

TS1

Reference Guide



<https://bvr-instruments.net/>

This document concerns the manual for the TS1 multitrack Trigger/Sequencer module from bvr -instruments.

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Software version V3.9(x)

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Thanks.

Thank you for choosing the TS1 Sequencer from Bvr-Instruments and we wish you a multitude of creative moments in your musical achievements.

About the TS1.

Since its first conception as a "TR" event trigger, the TS1 has continued to evolve in order to offer more functionalities such as the sequencer part for the purpose of becoming a complete and multitrack product with Midi and CV/ Gates, for musical creation.

About this guide.

This guide is the reference material for the TS1. Find this manual in **French** and **English** on our website: <https://bvr-instruments.net/support> .

What is TS1

The **TS1** is an event and musical note **sequencer**.

Note: A sequencer does not produce music but it drives your instruments like musicians in a band.

One of its particularities is to play previously recorded sequences.

To whom it is addressed

The **TS1** is **designed** specifically for **users** who wish to control musical **instruments equipped with the following connections**:

- **MIDI** sockets to digitally control Synthesizers, Drum machines.
- **Trigger** jacks for analog control of drum type modules.
- **CV/Gate** jacks for analog control of Oscillators and VCAs.

Do we need computer

You don't need a computer to use the TS1. It's a standalone sequencer that allows you to record and replay musical sequences without using a computer.

However, it is possible to record the sequences and compositions of the TS1 on a computer equipped with a MIDI interface and recording software (DAW) by connecting the MIDI Out output of the TS1 to the MIDI interface of your computer.

What is MIDI

MIDI (Musical Instrument Digital Interface) is a communication protocol and file format dedicated to music. It is used for communication between sequencers and electronic instruments, allowing the control and exchange of musical data.

What is MIDI socket

Din- type connector, although TRS type A or B mini-jacks are also used. Unlike these formats, the MIDI Din connector allows you to connect MIDI cables from an input to an output (and vice versa) without worrying about the type of cable to use.

What is the type of MIDI data

MIDI data is digital and composed of binary words, which makes it possible to represent and transmit musical information with great reliability.

The particularities of TS1.

The TS1 has an **innovation** with its **graphic screen** which makes it possible to present the notes in the form of a **matrix of parameters**. This makes each note parameter more **accessible** and editable **directly**.

The TS1 is a **multitrack sequencer** which has a total capacity of **12 tracks**.

These can play up to 4 measures or **64 steps**, they are divided as follows:

- **8 sequences** dedicated to triggers: tr1 to tr4 and dr1 to dr4.
- **4 sequences** dedicated to notes: seq1, seq2, seq3, seq4/chord.
- Sequence 4 can be configured to play 3-note **chords**.

The TS1's GUI lets you perform real-time editing of note parameters and triggers. You can adjust and **modify** these parameters **during playback**, giving you **great flexibility and allowing you to create live** sound variations.

The TS1 offers several creative editing features for manipulating Note Sequences and Trigger Sequences. Here are some of these features:

- **Roll sequence:** Allows you to scroll the notes or triggers of a sequence to the right or left, with the effect of reinserting the start or end notes of the sequence at its other end. This makes it possible to create interesting rhythmic variations and to explore new sequence.
- **Randomize:** Allows you to apply a parameter generation algorithm to the degrees or octaves of the notes, or to a specific area of the sequence. This feature is available for step events (steps). It offers the possibility of generating random variations in your sequences.
- **Reverse:** Reverses the direction of the notes in the sequence being edited, starting from a source position to a destination position. This allows you to reverse the order of notes and create interesting reversal effects in your sequences.
- **Groove on Bar:** Applies one of 16 velocity motif to note or chord sequences. This lets you change the velocity levels of notes in a specific bar, adding dynamism and expression to your music.
- **Scales Settings:** The TS1 has a scale mode in the settings (Scale Settings) which allows you to pick up the notes of your sequence in a specific scale. This allows you to choose only notes consistent with the desired tonality.
- **Swing:** You can swing your sequence to give it a syncopated rhythmic feel. By adjusting the swing, you can alter the timing of notes to create a unique, driving groove.

These creative editing features provide a wide range of possibilities for experimenting, customizing and refining your musical sequences on the TS1.

The TS1 has a "**Song**" mode that allows you to **replay sequence scenes in an organized fashion**. You can structure and combine your sequences to create complete and coherent musical compositions.

Thanks to these real-time editing features, numerous creative possibilities and the "Song" mode, the TS1 offers a versatile and powerful experience for music composition and performance.

Version 3.9x

With feedback from users, the TS1 **interface has been reworked** from **version 3.8** to offer a simplified user experience with the "**no thinking**" concept.

Each TS1 button has a function associated with its name:

- The "Menu" button is used to enter and exit the menu associated with the chosen mode.
- The " Edit " button is used to enter and exit edit mode.
- The "Select" button allows navigation, selection and validation.
- The "Mode" button is used to select one of the 9 TS1 modes.
- The "Play/Stop" button allows you to start or stop the sequencer.
- The "Shift" button provides access to shortcuts or secondary functions.

The RemoteApp1.6 control interface on a touchpad offers practical features for remote use with MIDI connectivity.

You can control the following actions:

- Starting and stopping the sequencer:
 - You can start and stop the sequencer directly from the touch pad, providing convenient control during your stage performance.
- Possibility to mute the 12 tracks separately:
 - You have the ability to individually mute all 12 sequencer tracks via the tablet interface. This allows you to manage the different tracks and create sound variations in real time.
- Transpose or solo the 4 sequences:
 - You can adjust the key of the 4 sequences of the TS1 or highlight a specific sequence to create interesting musical variations. This provides additional flexibility during your stage performances.

These remote-control features make it easy to use the TS1 sequencer during your live performance, allowing you to explore and manipulate the sequencer in convenient and creative ways.

The TS1 is designed for **music creation studios** and live **stage performances**.

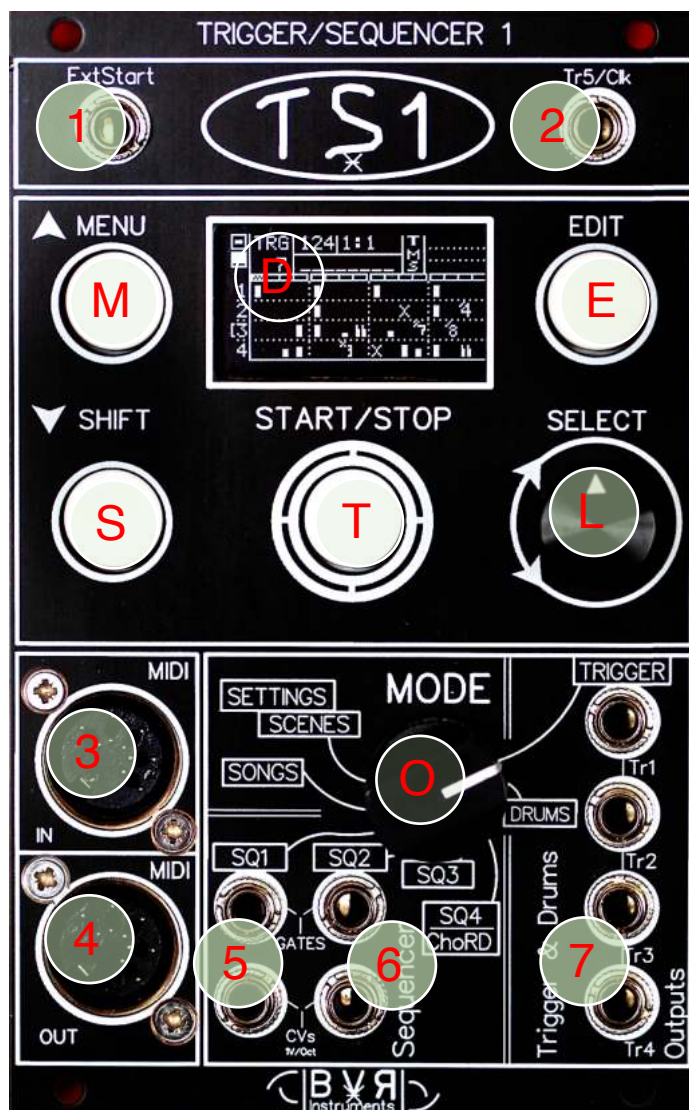
Installing the TS1.

The **TS1** is a Eurorack module designed to be mounted in a box compatible with this format and provided with a power supply.

- It is supplied with its power cable to be connected to the +12V/-12V connector of your case. **Note** the **TS1** does not need any 5V power supply.
- Its size of only 16HP, 80mm wide allows it to be easily inserted into any type of Eurorack case.

Note: The TS1 is equipped with a **low consumption processor**, this feature allows the TS1 to be connected with the advantage of not **increasing significantly** the **consumption electrical** from it.

Front of the TS1.



- [M] Menu button
- [E] EDIT button
- [S] Shift button
- [T] Start/Stop button
- [L] Select/Push button
- [O] Mode selector
- [1] Cv In (ExtStart) input
- [2] CV out (Tr5/clock) output
- [3] Midi IN
- [4] Midi Out
- [5] Cv/Gate Seq1 outputs
- [6] Cv/Gate Seq2 outputs
- [7] Trigger 1-2-3-4 outputs
- [D] OLED graphic screen

Presentation of the front panel.

The upper part of the TS1 interface includes the following connectors:

Ext/Start input allows with external trigger signal 0-5V the following possibilities:

- Start/stop TS1.
- Reset the TS1.
- Advance the sequencer step by step.
- Mute track Tr1.

