FLAME TON

MELODY LOOPER
EURO RACK MODULE

MANUAL

Version 1.00

CONTENTS

1. SHORT DESCRIPTION

Thank you for purchasing the FLAME TON eurorack module!

Before using the module, it is helpful to familiarize yourself with its basic functions and operation. We have included a mini-tutorial in the "First Steps" chapter to help you get to know the module when you first start using it. More detailed descriptions of the functions and operation can also be found in the relevant chapters.

"TON" is a Eurorack live sequencer module with only 12 HP width for generating two note tracks. They are output via two separate analog 1V/octave outputs with GATE/NOTE/VELOCITY and the notes can also be sent via MIDI. Both tracks are essentially independent of each other and can be used in different octave spreads or last steps and bar lengths, for example. Polyrhythmic sequences are therefore possible.

The sequencer is designed as a looper and plays a pattern of up to four bars in a loop. A track has a maximum of 16 steps per bar (64 notes maximum in 4 bars). The notes can be played (or deleted) quantized using two buttons. The SHOTS button is used for note repeats, the SINGLE button for setting individual events (quantized in 16ths). Different beat grids are available for the note repeats, and a triplet setting of the track is also possible. A track can also be played in half time. Both tracks can be shuffled together.

The pitch of the notes is determined either by the potentiometer, the CV input or the built-in distance sensor. The sensor works in a range of about 4 to 40 cm and is independent of external light. Even bright sunlight does not affect it.

A 1-octave mini keyboard allows you to transpose on the fly and set a scale. Each track has its own scale. Since the module has a CV input, it can also be used as a quantizer. The applied CV can be recorded instead of the sensor or potentiometer value.

It should be noted that note values are not recorded directly, but only the "unquantized" values generated by the sensor, potentiometer or CV input. These "tonally unquantized" values are then sent through a note quantizer. This means that the pattern can be easily manipulated or changed again after it has been played, for example with: gate length, velocity, random note changes, last step, hold, mute, glide, scale and transposition.

You can jam over the running sequence to create variations without changing the saved sequence. Different BEAT settings (Beat Performance Modes) are also available for this purpose.

In addition to the analog connection, the module has full MIDI functionality. It can be synchronized via analog clock or MIDI clock. When loading a patch, a fixed program change command can be sent via MIDI for each track in order to change sounds from connected MIDI sound generators.

An EDIT menu is available for both tracks to change recorded events or to program individual events. In the EDIT menu, the values of the steps can be manually set, changed and/or displayed. There are also other functions here for deleting, initializing, swapping or copying bars or tracks.

Settings of the current pattern are saved together in a patch. 128 memory locations are available for this. The patches can be selected manually or via MIDI program change, saved on the fly and reloaded. A patch can be saved as a backup on an external computer via MIDI dump. It is also possible to transfer a patch directly to a second "TON" module via MIDI dump.

2. MODULE OVERVIEW

❶ **OUTPUTS (left to right):**
1 - MIDI-OUT (Typ: TRS-B)
2 - CLOCK (mono jack)
3 - GATE 1+2 (stereo jack)
4 - Note/Velocity 1 (stereo jack)
5 - Note/Velocity 2 (stereo jack)
6 - RESET (mono jack)

❷ **INPUTS (left to right):**
1 - MIDI-IN (Typ: TRS-B)
2 - CLOCK (mono jack)
3 - CV-IN (mono jack)
4 - RESET (mono jack)

❸ **DISTANCE SENSOR and above 2 red activity LEDs**

❹ **DISPLAY**

❺ **BAR BUTTON / LEDs**

❻ **MENU BUTTONS: VELO, GATE and GLIDE**

❼ **MENU BUTTONS: BEAT, Fn (Functions), SCALE and TRANSPOSE**

❽ **MINI KEYBOARD / BUTTONS FOR FUNCTIONS**

❾ **PLAY BUTTONS: MUTE 1+2, SHOTS, SINGLE**

❿ **SELECT BUTTON TRACK-2**

⓫ **START / STOP BUTTON**

⓬ **LOAD / SAVE PATCH BUTTON**
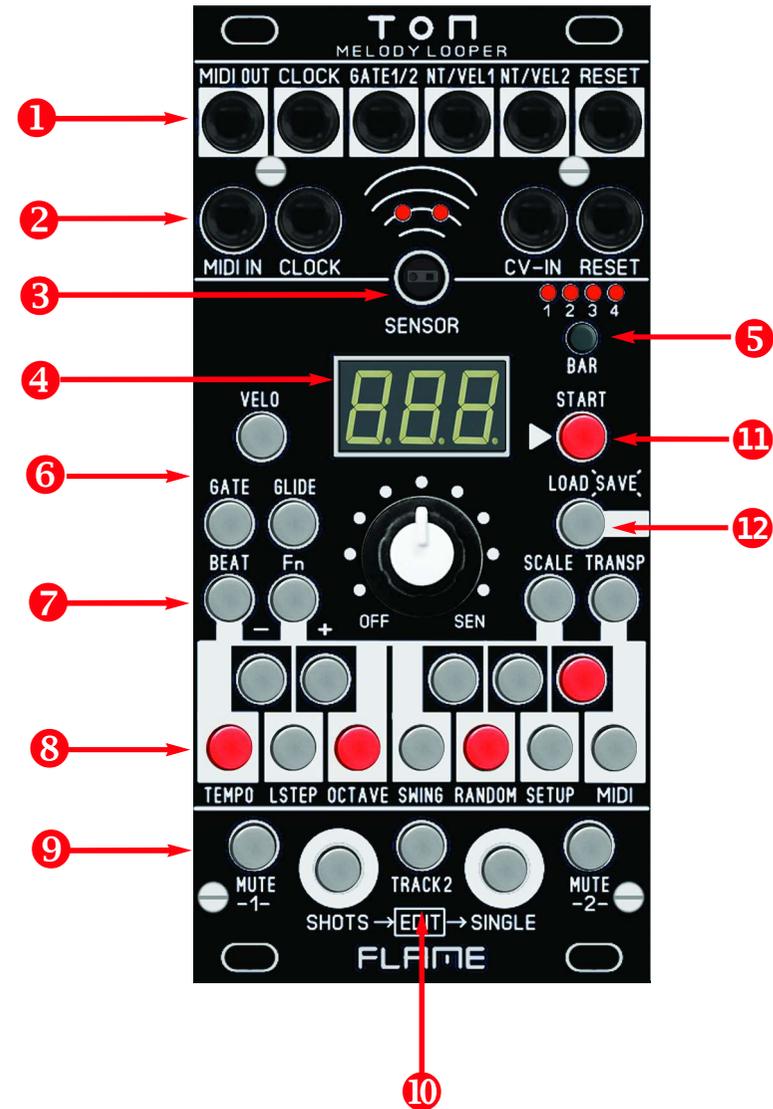
3. CONNECTIONS

The TON module is delivered with a ribbon cable connected to the Doepfer bus. The color-coded wire indicates -12 volts.

It is important to ensure that the polarity is correct when connecting. If the module is accidentally connected incorrectly, protective diodes prevent the module from being destroyed immediately (but it cannot be ruled out that damage may still occur).

Therefore caution: Check the connection several times before switching on for the first time!

The current consumption of the module is on average +170mA / - 30mA.

BACKUP BATTERY

The module's data memory is buffered with a 3V lithium battery (type CR2032). It is located in a socket below the processor board and has a lifespan of about 3-5 years. Instructions on how to replace the battery can be found in the appendix to this manual.

TIP: Output: GATE Track 1

RING: Output: GATE Track 2

TIP: Output: NOTE-CV 1v/oct Track 1

RING: Output: Velocity-CV Track 1

TIP: Output: NOTE-CV 1v/oct Track 2

RING: Output: Velocity-CV Track 2
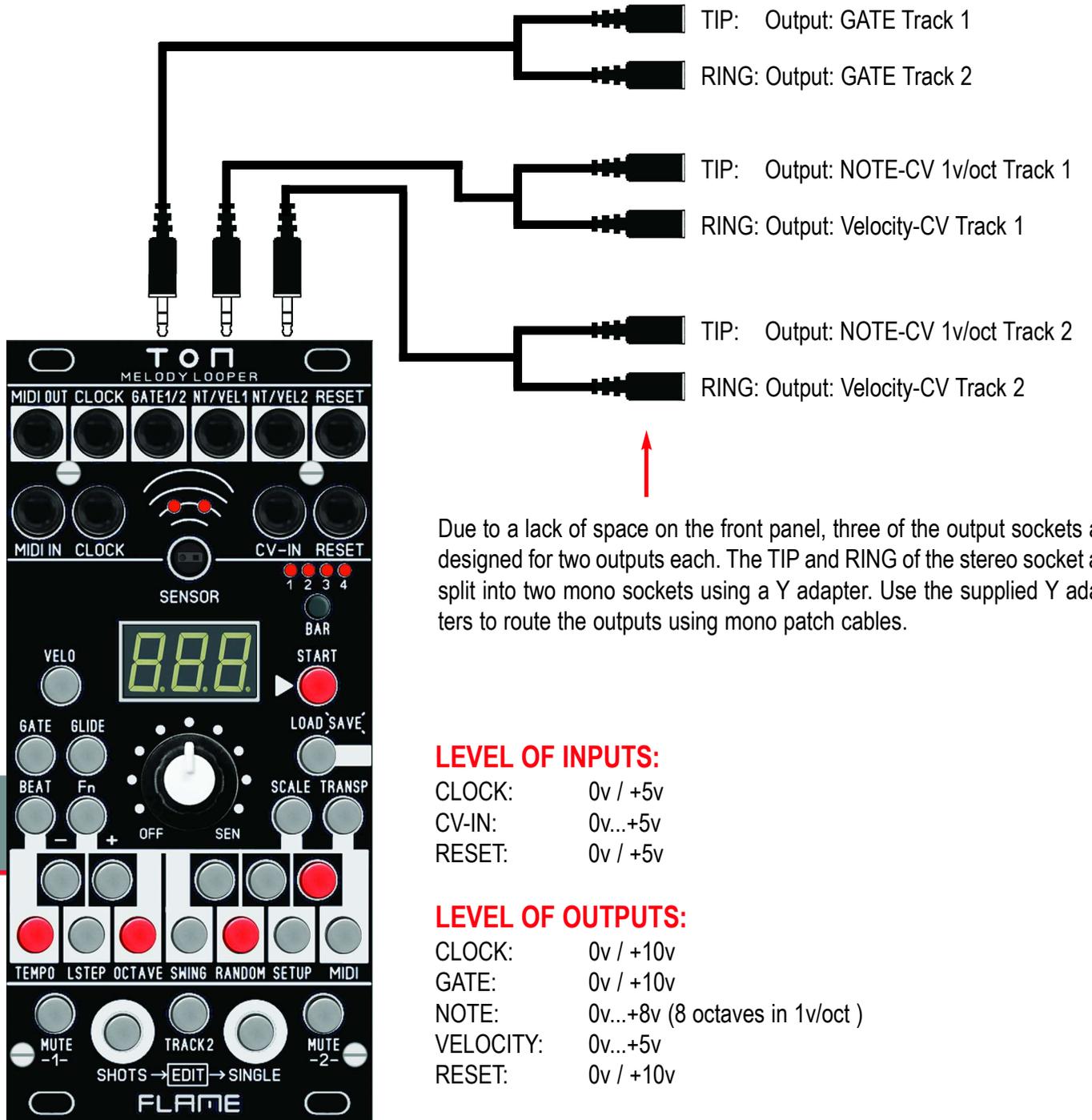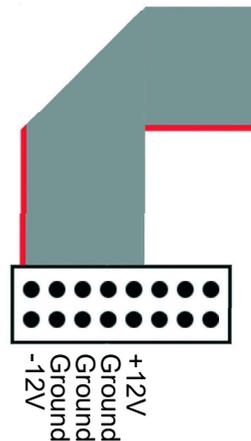
Due to a lack of space on the front panel, three of the output sockets are designed for two outputs each. The TIP and RING of the stereo socket are split into two mono sockets using a Y adapter. Use the supplied Y adapters to route the outputs using mono patch cables.

LEVEL OF INPUTS:

CLOCK:	0v / +5v
CV-IN:	0v...+5v
RESET:	0v / +5v

LEVEL OF OUTPUTS:

CLOCK:	0v / +10v
GATE:	0v / +10v
NOTE:	0v...+8v (8 octaves in 1v/oct)
VELOCITY:	0v...+5v
RESET:	0v / +10v

3. CONNECTIONS

MIDI CONNECTIONS

The MIDI connectors on the module are of the MIDI-TRS-B type. Use simple standard stereo cables for a direct connection of sockets of this type. For the connection to MIDI-DIN sockets, use commercially available MIDI-DIN to MIDI-TRS-B adapters. Adapters from MIDI-TRS-A to MIDI-TRS-B usually only swap the TIP and RING of the plug. This can also be achieved with two Y-cables.

**TRS-B
(TRS-A)**

**TRS-B
(TRS-A)**

MIDI-DIN

TRS-B

Adapter MIDI-DIN to MIDI-TRS-B
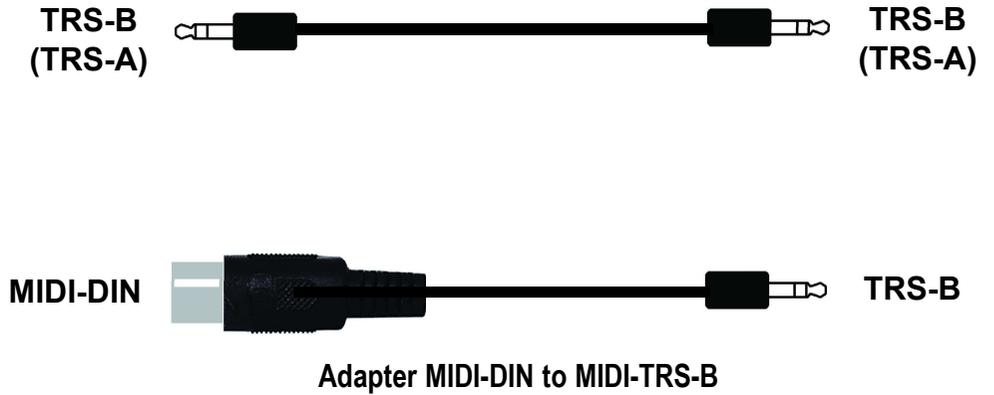
Connecting Sound Expander:

Connect a MIDI sound generator to the TON module via MIDI-OUT from the TON to the MIDI-IN of the sound generator. Multimode expanders that can play different sounds on different MIDI channels are advantageous (e.g. commercially available GM expanders).

MIDI IN

MIDI Sound Expander

Connect MIDI control unit:

Connect the MIDI control device via MIDI-OUT to the MIDI-IN of the TON module (e.g. with a master keyboard). Program change commands for switching patches and notes for transposing scales can be sent from the master keyboard. If the master keyboard is equipped with a sequencer, this can also run the TON in sync via MIDI clock (start and stop).

MIDI OUT

Masterkeyboard
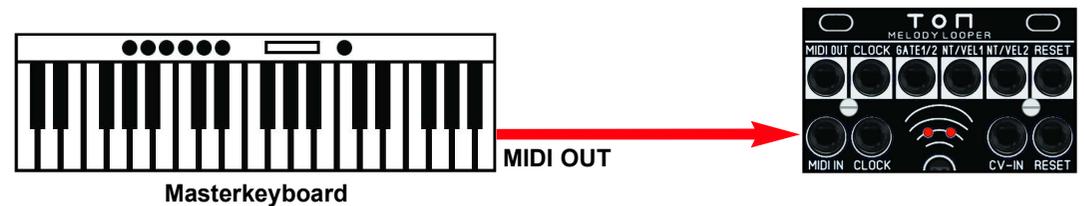
See also the chapter "Synchronization".

4. FUNCTION OF THE DISTANCE SENSOR

Above the display is a modern optical distance sensor with an infrared laser diode and receiver, which measures the distance of a hand (or object) every 10ms within a distance range of between approximately 4 and 40cm. The optical sensor is independent of external light.

The generated voltage behaves logarithmically over the distance. The closer an object comes to the sensor, the faster the generated voltage increases (see graphic scaling on the right).

The sensor is only active when the control is in the **SEN** position and when a hand (or object) is in the sensor area approximately vertically above it. The left red LED above the sensor signals the activity.

In the TON, the generated voltage is used for the pitch of the notes. This runs through an internal quantizer that defines a scale and the fundamental tone (keynote). If the SCALE menu or the TRANSPOSE menu is selected, the note generated by the sensor is shown in the display (potentiometer position SEN). The value of the note also depends on the set octave range and the octave offset (see also the OCTAVE function menu).

