Manual

B4000+

authentic organ modeller

FERROFISH

advanced audio applications



Introduction

Thank you for choosing the B4000+. We trust that you will have just as much fun with your B4000+ as we had developing this unique and characterful organ. Please read the manual thoroughly in order to take full advantage of the many features the B4000+ has to offer.

The B4000+ is a drawbar organ in the tradition of the fabulous Hammond B3™. All features of the glorious ancestor have been modeled with the highest accuracy: 91 tonewheels, full polyphony, keyclicks and percussion, scanner vibrato, overdrive, the rotating Leslie™ speaker, and many more!

Accessories, Software and Updates

For further information and current software please visit our website: www.ferrofish.de

Quick start

Attach your B4000+ to the power supply and connect it to the wall socket. Press and hold the **On** key to power the B4000+.

Connect the loudspeakers to the Audio Out plug, or your headphones to the Phones plug.

Attach your MIDI keyboard to MIDI A. You can play the upper register (manual) via MIDI channel 1. The lower register is on MIDI channel 2, and the pedal register on MIDI channel 3. In order to attach another MIDI keyboard for the lower register easily, use the MIDI B input. Here channel 1 is set to the lower register.

To load a preset, press the **Preset** key, and select the desired preset with knob A.

To get a first impression of the sound capabilities, start the demosong by pressing the **Demo** key long.



If you have any questions or problems, please contact us via email (info@ferrofish.de) first, before sending the unit in. Our support team will be happy to assist you!

Operation

Operating the B4000+ is very easy thanks to the TFT display. However, all functions of the B4000+ can be controlled directly at the device. More than 80 parameters influence the sound. Have fun playing with them!

To keep track of things, we grouped the functions as follows:

GENERATOR

Here the sound is generated and mixed. Adjust the global sound parameters by pressing **Sound** and **Percussion**. By selecting **Tone** you mix the registers and also the external input.

EFFECTS

After the generator the effects are added to the sound. **Rotor** adjusts the Rotor effect (simulation of rotating speakers similar to the Leslie™). Under **FX** you find more effects: chorus/vibrato, reverb and compressor.

SYSTEM

Here you can call up presets (**Preset** key) and also save them (press the **Store** key long), and also display the overview screen (**Play** key). In addition, configure the B4000+ by pressing the **Setup** key long.

REGISTER

Using the three keys **Pedal**, **Lower**, **Upper** you choose which register is attached to the drawbars. The actual setting is shown in the top part of the display.

By long pressing one of these keys you can copy the drawbar positions in the corresponding register. By double-clicking the key the register properties can be set.



First select the function by pressing the appropriate key, then change the parameters by turning the knobs A-F. The assignment of these knobs can be found on the B4000+ printing, or alternatively are marked on the TFT.



The most important functions are accessible directly by pressing the appropriate keys. Less used functions (red printing) are called by long pressing the key. Some functions have more than one page. Press the key again to get to the other pages.

Sound

When pressing this key the six most important sound parameters of the emulation are shown:



EMULATION FEATURE

Click

On a Hammond B3™, the mechanical triggering of the sound by the keyboard creates a noticeable, rather 'spitty' click. While this side effect was initially regarded as undesirable, it became accepted in time as a characteristic part of the Hammond sound and eventually came to be pretty popular! The 'Click' control allows you to control the volume of this characteristic sound element.

EMULATION FEATURE

Crunch

This non-technical term refers to a type of additive distortion which occurs in a Hammond organ's drawbars. The 'Crunch' control lets you control the intensity of the drawbar distortion.

EMULATION FEATURE

Drive

This knob controls the amount of overdrive, which has been faithfully digitally modelled.

EMULATION FEATURE

Condition

As time passes, the condition of the tonewheels of a Hammond organ tends to degrade, which affects the sound quality and tuning integrity. With this control you magically alter the condition of the tonewheels from brand new (’NEW’) to ’needs repair’ (’REPAIR’).