Tr5/ Clk output can be configured among the following modes:

- Clock output with multiple divisions: 1,2,4,8,16.
- Output for a 5th trigger output connected to one of the 4 Drums mode tracks: DR1, DR2, DR3, DR4.

The central part is dedicated to the interface with the user with:

A **graphic screen 128x64 pixel OLED** display.

A command zone comprising the following push buttons:

- **MENU**: Entering and exiting a menu session.
- **EDIT** : Entering and leaving an editing session.
- **SHIFT**: Allows access to advanced features
- **START**: Allows you to start and stop the sequencer.

SELECT knob is used to navigate through the menus, enter modification mode, change and validate data.

8 switch position **MODE** to select the current mode.

The lower part of the interface includes the following interfaces:

A MIDI interface equipped with 5-pin DIN IN and OUT sockets.

- **MIDI In** allows the reception of external notes and controls.
- **MIDI Out** allows you to send notes to MIDI equipment.

The Cv/Gate 1 and 2 interface has the function of controlling instruments that are equipped with Cv/Gate sockets in 1V/octave format.

- **Cv/Gate 1** is used to play the notes of sequence 1.
- You also have the option of reconfiguring it as a Bass DCO, with the **CVs Config parameter: DCO+CV2**.
- **Cv/Gate 2** is dedicated to play the notes of sequence 2.

A trigger interface composed of 4 outputs to drive modules with 0-10V trigger signals.

- **Tr1, Tr2, Tr3 and Tr4**, are connected respectively to each of the TRIGGER mode tracks.

These different parts of the TS1 interface provide versatile connectivity and control options for integrating the sequencer with other equipment and musical instruments.

The multitrack Possibilities of the TS1.

The TS1 offers multi-track playability and supports playback for 12 sequences simultaneously. Here are the different types of sequences available:

The different types of TS1 sequences.

Each sequence has 64 steps or steps.

The TS1 displays always a 16-step bar.

Rhythmic sequences:

- 4 tracks dedicated to Trigger mode.
- 4 tracks dedicated to Drum mode.

Note sequences:

- 4 sequences available: Seq1, Seq2, Seq3 and Seq4/ Chord.
- The Seq4/ Chord sequence allows you to play chords, with the option Seq4asChord enabled.

The parameter matrix representation for note and chord sequences.

The TS1's sequence parameters are designed to provide a clear, separate visual representation of every aspect of a note or chord. This makes it easier to understand and manipulate musical characteristics when composing.

When you look at the parameters of a sequence, you can see graphically the following different information on 4 lines:

For note sequences, the following lines are available:

- Velocity,
- Degree,
- Length
- Octave

For chord sequences, the following lines are available:

- Chord type.
- Degree,
- Length
- Octave

Finally: this distinct graphical representation of sequence parameters allows TS1 users to easily and in detail view the various elements that make up notes or chords, making it easier to manipulate and edit sequences to create musical compositions precise and expressive.

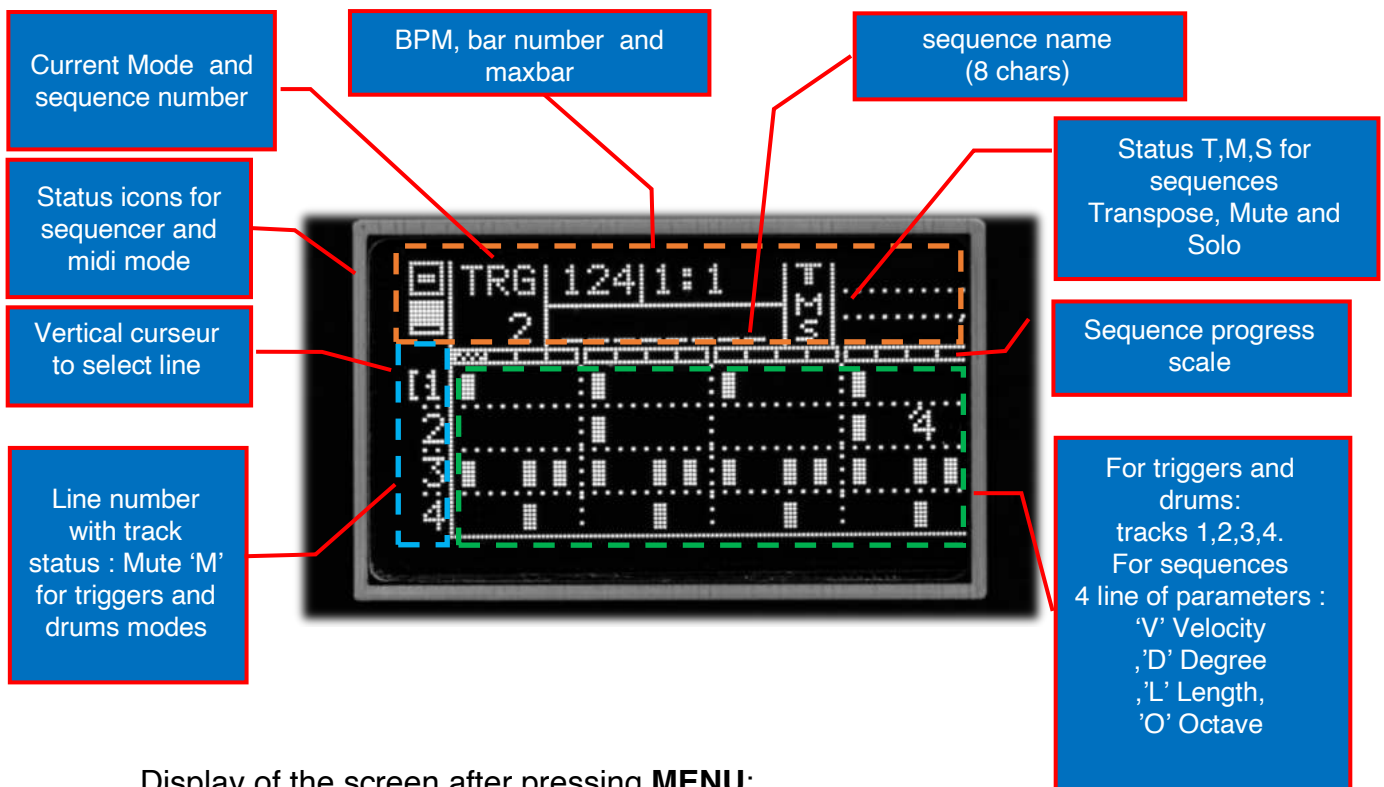
The TS1 screen

Presentation of the TS1 graphic screen.

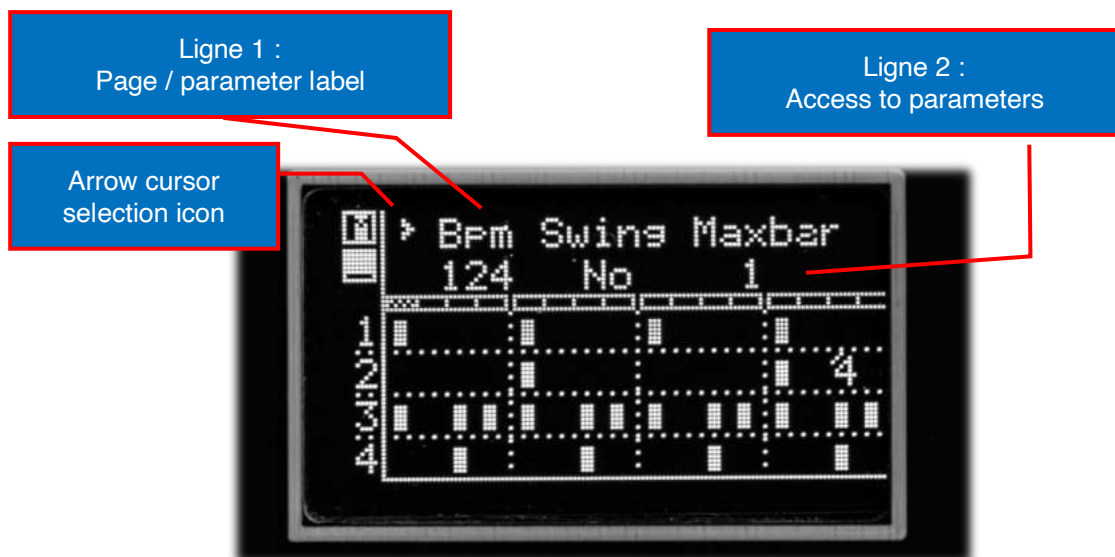
The TS1 screen is organized into several areas for the following modes: Trigger, Drums, Seq1,2,3,4/ Chord.

- **Zone 1:** Presents two lines of information and status icons.
- **Zone 2:** The information associated with each of the 4 lines.
- **Zone 3:** Sequence information: Notes, Chords, Steps.

Screen display after presentation screen:



Display of the screen after pressing **MENU**:



Detailed description of the screen areas of the TS1

Zone 1 displays the following:

Icons:

- Play/Stop icon: Used to visualize the state of the sequencer started or stopped.
- MIDI Record Mode Icon: Indicates the state of MIDI Record Mode.

Information:

- Line 1: Displays the active mode, the BPM (beats per minute), the current bar and the maximal bar number used for the sequence.
- Line 2: Displays the sequence number and the name of the current sequence.

Sequence status:

On the right part of zone 1, the status for sequences 1, 2, 3, and 4/ Chord are displayed on the following 3 lines:

- Line 1: Displays transpositions with the 'T' icon.
- Line 2: Displays Mutes with 'M' icon.
- Line 3: Displays the solo with the 'S' icon.

