User Manual

UB-Xa

Classic Analog 16-Voice Multi-Timbral Polyphonic Synthesizer with
8 Vintage Modes, Dual VCFs and 61-Key Poly After-Touch Keyboard

behringer

EN

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EN Important Safety Instructions

CAUTION
RISK OF ELECTRIC SHOCK!
DO NOT OPEN!

ATTENTION
RISQUE D'ÉLECTROCUTION !
NE PAS OUVRIR !

Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

Caution
To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

Caution
To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Caution
These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Use only attachments/accessories specified by the manufacturer.

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

17. Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

18. Do not install in a confined space, such as a book case or similar unit.

19. Do not place naked flame sources, such as lighted candles, on the apparatus.

20. Please keep the environmental aspects of battery disposal in mind. Batteries must be disposed-of at a battery collection point.

21. This apparatus may be used in tropical and moderate climates up to 45°C.

LEGAL DISCLAIMER

LIMITED WARRANTY

Welcome to your UB-Xa – Getting Started

Thank you for purchasing the Behringer UB-Xa – the legendary 1980s polysynth brought up to date with a host of new features.

Unpacking

Carefully unpack your UB-Xa. Then, inspect it carefully for any signs of damage that may have occurred during transit and notify the courier immediately if you discover any.

Check the contents of your UB-Xa equipment package. If there are any parts missing, incorrect or faulty, please contact your local distributor or MUSIC Tribe support.

Inside this box, you should find the following items:

• UB-Xa

• IEC power cable

• Quick Start Guide

Please retain the original packing in case you should need to return the equipment to the manufacturer or supplier or transport the unit later.

Installation

Before installing and operating this equipment, make sure it is correctly connected to the protective earth conductor of the mains voltage supply socket outlet through the mains lead.

Ideally a cool area is preferred, away from power distribution equipment or other potential sources of interference.

Do not install the equipment in places of poor ventilation. Do not install this equipment in a location subjected to excessive heat, dust or mechanical vibration.

Allow for adequate ventilation around the equipment, making sure that its fans and vents are not obstructed.

Whenever possible, keep the equipment out of direct sunlight.

Power

The internal power supplies are of the switch mode type that automatically senses the incoming mains voltage and will work where the nominal voltage is in the range 100V~ to 240V~, 50 Hz or 60 Hz.

The correct leads for connection in the area to which the unit was shipped are supplied with the unit.

The equipment should only be plugged into the mains outlets using the supplied leads.

Make sure the plug fitted on the supplied mains cable is securely fitted to the mains IEC connector on the unit.

When fitting or removing a plug, always hold the plug itself and never use the cable, as this may damage it.

Never insert or remove an electric plug with wet hands.

WARM UP TIME

We recommend leaving 15 minutes or more time for the UB-Xa to warm up before recording or live performance. (Longer if it has been brought in from the cold.) This will allow the precision circuits time to reach their normal operating temperature and tuned performance.

Connect the UB-Xa to your mixing desk or amplifier before powering up. Power up the UB-Xa first, with the volume at minimum. Power up your mixer or amplifier after powering up the UB-Xa. Always increase volume levels slowly. If it is necessary to tune the UB-Xa to another instrument use the Master Tune control once the UB-Xa has warmed up and internally tuned. The Master Tune control has a dead zone at 12 o'clock which is set at A 440Hz standard tuning.

SOFTWARE SETUP

The UB-Xa is a USB Class Compliant MIDI device, and so no driver installation is required. The UB-Xa does not require any additional drivers to work with Windows and MacOS.

FIRMWARE UPDATE

Please check the behringer.com website regularly for any updates to the Behringer SYNTH TRIBE app.

Features

- 16 voice bi-timbral with two analog oscillators per voice
- Switchable 2-pole (12 dB/oct slope) or 4-pole (24dB/oct slope) VCF
- Two ADSR envelopes for VCF and VCA
- Six waveform LFO
- Unison mode
- Keyboard split and doubling
- Programmable sequencer
- Versatile arpeggiator
- Comprehensive modulation options
- 512 patch memories
- 35 Split keyboard programs
- 35 Doubled programs
- 64 step sequences in every patch memory
- Vibrato and Filter footpedal options (pedals not included)
- Stereo outputs
- MIDI control over DIN and USB
- Separate MPE pitchbend, filter and matrix control over lower and upper keyboard

Recalling a preset or saved patch, creating a new patch, storing your patches

To recall a preset patch, or one that you have created yourself, press the Shift button (LED on), then the Bank/Page buttons to select the required patch bank (A – D). Then press the shift button again (LED off) and use the Preset Value +/- buttons or select control to scroll through the patches in your selected bank. Patches are loaded as you scroll. On power-up the last used patch will be loaded.
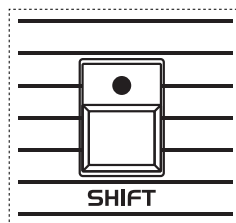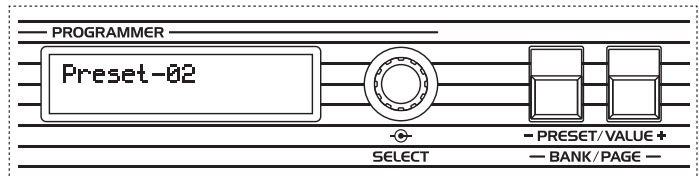
Once loaded a patch can be modified using the top panel controls. Please note that the physical position of the controls on the panel will not equate to the level of that control in the stored patch until the control setting is altered. The programmer display will show the name and value of the parameter being edited in real time. You can also create patches from scratch by switching the UB-Xa into Manual mode and using the top panel controls to build your patch.

When you are happy with your modifications or new creations you can write them to a memory by pressing the Write button and using the +/- buttons to select a memory location. Pressing the rotary encoder writes the settings to your selected patch slot. Pressing the Write button twice instantly saves the patch to the current location under its existing name.

If you wish to save into a different bank then press Shift (LED on) and scroll to your required bank using the Bank/Page buttons. Then press Shift again (LED off) and use the +/- buttons to select your required slot.

If you change to a different patch without writing then your edits will not be saved.

Manual Controls
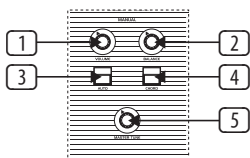
The settings of these controls are universal and are not stored as part of any programmed or preset patch, with the exception of patch volume (1).

☐1   **VOLUME** – controls the overall level of the UB-Xa to your amplifier or mixing desk. Care should be taken when changing patches, as some stored patches will be louder than others. It is recommended that the UB-Xa is powered up with the volume at its minimum and before the amplifier or mixing desk that it is connected to.

☐2   **BALANCE** – when using a split or double program the Balance control adjusts the level between the two patches associated with the program. When using a split program (one where the keyboard is split into lower and upper, each with its own patch) turning the Balance control to the left emphasizes the lower keyboard; to the right the upper. When using a double program (one in which there are two patches playing simultaneously) turning to the left emphasizes the patch associated with the lower keyboard; right the upper. More on Split and Double programs below.

☐3   **AUTO** – the UB-Xa will run an auto calibration routine in the background (depending on the settings in the Globals>Misc menu). Pressing the Auto button shows the current calibration state. Holding the button keeps the routine running.

☐4   **CHORD** – holding a chord on the keyboard and pressing the Chord button allows you to play that chord using any key on the keyboard, with the chord being transposed to the selected key. Pressing Chord again switches off the function. This function can also use used in conjunction with the Hold button (see Arpeggiator). Note priority can be set in the Vel>Aft menu.

☐5   **MASTER TUNE** – allows you to adjust the overall tuning of the UB-Xa to ensure that it is in tune with other instruments.

Control Section
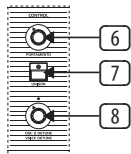
☐6   **PORTAMENTO** – this control affects the speed at which the pitch glides between notes. Portamento is polyphonic, so each note will glide at a different rate until its new pitch is reached. Portamento also works in Unison mode (see below). When the control is set fully left (CCW) there will be no portamento effect and notes will change instantly. When set fully to the right (CW) the maximum time possible will be taken to glide between pitches.

☐7   **UNISON** – turns the UB-Xa into a monophonic synthesiser. In Unison mode hold the Shift button and use the Unison button to select between 1 – 16 voices or 16 voices per key. In split mode Unison can be selected independently for lower and upper keyboard; so, for example, you could have the lower keyboard as normal to play chords, while setting the upper keyboard to Unison for lead patches.

☐8   **OSC 2 DETUNE** – this control allows you to set the oscillator 2 voices to be slightly sharp or flat relative to oscillator 1, giving a fatter sound, particularly in Unison mode. Turning the control to the left (CCW) flattens oscillator 2 by around 50 cents, right (CW) sharpens it by the same amount. An LED above the control indicates whether oscillator 2 is detuned. When the LED is not lit then then oscillators are in tune.

Arpeggiator (Arp)
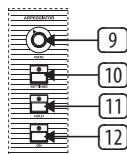
☐9   **RATE** – controls the rate at which the arpeggiator and internal sequencer (see below) run when Internal Sync is selected using the Settings Menu (see below). Rate can be adjusted between 40 and 240 bpm.

☐10   **SETTINGS** – allows access to the settings menu. There are five options, which can be scrolled through with the rotary encoder (62):

1. Arp Mode
2. Arp Time
3. Arp Gate Time
4. Sync
5. Octave

Pressing the rotary encoder allows access to the sub-menu options:

Arp Mode

> a - Up – notes held play upwards from lowest to highest (default).
>
> b - Down – notes held play downwards from highest to lowest.
>
> c - Inclusive – notes held play upwards from lowest then downwards from highest with repeats (1 / 2 / 3 / 4 / 4 / 3 / 2 / 1 / 1 etc).
>
> d - Exclusive – notes held play upwards from lowest then downwards from highest without repeats (1 / 2 / 3 / 4 / 3 / 2 / 1 etc).
>
> e - Random – notes held play randomly.
>
> f - Order – notes play back in the order that they are held (so holding C1 and C4 then adding C2 would give C1, C4, C2).
>
> g - Up x 2 – notes play upwards from lowest to highest, with each being played twice (1 / 1 / 2 / 2 / 3 / 3 / 4 / 4).
>
> h -Down x 2 - notes play downwards from highest to lowest, with each being played twice (4 / 4 / 3 / 3 / 2 / 2 / 1 / 1).
>
> i – Up x 3 - notes play upwards from lowest to highest, with each being played three times (1 / 1 / 1 / 2 / 2 / 2 / 3 / 3 / 3 / 4 / 4 / 4).
>
> j – Down x 3 - notes play downwards from highest to lowest, with each being played twice (4 / 4 / 4 / 3 / 3 / 3 / 2 / 2 / 2 / 1 / 1 /1).
>
> k – Up x2/x3 – notes play upwards from lowest to highest, with each being played twice on even time settings and three times on triplet settings.
>
> l – Down x2/x3 – notes play downwards from highest to lowest, with each being played twice on even time settings and three times on triplet settings.

Arp Time

    a - ¼ notes

    b - 1/8 notes

    c - 1/16 notes (default)

    d - 1/32 notes

    e - ¼ triplets

    f - 1/8 triplets

    g - 1/16 triplets

Arp Gate Time

    Continuously adjustable between 0 and 99; gate is open for longer at higher settings (default is 50).

Sync

    a - Global – adding a new note to the notes being held will only add the new note on the next applicable time interval.

    b - Retrigger – adding a new note to the notes being held restarts the arpeggio from the first note.

Octave

    Continuously adjustable between 1 and 6. If any value between 2 and 6 is selected then the notes held will be repeated up through the number of selected octaves. On higher settings if the notes held would go out of the UB-Xa's range then low octaves will be played at the end of the sequence (default is 1).

Pressing the rotary encoder when in one of the sub-menus returns to the main options menu.

⑪ **HOLD** – the Hold button allows an arpeggio to continue to play without keeping the selected keys pressed. To use it hold down the keys on the keyboard that you want to create an arpeggio from then press the button. The arpeggio will continue to play until either the Hold button is switched off or new notes are played; new notes will arpeggiate until the Hold button is switched off or a further set of new notes is played.

When the arpeggiator is not running the Hold button will apply an infinite sustain at the level of the loudness sustain control (47) to any notes being played when it is activated. Other notes can be played on top of the held notes and will be subject to the loudness envelope settings.

⑫ **ON** – switches the arpeggiator on and off.

Low Frequency Oscillator (LFO)
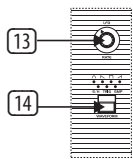
The LFO is used for modulation and runs at frequencies that are largely below human hearing. The LFO has two controls:

⑬ **RATE** – controls the frequency at which the LFO is running. The minimum is 0.06 Hz (approximately one cycle every 17 seconds); and the maximum is 50Hz (50 cycles per second).

⑭ **WAVEFORM** – there are six modulation waveforms available:

- Sine – a smooth rising and falling curve.

- Sawtooth – a wave with a smooth downcycle followed by a rapid rise.

- Square – alternating high and low states with no transition.

- Ramp – the reverse of Sawtooth: a smooth rise followed by a rapid fall.

- S&H – a random voltage derived from taking a sample of white noise at the top of each LFO cycle.

- SMP – samples the waveform from the separate LFO on the performance panel to the left of the keyboard in the same way as S&H samples white noise.

Pressing and holding the Waveform button for two seconds or more will put the LFO into re-trigger mode (Trig LED lit); in this mode the LFO will start a new waveform cycle for each new key played. This will not change the previously selected waveform.

Modulation Section
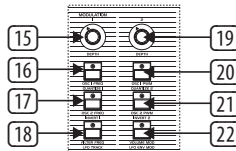
The modulation section controls the routing of the LFO to allow modulation of other sections of the UB-Xa.

⑮ **DEPTH** –controls the amount of LFO modulation that will be sent to each of the three selectable sources. When the control is fully to the left (CCW) there is no modulation, regardless of routing - when fully right (CW) the full output of the LFO will be routed.

⑯ **OSC 1 Frequency** – routes the LFO to oscillator 1 at the selected depth to produce a vibrato effect (frequency modulation).

⑰ **OSC2 Frequency** – routes the LFO to oscillator 2 at the selected depth to produce a vibrato effect (frequency modulation).

⑱ **FILTER** – routes the LFO to the filter, which will cause the filter to open and close above the base set using its frequency control.

⑲ **Pulse Width Depth** – allows the LFO to modulate the width of the pulse wave (see Oscillator section below) by varying amounts. When the control is fully to the left (CCW) there is no modulation, regardless of routing - when fully right (CW) the full output of the LFO will be routed.

⑳ **OSC 1 PWM** – routes the LFO to oscillator 1's pulse width.

㉑ **OSC 2 PWM** – routes the LFO to oscillator 2's pulse width.

㉒ **VOLUME MOD** – routes the LFO to the Voltage Controlled Amplifier (VCA) (see below) to produce a tremolo effect at the selected depth.

