Garden	401	Wood Block
308	Overture	355	Fair Away	402	Snare
309	Verve	356	Crystal	403	Talkin Drum
310	Fulness Pad	357	Drops Of Water	404	Melodic Tam
311	Overture Wah	358	Game	405	Synth Drum
312	Digital Age	359	Fly Into Space	406	Dynamics Jingle
313	Analog Pad	360	Little Funny	407	Reverse Cymbal
314	Analog Pad2	361	Funny Hammer	408	Guitar Fret Noise
315	Analog Pad 3	362	Surface Of The Water	409	Breath Noise
316	Analog Wah	363	Atmosphere	410	Seashore
317	Sharp	364	Clouds	411	Bird Tweet
318	Warm Pulse	365	Brightness	412	Telephone Ring
319	Happiness Pad	366	Life	413	Helicopter
320	Sawtooth Pad	367	Fresh	414	Applause
321	Poly Synth Pad	368	Goblins	415	Gunshot
322	Poly Synth Pad2	369	Fantasy	416	Fall
323	Modulation Distortion Wah	370	Space Trojan	417	PPPs
324	Choir Pad	371	Ceremony	418	ErHu
325	Choir Pad 2	372	Phonem	419	GuZhang
326	Plush Pad	373	Echoes	420	BanHu
327	Electric Pad	374	Empty	421	Standard Drum Set
328	ST's PAD	375	Deformation	422	Electronic Drum Set
329	Bowed Pad	376	Sci-Fi		

The information in this user manual is subject to change at any time without notice.

Version: Date of creation and author's initials: Revision date and author's initials:
 1.2 19-11-2018 RV 13-03-2025 EH

Rhythm list

No.	English name	No.	English name	No.	English name
1	8 Beat 1	48	Pop Groove	95	Piano Swing
2	8 Beat 2	49	Swing	96	Piano Jazz Waltz
3	8 Beat 3	50	Cool Jazz	97	Piano Twist
4	8 Beat 4	51	Pop Swing	98	Piano March
5	60" s 8 Beat	52	Swing Fox	99	Piano 6/8 March
6	8 Beat Ballad	53	Big Band	100	Chinese Folk Rock
7	8 Beat Rock	54	Big Band Medium	101	Chinese R&B
8	16 Beat 1	55	Jazz Waltz	102	Jiangnan Pop
9	16 Beat 2	56	Ragtime	103	Chinese Hip Hop
10	16 Beat Pop	57	DiscoLand	104	Chinese Techno
11	16 Beat Shuffle	58	Quick Step	105	DaZu Folk
12	Ballad	59	Country 1	106	8 Beat 1-2
13	Slow Ballad	60	Country 2	107	8 Beat 2-2
14	16 Beat Ballad	61	Pop Country	108	8 Beat 3-3
15	Unplugged	62	Country Rock	109	8 Beat 4-2
16	Rock	63	Country Folk	110	60" s 8 Beat - 2
17	Pop Rock	64	3/4 Country	111	8 Beat Ballad-2
18	Fast Rock	65	Country Waltz	112	8 Beat Rock-2
19	Slow Rock 1	66	Country Shuffle	113	16 Beat 1-2
20	Slow Rock 2	67	Country Boogie	114	16 Beat 2-2
21	Rock & Roll	68	Country Blues	115	16 Beat Pop-2
22	Heavy Metal	69	Country Quick Step	116	16 Beat Shuffle-2
23	Blues Boogie	70	Bluegrass	117	Ballad-2
24	Blues	71	Bossa Nova 1	118	Slow Ballad-2
25	Shuffle	72	Bossa Nova 2	119	16 Beat Ballad-2
26	Blues Shuffle	73	Rhumba	120	Unplugged-2
27	Rock Shuffle	74	Pop Rhumba	121	Rock-2
28	Charleston	75	Cha Cha	122	Pop Rock-2
29	Disco 1	76	Pop Cha Cha	123	Fast Rock-2
30	Disco 2	77	Tango	124	Slow Rock 1-2
31	Disco Funk	78	Jazz Samba	125	Slow Rock 2-2
32	Dance	79	Reggae	126	Rock & Roll-2
33	House 1	80	Pop Reggae	127	Heavy Metal-2
34	House 2	81	March 1	128	Blues Boogie-2
35	Rap	82	March 2	129	Blues-2
36	Euro Beat	83	German March	130	Shuffle-2
37	Hip Hop	84	6/8 March	131	Swiss Shuffle-2
38	Techno	85	Folks	132	Rock Shuffle-2
39	Funny Pop	86	Pop Folks	133	Charleston-2
40	Jazz Funk	87	Waltz	134	Disco 1-2
41	Cool Funky	88	Slow Waltz	135	Disco 2
42	Soul 1	89	Vienna Waltz	136	Disco Funk-2
43	Soul 2	90	Musette	137	Dance-2
44	Soul Shuffle	91	Flake 8 Beat	138	House 1-2
45	Soul Blues	92	Piano Ballad	139	House 2-2
46	R & B	93	Piano Boogie	140	Rap-2
47	6/8 Gospel	94	Piano Jazz	141	Euro Beat-2

The information in this user manual is subject to change at any time without notice.

