

Manual

OB6000

Editor for the Matrix 6 and Matrix 1000

Version 1.2

by

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1 Mainmenu

1.1 File

Open Bank	Loads a bank into the „Active Bank “.
Save Bank	Stores the „Active Bank “.
Save Bank as...	Stores the „Active Bank “ (with File Selector-Box).

1.2 Bank

Edit Patchbank	Go to the „Patchbank“- Page.
Clear Active Bank	Clears the „Active Bank “.
Clear Bigbank	Clears the „Bigbank “.
Delete Doubles in Bigbank	Deletes the patches that are twice in the Bigbank

1.3 Edit

Select an editpage.

1.4 Options

Make MIDI Settings.
„Reset MIDI-Ports“ sends an ALL-Notes-Off message and closes MIDI-Port.

1.5 MIDI Input - MIDI Output

To select a MIDI-Input and MIDI-Output port.

2 The Patchbank Page

Copy a Patch with *Drag and Drop*.

Doubleclick a Patch to copy the patch into the edit-buffer and to go to the Edit-Page (the Matrix 6 has no edit-buffer, so OB-6000 uses Patch number 99 as edit-buffer in Matrix 6 mode)

2.1 *The Active Bank Selection*

Here you can select one of 3 Patch-Banks

2.2 *Transmission of Patchbanks*

2.2.1 „Receive Bank from Synth“

Writes the internal memory of the matrix to the „Active Bank“.

The Matrix 1000 transmits the last selected bank.

If the message „*No MIDI-Communication*“, appears check MIDI-Input and - Output settings.

2.2.2 „Transmit Bank to Synth“

Transmits the Active Bank to the Synth“

Remember to disable the Matrix 6 Memory Protection.

2.3 The Bigbank

The *Bigbank* is for the sorting and archieving of Patches. In this bank you can put all your Patches.

2.3.1 Loading and saving of the *Bigbank*

To activate the *Bigbank* press the button BIGBANK. With „File open“ and „File save as...“ you can load and save a *Bigbank*.

2.3.2 Deleting the *Bigbank*

If you want to delete the Bigbank or a part of it press „*Clear Bigbank*“ of the *menue* „Bank“. In the Dialog box you can enter the range of the patches you want to delete.

2.4 Interaction between Active Bank and Bigbank

Use „Drag and Drop“ to copy patches

2.4.1 The button „Append Bank to Bigbank“

With this function you can append the complete „Active Bank“ to the *Bigbank*.

2.4.2 The button „Copy Bigbank to Bank“

With this function you can copy 100 patches from the *Bigbank* to the „Active Bank“. The first patch to be copied is the one you can see at the top of the *Bigbank*.

3 The Patch-Edit Page

3.1 *Envelopes*

Envelope Modes

- DADR** (Delay/Attack/Decay/Release) In this mode there is no sustain phase. The release phase occurs immediately after the decay phase. Also, the release phase occurs immediately after the note-off message. If the note-off arrives during the attack or decay phases, these phases will be aborted and the envelope will proceed directly to the release phase.
- FREE RUN** In this mode the envelope runs free, no matter if you release the keyboard or not (suitable for Drumsounds ect.).
- STRIG** (Single Trigger)
- MTRIG** (Multiple Trigger) Triggers received before the end of the envelope cycle will start new cycles.
- SRES** (Single Trigger with Reset)
- MRES** (Multiple Trigger with Reset)

Envelope Parameters

- DELAY** This control sets the nominal delay time between the triggering of the envelope and the start of the envelope's attack
- ATTACK** This control sets the nominal attack rate of the envelope.
- DECAY** This control sets the nominal rate at which the envelope decays from its initial attack level to the sustain level.
- SUSTAIN** This control sets the nominal level to which the envelope decays to after the initial attack phase.
- RELEASE** This control sets the nominal rate at which the envelope decays from the sustain level once the note off signal is received.
- AMP** This control sets the overall amplitude scaling applied to the envelope level.

