DER **OTO**

DER OTO

OCT — NOTE — LENG

A / LFO RATE D / LFO › VCF S / LFO › PIT Q

GLIDE ACC SEQ run

tap

VCA / LFO WAV EG › VCF (DATA) FREQ FILTER

1 / 9	2 / 10	3 / 11	4 / 12	5 / 13	6 / 14	7 / 15	8 / 16
WAV A	OCT A	GLIDE	LVL A	MIX MOD	LFO SYNC		NUMBER
WAV B	INT B	DETUNE	LVL B	EG › PIT	KBD TRK	LFO	SPEED

User Manual
Rev 2.3
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PRESENTATION

- **Der OTO** is the new Biscuit firmware (revision 2) and turns your Biscuit into a monophonic synth.
  You can play **Der OTO** with a standard MIDI keyboard, a computer with a MIDI interface or the internal sequencer.

- **Der OTO** has 2 main modes: **Synth** and **Sequencer**.
  You can access to the **Synth** parameters when the central round switch (**SEQ**) is off.
  When SEQ switch is on (lit up blue), you have access to the **Sequencer** parameters.

- The **Synth** has 2 oscillators: OSC A & OSC B with several waveforms.
  OUT L corresponds to the OSC A output and OUT R corresponds to the OSC B output.
  However you can use an adaptor (2 mono jacks to 1 stereo jacks) if you want to.
  The L & R inputs are inactive.

- There's 1 LFO and 1 envelope generator (EG) to modulate the pitch and VCF.

- The **Sequencer** can memorize and play up to 16 steps.
  Several parameters (OCT, NOTE, LENGTH, GLIDE, ACCENT) can be memorized in each step.
  You can transpose the whole sequence by playing a note on your MIDI keyboard.

- **Der OTO** accepts the following MIDI messages:

    - Note On & Note Off
    - Continuous Controller (for all knobs and parameters)
    - Pitch Bend
    - Beat Clock, Start and Stop (for synchronisation of the sequencer)
    - Program Change

- You can save **8 synth presets** and **8 sequence presets** in **Der OTO**. Saving a synth preset does not erase your Biscuit presets, but saving a sequence preset (nr 1 to 8) **will erase a Biscuit preset** (nr 9 to 16).
  You can save more synth or sequence presets by using the MIDI Dump function.

How to select between "DER OTO" and "BISCUIT"

With this firmware revision, you can use your Biscuit as a standard one (Revision 1.2) or as Der OTO.

If you press the "**SEQ**" (or "**BRAIN**"), "**4**" & "**5**" switches simultaneously while you switch Biscuit on, Biscuit becomes **Der OTO** and the other way around. This selection is kept into memory.

The color of the startup animation indicates if you are in Biscuit mode (the animation is in red) or in **Der OTO** mode (the animation is in white).

When you're in **Der OTO**, your Biscuit is no longer active.

How to install Der OTO on your Biscuit (Mac)

IMPORTANT NOTE: BEFORE UPGRADING THE FIRMWARE, WE RECOMMEND YOU TO SAVE YOUR
PRESETS WITH A MIDI SYSEX DUMP (see page 31 of BISCUIT USER MANUAL).
Presets are not modified by the firmware upgrade, but it's safer to do so.
DOING A PRESET SYSEX IS ALSO A GOOD WAY TO TEST MIDI COMMUNICATION BETWEEN BISCUIT AND
YOUR COMPUTER PRIOR TO THE UPGRADE.

1/ Connect a MIDI cable between the MIDI OUT port of your MIDI interface and the BISCUIT's MIDI IN port.

2/ Download the SysEx file "Der_OTO.syx" from our website :

   http://www.otomachines.com/support/

3/ Download and install freeware SysEx utility "SysEx Librarian" from this address :

   http://www.snoize.com/SysExLibrarian/

4/ Close all the running applications, such as audio or video player, internet and email programs.

5/ Move or copy the "Biscuit_vX.X.syx" file into the "SysEx Librarian" folder (in your "Documents" folder).

6/ Double-click on the "Biscuit_vX.X.syx" file. "SysEx Librarian" will open.

7/ Verify that your MIDI interface is displayed on the upper field, near the "Play" button.
    If not, select your MIDI interface.

8/ Go to "SysEx Librarian" then "Preferences...". Set "Pause between played messages" to 250
    milliseconds and "SysEx receive timeout" to 1 second. Close the "Preferences" menu.