Oscillators Section
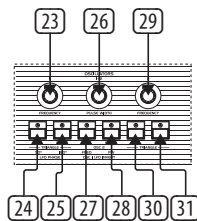
The Voltage Controlled Oscillators (VCOs) produce the basic sound of the UB-Xa.

㉓ **OSC 1 FREQUENCY** – controls the base frequency of oscillator 1, in four steps of one octave.

㉔ **SAW** – switches on Sawtooth waveform for oscillator 1 (Saw LED on).

㉕ **PULSE** – switches on Pulse waveform for oscillator 1 (Pulse LED on), which can be treated further by Pulse Width Modulation.

Switching on neither (both LEDs off) selects a Triangle waveform.

㉖ **OSC 1+2 PULSE WIDTH** – sets the width of the pulse when the Pulse wave is selected on either or both VCOs. When fully to the left (CCW) a square wave is produced where the up and down cycles are equal. Turning the control further to the right (CW) decreases the amount of the up cycle, producing a thinner effect. At all levels below the maximum Pulse Width Modulation will vary the waveform.

Holding the Pulse button (25 or 31) for either Osc 1 or Osc 2 allows the pulse width control 26 to affect each oscillator separately.

㉗ **SYNC** – causes the wave of oscillator 2 to reset at the same time as that of oscillator 1; giving a harmonically rich but sometimes glitchy effect, particularly when used in conjunction with F-env.

㉘ **F-ENV** – allows the filter envelope (see below) to change the pitch of oscillator 2, producing a distinctive effect as oscillator 2 attempts to synchronize with oscillator 1. The depth is controlled by the Filter Modulation control.

㉙ **OSC 2 FREQUENCY** – sets the base frequency of oscillator 2 in semitone steps over five octaves. This allows oscillator 2 to be offset against oscillator 1.

㉚ **SAW** – switches on Sawtooth waveform for oscillator 2 (Saw LED on).

㉛ **PULSE** – switches on Pulse waveform for oscillator 2 (Pulse LED on).

Switching on neither (both LEDs off) selects Triangle waveform.

Filter Section
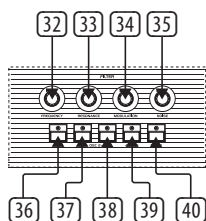
The filter is the way that the UB-Xa shapes the sound produced by the VCOs to control their timbre. The UB-Xa has two switchable Low Pass Filters (LPF): a 24 dB/octave 4-pole filter which gives a fuller sound, and a 12 dB/octave 2-pole which gives a smoother sound.

㉜ **FREQUENCY** – controls the amount of high frequencies that are allowed through the filter. When the control is fully to the left (CCW) no sound will pass (subject to modulation – see below). As the frequency control is turned to the right (CW) an increasing amount of high frequency is passed, until once the control is fully to the right (CW) there is no filtering at all; and all frequencies can be heard.

㉝ **RESONANCE** – also known as 'Q' or Emphasis, Resonance increases the prominence of frequencies centered around the position of the Frequency control. In 2-pole mode the overall patch will get louder; in 4-pole mode it will reduce in volume. The filter will self-oscillate in either mode, depending on the Atrophy settings in the Voice menu.

㉞ **MODULATION** – controls the amount of modulation from the Filter Envelope that is applied to the filter. This control also controls the amount of Filter Envelope that is applied to oscillator 2 when the F-Env button is used.

㉟ **NOISE** – allows the output of the Noise Generator to be routed to the filter. When the control is fully to the left (CCW) no noise will be heard. Turning the control to the right (CW) increases the amount of noise heard until the control is fully to the right (CW) where the noise is at its highest level.

㊱ **OSC 1** – allows the signal from oscillator 1 to be routed to the filter at full volume.

㊲ **OSC2 Half** – allows the signal from oscillator 2 to be routed to the filter at approximately half the level of oscillator 1 (- 6 dB).

㊳ **OSC2 Full** – allows the signal from oscillator 2 to be routed to the filter at the same level as that of oscillator 1.

㊴ **4 POLE** – when this switch is on (LED lit) the filter is working in 4-pole mode, as described above. When it is off then 2-pole is used.

㊵ **TRACK** – when this switch is on the keyboard voltage is applied to the filter, resulting in higher notes sounding brighter, particularly if the frequency control is set low.

Envelope Section
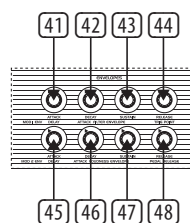
The UB-Xa has two envelope generators, which allow the patch of the filter and the amplitude of the Voltage Controlled Amplifier to be contoured. Both Envelope Generators feature four stages of contouring.

Filter Envelope

The Filter Envelope controls the contour of the filter when in use. Its effect will be more obvious if the frequency control is set low. There are four controls associated with this Envelope Generator:

㊶ **ATTACK** – controls the time taken for the envelope generator's level to rise from zero to maximum. The UB-Xa's attack is adjustable between 7ms and 13 seconds.

㊷ **DECAY** – controls the time taken for the envelope generator's level to fall from maximum to the level set by the Sustain control (see below) once the Attack stage has finished, and providing that keys are being held. The time is adjustable between a minimum of 9ms and a maximum of 16.5 seconds.

㊸ **SUSTAIN**- controls the level at which the filter will be held once the Decay cycle has completed and providing that keys are still being held. There is no time limit to Sustain. It should be noted that a high Sustain setting (above 50%) will cause the Decay stage to have little or no effect.

㊹ **RELEASE** – controls the rate at which the envelope generator's level drops to zero once keys are released. It should be noted that if Sustain is set to minimum the Release control will have no effect if keys are held down; but if keys are released during Attack or Decay then Release will still affect the filter. Release time can be adjusted between a minimum of 50ms and a maximum of 20 seconds.

The Filter Envelope also affects the pitch of oscillator 2 when the OSC2 F-Env switch is active.

Loudness Envelope

The Loudness Envelope controls the level of the UB-Xa's output (subject to the position of the Volume control). Like the Filter Envelope it has four controls:

㊺ **ATTACK** – controls the time taken for the envelope generator's level to rise from zero to maximum. The shorter the attack, the punchier the patch. The UB-Xa's attack is adjustable between 7ms and 13 seconds.

㊻ **DECAY** – controls the time taken for the envelope generator's level to fall from maximum to the level set by the Sustain control (see below) once the Attack stage has finished, and providing that keys are being held. As with Attack the shorter the decay, the punchier the patch. The time is adjustable between a minimum of 9ms and a maximum of 16.5 seconds.

㊼ **SUSTAIN** – controls the level at which the VCA will be held once the Decay

cycle has completed and providing that keys are still being held. There is no time limit to Sustain. It should be noted that a high Sustain setting (above 50%) will cause the Decay stage to have little or no effect.

⑷ **RELEASE** – controls the rate at which the envelope generator's level drops to zero once keys are released. It should be noted that if Sustain is set to minimum the Release control will have no effect if keys are held down; but if keys are released during Attack or Decay then Release will still affect the VCA. Release time can be adjusted between a minimum of 50ms and a maximum of 20 seconds.

Other Controls

⑷ **SHIFT** – Allows access to the UB-Xa's additional functions. A short press will latch the shift functions on; holding the button allows access to shift functions until the button is released.

Keyboard Section
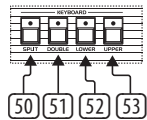
⑸⓪ **SPLIT** – allows the UB-Xa's keyboard to be split at any point, which enables the playing of different patches on the lower and upper keyboards. To use the Split function press the Split button to enter Split mode, then press and hold down the Split button and press the key that you would like to be the lowest note on the upper keyboard.

Pressing the Split key again without pressing any keys on the keyboard exits Split mode.

It should be noted that Split mode halves the UB-Xa's polyphony for each keyboard; so you will only be able to play a maximum of eight notes simultaneously on either. Split mode also allows the UB-Xa to be controlled from external sources on two MIDI channels simultaneously.

To recall a stored Split program enter Split mode and use the rotary encoder (62) to scroll through the stored programs. Programs are automatically loaded, so no further action is needed.

Up to 35 Split programs can be stored.

⑸① **DOUBLE** – allows the UB-Xa to play two patches simultaneously, either using its own keyboard or on two incoming MIDI channels.

To recall a stored Double program enter Double mode and use the rotary encoder (62) to scroll through the stored programs. Programs are automatically loaded, so no further action is needed.

Up to 35 Double programs can be stored.

⑸② **LOWER** – allows selection of the patch to be used for the Lower part of the keyboard in Split mode; or the patch balanced to the left in Double mode.

⑸③ **UPPER** – allows selection of the patch to be used for the Upper part of the keyboard in Split mode; or the patch balanced to the right in Double mode.

Sequencer Section
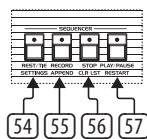
The UB-Xa stores a 64 step polyphonic sequence in each patch. The sequencer shares the Arpeggiator's Rate control. There are four controls associated with the sequencer, which also have additional functions when using the Shift button.

To start recording a sequence press the Record button (55). This resets the step count to the first step. The LED in the Record button will start flashing.

Any notes or chords that you play will be recorded into the sequence, and the position marker will advance by one. The +/- buttons can be used to navigate through steps that have been recorded. Steps are indicated on the display.

When you have finished recording press the Record button again, or press Stop (56).

To play back the sequence press Play (57). Pressing Play again will pause the sequence and the button's LED will flash. A further press resumes playback from the pause point.

To store your sequence press the Write button, then the Rotary encoder (Enter) to complete the write procedure. This writes the patch including the sequence.

If an error is made while programming a sequence then the Clr Last (Shift and Stop) button can be used to erase the last note.

To load a sequence from another patch into the current patch press Record and use the rotary encoder to select the patch whose sequence you wish to use. Use Shift and Select to change banks.

Pressing any key on the keyboard while a sequence is playing will instantly transpose the sequence.

⑸④ **REST/TIE** – pressing this button while holding a note or chord will extend (tie) the note(s) across more than one step of the sequence. Pressing it without holding any notes will insert a rest at that point in the sequence.

⑸⑤ **RECORD** – puts the sequencer into Record mode, as described above.

⑸⑥ **STOP** – when a sequence is running pressing the stop button stops the sequence and resets it to the first position.

⑸⑦ **PLAY/PAUSE** – if a sequence is not running then pressing this button starts it. A further press will pause the sequence, but unlike the use of the Stop button will not reset to first position. Pressing the button a third time will restart the sequence from the point that it was paused.

Using the Shift button with the four sequencer buttons adds additional functions:

Note that when the UB-Xa is acting as synchronization master for other MIDI equipment a short press of the play/pause or stop buttons will only enable or disable the UB-Xa's own sequencer. To control the external equipment as well use a double press or a long press.

Shift & 54 – Settings – accesses sequencer settings menu, which can be scrolled using the rotary encoder (62)

1. Seq Time

    a - ¼ notes

    b - 1/8 notes

    c - 1/16 notes

    d - 1/32 notes

    e - ¼ note triplet

    f - 1/8 note triplets

    g - 1/16 note triplets

2. Seq Gate Time

    Continuously adjustable between 0 and 99. Higher settings keep the gate open longer. Default is 50.

3.   Sync

 a - Global – adding a new note to the sequence will only add the new note on the next applicable time interval.

 b - Retrigger – adding a new note to the notes being held restarts the sequence from the first note.

Shift & 55 – Append – sets the playhead to the end of the sequence, allowing extra steps to be added, to the maximum allowed by the keyboard settings.

Shift & 56 – Clr Lst – Clear Last allows steps to be erased from the sequence, starting with the last step recorded. Pressing and holding Clear Last will erase the whole sequence.

Shift & 57 – Restart – when a sequence is running pressing Shift and 57 restarts it from the first step.

Programmer Section
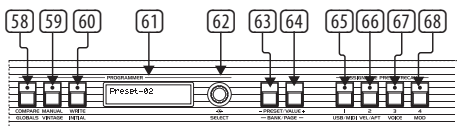
The Programmer Section allows stored patches to be recalled, edited, compared to the original and written/re-written.

⑤⑧   **COMPARE** – when editing a patch it is often useful to compare your edited version to the original. If you select Compare while editing the display will show you the stored value and edited value of the current control you are using, with an arrow to indicate whether you are above or below the stored value.

⑤⑨   **MANUAL** – puts the current state of all controls into the programming buffer, allowing the creation of new patches from the current control positions. The patch name will reset to 'preset'.

⑥⓪   **WRITE** – allows you to store new and edited patches. Press the Write button and use the +/- to select the memory slot that you want to write to. Press the rotary encoder to confirm. To name your patch use the encoder to scroll through the available letters and numbers, the Value +/- buttons move through the name. Pressing the encoder again stores the name with the patch. A maximum of 16 characters can be used. Patch must be re-written after name has been changed, otherwise the new name will not be saved.

 To store a Split or Double program enter Split or Double Mode. Hold down the Write button and use the +/- to scroll through the available memories (these are assigned the numbers 1-9 and the letters A-Z). Press Enter to store when you have reached the desired location. Turning the rotary encoder allows the write operation to be cancelled.

⑥①   **DISPLAY** – 32 character display. Normally this shows the name and location of the current patch.

- When a rotary control's position is changed display momentarily shows the new value of that control.

- When programming a sequence the display shows which sequence is being programmed, how many steps the sequence contains, and what the current step is.

- When using one of the settings menus the display shows the menu options.

⑥②   **SELECT** – rotary encoder used for selection memory locations. Pressing the encoder acts as an Enter button, with the option to complete or confirm.

⑥③   **Preset/Value (-)** – decreases a value by 1 unit for each press.

⑥④   **Preset/Value (+)** – increases a value by 1 unit for each press.

65, 66, 67, 68 - Assignable Preset Recall

The UB-Xa has four buttons that can be used to recall up to fifteen favourite/most used patches, including split and double patches. The buttons can be used in any of the following combinations:

1 / 2 / 3 / 4 / 12 / 13 / 14 / 23 / 24 / 34 / 123 / 124 / 134 / 234 / 1234

To assign a patch to a button combination first recall the patch as described in Getting Started. Hold down the button combination that you wish to use. Press the Write button.

Once a patch has been assigned to a specific button combination it can quickly be recalled by pressing that combination.

Patches can be single, double or split; and are global.

Performance Section
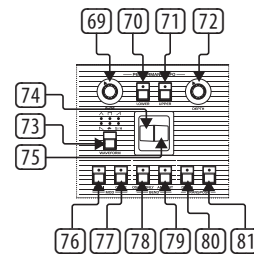
The performance section is located to the left of the keyboard. It contains a separate LFO to the main one described above. It should be noted that the Modulation Panel controls are not stored in patches, but are stored in Split or Double programs.

⑥⑨   **RATE** – controls the rate at which the LFO cycles. Adjustable from 0.06Hz (approximately 17 seconds) when the control is fully to the left (CCW) to 50Hz when the control is fully to the right (CW).