3.2 LFO's

- SPEED** This control sets the nominal speed (frequency) of the LFO, before modulations are added in. See the LFO section for a table relating the slider setting to LFO frequencies.
- AMP** This control sets the nominal amplitude of the LFO waveform.
- RETRIG** This control sets the point in the LFO's wave cycle at which the LFO will start when it is triggered. This is important for effects wherein the absolute level of the LFO wave determines some sound parameter (such as VCF cutoff frequency).
- WAVEFORM** These buttons select the waveform that the LFO will use. Choices are TRIANGLE, UP-SAWTOOTH, DOWN-SAWTOOTH, SQUARE, RANDOM, NOISE, and SAMPLED. See the Auxiliary LFO settings section in this help file for more LFO parameters.

3.3 DCO's

The DCOs - short for "Digitally Controlled Oscillator" - is the circuitry that produces the basics tone or sound of the patch. Since the two DCOs are almost identical, we'll cover them both together.

MIX This is used to set the relative volumes of DCO 1 and DCO 2 just before they are sent to the VCFNCA. VALUE range is from 0 to +63. You can think of this function as a mix control where a setting of 31 makes the outputs of the two DCOs equal. As you can increase above 31, more of DCO 1 is heard and DCO 2 fades out. As you decrease the setting below 31, more of DCO 2 is heard and DCO 1 fades out. A setting of 0 indicates that DCO 2 is heard only and a setting 63 is DCO 1 only.

FREQUENCY This function determines the pitch of the DCOs. VALUE range is 0 to +63 (5 octaves and a minor 3rd) where each VALUE increment represents one semi-tone.

WAVE SELECT The waveform output of the DCOs give each patch its tonal identify and is selected here. Your four choices are OFF, PULSE, WAVE or BOTH. DCO 2 adds NOISE as a fifth choice. The NOISE generator produces a pitchless "rushing" sound suitable for wind and thunder effects as well as adding breath inflections to flute, brass and woodwind sounds.

If BOTH is selected, a Pulse and a Wave are output at the same time, allowing for some very interesting and complex tones to be produced. Experiment with varying the Pulse Width (03 & 13) or the Wave Shape (05 & 15) with BOTH selected.

SYNC (DCO 1 only)

SYNC, the abbreviation for "synchronize", places both DCOs in close tune with each other by electronically slaving the waveform of DCO 1 to that of DCO 2 using 3 varying degrees plus OFF:

"0": OFF-SYNC has no effect and the DCOs' waveforms are independent of each other.

"1": SOFT

"2": MEDIUM

"3": HARD

The main idea to keep in mind while using SYNC is that its audible effects vary drastically with DCO tuning (are they in unison or several octaves apart?), the waveform selected for each DCO, where you are playing on the Keyboard (high notes or low notes) and what kind and how much modulation is used in the patch. The important thing is to keep experimenting.

KEY CLICK An effect that can be used to add an audible "punch" or "bite" to the beginning of a sound, KEY CLICK can be turned ON or OFF in this parameter. The amount is present at the factory. You may want to experiment by using KEY CLICK with piano, vibes and other percussive instruments just to name a few.

SHAPE If WAVE is selected as the waveform output of the DCOs in 06 & 16 WAVE SELECT, this control varies the waveform between a Sawtooth wave (a bright sound used in creating strings and brass patches) and a Triangle wave (a mellower wave used for Flutes, etc.). Since Sawtooth and Triangle waveforms are similar, they are made available in the same parameter.

VALUE range is from 0 to +63 where 0 produces the Sawtooth and 63 produces the Traingle. Settings in between these two extremes permits a variable mix of two Waves. A setting of 31 produces a waveform that has elements of both.

PULSE WIDTH If a PULSE is selected as the DCO's waveform, this control sets the pulse's width output. VALUE range is from 0 to +63 where 63 is an extremely wide Pulse that becomes gradually narrower as the settings approach 31, the setting for a Square wave. From 30 on down, the pulse becomes even more narrow with the same audible characteristics as narrow Pulses until 0 is reached and very little sound is heard.

In describing the audible characteristics of a Pulse wave, a very narrow or very wide pulse (settings towards the extremes of the

range) has a "nasal" quality and is traditionally used to synthesize woodwind instruments like Oboe and Bassoon or plucked-string instruments such as Harpsichord. Settings around 31 where the Square wave is produced have a "hollow" sound quality and resemble a Clarinet.