9/ Switch BISCUIT on while pressing the "BYPASS", "BRAIN", "FILTER" and "8 / STEP" switches.
    The "BYPASS", "BRAIN" and "FILTER" switches should light up red, the other switches are off.
    BISCUIT is now ready for the upgrade.

10/ Select the "Biscuit_vX.X.syx" file in the "SysEx Librarian" main screen and press the "Play" button.
    The following message "Sending message 1 of 31" appears and the BISCUIT's "1 / TAP" switch should light up red.
    The switches 2 to 8 will light up red one after the other, indicating the upgrade in progress.
    Check that the 8 rectangular switches are all lit up red for 3 seconds at the end of the upgrade.
    BISCUIT will reset itself and is ready to use. You can quit "SysEx Librarian" utility and unplug the MIDI cable.

If you encounters problems when upgrading firmware via SysEx, try to:

- increase "Pause between played messages" (in the SysEx Librarian "Preferences" menu),
- decrease the "Transmit Speed" (in the SysEx Librarian "Preferences" menu),
- update the drivers for your MIDI interface,
- remove any devices between your interface and BISCUIT such as MIDI thru boxes, mergers, splitters...,
- use another MIDI interface.

How to install Der OTO on your Biscuit (PC)

IMPORTANT NOTE: BEFORE UPGRADING THE FIRMWARE, WE RECOMMEND YOU TO SAVE YOUR PRESETS WITH A MIDI SYSEX DUMP (see page 31 of BISCUIT USER MANUAL).
Presets are not modified by the firmware upgrade, but it's safer to do so.
DOING A PRESET SYSEX IS ALSO A GOOD WAY TO TEST MIDI COMMUNICATION BETWEEN BISCUIT AND YOUR COMPUTER PRIOR TO THE UPGRADE.

1/ Connect a MIDI cable between the MIDI OUT port of your MIDI interface and the BISCUIT's MIDI IN port.

2/ Download the SysEx file "Der_OTO.syx" from our website :

    http://www.otomachines.com/support/

3/ Download and install SysEx utility "MIDI-OX" from this address (don't forget to donate !) :

    http://www.midiox.com/

4/ Close all the running applications, such as audio or video player, internet and email programs.

5/ Open the "MIDI-OX" application.

6/ Click "View" then "SysEx...". Go to "Sysex" then "Configure...".
   Check "Delay After F7". It should be selected and the value should be: "500" Milliseconds
   Click "OK".

7/ Click "Options" then "MIDI Devices...". Select your MIDI interface on the "MIDI Outputs" box.
   Your MIDI interface should be highlighted. Click "OK".

8/ Click "Options" then "Configure Buffers...". Set "Low Level Output Buffers" to 900 (size) and 19 (Num).
   Click "OK".

9/ Switch BISCUIT on while pressing the "BYPASS", "BRAIN", "FILTER" and "8 / STEP" switches.
   The "BYPASS", "BRAIN" and "FILTER" switches should light up red, the other switches are off.
   BISCUIT is now ready for the upgrade.

10/ Click "Actions" then "Send" then "SysEx File...". Select the "Biscuit_vX.X.syx" file with the opened
   browser. "MIDI OX" is sending the firmware via SysEx.
   The BISCUIT's "1 / TAP" switch should light up red.
   The switches 2 to 8 will light up red one after the other, indicating the upgrade in progress.
   Check that the 8 rectangular switches are all lit up red for 3 seconds at the end of the upgrade.
   BISCUIT will reset itself and is ready to use.
   You can quit MIDI-OX" application and unplug the MIDI cable.

If you encounters problems when upgrading firmware via SysEx, try to:

- increase the "Delay after F7" to "1500" (or more) Milliseconds,
- update the drivers for your MIDI interface,
- remove any devices between your interface and BISCUIT such as MIDI thru boxes, mergers, splitters...,
- use another MIDI interface.

IMPORTANT NOTES ABOUT DER OTO LIMITATIONS:

Due to limited memory space and processing power of the Biscuit 8-bit processor, please take note of the following limitations of **Der OTO**:

1) If you load a Synth or a Sequencer preset when the sequencer is running and synchronized with a MIDI clock, the sequence could run out-of-sync. It's safer to stop the sequencer before loading a Synth or Seq Preset.