⑦⓪   **LOWER** – when this button is pressed LFO modulation and pitchbend will be applied to the Lower keyboard when in Split or Double mode.

⑦①   **UPPER** – when this button is pressed LFO modulation and pitchbend will be applied to the Upper keyboard when in Split or Double mode.

 When both buttons are pressed equal amounts of LFO modulation will be applied to both Lower and Upper keyboards. These controls do not work outside these modes.

⑦②   **DEPTH** – controls the amount of continuous modulation to be applied. Lower settings (control to the left) produce a more subtle modulation; while more extreme modulation can be obtained by turning the control to the right (CW). The level of this control is summed with the modulation lever (75) and the vibrato footpedal, when in use.

⑦③   **WAVEFORM** –selects the waveform to be used for performance section modulation. There are six waveforms available:

- Triangle

- Square

- Ramp

- Sawtooth

- Noise

- Sample & Hold

⑦④   **Pitchbend Lever** – this control bends the pitch of any notes being played when it is being applied. Pulling the lever towards the front of the case bends the pitch up; pushing it towards the body of the UB-Xa bends down (this can be changed - see Globals menu below). The maximum bend is controlled by the Amount button (79) described below. The lever is spring loaded and returns to center when released.

⑦⑤ **Modulation Lever** – the Modulation Lever is spring loaded and returns to center when released. Pushing the lever up increases the amount of modulation applied. This will be summed to any modulation being applied by the Depth control and/or Footpedal. The action of the downward and upward motion of the lever can also be individually used as a Modulation Matrix source.

⑦⑥ **OSC1** – applies LFO modulation, according to settings for Depth, Lever and Footpedal to oscillator 1.

⑦⑦ **OSC 2** – applies LFO modulation, according to settings for Depth, Lever and Footpedal to oscillator 2.

When both buttons are pressed equal amounts of modulation are applied to both oscillators. These controls are deactivated during Auto tuning to ensure tuning accuracy.

⑦⑧ **OSC 2 ONLY** – applies pitchbend only to oscillator 2. When used in conjunction with the Sync and F-Env controls described in the Oscillator section very expressive timbral effects can be created. When the control is not active pitchbend will be applied to both oscillators equally.

⑦⑨ **AMOUNT** – this control sets the range of the pitchbend lever. When it is not applied (LED off) the lever will bend the pitch up or down by a maximum of one whole note (EG 'C' up to 'D' or down to 'Bb'). When it is applied (LED on) the lever will bend through a selected range up or down. To select the bend range hold the amount button and press any key on the keyboard, then release the button. Default on power-up is one octave.

⑧⓪ **TRANSPOSE DOWN** – shifts the register of the keyboard down by one octave on first press (solid LED on) or two octaves on second press (LED flashing). This can be reversed using Transpose Up (81), or by pressing both buttons together.

⑧① **TRANSPOSE UP** – shifts the register of the keyboard up one octave on first press (solid LED on) or two octaves on second press (LED flashing). This can be reversed using Transpose Down (80), or by pressing both buttons together.

If the LEDs in 80 and 81 are not lit then the keyboard is in its normal range.

If the Shift button (49) is active then transposition takes place in semitone steps. Transposition also takes place when the UB-Xa is being controlled by an external MIDI source

Shift Functions

49

Many of the UB-Xa's controls, both rotary and button, have second functions, mostly indicated in grey type below the main legend in white. These are described below, except for those associated with the sequencer, which were discussed in the sequencer section.

Shift & 6 (Portamento Control) – Porta Glide – if Porta Glide is switched on in the Velocity and Aftertouch menu then holding Shift and adjusting the Portamento control will adjust the glide rate from -32 to +31.

Shift & 7 (Unison) – Poly Modes – switches between Poly (default) where between 1 and 8 voices can be selected (default is 2) and Unison where between 1 and 16 voices can be selected (default is 1).

Shift & 8 (Osc 2 Detune) – Voice Detune – allows the individual voices to be detuned, upwards only, from each other, with a dead band between 0 and 25 and a maximum setting of 255. This function is particularly effective in Unison mode.

Shift & 13 (LFO Rate) – LFO Sync – holding the Shift button and turning the LFO rate control syncs the LFO to whatever clock is being used by the sequencer and arpeggiator. The options are:

- 4 Bar
- 2 Bar
- 1 Bar
- ½ Note
- ¼ Note
- Dotted ¼ Note
- ¼ Note Triplet
- 1/8 Note
- Dotted 1/8 Note
- 1/8 Note Triplet
- 1/16 Note
- Dotted 1/16 Note
- 1/16 Note Triplet
- 1/32 Note
- Dotted 1/32 Note
- 1/32 Note Triplet

Moving the rate control without shifting returns the LFO to free running.

Shift & 16 – Quantize 1 – quantizes the LFO waveform when applied to the first modulation channel (Frequency).

Shift & 20 – Quantize 2 – quantizes the LFO waveform when applied to the second modulation channel (Pulse Width).

Shift & 17 – Invert 1 – inverts the modulation envelope for mod channel 1.

Shift & 21 – Invert 2 – inverts the modulation envelope for mod channel 2.

Shift & 18 – LFO Track – increases or decreases the speed that the LFO is running at in relation to the most recent key pressed – the higher the note the faster the LFO will run. This function does not disable the rate control, but works in conjunction with it.

Shift & 22 – LFO Env Mod – allows the filter envelope to modulate the LFO depth.

Shift & 24 – LFO Phase 90˚ - changes the phase of the LFO to 90˚out from its normal phase.

Shift & 25 – LFO Phase 180˚- changes the phase of the LFO to 180˚out from its normal phase.

Pressing Shift and buttons 24 & 25 changes the phase of the LFO to 270˚out from its normal phase.

Shift & 27 – OSC1 LFO Invert Freq – inverts the LFO frequency modulation to oscillator 1 only.

Shift & 28 – OSC1 LFO Invert PW – inverts the LFO Pulse Width Modulation to oscillator 1 only.

Shift & 41 – Mod 1 Delay – delays the introduction of frequency modulation to modulation channel 1.

Shift & 42 – Mod 1 Attack – applies an attack envelope to the depth of modulation to modulation channel 1.

Shift & 44 – LFO Trigger Point – controls the trigger point of the LFO waveform, from no trigger to full wave cycle, as illustrated below:

Sawtooth — Trig Point at 100% Time / Trig Point at 50% Time / Trig Point at 25% Time

Sine — Trig Point at 100% Time / Time / Trig Point at 25% Time — Trig Point at 50%
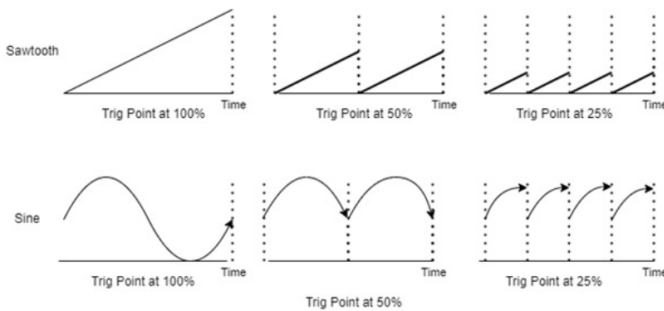
Shift & 45 – Mod 2 Delay – delays the introduction of pulse width modulation to modulation channel 2.

Shift & 46 – Mod 2 Attack - applies an attack envelope to the depth of modulation to modulation channel 2.

Shift & 48 – Pedal Release – used in conjunction with the 'Sustain' footpedal input (90) allows a different release time to the one selected on the loudness envelope to be selected by the switch.

Shift & 58 – Globals – accesses the Global Settings Menu. Options can be scrolled with the rotary encoder (62) and accessed by pressing it to Enter

Miscellaneous

1. Atrophy Lock – locks the editing of atrophy parameters, to prevent accidental editing. Options are Read Only (default) or Edit Advanced.

2. Contrast – adjusts to contrast of the display (61) from 0 to 32.

3. Backgrnd Cal – allows background calibration to be Enabled, Disabled or Only Auto, where the UB-Xa will only calibrate while the Auto button (3) is pressed.

4. Knob Dead Zones – changes how controls react in Atrophy:

   a – Purism – controls work in the range 9 o'clock to 3 o'clock.

   b – Extended (default) - controls work over full range of travel.

5. Disable – allows the following functions to be disabled:

   a – Assign Preset – disables the use of the assign preset recall button combinations.

   b – LEDSegues – disables LED segues between settings.

   c – Pulse Revert – disables an original bug where the oscillators would revert to pulse waveform on power down.

6. Levers – allows inversion of the pitchbend lever (left lever) (74) and modulation lever (right lever) (75). Use the +/- buttons to switch between normal and inverted.

   When pitchbend is inverted (indicated by [X]) then pushing the lever towards the body of the UB-Xa will bend the pitch down rather than up, and vice versa.

   When modulation is inverted (indicated by [X]) then modulation starts at full and is reduced by pushing the lever down.

   Also allows the levers to be swapped, so that pitchbend becomes modulation and vice versa.

7. Fan – allows the fan to be enabled (default), temperature controlled or disabled.

Pedal Settings

1. **Sustain Assign** – allows the sustain pedal footswitch input (Back Panel 90 below) to be reassigned. Options are:

   a – Patch Up – steps up through the patches in the currently selected bank. After patch 128 returns to patch 1.

   b – Patch Down – steps down through the patches in the currently selected

bank. After patch 1 returns to patch 128.

   c – Program Up – steps up through the stored Split or Double programs when in Split or Double mode.

   d – Program Down - steps down through the stored Split or Double programs when in Split or Double mode.

   e - Sustain (default) – switches between the Release time set by Control 48 and the Pedal Release time set by Shift & Control 48.

   f – Hold – duplicates the action of the Hold button (11) on the top panel.

   g – Sostenuto – pressing the pedal while holding notes on the keyboard causes the Pedal Release time set by Shift & Control 48 to be activated. Releasing the pedal reverts to the Release Time set by Control 48.

2. **Sustain Action** – switches between Negative (default) where pressing the footswitch causes the selected action to take place; Positive where the selected action takes place until the footswitch is pressed and Disabled.

3. **Sustain Latch** – switches between Unlatched (default) where releasing the footswitch causes the selected action to stop; and Latched where the selected action will continue until the footswitch is pressed again.

4. **Program Assign** - allows the program advance footswitch input (Back Panel 91 below) to be reassigned. Options are:

   a – Patch Up (default) – steps up through the patches in the currently selected bank. After patch 128 returns to patch 1.

   b – Patch Down – steps down through the patches in the currently selected bank. After patch 1 returns to patch 128.

   c – Program Up - steps up through the stored Split or Double programs when in Split or Double mode.

   d – Program Down - steps down through the stored Split or Double programs when in Split or Double mode.

   e - Sustain – switches between the Release time set by Control 48 and the Pedal Release time set by Shift & Control 48.

   f – Hold – duplicates the action of the Hold button (11) on the top panel.

   g – Sostenuto – pressing the pedal while holding notes on the keyboard causes the Pedal Release time set by Shift & Control 48 to be activated. Releasing the pedal reverts to the Release Time set by Control 48.

5. **Program Action** - switches between Negative (default) where pressing the footswitch causes the selected action to take place; Positive where the selected action takes place until the footswitch is pressed and Disabled.

6. **Program Latch** – switches between Unlatched (default) where pressing the footswitch causes the selected action to take place and Latched where the selected action will continue until the footswitch is pressed again.

7. **Hold Assign** - allows the hold pedal footswitch input (Back Panel 92 below) to be reassigned. Options are:

   a – Patch Up – steps up through the patches in the currently selected bank. After patch 128 returns to patch 1.

   b – Patch Down – steps down through the patches in the currently selected bank. After patch 1 returns to patch 128.

   c – Program Up - steps up through the stored Split or Double programs when in Split or Double mode.

   d – Program Down - steps down through the stored Split or Double programs when in Split or Double mode.

   e - Sustain – switches between the Release time set by Control 48 and the Pedal Release time set by Shift & Control 48.

   f – Hold (default) – duplicates the action of the Hold button (11) on the top panel.

g – Sostenuto – pressing the pedal while holding notes on the keyboard causes the Pedal Release time set by Shift & Control 48 to be activated. Releasing the pedal reverts to the Release Time set by Control 48.

8. **Hold Action** - switches between Negative (default) where pressing the footswitch causes the selected action to take place; Positive where the selected action takes place until the footswitch is pressed and Disabled.

9. **Hold Latch** - switches between Unlatched (default) where releasing the footswitch causes the selected action to stop and Latched where the selected action will continue until the footswitch is pressed again.

10. **Vibrato Assign** – allows the vibrato footpedal input (Back Panel 88 below) to be reassigned. Options are:

    a – Filter – the footpedal will control the filter cutoff frequency, with a range between the current filter frequency setting set by control 32 and the filter being fully opened.

    b – Vibrato (default) – the footpedal will control the amount of vibrato from the performance section LFO to whichever destinations have been selected with buttons 76 & 77. The modulation lever 74 will still be active.

    c – Attack – the footpedal will alter the loudness Attack time, overriding control 45, to the maximum of 14 seconds.

    d – Release – the footpedal will alter the loudness Release time, overriding control 48, to the maximum of 20 seconds

    e – Decay – the footpedal will alter the loudness Decay time, overriding control 46, to the maximum of 10 seconds.

    f – General 1 CC16 – the footpedal will affect continuous controller #16, which can be assigned through the Modulation Matrices.

    g – General 2 CC17 – the footpedal will affect continuous controller #17, which can be assigned through the Modulation Matrices.

    h – General 3 CC18 – the footpedal will affect continuous controller #18, which can be assigned through the Modulation Matrices.

    i – General 4 CC19 – the footpedal will affect continuous controller #19, which can be assigned through the Modulation Matrices.

11. **Vibrato Action** – switches between Negative (default) where pressing the footpedal decreases the effect; Positive where the footpedal action increases the effect and Disabled.

12. **Vibrato Trim L** – allows trimming of the vibrato pedal effect in the left channel. Continuously variable between 0 (default) and 255.

13. **Vibrato Trim R** – allows trimming of the vibrato pedal effect in the Right channel. Continuously variable between 0 and 255 (default).

14. **Filter Assign** – allows the filter footpedal input (Back Panel 89 below) to be reassigned. Options are:

    a – Filter (default) – the footpedal will control the filter cutoff frequency, with a range between the current filter frequency setting set by control 32 and the filter being fully opened.

    b – Vibrato – the footpedal will control the amount of vibrato from the performance section LFO to whichever destinations have been selected with buttons 76 & 77. The modulation lever 74 will still be active.

    c – Attack – the footpedal will alter the loudness Attack time, overriding control 45, to the maximum of 14 seconds.

    d – Release – the footpedal will alter the loudness Release time, overriding control 48, to the maximum of 20 seconds

    e – Decay – the footpedal will alter the loudness Decay time, overriding control 46, to the maximum of 10 seconds

    f – General 1 CC16 – the footpedal will affect continuous controller #16, which can be assigned through the Modulation Matrices.

g – General 2 CC17 – the footpedal will affect continuous controller #17, which can be assigned through the Modulation Matrices.

h – General 3 CC18 – the footpedal will affect continuous controller #18, which can be assigned through the Modulation Matrices.

i – General 4 CC19 – the footpedal will affect continuous controller #19, which can be assigned through the Modulation Matrices.