👉 **Notice:**
The sensor should be carefully cleaned of dust from time to time or when necessary using a soft brush.
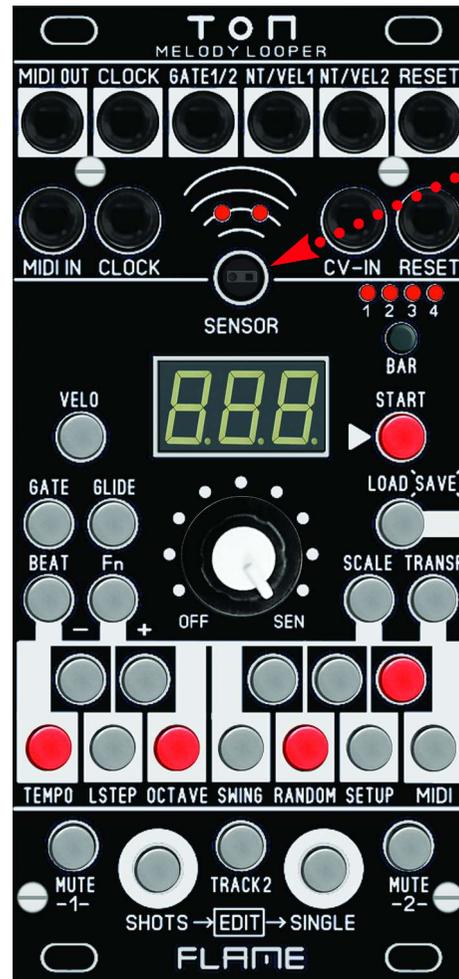
Control range approx. 4..40 cm
(vertically above the sensor)
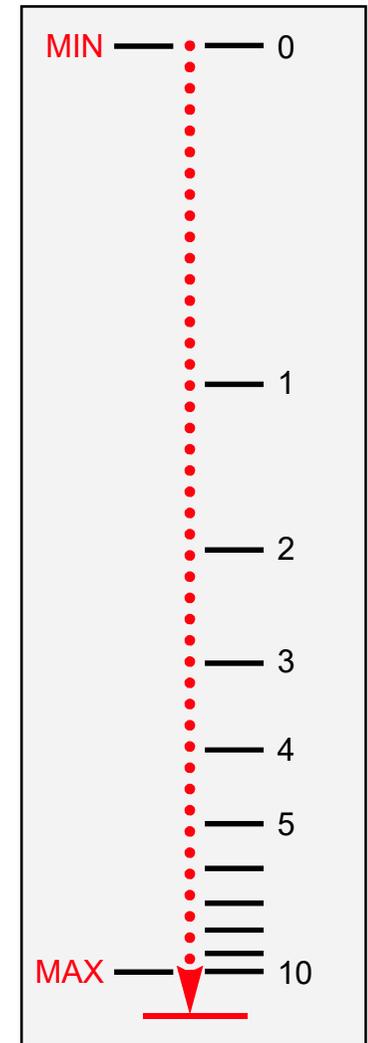
logarithmic scaling

5. FIRST STEPS

BASIC OPERATION

After switching on, PATCH 01 is automatically loaded and the **TRANSP** menu (for transposing or setting the root note) is called up. The **[TRANSP]** menu button lights up and one of the keyboard keys (lights up) shows the currently set root note (transposition). The root note can now be changed using the keyboard keys. The root note is always the same for both tracks (see also the TRANSPOSE chapter).
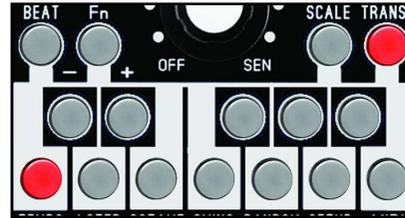
[TRACK2] BUTTON

The **[TRACK2]** button indicates which track is currently selected. This button can be switched in every menu. Note, however, that in some menus (**SETUP** and **MIDI)** this button is also used to switch between submenus. More on this in the relevant chapters of the function menus.

👉 **Example:**

For example, go to **SCALE** (press the **[SCALE]** button) and set different scales for both tracks. Switch tracks with the **[TRACK2]** button and use the keyboard keys to set the track's scale (turn notes on and off).
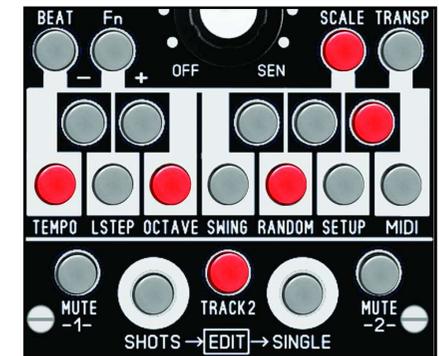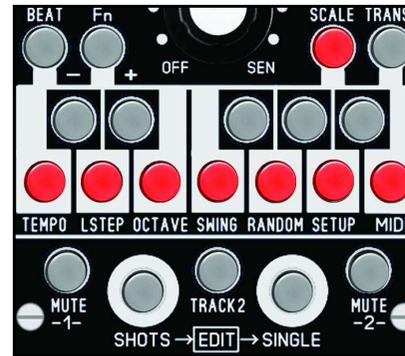
VALUE CHANGES WITH +/- BUTTONS

In some menus, parameters must be changed. To do this, use the **[#C]** key for minus and the **[#D]** key for plus. For some parameters, the value can be set using the potentiometer by pressing both keys at the same time. This means the value can be reached more quickly without having to step around for a long time using the +/- keys.

👉 **Example:**

Press the **[Fn]** key, release, then press the **[TEMPO]** key, release. Both keys light up and the display shows the current tempo of the loaded patch in Bpm. Use the **[#C]** and **[#D]** keys to step back or forward to change the tempo. Press both keys at the same time and turn the potentiometer to cover larger areas.
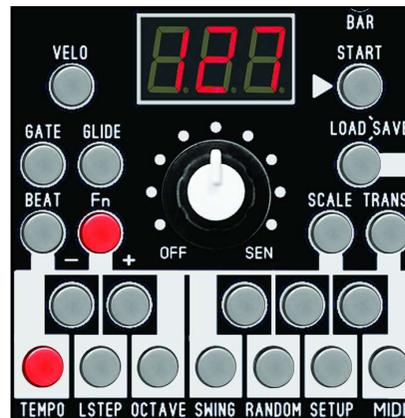
5. FIRST STEPS

RECORD / PLAY YOUR FIRST TRACK

Start the sequencer by pressing the **[START]** button. The loaded **PATCH** will now be played.

To display notes on the display, go to the **[SCALE]** or **[TRANSP]** menu. When the control is set to **[SEN]**, the notes playing on the selected track are displayed.

The tracks can be muted using the **[MUTE1]** and **[MUTE2]** buttons. Select track 1 using the **[TRACK2]** button (button not lit). With the control set to **[SEN]** (for sensor), track 1 can now be played over the running sequence by placing your hand over the sensor.

If the recorded track is muted, a sequence will now be heard. If the track that is playing is not muted, the new notes will now be played instead of the recorded sequence. To record this, the **[SHOTS]** button must be held down (as long as you want to record).

Notes can also be recorded using the knob. Rotate the knob between the two positions **[OFF]** and **[SEN]** while holding down the **[SHOTS]** button. Note that the number of playable notes is limited by the SCALE, OCTAVE and TRANSPOSE settings.

To delete notes or create rests, turn the control to the **[OFF]** position and press the **[SHOTS]** button as long as desired.

☛

Note that the grid of the SHOTS sequence can be adjusted in the BEAT menu (see chapter 7.5 BEAT).

in the BEAT menu set the SHOTS grid

Start and stop sequence

Select TRANSPOSE to show notes on the display

Hold SHOTS to record

Select TRACK-1
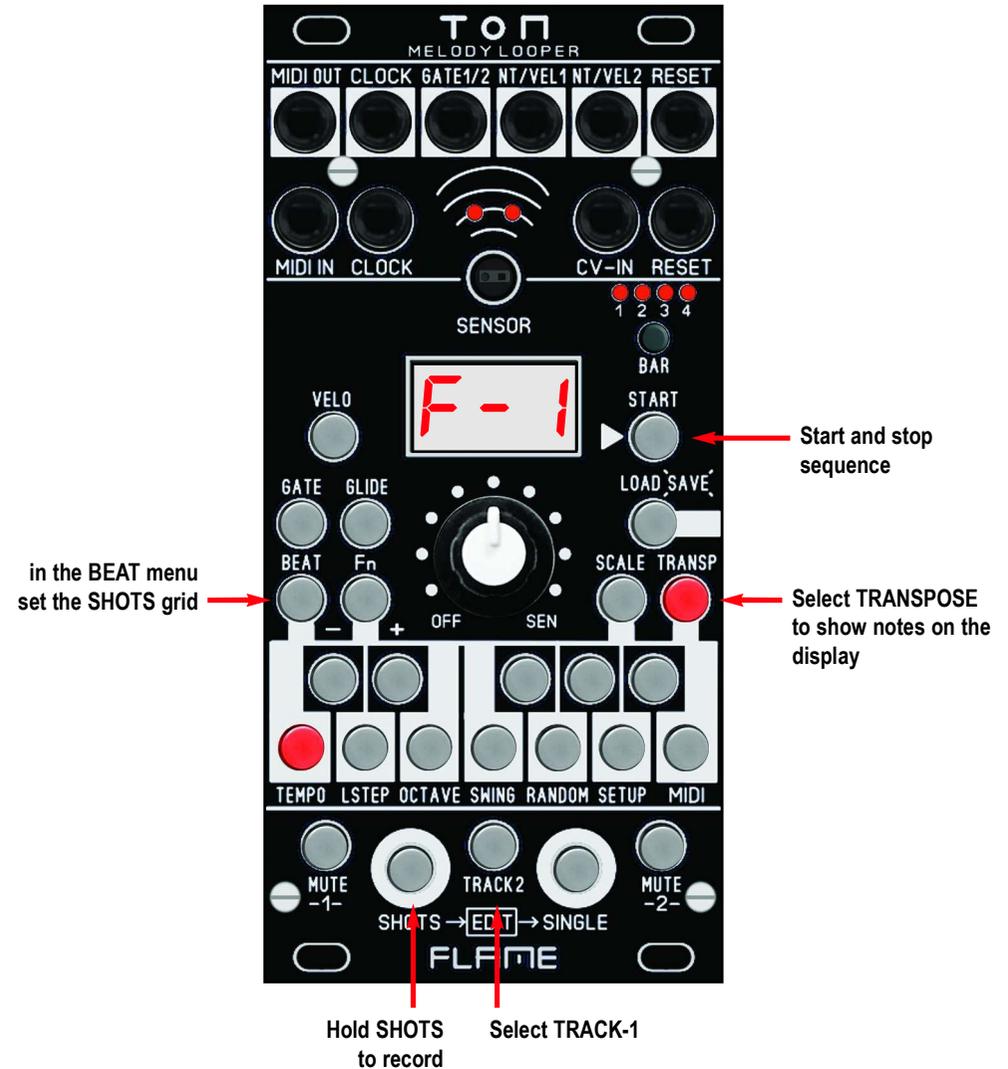
6. SEQUENCER BASIC

6.1 SEQUENCER PRINCIPLE

The sequencer in the TON module has two tracks, each with 16 steps per bar. The sequence can be up to 4 bars long, i.e. with up to 64 steps, and runs in a loop with the set length of BAR and LASTSTEP. The sequencer cannot record notes directly, not on the module itself and not via MIDI or CV. Only an unquantized voltage generated by the sensor, the potentiometer or an external CV source is recorded. These values are sent through a programmable quantizer with different settings and the note values are then created from this. This means that the sequence can also be easily manipulated or changed during playback. When recording, only notes that are set in the quantizer settings can be generated.

The following parameters can be adjusted with the quantizer:
Scale, transpose, octave range, octave offset, random for notes (pitch).

_____

In addition, further parameters are saved in the respective step. These are the values for velocity, gate time and glide, as well as optional random settings. When the notes are recorded, these parameters are set using the preset values from the respective menus. It is possible to change these values later without changing the note.

☞ **Example:**
In the **VELO** menu, a velocity of 127 is preset. When recording the notes, the velocity values are then set to 127. There are two ways to change one or more of these values later: either in **EDIT** MODE, where every parameter of the step can be edited, or in the VELO menu, where other velocity values can be recorded (the note pitches are retained).

Pot

SENSOR

CV-IN

STEP MEMORY

QUANTIZER

Scale
Transpose
Octave Range
Octave Offset
Note Random

PLAY
STEP NOTE
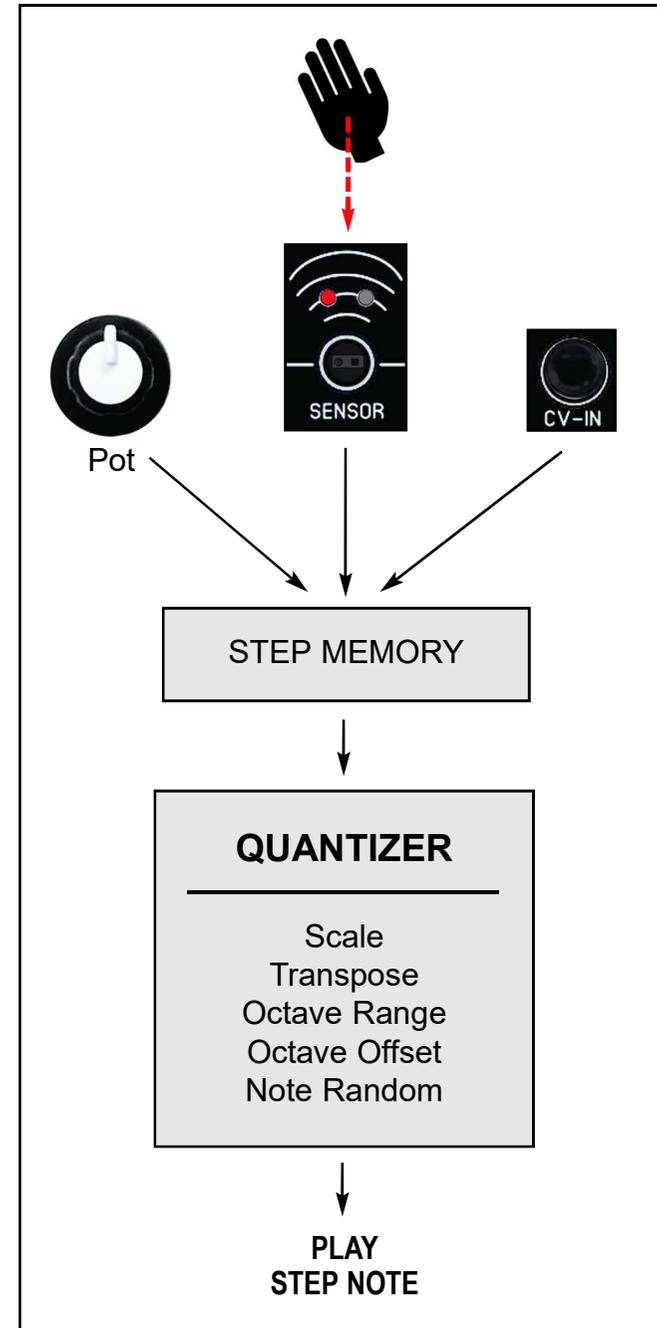
6. SEQUENCER BASIC

6.2 DATA STRUCTURE

Below is a simplified diagram of the sequencer data structure. The data of the pattern is stored in a **PATCH**. This includes the data from Track 1 and Track 2, as well as the data that is the same for both tracks (common data). There are 128 memory locations available for patches. When the module is switched on, Patch 1 is always loaded automatically.

There is also global data (applies to all patches) which is located in a separate memory area. This data is automatically saved when the parameter is changed and automatically loaded when the device is switched on.

```
    ┌─────────┐        ┌─────────┐
    │         │        │ Global  │
    │  PATCH  │        │  data   │
    │         │        │         │
    └────┬────┘        └─────────┘
         │
    ┌────┴────┐
    │ Common  │
    │  data   │
    └────┬────┘
    ┌────┴──────┐
    │           │
┌───┴───┐   ┌───┴───┐
│Track 1│   │Track 2│
│ data  │   │ data  │
└───┬───┘   └───┬───┘
    │           │
┌───┴───┐   ┌───┴───┐
│  64   │   │  64   │
│ steps │   │ steps │
└───────┘   └───────┘
```
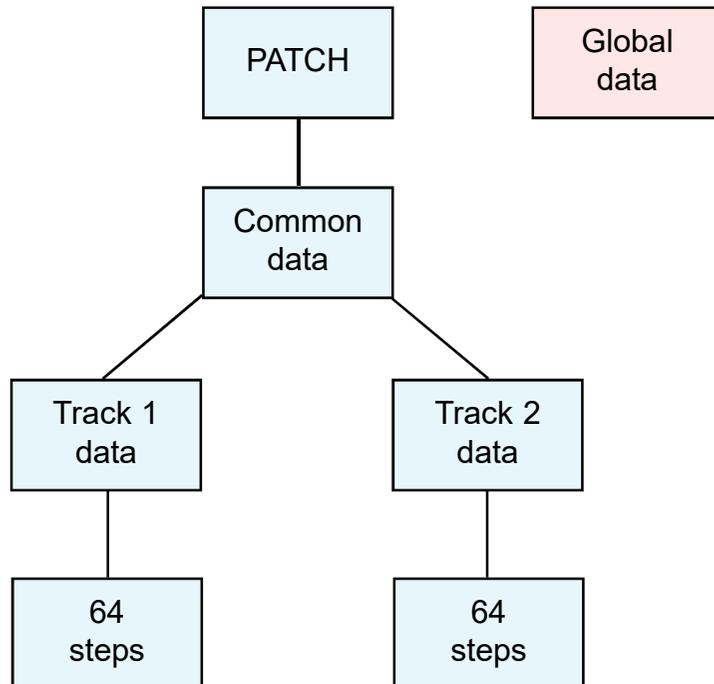
LIST OF PATCH DATA

<u>**COMMON DATA**</u> (for both tracks together)

TEMPO
SWING
TRANSPOSE (root key)
RESET OUT

<u>**TRACK 1+2 DATA**</u> (for each track separately)

SCALE	LASTSTEP, BAR
OCTAVE RANGE	OCTAVE SHIFT
RANDOM NOTE	BEAT
RANDOM VELOCITY	MUTE
RANDOM GATE	64x STEP Data (Note-CV, Velocity, Gate, Glide)
PROGRAM CHANGE NR	PRESET VALUES (Velocity, Gate, Glide)

LIST OF GLOBAL DATA

MIDI CHANNEL TRACK 1 (transmit channel)
MIDI CHANNEL TRACK 2 (transmit channel)
MIDI RECEIVE CHANNEL PATCH PROGRAM CHANGE
MIDI TRANSMIT CHANNEL PATCH PROGRAM CHANGE
MIDI CHANNEL transmit & receive Transpose note
SEND MIDI CLOCK ON/OFF (Sequencer runs under extern clock)
CV INPUT routing
CLOCK OUTPUT setting

6. SEQUENCER BASIC

6.3 MENU STRUCTURE

An overview of the sequencer menu structure is shown on the right. The main menus are highlighted in blue. The submenus of the two menus BEAT and Fn are highlighted in red. All important functions can be called up directly at the touch of a button.

