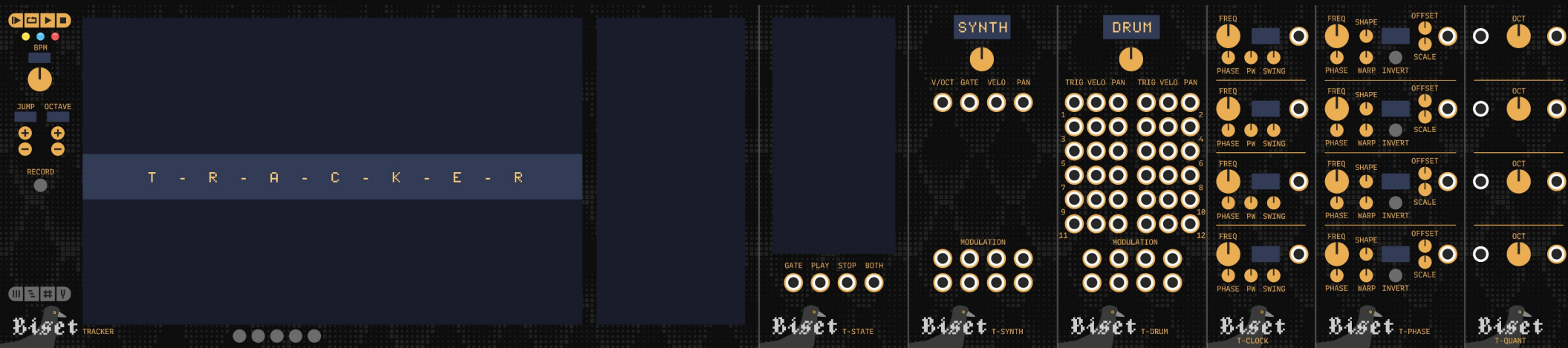# Biset

TRACKER

Biset TRACKER

The **Tracker suite** is a set of VCV modules working together to create an advanced **sequencer**. It is based on a **timeline** on which you arrange **patterns**.

The suite is made of **Tracker**, the main composition module and a set of **side modules** outputing your track informations (pitch, gate, modulations, clock, etc.).

Biset TRACKER

Tracker suite **modules**

Tracker *The main **composition** module where you edit your **timeline**, **patterns**, **synths**, **tuning** and **play** your track*

T-Synth *Synth / instrument** module asigned to a synth of your track. Outputs **pitch**, **gate**, **velocity**, **panning** and **modulations***

T-Drum *Drum** module asigned to a synth of your track. Works like T-Synth but split synth notes into 12 channels to easility use it as a drum trigger generator*

T-Clock *Clock generator** module based on playing track. Allows clock division / multiplication (from /96 to x96), phase offset, pulse width and swing*

T-Phase *Synced LFO** module with beat division / multiplication (from /32 to x32), different wave shapes, phase offset, wave warping and invert and editatable range*

T-Quant *Quantizer / tuner** module allowing you to tune other modules pitch output to be tuned to your track*