15. **Filter Action** - switches between Negative (default) where pressing the footpedal decreases the effect; Positive; where the footpedal action increases the effect and Disabled.

16. **Filter Trim L** - allows trimming of the filter pedal effect in the left channel. Continuously variable between 0 (default) and 255.

17. **Filter Trim R** - allows trimming of the filter pedal effect in the Right channel. Continuously variable between 0 and 255 (default).

Sysex Data Dump

Controls transmission of System Exclusive data relating to the following areas:

    a - **Upper Patch** – the patch being played by the upper keyboard in Split or Double mode, or the current patch otherwise.

    b - **Lower Patch** – the patch being played by the lower keyboard in Split or Double mode.

    c - **Current Program** – the current program settings (pointer to upper and lower patch, keyboard split point).

    d - **Bank A / B / C / D** – the content of the required patch bank.

    e - **Globals** – contents of the Global Settings menu.

    f - **Split Double** – the content of the Split and Double program memories.

    g - **Tuning 1-8** – the tuning settings of voices 1-8 (only required for support).

    h - **Tuning 9-16** – the tuning setting of voices 9-16 (only required for support).

    i - **Current Atrophy** – the Atrophy settings of the current patch.

    j - **Profiles** – all of the Atrophy Profiles stored on your UB-Xa.

Factory Defaults

Selectively erases stored data and replaces it with the defaults that the UB-Xa is shipped with. You can select from:

    a – Banks A – D Reset

    b - Split/Double Programs Reset

    c – Settings Reset

    d – Atrophy Reset

    e – Full Reset

It is suggested that care should be taken when using this option, as wipes cannot be reversed. You will be prompted to cancel or confirm before the wipe takes place.

Recover Last

Allows the last patch edited to be recovered, with edits, if the user accidentally navigates away without writing.

Main Firmware

Shows the current Firmware version. Firmware updates are available from Behringer.com and can be installed with the SYNTHTRIBE app for Windows or Mac. It is recommended that you keep your UB-Xa Firmware up to date in order to access new features.

EN

Voice Firmware

Shows the current Firmware version. Firmware updates are available from Behringer.com and can be installed with the SYNTHTRIBE app for Windows or Mac. It is recommended that you keep your UB-Xa Firmware up to date in order to access new features.

Keys Firmware

Shows the current Firmware version. Firmware updates are available from Behringer.com and can be installed with the SYNTHTRIBE app for Windows or Mac. It is recommended that you keep your UB-Xa Firmware up to date in order to access new features.

Recalibrate

Runs calibration routine. Can be cancelled during operation by pressing the rotary encoder (62). Calibration typically takes around 2.5 minutes.

Shift & 59 – Vintage – accesses the Vintage Settings Menu (Atrophy). Options can be scrolled with the rotary encoder (62) and are loaded automatically and will be saved automatically if parameters are changed. Names of the Atrophy Profiles can be changed by the same method as is used for patches. The Factory Defaults menu allows the original versions to be re-loaded.

1. OB-Xa

2. OB-8

3. Creamy

4. Broken

5. Gnarly

6. Bright

7. Modern

8. Stereo

A note about Atrophy: over time the components used in electronic equipment deteriorate, unless they are changed during a service. In synthesizers this has the effect of changing the sound of the synthesizer over time, sometimes to the point where the synthesizer becomes unusable owing to the instability that this causes.

The UB-Xa has been designed to emulate the characteristics of a synthesizer whose components have deteriorated without causing it to fail completely; and these altered characteristics can be loaded through the Vintage options. Finer adjustments can be made through the Voice menu options described below. Presets can be overwritten if required.

Shift & 60 – Initial – reloads the default patch from memory, overwriting any edits that have been made. Use the select control to confirm.

Shift & 63 – Bank/Page Down – changes the current patch bank downwards (D / C / B / A).

Shift & 64 – Bank/Page Up – changes the current patch bank upwards (A / B / C / D).

Shift & 65 – USB / MIDI – accesses the USB and MIDI settings

1. **Channel In Upper** – select channel 1-16, All to respond to all channels, None to disable MIDI In. Default is 1. The channel selected here will also be used in normal mode.

2. **Channel In Lower** – select channel 1-16, All to respond to all channels, None to disable MIDI In. Default is 2.

3. **Channel Out Upper** – select channel 1-16 or RxChannel to duplicate MIDI In channel. Default is 1. The channel selected here will also be used in normal mode.

4. **Channel Out Lower** - select channel 1-16 or RxChannel to duplicate MIDI In channel. Default is 2.

5. **Device ID** – select an ID number for the device from 1-16, in case multiple units are to be used on the same MIDI connection, for Sysex.

6. **Sync** – synchronization for sequencer and arpeggiator. Select from:

    a - Internal – sequencer and arpeggiator use rate set by control 9

    b - USB – sequencer and arpeggiator use clock from external MIDI device connected via the USB port. Control 9 has no effect.

    c - DIN – sequencer and arpeggiator use clock from external MIDI device connected to the MIDI In DIN socket. Control 9 has no effect.

7. **Song** – controls how the UB-Xa responds to Song information from an external MIDI source on either USB or DIN. You can select response to:

    a - Song Position Pointer (on (default) / off using +/- buttons).

    b - Stop on Seek – sequencer pauses when SPP received (on / off (default) using +/- buttons).

    c - Stop all off – all notes off when sequencer is paused (on (default) / off using +/- buttons).

    d – Keystart Seq – allows a sequence to be restarted from Pause by pressing a key on the keyboard (on (default) / off using +/- buttons). The sequence will be transposed to the key used. When used with a split patch this function will only operate if a sequence has been recorded for the zone that they key is in.

    e – Start EN Seq – MIDI Start, Stop and Continue commands can be used to auto-arm the sequencer (on (default) / off using +/- buttons)

    f – Start EN Arp – MIDI Start, Stop and Continue commands can be used to auto-arm the arpeggiator (on / off (default) using the +/- buttons)

8. **Forwarding** – selects how MIDI data is forwarded between the DIN and USB ports:

    a – DIN to USB (on or off (default) using +/- buttons) – forwards incoming MIDI data from the DIN MIDI In to USB MIDI OUT.

    b – USB to DIN (on or off (default) using +/- buttons) – forwards incoming MIDI data from the USB port to DIN MIDI OUT.

    c – DIN to DIN (on or off (default) using +/- buttons) – forwards incoming MIDI data from the DIN MIDI IN to the DIN MIDI OUT. Please note that this option should not be selected if the same external source is connected to both the DIN MIDI IN and the DIN MIDI OUT of the UB-Xa.

    d – Rt to USB (on or off (default) using +/- buttons) – forwards System Real Time data (start/stop/pause/continue) from the UB-Xa to the USB MIDI OUT.

    e – Rt to DIN (on or off (default) using +/- buttons) – forwards System Real Time data (start/stop/pause/continue) from the UB-Xa to the DIN MIDI OUT.

    f – Clock to DIN (on or off (default) using +/- buttons) – sends clock data received from USB MIDI IN to DIN MIDI OUT.

    g – Clock to USB (on or off (default) using +/- buttons) – sends clock data received from DIN MIDI In to USB MIDI OUT.

    h – ArpSeq Sel (on or off (default) using +/- buttons) – sends the arpeggiator and on-board sequencer to MIDI OUTs.

9. **Local Control** – selects how the UB-Xa is controlled by and controls other equipment:

    a – Local Control – switches the UB-Xa's keyboard on (default) or off using +/- buttons.

    b – DIN Rt – switches sending of System Real Time data. (start/stop/pause/continue) from UB-Xa to DIN MIDI OUT (on (default) or off using +/- buttons).

c – DIN Clock – switches transmission of internal clock over DIN MIDI OUT (on (default) or off using +/- buttons).

d – USB Rt – switches sending of System Real Time data (start/stop/pause/continue) from UB-Xa to USB MIDI OUT (on (default) or off using +/- buttons).

e – USB Clock – switches transmission of internal clock over USB (on (default) or off using +/- buttons).

f – Program Change Rx – switches reception of program and bank change messages over either DIN or USB (on or off (default) using +/- buttons).

g – Program Change Tx – switches transmission on program and bank change messages over either DIN or USB (on or off (default) using +/- buttons).

h – Surface NRPN – switches transmission of NRPN messages when controls are adjusted on or off (default). When NRPN is off MIDI CCs will be transmitted.

Note that when the UB-Xa is acting as synchronization master for other MIDI equipment a short press of the play/pause or stop buttons will only enable or disable the UB-Xa's own sequencer. To control the external equipment as well use a double press or a long press.

10. **USB Control** – selects how the UB-Xa responds to, and transmits, MIDI messages over USB

    a – NRPN Tx – switches transmission of Non-Registered Parameter Numbers over USB for coarse and fine adjustment of parameters where allowed (on or off (default) using +/- buttons).

    b – NRPN Rx – switches reception of Non-Registered Parameter Numbers over USB for coarse and fine adjustment of parameters where allows (on (default) or off using +/- buttons).

    c – CC Tx – switches transmission of continuous controller data over USB (on (default) or off using +/- buttons).

    d – CC Rx – switches reception of continuous controller data over USB (on (default) or off using +/- buttons).

11. **DIN Control** - selects how the UB-Xa responds to, and transmits, MIDI messages over DIN

    a – NRPN Tx – switches transmission of Non-Registered Parameter Numbers over DIN for coarse and fine adjustment of parameters where allowed (on or off (default) using +/- buttons.

    b – NRPN Rx – switches reception of Non-Registered Parameter Numbers over DIN for coarse and fine adjustment of parameters where allow (on (default) or off using +/- buttons).

    c – CC Tx – switches transmission of continuous controller data over DIN (on (default) or off using +/- buttons).

    d – CC Rx – switches reception of continuous controller data over DIN (on (default) or off using +/- buttons).

12. **MPE Pitch Lowe**r – controls the sensitivity of MPE control of pitch bend for the lower keyboard, from 0 to 96. Default is 48.

13. **MPE Pitch Upper** – controls the sensitivity of MPE control of pitch bend for the upper keyboard, from 0 to 96. Default is 48.

14. **MPE Profile** – selects the MPE profile. Single allocates fifteen channels of MPE control to the spread of the keyboard, with channel 1 as the base channel; or Zones which allocates 7 channels each to upper and lower keyboards, with channel 1 as the lower base channel and channel 16 as the upper. MPE can also be disabled in this option. Default is Disabled. Note that the MIDI Rx channels selected in options 1 & 2 are disabled when in MPE mode.

Please see the MPE chapter later in the manual for a full explanation of how MPE works, and specifically how it works with the UB-Xa.

Shift & 66 – Velocity & Aftertouch

1. Porta Modes – allows selection of different portamento types:

    a – Match – matches the portamento speed of each note so that they arrive at their destination simultaneously (on or off (default) using +/- buttons).

    b – Quantize –switches between a standard smooth portamento curve and one where notes glissade through semitones between notes (on or off (default) using +/- buttons).

    c – Bend – switches between a standard portamento and one where there is always a bend from highest to lowest note when playing the same chord repeatedly (on or off (default) using +/- buttons).

    d – Exponential – all voices will take the same length of time to reach their new note (on or off (default) using +/- buttons).

2. Unison Priority – switches between Below (default), Above and Last note priority when in Unison mode.

3. Chord Priority - switches between Below (default), Above and Last note priority when in Chord mode.

4. Aftertouch Out – switches between Channel Pressure and Polyphonic Aftertouch (default) on MIDI OUTs.

5. AT Curve – sets intensity of Aftertouch Curve. Options are Soft, Medium (default) and Hard.

6. Aftertouch Flt – sets the amount of aftertouch affecting the filter from 0 (no affect) to 127 (full affect). Default is 63

7. Vel Curve – sets the intensity of the Velocity Curve. Options are Soft, Medium (default) and Hard.

8. Vel Scale – sets the velocity response level from 0 (minimum) to 127 (maximum). Default is 63.

Shift & 67 – Voice Menu

Atrophy – allows alteration of Atrophy settings for the current profile.

1. 2pole Floor – adjusts the minimum point of the Filter Frequency control (32) when the filter is in 2-pole mode; from 8.18 Hz to 130.81 Hz.

2. 4pole Floor – adjusts the minimum point of the Filter Frequency control (32) when the filter is in 4-pole mode; from 8.18 Hz to 130.81 Hz.

3. FltrFreq Amount – adjusts the sensitivity of the Filter Frequency control (32) from 48 semitones to 111 semitones.

4. FEnv Freq Amt – adjusts the range of the Filter Modulation control (34) from 48 semitones to 175 semitones. Default is 120 in all profiles.

5. ltrLFO Depth – adjusts the range of the LFO's filter modulation when selected by button 18 and Depth control (15); from 48 semitones to 175 semitones.

6. Res 2pCV Cap – caps the maximum level of the Resonance control (33) when the filter is in 2-pole mode; from 50.20 % to 100.00 %. At settings below 97.00 % the filter will not self-oscillate.

7. Res 4pCV Cap – caps the maximum level of the Resonance control (33) when the filter is in 4-pole mode; from 0.00 % to 100.00 %. At settings below 48.00 % the filter will not self-oscillate.

8. Filter Drift – adds a random voltage to the filter frequency cutoff. Ranges from 0.00 cent to 400.00 cent with the effect becoming more pronounced at higher settings. Default is 0.00 cent in all profiles.

9. FVPO Error – adds a fixed error to the tracking of the filter, resulting in a flattening below the frequency set by FInit Freq (option 11) and a sharpening above, from – 50.79 cent per octave to 49.21 cent per octave.

10. FVPO Drift – sets the randomization range of the filter's tracking as it moves away from the initial frequency set in option 11, from 0.00 cent per octave to 50.00 cent per octave. Default is 0.00 cent per octave in all profiles.

11. FInitFreq – sets the starting frequency for FVPO Drift and FVPO Error, from 8.18 Hz to 12543.86 Hz.

12. FDrift Speed – sets the rate at which the filter drift changes, from 0.00 % per second (no drift) to 61.50 % per second.

13. FENV Drift – adds a randomization to the filter envelope attack, decay and release settings, from 0.00 envelope units to 32.00 envelope units. Default is 0.00 in all profiles.

14. FTrack Offset – adds a negative offset to filter keyboard tracking, adjusted in semitones from 0.00 semitones to -63.00 semitones. Default is -20.00 semitones in all profiles.