Each column corresponds to the sequence number from 1 to 4.

Zone 2 displays the following:

For Trigger and Drums modes:

- step track numbers: 1, 2, 3, 4.

For Sequence Modes 1, 2, 3, 4/ Chord:

- For sequences: V (velocity), D (degree), L (length), O (octave).
- For chords: T (type of chord), D (degree), L (length), O (octave).

Zone 3 displays the following:

In Trigger and Drums modes:

- step trigger parameter icons.

Chord modes:

- Display of parameter icons for sequence lines V, D, L, O (velocity, degree, length, octave) and for chord lines T, D, L, O (chord type, degree, length, octave).

These different areas of the TS1 screen provide visual information and icons to help you navigate and understand sequence parameters and status while using the sequencer.

First steps with the TS1

Startup of TS1 after power-up.

At startup, the welcome screen appears for a moment with the version of the software installed. Press **SHIFT** if you want to shorten this step.



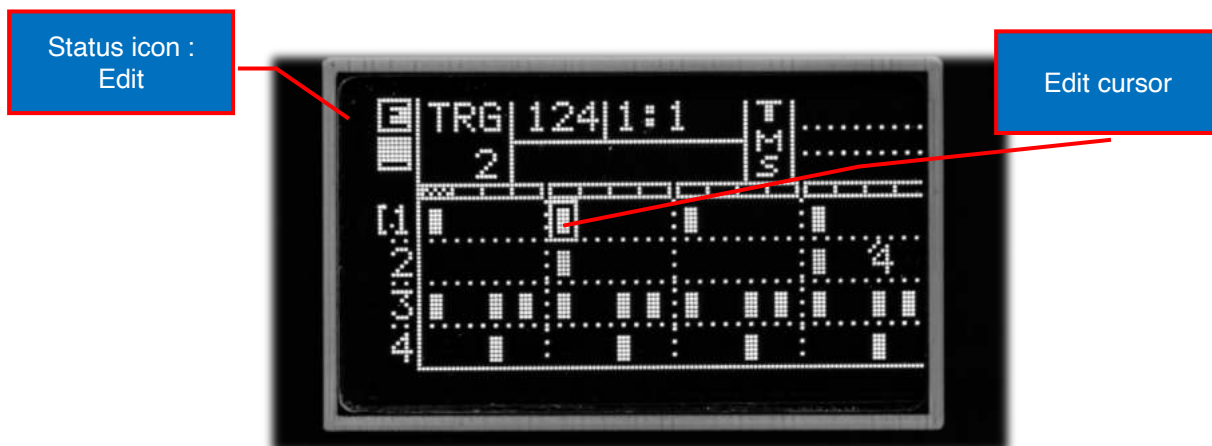
Enter a menu.

The **MENU** button lets you enter and exit a menu session.



Entry into edition.

The **EDIT** button lets you enter and exit an edit session.



Starting and stopping the sequencer.

The **START / STOP button** is used to start and stop the sequencer.

Mode selection.

To choose a mode, turn **MODE** among the following positions:

Trigger, Drums, Sequence 1,2,3,4/Chord, Song, Scene/Settings.

Note: The scene and setting modes share the same position:

The choice is made by moving the line to your choice with **SELECT**, then press **SELECT** to enter mode.

Page selection in a menu. (Except Settings menu)

Press **MENU** then turn **SELECT** to choose the page.

Note: the selection icon ▶ appears in line 1 in front of the page title.

Access to parameters in a menu page.

Pressing **SELECT** gives access to the parameters.

Turn **SELECT** to choose one.

Note: the selection icon ▶ appears in line 2 in front of the parameter to be modified.

Modify a parameter.

Pressing **SELECT** allows you to enter parameter modification.

The selection icon flashes. Turn **SELECT** to modify the value.

Press **SELECT** to finish editing; the selection icon becomes fixed.

Return to menu page selection.

When the selection icon reaches the end of the parameter line, it goes automatically back to line 1. Pressing **SELECT** takes it back to the left for a new page selection.

Quick access commands

Fast data backup in the selected mode.

SHIFT pressed + **EDIT**.

Allows you to save the current data in one of the following modes:

Trigger Drums, Sequence 1-4/ Chord, Song, Scene, Setting.

Eg: quick save action in Seq1 mode, saves the data of the sequence number used in this current mode.

Direct access to Mute, Solo, Transpose.

A cursor is displayed in trigger/drums and seq 1,2,3,4/Chord modes.

Turning **SELECT** moves the cursor to the following positions from left to right:

- 4 vertical positions next to the 4 lines of parameters.
- 1 central position (cursor changes to an arrow) to access the sequence number.
- 4 horizontal positions S1, S2, S3, S4 relative to sequences 1,2,3,4/ Chord.

Controls available in Sequence Modes 1,2,3,4/ Chord.

Cursor in 'vertical' position	Press SELECT
'V' Velocity T' type (for chords)	Mute Sequence On/Off.
' D' Degree	Solo Sequence On/Off.
' D' Duration	Transpose Sequence On/Off.

Available controls in Trigger and Drums Modes.

Cursor in 'vertical' position	Press SELECT	Press SHIFT + press SELECT	Press SHIFT + turn SELECT left/right
1	Mute track 1	Mute All tracks	Solo track 1
2	Mute track 2		Solo track 2
3	Mute track 3		Solo track 3
4	Mute track 4		Solo track 4

Available controls in trigger, drums, sequences 1,2,3,4/ Chord modes.

Cursor in 'horizontal' position	Press SELECT	Press SHIFT + Press SELECT	Press SHIFT + turn SELECT left/right
S1	Mute Seq1	Solo Seq1	Transpose Seq1
S2	Mute Seq2	Solo Seq2	Transpose Seq2
S3	Mute Seq3	Solo Seq3	Transpose Seq3
S4	Mute Seq4/ Chord	Solo Seq4/ Chord	Transpose Seq4/ Chord

Note: The display of the sequence name (8 characters) momentarily displays the possible action depending on the position of the cursor.

Sequences

A sequence is made up of a matrix of parameters made up of icons.

A sequence is made up of 16 notes each representing a sixteenth note.

- THE 99 Trigger/Drums sequence consist of step tracks.
- The 99 sequence of Sequences 1 to 4 are composed of notes.
- The 49 chord sequence are reserved for Seq4/ Chord mode with the seq4 as chord = On option.

Editing a sequence

Switch to editing by pressing **EDIT**. The edit cursor **|** appears. Turn **SELECT** to the icon to modify then press **SELECT** to modify it.

On line 1 is displayed all the icons available for the selected mode.

In line 2 is displayed the description of the icon.

Turn **SELECT** to choose the icon and to lean on on **SELECT** to validate.

Note1: **MENU** and **SHIFT** allow to move the cursor vertically in addition to moving the line in line with the rotation of **SELECT**.

Note2: For in sequence modes, only existing icons can be edited.

If no Icon therefore no note is present, it is then necessary to create one a, in itself positioning on the 'V' line then press **SELECT** and choose ' Init Note'.

Note3: same thing for Seq4/ Chord with cursor on the ' T' line and InitChord.

Step through the bars of a sequence.

In editing, turning **SELECT** moves the cursor from score to score, which allows access to all the measures. If the "MaxBar" parameter is >1.

Quick editing with 'Pencil Mode'

This mode allows using the Shift, Menu and Select keys to: Create, Delete, Copy or Move icons in the matrix.

Go into edit and move the cursor to the desired icon or location.

Stock	Result
SHIFT (hold down) + SELECT -> right	Creation of a note or step (if empty icon). Copy of a note or step (if icon exists).
SHIFT (hold down) + SELECT <- left	Deleting a note, chord or step.
MENU (keep pressed) + SELECT left/right	Moving a note, chord or step.

On-the-fly modification of a Step, Note or Chord Icon.

By pressing **SELECT** + rotate left or right, you can select the next or previous icon from the list of available ones.

TS1 Modes

Trigger mode:

It allows you to view, play and modify any of the 99 step sequences available for triggers and drums.

These sequences are composed of 4 tracks played on the following outputs:

- **Tr1, Tr2, Tr3, Tr4.**
- **NOON Out.**

Drum mode:

Functioning identical to the Trigger: with the following outputs:

- **NOON Out.**
- **Tr5/ Clk** (see adjustment parameters).

Note: Each trigger or drum track is associated with a **MIDI note**. This will correspond to the MIDI note of the instrument being played.

Sequence mode 1 and 2:

It allows you to view, play and modify one of the 99 note sequences.

Each sequences is made up of a 4-line matrix made up of the following parameters:

' **V** ' for Velocity.

' **D** ' for Degree.

' **L** ' for Length or Duration.

' **O** ' for Octave.

They are played respectively on the following outputs:

- **Cv /Gate1, Cv /Gate2.**
- **NOON Out.**

Sequence Modes 3 and 4:

Sequence modes 3 and 4 are identical to 1 and 2 except that the notes will only play on the output:

- **NOON Out.**

Sequence 4/Chord mode:

With parameter Seq4asChord = On (see in settings)

The Ts1 can play one of 49 chord sequences on the output:

- **NOON Out.**

Note: The TS1 has 12 separate **MIDI channels** for 8 tracks and 4 sequences.

Browse TS1 sequences.

The method described here will be the same for browsing Scenes and Songs. Beforehand the TS1 will be out of an edit or menu session.

1. With **SELECT**, move the cursor in front of the sequence number.
The cursor takes the form of a selection arrow.
2. Press **SELECT** to enter edit mode.
The selection arrow starts flashing.
3. Turn **SELECT** until you reach the desired sequence number.
Press **SELECT** to exit edit mode.
The selection arrow stops flashing.