T-State *Visualizer** module with some playing track informations such as playing gate, trigger, etc.*
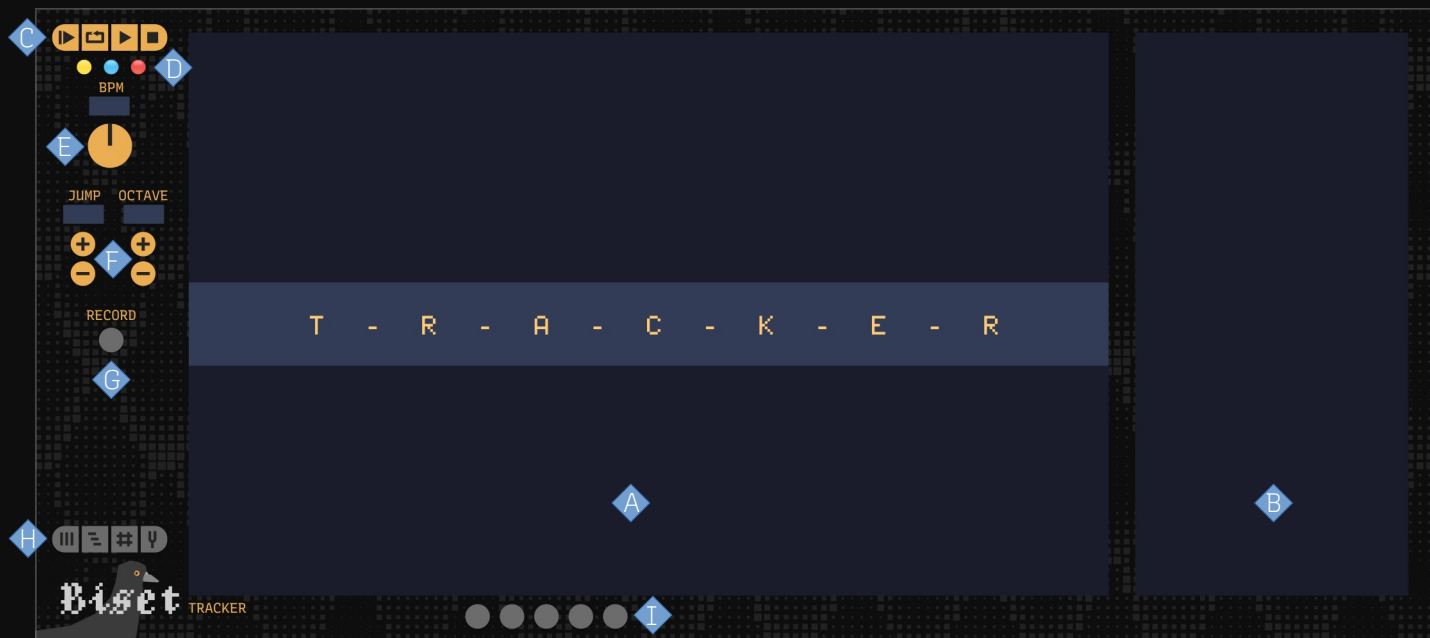
Biset TRACKER

Overview

The modules of the suite are implicitly **interconnected**. **Tracker**, at the center of this connection, should only be present **once in the patch**.

A track is made of **patterns** and **synths**. **Patterns** can be edited and arranged in a **timeline** from the **Tracker** module. A **pattern** is a sequence of notes and modulations made throughout synths. **Synths** are created and edited from the **Tracker** but their outputs are made through 2 other modules, **T-Synth** and **T-Drum**. These modules outputs notes (via pitch, gate, velocity and panning) and modulations (free range CV also mappable to other modules knobs). The **Tracker** can handle up to **100 synths** and **1000 patterns**. Each **T-Synth** and **T-Drum** modules is assigned to a specific synth of the track. Modulations can be **synth modulations** or **BPM modulation** and perhaps even more later.

As a patch would be boring without a **clock generator** and a set of **LFOs**, the tracker suite provides **T-Clock**, a **clock generator** synced with your track with **beat division and multiplication** (up to /96 and x96), **phase offset** and **swing** and **T-Phase** a **synced LFO** with **beat division and multiplication** (up to /32 and x32), different **wave shapes**, **phase offset**, **wave warping** and **invert** and with easily **editable range**.

For mad scientists and musicians wanting to annoy their pitch perfect friends, the **Tracker** also allows you to work with a **different temperement** and **reference frequency** (440hz). You can specify each of the 12 notes a pitch in **cents**. Common temperement presets are provided such as **Just** or **Pythagorean**. It can also be used as a **quantizing** tool with a lot of common scales available as presets. **T-Quant** is available to allow you to quantize your other modules pitch outputs.

T - R - A - C - K - E - R

A	Main display
B	Side display
C	Play controls
D	State lights
E	BPM control
F	Write controls
G	Record switch
H	Pattern views
I	Pattern views