15. Ftrack Offset – adds a negative offset to filter keyboard tracking, adjusted in semitones from 0.00 semitones to -63.00 semitones. Default is -20.00 semitones in all profiles. Default is -20.00 semitones in all profiles.

16. FEnv Attack – adjusts the linearity of the filter envelope attack, from 0% to 100%.

17. OSC Drift – introduces a chaotic detuning of voices relative to the central pitch from 0.00 cents to 100.00 cents.

18. OscVPOError – adjusts the volt per octave tracking of the VCOs, resulting in lower notes being slightly flattened and higher notes being slightly sharpened, from -6.25 cents per octave to 5.86 cents per octave. Default is 0.00 cents per octave in all profiles. Only works in Unison mode.

19. OSCVPO Drift – adds a randomization to the tracking of the VCOs, from 0.00 cents per octave to 12.50 cents per octave from the initial frequency set in option 19. Only works in Unison mode.

20. OSCInitFreq – offsets the initial frequency of the VCOs in Hz so that a specified note will be accurate when VPO error or chaos is introduced, from 8.18 Hz to 12543.86 Hz. Default is

21. ODrift Speed – adjusts the speed at which the OSCVPO Drift parameter operates, from 0.00 % per second (no drift) to 61.50 % per second.

22. Porta Spread – continuous adjustment of the spread of the portamento effect, from 0.00 % to 100.00 %. Default is 100.00 % in all profiles.

23. Porta Speed – continuous adjustment of the speed of the portamento effect from 0.00 % to 100.00 %.

24. VCOLFO Amt – sets the range of the modulation depth control (15) to the oscillators when selected by buttons 16 and 17; from 6 semitones to 48 semitones. Does not have any effect on filter modulation when selected using button 18.

25. FEnv Osc Amt – sets the range of the filter envelope button (28) from 1 semitone to 63 semitone. Default is 12 semitones in all profiles.

26. VCA Offset: reduces minimum volume of the VCA; from 0.00 % to 78.43 %. Default is 30% on all profiles.

27. VCA 2p Bias – sets the attenuation of the VCA when the filter is in 2-pole mode; from 0.00 % to 100.00 %.

28. VCA Uni Bias – reduces the maximum level of the VCA when Unison mode is on. From 0.00 % to 100.00 %.

29. Volume Bias – adjusts the maximum level of the VCA from 0.00 % to 100.00 %.

30. VCAEnv Attack – adjusts the linearity of the attack portion envelope on the VCA. Continuously adjustable from 0.00 % to 100.00 %.

31. VCA Env Drift – adds a randomization to the VCA envelope attack, decay and release settings, from 0.00 envelope units to 32.00 envelope units. Default is 0.00 in all profiles.

32. 01PWM Trim L – sets the maximum width of PWM control (19) on oscillator 1 voices to the left from 0.00 % to 100.00 % of the duty cycle. Default is 0.00 in all profiles.

33. 01PWM TrimR – sets the maximum width of PWM control (19) on oscillator 1 voices to the right from 0.00 % to 100.00 % of the duty cycle.

34. 02PWM Trim L - sets the maximum width of PWM control (19) on oscillator 2 voices to the left from 0.00 % to 100.00 % of the duty cycle. Default is 0.00 in all profiles.

35. 02PWM TrimR – sets the maximum width of PWM control (19) on oscillator 1 voices to the right from 0.00 % to 100.00 % of the duty cycle.

36. PWMLFO Amt – sets the maximum depth of LFO Pulse Width Modulation, from 0.00 % to 100.00 %.

37. PWMLFO Shift – adds a fixed offset to the LFO Pulse Width Modulation, from -50.20 % to 49.80 %.

38. OB-8 Quirks – allows the phase of the LFO square wave and the VCF modulation to be separately inverted.

39. ModLFO Limit – sets the upper limit of the LFO rate control (13) from 0.10 Hz to 60.00 Hz.

40. PerfLFO Limit – sets the upper limit of the Performance LFO rate control (69) from 0.10 Hz to 60.00 Hz.

The table below shows default settings for Atrophy controls where they differ between profiles

Profile	UB-Xa	OB-8	Creamy	Aged	Gnarly	Bright	Modern	Wider
2pole Floor	11.56	13.75	25.96	25.96	8.18	92.50	25.96	11.56
4pole Floor	13.75	16.35	34.65	34.65	8.18	65.41	34.65	13.75
FltrFreq Amount	82.00	65.00	75.00	96.00	96.00	96.00	96.00	82.00
FltrLFO Depth	48.00	48.00	48.00	48.00	175.00	120.00	120.00	48.00
Res 2pCV Cap	96.09	95.31	96.09	96.09	96.09	96.09	96.09	96.09
Res 4pCV Cap	60.00	32.94	60.00	60.00	100.00	60.39	60.00	60.00
Filter Drift	158.73	0.00	50.79	0.00	0.00	203.17	0.00	0.00
FVPO Error	-25.40	-25.40	-12.70	49.21	-25.40	-50.79	0.00	-25.40
FVPO Drift	0.00	0.00	37.30	25.40	25.40	0.00	0.00	0.00
Finit Freq	329.63	329.63	329.63	329.63	2093.00	2093.00	329.63	329.63
Fdrift Speed	2.93	0.00	46.86	61.50	31.24	31.24	31.24	2.93
Ftrack Offset	-16.00	-20.00	-20.00	-20.00	-20.00	-20.00	-20.00	-16.00
FEnv Attack	100.00	82.54	82.54	82.54	1.59	0.00	0.00	0.00
OSC Drift	1.59	0.00	7.94	12.70	3.17	1.59	0.00	1.59
Osc VPO Error	0.00	0.00	2.34	-1.17	-0.39	0.00	0.00	0.00
OSC VPO Drift	4.37	0.00	0.99	0.00	7.94	1.59	0.00	4.37
Osc Init Freq	329.63	329.63	329.63	8.18	440.00	8.18	8.18	329.63
Odrift Speed	0.98	0.00	61.50	61.50	61.50	61.50	61.50	0.98
Porta Speed	73.33	24.91	25.10	25.10	25.10	25.10	25.10	73.33
VCOLFO Amt	12.00	15.00	12.00	12.00	12.00	12.00	12.00	12.00
VCA 2p Bias	100.00	100.00	90.98	90.98	90.98	90.98	90.98	91.37
VCA Uni Bias	96.86	97.25	90.20	90.20	100.00	90.20	90.20	96.86
Volume Bias	96.47	89.02	96.47	96.47	96.47	100.00	96.47	96.47
VCA Env Attack	82.54	63.49	82.54	82.54	82.54	82.54	82.54	82.54
O1 PWM TrimR	87.06	100.00	90.98	90.98	90.98	90.98	90.98	87.06
O2 PWM TrimR	87.06	100.00	90.98	90.98	90.98	90.98	90.98	87.06
PWMLFO Amt	70.59	97.25	55.69	55.69	55.69	55.69	55.69	70.59
PWM Lfo Shift	6.27	5.10	0.78	0.78	0.78	0.78	0.78	6.27
OB-8 Quirks	Both off	Both on	Both off	Both off	Both off	Both off	Both off	Both off
ModLFO Limit	24.32	51.62	37.25	37.25	37.25	37.25	37.25	24.32
Perf LFO Limit	12.99	51.62	37.25	24.94	60.00	24.94	24.94	12.99
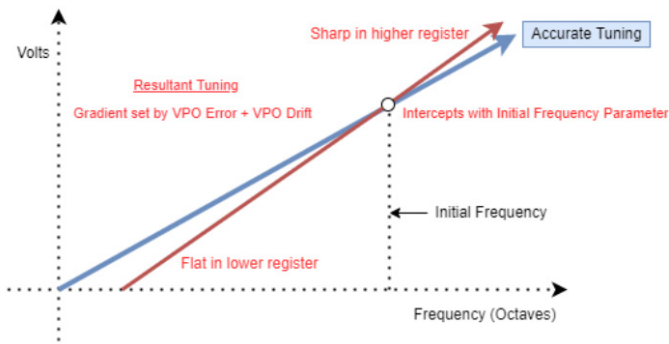
The above graph applies to FVPO Error, FVPO Drift, FDrift Speed and FInitFreq in relation to the filter where frequency is in relation to the frequency of the resonant peak of the filter; OSCVPO Error, OSCVPO Drift, ODrift Speed and OSCInitFreq where frequency is in relation to the pitch of the oscillators. These parameters allow the tuning of the filter to be adjusted emulating volts per octave calibration tuning error in vintage synthesizers.

The VPO Error is a constant scaling to the gradient of the volts per octave relative to the Initial Frequency, the Initial Frequency is precise and accurate. VPO Drift is a small amount of random factor independent to each voice added to this factor. The speed that the VPO Drift is changing is set by the respective drift speed parameters.

Panning – sets the position of each voice, individually, in the stereo field using the rotary encoder to scroll through the voices then pressing to enter the voice. The encoder can then be used to pan the selected voice through the stereo field: -127 is fully panned to the left; 0 is central; 127 is fully panned to the right. Default is 0 for all voices. Hard pan to the left or right can be set instantly with the value +/- buttons.

Inhibit

Please note that the Inhibit options are intended for repair and diagnostic use and should not have their settings adjusted unless this becomes necessary.

Toggle 1 – 8 – allows voices 1 – 8 to be individually switched on or off using the +/- buttons. Default is on.

Toggle 9 – 16- allows voices 9 – 16 to be individually switched on or off using the +/- buttons. Default is on.

PWMCal1to8 – allows PWM calibration for voices 1 – 8 to be individually inhibited using the +/- buttons. Default is on.

PWMCal9to16 – allows PWM calibration for voices 9 – 16 to be individually inhibited using the +/- buttons. Default is on.

VCOCal1to8 – allows VCO calibration for voices 1 – 8 to be individually inhibited using the +/- buttons. Default is on.

VCOCal9to16 – allows VCO calibration for voices 9 – 16 to be individually inhibited using the +/- buttons. Default is on.

VCFCal1to8 – allows VCF calibration for voices 1 – 8 to be individually inhibited using the +/- buttons. Default is on.

VCFCal9to16 – allows VCF calibration for voices 9 – 16 to be individually inhibited using the +/- buttons. Default is on.

Shift & 68 – Modulation Matrices

The modulation matrices allows any available source to be routed to any available destination with a depth of 0 to 127 (normal) or 0 to -127 (inverted). Each patch has eight matrices available, which can be selected when in the menu by using the +/- buttons.

Sources

Can be selected by scrolling through the available options using the rotary encoder (62) then pressing enter, or by moving/pressing the relevant control on the top panel where available. Enter cycles through Source; Destination and

Amount. A matrix can be cleared by selecting it then pressing and holding the rotary encoder for one second. Available sources are:

Empty (no source selected)

ATMono (monophonic aftertouch)

ATPoly (polyphonic aftertouch)

Breath (Incoming Continuous Controller #2 (Breath))

CH1Env (Modulation Channel 1 envelope)

CH2 Env (Modulation Channel 2 envelope)

CH1Mod (Modulation Channel 1 (frequency))

CH2Mod (Modulation Channel 2 (pulse width modulation))

Express (Incoming Continuous Controller #11 (Expression))

Filter (Aggregate of all filter controls)

FtrEnv (Filter Envelope)

KyMono (Monophonic keyboard tracking using last note played)

KyPoly (Polyphonic keyboard tracking)

LdnEnv (Loudness Envelope)

LFOMod (Modulation LFO)

LFOPrf (Performance LFO)

Noise (White Noise Generator)

ModLvr (Modulation Lever (74))

OSC1Fr (Oscillator 1 Frequency control (23))

OSC2Fr (Oscillator 2 Frequency control (29))

OSC1PW (Oscillator 1 Pulse Width depth)

OSC2PW (Oscillator 2 Pulse Width depth)

PchBnd (Pitch Bend Lever (75))

Resnce (Filter Resonance control (33))

Portam (Portamento control (6))

PerfCh (Aggregate of all Performance LFO controls)

VCA L (Left hand output VCA level)

VCA R (Right hand output VCA level)

Velcty (Keyboard velocity)

Butter (modulation increases in a linear manner per voice. Last voice played gets full level)

#16 (Continuous Controller #16, assignable to either footpedal, or from external device)

#17 (Continuous Controller #17, assignable to either footpedal, or from external device)

#18 (Continuous Controller #18, assignable to either footpedal, or from external device)

#19 (Continuous Controller #19, assignable to either footpedal, or from external device)

MLvrUp (Modulation level upward motion)

MLvrDn (Modulation level downward motion)

MPETbr (MIDI MPE Timbre (up and down action))

MPEPb (MIDI MPE Pitchbend (left to right action))

MPEPrs (MIDI MPE Pressure)

8L*8R (8 voices are panned hard left, 8 panned hard right)

Flip LR (Odd numbered voice pan left, even pan right)

Spiral (voice alternately pan L/R with each new voice panning further from centre)

Destinations

These destinations can have a modulation source assigned to them:

Empty (no destination selected)

Churn (multiplies the Butter modulation)

FltrAttk (increases or decreases the filter envelope attack, in conjunction with Filter Attack control (41))

FltrDecy (increases or decreases the filter envelope decay, in conjunction with Filter Decay control (42))

FltrFreq (adds or subtracts from the filter frequency as set by control 32 and selected modulation sources such as filter envelope and LFO)

FltrMod (increases or decreases the amount of filter modulation, in conjunction with the Filter Modulation control (34))

FltrNoise (increases white noise content to the filter input, in conjunction with Noise Level control 35)

FltrRels (increases or decreases the filter envelope release, in conjunction with the Filter Release control (44))

FltrRsnce (increases or decreases the amount of filter resonance, in conjunction with the Filter Resonance control (33))

FltrSust (increases or decreases the sustain level of the filter envelope, in conjunction with the Sustain control (43))

LdnssAttk (increases or decreases the loudness envelope attack, in conjunction with Loudness Attack control (45))

LdnssDecy (increases or decreases the loudness envelope decay, in conjunction with Loudness Decay control (46))

LdnssRels (increases or decreases the loudness envelope release, in conjunction with Loudness Release control (48))

LdnssSust (increases or decreases the loudness sustain level, in conjunction with Loudness Sustain control (47))

ModCh1Amt (increases or decreases the depth of Channel 1 modulation (frequency) in conjunction with the depth control (15))

ModCh2Amt (increases or decreases the depth of Channel 2 modulation (PWM) in conjunction with the depth control (19))

ModLFOPhs (changes the phase of the modulation LFO)

ModLFORte (increases or decreases the rate of the modulation LFO in conjunction with Rate control (13))

O1 PWAmnt (increases or decreases the amount of Pulse Width Modulation to Oscillator 1, in conjunction with the depth control (19))

O1 Trnsps (transposes Oscillator 1 in conjunction with Frequency control (23))

O2 Detune (increases or decreases the detuning of Oscillator 2 against Oscillator 1 in conjunction with the Detune control (8))

O2 PWAmnt (increases or decreases the amount of Pulse Width Modulation to Oscillator 1, in conjunction with the depth control (19))

O2 Trnsps (transposes Oscillator 2 in conjunction with Frequency control (29))

Panning (the modulation source controls the panning of the voices from left to right)

Porta (increases or decreases the Portamento time, in conjunction with control (6))

PrfLFOAmnt (increases or decreases the depth of the Performance LFO, in conjunction with Depth control (72))

PrfLFORte (increases or decreases the rate of the performance LFO, in conjunction with Rate control (69))

Tuning (raises or lowers the Master Tuning of the UB-Xa, in conjunction with Master Tune control (5))

V Detune (increases or decreases the amount of voice detuning, in conjunction with Voice Detune control (Shift & 8))

Volume (increases or decreases the overall level of the UB-Xa)

Shift & 69 (LFO Rate) – Performance LFO Sync – holding the Shift button and turning the Performance LFO rate control syncs the LFO to whatever clock is being used by the sequencer and arpeggiator. The options are:

- 4 Bar
- 2 Bar
- 1 Bar
- ½ Note
- ¼ Note
- Dotted ¼ Note
- ¼ Note Triplet
- 1/8 Note
- Dotted 1/8 Note
- 1/8 Note Triplet
- 1/16 Note
- Dotted 1/16 Note
- 1/16 Note Triplet
- 1/32 Note
- Dotted 1/32 Note
- 1/32 Note Triplet

Moving the rate control without shifting returns the LFO to free running.