EMULATION FEATURE

Leakage

On some organs you hear quiet overtones in the background when keys are played, even when all drawbars are in zero position. This is caused by internal overlapping within the drawbar circuitry of old Hammond B3. organs. By adjusting the ’Leakage’ control you simulate this phenomenon and adjust its intensity.

EMULATION FEATURE

Tuning

This setting controls the B4000’s master tuning +/- one tone in 128 single steps.

Percussion



As with a Hammond™ organ, the percussion effect is available only on the upper register and sounds only when a detached fingering style is used. If you play legato style (i.e. with overlapping notes), only the first note played triggers the percussion.

EMULATION FEATURE

On/Off

Enables the percussion.

EMULATION FEATURE

Level

Controls the overall level of the percussion.

EMULATION FEATURE

Harmonic

This controller changes the pitch of the percussion. The pitches correspond to those of the drawbars.

ADDITIONAL FEATURE

Attack

Controls the duration of the percussion. Since this feature isn't available on the original, set this value to minimum for the original sound.

EMULATION FEATURE

Decay

Controls the duration of the percussion.

Tone

Here you mix the registers and external input:



EMULATION FEATURE

Pedal - Lower - Upper

Adjust the volume of the corresponding register.

ADDITIONAL FEATURE

Input

You can feed an external signal in the Audio In plug. This signal can either be fed directly to the mix or via the effects section. Adjust the volume of the input signal with this knob.

In case you don't need this input, please set the volume to minimum to avoid noise coming in from the unused (open) input jack.

The routing of the external input is set by pressing the **Tone** key again.

EMULATION FEATURE

Treble - Bass

Set treble and bass of the B4000+ here.

external Input

When pressing the **Tone** key a second time, this screen will be shown. Here you see the chain of the sound generator and the effects. The external input signal can be inserted at arbitrary points. This way the signal is inserted before a specific effect, or can also be fed as dry signal to the output, or a combination of both.



Rotor

This screen control the motion of the rotating speaker (Leslie™). When you press the **Rotor** key again, the Horn and then the Bass screen is shown. Here you adjust the speeds of the Rotor, and also control break and acceleration.



EMULATION FEATURE

On / Off

Enables the rotor.

EMULATION FEATURE

Slow / Brake / Fast

Switch the rotor speed between slow, brake, and fast.

The speed of the rotor can also be switched using the external switch plug. You can set the direction of the switch, and many other options in the **Settings**.

ADDITIONAL FEATURE

Modwheel / Aftertouch

When enabled, you're able to switch the rotor between slow and fast by using the modwheel and aftertouch. So, if you press the key harder (aftertouch) or turning the modwheel, the rotor switches between slow, brake, and fast.



The MIDI threshold for modwheel and aftertouch can be adjusted in the **Settings**.

EMULATION FEATURE

Spread

Widen the stereo image by adjusting the 'Spread' control, emulating the effect of adjusting the positions of two spaced microphones.

EMULATION FEATURE

Balance

The 'Balance' control adjusts the volume balance of the bass speaker and treble speaker microphones. Turn the control fully left and you will hear only the bass speaker, turn it fully right and you will hear only the treble. In the centre position, the volume of the two is equal.

EMULATION FEATURE

Distance

Allows you to adjust the virtual distance between microphones and speakers.

Horn / Bass

After pressing Rotor again, the Horn- and then the Bass-screen is shown.



These controls are used to adjust various rotor settings. Many rotary speaker systems used a speaker for bass frequencies and a horn for treble signals, which rotated at different speeds. This rich, complex sound is faithfully reproduced and fully programmable in the B4000+.

EMULATION FEATURE

Slow

Controls the rotary speakers' slow rotation speed when the 'ROTOR' switch is set to the 'Slow' position.

EMULATION FEATURE

Fast

Controls the rotary speakers' fast rotation speed when the 'ROTOR' switch is set to the 'Fast' position.