Chord modes.

- In **Stop mode**: the new sequence is updated immediately when the number changes.
- In **Play mode**: the center display in the second line shows " Next #xx" when you select a new sequence number.
The sequence will update as soon as you exit edit mode by pressing **SELECT**.

For Scene and Song modes,

- In **Stop mode**: the new sequence is updated immediately when the number changes.
- In **Play mode**: Scene or Song change is not active.

TS1 data backup

Backing up TS1 data can be done in two ways: through the menu and through shortcuts.

Backup by menu:

To access the backup page, enter the menu session by pressing the **MENU button** and turn **SELECT** to the left. In this page, you have a parameter that can take 3 options:

- Sequences: allows you to save the sequences of the current mode.
- Settings: allows you to save the Settings mode.
- All Data: saves all TS1 data at once.

To select an option, press **SELECT**, choose **YES** and press **SELECT** again to confirm. The message " **Ok** " will appear above the **YES parameter**, then this parameter will return to '**NO**'.

Backup by shortcuts:

Save current mode:

Press the **SHIFT button** (hold down) then **EDIT** to save.

The type of data saved will momentarily be displayed in the name display area.

An "s" icon briefly appears below the "Midi Mode" icon to confirm saving.

TS1 global backup:

Press **SHIFT + MENU** (hold down both buttons) then **EDIT** to save all TS1 data.

Note 1: The message "Save ALL" will be displayed instead of the sequence names.

Note 2: For saves made in settings mode, the display will indicate " SaveSettings " or " SaveAll " in the first line of the screen.

Note 3: Backups are disabled when the TS1 is playing Song mode arrangements.

Creation in full screen mode.

To create a note or step:

Edit the **sequence** by pressing **EDIT**.

- **To create a Step: Trigger and Drum modes.**

Place the cursor on the step or note parameter to modify.

By turning **SELECT** to the left or right and using the keys **MENU** and **SHIFT** to change lines.

Press **SELECT** start **editing**, choose an Icon

in the list of proposed icons (2nd line, right part) with **SELECT** left/right then finalize the choice by pressing **SELECT**.

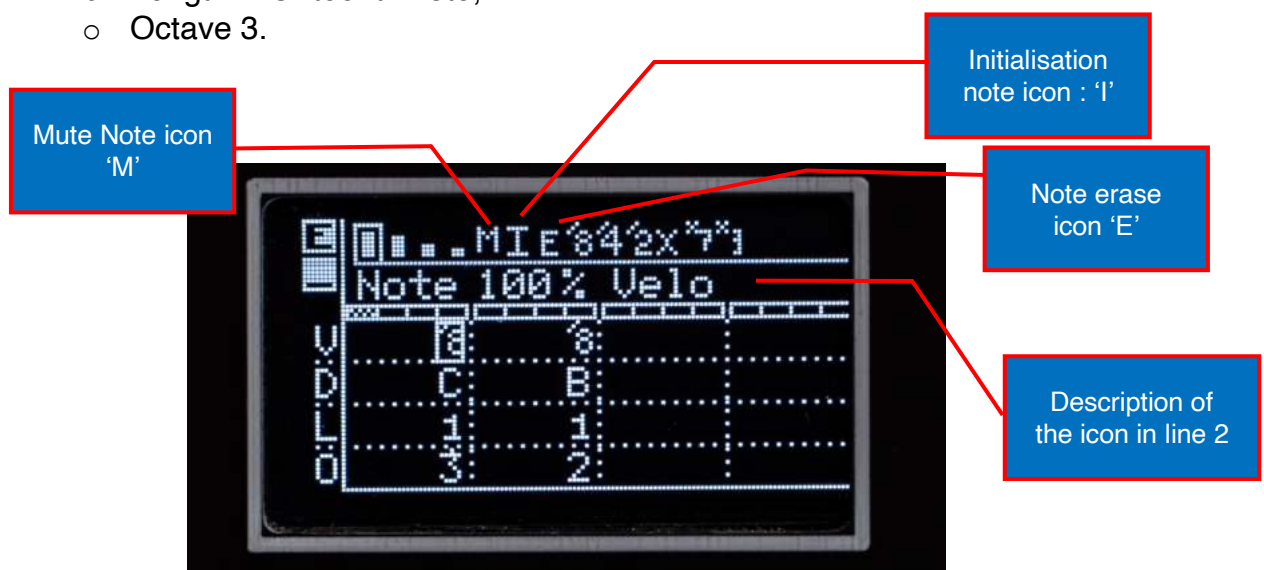
To create a note: Seq1, Seq2, Seq3 and Seq4 modes.

Edit the 1st line : **Note velocity** .

Choose icon initialization 'I': (Initializes new Note).

The **'I' icon** allows you to create a note with the following values:

- Velocity: 100%,
- Degree: Root note corresponding to the user scale,
- Length: 1 sixteenth note,
- Octave 3.



To create a chord: seq4 mode with Seq4asChord = On.

Edit the 1st line : **Agreement type** .

initialization **icon I**: (Initialize new Agreement)

The **'I' icon** allows you to create a chord with the following values:

- Mode: Major,
- Degree: Root note corresponding to the user scale,
- Length: 1 sixteenth note,
- Octave 4.

Note: The editing procedure for notes and chords being Same as for Steps, it is not repeated on this page.

Creation with an external MIDI keyboard.

With an external keyboard connected the MIDI In socket to enter notes.

In edit mode and with the midi menu on ' 1 ' (one note).

- **One note** allows to enter the note only **on the position** of the **cursor** whatever the state of the started or stopped sequencer.

With the option in the settings: **IncStepAuto** on “**On**”: all you have to do is enter notes for the cursor to move to the next note position.

In edit mode and with the midi menu ' **R**' (Record notes).

- **Record note** allows you to enter notes when the sequencer is launched, each note will then be recorded at the position played by the sequencer.

Note: The choice of lunch menu options is made in the general menu: page 3.

The Trigger or Drums Sequences of the TS1

Step Sequences

Trigger and drum type sequences.

The Trigger and Drums sequences contain icons that define the trigger possibilities for each of the Steps.

They are composed of a matrix of 4 rows or tracks on 16 columns.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	■				■				■				■			
2					■						X		■		/4	
3				x3			■	■			■					x7
4			■		X		X			X	II	■	X		■	X

Each line corresponds to one of the 4 tracks of the sequence.

List of available icons:

- Velocity step 100%.
- 80% velocity step.
- 60% velocity step.
- 50% velocity step.
- 30% velocity step.

Velocity step 0% (no trigger or MIDI note played).

II: 'Ratchet ' plays two triggers in one step.

/8: plays the step 1 time out of 8.

/4: plays the step 1 time out of 4.

/2: plays the step 1 time out of 2.

X 'Chance' plays the step randomly (+/- 50% probability).

II ' Ratchet Chance' plays two triggers randomly.

x7 plays the step 7 out of 8 times.

x3 plays the step 3 out of 4 times.

Editing a Trigger or Drums sequence.

Selection of the Track or of a sequence line.

- In **non-Edit mode**, access is via the **MENU** and **SHIFT buttons** which allow you to change the **line up** or **down. selected**. This is identified by the vertical line on the left.

Switch to edit mode

Press to enter **Edit mode**. (" E " icon)

A selection **square** is displayed and surrounds the **Step to be modified**.

- With **EDIT** enter **edit mode**. (" E " icon)
With **SELECT** move the cursor to the parameter to be modified.

Note: **Menu** and **Shift** allow you to move from line to line.

- **Show the choice of selection** with **SELECT (Press)**.
- Choose the new "Icon" with **SELECT (left/right)**.
- Then press **SELECT to confirm**.
- Press **EDIT** to exit **Edit mode**.

List of available steps:

Velocity:

- Velocity 100%,
- Velocity 60%,
- Velocity 40%,
- Velocity 30%,
- Velocity 0%

Divide:

- Div /8
- Div /4
- Div /2

Multiply:

- x7 _
- x3 _

Velocity Chance:

- X

Delete an existing Step:

- Choose an empty Step with 0% velocity.

Note: You can use the pencil mode to quickly write, erase or modify a trigger sequence or drums (see page 18).


Note Sequences

Note Sequence type.

Sequence type contain sets of 4 parameters for each note.





They are composed of a matrix of 4 rows of 16 columns:

Each column represents a note among the 16 of the measure.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
V																
D	G				D				D			AT	G			
I	1				1				1				1			
O	3				4				3			2	4			

First line: "V" for Velocity + extra icons:

List of available icons:

-  Velocity Note 100%.
-  Velocity Note 80%.
-  Velocity Note 50%.
-  Velocity Note 30%.

M: Mute note

I: Creating a Note: Velocity: 100%, Degree: C, Len: 1, Octave: 3.

E: Erases the note at the cursor location.

/8: plays the note 1 time out of 8.

/4: plays the note 1 time out of 4.


/2: plays the note 1 time out of 2.

X: 'Chance' plays the note randomly (+/- 50% probability).



x7: plays the note 7 out of 8 times.

x3: plays the note 3 out of 4 times.

Second line: "D" for Degree of note: (in English notation)



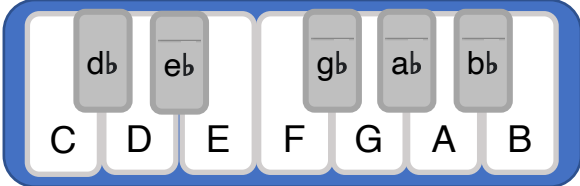


- 7 full notes: C, D, E, F, G, A, B. (in capitals)
- 5 altered notes or flats: d, e, g, a, b. (lowercase)
-  Random note chosen from the selected scale.