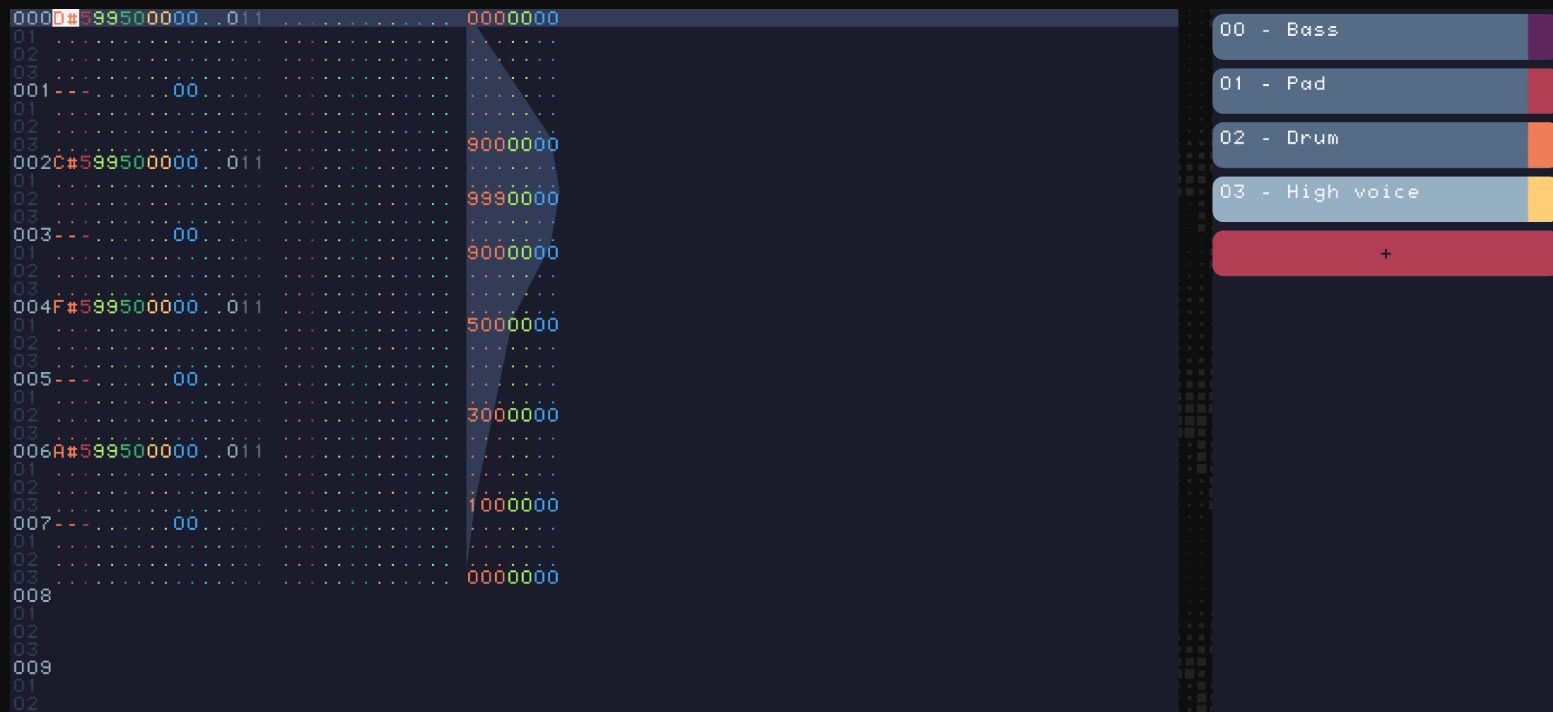**Tracker** is the module from which you edit your **timeline, patterns, synths, tuning** and **play** your track.

Tracker has **4 views** accessible with the buttons on the bottom-left (H) :

    Pattern view   *View to edit the selected pattern and add/remove/edit synths*
    Timeline view   *View to edit the timeline and add/remove patterns*
    Matrix view   *Live oriented view - Not handled yet*
    Tuning view   *View showing current tuning settings*

Biset

TRACKER / Tracker / View Pattern

The **pattern view** is divided into the **tracker screen** (main display, A) and the **synth screen** (side display, B).

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The **tracker screen** allows you to edit the pattern. A pattern is made of **note columns** and **cv columns** each made of lines. The **pattern length** (in beats) and the **time signature** (number of lines per beat) can be edited with a right click.

Note columns are the main place you create your melodies, chords, etc. Each line represents a beat division. A line can contain a **note start**, a **note stop** or a **note glide**. Notes are made of the **pitch, octave, velocity, panning, synth id, delay, glide** and **effects**. Some of these properties can be hidden for clarity via the "eye" switches on the module bottom (I).

A pattern can also contain **CV columns**. Where you can draw modulations. Unlike notes columns, cv columns are assigned to a specific synth and a specific "channel" editable with a right click.

A note is formatted **PPOVVPPSSDDGG(FXX)** :
    Pitch noted with the note letter, a sharp if necessary.
    Octave in the range 0 to 9.
    Velocity in the range 0 to 99, 0 being 0v and 99 being 10v.
    Panning in the range 0 to 99, 0 being left (-5v), 50 being center and 99 being right (5v).
    Synth in the range 0 to 99. It defines which synth to use by the note.
    Delay in the range 0 to 99, 0 being no delay and 99 being delay up to just before next line start.
    Glide allows you to glide from a note to another. It interpolates **pitch, velocity** and **panning**. It is in the range 0 to 99. 0 beeing 1 beat long glide and 99 being almost instant glide.
    Effect type is a letter indicating the type
    Effect value is a number. Depending of the effect type, it can be a **2 digits** number or two **1 digit** number.