Rear Panel
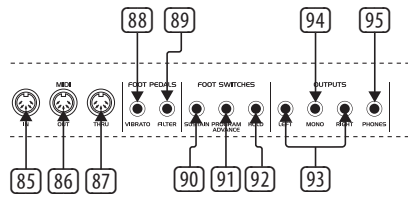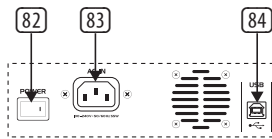
The rear panel of your UB-Xa contains the connections for power, peripherals and communication. It also contains a fan and air vents for cooling. It is important that there is enough space behind your UB-Xa to allow free air flow, otherwise damage may occur.

82 **Power Switch** – switches the UB-Xa on and off.

83 **AC IN** – should be used only with the IEC lead supplied with your UB-Xa. Will work with any AC mains source in the range 100v – 240v.

84 **USB** – A USB type B connector which allows control of the UB-Xa from external MIDI sources via a standard USB lead. The USB port is also used to update the firmware of the UB-Xa where necessary.

85 **MIDI IN** – allows the UB-Xa to be controlled from an external source, such as a DAW, via standard 5 pin MIDI leads.

86 **MIDI OUT** – transmits MIDI data generated from using the UB-Xa for use by external equipment or recording into a DAW.

87 **MIDI THRU** – mirrors the MIDI messages received via the MIDI In socket for use by other equipment.

88 **VIBRATO** – allows the use of an external pedal, such as the Behringer FC600, to control the vibrato of the UB-Xa. When a pedal is being used it will be summed with the Depth (72) and Modulation Lever (75) controls until the maximum value is reached. Taking the pedal back to its minimum will over-ride Depth and Lever.

The action of the Vibrato pedal can be re-assigned using the Global Settings menu.

89 **FILTER** – allows the use of an external pedal, such as the Behringer FC600, to open and close the filter of the UB-Xa. The pedal's output over-rides frequency control (32).

The action of the Filter pedal can be re-assigned using the Global Settings menu.

90 **SUSTAIN** – input for a footswitch, such as the Behringer FS112B, to delay the Loudness Envelope reaching its Release time. A non-latching pedal should be used, as the latching action can be altered in the Global Settings menu.

The action of the Sustain pedal can be re-assigned using the Global Settings menu.

91 **PROGRAM ADVANCE** – input for a footswitch, such as the Behringer FS112B, to move the UB-Xa on to its next numerical program within the current bank.

The action of the Program Advance pedal can be re-assigned using the Global Settings menu.

92 **HOLD** – duplicates the action of the Hold button (9) on the top panel.

The action of the Hold pedal can be re-assigned using the Global Settings menu.

93 **LEFT/RIGHT** – balanced outputs for stereo use. TRS leads should be used for balanced use.

94 **MONO** – monophonic output derived from summing left and right outputs.

95 **PHONES** – stereo output for use with suitable headphones.

Preset Patches

Your UB-Xa is supplied with 403 preset patches loaded into Banks A-D. These can be edited and overwritten, or replaced by your own creations.

Patches can be stored into any of the UB-Xa's four patch banks and can be backed up using any Sysex librarian. Factory supplied presets can be restored on a bank by bank basis.

Bank A – Classic Patches

Number	Patch
1	Brass Ensemble
2	Clavinet
3	Low Strings
4	Electric Piano
5	Rotary Organ
6	Flutes
7	Harpsichord
8	Rock Unison
9	French Horns
10	Celeste
11	High Strings
12	RMI Piano
13	Pipe Organ
14	Xa Chorus
15	Harp
16	Calliope
17	Trumpet Ensemble
18	Harmonica
19	Strings 1
20	Accordion
21	Filter Drone
22	Bagpipes
23	Banjo
24	Rush Rezz
25	Trumpets
26	Mellow Wow
27	Slow Strings
28	Resonance Sweep
29	Combo Organ
30	Double Reed
31	Farr's Funk
32	Pizzicato
33	Modern Horns
34	Bass 1
35	Four Pole

Number	Patch
36	Reed Piano
37	Perc Organ
38	Sax
39	Harp 2
40	Oriental Unison
41	Tropical Horns
42	Rubber Clav
43	Strings 2
44	Edge Piano
45	Hymn Organ
46	Recorder
47	Long Chimes
48	Unison Fear
49	Comp Horns
50	Bells
51	Strings 3
52	Soft Piano
53	Reed Organ
54	Vocal Wow
55	Marimba
56	Terror
57	F-Env Horns
58	S/H in Fifths
58	Polyphonic Porta
60	Steel Drums
61	Square Wave
62	Comp Synth
63	Unison Portamento
64	Delayed Mod
65	Tenth Decay
66	Sitar
67	Fiddle
68	Pulse Comp
69	PW Rezz
70	Comedy Comp
71	Jazz Solo
72	Earthquake
73	S/H Port
74	Conga
75	Strings 4
76	Funk Keys
77	Organ
78	Tremolo Rezz
79	Box O'Pups
80	Martian Hop
81	Claps
82	Carillion
83	Solo Strings
84	Tuned Bees
85	Rezz Reeds

Number	Patch
86	Three Way
87	Percussion
88	Chopper
89	Io
90	S/H PW
91	Strings 5
92	Clarinet
93	Bright Drone
94	Rock Solo
95	Claves
96	Jet
97	Water Wiggle
98	Water Piano
99	Slower Strings
100	Flanged Piano
101	Space Bugs
102	Taped Voices
103	Thunder
104	Pong

MIDI Continuous Controllers

Your UB-Xa is supplied with 403 preset patches loaded into Banks A-D. These can be edited and overwritten, or replaced by your own creations.

Patches can be stored into any of the UB-Xa's four patch banks and can be backed up using any Sysex librarian. Factory supplied presets can be restored on a bank by bank basis.

CC No	CC Name	NRPN Equivalent
2	Breath Controller MSB	PerformanceBreathControl
3	Undefined 1 MSB	ManualMastertune
5	Portamento Time MSB	ControlPortamentoAmount
7	Volume MSB	ManualVolume
8	Balance MSB	ManualBalance
9	Undefined 2 MSB	ControlDetune
10	Pan MSB	ControlPanning
11	Expression Controller MSB	PerformanceExpression
15	Undefined 4 MSB	ModulationLFORate
16	General Purpose 1 MSB	PerformanceGeneralPurpose1
17	General Purpose 2 MSB	PerformanceGeneralPurpose2
18	General Purpose 3 MSB	PerformanceGeneralPurpose3
19	General Purpose 4 MSB	PerformanceGeneralPurpose4
20	Undefined 5 MSB	ModulationChannel1Amount
21	Undefined 6 MSB	ModulationChannel2Amount
22	Undefined 7 MSB	OscillatorsOSC1Transpose
23	Undefined 8 MSB	OscillatorsOSC1PWAmount
24	Undefined 9 MSB	OscillatorsOSC2Transpose
25	Undefined 10 MSB	OscillatorsOSC2PWAmount
26	Undefined 11 MSB	FilterFrequency
27	Undefined 12 MSB	FilterResonance
28	Undefined 13 MSB	FilterModulation
29	Undefined 14 MSB	FilterNoise
34	Breath Controller LSB	PerformanceBreathControl
35	Undefined 1 LSB	ManualMastertune
37	Portamento Time LSB	ControlPortamentoAmount
39	Volume LSB	ManualVolume
40	Balance LSB	ManualBalance
41	Undefined 2 LSB	ControlDetune
42	Pan LSB	ControlPanning
43	Expression Controller LSB	PerformanceExpression
47	Undefined 4 LSB	ModulationLFORate
48	General Purpose 1 LSB	PerformanceGeneralPurpose1
49	General Purpose 2 LSB	PerformanceGeneralPurpose2
50	General Purpose 3 LSB	PerformanceGeneralPurpose3
51	General Purpose 4 LSB	PerformanceGeneralPurpose4
52	Undefined 5 LSB	ModulationChannel1Amount
53	Undefined 6 LSB	ModulationChannel2Amount
54	Undefined 7 LSB	OscillatorsOSC1Transpose
55	Undefined 8 LSB	OscillatorsOSC1PWAmount
56	Undefined 9 LSB	OscillatorsOSC2Transpose
57	Undefined 10 LSB	OscillatorsOSC2PWAmount
58	Undefined 11 LSB	FilterFrequency
59	Undefined 12 LSB	FilterResonance
60	Undefined 13 LSB	FilterModulation

CC No	CC Name	NRPN Equivalent
61	Undefined 14 LSB	FilterNoise
64	Damper Pedal	FootSwitchDamper
66	Sostenuto	FootSwitchSostenuto
69	Hold Pedal	FootSwitchHold
71	Sound Control 2 Timbre	FilterResonance
72	Sound Control 3 Release	EnvelopesLoudnessR
73	Sound Control 4 Attack	EnvelopesLoudnessA
74	Sound Control 5 Brightness	PerformanceFilter
75	Sound Control 6 Decay	EnvelopesLoudnessD
76	Sound Control 7 Vibrato Rate	PerformanceLFORate
77	Sound Control 8 Vibrato Depth	PerformanceVibrato
78	Performance LFO Amount	PerformanceAmount
84	Portamento Control	ControlPortamentoAmount
85	Undefined 17	EnvelopesFilterA
86	Undefined 18	EnvelopesFilterD
87	Undefined 19	EnvelopesFilterS
88	Undefined 20	EnvelopesFilterR
89	Undefined 21	EnvelopesLoudnessA
90	Undefined 22	EnvelopesLoudnessD
102	Undefined 23	EnvelopesLoudnessS
103	Undefined 24	EnvelopesLoudnessR
105	Undefined 26	ModMatrixBus1Amount
106	Undefined 27	ModMatrixBus2Amount
107	Undefined 28	ModMatrixBus3Amount
108	Undefined 29	ModMatrixBus4Amount
109	Undefined 30	ModMatrixBus5Amount
110	Undefined 31	ModMatrixBus6Amount
111	Undefined 32	ModMatrixBus7Amount
112	Undefined 33	ModMatrixBus8Amount

MIDI NRPNs

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
0	0	0	ControlPortamentoAmount	0~16383	patch	
0	1	1	ControlPortamentoBend	0~16383	patch	
0	2	2	ControlDetune	0~16383	patch	Signed Number, Midpoint is 8192.
0	3	3	ControlVoiceDetune	0~16383	patch	
0	4	4	ControlUnison	0~1	patch	
0	5	5	ControlPolyphonicVoiceCount	1~8	patch	
0	6	6	ControlUnisonVoiceCount	1~16	patch	
0	7	7	ControlPortamentoSettings	0~15	global	Bitmask: Match (0001) Quantize (0010) Bend (0100) Exponential (1000)
0	8	8	ControlAftertouchSmoother	0~255	global	
0	9	9	ControlUnisonNotePriority	0~2	global	Enumeration: Below (0), Above (1), Last (2),
0	10	10	ControlChordModeNotePriority	0~2	global	Enumeration: Below (0), Above (1), Last (2),
0	11	11	ControlPortamentoSpread	0~255	global	
0	12	12	ControlPortamentoRange	0~255	global	
1	0	128	PerformanceVolume	0~16383	patch	
1	1	129	PerformanceSettings	0~63	program	Bitmask: Bend Osc2 only~Bend Osc1 & Osc2 (000001) Custom bend~Bend +/- 2 (000010) OSC1 (000100) OSC2 (001000) Upper (010000) Lower (100000)
1	2	130	PerformancePitchBendSensitivity	0~16383	program	
1	3	131	PerformanceTranspose	0~16383	program	Signed Number, Midpoint is 8192.
1	4	132	PerformanceLFORate	0~16383	program	
1	5	133	PerformanceLFOShapes	0~7	program	Enumeration: Sine (0), Saw (1), Square (2), InverseSaw (3), SH (4), Triangle (5), Sample Hold (6), Noise (7),
1	6	134	PerformanceLFOChannelAmount	0~16383	program	
1	7	135	PerformanceLFOMods	0~15	program	Bitmask: Track (0001) Envelope (0010) TempoLock (0100) LFOTrig (1000)
1	8	136	PerformanceMpePitchLowerSensitivity	0~96	global	
1	9	137	PerformanceMpePitchUpperSensitivity	0~96	global	
1	10	138	PerformanceLFOTrim	0~255	global	
2	0	256	ModulationLFOTrigPoint	0~16383	patch	
2	1	257	ModulationLFORate	0~16383	patch	
2	2	258	ModulationLFOPhase	0~16383	patch	
2	3	259	ModulationChannel1Amount	0~16383	patch	
2	4	260	ModulationChannel2Amount	0~16383	patch	
2	5	261	ModulationLFOMods	0~15	patch	Bitmask: Track (0001) Envelope (0010) TempoLock (0100) LFOTrig (1000)
2	6	262	ModulationLFOShapes	0~7	patch	Enumeration: Sine (0), Saw (1), Square (2), InverseSaw (3), SH (4), Triangle (5), Sample Hold (6), Noise (7),
2	7	263	ModulationChannel1Sends	0~7	patch	Bitmask: OSC1 (001) OSC2 (010) Filter (100)
2	8	264	ModulationChannel1Mods	0~3	patch	Bitmask: Quantize (01) Invert (10)
2	9	265	ModulationChannel2Sends	0~7	patch	Bitmask: OSC1 (001) OSC2 (010) Volume (100)
2	10	266	ModulationChannel2Mods	0~3	patch	Bitmask: Quantize (01) Invert (10)
2	11	267	ModulationLFOTrim	0~255	global	
2	12	268	ModulationQuirks	0~3	global	Bitmask: FlipSquare (01) FlipVCFMod (10)
3	0	384	EnvelopesFilterA	0~16383	patch	
3	1	385	EnvelopesFilterD	0~16383	patch	
3	2	386	EnvelopesFilterS	0~16383	patch	
3	3	387	EnvelopesFilterR	0~16383	patch	
3	4	388	EnvelopesLoudnessA	0~16383	patch	
3	5	389	EnvelopesLoudnessD	0~16383	patch	
3	6	390	EnvelopesLoudnessS	0~16383	patch	
3	7	391	EnvelopesLoudnessR	0~16383	patch	