2) The "Snapshot" function in Biscuit mode has been removed (see Biscuit User Manual page 26).

3) The MIDI FILTER sub-menu has been removed in **Der OTO** mode. If you want to filter a MIDI event, you have to go back to Biscuit mode. The FILTER settings stored in the Biscuit FILTER sub-menu will be applied in **Der OTO** mode (see Biscuit User Manual page 30).

4) None of the sequencer parameters (OCTAVE, NOTE, LENGTH, GLIDE and ACCENT) have Continuous Controller message assigned. Thus you cannot record a MIDI sequence coming from Der OTO, or control one of these parameters from a Continuous Controller message.

5) Use the MIDI Dump functions (Send one or all presets, Receive one or all presets) only when the sequencer is not running.

6) Changing the SPEED parameter while sequencer is running could stop the playing. Der OTO is not freezed, and sometime the sequencer start to play again after a few seconds. It's better to change the SPEED parameter while sequencer is stopped.

7) When sequencer is running, if you notice glitches or dropped notes, try one of these workarounds:

- Listen the sequence in Synth mode instead of Seq mode (less "LED display" computing),
- Use waveform 3 or 4 (instead of 1 & 2), for at least one of the 2 oscillators. Waveforms 3 & 4 need much less computing.

8) When you switch Biscuit on, you will have to tap a tempo before hitting the "run" switch. If not, the sequencer will not start to run.

1. PANEL

Use the "Der MASK" cover (available from our online shop) or make your own one (a 1:1 scale drawing is downloadable from our website).
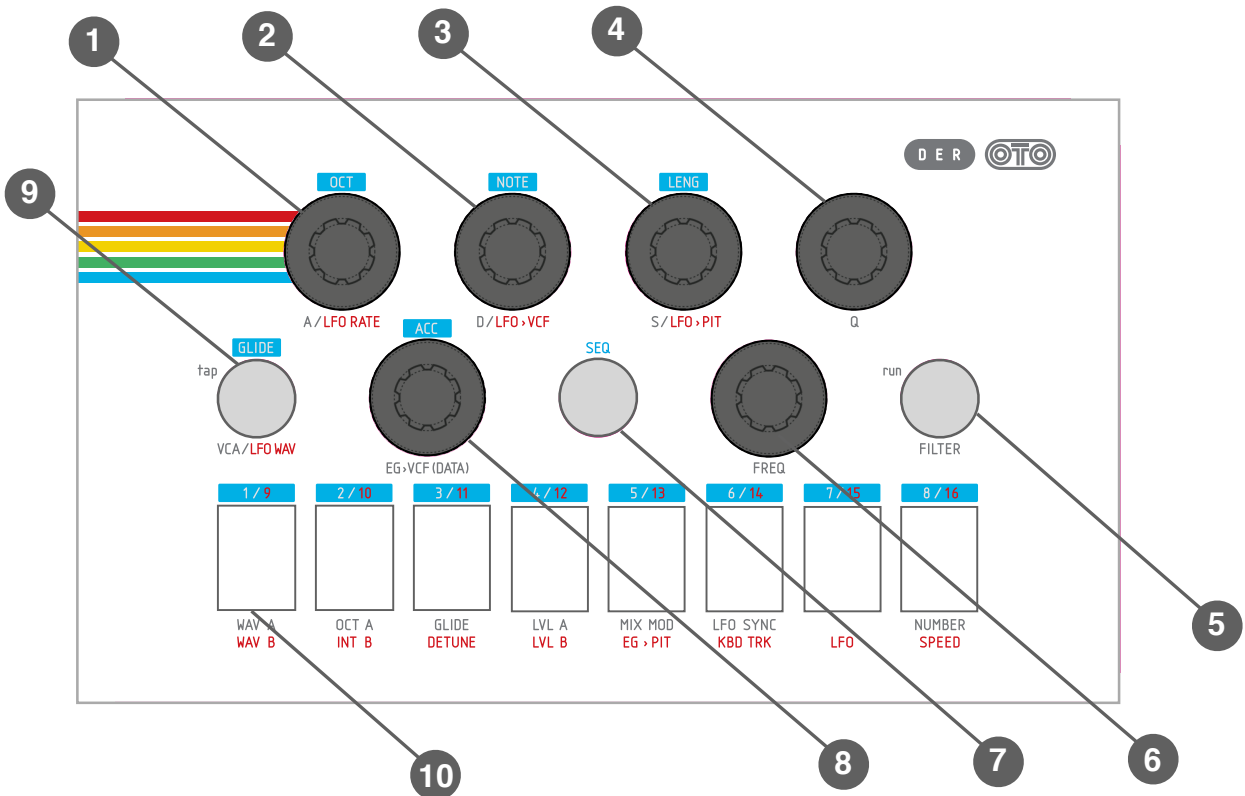
1 **A/ LFO RATE/** OCT