A CV line is formatted **VVVCCDD** :
    Value in the range 0 to 999, 0 being minimum and 999 maximum (real CV range is editable from **T-Synth** and **T-Drum**)
    Curve is not handled yet
    Delay in the range 0 to 99, 0 being no delay and 99 being delay up to just before next line start.

To edit the pattern with your keyboard, you need to check that **Tracker** is **selected**. To do so, you can simply check the leftmost **yellow light** (D) indicating that the module has the **focus**. You can navigate through lines and columns with the **arrow keys** and edit values with the **digit keys** (independent of your layout, azerty users don't need to press Maj). Effects types are letters and thus can be edited depending of your keyboard layout. To add or edit a note, you need to put your cursor on the note line pitch and either press a key on your keyboard, with the classic VCV **2 octaves layout** or a key on your **midi keyboard** (connection can be made via the main **Tracker** context menu with right click).

When a synth is selected but the **Tracker** does not have the focus (in pattern mode), you can play the synth with your keyboard without writing anything.
When the **record switch** is on, the pattern cursor follows the **playhead** and allows you to play and write at the same time.

Note effects

    Axx   *Amplitude random, 0 being no change and 99 being possibility to decreasing volume down to 0*
    Pxx   *Panning random, 0 being no change and 99 being possibility to move panning in any direction up to 50%*
    Dxx   *Delay random, 0 being no change and 99 being possibility to delay note up to 1 line*
    Oxy   *Octave random, **x** defining the mode (0: bipolar, 1: unipolar +, 2: unipolar -) and **y** being maximum octave offset*
    Mxy   *Note choose, choose between original note, note + **x** and note + **y**. Can be combined with other Mxy*
    Vxy   *Vibrato, **x** being speed and **y** being amplitude*
    vxy   *Vibrato random, **x** being maximum speed and **y** being maximum amplitude*
    Txy   *Tremolo, **x** being speed and **y** being amplitude*
    txy   *Tremolo random, **x** being maximum speed and **y** being maximum amplitude*
    Cxx   *Chance, chance to play note. 0 being no chance and 99 full chance. If not played, does not stop previous voice*
    cxx   *Chance, chance to play note. 0 being no chance and 99 full chance. If not played, stops previous voice*

The **synth screen** allows you to add, remove and edit your track synths. Synths are shared by all patterns. You can edit synth **name, color,** number of **polyphonic channels** and **gate mode**. You can add up to **100 synths.**

Gate modes :
    Mode gate where a note requires a start and a stop to stop its gate
    Mode trigger where a note only requires a start
    Mode drum where a note only requires a start and each note is assigned to its corresponding polyphonic channel (drum mode always have 12 polyphonic channels). Should be used with **T-Drum**.