STEP EDIT MODE can only be used when the sequencer is stopped and is activated using this key combination:
Hold down the **[SHOTS]** + **[SINGLE]** keys simultaneously

👉 **Notice:**

Detailed descriptions of the menus and functions can be found in the corresponding chapters of this manual!

```
                                    LOAD / SAVE
                                      SCALE
                                     TRANSPOSE
                                       VELO
                                       GATE
                                       GLIDE

   STEP EDIT        BEAT              Fn
   MODE        ---  (Divider)         (Functions)

   Edit Note        RASTER            TEMPO
   Edit Velocity    OFFBEAT           LASTSTEP
   Edit Gate        HALFTIME          OCTAVE ──── - Range
   Edit Glide       TRIPLETS          SWING          - Offset
                    PERFORMANCE       RANDOM ──── - Note
                                                      - Velocity
                                      SETUP           - Gate
                                      MIDI ──── - MIDI channel Tracks
                                                  - MIDI channel Patch
                                                  - MIDI channel Transpose
                                                  - MIDI DUMP

- Clock output
- Reset output
- Transmit MIDI Program Change numbers
- CV input routing
- Transmit MIDI Clock on/off (in Sync mode)
```

7. MAIN MENUS

7.1 START (STOP)

Start the internal sequencer by pressing this button **[START]**. Pressing it again stops the sequencer. If the sequencer has already been started by an external device using MIDI clock or analog clock, this function is inactive.

The TEMPO of the sequence is set in Menu **Fn > TEMPO**.

For the sync settings with external sequencers, see chapter 10: SYNCHRONIZATION for more information.

7.2 LOAD / SAVE (PATCH)

In this menu, a PATCH can be loaded, saved or the current patch number can be displayed. Loading and saving is also possible when the sequencer is running. When the sequencer is running, it is loaded at the next beat change, and loaded immediately when stopped.

LOAD

Briefly press the **[LOAD]** button once to call up the menu for loading or displaying the patch number. The currently loaded patch number is shown on the display. If you want to load the patch again (RELOAD), briefly press the **[LOAD]** button again. But be careful! Previous changes will be lost! If you want to load a different patch, first set the desired new patch number using the +/- buttons (**[#C]** and **[#D]** buttons).
Alternatively, you can use the potentiometer to reach a larger range more quickly by holding down the +/- buttons. The display then flashes alternately with the new number and an empty display:

flashes alternately:

Now load the new patch by briefly pressing the **[LOAD]** button once. When you release the button, the new patch is loaded immediately if the sequencer is stopped, or at the next bar change if the sequencer is running. The new patch number is then displayed permanently. When loading a new patch, a MIDI program change command can also be sent (see chapter 8.7 and 8.8 for the MIDI functions).

SAVE

To save a patch, press the **[LOAD]** button until the display flashes and alternates between the current patch number and "**-S-**":

flashes alternately:

Release the button and first set the desired new patch number using the +/- buttons (**[#C]** and **[#D]** buttons) (alternatively, a larger range can be reached more quickly using the potentiometer if you hold down the +/- buttons).
Briefly press the **[LOAD]** button again to save the patch.

7.3 SCALE

The scale for the selected track is set in the SCALE menu. Press the **[SCALE]** button once, it will then light up. The notes of the scale are displayed on the mini keyboard by the illuminated buttons. Switch the desired notes on and off. Switch between the two tracks with the **[TRACK2]** button:
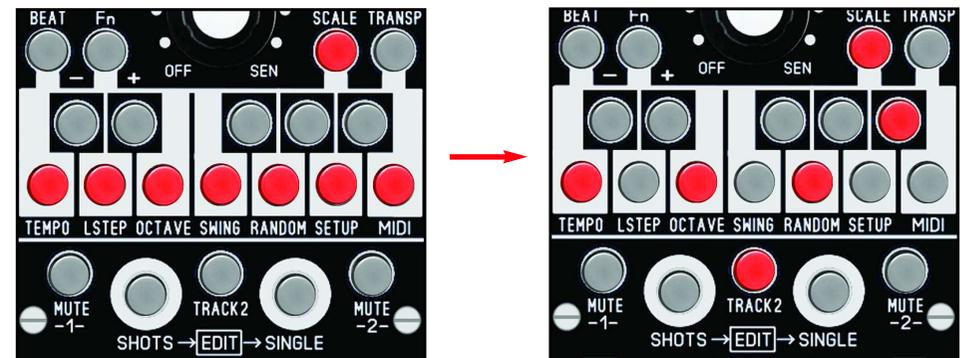
Scale of track1   Scale of track2

7. MAIN MENUS

7.4 TRANSPOSE (root keynote)

With TRANSPOSE you can transpose the set scales of both tracks together. Press the **[TRANSP]** button (the button lights up). Press a button on the mini keyboard to transpose. If the **[C]** button is selected, the scale, i.e. the notes displayed in the SCALE menu, are not transposed.

👉 Note:
When transposing, the notes on the mini keyboard in the SCALE menu are not changed, but the notes displayed in the display are!

The transpose note can also be seen as the root note of the scale. If the scale in the SCALE menu always starts with note C, you can simply change the key with TRANSPOSE. In the example on the right, from C-MAJOR to D-MAJOR.

Transpose (notes C-B correspond to the values of 0-11 semitones) can be sent and received via MIDI as a note number on a separate MIDI channel, for example to transpose two connected TON modules at the same time with the same value. When loading a patch, this transpose note is sent automatically.

Activate or deactivate this function in the menu **MIDI > MIDI Channel Transpose:**

Press the **[Fn]** key > then Menu MIDI (press the **[MIDI]** key) > then Menu **MIDI Channel Transpose** (press the **[#A]** key) > select Track1 (**[TRACK2]** key off).

Use the +- keys **[#C] / [#D]** to set the MIDI channel, or set the value to **OFF** if no transpose note is to be sent or received.
The display shows, for example:

Transpose transmit / receive channel

MIDI channel 16   **off**
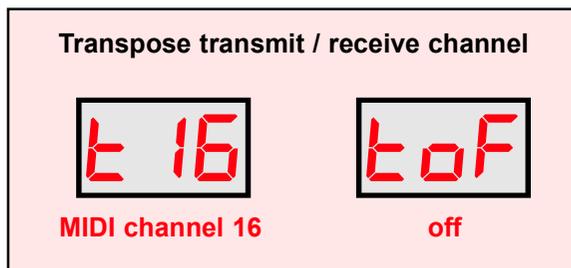
C-major   **D-major**

Example of the notation of the scale tones in the display (above) and on the mini keyboard (below) with the same scale and transposed 2 semitones upwards.
The note F-1 becomes G-1 (2 semitones higher) in the display. The display remains the same in the SCALE menu.

7. MAIN MENUS

7.5 BEAT

BEAT MENU OVERVIEW / BASICS

The BEAT menu contains all settings relating to the rhythm of the sequence, on the one hand for recording and varying with SHOTS, and on the other hand for rhythmic manipulation during playback. The BEAT settings can be made separately for each track and are saved in the PATCH.

Go to the BEAT menu by pressing the **[BEAT]** button. The graphic shows the assignment of the keys on the mini keyboard for this menu:

The buttons for selecting the SHOTS grid are P1, P2, P3, 1/2, 4th, 8th and 16th. Only one of these grids can be selected at the same time and one of these buttons is always illuminated. The OFFBEAT, HALFTIME and TRIPLET buttons can be switched on and off separately. With the exception of HALFTIME, all settings are also shown on the display within this menu (> see next page).

NORMAL BEAT (duoles)

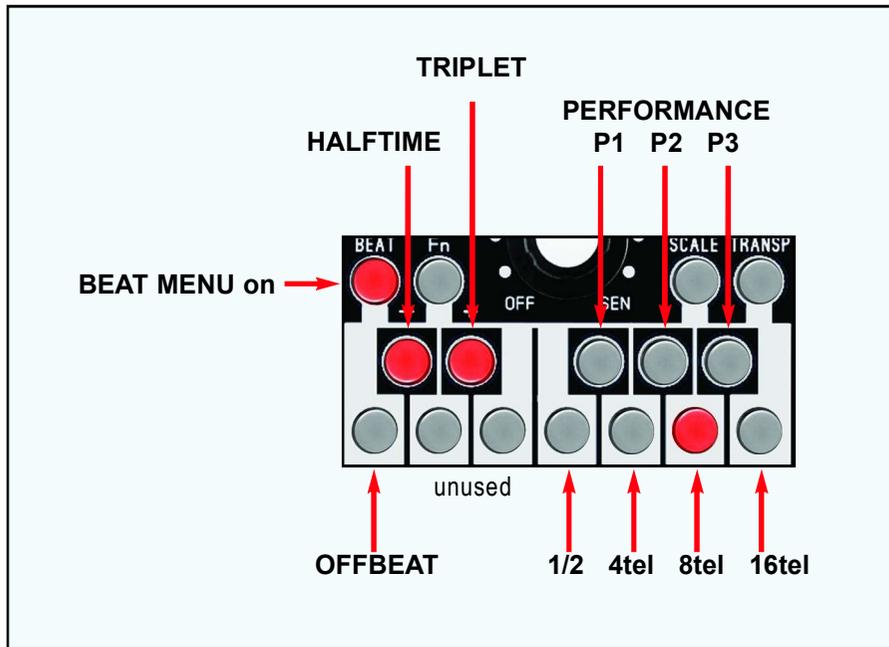Each track of the sequencer has only 16 steps per bar (i.e. a maximum of 64 steps). In the NORMAL setting (**[TRIPLET]** key off), these run as 16th notes in 4/4 time (16th notes = steps at intervals of 6 MIDI ticks). The number of steps can be reduced using LAST-STEP (but this is the same for all 4 bars > see chapter LASTSTEP, BAR).

TRIPLET BEAT (triplets)

If the track is switched to "triplet" (**[TRIPLET]** key on), the steps run with 8 MIDI ticks between them. The last step of the track is automatically set to 12 so that a one-bar loop is maintained (the old last step is retained when switching back to 4/4).

HALFTIME (halved playback speed)

The playback speed of the track can be halved using the **[HALFTIME]** key. The sequence then runs twice as long and 16th notes become 8th notes, for example. The tick interval between the steps determines the pattern in which the sequence runs:

	halftime off	halftime on (playback speed halved)
Normal (4/4):	6 ticks interval	12 ticks interval
Triplet:	8 ticks interval	16 ticks interval

A special feature of the sequencer is that a sequence that has already been recorded can also be played later as a 4/4 sequence or triplet. The HALFTIME function can also be used in this way. Switching back and forth is possible when the sequencer is running and always takes effect at the start of the next bar.

There are BEAT settings that are only effective when recording, and settings that can also change the rhythm of the recorded sequence when playing:

Functions that are only used for recording / playing variations:
- Beat 16th until half notes, Performance modi, Offbeat

Functions that can change the recorded sequence during playback:
- Beat scheme Triplet / Normal, Halftime Speed

7. MAIN MENUS

BEAT DISPLAY

The BEAT settings are also shown on the display within the menu (except HALFTIME). A small "**t**" means "TRIPLET on", the dot means "OFFBEAT on".

👉 **Exception:**

The 16th note cannot be played in OFFBEAT.

Display	Meaning
16	16th normal
_8	8th normal
_4	4th normal
_2	1/2 note normal
P1	Performance 1 Raster
P2	Performance 2 Raster
P3	Performance 3 Raster
16t	16th triplet
_8.	8th offbeat
_8t.	8th triplet offbeat
P1t	Performance 1 triplet

BEAT - PRINCIPLE FOR SHOTS RECORD / PLAYING VARIATIONS

When recording (or playing variations) with SHOTS, sequence steps are skipped depending on the grid setting: For example, with "8ths normal" only every second step is recorded, with "4ths normal" only every fourth step is recorded and the steps in between are deleted (pause):

🔴 empty step (pause)
🔵 Step set

🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴🔴 **16 steps memory empty**

🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵🔵 **16th note sequence (all steps on)**

🔵🔴🔵🔴🔵🔴🔵🔴🔵🔴🔵🔴🔵🔴🔵🔴 **8th note sequence (every second step on)**

🔵🔴🔴🔴🔵🔴🔴🔴🔵🔴🔴🔴🔵🔴🔴🔴 **Quarter note sequence (every fourth step on)**

🔵🔴🔴🔴🔴🔴🔴🔴🔵🔴🔴🔴🔴🔴🔴🔴 **1/2 note sequence (every eighth step on)**
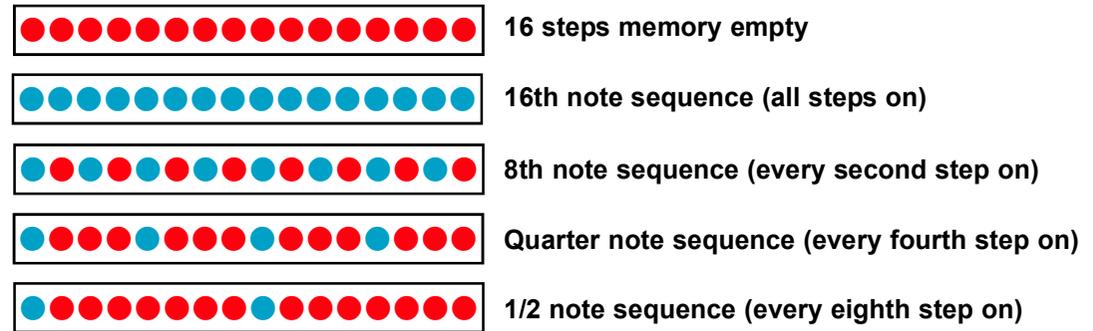
OFFBEAT (Notes shifted by half in the grid)

Switch the grid to OFFBEAT if you want to record (or play) in push-pull time. Use the **[OFFBEAT]** button (in the BEAT menu, press the keyboard key **[C]**) to switch OFFBEAT on/off. The button lights up when OFFBEAT is switched on. With the exception of the 16th grid, all other grids are shifted by half and run in push-pull time. This function is only available for recording (or playing variations). Notes that have already been recorded cannot be switched to OFFBEAT later. OFFBEAT is indicated in the display by a dot at the bottom right.

🔴🔵🔴🔴🔵🔴🔵🔴🔴🔴🔵🔴🔵🔴🔵🔴🔵 **8th note sequence in offbeat**

🔴🔴🔴🔵🔴🔴🔴🔵🔴🔴🔴🔵🔴🔴🔴🔵 **4th note sequence in offbeat**

🔴🔴🔴🔴🔴🔴🔴🔵🔴🔴🔴🔴🔴🔴🔴🔵 **1/2 note sequence in offbeat**
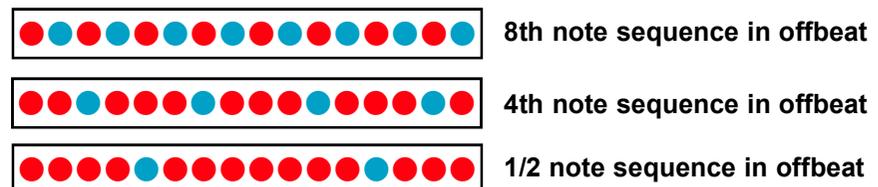
7. MAIN MENUS

BEAT PERFORMANCE MODI

There are three so-called performance modes in which up to three pitch ranges are assigned different SHOT grids. When playing with the sensor and SHOTS, not only the note pitch changes at different distances, but also the grid. These three MODES can be used instead of the fixed GRID 16ths to 1/2 notes to create more rhythmic variations when playing.