Third line: "L" Duration of notes:

- 5 types of duration: 1, 2, 4, 6 or 8 sixteenth notes.
- Legato note with icon: 
- Note with short trigger with icon: 

Fourth line: "O" Octave of the note:

- 7 types: 1,2,3,4,5,6,7 corresponding to the octave of the note.

1	V elocity	Note velocity: 4 volumes  (Editable in Settings mode: NOTES VELOCITIES.)														
2	Rating grade	<p>The user note range is displayed according to the "user" choice in the settings mode " Scale settings"</p> <p>A new icon '  ' appears in last position to randomly play a selected note in the user scale.</p> <p>Regarding the display of notes: Solid notes are capitalized: C, D, E, F, G, A, B. Altered notes (flat) are lowercase: d, e, g, a, b. Note: Flat = -1/2 tone relative to an unaltered note.</p> <p>A 2nd bank of specific trigger icons is accessible with SHIFT / MENU. There are trigger icons of the type: <u>Divisors:</u> ' /2', ' /4', ' /8 ': trigger every 2,4,8 bars. <u>Chance:</u> approx50%: ' X ', ' x ', for 100% and 70% velocity.</p> <div data-bbox="627 896 1209 1081" style="text-align: center;">  </div> <p>Notes and their arrangement on a piano keyboard. Note the TS1 uses the so-called English notation. Correspondence of notes with Latin notation.</p> <table border="1" data-bbox="443 1187 1441 1267"> <tr> <td>VS</td> <td>D</td> <td>E</td> <td>F</td> <td>G</td> <td>AT</td> <td>B</td> </tr> <tr> <td>Do</td> <td>D</td> <td>Mid</td> <td>Fa</td> <td>Floor</td> <td>There</td> <td>Whether</td> </tr> </table>	VS	D	E	F	G	AT	B	Do	D	Mid	Fa	Floor	There	Whether
VS	D	E	F	G	AT	B										
Do	D	Mid	Fa	Floor	There	Whether										
3	Length _	Number of sixteenth notes: 1, 2, 4, 6, 8, b (16/a measure).  Legato: Bass 303 type legato note control.  Note with a short impulse, pulse type.														
4	Octave _	From 1 to 7 octaves														

Note 1: Specific note durations are only available in Chord mode with the following icons:

- ' b ' for 16 **sixteenth notes** or **one bar**.
- ' 6 ' for **6 sixteenth notes**.

Note2: The note matrix allows you to better identify the note parameters in order to understand the various variations that occur in the bar.

Editing a sequence of notes.

Line selection "V", "D", "L", "O".

Choice of line with:

- **SELECT** knob: The cursor moves from parameter to parameter then to the next or previous line.
- **MENU** and **SHIFT** buttons which allow to change **up** or **down** the **line selected**. This is identified by the vertical line (cursor) on the left.

Switching to edit mode:

Press **EDIT** ("E" icon)

Note: A **selection** square **appears** around the parameter to be modified.

Cycle through parameters by turning **SELECT**:

- Bring up the **selection choices** by pressing **SELECT**.
- Among the choices offered, choose the new "Icon" with **SELECT** (left/right) then press **SELECT** to confirm the choice.

Insert a Note:

Choose the "V" line to edit the velocity parameters.

To insert a new note in the sequencer you must either:

- Use the 'I' icon to Initialize a note: D3, Len 1.
- With an external keyboard connected via MIDI. (See MIDI menu).

Delete a Note:

Choose the "V" line to edit the velocity parameters.

To delete a note in the sequencer, use:

- 'E' icon for Erase.
- An external keyboard connected via MIDI and press **SHIFT** while pressing the note. (See MIDI menu).

Mute a note:

Choose the "V" line to edit the velocity parameters.

- Use the 'M' icon to mute a note without erasing it.
- Use one of the 4 velocity to hear it again.

Note: You can use Pencil mode to quickly write, erase or modify a sequence of notes.

Chord Sequences

Chord sequence.

Chord sequence are made up of 4 parameters for each chord.

Note: The chords are accessible in SEQ4 with the "Seq4AsChord" option.

They are composed of a matrix of 4 rows of 16 columns:

Each represents one of the 16 chords in the measure.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
T	M				m				m		M		M			
D	G				D				D		VS		G			
I	4				4				2		2		4			
O	3				4				3		3		4			

First line: "T" for Chord type + extra icons:

List of available icons:

M: Major chord.

m: Minor chord.

/M: Inverted major chord (2nd inversion).

/m: Reverse minor chord.

I: Creation of a chord: Major, degree: C, Len: 1, Octave: 3.

E: Erases the chord at the cursor location.

A: Augmented chord.

D: Diminished chord.

/A: Inverted augmented chord.

/D: Reversed diminished chord.

Second line: "D" for Degree of note: (in international notation)

- 7 full notes: C, D, E, F, G, A, B. (in capitals)
- 5 altered notes or flats: d, e, g, a, b. (lowercase)
- ⬆️ Random note chosen from the range selected in settings.

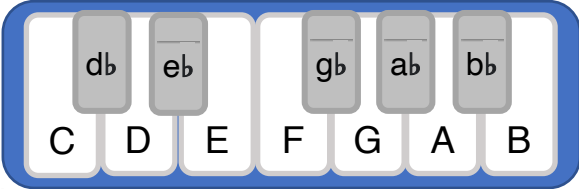
Third line: "L" Duration of notes:

- 5 types of duration: 1, 2, 4, 6 or 8 sixteenth notes.

Fourth line: "O" Octave of the note:

- 7 types of octave: 1,2,3,4,5,6,7 corresponding to the octave of the note.

Note: In edit mode, when the cursor hovers over a chord, the respective 3 notes of the chord are displayed instead of the sequence name.


1	Type of agreement	Basics	Alternatives with Shift .														
		<ul style="list-style-type: none"> • Middle finger icon: M • Minor icon: m • Major reverse: M — • Reverse minor: m — 	<ul style="list-style-type: none"> • Diminished: D • Augmented: A • Inverted Diminished \overline{D} — • Augmented inverted A — 														
2	Degree _ All right	<p>The user note range is displayed according to the "user" choice in the settings mode " Scale settings"</p> <p>A new icon '↕' appears in last position to randomly play a selected note in the user scale.</p> <p>Regarding the display of notes: Solid notes are capitalized: C, D, E, F, G, A, B. Altered notes (flat) are lowercase: d, e, g, a, b. Note: Flat = -1/2 tone relative to an unaltered note.</p>  <p>Notes and their arrangement on a piano keyboard. Note the TS1 uses the so-called English notation. Correspondence of notes with Latin notation.</p> <table border="1"> <tr> <td>VS</td> <td>D</td> <td>E</td> <td>F</td> <td>G</td> <td>AT</td> <td>B</td> </tr> <tr> <td>Do</td> <td>D</td> <td>Mid</td> <td>Fa</td> <td>Floor</td> <td>There</td> <td>Whether</td> </tr> </table>		VS	D	E	F	G	AT	B	Do	D	Mid	Fa	Floor	There	Whether
VS	D	E	F	G	AT	B											
Do	D	Mid	Fa	Floor	There	Whether											
3	Length _	Number of sixteenth notes: 1, 2, 4, 6, 8, b (16/a measure). ▲ Legato: Bass 303 type legato note control. ▲ Note with a short impulse, pulse type.															
4	Octave _	From 1 to 7 octaves															

Note1: Modifying a chord sequence is based on the same principle as modifying note sequences.

Note2: You can use the Pencil mode to quickly write, erase or modify a sequence of chords.

TS1 Modes

MODE selector Allows you to choose one of the following 9 modes:

FASHION		Number
trigger		1
Drums		2
Sequence4		3
Sequence3		4
Sequence2		5
Sequence1		6
Song/Scene		7/8
Settings		9

Trigger and Drums mode:

These two modes allow you to select, modify and play one of the 99 sequences. The rhythmic sequences are common to Triggers and Drums modes.

Trigger mode:

In **trigger mode**: the 4 tracks are played on the outputs following:

- **Trigger Tr1** and **MIDI out** with MIDI channel **Trigger ch.**
- **Trigger Tr2** and **MIDI out** with MIDI channel **Trigger ch.**
- **Trigger Tr3** and **MIDI out** with MIDI channel **Trigger ch.**
- **Trigger Tr4** and **MIDI out** with MIDI channel **Trigger ch.**

Drum mode:

Same as Trigger mode, tracks are played on the following outputs:

- **Dr1 on the MIDI out** output on the **Drum ch MIDI channel.**
- **Dr2 on the MIDI out** output on the **Drum ch MIDI channel.**
- **Dr3 on the MIDI out** output on the **Drum ch MIDI channel.**
- **Dr4 on the MIDI out** output on the **Drum ch MIDI channel.**

Note 1: A **Dr1,2,3 or 4** tracks can be redirected to the **output EXT2 (Tr5/ Clk).**

Note 2: Each Trigger and Drums Track has a MIDI note (see settings).

Sequence 1, 2, 3, and 4/ Chord mode:

These four modes allow you to select, modify and play one of the 99 sequences. Note sequences are common to Seq1 to Seq4 modes.