The **timeline view** is divided into the **timeline screen** (main display, A) and the **pattern screen** (side display, B).
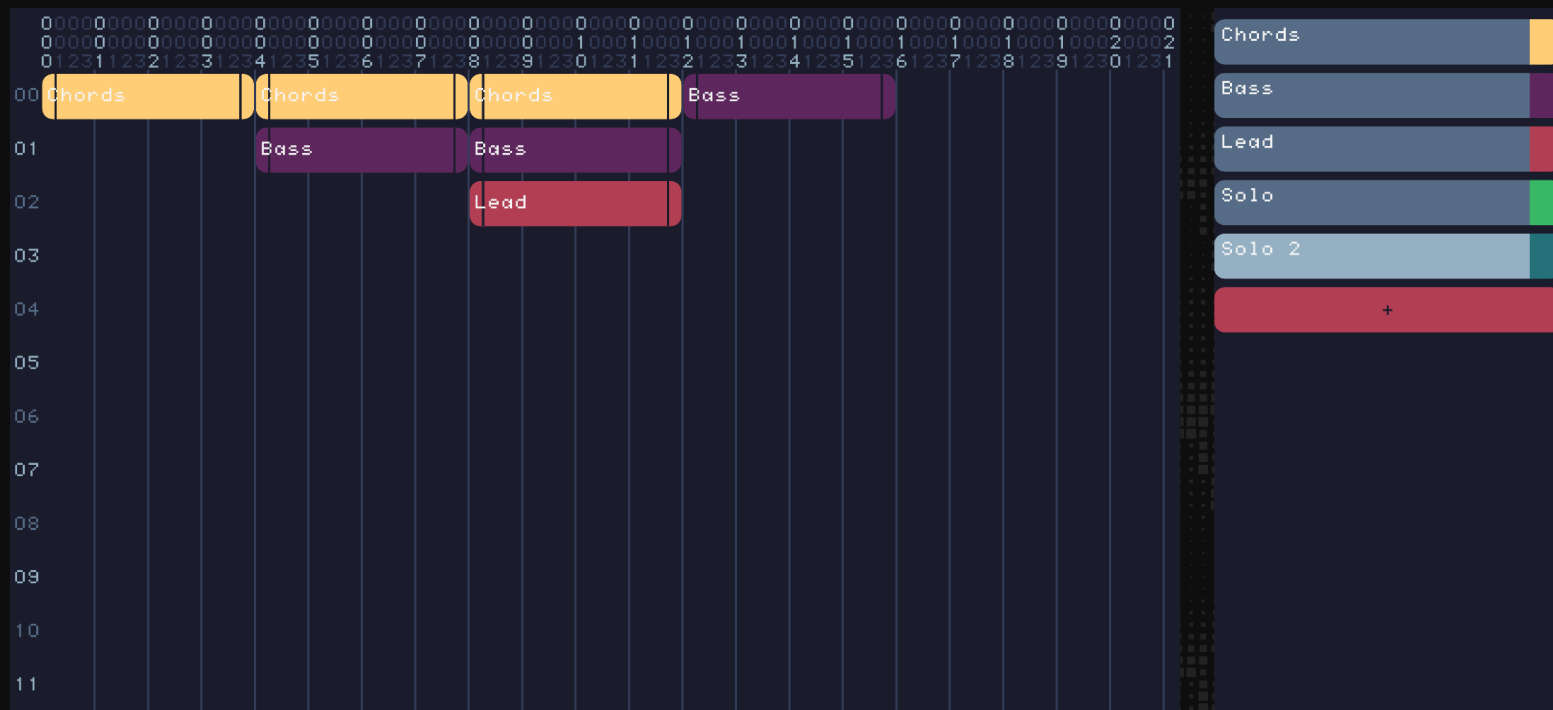
The **timeline screen** allows you to arrange your patterns into a complete track or a live set.

The **X axis** of the timeline represents the **time** in beats while the **Y axis** of the timeline is only designed to let you organize your pattern more easily.

To **add** an instance of a specific pattern to the timeline, you simply have to select the pattern from the pattern screen or an instance of this pattern on the timeline and click where you want it to be placed. Patterns can be **shrinked** or **expanded** thanks to **left and right handles**. A doted line help you to know when a expanded pattern is **repeated**.

You can **remove** or **mute** an instance with a right click.

The **pattern screen** allows you to add, remove or edit your track patterns. You can edit pattern **name, color, length** and **time signature.** You can add up to **1000 patterns.**

Pattern length and time signature can also be edited on pattern view with a right click.
A small arrow is added to the sliders to open a text box to more easily edit the value.
Once sliders set you need to click on the update button below.

 Pattern length in beats, from 1 beat to 999 beats
 Pattern lbp is the pattern lines per beat to change pattern time signature or precision
 **Pattern note columns** is the number of note columns (up to 32)
 **Pattern cv columns** is the number of cv columns (up to 32)

The **tuning view** is divided into the **visualizer screen** (main display, A) and the **tuning screen** (side display, B). This view is in construction. You can edit **tuning** / **temperament** / **scale** with a right click on **Tracker**. The **reference frequency** (default 440hz) and each **note tuning** (in cents) can be edited. A few temperament and scale presets are available.

The **visualizer screen** aims to give you a circular representation of your tuning. The circle represents an **octave**, each yellow line being a **note pitch**. By default, each yellow line is aligned to its corresponding light blue dot on the edge of the circle, corresponding to the equal temperament (octave perfecly splitted into 12 notes).
Here you can see 7 lines, meaning that I use the tuning as a **quantizer** by merging adjacent notes. Some lines are a bit out of line meaning that I use a different temperament where the octave is not perfectly divided into 12 notes.