When the "1-8" & "SEQ" switches are all off, this pot sets the **A**ttack time of the envelope.
When the "**LFO**" switch lights up red, this pot sets the LFO rate.
When the "**SEQ**" switch lights up blue, this pot sets the octave you record in the sequencer.

2 **D/ LFO > VCF/** NOTE

When the "1-8" & "SEQ" switches are all off, this pot sets the **D**ecay of the envelope.
When the "**LFO**" switch lights up red, this pot allows the LFO to modulate the VCF.
When the "**SEQ**" switch lights up blue, this pot sets the note you record in the sequencer.

3 **R/ LFO > PIT/** LENG

When the "1-8" & "SEQ" switches are all off, this pot sets the **R**elease of the envelope.
When the "**LFO**" switch lights up red, this pot allows the LFO to modulate the Pitch.
When the "**SEQ**" switch lights up blue, this pot sets the length of the note you record in the sequencer.

4 **Q**

This pot sets the Q of the analog filter.

5 FILTER/ run

When the "**SEQ**" switch is off, this switch selects the filter type. Green is for Low-pass, Yellow for Band-pass and Orange for Hi-pass.
When the "**SEQ**" switch lights up blue, this switch becomes "**run**". This is the start and stop of the sequencer.
Press it once to start (lit up white), and once more to stop (off).

6 FREQ

This pot sets the analog filter cutoff frequency (from 20Hz to 15kHz)

7 SEQ

When the " **SEQ**" switch lights up blue, you are in the sequencer mode.
You can now choose a step by pressing once (for step 1 to 8) or twice (for step 9 to 16) any of the 8 rectangular switches, and record parameters in your sequence.
This switch is also used for recalling and saving presets and to access MIDI section.

8 EG > VCF (Data) / ACC

When the "**SEQ**" switch is off, this pot sets the EG's rate of modulation on the filter.
This pot is also used to set synth parameters (as a Data Entry pot) when you press one of the 8 rectangular switches.
When the "**SEQ**" switch lights up blue, this pot sets the ACCENT of the note you record in the sequencer.

9 VCA/ LFO > WAV/ Tap/ GLIDE

When the "1-8" & " **SEQ**" switches are all off, the VCA controls the volume of the sound. If the "VCA" switch lights up white, the amplitude of the sound is controlled by the envelope generator. If the "VCA" switch is off, the amplitude of the sound is controlled by the gate signal as a TRIG.
When the "**LFO**" switch lights up red, the "VCA" switch selects the type of waveform. Green for Triangle, Yellow for Square and Orange for Sample&Hold.
When the "**SEQ**" switch lights up blue and the "1-8" switch are all off, this switch becomes the Tap Tempo.
When the "**SEQ**" switch lights up blue and that a step is selected, this switch becomes the Glide on/off in the sequencer.

10 The 8 rectangular switches

The different synth parameters are selected by these switches.

When the "**SEQ**" switch is off, you can select the parameters you want to modify in Der OTO.
Press once to select the parameters written in white (the switch lights up white).
Press twice to select the parameters written in red (the switch lights up red).

When the "**SEQ**" switch lights up blue, you can select the step you want to modify in your sequence.
Press once to select the steps 1 to 8 written in white (the switch lights up white).
Press twice to select the steps 9 to 16 written in red (the switch lights up red).

2. SYNTH PARAMETERS

When you press once one of the 8 rectangular switches, the switch lights up white and the parameter written in white below the switch is selected.The parameter will flash in white and the value will light up white and still.
When you press twice one of the 8 rectangular switches, the switch lights up red and the parameter written in red below the switch is selected. The parameter will flash in red and the value will light up white and still.

When a parameter is selected, you can change its state or value by moving the "EG > VCF (DATA)" pot.