👉 **Example:**
To test it out, play a SHOTS sequence (in the **SEN** control position) with the sensor (octave range 3..5, octave offset = 1). First set the BEAT GRID of the track to **P2** (switch on the **[#G]** button in the BEAT menu).

With this grid setting, the entire sensor area is divided into three regions with 4th, 8th and 16th grids, starting with the furthest distance (with the lowest notes). Low notes are then played in 4th grids, medium notes in 8th grids and high notes in 16th grids.
                            > see illustration on the right ⟶

A different grid performance can be set for each of the two tracks.

Instead of the sensor, the voltage from the CV input can also be used to play with SHOTS. To do this, set the routing of the CV-IN input in the SETUP menu.

👉 **Note:**
If OFFBEAT is switched on, the quarter notes in modes P2 and P3 are played in counter-beat (offbeat).

lowest note

Sensor range 4-40cm

highest Note

8th area	4th area (+ Offbeat)	16th area
	8th area	8th area
16th area	16th area	4th area (+Offbeat)
P1	**P2**	**P3**
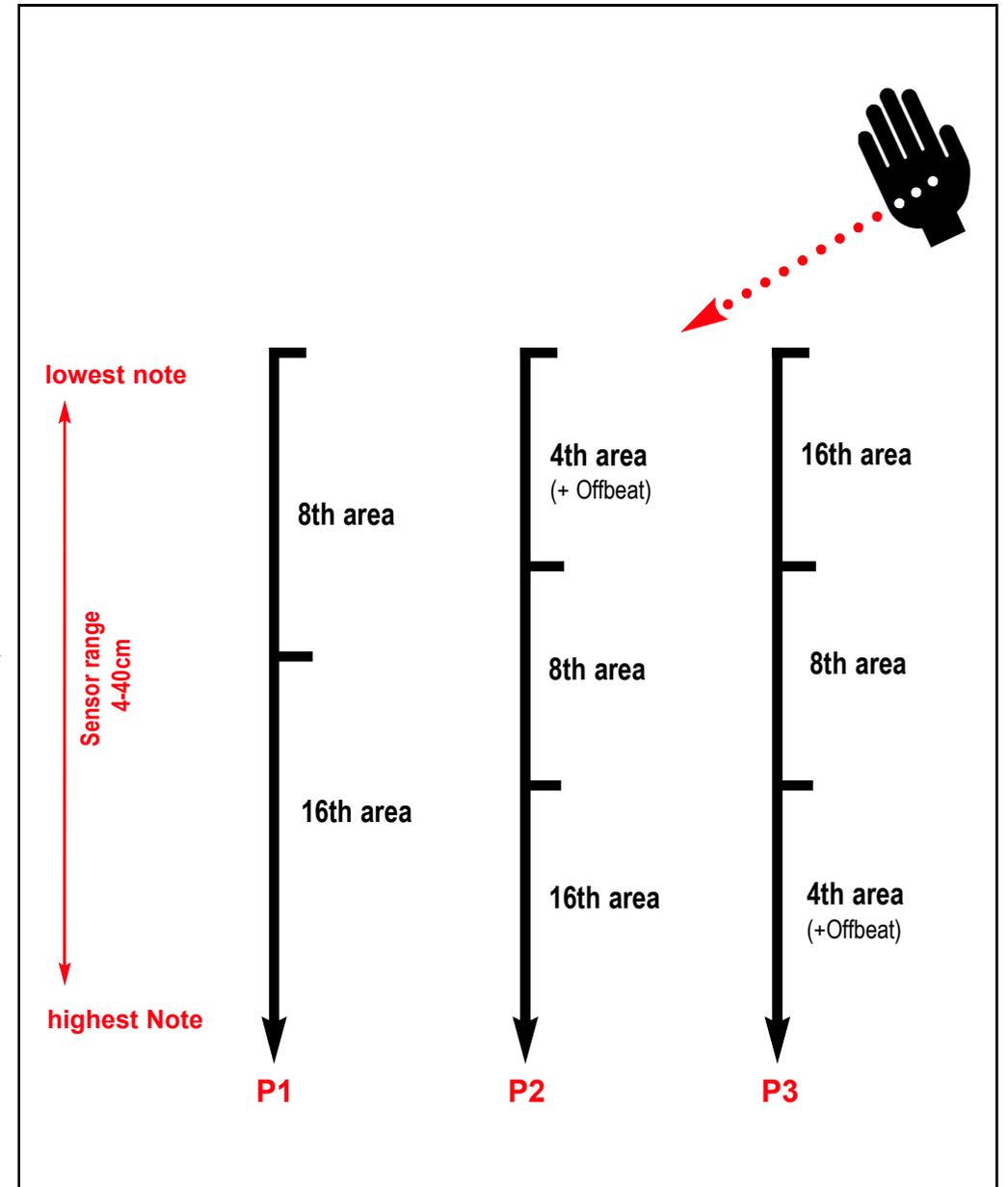
8. FUNCTION MENUS

8.1 OVERVIEW OF FUNCTION MENUS

To call up the FUNCTIONS, press the **[Fn]** key (the key lights up). Then use the seven lower keyboard keys to select the corresponding menu (the names of the functions are below the keys).

Set the value using the +- keys (keyboard keys **[#C]** and **[#D]**). Some or all of the **[#F]**, **[#G]** and **[#A]** keys have submenus. Use the **[TRACK2]** key to either switch tracks or select between two submenus. The parameters of the functions to be edited are shown differently in the display (more information can be found in the relevant chapters for the individual functions).

Values displayed in the DISPLAY

FUNCTIONS MENU on

+/- Buttons

7 FUNCTION BUTTONS and NAMES

SUBMENUS

Switch for TRACK or SUBMENU

8.2 TEMPO

The internal TEMPO is set in the TEMPO function menu in Bpm (beats per minute): Press the **[Fn]** key and then the **[TEMPO]** key (keyboard key **[C]**, lights up).

Set the value using the +- keys (keyboard keys **[#C]** and **[#D]**). If you hold down the +- keys, you can use the potentiometer to set the value more quickly over a larger value range. TEMPO is saved separately for each patch.

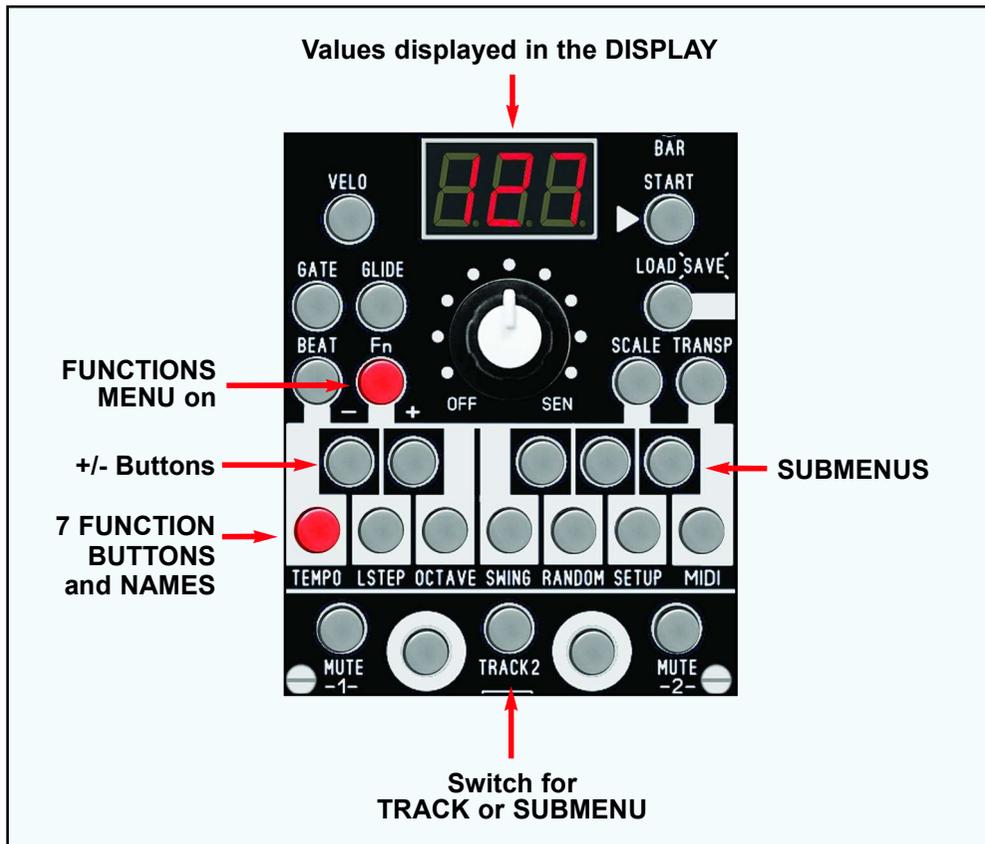If you change the patch while the sequencer is running, the current tempo of the current sequence remains. The tempo of the patch is only adopted when you start a patch.

Value range: 20..200 Bpm (Beats per minute)

8.3 LASTSTEP

To create polyrhythmic patterns, both tracks can run with different LOOP lengths. The steps shift against each other. Use the LASTSTEP function to set how many steps a bar can have. Note that the LASTSTEP is the same for each bar. If, for example, Laststep = 12 and 4 bar length is set, the total length of the track = 48 steps (4x 12 steps).

Go to the LSTEP function menu:
Press the **[Fn]** key and then the **[LASTSTEP]** key (keyboard key **[D]**, lights up).

Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: 1..16 steps

8. FUNCTION MENUS

8.4 OCTAVE

In the OCTAVE function menu, two values are set that are important for playing with the sensor, potentiometer and CV-IN input.

OCTAVE RANGE sets the size of the note octave range, and OCTAVE OFFSET sets the octave (lowest note) at which the range begins. OCTAVE OFFSET shifts the note range set with RANGE in octaves. The graphic on the right illustrates these functions.

Go to the function menu OCTAVE:
Press the **[Fn]** key and then the **[OCTAVE]** key (keyboard key **[E]**, lights up).
Now select the desired PARAMETER:

OCTAVE RANGE

Press the keyboard key **[#G]**, the key lights up.
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).
Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: 1..5

The display shows, for example: `r 3` range = 3 octaves

OCTAVE OFFSET

Press the keyboard key **[#G]**, the key lights up.
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).
Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: 0..5

The display shows, for example: `o 0` offset = zero

min   **Value range of Poti, Sensor, CV-IN**   max

Octave range
1-5 octaves

Octave Offset
Octaves 0-5

The analog 1V/Octave output has a range of 0 to 8V, i.e. it covers 8 octaves. If high notes are generated that are greater than the sum of Octave Offset and Range, they are limited to the highest note.
The MIDI notes can be output 4 octaves higher (up to the maximum note number 127).

8.5 SWING (Shuffle)

The patch can be played in 16th note shuffle (the same for both tracks). This means that every second 16th note step is played with a delay. There are three shuffle settings available for this.

To set the SWING, call up the SWING function menu as follows:
Press the **[Fn]** key and then the **[SWING]** key (keyboard key **[F]**, lights up).

Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, 1..3

8. FUNCTION MENUS

8.6 RANDOM

The RANDOM menu is used to set the intensity of the random algorithms that can affect NOTES (pitch), VELOCITY and GATETIME (length of the note). There are three submenus available for these parameters. These values can be set separately for each track.

First go to the RANDOM function menu:
Press the **[Fn]** key and then the **[RANDOM]** key (keyboard key **[G]**, lights up).
Now select the desired PARAMETER:

NOTE RANDOM (Randomness on the played note pitch)

Press the keyboard key **[#F]**, the key lights up.
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

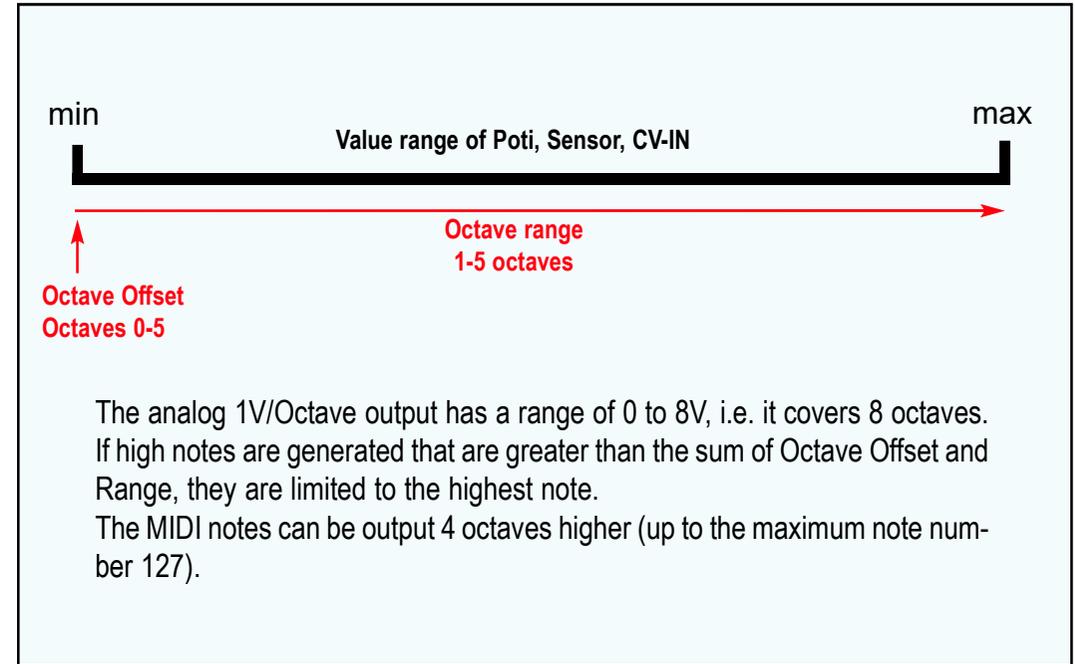Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: oFF + 6 gradations:

Display of values in the display:

oFF	random function off
n - 1	rarely slightly lower notes
n - 2	often slightly higher notes

1o1	rarely an octave high
1o2	often an octave higher
2o1	rarely 1 to 2 octaves high
2o2	often 1 to 2 octaves high

VELOCITY RANDOM (Intensity of active velocity randomness)

Press the keyboard key **[#G]**, the key lights up.
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: 1..16 gradations: U01 to U16

GATETIME RANDOM (Intensity of gate length randomness)

Press the keyboard key **[#A]**, the key lights up.
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: 1..16 gradations: 601 to 616

☞ **See also Chapter 9 "VELO and GATE":**
Chapter 9 describes how to generate random values for velocity and gate. The step parameters can also be assigned random values in the EDIT menu. There are random values that are only generated during playback, as well as random values generated during recording that are then "frozen" during playback.

8. FUNCTION MENUS

8.7 SETUP
In the SETUP menu, some basic global settings and settings for the patch are defined.

First go to the SETUP function menu:
Press the **[Fn]** key and then the **[SETUP]** key (keyboard key **[A]**, lights up).

Now select the desired PARAMETER in the submenus with the **[#F], [#G]** and **[#A]** keys:

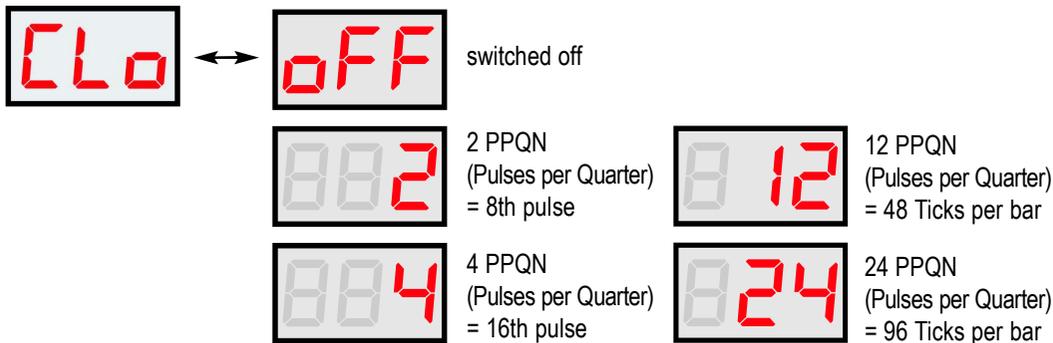## CLOCK OUT (Assignment of the analog CLOCK output socket)
Set the clock rate for external analog synchronization here. The pulses are sent via the CLOCK-OUT socket. This is a global parameter and applies to all patches.

Press the keyboard button **[#F]**, the button lights up. Switch to TRACK1 with the **[TRACK2]** button (the button does not light up). Set the value with the +- buttons (keyboard buttons **[#C]** and **[#D]**).