The **tuning screen** will be used to list the 12 notes pitch with **cents** and **nearest ratio** allowing you to more easily edit your tuning. You won't be able to add or remove notes. Notes can only be "removed" by merging them (setting 2 or more notes to the same pitch).
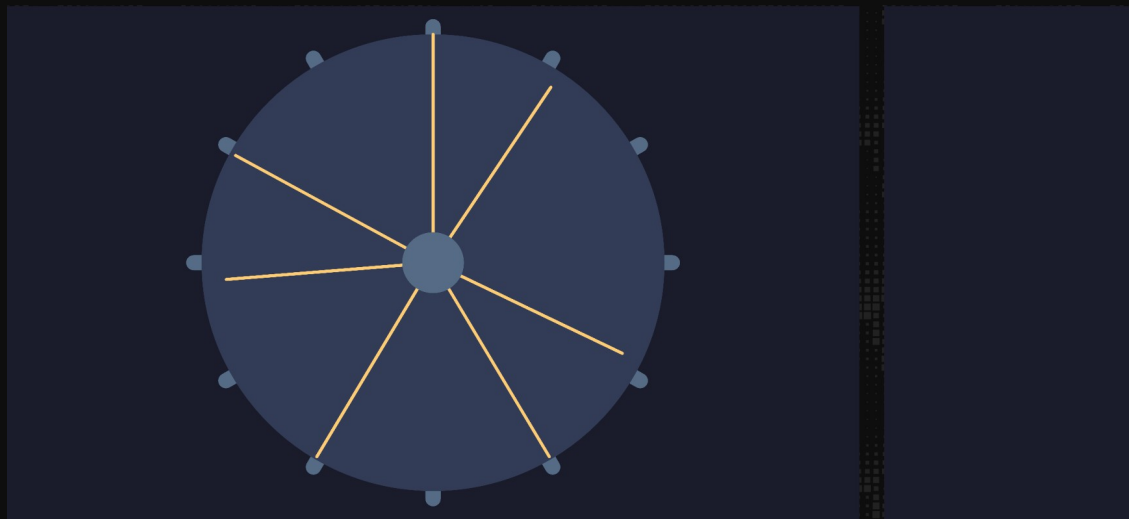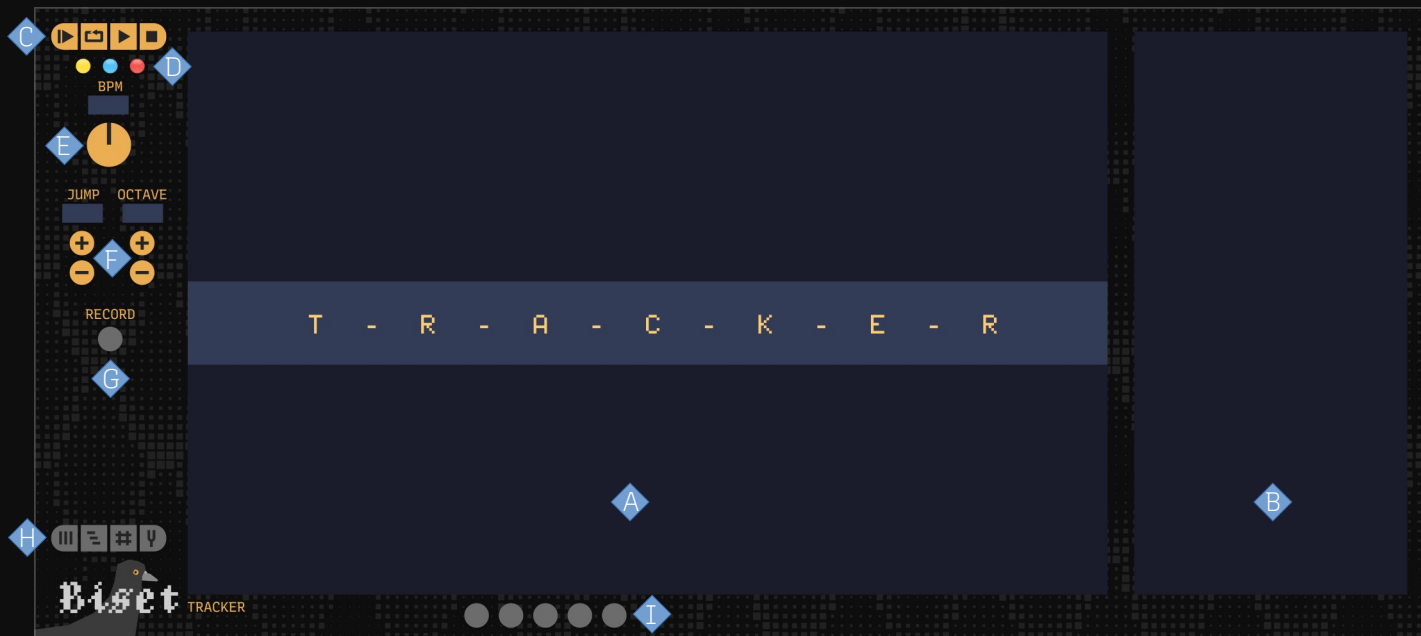
Along with the **BPM knob** are the **jump** and **octave** screens. **Octave,** is simply the octave used when notes are inserted with your computer keyboard. **Jump** is the number of lines jumped after a note or a value is inserted.