Version: 1.2 Date of creation and author's initials: 19-11-2018 RV Revision date and author's initials: 13-03-2025 EH

Rhythm list

No.	English name	No.	English name	No.	English name
142	Hip Hop-2	165	Country 3-2	188	German March-2
143	Techno-2	166	Pop Country-2	189	6/8 March-2
144	Funky Pop-2	167	Country Rock-2	190	Folks-2
145	Jazz Funk-2	168	Country Folk-2	191	Pop Polka-2
146	Cool Funky-2	169	3/4 Country -2	192	Waltz-2
147	Soul 1-2	170	Country Waltz-2	193	Slow Waltz-2
148	Soul 2-2	171	Country Shuffle-2	194	Vienna Waltz-2
149	Soul Shuffle-2	172	Country Boogie-2	195	Musette-2
150	Soul Blues-2	173	Country Blues-2	196	Piano 8 Beat-2
151	R & B-2	174	Country Quick Step-2	197	Piano Ballad-2
152	6/8 Gospel-2	175	Bluegrass-2	198	Piano Boogie-2
153	Pop Groove-2	176	Bossa Nova 1-2	199	Piano Jazz-2
154	Swing-2	177	Bossa Nova 3-2	200	Piano Swing-2
155	Cool Jazz-2	178	Rumba-2	201	Piano Jazz Waltz-2
156	Pop Swing-2	179	Pop Rumba-2	202	Piano Twist-2
157	Swing Fox-2	180	Cha Cha-2	203	Piano March-2
158	Big Band-2	181	Pop Cha Cha-2	204	Piano 6/8 March-2
159	Big Band Medium-2	182	Tango-2	205	Chinese Folk Rock-2
160	Jazz Waltz-2	183	Jazz Samba-2	206	Chinese R&B-2
161	Ragtime-2	184	Reggae-2	207	JiangNan Pop-2
162	Dixieland-2	185	Pop Reggae-2	208	Chinese Hip Hop-2
163	Quick Step-2	186	March 1-2	209	Chinese Techno-2
164	Country 1-2	187	March 2-2	210	DaiZu Folk-2

The information in this user manual is subject to change at any time without notice.

Version: 1.2 Date of creation and author's initials: 19-11-2018 RV Revision date and author's initials: 13-03-2025 EH

Demo List

No.	English name	No.	English name	No.	English name
1	Chanson Du Toreador	41	With Games	81	Yankee Doodle (Piano)
2	Meditation	42	Way Home	82	Kaiser Walzer
3	Wiegandlied	43	Yankee Doodle	83	From A Story Book
4	A Lover's Concerto	44	Michael Row The Boat Ashore	84	Butterfly
5	Whispering Hope	45	Aut Long Song	85	Christmas Eve
6	From The New World	46	My Darling Clementine	86	Old Folks At Home (Piano)
7	O Sole Mio	47	Little Broken Jug	87	A Little Polish Dance
8	Auf Flügeln Des Gesanges	48	The House Of The Rising Sun	88	Larghetto
9	Santa Lucia	49	Centry Boy	89	Minuet 2
10	Deck The Halls	50	El Condor Pasa	90	Prelude
11	Old Folks At Home	51	Greenleaves	91	Duke Aria From "The Rigoletto"
12	Camptown Races	52	Hedwigen	92	Puck
13	Oh! Susanna	53	Wiegandlied 2	93	The Happy Farmer
14	Jennie With The Light Brown Hair	54	Her Bright Smiles Haunts Me Still	94	Etude
15	Long Long Ago	55	Old Black Joe	95	Dance Of The Four Swans From "Swan Lake"
16	Annie Laurie	56	Old Dog Tray	96	Jesus Saviour Pilot Me
17	My Old Kentucky Home	57	Are You Lonesome Tonight?	97	Old MacDonald Had A Farm
18	Tanay In The Snow	58	Arrang	98	3-Part Invention No.13 In A Minor BWV 784
19	Aloha Oe	59	The Quilting Party	99	Musette
20	Carry Me Back To Old Virginia	60	The Colorado Trail	100	Bourree
21	The Blue-Bells Of Scotland	61	I'D Like To Be In Texas	101	Away In A Manger
22	Joy To The World	62	Shenandoah	102	Marriage Of Figaro
23	Jingle Bells	63	Down In The Valley	103	Angels We Have Heard On High
24	Battle Hymns Of The Republic	64	On Top Of Old Smokey	104	Waltz
25	Silent Night	65	Barbara Allen	105	Did You Ever See A Lassie
26	Ode To Joy	66	Careless Love	106	Old France
27	My Bonnie	67	Sweet Baby From Pie	107	Santa Claus Is Coming To Town
28	La Cucaracha	68	Jesse James	108	Minuet 3
29	Yellow Rose Of Texas	69	The Cowboy's Lament	109	In The Theatre
30	The Wabash Cannon Ball	70	Skip To My Lou	110	Alfredo And Vola Sa Colum's Tower Duet
31	Red River Valley	71	London Bridge Is Falling Down	111	Ab Die Alte Mutter Nicht Nicht Nicht Singen
32	Dreaming Of Home And Mother	72	Home On The Range	112	At The Ball
33	Ring Ring De Banjo	73	This Old Man	113	Dancing Raindrops
34	Der Freischütz	74	Polly Wolly Doodle	114	Comin' Round The Mountain
35	Tales Of Hoffman	75	Sippin' Cider Through A Straw	115	Song Of The Brook
36	Die Forelle	76	Home Sweet Home	116	Cotton-pickin' Fingers
37	Aura Lee	77	Mary Had A Little Lamb	117	Minuet G Dur 3
38	When The Saints Go Marching In	78	Valce Brillante Op 34 #3 In F Major	118	Knight
39	Twinkle Twinkle Little Star	79	Musette In D Major	119	Gavotte/Puck
40	I've Been Working On The Railroad	80	Blue Bird Waltz	120	The Angels Singing