<u>**SWITCH 1:**</u>

    * WAV A: 6 waveforms are available:

- **Sawtooth**
- **Square**
- **Raw Sawtooth** (1)
- **Raw Square** (1)
- **Sine**
- **FM** (2)

(1): These waveforms are not band-limited and thus produces aliasing when you place notes above C3. Neverthless, the sound is more "punchy" in the bass range, and produce a more dirty sound.

(2): When you are in the FM mod, OSC B is no longer active. It becomes the modulator. The FM sound from OSC A is mono but goes to both outputs L & R.

    * WAV B: 6 waveforms are available:

- **Sawtooth**
- **Square**
- **Raw Sawtooth**
- **Raw Square**
- **Sine**
- **White Noise**

<u>**SWITCH 2:**</u>

    * OCT A: 3 values are available in comparison with the MIDI note:

- **1 octave below**
- **Unison**
- **1 octave above**
- **2 octaves above**

    * INT B: The OSC B interval in comparison with OSC A:

- **Unison**
- **Minor 3rd Up**
- **Major 3rd Up**
- **Forth Up**
- **FifthUp**
- **1 Octave Up**
- **Fifth 1 Octave Up**
- **2 Octaves Up**

When Osc A is in FM mod, Int B becomes the FM frequency ratio.

SWITCH 3:

    * GLIDE: This is a slide from one pitch to another:

        - Glide OFF
        - From switch 2 to 6: From fast to slow glide time

    * DETUNE: This is the detune of OSC B in comparison with OSC A:

        - OFF (switch 1): Both OSC are synchronized
        - From switch 2 to 8: From soft to strong detune

SWITCH 4:

    * LVL A: Output Level of OSC A:
        - From Mute to Full level

    * LVL B: Output Level of OSC B:
        - From Mute to Full level

Note: When OSC A is in FM mode, LVL B becomes the depth modulation (from 0 to 100 %).

SWITCH 5:

    * MIX MOD: Different way to mix the 2 oscillators:

        - Mixer (LVL A for OSC A and LVL B for OSC B)
        - Ring Mod (Amplitude of OSC A modulate the amplitude of OSC B)
        - X-OR
        - Bitcrusher
        - Swap

    * EG > PIT: This sets the modulation rate of the envelope generator on the pitch.

SWITCH 6:

    * LFO SYNC: This is the way the LFO get synchronized on the NOTE ON:

        - No Sync
        - Sync on minimum position
        - Sync on maximal position
        - One Shot

    *KBD TRK: This is the rate of follow up filter by the note:

        - 0%
        - 50%
        - 100% (the cutoff freq is fully controlled by the Midi note)

Note: Switch 3 is specially made to be used with Sine and FM mode (and with your FREQ set to minimum) to avoid too much noise.

SWITCH 7:

LFO: This is just an ON/OFF switch. When it's ON, you can access all the LFO parameters, written in red under the pots:

- **LFO RATE:** it sets the rate of modulation
- **LFO >VCF**
- **LFO > PIT**
- **LFO WAV:** lights up green for triangle, yellow for square, orange for sample&hold

SWITCH 8:

This last switch gives access to the sequencer parameters.

* NUMBER: You can select the number of steps (from 1 to 16) you want in your sequence.
When you choose a step between 1 and 8, the switch will light up white. When you choose a step between 9 and 16, the switch will light up red.

* SPEED: You can choose the speed of your sequence in comparison with the tempo:

- **X 1**
- **X 2**
- **X 4**

Synth parameters summary:

	1	2	3	4	5	6	7	8
WAVE A	SAW	SQUARE	R. SAW	R. SQU	SINE	FM		
WAV B	SAW	SQUARE	R. SAW	R. SQU	SINE	NOISE		
OCT A	- 1 Oct	UNISON	+ 1 Oct	+ 2 Oct				
INT B	UNISON	+ 3rd m	+ 3rd M	+ 4th	+ 5th	+ 1 OCT	+ 5th Oct	+ 2 OCT
GLIDE	OFF	Fast	Mid Fast	Mid	Mid Slow	Slow		
DETUNE	OFF	(from	soft	to	strong	detune	in 7	steps)
LVL A	MUTE	(from	low	to	high	level	in 7	steps)
LVL B	MUTE	(from	low	to	high	level	in 7	steps)
MIX MOD	MIXER	RING	X-OR	Bitcrush	Swap			
EG > PIT	OFF	1 (*)	2 (*)	4 (*)	8 (*)	16 (*)	32 (*)	
LFO SYNC	No Sync	Sync Lo	Sync Hi	One Shot				
KBD TRK	0 %	50 %	100 %					

(*): in semitone

3. SEQUENCER PARAMETERS

When you press the "**SEQ**" switch (it lights up blue), you enter in the sequencer mode.