Lights indicate the **Tracker** states. The **1st light** (yellow) is on when the module is **selected** and, thus, when you can edit a pattern with your keyboard. The **2nd light** (blue) is on when the module is **playing,** whatever the playing mode. The **3rd light** (red) is on when you are in **recording** mode (not available yet !).

There are 4 play buttons (C)

Play track *Plays the track from the beginning, loops at the end (rightmost module)*
Play pattern *in pattern view, plays and loops the selected pattern. In timeline view, plays and loops the selected pattern instance with other instances present on the same beat range. While playing, you can select another instance which will be looped at the end of the previous pattern. Useful for live performances.*
Play *Plays the track from where it was stopped*
Stop *Stops playing*
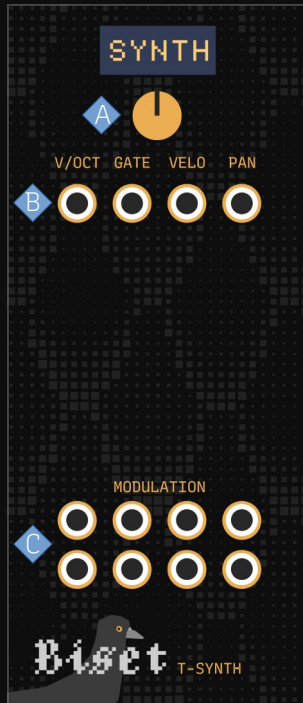
A   Synth selection

B   Voices pitch / gate / velocity / panning output

C   Voices modulations output

**T-Synth** is the module that outputs a synth **pitch, gate, velocity, panning** and **modulations.**

You can **select** the synth with the top knob (A) or simply click on the small display and select the synth by its name.

The main outputs (pitch, gate, etc.) are **polyphonic.** The number of channels can be edited in the **Tracker pattern view** on the **synth list** with a right click along with the gate mode. You need to press the **update synth** button from the context menu to confirm the change of channels and mode.

A synth can handle up to 8 modulations. **T-Synth** allows you to set the **CV range** of these modulation with a right click. You can also **map** a modulation to up to 4 other modules knobs.
If you can have only one **Tracker** module, you can have more than one **T-Synth** module assigned to the same synth if you need to have different cv range from the same modulation.

Biset TRACKER / T-Drum
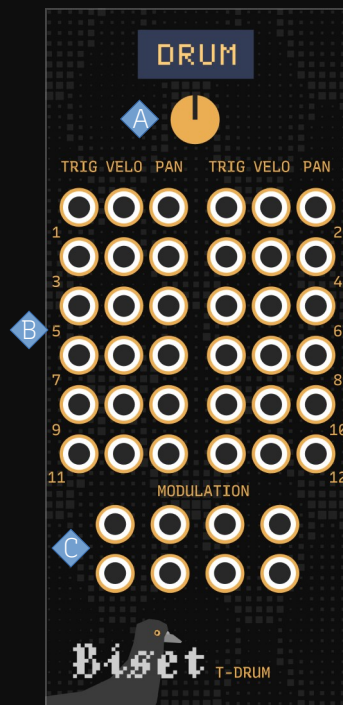
A — Synth selection

B — Voices gate / velocity / panning output

C — Voices modulations output

T-Drum is the **T-Synth** alternative for drum triggers. It works the exact same way except that outputs are monophonic and are distributed over 12 differents output lines, one for each note (octave independent).

C triggers the 1st line, **C#** the 2nd one, **D** the 3rd one and so on.