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
3	8	392	EnvelopesModChannel1A	0~16383	patch	
3	9	393	EnvelopesModChannel1Delay	0~16383	patch	
3	10	394	EnvelopesModChannel2A	0~16383	patch	
3	11	395	EnvelopesModChannel2Delay	0~16383	patch	
3	12	396	EnvelopesPedalR	0~16383	patch	
4	0	512	OscillatorsOSC1PWAmount	0~16383	patch	
4	1	513	OscillatorsOSC1Transpose	0~16383	patch	Signed Number, Midpoint is 8192.
4	2	514	OscillatorsOSC2PWAmount	0~16383	patch	
4	3	515	OscillatorsOSC2Transpose	0~16383	patch	Signed Number, Midpoint is 8192.
4	4	516	OscillatorsMode	0~3	patch	Bitmask: OSC2 sync on~OSC2 sync off (01) OSC2 f-env on~OSC2 f-env off (10)
4	5	517	OscillatorsOSC1State	0~7	patch	Bitmask: OSC1 full~OSC1 off (001) OSC1 VCO LFO 180~OSC1 VCO LFO 0 (010) OSC1 PWM LFO 180~OSC1 PWM LFO 0 (100)
4	6	518	OscillatorsOSC1Shapes	0~2	patch	Enumeration: Osc1 pulse (0), Osc1 saw (1), Osc1 tri (2),
4	7	519	OscillatorsOSC2State	0~2	patch	Enumeration: Osc2 half (0), Osc2 full (1), Osc2 off (2),
4	8	520	OscillatorsOSC2Shapes	0~2	patch	Enumeration: Osc2 pulse (0), Osc2 saw (1), Osc2 tri (2),
4	9	521	OscillatorsOSC1PWTrimL	0~255	global	
4	10	522	OscillatorsOSC1PWTrimR	127~255	global	
4	11	523	OscillatorsOSC2PWTrimL	0~255	global	
4	12	524	OscillatorsOSC2PWTrimR	127~255	global	
4	13	525	OscillatorsModDepth	6~48	global	
4	14	526	OscillatorsPWMDepth	0~255	global	
4	15	527	OscillatorsPWMOffsetShift	0~255	global	
4	16	528	OscillatorsChaos	0~63	global	
4	17	529	OscillatorsVPOError	0~31	global	
4	18	530	OscillatorsDriftSpeed	0~63	global	
4	19	531	OscillatorsVPOErrorChaos	0~63	global	
4	20	532	OscillatorsOscAutoInitF	0~127	global	
4	21	533	OscillatorsFEnvRange	1~63	global	
5	0	640	FilterFrequency	0~16383	patch	
5	1	641	FilterResonance	0~16383	patch	
5	2	642	FilterModulation	0~16383	patch	
5	3	643	FilterNoise	0~16383	patch	
5	4	644	FilterModes	0~3	patch	Bitmask: Filter track on~Filter track off (01) 4 pole filter~2 pole filter (10)
5	5	645	FilterResonanceTrim	0~255	global	
5	6	646	FilterResonanceTrim4Pole	0~255	global	
5	7	647	FilterFrequencyRange	0~63	global	
5	8	648	FilterZero2pOffset	0~48	global	
5	9	649	FilterZero4pOffset	0~48	global	
5	10	650	FilterModulationRange	0~127	global	
5	11	651	FilterEnvLinearity	0~63	global	
5	12	652	FilterEnvChaos	0~31	global	
5	13	653	FilterLFORange	0~127	global	
5	14	654	FilterChaos	0~63	global	
5	15	655	FilterDriftSpeed	0~63	global	
5	16	656	FilterTrackOffset	0~63	global	
5	17	657	FilterPedalRange	0~96	global	
5	18	658	FilterVPOError	0~63	global	
5	19	659	FilterVPOErrorChaos	0~63	global	
5	20	660	FilterInitFreq	0~127	global	
6	0	768	ModMatrixBus1Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	1	769	ModMatrixBus2Amount	0~16383	patch	Signed Number, Midpoint is 8192.

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
6	2	770	ModMatrixBus3Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	3	771	ModMatrixBus4Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	4	772	ModMatrixBus5Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	5	773	ModMatrixBus6Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	6	774	ModMatrixBus7Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	7	775	ModMatrixBus8Amount	0~16383	patch	Signed Number, Midpoint is 8192.
6	8	776	ModMatrixBus1Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	9	777	ModMatrixBus1Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	10	778	ModMatrixBus2Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	11	779	ModMatrixBus2Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	12	780	ModMatrixBus3Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
6	13	781	ModMatrixBus3Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	14	782	ModMatrixBus4Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	15	783	ModMatrixBus4Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	16	784	ModMatrixBus5Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	17	785	ModMatrixBus5Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	18	786	ModMatrixBus6Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
6	19	787	ModMatrixBus6Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	20	788	ModMatrixBus7Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	21	789	ModMatrixBus7Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
6	22	790	ModMatrixBus8Source	0~41	patch	Enumeration: Empty (0), ChannelPressure (1), PolyAftertouch (2), BreathControl (3), ModChannel1Envelope (4), ModChannel2Envelope (5), ModChannel1 (6), ModChannel2 (7), Expression (8), Cuttoff (9), FilterEnvelope (10), KeyTrack (11), KeyTrackPoly (12), LoudnessEnvelope (13), MainLFO (14), SecondaryLFO (15), Noise (16), ModWheel (17), Oscillator1 (18), Oscillator2 (19), PulseWidth1 (20), PulseWidth2 (21), PitchBendAmount (22), Resonance (23), VoiceSlewer (24), PerformanceChannel (25), PanningLeft (26), PanningRight (27), KeyVelocity (28), SpreadFtn (29), GeneralPurpose1 (30), GeneralPurpose2 (31), GeneralPurpose3 (32), GeneralPurpose4 (33), ModWheelUp (34), ModWheelDown (35), MPETimbre (36), MPEPitch (37), MPEPressure (38), EightLEightR (39), FlipFlop (40), Spiral (41),
6	23	791	ModMatrixBus8Destination	0~29	patch	Enumeration: Empty (0), ButterInput (1), EnvelopesFilterA (2), EnvelopesFilterD (3), FilterFrequency (4), FilterModulation (5), FilterNoise (6), EnvelopesFilterR (7), FilterResonance (8), EnvelopesFilterS (9), EnvelopesLoudnessA (10), EnvelopesLoudnessD (11), EnvelopesLoudnessR (12), EnvelopesLoudnessS (13), ModulationChannel1Amount (14), ModulationChannel2Amount (15), ModulationLFOPhase (16), ModulationLFORate (17), OscillatorsOSC1PWAmount (18), OscillatorsOSC1Transpose (19), ControlDetune (20), OscillatorsOSC2PWAmount (21), OscillatorsOSC2Transpose (22), ControlPanning (23), ControlPortamentoAmount (24), PerformanceLFOChannelAmount (25), PerformanceLFORate (26), ManualMastertune (27), ControlVoiceDetune (28), PerformanceVolume (29), CuttoffLfo (30), Oscillator1Modulation (31), Oscillator1Fenv (32), Oscillator2Modulation (33), Oscillator2Fenv (34), PulseWidth1Modulation (35), PulseWidth2Modulation (36), PanningLeftModulation (37), PanningRightModulation (38),
7	0	896	UIPatchNameA	0~16383	patch	
7	1	897	UIPatchNameB	0~16383	patch	
7	2	898	UIPatchNameC	0~16383	patch	
7	3	899	UIPatchNameD	0~16383	patch	
7	4	900	UIPatchNameE	0~16383	patch	
7	5	901	UIPatchNameF	0~16383	patch	
7	6	902	UIPatchNameG	0~16383	patch	

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
7	7	903	UIPatchNameH	0~16383	patch	
7	8	904	UIVintageKnobs	0~1	global	Enumeration: Extended (0), Purism (1),
7	9	905	UILastUpperPatchNumber	0~127	global	
7	10	906	UILastUpperPatchBank	0~3	global	
7	11	907	UILastSplitProgramNumber	0~35	global	
7	12	908	UILastDoubleProgramNumber	0~35	global	
7	13	909	UIAtrophyProfileNumber	0~7	global	
7	14	910	UILastPatch	0~15	global	Bitmask: Upper (0001) Lower (0010) Combo (0100) Split (1000)
8	0	1024	ArpeggiatorEnabled	0~1	patch	
8	1	1025	ArpeggiatorMode	0~11	patch	Enumeration: Up (0), Down (1), Inclusive (2), Exclusive (3), Random (4), Order (5), Up x2 (6), Down x2 (7), Up x3 (8), Down x3 (9), Up x2/x3 (10), Down x2/x3 (11),
8	2	1026	ArpeggiatorHold	0~1	patch	
8	3	1027	ArpeggiatorTime	0~6	patch	Enumeration: 1/4 notes (0), 1/8 notes (1), 1/16 notes (2), 1/32 notes (3), 1/4 triplets (4), 1/8 triplets (5), 1/16 triplets (6),
8	4	1028	ArpeggiatorGatetime	0~99	patch	
8	5	1029	ArpeggiatorSync	0~1	patch	Enumeration: Global (0), Retrigger (1),
8	6	1030	ArpeggiatorOctave	1~6	patch	
8	7	1031	ArpeggiatorSwing	0~10	patch	
8	8	1032	ArpeggiatorRepeat	0~10	patch	
8	9	1033	ArpeggiatorRest	0~255	patch	
9	0	1152	MidiTranspose	0~127	patch	
9	1	1153	MidiPatchTempo	40~240	patch	
9	2	1154	MidiTempo	40~240	global	
9	3	1155	MidiSync	0~2	global	Enumeration: Internal (0), USB (1), DIN (2),
9	4	1156	MidiSong	0~15	global	Bitmask: Position In (0001) Stop on Seek (0010) Stop all off (0100) Keystart seq (1000)
9	5	1157	MidiChannelUpperRx	0~17	global	Enumeration: Channel 1 (0), Channel 2 (1), Channel 3 (2), Channel 4 (3), Channel 5 (4), Channel 6 (5), Channel 7 (6), Channel 8 (7), Channel 9 (8), Channel 10 (9), Channel 11 (10), Channel 12 (11), Channel 13 (12), Channel 14 (13), Channel 15 (14), Channel 16 (15), All (16), None (17),
9	6	1158	MidiChannelLowerRx	0~17	global	Enumeration: Channel 1 (0), Channel 2 (1), Channel 3 (2), Channel 4 (3), Channel 5 (4), Channel 6 (5), Channel 7 (6), Channel 8 (7), Channel 9 (8), Channel 10 (9), Channel 11 (10), Channel 12 (11), Channel 13 (12), Channel 14 (13), Channel 15 (14), Channel 16 (15), All (16), None (17),
9	7	1159	MidiChannelUpperTX	0~16	global	Enumeration: Channel 1 (0), Channel 2 (1), Channel 3 (2), Channel 4 (3), Channel 5 (4), Channel 6 (5), Channel 7 (6), Channel 8 (7), Channel 9 (8), Channel 10 (9), Channel 11 (10), Channel 12 (11), Channel 13 (12), Channel 14 (13), Channel 15 (14), Channel 16 (15), RxChannel (16),
9	8	1160	MidiChannelLowerTX	0~16	global	Enumeration: Channel 1 (0), Channel 2 (1), Channel 3 (2), Channel 4 (3), Channel 5 (4), Channel 6 (5), Channel 7 (6), Channel 8 (7), Channel 9 (8), Channel 10 (9), Channel 11 (10), Channel 12 (11), Channel 13 (12), Channel 14 (13), Channel 15 (14), Channel 16 (15), RxChannel (16),
9	9	1161	MidiLocalControl	0~255	global	Bitmask: Local Ctrl (00000001) Din Rt (00000010) Din Clock (00000100) USB Rt (00001000) USB Clock (00010000) ProgChngeRx (00100000) ProgChngeTx (01000000) NRPNTx (10000000)
9	10	1162	MidiForwarding	0~255	global	Bitmask: Din to Usb (00000001) Usb to Din (00000010) Din to Din (00000100) Rt to Usb (00001000) Rt to Din (00010000) Clk to Din (00100000) Clk to Usb (01000000) ArpSeq Sel (10000000)
9	11	1163	MidiUSBControl	0~15	global	Bitmask: USB NRPN TX (0001) USB NRPN RX (0010) USB CC TX (0100) USB CC RX (1000)
9	12	1164	MidiDinControl	0~15	global	Bitmask: DIN NRPN TX (0001) DIN NRPN RX (0010) DIN CC TX (0100) DIN CC RX (1000)
9	13	1165	MidiMpeProfile	0~2	global	Enumeration: Disabled (0), Single (1), Zones (2),
10	0	1280	KeyboardSplitPoint	0~127	program	
10	1	1281	KeyboardVelocityCurviness	0~2	global	Enumeration: Soft (0), Medium (1), Hard (2),
10	2	1282	KeyboardVelocityScaling	0~255	global	
10	3	1283	KeyboardAftertouchAssignment	0~1	global	Enumeration: ChannelPressure (0), PolyAftertouch (1),
10	4	1284	KeyboardAftertouchCurviness	0~255	global	