DETUNE

enables the pitch of DCO 2 to be adjusted slightly sharp or flat relative to DCO 1. This produces a richer sound quality caused by two closely tuned oscillators "beating" from the slight variation in tuning. VALUE range is -31 to +31 (+/- a ¼ tone) where 0 is no detune, -31 is the Flat limit and +31 is the Sharp limit. Each increment of one represents varying amounts of detune: settings close to 0 provide very slight detuning while settings towards the extremes produce greater amounts of detune as each higher number is used.

3.4 VCF

VCF stands for "Voltage Controlled Filter" and is the circuit that gives you very precise control over the harmonic content of the patch. In adjusting the harmonic content, the VCF acts somewhat like a tone control but with much more flexibility. After you have selected the waveforms for DCOs 1 & 2, the VCF allows you to determine the tonality of the sound and articulate this tone setting with Envelope # 1 (abbreviated ENV 1) and PRESSURE. It is in the way you use ENV 1 and PRESSURE that dynamics are added to the patch.

FREQUENCY As we mentioned before, the VCF permits you to adjust the patch's tone level by controlling the harmonic content. Harmonics are upper frequencies that give each sound its own identity. It is the amount and structure of harmonics that allow our ears to differentiate between sounds. The structure of the harmonics in the MATRIX-6 is determined by the waveform you selected with the DCOs. The amount is set with the FREQUENCY control.

The VALUE range of the VCF is from 0 to +127 where 0 is minimum or fewest harmonics and 127 is the maximum setting where all the harmonics for that waveform are present. Another way of stating this is a Value of 0 makes the patch sound muffled and a Value of 127 causes the patch to sound bright and buzzy.

RESONANCE The RESONANCE Parameter is used to emphasize the harmonic closest to the Filter's FREQUENCY. This control actually increases the loudness or "gain" of the harmonic resulting in a ringing or whistling effect as more RESONANCE is used. This Parameter is especially useful in synthesizing the resonant characteristics of acoustic instruments (particularly woodwinds) and to achieve many other electronic special effects.

VALUE range is from 0 to +63 where 0 indicates no RESONANCE and 63 is maximum. At a RESONANCE setting of 63, the VCF will oscillate - that is, produce its own pure tone.

3.5 VCA's

The VCA section in the MATRIX-6 is a two-Stage function allowing for expanded flexibility in the volume articulation of the patch. This section contains two independent Voltage Controlled Amplifiers labeled VCA 1 and VCA 2.

VOLUME This first-stage VCA sets the initial output of the patch. Value range is 0 to +63 where 0 indicates no output or silence and 63 is maximum output.

VELOCITY One of the more common applications of VELOCITY is its use in creating loudness dynamics. VELOCITY refers to making subtle or dramatic changes by striking the keys hard or soft. In this parameter, VELOCITY is used to play the patch louder or quieter.

VALUE range is from -63 to +63. A 0 setting indicates no effect by VELOCITY. When positive Values are used, notes played harder will increase volume and softer notes will not. When negative Values are used, the opposite effect occurs: volume decreases the harder you play notes and soft playing keeps the volume close to normal.

Parameters "27 VCA 1 VOLUME" and "28 VCA 1 MOD BY VELOCITY" work hand-in-hand. If the Value of VCA 1 VOLUME is set to 63, Velocity will seem to have a little or no effect if you give it a positive Value. This is because at a value of 63, VCA 1 is set as loud as it will go and Velocity cannot make it any louder. Also, if VCA 1 is given low Values, positive Velocity settings will require very hard playing all the time or some notes will seem to "drop out" and not be heard. You should plan to spend some time experimenting to find the right combination of Values to suit your particular need.

As you experiment, you may experience some results that you didn't expect. This may be due to the fact that many of the MATRIX-6's modulations are inter-related and editing one parameter could possibly affect another indirectly. One example of this is using VELOCITY on the output of Envelpo # 2 ("66 AMP MOD BY VELOCITY"). Since ENV 2 is routed to VCA 2, Velocity in this case may effect VCA 2 unexpectedly.