The information in this user manual is subject to change at any time without notice.

Version: 1.2 **Date of creation and author's initials:** 19-11-2018 RV **Revision date and author's initials:** 13-03-2025 EH

Solving keyboard problems

If you have a problem with your keyboard, please consult this troubleshooting section for possible solutions. If, after consulting this section, the problem remains unresolved, please contact your dealer for more information and/or help.

This troubleshooting section contains information on how to solve the most common keyboard problems, but it does not and cannot cover every eventuality. It is possible that you won't find your problem, cause and solution in this section.

Problem	Possible cause	Solution
Keyboard won't turn on	Power adapter not connected (properly)	Make sure the included power adapter is connected properly to the keyboard and an active power socket.
	Keyboard not switched on	Press the ON/OFF button to turn the keyboard on.
	Faulty power adapter	If the power adapter is connected properly to the keyboard and an active power socket, but the keyboard won't turn on, the power adapter could be faulty. If you suspect that this is the case, try powering the keyboard with batteries and/or contact your dealer for assistance.
	Batteries not installed, not installed correctly or empty	If you're trying to power the keyboard with batteries, ensure you have 8 full D-Cell 1.5V batteries inserted correctly according to the polarity shown in the battery compartment.
No sound audible	Volume too low	Turn up the master volume and/or one of the other volume settings.
	Headphones connected	Check to see if headphones are connected as these will prevent sounds from being played back through the speakers.

The information in this user manual is subject to change at any time without notice.

Version: 1.2 **Date of creation and author's initials:** 19-11-2018 RV **Revision date and author's initials:** 13-03-2025 EH

Problem	Possible cause	Solution
Speaker sound distorted	Volume is too high	When the volume is too high, the sound coming through the speakers may be distorted. If this is the case, the volume level should be lowered.
Balance between sounds isn't good	Various volume levels need adjusting	Check and adjust all volume levels including the ones in the Sound Console until you're happy with the sound.
Unexpected sound effects	Various sound effects are turned on or off	Check and adjust effects like Sustain, Vibrato and Effect as well as Reverb and Chorus (see Function Menu) until you're happy with the sound.
Not all notes are registered at the same time	Full sound reproduction may not be possible due to limited polyphony	When playing very complex chords, it's possible that some notes may not be registered correctly due to the limited polyphony of the keyboard. Polyphony refers to the ability to play a certain amount of notes at the same time.

The information in this user manual is subject to change at any time without notice.

Version: 1.2 **Date of creation and author's initials:** 19-11-2018 RV **Revision date and author's initials:** 13-03-2025 EH

Specifications

- 61-note keyboard with touch-sensitive keys
- comprehensive LCD display with backlight
- 422 sounds, divided into groups
- 210 rhythms/accompaniments, divided into groups
- 120 demos/songs
- various adjustable sound effects: sustain, vibrato, effect, reverb, chorus
- master volume, rhythm volume and other independently-adjustable volume balances
- Auto Chord mode in A.B.C. and Full Range modes
- start/stop, intro/ending, sync, fill-in possibilities
- built-in metronome with adjustable speed and time signature
- dual voice option
- pitch bend
- built-in lessons consisting of three lesson types with optional left and right hand training
- USB MP3 player supports USB sticks up to 32 GB
- transpose function (+/- 12 semitones)
- memory function for presets (4 banks with 2 storage slots each)
- 64k recording function
- works with included power adapter or 8x 1.5 V D-cell batteries (batteries not included)

connectors:

- MIDI output (5-pin DIN)
- microphone input (TRS mini jack)
- headphone output (TRS mini jack)
- USB stick input (USB A female)

Technical:

- speaker power output: 2x 5 W
- power supply: 115 - 230V AC, 50 - 60 Hz
- operating voltage: 9V DC, 500 mA max.
- power consumption: 120 mA
- dimensions: 1008 x 431 x 171 mm
- net weight: 5.4 kg

The information in this user manual is subject to change at any time without notice.

Version:	Date of creation and author's initials:	Revision date and author's initials:
1.2	19-11-2018 RV	13-03-2025 EH