Special feature of Seq1 and Seq2 Modes:

Sequences are played to the **outputs Resume/Gates** and **MIDI**:

- **Cv/Gate1** and **MIDI out** on MIDI channel **Seq1 ch.**
- **Cv/Gate2** and **MIDI out** on MIDI channel **Seq2 ch.**

Special feature of Seq3 and Seq4 Modes:

The sequences are played **only** towards the Midi **outputs**:

- **MIDI out** on MIDI channel **Seq3 ch.**
- **MIDI out** on MIDI channel **Seq4 ch.**

Seq4/ Chord mode configured in Chord:

The chord mode allows you to select, modify and play one of the 49 chord sequences with their A or B part.

Chord sequences (triads) are played on the Midi **output**:

- **MIDI out** on MIDI channel **Seq4 ch.**
- Seq4 will be configured as a chord sequence with the “Seq4asChord” option.

Scene and Song modes.

Scene mode and **Song** mode.

Description of the scene board.

Each scene records the following data in a table:

- **Sequence:** S1, S2, S3, S4 or CH, Dr, Tr.
- Sequence **Numbers** to play.
- Mute **Information** and transposition of sequences and mutes of tracks.

S	S1	S2	S3	S4	Dr.	Tr
				CH		
N	1	2	3	4	5	6
I	--	--	--	--	III	III

Depending on the **setting** of the **SQ4asChord** option **On** or **Off**

A scene will record in column 4 the **sequence or chord number**.

Column 4 will display the following information:

- ' **S4**' if there is a scene **without chords**.
- ' **CH**' if there is a scene **with chords**.

Row **I** contain **Mute** and **Transpose** information specific to Sequences 1, 2, 3 and 4/ Chord with Icons among the following:

Icons	1st news	2nd info
--	Mute Off	No transpose
-	Mute Off	Transpose -12
+	Mute Off	Transpose +12
M_	Mute On	No transpose

The mute information for the Trigger and Drums tracks is as follows:

Icons	Track1	Track2	Track3	Track4
....	mute	mute	mute	mute
...I	mute	mute	mute	Play
.. II	mute	mute	Play	Play
.III	mute	Play	Play	Play
IIII	Play	Play	Play	Play

Note 1: this table represents 5 possibilities among the 16 possible concerning the possible states of muted or unmuted tracks:

A bar = a played track and a dot = a muted track.

Note 2: Each scene has an **8-character name**.

Selecting a Scene.

- With **SELECT**, move the cursor in front of the Scene number.
- The cursor takes the form of a selection arrow.
- Press **SELECT** to enter edit mode. The arrow flashes.
- Turn **SELECT** until you reach the desired Scene number among the 99.
- Press **SELECT** to exit edit mode. The arrow becomes fixed.

Edition of the scene board.

Move the cursor over a data to modify

In an edit session with the **EDIT button**:

A cursor surrounds the selected value in the table:

Move the **cursor** with the following keys:

- **MENU**: moves the cursor up.
- **SHIFT**: moves the cursor down /down.
- **SELECT**: (rotate) to move the cursor left or right.

Modify the selected value:

- Press **SELECT** to edit the value.
- Rotate **SELECT** Left/Right to change the value.
- Press **SELECT** to finalize the modification.

Important: Do not forget to **save your modifications** in the **permanent memory** by using the following options:

- **SHIFT + EDIT** shortcut for saving current mode data.
- Scene menu, in the page: **Create NewScene to**.

Restore a previously saved sequence scene:

Default when entering scene mode (edit and menu disabled)

it is proposed to restore the current scene with the following prompt:

"Play to start Scene"

Pressing **Play** restores the following sequences:

- Trigger.
- Drums.
- Seq1.
- Seq2.
- Seq3.
- Seq4 or Chord depending on the type of scene recorded.

Pressing **PLAY/STOP** loads the 6 sequences then launches the sequencer in **PLAY mode**.

Note: At TS1 start, it reload automatically the numbered scene (with their sequences) defined in settings mode with **Scene Ld start "xx"** parameter.

Scene mode menu.

This menu has 5 pages which allow the following actions:

Page	Display	Description
1	Create NewScene to	Allows you to freeze a scene to a location chosen from among the 99 available.
2	CopyScene _	Allows you to copy a source scene to a destination scene by pressing SELECT .
3	Initialize scene	Allows you to reset either: <ul style="list-style-type: none">• The scene with factory settings.• The name of the scene.
4	Scene with chrd	Allows you to change the Scene type: SQ4/CRD. <ul style="list-style-type: none">• SQ4 creates a scene of sequences only.• CRD creates a composition of Seq1, Seq2, Seq3 and CRD sequences (chord).
5	Rename	Allows you to modify the name of the 8-character scene.

Note 1: Navigation in the menu and parameters is identical to that of the general mode.

Note 2: depending on the configuration setting of SQ4 as Chord, when creating a new scene the parameter with or without chord will be taken into account in the new scene.

Song mode.

Song mode consists of 49 records containing an array containing 12 scenes to recall and play.

Each scene can be repeated up to 8 times

play Song game mode is represented by an empty icon “▶” at the top left of the screen in order to differentiate it from the play sequence mode: Filled icon “▶”.

Access to the mode is done by positioning the **MODE button** on Song.

Using Song mode allows you to:

- To record a list of scenes with their respective repetition and their mode of play in order to be replayed as a sequence of arrangements.

Description of Song board.

Each Song displays a table containing the following elements:

- **Number** of the sequence of scenes to play from 1 to 12.
- **Scene** to Play.
- **Repetition** of the scene from 1 to 8 before playing the next one.
- Song start and end or loop info.
 - Types of info Song:
 - **St**: Start Song
 - **__**: Play the scene.
 - **En**: End of Song after the last bar played.

	1/4 screen page						Screen page 2/4					
NOT	1	2	3	4	5	6	7	8	9	10	11	12
S	1	2	3	5	6							
R	1	1	1	1	1	1	1	1	1	1	1	1
I	st					In						

Note 1: The display is made up of 4 pages for a total of 24 columns, only two pages are drawn in this example.

Note 2: the **songs** each have a **number** from 1 to 49 and a **name** comprising **8 characters**.

Selecting a Song.

- With **SELECT**, move the cursor in front of the Song number. The cursor takes the form of a selection arrow.
- Press **SELECT** to enter edit mode. The arrow flashes.
- Turn **SELECT** until you reach the desired Song number among the 49.
- Press **SELECT** to exit edit mode. The arrow becomes fixed.

Editing the song table.

Move the cursor over a data to modify

In an edit session with the **EDIT** button:

A cursor surrounds the selected value in the table:

Move the **cursor** with the following keys:

- **MENU**: moves the cursor up.
- **SHIFT**: moves the cursor down.
- **SELECT**: (rotate) to move the cursor left or right.

Modify the selected value:

- Press **SELECT** to edit the value.
- Rotate **SELECT** Left/Right to change the value.
- Press **SELECT** to finalize the modification.

Important: Do not forget to **save your modifications** in the **permanent memory** by using the following options:

- **SHIFT + EDIT** shortcut for saving current mode data.
- Song menu, in the page: **Save Song to**.

Song mode menu.

This menu consists of 4 pages which allow the following actions:

Page	Display	Description
1	SaveSong	Allows you to save the current Song to another Song among the 49 available.
2	Initialize Line	Allows you to reset one of the 3 lines among the following: Scene, Repeat, Info.
3	initiate	Allows you to reset: <ul style="list-style-type: none">• The Song with factory settings.• The name of the Song.
4	Rename	<ul style="list-style-type: none">• Allows you to change the 8 characters of the song .

Note 1: Navigation in the menu and parameters is identical to that of the general mode.

Note 2: Don't forget to save with **SHIFT + EDIT** except after a save action song.

Presentation of the Settings mode.

Setting Mode:

This mode allows access to the parameters of the TS1.

To enter the settings position **MODE** on Settings/Scène

With **SELECT** move the horizontal line to “settings” then press **SELECT**.

Navigation and edition of the settings mode pages.

Make sure beforehand that the TS1 is not in edit mode, if so: press the **EDIT** button to exit this mode.

Choosing the page to edit:

The choice is made by rotating the **SELECT** button to choose the next or previous page, up to the first/last page.

Edition of the page to be modified:

Pressing the **EDIT** button enters the Edit page.

Selecting a line to modify:

SHIFT buttons to go down one line and **MENU** to go back one line, position the editing cursor on the parameter to be modified.

Enter and exit parameter edit mode

Pressing **SELECT** changes the cursor to modification, the cursor flashes

A second press on **SELECT** exits the current modification, the cursor becomes fixed.

Changing the parameter when the cursor is flashing:

To change the value of a parameter, turn the **SELECT** knob until the desired value is displayed

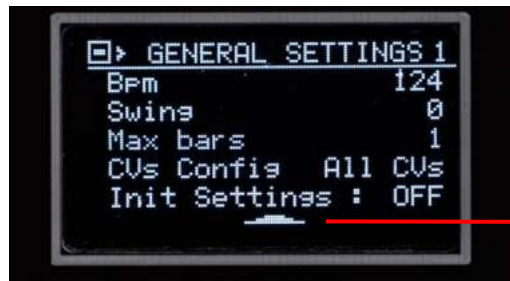
For On/Off type settings, press the **SELECT** button to confirm the action.

Pages of the settings menu.

Each page with its settings content is described in the following tables:



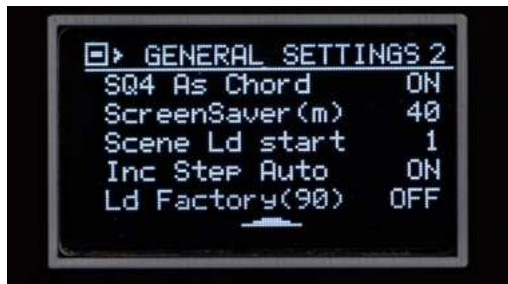
GENERAL SETTINGS 1: Page 1.