Value range: oFF, 2, 4, 12, 24 PPQN (Pulses per quarter note = Pulses per 4th)

Display of values in the display:
The menu name **"CLo"** and the parameter value flash alternately in the display:

CLo ↔ oFF	switched off
2	2 PPQN (Pulses per Quarter) = 8th pulse
12	12 PPQN (Pulses per Quarter) = 48 Ticks per bar
4	4 PPQN (Pulses per Quarter) = 16th pulse
24	24 PPQN (Pulses per Quarter) = 96 Ticks per bar

RESET OUT (Assignment of the analog RESET output socket)
Set the type of reset for external analog synchronization or other usable clock rates here. The pulses are sent via the RESET-OUT socket. Since this socket can also send individually programmable clock pulses, the parameter is part of the patch data and can be set differently for each patch.

Press the keyboard key **[#F]**, the key lights up. Switch to TRACK2 with the **[TRACK2]** key (the key lights up). Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, trs, run, _16, _t8, _8, _4, _2, 01-16

Display of values in the display:
The menu name **"rSo"** and the parameter value flash alternately in the display:

rSo ↔ oFF	switched off		
trS	Trigger at Start + Stop	_8	8th Clock pulses
rUn	Start = High Stop = Low	_4	4th Clock pulses
_16	16th Clock pulses	_2	Pulse per half bar
_t8	8th triplet Clock pulses	16	Trigger pulses per 01-16 bars
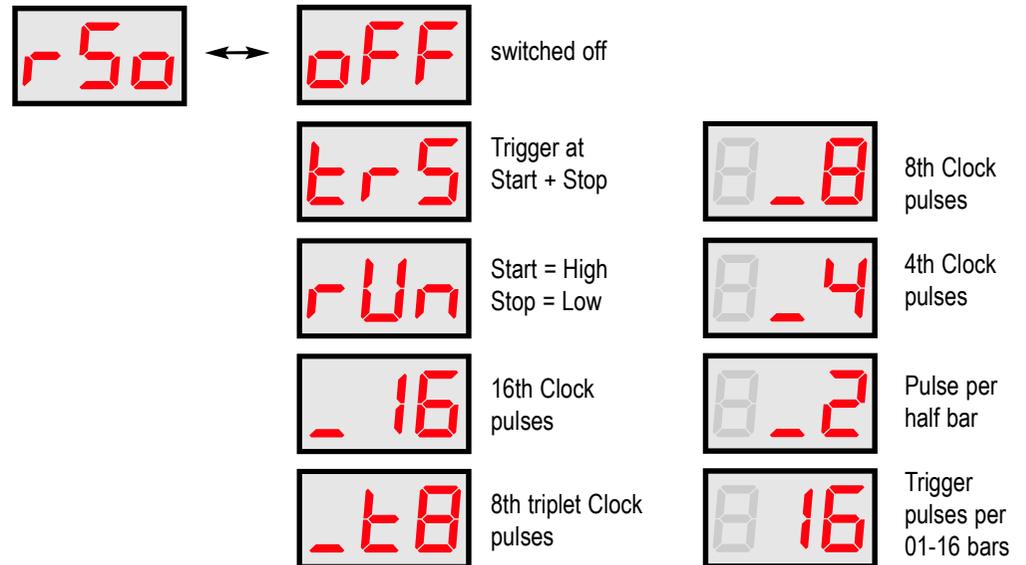
8. FUNCTION MENUS

SEND MIDI PROGRAM CHANGE (for each track)

Each of the two tracks can send a MIDI program change command on the respective MIDI note channel of the track when loading a patch. Set the numbers for both tracks here. With this function, external MIDI expanders can automatically switch their sounds when a PATCH is changed in the SOUND.

In "General MIDI expanders" the sound programs are standardized. For example, an expander changes to a "GRAND PIANO" with program 01, to an "ACOUSTIC BASS" with program 33 and to a "SYNTH VOICE" with program 55.

The function can also be switched off. Also note that the command is also not sent if the MIDI channel of the track is switched off.

First go to the SETUP function menu:
Press the **[Fn]** key and then the **[SETUP]** key (keyboard key **[A]**, lights up).

Press the keyboard key **[#G]**, the key lights up.
Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.
Adjust the value using the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, 1-128

Display of values in the display:
The menu name **"SPr"** and the parameter value flash alternately in the display:
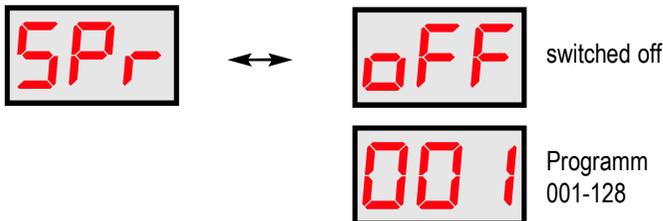

SPr ↔ oFF switched off

001 Programm 001-128

SEND MIDI CLOCK on/off (only in sync mode)

If the module is synchronized by an external sequencer, the sending of MIDI clock data is normally switched off. However, sometimes it is desirable for the module to forward the MIDI clock data to other connected devices. This parameter is set globally and is valid for all PATCHES at the same time.

First go to the SETUP function menu:
Press the **[Fn]** key and then the **[SETUP]** key (keyboard key **[A]**, lights up).

Press the keyboard key **[#A]**, the key lights up. Switch to TRACK2 with the **[TRACK2]** key (the key lights up).
Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, on

Display of values in the display:
The menu name **"ScL"** and the parameter value flash alternately in the display:

ScL ↔ oFF switched off

on switched on
MIDI clock is also sent during external synchronization

8. FUNCTION MENUS

CV-INPUT ROUTING (Quantizer)

The **CV-IN** input socket can be routed to both tracks. This replaces the voltage of the sensor and carries out the function in the **SEN** control position instead of the sensor. It is possible to route the CV input to one or both tracks.

For example, the sensor can still be active on Track1, but when switching to Track2 the CV input is active there. The module can thus tonally quantize an external analog voltage of 0.4..5V, as this runs through the module's tone filter. The right red LED above the sensor opening signals this.

With a voltage of zero volts, only the current sequence is audible in the POTI position **SEN** (no note is triggered when stopped).

This parameter can be set separately for each PATCH.

First go to the SETUP function menu:
Press the **[Fn]** key and then the **[SETUP]** key (keyboard key **[A]**, lights up).

Press the keyboard key **[#A]**, the key lights up.
Switch to TRACK1 with the **[TRACK2]** button (the button is not lit).
Set the value with the +- buttons (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, tr1, tr2, ALL

The activity at **CV-IN** is indicated in the **SEN** control position with the right LED above the display:

Display of values in the display:
The menu name **"Cin"** and the parameter value flash alternately in the display:

CV input turned off
Sensor turned on on both tracks

CV input routed to track 1 (sensor off)
Sensor turned on on track 2

CV input routed to track 2 (sensor off)
Sensor turned on on track 1

CV input routed to tracks 1 and 2
Sensor turned off on both tracks
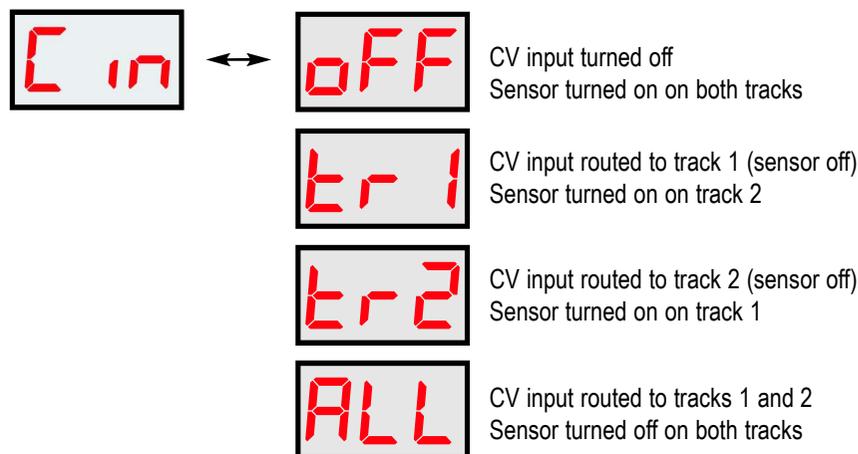
☞ **TIP:**

The routing can also be used to switch off the built-in distance sensor "permanently". In this case, set the value for the desired PATCH (or all) to "**ALL**" and do not use the CV input.

8. FUNCTION MENUS

8.8 MIDI MENU

Global MIDI settings are defined in the MIDI menu. This is also where you will find the menu for sending and receiving patch data via SYSEX (MIDI dump), i.e. for saving or loading patch data.

MIDI TRANSMIT CHANNEL NOTES TRACK 1+2

Set the global send MIDI channels of the two tracks for MIDI notes here. **OFF** can be used to switch off the sending of notes globally for the track. If the value is changed, it is saved immediately (it is not part of the individual patch data).

First go to the MIDI function menu:
Press the **[Fn]** key and then the **[MIDI]** key (keyboard key **[B]**, lights up).

Now select the desired PARAMETER in the submenus with the **[#F], [#G]** and **[#A]** keys:

Press the keyboard key **[#F]**, the key lights up.

Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Change the track with the **[TRACK2]** key. Note that the value can be set differently for both tracks.

Value range: oFF, 01-16

Display of values in the display:
The display shows the menu name **"C"** (for MIDI Channel) and the parameter value:

`CoF`	switched off
`C01` to `C16`	

MIDI RECEIEVE- & TRANSMIT CHANNEL PATCH (for Program Change)

Set the global receive and transmit MIDI channel for program change commands to change the patch here. The module loads the patch of the received MIDI program change number (immediately when stopped, at the next bar change when the sequencer is running). If a patch is changed on the module itself, the module sends a program change command to other connected devices.
Note that different MIDI channels can be set for receiving and sending.

First go to the MIDI function menu:
Press the **[Fn]** key and then the **[MIDI]** key (keyboard key **[B]**, lights up).

Now select the desired PARAMETER in the submenus with the **[#F], [#G]** and **[#A]** keys:

Press the keyboard key **[#G]**, the key lights up.

Switch between receive and send channel with the **[TRACK2]** key:
Track1 = receive channel
Track2 = transmit channel

Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, 01-16

Display of values in the display:
The display shows the menu name **"P"** (for MIDI ProgramChange) and the parameter value:

`PoF`	Receive (or transmit channel) switched off
`P01` to `P16`	

8. FUNCTION MENUS

MIDI CHANNEL TRANSPOSE

Set the global MIDI channel for sending/receiving a transpose note here. OFF can be used to globally switch off the sending/receiving of transpose notes. If the value is changed, it is saved immediately (it is not part of the individual patch data). The MIDI channel cannot be set differently for receiving and sending.

First go to the MIDI function menu:
Press the **[Fn]** key and then the **[MIDI]** key (keyboard key **[B]**, lights up).
Now select the desired PARAMETER in the submenus with the **[#F], [#G]** and **[#A]** keys:
Press the keyboard key **[#A]**, the key lights up.
Switch to Track1 with the **[TRACK2]** key (the key does not light up). The TRANSPOSE submenu is now selected (a small t is in the first place in the display).

Set the value with the +- keys (keyboard keys **[#C]** and **[#D]**).

Value range: oFF, 01-16

Display of values in the display:
Im Display steht der Menuname **"t"** (für Transpose) und der Parameterwert:

toF   switched off

t01 to **t 16**

MIDI DUMP PATCH

In this menu, a loaded PATCH can be sent via MIDI as a SYSEX file and saved on a computer or second TON module. This makes it possible to back up the patches. In addition, in this menu (and only here) a patch SYSEX file can be received, which is automatically saved not only in the internal RAM but also in the memory location of the currently set patch number.

First go to the MIDI function menu:
Press the **[Fn]** key and then the **[MIDI]** key (keyboard key **[B]**, lights up).
Now select the desired PARAMETER in the submenus with the **[#F], [#G]** and **[#A]** keys:

Press the keyboard key **[#A]**, the key lights up. Switch to Track2 with the key **[TRACK2]** (the key lights up). The MIDI DUMP submenu is now selected and the display shows **"SPt"** for "Send Patch".

MIDI DUMP SEND

Now switch the receiving device (computer or TON module) to SYSEX reception. Press the + key (keyboard key **[#D]**) and the dump starts. A counter runs up in the display and confirms the end of the transmission with **YES**. Save the received file on the computer.

SPt → **001** → **032** → **YES**

MIDI DUMP RECEIVE

In this menu, a SYSEX file can be received automatically. Send this file to the module. If the transmission is correct, a counter in the display starts counting up. The first digit is a small r (for Receive). The module acknowledges the correct reception with **YES** and saves the file in the RAM and in the current PATCH.

SPt → **r01** → **r32** → **YES**

9. PLAY/RECORD FUNCTIONS

9.1 SHOTS RECORD (NOTE REPEAT)

SHOTS are internal pulse sequences with an adjustable grid (in the BEAT menu). When the **[SHOTS]** button is pressed or the sensor is played, sequences are generated with these pulse sequences (either just played or recorded at the same time).

The pitch is controlled with the values from the sensor, controller or CV input. The rhythm is determined by the settings in the BEAT menu (grid, performance, offbeat, triplet etc.) and by playing with the sensor, controller or the voltage at the CV input. The velocity, gate and glide parameters of a previously recorded note sequence (melody) can be changed (modified) by subsequently playing with SHOTS without changing the note pitch. This makes it easy, for example, to adjust the velocity dynamics of the sequence.

This principle is fundamentally different from conventional running light step sequencers, which are programmed rather than played. With the help of SHOTS, the sequence must be played directly in a physically active rhythmic manner. This usually leads to different, interesting results. If necessary, it is also possible to change individual steps retrospectively using the EDIT mode.

Here is an example to illustrate this:
In the BEAT menu, the grid is set to PERFORMANCE-2 **[P02]**. The sequencer is started and now generates an internal pulse sequence, which cannot be heard. Go to the TRANSPOSE menu to display the notes that can be played with the controller. If I now press the SHOTS button, these notes are played (or recorded) as a sequence in 4th, 8th or 16th note grids, depending on the controller range (which is divided into three zones with different grids). If the controller is turned back and forth, melodies can be created in the rhythm of the respective range.

When the sequencer is stopped, the **[SHOTS]** button has no function (except for calling up EDIT mode in conjunction with the **[SINGLE]** button).

NOTES RECORDING (SHOTS RECORD)

The pitch of the note can be determined with the controller (values between the controller positions **OFF** and **SEN)** or with the distance of the hand above the sensor in the controller position **SEN.** In the SCALE and TRANSPOSE menus, the generated note is shown on the display. The total number of notes available over the entire control range of the controller and the sensor is determined by the scale, transposition, octave range and octave offset. This means that only musically meaningful notes are selected.

To record, start the sequencer and hold down the **[SHOTS]** button. As long as this button is pressed, the selected track will record either notes or rests.

If the controller is in the **OFF** position or the sensor is not active when playing (the hand is outside the sensor range, the left red LED above the sensor is off), then the data is deleted or rests are recorded.

PLAY NOTES WITHOUT RECORDING (VARIATIONS)

You can use the sensor to play over a running sequence without recording the notes you play. The sequence will be suppressed. To do this, turn the control to the **SEN** position. If the sensor is not activated, you can hear the sequence being played. If you activate the sensor by hand, new notes are generated and the recorded sequence is suppressed. If you want to record these new notes, hold down the **[SHOTS]** button and overwrite the old sequence.

If you want to play with the control without recording, first mute the track with MUTE and then hold down the **[SHOTS]** button to play. This way you can also play with the control without recording.

☞ **Note:**
When recording the note pitches, the values for velocity, gate time and glide are automatically generated from previously set values. More on this in chapter 9.5!

9. PLAY/RECORD FUNCTIONS

9.2 SINGLE NOTES

PLAY MANUALLY AT STOP

Use the **[SINGLE]** button to play notes manually when the sequencer is stopped. As long as the button is pressed, the note is switched on (gate on / MIDI NoteOn command). If you release the button, the note is switched off again (gate off / MIDI NoteOff command). Only the currently selected track can be played (not both at the same time, that only works in EDIT mode). These played notes are not recorded, but are only used for listening to/testing/manually playing the connected sound generator.

RECORD / PLAY ON RUN

When the sequencer is running, notes can be manually triggered and recorded in 16th note steps. The gate time (duration of the key press) is also recorded. To record notes, the track's **MUTE** must be turned off (**[MUTE]** key is not lit). When recording, the note played is saved to the closest step (16th note quantization).
Note that the sequencer's smallest beat resolution is 16th notes.

Record SINGLE notes like this:

Start the sequencer, select the track to record, turn off **MUTE** of this track, either turn the control to the note to be recorded or turn the control to the **SEN** position to select the note with the sensor.
Now press the **[SINGLE]** button to record this note at the current sequence position. The gate time is the duration of the key press. Using this principle, notes can be played/recorded manually as with a keyboard key.

Delete with the [SINGLE] button:

If the sensor is not active (hand not over the sensor, left red LED above the sensor is off) or the controller is in the **OFF** position, then pressing the **[SINGLE]** button will delete the current sequence!

👉

It is possible to hold down a note for more than 4 bars (gate time = 4 bars).
Notes inserted later will then cut them off. The track is monophonic and a note off is then generated to avoid "hanging notes".

9.3 MUTE TRACKS

Both tracks can be muted using the respective buttons **[MUTE1]** (for track 1) and **[MUTE2]** (for track 2) (the button then lights up). When MUTE is pressed, the recorded sequence is muted and cannot be heard.