EMULATION FEATURE

Accel

Controls the acceleration when switching from 'Slow' to 'Fast'.

EMULATION FEATURE

Brake

Controls the braking when switching from ’Fast’ to ’Slow’.

EMULATION FEATURE

Tone

The bass speaker and horn each have a tone control. By adjusting these you change the overall tone color and resonance of the rotor effect.

Chorus / Vibrato

More effects are implemented in the B4000+, which you control using the **FX** key: Chorus/Vibrato, reverb and compressor



EMULATION FEATURE

Vibrato Lower On/Off - Vibrato Upper On/Off

This effect can be switched on for the upper and lower register seperately.

EMULATION FEATURE

Data Wheel

The data wheel controls the strength of the vibrato and chorus effects. The ’V-1’, ’V-2’ and ’V-3’ settings introduce increasing strengths of vibrato, while selecting ’C-1’, ’C-2’ or ’C-3’ adds incremental amounts of chorus. Position ’C-3’ is mainly used for jazz or rock sounds.

Reverb

With this screen you can switch on and adjust the reverb effect.



ADDITIONAL FEATURE

On/Off

Enables the reverb

ADDITIONAL FEATURE

Dry/Wet

Sets the mix between the original (dry) and the reverb sound (wet)

ADDITIONAL FEATURE

Size

Sets the size of the room

ADDITIONAL FEATURE

Time

Sets the amount of reverb that is fed back in the reverb loop

ADDITIONAL FEATURE

Damp

Sets the frequency of the lowpass filter for the reverb feedback

Compressor

Since you're able to play up to 250 voices on the B4000+, the dynamics of this device is very high. The compressor is used to get a stronger sound. Press **FX** three times to get to the compressor screen.



ADDITIONAL FEATURE

On / Off

Enables the compressor

ADDITIONAL FEATURE

Gain, Amp.

Sets the strength of the compressor.

Presets

Press the **Preset** key to call up the a preset.



Select a preset by using knob A, and the bank by knob B.

To find a preset of a specific category, set the category filter with knob C.

Bank 1 is used for the 128 factory presets, which are not writable. The banks 2-16 are unused.

By long pressing the **Store** key you store a preset. Select the location by using knob A and B, and then press **Preset** again to execute. The name of the stored presets are “user 0001” etc. The names and categories of own presets can be renamed by using the PC software.

Play

Use this key when playing live. Here you have an overview of the drawbars, and you can adjust the volume by using knobs A and B.

Knob A controls the volume of the B4000+ simulation. If you enabled the tube-amplifier emulation, you will hear tube-distortion when turning up this volume. Knob B just sets the output volume at the jacks.



The presence of MIDI input signals is always shown on the very top of the TFT display. The small triangles show MIDI signals for MIDI A, MIDI B, and USB.

Pedal - Lower - Upper

Press one of these keys to connect the drawbars to the corresponding register. The active register is always shown in the top right border of the screen. To prevent accidental changing of the drawbar settings you also can disconnect the drawbars.

When pressing one of the keys long, you copy the current drawbar settings to the register. More features of this register are accessible by pressing the key twice (“double-click”):



ADDITIONAL FEATURE

Velocity On/Off

Unlike mechanical and most electronic organs, the B4000 can be played with dynamic key velocity and the envelope curve can be changed.

If the switch is set to the ON position, key velocity controls the volume of the notes.

ADDITIONAL FEATURE

Attack

This controls the attack time of the organ signal. When turned fully left (minimum position) the organ sounds immediately at full strength, while turning it fully right (maximum position) makes it fade in smoothly.

ADDITIONAL FEATURE

Release

This controls the decay time of the signal. When turned fully left (minimum position) the sounds stops immediately after you release a key. When turned fully right (maximum position) the note will go on sounding after you release the key.