To return to selection of the menu pages: Position the arrow then press SELECT

Settings	Values	Description
bpm	40 to 250	Defines the Bpm (beat per minutes) of the TS1.
Swing	0 to 15	Allows to modify the precision and delays in the playing of the notes or not.
Max Bars	1 to 4	Defines the number of measures of a sequence from 16 to 64 Steps. (each step is a semi quaver)
CVs Config	All CVs COD1+CV2	<ul style="list-style-type: none"> All CVs configures the CV gates outputs in their cv/ gates functionality DCO1+CV2 allows to modify the CV1 output in DCO Lo-Fi able to generate a Digital Oscillator with "SAWTOOTH" signal. This oscillator plays the notes of sequence 1 over 4 octaves: 0 to 3; the notes with Octave 4, 5, 6, 7 will not be played. Note: to play notes in octave 0, you have to play a note in octave 1 with transposition -12 activated.
Init Settings	ON/OFF	Allows you to reset all the settings by choosing "ON" then confirming by pressing SELECT . Note: this action saves the settings automatically.

GENERAL SETTINGS 2: Page 2.



Settings	Values	Description
SQ4 As Chord	ON/OFF	Selects whether Seq4 mode plays: <ul style="list-style-type: none"> Note sequences. (OFF) Chord sequences. (ON)
Screen Saver (m)	No, 0 to 40	Allows you to change the delay in minutes before the screen saver starts. No: allows this feature to be disabled.
Scene Ld start	1 to 49	Defines the scene with sequences to be reloaded for the next TS1 start.
Inc Step Auto	ON/OFF	Allows when entering notes with an external keyboard connected to MIDI IN to move the editing cursor automatically to the next note. Note: check the correspondence of the connected keyboard with "Input Channel"
Lo Factory (90)	ON/OFF	Allows you to reload Factory Presets to the locations: <ul style="list-style-type: none"> 90 to 98 for trigger sequences. 8 triggers sequences. 90 to 94 for sequences. 4 notes sequences. 40 to 48 for chord sequences. 8 Chords sequences.



Settings	Values	Description
ExtStart	Seq Start Sng Start Clk Extern Seq /Rst Mute TR1	<p>Select a functionality for the ExtStart input:</p> <ul style="list-style-type: none"> • Seq Start: allows you to start and stop the sequence mode. • Sng Start: allows you to start and stop the song sequence mode. • Clk Extern receive clock input instead of the internal Bpm. Each trigger advances the sequencer by one step. • Seq /Rst Restart at the beginning of the sequence: Step 1, Bar 1. • Mute Tr1 allows you to mute/unmute the TR1 track. <p>Note: for Clk Extern configuration: if the TS1 does not receive any external clock: the sequencer may seem to be blocked.</p>
Tr5/CLK Takes	Clk , Dr1-4	<p>Select a functionality for the Tr5/ Clk output:</p> <ul style="list-style-type: none"> • Clk: connects the internal clock. • Dr1-4 connects one of the 4 drum tracks to this output.
Ext/ Clk Div by	1,2,4,8	<p>This parameter is used to divide the clock signal that comes out on Ext/ Clk in the case of the TR5/CLK Takes option Click.</p> <p>The outgoing signal can be divided by 1, 2, 4 or 8.</p>
Tr5/ Clk Div by	1,2,4,8,16	<p>This parameter controls the pre-divider in the case of an external clock connected to the TS1 with the option ExtStart = Clk Extrn.</p> <p>The predivisor can divide by 1, 2, 4, 8 or 16.</p>
MIDI thru to CV	ON/OFF	<p>Allows you to redirect the notes coming from the MIDI In to a CV/Gate 1 or 2 output depending on whether the mode selector is in Seq1 or Seq2.</p>

MIDI CHANNELS 1: Page 4.



Settings	Values	Description
Input Channel	No, 1 - 16	received MIDI data. No: disables data reception.
Scales Channel	No, 1 - 16	Specific Midi channel which will play the "User Scale" when the Hp icon is activated and the sequencer launched.

MIDI SEQUENCES: Page 5.



Settings	Values	Description
Sequence 1 Ch	No.1 - 16	Defines the output MIDI channel for the notes associated with sequence 1. No: disables the sending of MIDI data.
Sequence 2 Ch	No, 1 - 16	Defines the output MIDI channel for the notes associated with sequence 2. No: disables the sending of Midi data.
Sequence 3 Ch	No, 1 - 16	Defines the output MIDI channel for the notes associated with the sequence 3. No: disables the sending of MIDI data.
Chrd /Seq4 Ch	No, 1 - 16	Defines the output MIDI channel for the notes associated with the 4/ Chord sequence. No: disables the sending of MIDI data.

MIDI TRIGGERS: Page 6.



Settings	Values	Description
Trig Tr1 Ch	No.1 - 16	Defines the output MIDI channel for the note associated with the Trigger1 track. No disables note sending.
Trig Tr2 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the Trigger2 track. No disables note sending.
Trig Tr3 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the Trigger3 track. No disables note sending.
Trig Tr4 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the Trigger4 track. No disables note sending.

MIDI DRUMS: Page 7.



Settings	Values	Description
Drums Dr1 Ch	No.1 - 16	Defines the output MIDI channel for the note associated with the drums1 track. No disables note sending.
Drums Dr2 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the drums2 track. No disables note sending.
Drums Dr3 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the drums3 track. No disables note sending.
Drums Dr4 Ch	No, 1 - 16	Defines the output MIDI channel for the note associated with the drums4 track. No disables note sending.

MIDI CONTROLS: Page 8.



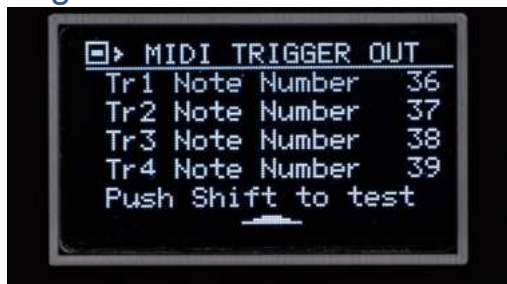
Settings	Values	Description
ExtClock _	ON/OFF	Synchronizes the TS1 sequencer from an external MIDI Clock message.
clock out	ON/OFF	Clock ' message synchronized with the TS1 to the MIDI Out output.
Play Ext in	ON/OFF	Starts and stops the TS1 sequencer on reception of the 'MIDI Start' and 'MIDI Stop' messages.
Play Ext Out	ON/OFF	Sends 'MIDI Start' message when starting the sequencer. Sends 'MIDI Stop' message when the sequencer stops.
Out Bpm	Hidden if Ext Clock = OFF	Displays the Bpm coming from a device connected to the MIDI In socket. If no MIDI signal Clock displays 0.

MIDI TRIGGER IN: Page 9.



Settings	Values	Description
Tr1 Note In	0-127	Trigger 1 track trigger MIDI note.
Tr2 Note In	0-127	Trigger 2 track trigger MIDI note.
Tr3 Note In	0-127	Trigger 3 track trigger MIDI note.
Tr4 Note In	0-127	Trigger track 4 trigger MIDI note.

MIDI TRIGGER OUT: Page 10.



Settings	Values	Description
Tr1 Note Number	0-127	MIDI note triggered by Trigger 1 track.
Tr2 Note Number	0-127	MIDI note triggered by Trigger 2 track.
Tr3 Note Number	0-127	MIDI note triggered by Trigger track 3.
Tr4 Note Number	0-127	MIDI note triggered by Trigger track 4.

Note: Pressing **SHIFT** plays the Midi note of the line being edited.

MIDI TRIGGER ON/OFF: Page 11.



Settings	Values	Description
Tr1 Midi Out	ON/OFF	Disables the MIDI Note of the Trigger 1 track.
Tr2 Midi Out	ON/OFF	Disables the MIDI Note of the Trigger 2 track.
Tr3 Midi Out	ON/OFF	Disables the MIDI Note of the Trigger 3 track.
Tr4 Midi Out	ON/OFF	Disables the MIDI Note of the Trigger track 4.

MIDI DRUM INPUT: Page 12.



Settings	Values	Description
Dr1 Note In	0-127	Drum track 1 MIDI trigger note.
Dr2 Note In	0-127	Drum track 2 MIDI trigger note.
Dr3 Note In	0-127	Drum track 3 MIDI trigger note.
Dr4 Note In	0-127	Drum track 4 MIDI trigger note.

MIDI DRUM OUTPUT: Page 13.











Settings	Values	Description
Dr1 Note Number	0-127	MIDI note triggered by Drum 1 track.
Dr2 Note Number	0-127	MIDI note triggered by Drum 2 track.
Dr3 Note Number	0-127	MIDI note triggered by Drum track 3.
Dr4 Note Number	0-127	MIDI note triggered by Drum track 4.

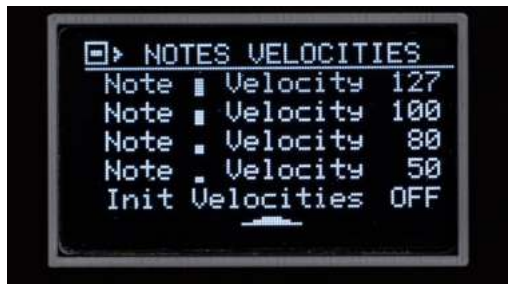
Note: Pressing **SHIFT** plays the Midi note of the line being edited.

TRIGGER TIMINGS: Page 14.