Although we will cover this in more detail later. VELOCITY performance also relies on the Values you give it for "Scale" and "Sensitivity" (see MASTER EDIT/ KEYBOARD "40 VELOCITY SCALE" and "41 VELOCITY SENS."). Using extremes in the available Values may yield unusable results. For example, setting "27 VCA 1 VOLUME" to 0 and a -63 on "28 VCA 1 MOD BY VELOCITY" will be almost useless if the Sensitivity is set to maximum. The resulting dynamic range will be too wide to be of any real use.

VCA 2 MOD BY ENV 2 This second-stage VCA is used to determine the final output of the patch. As you can see, there is no Volume parameter for VCA 2 like there is for VCA 1. The volume of VCA 2 is pre-set to be 0 and its output level is controlled by Envelope # 2.

This function is concerned only with the amount of ENV 2 affecting the VCA's VOLUME output. The actual settings of the envelope are made in the ENV 2 Sub-Page. VALUE range is from -63 to +63. A Value of 0 indicates that the envelope has no effect on the VCA which results in no sound when the Keyboard is played. A setting of -63 is the maximum. Using negative Values invert the effect of ENV 2 on the VCA's VOLUME. A VALUE of -63 is the maximum inversion.

4 The Effect-Rack Page

4.1 *Portamento*

KEYBOARD/ PORTAMENTO - Portamento routing to the DCOs is selected in these parameters. Portamento is described as a "sliding" between notes played on the keyboard. The specific operating parameters of Portamento - RATE, MOD BY VELOCITY; MODE and LEGATO

PORTAMENTO AND LAG MODE

The portamento is a form of ramp generator. It is triggered by a note on and sweeps between the previous note value and the new note value. The sweep rate is determined by the Portamento rate control and by the Lag Mode setting. Please note that portamento is best applied when the keyboard is in UNISON mode. When the keyboard is in some other mode, portamento is applied to notes corresponding to the same voice. Thus some notes will seem to have portamento, while other notes will not. It can be difficult to control which notes will have the portamento effect applied.

SPEED This slider sets the time taken for the portamento ramp to reach its maximum value in the constant time lag mode (the word "rate" is misleading). In constant-slope mode this slider sets the slope, but large values mean a small slope.

VELOCITY This connects the portamento rate control input to the MIDI velocity controller. With a positive modulation level setting, this will create a faster glides between pitches as velocity increases.

LIN The time taken to sweep between the old and new note value is constant. The sweep rate is faster for notes far apart in pitch than for notes close together in pitch.

CON The rate of sweep between the old and new note value is constant. It will take longer to sweep between notes far apart in pitch than for notes close together.

EXP The sweep between the old and new note values is exponential, that is, the sweep is rapid at the beginning and then slows as the sweep approaches the new note value.

LEGATO When the LEGATO mode is set, the portamento ramp is only applied to notes that are triggered before the previous note is finished. If a note is triggered after the previous note is finished, there will be no portamento between the two notes.

4.2 *The Rampgenerators*

Each of the voices has a pair of ramps which can be triggered independently, but the ramp time and trigger mode is the same for each.

SPEED This control sets the time taken for the ramp waveform to reach its maximum value (so the term "rate" is a misnomer here!).

RAMP MODE

These buttons determine the conditions under which the ramp waveform is started.

STRIG the ramp cannot be re-started until the note-off corresponding to the note-on which triggered it is received.

MTRIG the ramp is restarted each time a trigger is received.

XTRIG the ramp is started by the external trigger (from Pedal 2, which defaults to MIDI Controller 64).

XGATE the external trigger only starts the ramp if a keyboard key is pressed.

4.3 *Levers*

The performance LEVERS just to the left of the Keyboard are selected in this parameter.

BEND permits LEVER 1 to modulate the pitch of the DCOs by providing pitch bend up or down a whole tone either way. When BEND is selected, LEVER 1 is the only one that is active.

VIB adds vibrato modulation to the DCOs, normally controlled by LEVER 2.

BOTH turns on both LEVERS to modulate the DCOs.

4.4 *Keyboard Mode*

The keyboard mode determines how incoming note-on/note-off pairs are assigned to the six individual voices of the Matrix-6/1000.