When the "**SEQ**" switch lights up blue, you can choose a step by pressing any rectangular switches.
When you press once, the switch lights up white and corresponds to the steps 1 to 8. When you press twice, the switch lights up red and corresponds to the steps 9 to 16.
As soon as you select one of the 16 step, the note stored in this step is played.

You can now modify the SEQ parameters in the chosen step. The SEQ parameters are surrounded by blue and written above the pots. (OCT, NOTE, LENG, ACC, GLIDE).
When you touch any of these parameters, the new value is taken into account on the chosen step.

The sequence is then read with its new values. The sequence keeps running when SEQ is off unless you stop it. This allows you to access Der OTO parameters while your sequence is running.

Use the "**run**" switch to start or stop the sequencer playing.
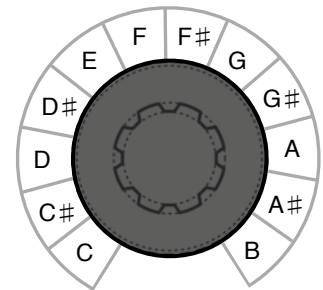
OCT

Octave of the note. It covers 8 octaves; from **-1** (notes from C-1 to B-1)
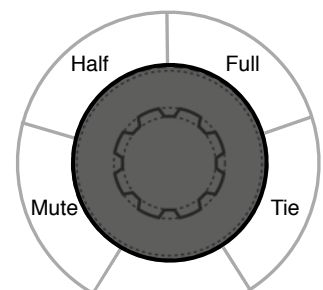to **5** (notes from C5 to B5)
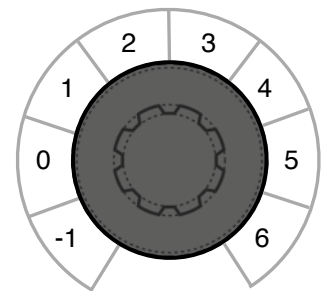
NOTE

It covers 12 notes from C to B. These are the 12 notes of the selected octave.
If a step is selected, you can choose a note using a MIDI keyboard.

LENG

The lenght of the note. 4 zones:
- Mute
- Half (the lenght of the note lasts half the step)
- Full (the lenght of the note lasts the whole step)
- Tie (the lenght lasts the whole step but is tied to the previous note)

ACC

This is the ratio of Envelope Generator to the filter for each step.
When your sequence is running and that no steps are selected, ACC becomes the MASTER ACCENT.
It attenuates the Accent in general but keeps the difference of accents between the notes.

GLIDE

This is the Glide On/Off.
When the light is off, **Glide** is OFF. When the light is on, the **Glide** time is the one you've selected with the corresponding Synth parameter.

Number of steps:
You can choose the number of steps in your sequence, with a maximum of 16 steps. (cf parameter **NUMBER** page 7).

Sequencer speed:
You can also choose the speed of your sequence. (cf parameter **SPEED** page 7).

Tap Tempo:
When the "1-8" switches are all off, the Tap Tempo ("**tap**" switch) is active.
If **Der OTO** receives a MIDI BEAT CLOCK, the Tap will be inactive and the sequence will follow the MIDI tempo.

Sequencer Start / Stop:
The Run function ("**run**" switch) is always active in Sequencer mode. Press it once to start and once again to stop.

When **Der OTO** receives a Beat Clock on its MIDI input, the sequencer will follow the Beat Clock if the "**run**" switch is on.
If the "**run**" switch is off, the sequencer stops but the synchronisation is kept until the next start.

Transpose:
While Sequencer is running, you can play a MIDI note between **C1** and **C5** to transpose the whole sequence, in relation to the first note of the sequence.

For example, if the note in the first step is C3 and you play a C2 when sequencer is running, the whole sequence will be transposed one octave below. If you play a C#3, the whole sequence will be transposed one semitone above.
If you play a note outside the C1 - C5 range, the sequence won't be tranposed.

Step triggering:
You can trigger each of the 16 steps with the MIDI notes from C -2 to D# -1.
Each step will play its corresponding note, accent and glide on/off.
The "MASTER ACCENT" setting is not taken into account.