When **MUTE** is selected, it is no longer possible to record on this track, but you can still play on the track (to play short sequences live).

9.4 BAR (sequence lenght)

The sequence can be of different lengths for both tracks. Use the **[BAR]** button to set the bar length for each track individually. It can also be changed while the sequence is running. The bar length is displayed with the corresponding BAR LED.

Note that the setting for **LASTSTEP** is the same for all bars. So the sequence with 2 BARs and Laststep=12 is only 24 steps long (and not 28). The **BAR** settings are saved in the PATCH data.

👉 **TIP:**
If only one bar was recorded on the track and you later want to have exactly this phrase run on all 4 bars, go to the EDIT menu and copy this bar into the other bars.

9. PLAY/RECORD FUNCTIONS

9.5 VELO MENU (VELOCITY BASIC SETTING / RECORD)

The VELO menu is designed for two different tasks.

Firstly, the basic setting of the velocity for notes is made. This value is used when recording notes and is saved in the step. When playing without recording, this default setting is also used.

Secondly, velocity values ??that have already been recorded can be subsequently re-recorded sequentially using SHOTS Record without changing the note pitch or the BEAT. Only the velocity values ??of the existing notes in the sequence are modified.

VELOCITY BASIC SETTING

Set the preset value for the velocity like this (not from the EDIT menu, exit this beforehand if necessary, e.g. by pressing the **[TRANSP]** button):

Press the **[VELO]** button to go to the menu (button lights up).
If you keep the **[VELO]** button pressed, the preset value is displayed. Change this value by turning the control (note the value overlay).

Value range: rnd1, rnd2, 1-127

Display of values in the display:

RANDOM 1 (random value, generated when recording)
This value is randomly generated when recording and then saved as a fixed value. This means that these values remain unchanged when playing.

RANDOM 2 (random value when playing)
This value is saved as a velocity random function in the step and then always generates random values when playing.

FIXED VELOCITY VALUE
001 - 127

VELOCITY RECORD

Change the velocity values of a previously recorded note sequence using SHOTS RECORDING (not from the EDIT menu, exit this beforehand if necessary, e.g. by pressing the **[TRANSP]** button):

Press the **[VELO]** button to go to the menu (button lights up).

If the **[VELO]** button is not pressed, the new velocity is shown in the display and can be set using the control. The track to be changed must be running (MUTE off). The correct track must be selected (note the **[TRACK2]** button).

Now press the **[SHOTS]** button for as long as you want to change the velocity. Turn the control to record velocity curves. The result can be heard immediately as the sequence plays. Note that the old values have now been replaced by new ones. You can also set a specific value and then briefly press and release the button at the step to be changed to modify just that one point.

The value range is the same as for the basic velocity setting (see value range on the left, chapter 9.5).

RANDOM INTENSITY

If random values are selected for the velocity, also note that the intensity of the random algorithm is adjustable. The strength of the randomness is set in the function menu **Fn > RANDOM**. There are 16 levels of velocity available, from minimal to maximum randomness.

See also chapter 8.6 about the menu:
FUNCTIONS > RANDOM > VELOCITY

9. PLAY/RECORD FUNCTIONS

9.6 GATE MENU (GATETIME BASIC SETTING / RECORD)

The GATE menu is designed for two different tasks.

Firstly, the basic setting of the gate time for note recording is made with SHOTS. This value is only used when notes are recorded with SHOTS and is saved in the step. When playing without recording, this default setting is also used.

Secondly, gate time values ??that have already been recorded here can be re-recorded sequentially with SHOTS Record without changing the note pitch or the BEAT. Only the gate lengths of the existing notes in the sequence are modified.

GATETIME BASIC SETTING

Set the preset value for the gate time like this (not from the EDIT menu, exit this beforehand if necessary, e.g. by pressing the **[TRANSP]** button):

Press the **[GATE]** button to go to the menu (button lights up).
If you keep the **[GATE]** button pressed, the preset value is displayed. Change this value by turning the control (note the value overlay).

Value range: rnd (random), 1-200

Display of values in the display:

rnd	RANDOM (random value, generated when recording) This value is randomly generated when recording and then saved as a fixed value. This means that these values remain unchanged when playing.
200	FIXED GATETIME VALUE 001 - 200

GATETIME RECORD

Change the length of a note sequence that has already been recorded using SHOTS RECORDING (not from the EDIT menu, exit it beforehand if necessary, e.g. by pressing the **[TRANSP]** button):

Press the **[GATE]** button to go to the menu (button lights up).

If the **[GATE]** button is not pressed, the new velocity is shown in the display and can be set using the control. The track to be changed must be running (MUTE off). The correct track must be selected (note the **[TRACK2]** button).

Now press the **[SHOTS]** button for as long as you want to change the gate time. Turn the control to create grooves. The result can be heard immediately as the sequence plays. Note that the old values have now been replaced by new ones. You can also set a specific value and then briefly press and release the button at the step to be changed to modify just that one point.

The value range is the same as for the basic gate time setting (see value range on the left, chapter 9.6).

RANDOM INTENSITY

If random values are selected for the gate time, also note that the intensity of the random algorithm is adjustable. The strength of the randomness is set in the function menu **Fn > RANDOM**. There are 16 levels available for the velocity, from little to maximum randomness.

See also chapter 8.6 about the menu:
FUNCTIONS > RANDOM > GATE

9. PLAY/RECORD FUNCTIONS

9.7 GLIDE MENU (GLIDE BASIC SETTING / RECORD)

The GLIDE (Portamento) menu is designed for two different tasks.

Firstly, the basic setting of the portamento time for note recording is made with SHOTS. This value is only used when notes are recorded with SHOTS and is saved in the step. When playing without recording, this default setting is also used.

Secondly, glide values that have already been recorded can be re-recorded sequentially with SHOTS Record without changing the note pitch or the BEAT. Only the glide values of the existing steps in the sequence are modified.

GLIDE BASIC SETTING

Set the preset value for portamento like this (not from the EDIT menu, if necessary, leave it first, e.g. by pressing the **[TRANSP]** button):

Press the **[GLIDE]** button to go to the menu (button lights up).
If you keep the **[GLIDE]** button pressed, the preset value is displayed. Change this value by turning the control (note the value overlay).

Value range: rnd (random), 1-14

Display of values in the display:

RANDOM (random value, generated when recording)
This value is randomly generated when recording and then saved as a fixed value. This means that these values remain unchanged when playing.

FIXED GLIDE VALUE (Portamento Time)
001 - 014

GLIDE RECORD

Change the portamento time of a previously recorded note sequence using SHOTS RECORDING (not from the EDIT menu, exit this beforehand if necessary, e.g. by pressing the **[TRANSP]** button):

Press the **[GLIDE]** button to go to the menu (button lights up).

If the **[GLIDE]** button is not pressed, the new glide value is shown in the display and can be set using the control. The track to be changed must be playing (MUTE off). The correct track must be selected (note the **[TRACK2]** button).

Now press the **[SHOTS]** button for as long as you want to change the glide. Turn the control to create different values. The result can be heard immediately as the sequence plays. Note that the old values have now been replaced by new ones. You can also set a specific value and then briefly press and release the button at the step to be changed to modify just that one point. Note that Glide has no effect if the notes played are of the same pitch.

The value range is the same as for the basic Glide setting (see value range on the left, chapter 9.7).

RANDOM INTENSITY

The intensity of the randomness cannot be changed!
Portamento is achieved on the analog tracks by sliding the note CV.

Two standardized ControlChange commands are sent for MIDI:

Controller number 65 (portamento on/off)
Controller number 5 (portamento time)

The connected MIDI expander must therefore be able to evaluate these commands so that the portamento can be heard!

10. SYNCHRONIZATION

10.1 SYNC VIA MIDI CLOCK

The module can be synchronized with other sequencers via MIDI CLOCK. It can synchronize other sequencers with MIDI Clock or be synchronized by them. No settings in the **SETUP** or **MIDI** menu are necessary to activate these functions. Use a MIDI cable of type TRS-B for the TON module.

TON synchronizes an external MIDI sequencer:

Connect an external MIDI sequencer to the MIDI OUT of the TON:

MIDI IN
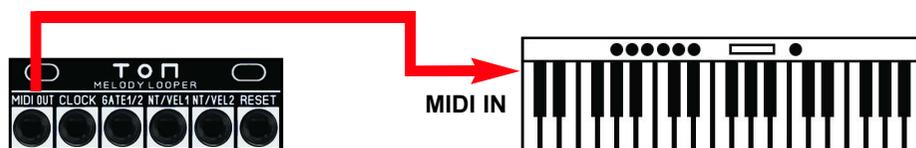
When the module itself is started, it sends the MIDI start/stop/clock commands for connected MIDI sequencers via MIDI OUT. The tempo is determined by the tempo saved in the patch. If the patch is changed while the sequencer is running, the current tempo remains the same and is not replaced by a possibly different tempo of the new patch. The tempo of the patch only becomes active after stopping and restarting.

👉 **Note:**

The module does not send a MIDI CONTINUE command and cannot receive a MIDI CONTINUE command!

External MIDI sequencer synchronizes TON:

Connect an external MIDI sequencer to the MIDI INPUT of the TON:

MIDI OUT
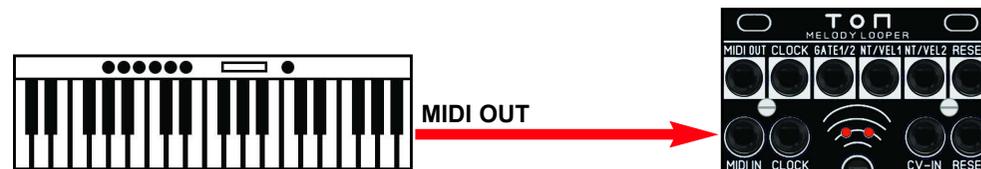
If the module is synchronized by an external sequencer, it starts when it receives a MIDI start command. However, the TON module must be stopped beforehand, otherwise incoming clock commands will be ignored.

10.2 SEND MIDI CLOCK on/off (only available in Sync mode)

If the module is synchronized by an external sequencer, the sending of MIDI clock data is normally switched off. However, sometimes it is desirable for the module to forward the MIDI clock data to other connected devices.

Set this function in the SETUP menu as follows:

Press the keys **> [Fn] > [SETUP] > [#A]** one after the other and activate **[TRACK2]** (key lights up). The display flashes back and forth between the menu name and the value. Switch the function on/off with the +/- keys:

flashes alternately: | ScL | ↔ | oFF | or | on |
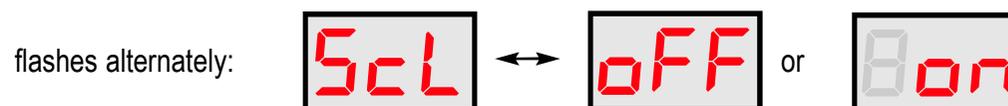
10. SYNCHRONIZATION

10.3 SYNC VIA ANALOG CLOCK

The module can be synchronized with other analog sequencers via analog CLOCK. It can send analog clock/reset itself to synchronize other analog sequencers. Use simple mono patch cables for the device connections.

TON synchronizes an external sequencer via analog clock:

Connect the CLOCK OUT and the RESET OUT of the TON to the corresponding inputs of the sequencer to be synchronized:

CLOCK IN

RESET IN

In order for the synchronization to work properly, both devices must be set to the same values for the analog clock and reset. To do this, first go to the SETUP menu of the TON: Press the keys **[Fn] > [SETUP] > [#F]** one after the other. Use the **[TRACK2]** key to switch between the two menus Clock out and Reset out:
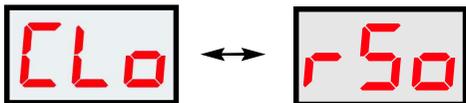

Go to Clock out, the display flashes between the menu name and the value.
Set the value using the +/- buttons (**[#C]** and **[#D]** buttons):

👉 **ATTENTION: only when the sequencer is stopped!**

switched off

2 PPQN
(pulses per quarter)
= 8th pulse

4 PPQN
(pulses per quarter)
= 16th pulse

12 PPQN
(pulses per quarter)
= 48 Ticks per Bar

24 PPQN
(pulses per quarter)
= 96 Ticks per Bar

Then go to Reset out and set the value, the display flashes between the menu name and the value.
Set the value to **"rUn"** (H/L Gate) or **"trS"** (Trigger Start/Stop) using the +/- buttons:

flashes alternately:

 or
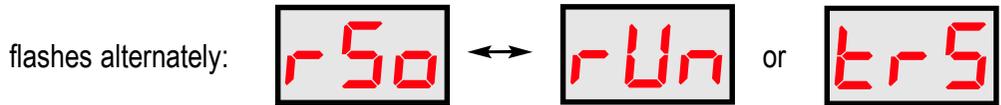
External sequencer synchronizes the sound via analog clock:

Connect the CLOCK IN and the RESET IN of the TON to the corresponding outputs of the sequencer to be synchronized:

CLOCK OUT

RESET OUT

For the synchronization to work properly, both devices must be set to the same values for the analog clock and reset. The TON module has the following non-changeable settings for analog synchronization by an external analog sequencer:

CLOCK: 24 PPQN (24 pulses per quarter note = 96 Ticks per bar)
RESET: Trigger per Start/Stop (**trS**)

The device that controls the TON module must be set to these two parameters so that the synchronization works correctly. Information on this can be found in the manual of the device used.

11. EDIT MODE

In EDIT MODE, individual steps of the sequence can be created or edited. Please note that not all possible note values can be set; only those notes appear that are determined by the set scale, the transposition, and the octave range and octave offset values of the track.

👉 **Note:**

Steps cannot be edited while the sequencer is running, but the sequence can be started from the EDIT menu and listened to in a loop. When you press STOP, the system returns to the EDIT menu and the step position previously set there, so that you can continue editing the step there.

ENTER / EXIT EDIT MENU

When the sequencer is stopped, hold down the **[SHOTS]** button and then press the **[SINGLE]** button. EDIT MODE is now active. The two buttons **[SHOTS]** and **[SINGLE]** light up continuously, as do the two +/- buttons **[#C]** and **[#D]**. The display shows the step position of the sequence.
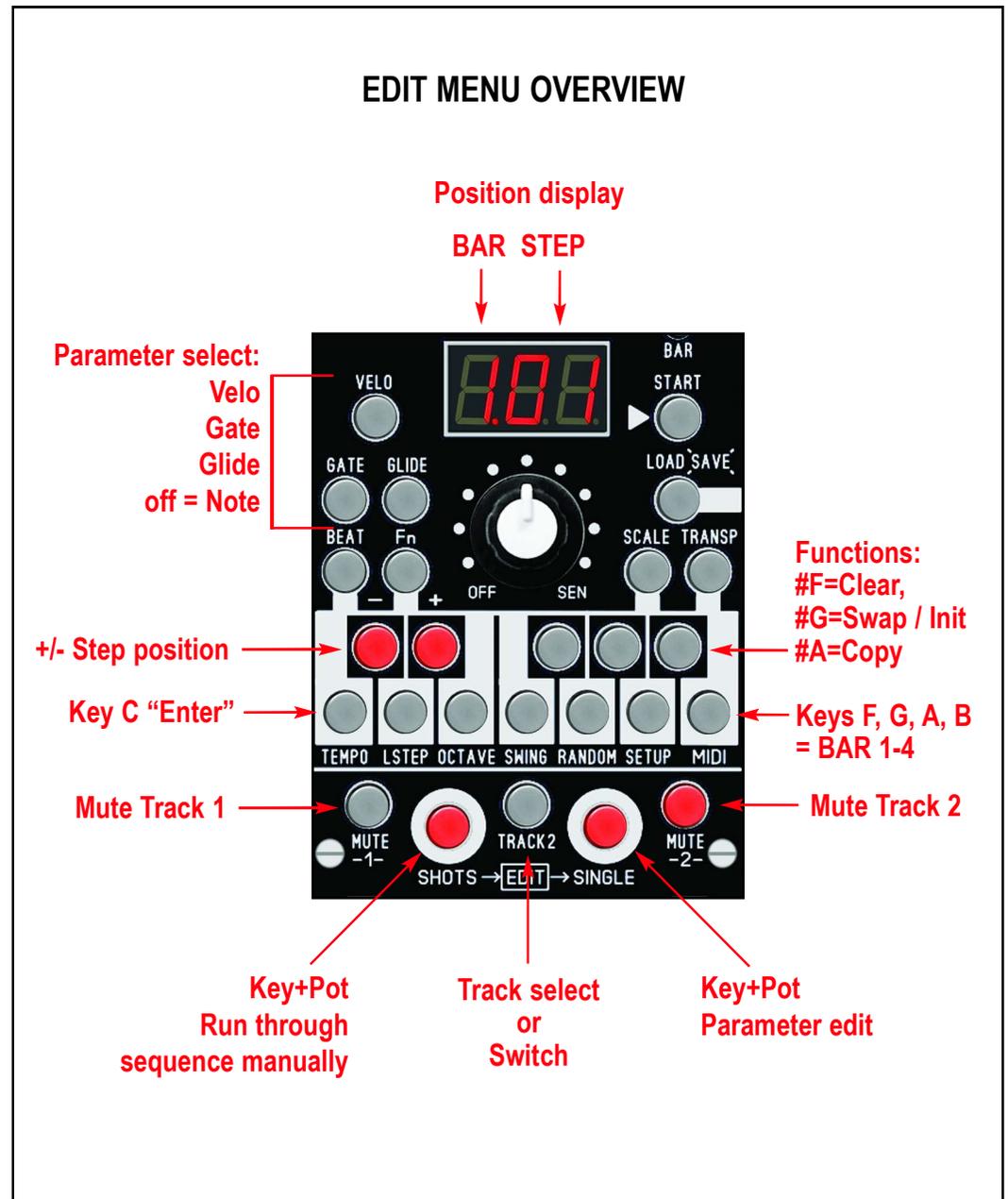
EDIT MODE can be exited by pressing a MAIN MENU button (e.g.: **[BEAT], [Fn], [SCALE]** or **[TRANSP]**). The **[VELO], [GATE]** and **[GLIDE]** buttons are used in the EDIT menu and cannot be used to exit EDIT MODE.
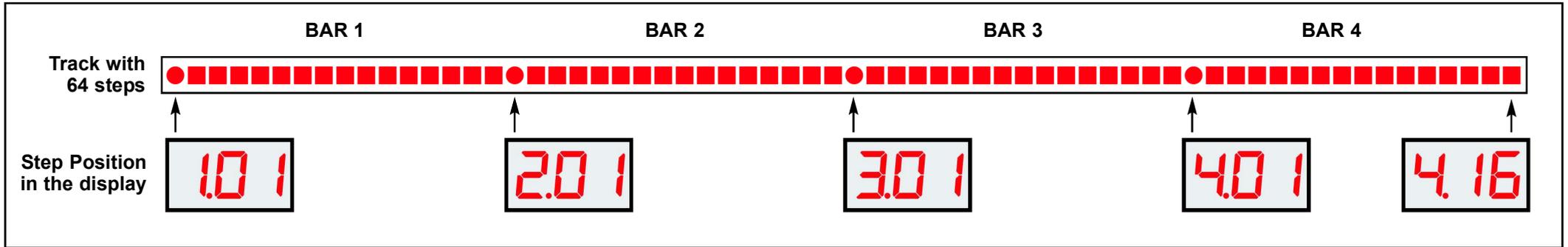
SELECT / MUTE TRACK