Biset TRACKER / T-Clock
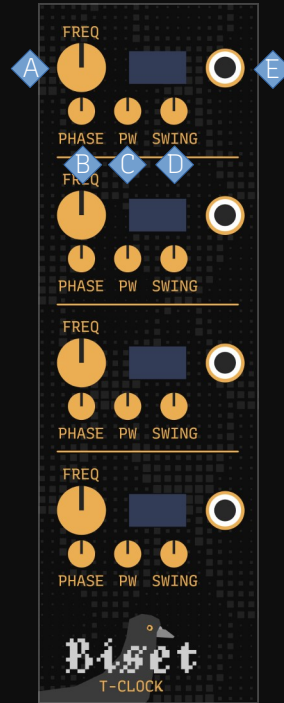
A Clock division / multiplication

B Clock phase offset

C Clock pulse width

D Clock swing

E Clock output

T-Clock is the **clock generator** module of the suite. It allows you to output 4 different clock signals. Clock division / multiplication can go up to /96 and x96 based on the **Tracker** playing beats.
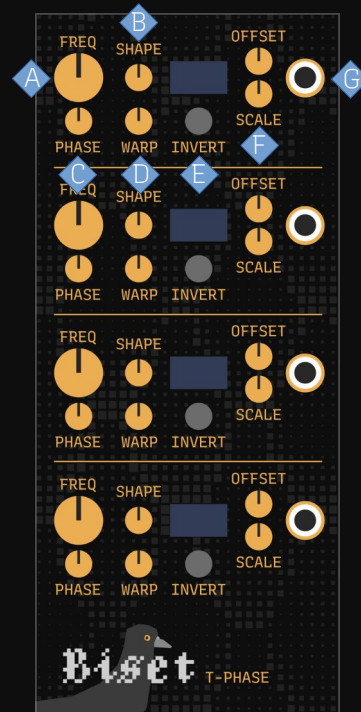
You can also modify clock signal **phase offset** and **pulse width**. Swing can be added, based on **Tracker** beats.

T-Clock provides 2 sync algorithm, available from the context menu

Fixed *Track oriented, restarts clock division / multiplication at the end of a pattern*
Looped *(Not handled yet !) Live oriented, keeps clock division / multiplication at the end of a pattern*

|	
A	Phase frequency division / multiplication
B	Phase shape
C	Phase phase offset
D	Phase wave warping
E	Phase wave inverting
F	Phase range (offset + scale)
G	Phase output

T-Phase is a **synced LFO** module. It allows you to output 4 different signals. Frequency division / multiplication can go up to /32 and x32 based on the **Tracker** playing beats. **T-Phase** provides the same sync algorithms as **T-Clock**.

Available wave shapes are **saw, triangle, sine** and **square**. Wave shapes can be **phase offset, warped** and **inverted**. Their **range** can be set with the offset and scale knobs.
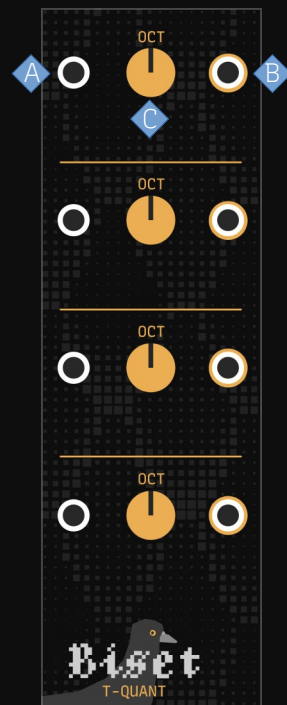
A   Quant input

B   Quant output

C   Octave offset

T-Quant allows you to **quantize** other modules (not from the suite) **pitch signals** to fit your track tuning / temperament and reference frequency.

T-Quant provides 4 quantizing algorithms, each line can have its own algorithm

Index down *looks for the corresponding note pitch, rounded down*
Index up *looks for the corresponding note pitch, rounded up*
Index round *looks for the corresponding note pitch, rounded*
Nearest *looks for the nearest note pitch*

A   Visualizer display

B   Outputs

T-State outputs **playing state** and display a **visual representation** of the different voices playing. Voices are reprensented as dots. Their **color**, **size**, **x axis** and **y axis** depends respectively on the synth **color**, the voice **velocity**, **panning** and **pitch**.

Gate is on whenever **Tracker** is playing, **play** triggers on start, **stop** triggers on stop while **both** triggers on both events.

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