Default sequence:
Unless you modifiy it, **Der OTO** will play the following default sequence:
16 steps, Alternation of C2-C3 notes, all step have a Full Length, Full Accent and Glide Off.
You can recall this default sequence by pressing the "**1**" and "**3**" switches.

4. PRESETS

You can save 8 synth sound presets and 8 sequence presets.

The **8 synth presets** are saved or recalled when the "**SEQ**" switch is **OFF**.
The **8 sequencer presets** are saved or recalled when the "**SEQ**" switch is **ON**.

4.1 Saving a preset

While pressing the "**SEQ**" switch, press the "**FILTER**" switch.
Keep pressing the "**SEQ**" switch for 2 seconds.
The switches 1 to 8 flash red. Press one of the switches 1 to 8, the synth sound will be saved in the corresponding preset.
Saving a synth preset (preset 1 to 8) in Der OTO **does NOT ERASE** your Biscuit presets 1 to 8.

To save a sequence preset, do the same as explained above. When the 8 switches flash red, press the "**SEQ**" switch again (it turns blue).You can now press one of the switches 9 to 16 to save your sequence preset in the corresponding preset.
Saving a sequence preset (preset 9 to 16) in Der OTO **DOES ERASE** your Biscuit presets 9 to 16. (So don't forget to save your presets to a computer using a SysEx utility if you don't want to loose your Biscuit presets 9 to 16)

4.2 Recalling a preset

While pressing the "SEQ" switch, press the "Filter" switch. The switches 1 to 8 flash white.
Press one of the switches 1 to 8 to recall the desired synth preset.

To recall one of the sequence presets (presets 9 to 16), do the same as explained above. When the 8 switches are flashing white, press the "SEQ" switch again (it turns blue). You can now select one of the sequence presets (9 to 16) by pressing one of the 9 to 16 switch.

To exit the saving/recalling preset mode, press again the "Filter" switch while pressing the "SEQ" switch, or wait 10 seconds. Der OTO will revert to its regular state.
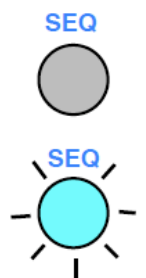
4.3 Factory presets
There are 8 factory presets in Der OTO.
You can recall these factory presets as in Biscuit.
(cf p 27 of the Biscuit user manual).

1	2	3	4	5	6	7	8
Synth nr 1	Synth nr 2	Synth nr 3	Synth nr 4	Synth nr 5	Synth nr 6	Synth nr 7	Synth nr 8
9	10	11	12	13	14	15	16
Seq nr 1	Seq nr 2	Seq nr 3	Seq nr 4	Seq nr 5	Seq nr 6	Seq nr 7	Seq nr 8

SEQ

SEQ

5. MIDI

While pressing the "**SEQ**" switch, press the "**VCA/LFO WAV**" switch to enter the MIDI SETTING mode.

The switch 1 & 3 flash white to let you know you have 2 sub-menus.

Press the switch 1 to access the sub-menu **MIDI CHANNEL**.
This sub-menu works the same way than in Biscuit (cf p 29 of the Biscuit user manual).

Press the switch 3 to access the sub-menu **PRESET DUMP**.
This sub-menu works the same way than in Biscuit (cf p 31 of the Biscuit user manual), except that **"SEND ALL PRESETS"** and **"RECEIVE ALL PRESETS"** only deal with presets **1 to 8** (synth presets).
For sequencer presets, you will need to use the **"SEND ONE PRESET" and "RECEIVE ONE PRESET"** function.

Just remember: **Preset 1 to 8 = Synth preset**
Preset 9 to 16 = Sequence preset

Der OTO accepts the following Continuous Controller numbers:

Parameter	CC nr
ATTACK	14
DECAY	15
SUSTAIN	16
Q	17
EG > VCF	18
FREQ	19
WAV A	20
WAV B	21
OCT A	22
INT B	23
GLIDE	24
DETUNE	25
LEVEL A	26
LEVEL B	27
VCA	28
FILTER	29
MIX MODE	30
EG > PIT	31
LFO SYNC	33
KBD TRACK	34
LFO RATE	35
LFO > VCF	36
LFO > PIT	37
LFO WAV	38
NUMBER	40
SPEED	41
MASTER ACCENT	42