EMULATION FEATURE

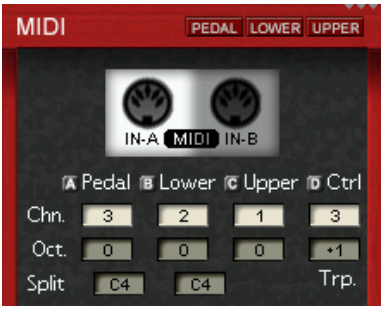
Transient Delay On/Off

When pressing a keyboard key on the original HammondTM nine mechanical contacts are closing, corresponding to the drawbars. If you press the key slowly, these contacts not close simultanously, thats why you hear a “softer” sound. The B4000+ can simulate this behaviour, if you set this switch to On. In this case, the MIDI velocity, which gives the information about the speed of the keyboard pressing, controls the amount of the delay.

Settings

MIDI

To adjust the MIDI setting, press long the **Setup** key.



Here you select the channels for the three registers, adjust the octave position, and select keyboard splits, for playing more than one register on one keyboard.

To attach a second keyboard easily, there is an additional MIDI input. The default setting of the MIDI channels are as follows:

Register	*MIDI IN A*	*MIDI IN B*	*USB*
Upper	1*	2*	1
Lower	2*	1*	2
Pedal	3*	3*	3
Ctrl.	1*	2*	1

* default, adjustable

So, easiest is to set both keyboards to MIDI channel 1, and plug in the upper-register keyboard to MIDI A, and the lower-register keyboard to MIDI B.

MIDI controller messages are processed on the “Ctrl” MIDI channel. Usually this is the same channel as you use for the upper keyboard. So, with the upper keyboard you also can select the Preset, and send other controllers. If you don't want the B4000+ to react on these controller messages, set the “Ctrl” MIDI channel to off.



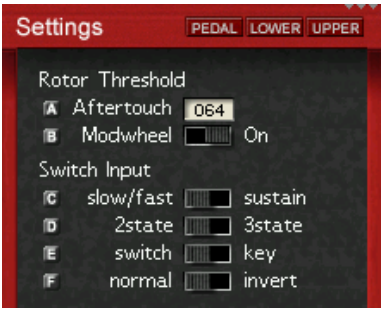
MIDI data is also transferred via USB. The MIDI channels on USB are fixed to channel 1 (upper register and controller), channel 2 (lower register) and channel 3 (pedal register). All incoming data from the MIDI plugs is transferred to the PC by USB, so you are able to record them on your sequencer.

The “Oct” line is used to transpose the registers by one octave up or down. With “Trp” you also can transpose all registers by half tone steps.

The Split-function is enabled automatically as soon as you select the same MIDI channels for two registers, for example, by selecting MIDI channel 1 for Upper and also Lower. Then the splitpoint is selected by the split-note.

Pressing **Setup** again allows you to change these settings step by step. After that further settings are shown.

Settings



ADDITIONAL FEATURE

Aftertouch Threshold

You can also switch the speed of the rotor by using aftertouch. The higher the number the more you have to press the key on your keyboard to switch the rotor to fast speed.

ADDITIONAL FEATURE

Modwheel

If you like to control the Rotor using the Modwheel, set this switch to “On”.

ADDITIONAL FEATURE

Switch: slow/fast ↔ sustain

This selects, if you use the switch input on the back of the B4000+ for controlling the Rotor, or for the Sustain function.

ADDITIONAL FEATURE

Switch: 2state ↔ 3state

2state switches (On-Off) are commercially available. However, since the Rotor has three positions, you can also connect a special switch with three positions, using a stereo-phone jack. This switch should connect *tip* with *sleeve*, and *ring* with *sleeve*.

ADDITIONAL FEATURE

Switch: switch ↔ key

Alternatively to a switch, you can also connect a momentary key. When using a key, every keypress advances the Rotor by one position.

ADDITIONAL FEATURE

Switch: normal ↔ invert

This setting reverses the function of the switch plug.