When you first enter EDIT MODE, track 1 is selected. The **[TRACK2]** button is not lit and track 2 is muted. This means that when you edit track 1, only track 2 will be audible. Press the **[TRACK2]** button to select track 2. The button now lights up, but the two MUTE buttons switch automatically so that track 1 is muted and track 2 is audible. This makes it possible to quickly switch between the two tracks and only hear this track each time.

👉 **TIP:**

Sometimes it is helpful to hear the steps of both tracks at the same time. Simply press the **[MUTE]** button of the muted track to make it audible. When you change tracks, the other track is automatically muted again.

EDIT MENU OVERVIEW

Position display

BAR STEP

Parameter select:
Velo
Gate
Glide
off = Note

Functions:
#F=Clear,
#G=Swap / Init
#A=Copy

+/- Step position

Keys F, G, A, B
= BAR 1-4

Key C "Enter"

Mute Track 1

Mute Track 2

Key+Pot
Run through
sequence manually

Track select
or
Switch

Key+Pot
Parameter edit

11. EDIT MODE

SELECT STEP / MOVE THROUGH THE SEQUENCE

Step through the sequence using the +/- buttons **[#C]** and **[#D]** and change the position in 1-step increments from 1.01 to 4.16 (forward or backward).

Manually move through the entire sequence (forward and backward) while holding down the **[SHOTS]** button and turning the potentiometer (note that the potentiometer accepts the value).

The set position is always the same for both tracks.

👉 **Note:**
Note that the length of the sequence is not limited by the values of LASTSTEP and BAR of the track and both values are ineffective here.

SHOW STEP PARAMETERS

To display the value of the set parameter of the current step/track, hold down the **[SINGLE]** button. The value will then appear on the display. Which value is displayed depends on whether one of the **[VELO], [GATE]** or **[GLIDE]** buttons is switched on or all are switched off. If all are switched off, the note will be displayed.

You can also manually step through the sequence using the +/- buttons and then see the corresponding parameter values of the steps on the display.

👉 **Note:**
If you do not want to change any values, do not turn the potentiometer. Turning the potentiometer will change the old value if you go past the value!

🎧 **LISTEN TO STEPS**

Press the **[SHOTS]** button to listen to the step of the tracks (use MUTE to switch the tracks on/off first). Use the +/- buttons to step through the sequence and listen to the steps. Note that the set gate time has no effect, only the note pitch, velocity and glide can be heard. If the same note is triggered several times with the **[SHOTS]** button, the GLIDE parameter will not be heard (only when stepping through the sequence of different pitches!)

11. EDIT MODE

STEP EDIT NOTE

To view and change the NOTE of a step in the EDIT menu, the VELO, GATE and GLIDE functions must be turned off. If one of these three buttons is lit, press that button to turn it off.
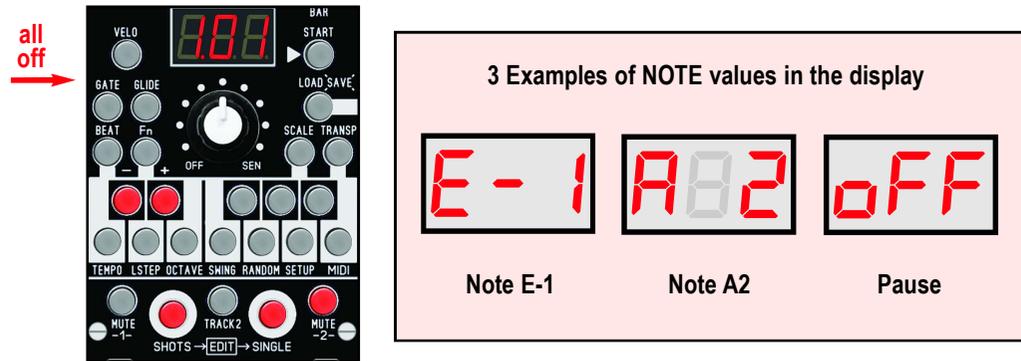
3 Examples of NOTE values in the display

Note E-1	Note A2	Pause

Use the **[TRACK2]** button to select the track you want to edit. Use the +/- buttons **[#C]** and/or **[#D]** to select the step. Keep the **[SINGLE]** button pressed. The note of the step is shown in the display (and triggered once for listening).

To change the value, keep the **[SINGLE]** button pressed and turn the potentiometer until the potentiometer has passed the value. Now continue turning the potentiometer until you reach the note you want. Every time you change the potentiometer position, the step is automatically triggered for listening.

If you don't want the step to send a note (step off = pause), turn the potentiometer all the way to the left to OFF (for pause). Note that only notes that result from the quantizer settings (scale, transpose, octave range+offset) can be set.

When you release the **[SINGLE]** button, the set value is retained on the step.

☛ **Note:**
The following parameters affect the sound of the step: note pitch (including possible note random), velocity (including velocity random), possibly glide.

STEP EDIT VELOCITY

To display and change the VELOCITY of a step in the EDIT menu, activate the VELOCITY EDIT function with the **[VELO]** button (the button lights up). The velocity of the steps can now be displayed or changed.
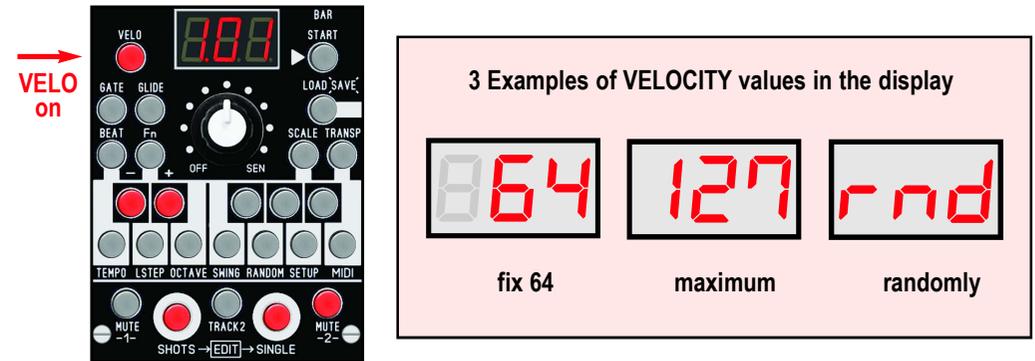
3 Examples of VELOCITY values in the display

fix 64	maximum	randomly

Use the **[TRACK2]** button to select the track you want to edit. Use the +/- buttons **[#C]** and/or **[#D]** to select the step. Hold down the **[SINGLE]** button. The velocity of the step is shown in the display. The step is triggered once for listening.

To change the velocity value, continue to hold down the **[SINGLE]** button and turn the potentiometer until the potentiometer has passed the value. Now continue to turn the potentiometer until you reach the desired velocity value. Every time you change the potentiometer position, the step is automatically triggered for listening.

When you release the **[SINGLE]** button, the set value is retained on the step.

Value range:
001-127 = fixed value (via velocity CV output approx. zero to +5v)
rnd = RANDOM > random values during playback
(the intensity is set in the RANDOM menu with U01..U16)

11. EDIT MODE

STEP EDIT GATETIME

To display and change the GATETIME of a step in the EDIT menu, activate the GATETI-ME EDIT function with the **[GATE]** button (the button lights up). The velocity of the steps can now be displayed or changed.
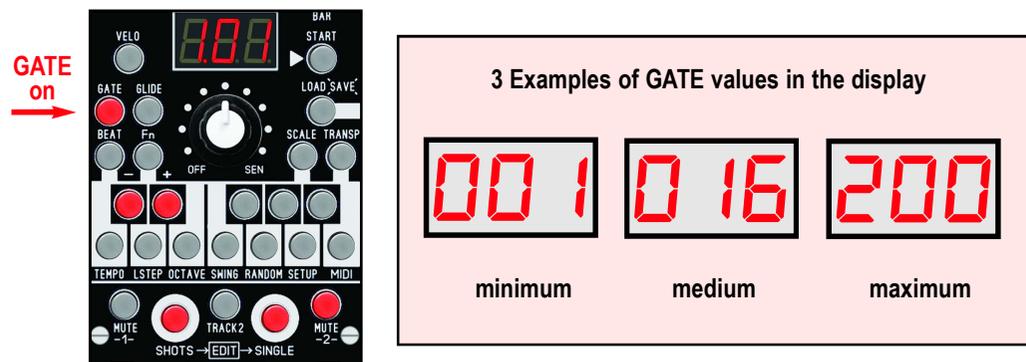
GATE on →

3 Examples of GATE values in the display

001	016	200
minimum	medium	maximum

Use the **[TRACK2]** button to select the track you want to edit. Use the +/- buttons **[#C]** and/or **[#D]** to select the step. Keep the **[SINGLE]** button pressed. The gate time of the step is shown on the display. The step is triggered once for listening.

To change the value, keep the **[SINGLE]** button pressed and turn the potentiometer until the potentiometer has passed the value. Now continue turning the potentiometer until you reach the gate value you want. Every time you change the potentiometer position, the step is automatically triggered for listening.

When you release the **[SINGLE]** button, the set value is retained on the step.
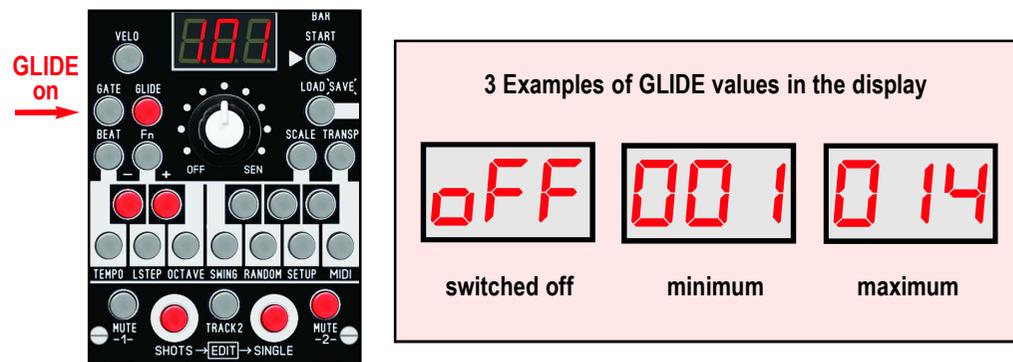
Value range:
001-200 = fixed value (1 tick length up to a maximum of 4 bars long)

👉 **Note:**
In EDIT mode the gate time has no effect when listening to the step!

STEP EDIT GLIDE

To display and change the GLIDE (portamento) of a step in the EDIT menu, activate the GLIDE EDIT function with the **[GLIDE]** button (the button lights up). Now the velocity of the steps can be displayed or changed.

GLIDE on →

3 Examples of GLIDE values in the display

oFF	001	014
switched off	minimum	maximum

Use the **[TRACK2]** button to select the track you want to edit. Use the +/- buttons **[#C]** and/or **[#D]** to select the step. Hold down the **[SINGLE]** button. The glide value of the step is shown in the display. The step is triggered once for listening.

To change the velocity value, continue to hold down the **[SINGLE]** button and turn the potentiometer until the potentiometer has passed the value. Now continue to turn the potentiometer until you reach the desired velocity value. Every time you change the potentiometer position, the step is automatically triggered for listening.

When you release the **[SINGLE]** button, the set value is retained on the step.

Value range:
oFF = switched off
001-014 = fixed value (portamento time short to very long)

👉 **Note:**
In EDIT mode, Glide has no effect on listening to the step if the notes played one after the other are the same pitch!

11. EDIT MODE

EDIT SEQUENCE WITH CLEAR, SWAP, INIT, COPY

In EDIT MODE, the tracks can be edited using advanced functions. Bars can be copied within the track (or to the other track), or the entire track can be copied to the other track. The two tracks can be swapped using SWAP and the entire PATCH can be reset to the factory settings (initialization). It is also possible to delete the entire track or just certain bars.

ENTER / EXIT FUNCTIONS

If EDIT MODE is active, call up the function using the **[#F], [#G]** or **[#A]** buttons. The corresponding button lights up continuously and the name of the function is shown on the display. Pressing the illuminated button again exits the function (back to the EDIT NOTE menu).

The **[TRACK2]** button is used to either select the track or to switch between these two functions in the SWAP / INIT menu.
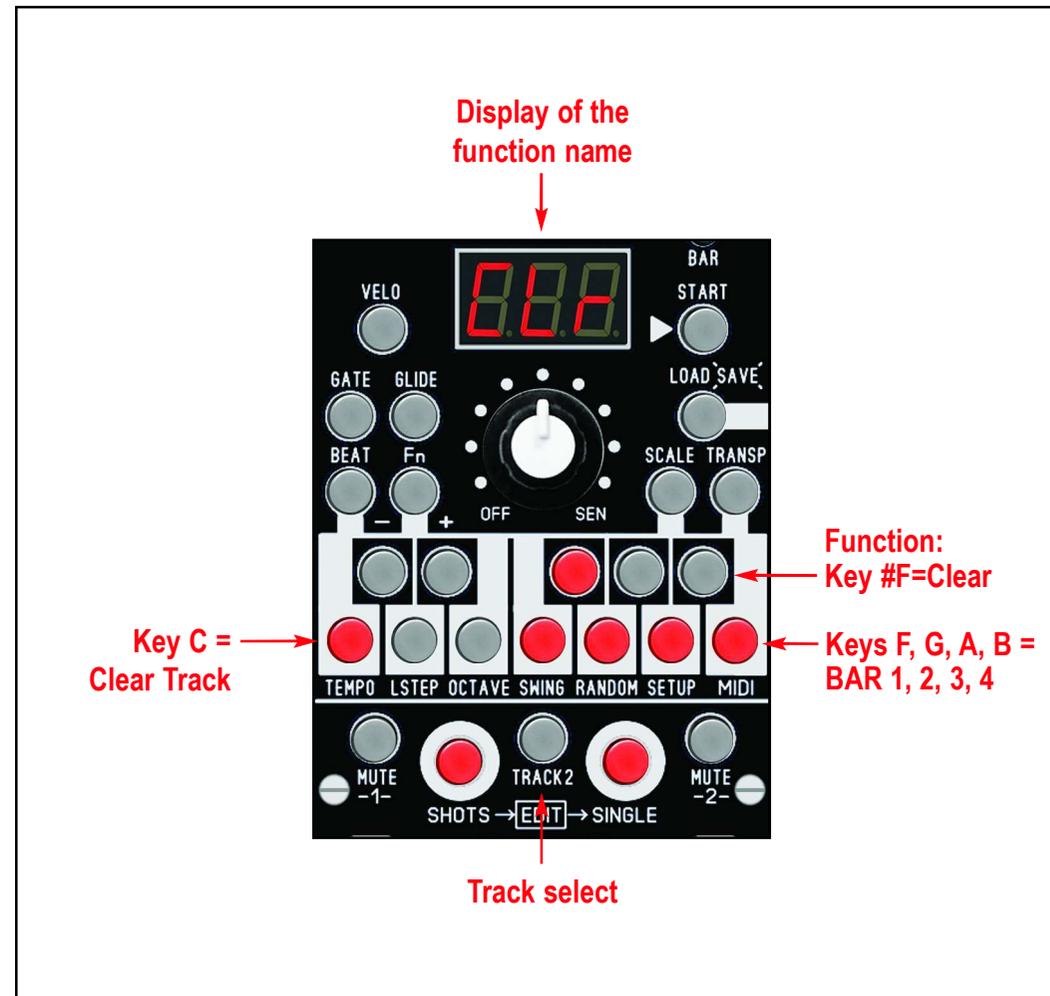
The **[C]** button is used to trigger the function directly for SWAP and INIT (ENTER), or to apply the function to all 4 bars together (entire track) for CLEAR and COPY.