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
11	0	1408	PedalSustainAssignment	0~6	global	Enumeration: Patch Up (0), Patch Down (1), Program Up (2), Program Down (3), Sustain (4), Hold (5), Sostenuto (6),
11	1	1409	PedalSustainPolarity	0~2	global	Enumeration: Negative (0), Positive (1), Disabled (2),
11	2	1410	PedalSustainInternalLatch	0~1	global	Enumeration: Unlatched (0), Latched (1),
11	3	1411	PedalProgramAssignment	0~6	global	Enumeration: Patch Up (0), Patch Down (1), Program Up (2), Program Down (3), Sustain (4), Hold (5), Sostenuto (6),
11	4	1412	PedalProgramPolarity	0~2	global	Enumeration: Negative (0), Positive (1), Disabled (2),
11	5	1413	PedalProgramInternalLatch	0~1	global	Enumeration: Unlatched (0), Latched (1),
11	6	1414	PedalHoldAssignment	0~6	global	Enumeration: Patch Up (0), Patch Down (1), Program Up (2), Program Down (3), Sustain (4), Hold (5), Sostenuto (6),
11	7	1415	PedalHoldPolarity	0~2	global	Enumeration: Negative (0), Positive (1), Disabled (2),
11	8	1416	PedalHoldInternalLatch	0~1	global	Enumeration: Unlatched (0), Latched (1),
11	9	1417	PedalVibratoAssignment	0~8	global	Enumeration: Filter (0), Vibrato (1), Attack (2), Release (3), Decay (4), General1 cc16 (5), General2 cc17 (6), General3 cc18 (7), General4 cc19 (8),
11	10	1418	PedalVibratoPolarity	0~2	global	Enumeration: Negative (0), Positive (1), Disabled (2),
11	11	1419	PedalVibratoLower	0~255	global	
11	12	1420	PedalVibratoUpper	0~255	global	
11	13	1421	PedalFilterAssignment	0~8	global	Enumeration: Filter (0), Vibrato (1), Attack (2), Release (3), Decay (4), General1 cc16 (5), General2 cc17 (6), General3 cc18 (7), General4 cc19 (8),
11	14	1422	PedalFilterPolarity	0~2	global	Enumeration: Negative (0), Positive (1), Disabled (2),
11	15	1423	PedalFilterLower	0~255	global	
11	16	1424	PedalFilterUpper	0~255	global	
12	0	1536	SysexDeviceId	0~15	global	Enumeration: Channel 1 (0), Channel 2 (1), Channel 3 (2), Channel 4 (3), Channel 5 (4), Channel 6 (5), Channel 7 (6), Channel 8 (7), Channel 9 (8), Channel 10 (9), Channel 11 (10), Channel 12 (11), Channel 13 (12), Channel 14 (13), Channel 15 (14), Channel 16 (15),
13	0	1664	VoiceToggle1to8	0~255	global	Bitmask: Voice 1 (00000001) Voice 2 (00000010) Voice 3 (00000100) Voice 4 (00001000) Voice 5 (00010000) Voice 6 (00100000) Voice 7 (01000000) Voice 8 (10000000)
13	1	1665	VoiceToggle9to16	0~255	global	Bitmask: Voice 9 (00000001) Voice 10 (00000010) Voice 11 (00000100) Voice 12 (00001000) Voice 13 (00010000) Voice 14 (00100000) Voice 15 (01000000) Voice 16 (10000000)
13	2	1666	VoiceIgnorePWMCalibration1to8	0~255	global	Bitmask: Voice 1 (00000001) Voice 2 (00000010) Voice 3 (00000100) Voice 4 (00001000) Voice 5 (00010000) Voice 6 (00100000) Voice 7 (01000000) Voice 8 (10000000)
13	3	1667	VoiceIgnorePWMCalibration9to16	0~255	global	Bitmask: Voice 9 (00000001) Voice 10 (00000010) Voice 11 (00000100) Voice 12 (00001000) Voice 13 (00010000) Voice 14 (00100000) Voice 15 (01000000) Voice 16 (10000000)
13	4	1668	VoiceIgnoreVCOCalibration1to8	0~255	global	Bitmask: Voice 1 (00000001) Voice 2 (00000010) Voice 3 (00000100) Voice 4 (00001000) Voice 5 (00010000) Voice 6 (00100000) Voice 7 (01000000) Voice 8 (10000000)
13	5	1669	VoiceIgnoreVCOCalibration9to16	0~255	global	Bitmask: Voice 9 (00000001) Voice 10 (00000010) Voice 11 (00000100) Voice 12 (00001000) Voice 13 (00010000) Voice 14 (00100000) Voice 15 (01000000) Voice 16 (10000000)
13	6	1670	VoiceIgnoreVCFCalibration1to8	0~255	global	Bitmask: Voice 1 (00000001) Voice 2 (00000010) Voice 3 (00000100) Voice 4 (00001000) Voice 5 (00010000) Voice 6 (00100000) Voice 7 (01000000) Voice 8 (10000000)
13	7	1671	VoiceIgnoreVCFCalibration9to16	0~255	global	Bitmask: Voice 9 (00000001) Voice 10 (00000010) Voice 11 (00000100) Voice 12 (00001000) Voice 13 (00010000) Voice 14 (00100000) Voice 15 (01000000) Voice 16 (10000000)
14	0	1792	SurfaceBrightness	0~32	global	
14	1	1793	SurfaceContrast	0~32	global	
14	2	1794	SurfaceLeverSettings	0~3	global	Bitmask: Invert Left (01) Invert Right (10)
14	3	1795	SurfaceFan	0~2	global	Enumeration: Enabled (0), TempCtrl (1), Disabled (2),
15	0	1920	BackgroundCalibrationSettings	0~2	global	Enumeration: Enabled (0), Only Auto (1), Disabled (2),
16	0	2048	AmplifierOffset	0~255	global	
16	1	2049	AmplifierOffset2P	0~255	global	
16	2	2050	AmplifierOffsetUni	0~255	Scope	
16	3	2051	AmplifierOffsetMaster	0~255	global	

MSB	LSB	14-bit	Parameter Name	Range	Scope	Notes
16	4	2052	AmplifierEnvLinearity	0~63	global	
16	5	2053	AmplifierEnvChaos	0~31	global	
17	0	2176	PanningVoice1	0~255	global	
17	1	2177	PanningVoice2	0~255	global	
17	2	2178	PanningVoice3	0~255	global	
17	3	2179	PanningVoice4	0~255	global	
17	4	2180	PanningVoice5	0~255	global	
17	5	2181	PanningVoice6	0~255	global	
17	6	2182	PanningVoice7	0~255	global	
17	7	2183	PanningVoice8	0~255	global	
17	8	2184	PanningVoice9	0~255	global	
17	9	2185	PanningVoice10	0~255	global	
17	10	2186	PanningVoice11	0~255	global	
17	11	2187	PanningVoice12	0~255	global	
17	12	2188	PanningVoice13	0~255	global	
17	13	2189	PanningVoice14	0~255	global	
17	14	2190	PanningVoice15	0~255	global	
17	15	2191	PanningVoice16	0~255	global	
18	0	2304	AtrophyProfileNameA	32~255	global	
18	1	2305	AtrophyProfileNameB	32~255	global	
18	2	2306	AtrophyProfileNameC	32~255	global	
18	3	2307	AtrophyProfileNameD	32~255	global	
18	4	2308	AtrophyProfileNameE	32~255	global	
18	5	2309	AtrophyProfileNameF	32~255	global	
19	0	2432	SequencerStepCount	0~128	patch	
19	1	2433	SequencerTime	0~6	patch	Enumeration: 1/4 notes (0), 1/8 notes (1), 1/16 notes (2), 1/32 notes (3), 1/4 triplets (4), 1/8 triplets (5), 1/16 triplets (6),
19	2	2434	SequencerGatetime	0~99	patch	
19	3	2435	SequencerSync	0~1	patch	Enumeration: Global (0), Retrigger (1),

MPE

MIDI Polyphonic Expression (also known as Multidimensional Polyphonic Expression) is a MIDI extension adopted by the MIDI Manufacturers Association in 2018. It allows much greater control of selected parameters than that available in the original MIDI spec by allocating a new MIDI channel to each note played (up to a limit of 15 notes) and therefore allowing each note to have parameters adjusted without affecting the other notes being played. A base channel is reserved for common MIDI messages.

The UB-Xa has two ways of using MPE. The Single option uses channel 1 as the base channel, then uses the other fifteen for MPE. However if a Split or Double Program is in use it is possible to switch to the Zones mode, where two base channels, channel 1 for the lower keyboard and channel 16 for the upper, with channels 2 – 8 used for lower keyboard MPE and channels 9 – 15 for the upper keyboard. The selection is option 14 in the MIDI/USB Menu (Shift & 65), where MPE can also be disabled, which is the default option, as activating MPE deselects the MIDI Rx channels selected in options 1 and 2 of the same menu.

Typically MPE controllers output three parameters: Pitchbend, Timbre (Filter Cutoff – MIDI CC #74) and Channel Pressure. The UB-Xa responds only to Pitchbend and Timbre as standard; but all three controllers can be used as sources in the Modulation Matrices and can therefore be applied to any allowable destination. Note on and off are also allocated to MPE channels in order that the notes are individually affected. If more than fifteen (or seven plus seven) notes are played then two or more notes will be allocated to one channel dynamically as necessary.

Pitchbend sensitivity for the upper and lower keyboards can be individually set by options 12 and 13 of the MIDI/USB Menu.

Glossary

ADSR – Envelope generator with four stages: Attack, Decay, Sustain and Release.

Amplitude – The volume of a sound.

Aftertouch – MIDI data sent when pressure is applied to the keyboard after keys have been played, but while they are still being held.

Arpeggiator – a part of the synthesizer which causes the notes of a chord to be played individually as an arpeggio according to settings.

Atrophy - To degrade or to get worse. The sound of Vintage synthesizers changes over time, a model fresh from production line would not sound the same after 30 years, Indeed our beta tester's original synthesizers all sound slightly different. This is because the physical electronic components inside will 'atrophy'. The atrophy menu is to be able to give the user options to be able to make small tweaks to the voice engine, so the sound becomes not perfect and to make it sound more like what they expect an OB-Xa to sound like.

Attack Time – The first stage of the envelope. Specified as the time taken for the envelope to reach maximum level when keys are played.

Attenuate – To reduce the level of a signal or modulation source.

Bank – A collection of a number of patches.

Cent – Unit of measurement for tuning. One semitone is divided into 100 cents.

Cutoff Frequency – The point at which the filter starts to cut frequencies.

Decay Time – The second stage of the envelope. Specified as the time taken for the sound level to drop from maximum to the sustain level while the played keys are being held.

Digital Audio Workstation (DAW) – A computer based software package that allows the recording, editing and playing back of audio and/or MIDI data.

Envelope Generator – Envelope generators can be used to contour the sound. Most commonly used to affect the amplitude (volume) of the sound they can also be used on filters and to affect pitch.

Filter – Filters attenuate the frequencies above or below their cutoff point, thus affecting the timbre of the sound.

Frequency Modulation (FM) – The use of one frequency to modulate another. Typically the use of a low frequency from a low frequency oscillator to add vibrato or tremolo to a sound, but could also be the use of one audio level frequency to modulate another, which would cause a change in timbre.

Frequency – The number of cycles per second (Hz) that an oscillator runs at.

Global – parameters that affect all patches.

Hertz (Hz) – Unit of measurement for frequencies. 1 Hz is one cycle per second.

Invert – change to the opposite, so a positive becomes negative for example.

Keyboard Tracking – Use of the notes played on the keyboard to adjust another parameter, for example.

KiloHertz (kHz) – Common abbreviation for one thousand Hz.

Low Frequency Oscillator (LFO) – An oscillator that runs at a low speed and is used to modulate other parts of the synthesiser.

MPE – MIDI Polyphonic Expression (also known as Multidimensional Polyphonic Expression). Please see the MPE chapter for a full explanation of MPE.

Musical Instrument Digital Interface (MIDI) – a protocol that allows musical instruments, other peripherals and DAWs to pass data according to a defined standard.

MIDI Clock – a timing signal that is sent as part of the MIDI data.

MIDI Message – data transmitted from one MIDI device to another that constitutes an instruction.

Mix – The balance between two or more signals.

Modulation – The use of sources to control a parameter of a destination.

Monophonic – Only allowing one note to be played at a time.

Noise – A random sound comprising of all frequencies.

Note Priority – Determines which note is played when the maximum number is exceeded. Typically lowest, highest or last.

Octave – A measure of pitch.

Oscillator (Osc or VCO) – The basic sound source of the synthesizer.

Oscillator Sync – The process by which the cycle of one oscillator is synchronized to the cycle of another.

Output – Can refer both to the signal sent out from one part of the synthesizer to another, or to the physical sockets used to connect to external equipment.

Parameter – A setting whose value can be changed.

Patch – A stored combination of parameters that make up a sound.

Phase – The measurement in degrees of the time difference between two waveforms or a waveform and a fixed reference point.

Pitch Bend – Changing the pitch of a note up or down while it is being played.

Polyphonic – Capable of playing more than one note at a time, expressed as a number of voices.

Portamento – The effect of 'gliding' the pitch between notes rather than changing instantly.

Pulse Wave – A wave similar to a square wave, but whose symmetry can be changed.

Pulse Width Modulation – The modulation of the symmetry of a pulse wave.

Rate – The speed at which an action takes place.

Release Time – The final stage of the envelope. Specified as the time taken for the envelope to reach zero once keys have been released.

Resonance – The emphasis of frequencies centered on the cutoff frequency.

Sample & Hold (S&H) – the sampling of a waveform, typically that of an LFO or noise source, to provide a series of voltages at a set rate.

Sawtooth – A waveform resembling the teeth of a saw, with an instantaneous leading edge followed by a gradual decline to zero point.

Self Oscillation – The point at which a filter starts to produce a sine wave output owing to excessive use of resonance.

Semitone – A measure of pitch. Each octave contains 12 semitones.

Sequencer – A part of the synthesizer which can be programmed with a series of notes and/or chords which are then repeated back at a selected tempo.

Signal Flow – The path of a signal from one part of the synthesizer to another.

Sine Wave – A smooth waveform that contains only the fundamental frequency with no harmonics.

Square Wave – a symmetrical waveform which changes instantaneously from zero state to full.

Sustain Level – The third stage of the envelope. This is the level that the envelope holds at after decay until keys are released.

Synchronization (Sync) – Co-ordinating the timing of devices where one is the master and the other(s) are synchronized to it.

Trigger – The activation of a function, for example pressing a key to start the Envelope cycle.

Tune – The adjustment of the pitch of an instrument to be the same as that of another instrument; or the adjustment of one oscillator to be in tune with the other.

Unison – Two or more voices played together on the same key(s).

Universal Serial Bus (USB) – An interface that can be used to connect your synthesizer to a DAW, or to receive firmware updates.

Velocity – The strength at which the keyboard is played, which can be used as a modulation source.

Voltage Controlled Amplifier (VCA) – An amplifier whose level can be adjusted by control voltages, for example from an envelope generator.

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

Behringer

UB-Xa

Responsible Party Name:	**Music Tribe Commercial NV Inc.**
Address:	**122 E. 42nd St.1,** **8th Floor NY, NY 10168,** **United States**
Email Address:	**legal@musictribe.com**

UB-Xa

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Important information:

Changes or modifications to the equipment not expressly approved by Music Tribe can void the user's authority to use the equipment.

$C\,E$

Hereby, Music Tribe declares that this product is in compliance with Directive 2014/35/EU,Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

Full text of EU DoC is available at https://community.musictribe.com/

EU Representative: Music Tribe Brands DK A/S
Address: Gammel Strand 44, DK-1202 København K, Denmark

UK Representative: Music Tribe Brands UK Ltd.
8th Floor, 20 Farringdon Street London EC4A 4AB, United Kingdom

We Hear You

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