Pedal

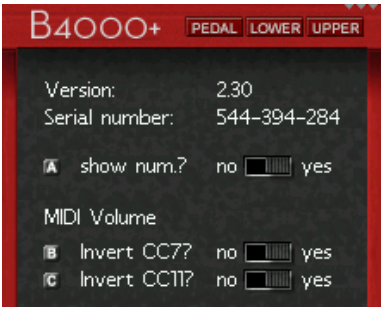
Press **Setup** again to adjust the range for the volume pedal. Please insert a pedal in the plug on the back of the B4000+.



The minimum and maximum value can be set with the knobs A and B. The arrows show the actual position of the pedal. The pedal function can be inverted with knob C.

Version

Here you find the firmware version and the serial number of your B4000+. Please check our website for new firmware versions.



ADDITIONAL FEATURE

show Num.: no ↔ yes

Most settings of the B4000+ are shown as rotary potentiometer, but internally stored as MIDI values between 0 and 127. Sometimes it makes sense to see this MIDI value in addition to the potentiometer. Set this switch to „on“ to display the numeric value.

ADDITIONAL FEATURE

invert CC7 / CC11:

MIDI Controllers 7 and 11 are used for volume and expression. Most MIDI pedals send 127...0 for loud...quiet. But there also exist pedals, which function is reversed. In this case set CC7 or CC11 to invert, so the pedal can be used as normal.

additional functions

Demosong

Start the song by pressing the **Demo** key long.

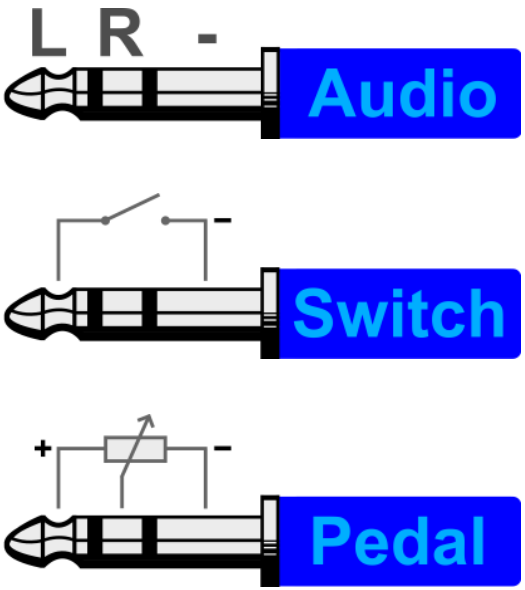
Panic

No panic when a MIDI note gets stuck. Press the **Panic** key long to stop all playing notes.

On / Off

Press the **On** key long to switch the B4000+ off. If possible, please switch off the B4000+ using this key and not by removing the power plug. This way you're sure, that all settings are stored correctly.

Assignment of the plugs



CE / FCC Compliance

This device complies with the limits of the European Council Directive on the approximation of the laws of the member states relating to electromagnetic compatibility (RL89/336/EWG, RL73/23/EWG).

This device complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.

RohS

This device has been soldered lead free and fulfills the requirements of the RohS directive.

Information about Disposal



According to the Directive on Waste Electrical and Electronic Equipment – RL for electrical and electronical devices) RL2002/96/EG this device has to be reused or recycled after its usage.

Trademarks

All trademarks are properties of their respective owners, and only used here for description.

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Warranty

Each B4000+ is tested by us and all functions are checked extensively. Only high quality components are used, which enables us to give two years full warranty. As confirmation for the purchase date please keep the sales receipt.

In case of a defect please consult your dealer. Defects, which are caused by improper installation or use are not subject to the warranty. In this case the repair is with costs.

Compensation in any kind, i.e. of secondary damages is excluded. Any liability beyond the merchandise value of the B4000+ is excluded. General terms and conditions of Ferrofish GmbH apply.

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