CLEAR TRACK / BAR

The CLEAR menu is displayed on the right. The menu can be called up or cancelled using the **[#F]** button. The five buttons **[C], [F], [G], [A], [B]** are now flashing. By pressing one of these buttons, an entire track or just one bar (BAR) of a track can be deleted. Deleting here means that the notes of the steps are set to OFF. The other parameters are not changed.

Press the **[C]** button to completely delete the track previously selected with the **[TRACK2]** button (all four bars) (in the example on the right, track 1 would be deleted).

By pressing one of the **[F], [G], [A], [B]** buttons, only one bar (BAR 1, 2, 3 or 4) of the track previously selected with the **[TRACK2]** button is deleted.

Display of the function name

Function:
Key #F=Clear

Key C =
Clear Track

Keys F, G, A, B =
BAR 1, 2, 3, 4

Track select

After the delete button has been pressed, the display confirms execution with YES and exits the menu (returns to EDIT NOTE).

11. EDIT MODE

SWAP TRACKS

The SWAP menu is displayed on the right.

The menu is called up or cancelled using the **[#G]** button. The **[TRACK2]** button must be turned off. The **[C]** button is now flashing and pressing this button swaps the complete patch data of both tracks. Note that the global parameters (e.g. note MIDI channels of the tracks) are not changed.

Press the **[C]** button to execute SWAP and swap the data of both tracks.

After the **[C]** button has been pressed, the execution is confirmed with **YES** in the display and the menu is closed (returns to EDIT NOTE).

Key C "Enter"
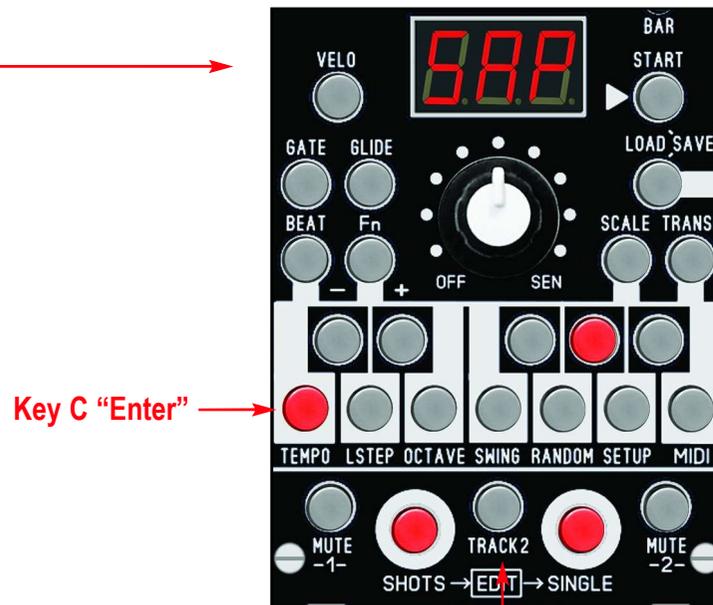
Track1 = select SWAP

INIT PATCH (Reset patch to factory settings)

The INIT menu is displayed on the right.

The **[#G]** button is used to call up or cancel the menu. The **[TRACK2]** button must be switched on (button lights up). The **[C]** button is now flashing and pressing this button will reset the entire patch data to the factory settings.

Press the **[C]** button to initialize the patch and thus reset the patch data to the factory settings. Note that this will delete both tracks.

After pressing the **[C]** button, the display confirms execution with **YES** and the menu closes (returns to EDIT NOTE).

Key C "Enter"
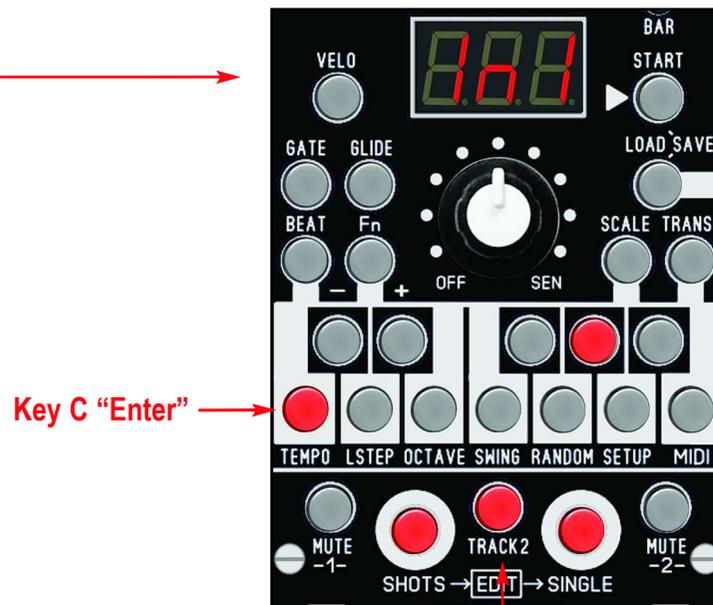
Track2 = select INIT

11. EDIT MODE

COPY TRACK

The COPY menu is displayed on the right. The **[#A]** button is used to call up or cancel the menu. The five buttons **[C], [F], [G], [A], [B]** are now flashing.

By pressing the **[C]** button, the track previously selected with the **[TRACK2]** button can now be copied to the other track.

After the **[C]** button has been pressed, the display confirms execution with **YES** and the menu is closed (returns to EDIT NOTE).

COPY BAR

The COPY menu is displayed on the right. The menu can be called up or cancelled using the **[#A]** button. The five buttons **[C], [F], [G], [A], [B]** are now flashing.
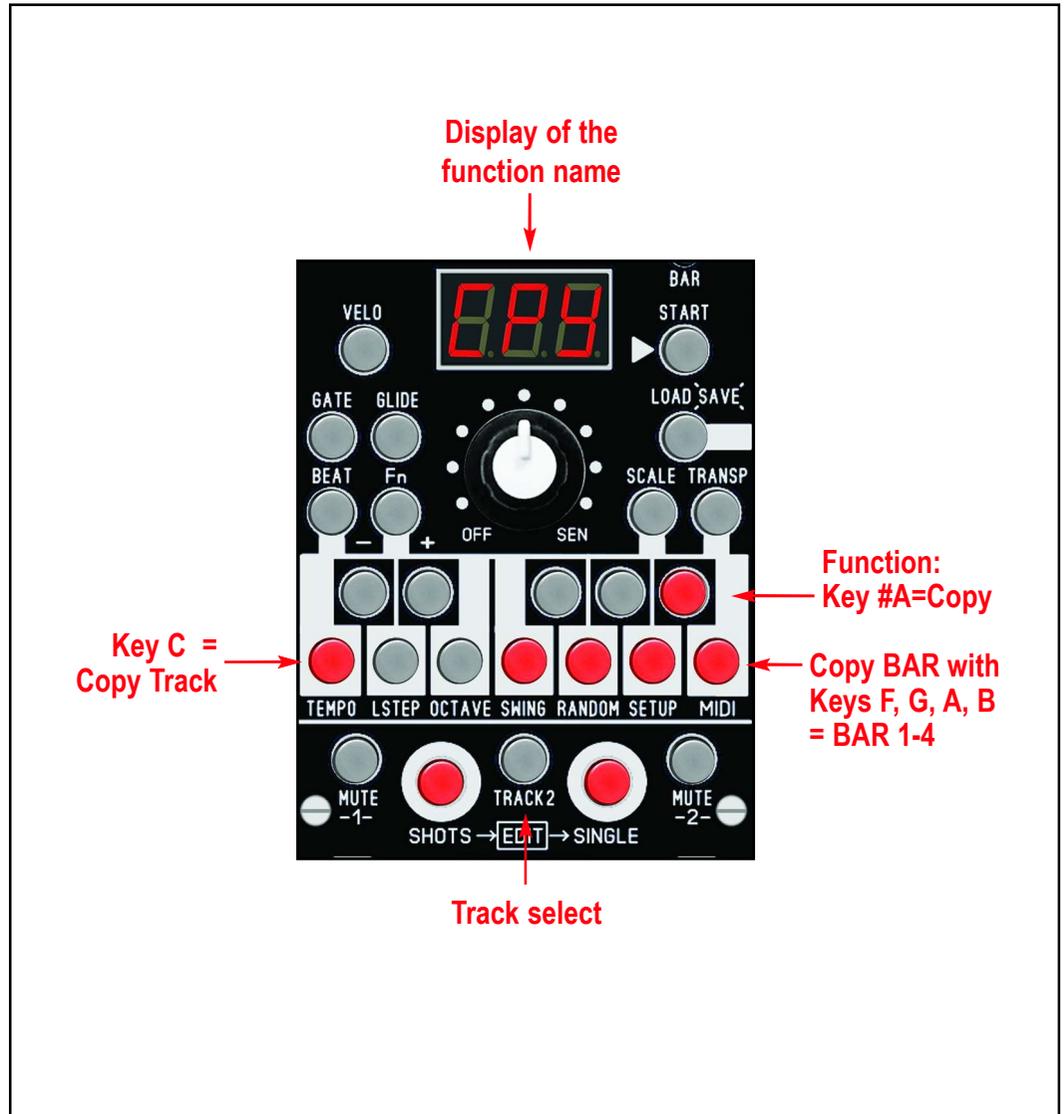
First, the bar to be copied (the source) of the track must be selected. If necessary, select the track of this bar beforehand using the **[TRACK2]** button.

Then press the button of the bar to be copied to select the source:
Key **[F]** for Bar 1, Key **[G]** for Bar 2, Key **[A]** for Bar 3, Key **[B]** for Bar 4.

The **[C]** button now goes out because it no longer has any function and the BAR button you just pressed lights up permanently to indicate that the bar cannot be copied to itself. If the target is on the other track, now change the track using the **[TRACK2]** button. The BAR button you previously pressed will flash again because the target is now on the other track. No matter which track is selected, pressing one of the BAR buttons a second time sets the copy destination and the operation is carried out immediately.

After the button is pressed, the display confirms execution with **YES** and the menu is closed (returns to EDIT NOTE).

Display of the function name

Function: Key #A=Copy

Key C = Copy Track

Copy BAR with Keys F, G, A, B = BAR 1-4

Track select

12. APPENDIX

CALIBRATION OF THE 1v/Oct CV OUTPUTS

The two 1v/Oct outputs for the note pitch of the two tracks can be recalibrated as follows. A voltmeter is required to measure the voltage at the respective output, as well as a mini screwdriver for the trim controls. First connect the voltmeter to the output to be calibrated. Set the following parameters for the track as follows:

- Menu Scale: switch on all notes
- Menu Transpose: to note "C"
- Fn-Menu Octave Range: "5"
- Fn-Menu Octave Offset: "0"

Calibrate output for track 1:
Press the **[TRANSP]** button to be able to set and display notes in the display. Turn the Pot to ZERO and then slightly up to set the note "C-1" in the display. This is the lowest playable note with an output voltage of zero volts. Press the **[SINGLE]** button to play the note "C-1". Now use the OFFSET-1 trimmer to set a voltage in the range 10..35mV (read on the voltmeter).
Now turn the Pot almost to the end until the note "C 4" appears on the display. Press the **[SINGLE]** button again to play the note "C 4". A higher voltage will now appear on the voltmeter, but this must now be set to exactly 5,000 volts using the blue trim control SCALE-1. Each octave jump means exactly one volt difference, so each semitone 1/12th of that is about 0.0833 volts.

Do the same with Track 2 at its output, using the OFFSET-2 and SCALE-2 trim controls.

☛ **TIP:**
If a VCO is not set to the exact 1v/Oct scale, it can be calibrated without a voltmeter by connecting the VCO and listening to the octaves. However, this can only be used for this VCO.

CHANGING THE BACKUP BATTERY

The module contains a 3v backup battery (lithium type CR2032) for the global data and for the patch data. When the battery capacity is exhausted after about 3-5 years, it must be replaced. Save the patch data beforehand using MIDI dump (see also chapter 8.8 MIDI DUMP PATCH).

Unscrew the lower processor board (to do this, loosen the 4 screws at the corners) and pull it off the base board. The battery socket is on the back. If the data is still there and the battery is to be changed without a backup, then connect the board to the power supply using the Doepfer cable. The data in the RAM is now buffered by the operating voltage. But be careful and do not cause short circuits!

Remove the old battery (using a small screwdriver) from the socket and insert the new battery (make sure the polarity is correct: positive pole facing outwards). If necessary, remove the Doepfer cable again (board without power supply), carefully put the board back on the base board and screw the 4 screws back in.

Avoid electrostatic charging of your body while working. Discharge it beforehand by touching an earthing point (e.g. ground surfaces, water pipes, heating pipes, etc.).

FIRMWARE UPDATE

The module cannot be updated via MIDI SYSEX. To flash new firmware into the processor, a Silicon Labs USB programming adapter and associated software are required. This is only available for Windows PC. A detailed description will be provided on our website when necessary.

13. TROUBLESHOOTING / FAQ

What the module <u>cannot</u> do:

- record MIDI notes sent to the module
- output the sensor voltage unquantized
- record more than 64 steps per track
- play notes directly with the mini keyboard on the module (except transpose)
- record both tracks simultaneously
- transpose tracks separately
- move steps, microtiming
- link patterns to "songs"
- firmware updates only possible with the help of a SiLabs programmer
- the module is not a sound generator
- the module is not an arpeggiator

The sensor often interferes with wiring or in the studio and I would like to switch it off temporarily or permanently:

Do not turn the POTI all the way to the SEN position, because the sensor can only be triggered in this control position.

A second permanent option would be to route the CV-IN input to one or both tracks. The sensor is then switched off and the voltage at the CV-IN would replace the sensor voltage. In this case, do not plug a cable into the CV-IN input (this makes it ZERO and has no effect). The CV-IN routing can be found in the function menu:
Fn > SETUP > key [#A] (Track1).

MIDI dump not working:

Check the MIDI cables (use a TRS-B adapter) and make sure that you are using a direct MIDI connection to the computer, not a USB hub or similar. Other errors can sometimes be caused by the SYSEX program you are using - make sure that the correct MIDI driver is selected in the SYSEX program.

If you are a Mac user and use the "SYSEX LIBRARIAN" program, always receive the SYSEX data sent by TON using the "Record Many" button (top right).

If it still doesn't work, try a different (older) sound card - many new and especially cheaper sound cards have a different power supply on the MIDI socket and therefore often function with limitations.

14. TECHNICAL DETAILS

Technical details

Connections:
Ribbon cable adapter for Doepfer Buss +/-12Volt
Inputs: 1x MIDI-TRS-B, 1x CV, 2x trigger/gate, 3.5mm mono jacks
Outputs: 1x MIDI-TRS-B, 4x trigger/gate, 4x CV 3.5mm mono/stereo jacks

Controls:
26 illuminated buttons
1 potentiometer, 1 distance sensor
1 illuminated display

Current consumption: 12v ca: +170mA / -30mA
Size: Euro format 3U / 12HP   60,5x128,5mm, installation depth: 35mm

Warrenty

Beginning from the date of purchase a 2-year warranty is guaranteed for this device in case of any manufacturing errors or other functional deficiencies during runtime.

The warranty does not apply in case of:
- damage caused by misuse
- mechanical damage arising from careless treatment
  (dropping, vigorous shaking, mishandling, etc)
- damage caused by liquids penetrating the device
- heat damage caused by overexposure to sunlight or heating
- electric damage caused by improper connecting
  (wrong power supply/ jacks/ MIDI connections/ voltage problems).

If you have any complaints please contact your dealer or send an e-mail to:
service@flame-instruments.de

Terms of production
conformity: CE, RoHS, UL

Disposal

The device is produced with RoHS-conformity (subject to the regulations of the European Union) and is free of hazardous substances (like mercury, plumb, cadmium and hexavalent chrome). But electronical scrap is hazardous waste. Please don't add this to consumer waste. For an environment friendly disposal of waste please contact your distributor or specialist dealer.

Support
Updated and additional informations, updates, downloads and more see:
https://www.flame-instruments.de

e-mail:
service@flame-instruments.de

Acknowledgment
For help and assistance big thanks to: Felix Bergleiter, Sebastian Preller, Thomas Wagner, Anne-Kathrin Metzler, Alex4 and Schneiders Büro Berlin.