UNISON - Note-On/Note-Off are applied to all voices at the same time. If LEGATO mode is set, a note-on received before the previous note was released will take over. If LEGATO mode is off, note-on messages will be ignored until the previous note is released.

REASSIGN Subsequent non-overlapping notes played will be assigned to the same voice. Voices will be reassigned to new notes once their notes have been released. For example, pressing the middle "C" key repeatedly will result in middle "C" being played

on the same voice over and over. Note that this will cause the envelope decay phase of each note to be aborted.

REAS/ROB Like reassign mode, except that the voice corresponding to the first note played in an overlapping series will be reassigned to the seventh note played in the series, even when the first note has not yet been completed.

ROTATE Subsequent non-overlapping notes played will be assigned to new voices. For example, pressing the middle "C" key six times in succession will result in middle "C" being played on each of the six voices in succession. This may not seem to be too important, as every voice sounds the same, but in this mode a long envelope decay after the key is lifted will not be cutoff (until the 7th note is played).

DCO CONSTANT FREQUENCY (available for DCO 2 ONLY) - This option disables the Keyboard control to DCO 2. This means that DCO 2 will play the same pitch no matter what keys are played. This is definitely used for effects.

VCF KEY TRACKING The *Key-Tracking* means, that the filter is at higher notes more open than at lower notes.

4.5 *The Tracking Generator*

The tracking generator is a kind of "transfer function" between input data and output data. To visualize the action of the tracking generator, draw (X,Y) axes on a paper, then the five points. The X coordinates of the points are respectively 0, 15, 31, 47 and 63 and the Y coordinates are the values given in the parameters. The Tracking Generator can be applied to any of the 20 sources listed in the *Modulation Input* area, and the result can be used as a source for a matrix modulation line.

For example, if you give the parameters 63, 47, 31, 15 and 0, you invert the action of the source parameter. Other uses are to alter the Keyboard velocity response, the Keyboard pitch mapping (for microtonal scales), and for altering the response curves of controllers such as pitch-bend levers and mod-wheels. To adjust the curve, select one tracking point and set the value with the slider.

4.6 *Envelope Trigger Source*

NORMAL The envelope cycle begins when when a key is pressed.

LFO The envelope is triggered when the LFO1 waveform crosses its retrigger level.

GATE LFO The LFO triggers the envelope, but only between a Note-on/Note-off pair (e.g. when a key is pressed).

EXTERN The envelope cycle begins when an external trigger is received (from Pedal 2, which defaults to MIDI Controller 64).

4.7 *Auxiliary LFO settings*

LFO TRIGGER MODE

These buttons select the conditions under which the LFO cycle will be triggered or re-started.

FREE The LFO will free-run, and will not be synchronized to any other signal.

STRIG The LFO will be triggered by a note-on (and start at the LFO RTG level). The LFOs for subsequent note-ons (for the other voices) will all be triggered at the same time (and hence will be synchronized).

MTRIG The LFO for a voice will be triggered by its note-on, but will not trigger any of the other voices LFOs. This means that the voice LFOs will not be synchronized.

XTRIG The LFO cycle is triggered by an external trigger (from Pedal 2, which defaults to MIDI Controller 64)

LAG When this mode is set the LFO waveforms are "lagged" or smoothed, in a manner similar to portamento. This is most useful when the square wave and sampled waveforms are selected. In these cases, application of lag mode results in linear ramps between the square wave and sampled levels.

SAMPLE INPUT A *Sample-Input* is a different kind of LFO source. Not a waveform (e.g. sawtooth or sin) modulates but a selected source (e.g. an envelope) will be scanned and given out as an modulation value.

5 The Modulation Matix-Page

On this page you can find all modulation parameters of the Matrix 6/1000.

5.1 *Fixed Modulations*

These modulation set up direct modulation connections. The level of these modulations cannot be altered. The advantage of using these is that you don't need to use up one of the 10 general matrix modulation channels. The modulation level can be set with the slider.

5.2 *Modulation Matrix*

There are 10 modulation channels that can be used. To assign one of the Modulation channels, click one of the Mod. Numbers. Select the source and the destination of the desired modulation. Now the modulation level can be set with the slider.