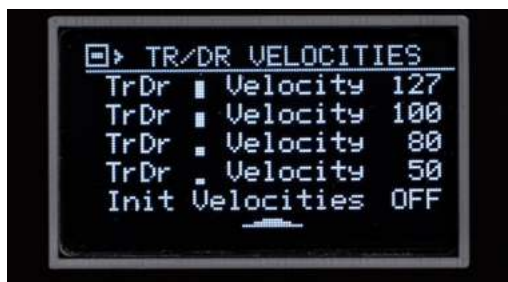
Settings	Values	Description
Step  Length	1-80	Duration of a trigger signal: 
Step  Length	1-80	Duration of a trigger signal: 
Step  Length	1-80	Duration of a trigger signal: 
Step  Length	1-80	Duration of a trigger signal: 
initiate Trig T-On	ON/OFF	Allows you to reset the timings with the factory values, by choosing "ON" then confirming by pressing SELECT . Note: this action saves the settings automatically.

NOTES VELOCITIES: Page 15.



Settings	Values	Description
Note ▄ Velocity	0-127	Note MIDI Volume: ▄
Note ▄ Velocity	0-127	Note MIDI Volume: ▄
Note ▄ Velocity	0-127	Note MIDI Volume: ▄
Note ▄ Velocity	0-127	Note MIDI Volume: ▄
initiate Velocities	ON/OFF	Allows you to reset the note velocities with the factory values, by choosing "ON" then confirming by pressing SELECT . Note: this action saves the settings automatically.

TR/DR VELOCITIES: Page 16.



Settings	Values	Description
TrDr ▄ Velocity	0-127	Note MIDI Volume: ▄
TrDr ▄ Velocity	0-127	Note MIDI Volume: ▄
TrDr ▄ Velocity	0-127	Note MIDI Volume: ▄
TrDr ▄ Velocity	0-127	Note MIDI Volume: ▄
initiate Velocities	ON/OFF	Allows you to reset the note velocities with the factory values, by choosing "ON" then confirming by pressing SELECT . Note: this action saves the settings automatically.

SCALE SETTINGS: Page -1:

Note: Access is by turning **SELECT** to the left as soon as you enter the settings.



Settings	Values	Description
Scale	Major, Minor Melo Minor Harmo , PentaClasic Penta Blues	Basic range
Color	(Major) Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian, Locrian. (Minor Melo) Melodic, Javanese, Lydi Aug, Bartok, Indu , Dlminish , Altered. (Minor Harmo) Harmonic, Javanese, Augmented,Romanian , Phry Span(ish), Lydian9#, Altered. (Penta Classic) Major, Minor, Egypt, Minor Aug, Suspend6. (Penta Blues) Classic, Minor ,5+1,9#	This is the mode: this is chosen specifically for each range.
Root Note	C,d ,D,e,E,F,g,G,a,A,b,B	Base note for the user scale.
User scale display		A mini keyboard allows you to view the notes that will be used in user mode.
<p>In line 3 we have the base note or Root note. In line 4 we have a speaker icon (not crossed out) allowing pre-listening of the range in a loop when the sequencer is launched. User scales notes are played out via the Midi Scales Channel.</p>		

TS1 General Menu

The general menu is available for the following modes:
 - **Trigger, Drums, Seq1, Seq2, Seq3, Seq4/chord.**

General menu description:

Navigation in this menu is made possible by entering the menu with the **MENU** button then turn **SELECT** left or right:

Note: the 0 page is accessible by turning **SELECT** to the left when entering the menu.

Page	Display	Description
0	Saving data	Allows you to save the following data: Pattern, Settings, All Data.
1	bpm Swing Maxbar	BPM: 10 to 239. Swing: None, 1 to 8. Maxbar : 1,2 or 4. (Number of measurements).
2	Save Pattern x	Allows you to save the current scene to another pattern among the 99 possible.
3	Noon Fashion	Allows you to choose the type of note recording with an external keyboard: 1) Rec None: No notes recorded. 2) Rec One: Record at edit cursor. 3) Rec Live: Records while playing. 4)Ext Transpose: Transposition up to +/-12 semitones.
4	CopyStep Bar x	Copying a set of Steps/Note: 1 -> 16 To another measure from 1 to 4.
5	CopyBar to Bar	Source measurement to Destination measurement.
6	CopyPattern	Source Pattern to Destination Pattern.
7	Roll Seq / Track	By turning SELECT , we circularly shift all the data to the left or to the right. <ul style="list-style-type: none"> • In Seq1-4/ Chord mode: All the parameters of the sequence are shifted. • In Trigger / Drums mode: the following parameters can be shifted as desired: 1,2,3,4, All

Note: the word "pattern" is sometimes used to refer to sequence, it has the same meaning as sequence.

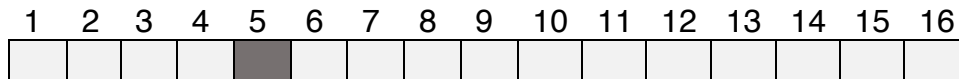
Page	Display	Description
8	Randomize	Randomizes a sequence on all or part of the sequence with the following parameters: Deg , Len, Octave, All for sequences. 1,2,3,4 All for triggers/drums. Displays random rendering graphically as pixels.
9	Reverse	Mirror effect for steps / notes: <ul style="list-style-type: none"> • Source from 1 to 16. • Destination from 1 to 16. <u>For Sequences 1,2,3,4/ Chord</u> With the All option for notes: (all lines) <u>For Trigger Drums</u> With the following options for steps: 1,2,3,4, All: Track 1, 2, 3, or all selected tracks.
10	Groove on Bar	Applies a motif of 4 consecutive velocities from a choice of 16 possibilities with the choice of measure 1,2,3,4 or all 4. Note: this motif will be heard at 16 Notes/Steps. Note: This page is only available for the following modes: sequences 1,2,3,4 / Chord
11	Transpo	Transpose a Seq1-4/ Chord sequence. Number of semitones: -12 to +12 Transpose: On/Off Note: This page is only available for sequences 1,2,3,4 / Chord
12	Delete	Delete data from the following options. Share: 1, 2, 3, 4, All. Name. Parts & Name.
13	Rename	Allows you to change the 8 characters of the name of the current sequence.

TS1 Display Graphics and Icons

Sequencer progress animation is available in the following modes: Trigger, Drum, Seq1, Seq2, Seq3, Seq4/ Chord and Song.

Progress bar.

- It represents the 16 Steps or Notes of a bar and displays in “gray” the step position played.



Example with box 5 shaded for the position of the step played.

Position bar of the measure to be played.

- Display of position and maximum number of bars:

Example of display	Measure displayed On the screen	' Maxbar ' selected in settings mode
1:1	1	1
2:2	2	2
3:4	3	4
4:4	4	4

Song position during play.

- A progress bar displays the play position of the played scenes.

MIDI activity icon

- The TS1 displays an “**IN**” icon at the left of the screen under the ‘midi mode icon’ when midi data are received on the MIDI In socket.

The TS1 input and output connectors

The ExtStart input (formerly called EXT1).

ExtStart can be configured in **setting mode** for the following actions:

Possible options for **ExtStart**

- **Seq Start**: allows you to start the sequencer.
- **Sng Start**: allows you to start the sequencer in song mode.
- **Clk Extern**: allows to react to an external clock 0-5V each pulse will advance the sequencer by one Step. Note: TS1 considers the external clock signal instead of the internal clock.
- **Seq /Rst**: resets the sequencer to zero: Step 1, bar 1.
- **Mute Tr1**: Mutes Trigger track 1.

Note: For the **Seq Start** and **Sng Start** options the logic used is as follows:
0 Volt = **Start**, > 2.5V = **STOP**.

The Gate Tr5/ Clk output formerly called EXT2.

Tr5/ Clk can generate the following signals:

- **Option 1: EXT2 configuration in clock clock**:
 - In settings mode: setting **Ext2 Connect to CLK**:
 - The output tr5/ Clk (EXT2) generates the CLK signal.
 - In settings mode: **CLK Div** manages the pre-divider of the clock input signal: 1,2,4 or 16.
- **Option 2: Tr5/ Clk configuration in trigger output**:
 - In settings mode: setting **Ext2 Connect to Dr1-4**.
 - The chosen drum track will be redirected to Tr5.

Gates trigger: Tr1, Tr2, Tr3, Tr4, Tr5.

These outputs are 0-10V type voltage and are used to drive percussive instruments or to events trigger type signals.

The CV/Gate1 and CV/Gate2

They are used to control **oscillator** modules activated in **1V/Octave** mode with the associated gate.

- The CV/Gate1 output plays the notes of sequence 1.
- The CV/Gate2 output plays the notes of sequence 2.

Note: CV1 output allows notes to be played with a DCO oscillator(sawtooth).
With this one we can play notes over 4 octaves from 0 to 3 with the following option:
CVs Config = DCO1+CV2.

Note: To reach octave 0, you must play a note in octave 1 and the transposition must be set with -12 semitones.

Two 5-pin DIN connectors

The MIDI IN connector

It allows to record notes **from** an **external keyboard** via the according to the selected MIDI recording mode.

- With the option setting **Ext Clock on On in Mode settings**, it allows to **synchronize the TS1 with MIDI clock** signals.

Important: If **Ext Clock = On** and **no clock is received**, the **TS1 will not start** when **Start** is pressed.

The MIDI OUT connector

It allows to play all the triggers, drums and sequences, i.e. **6 channels** to **drive** external instruments: **drum machine, synthesizers**, etc.

Clock Out option set **to On** in Mode settings, the Ts1 will send the BPM to the Midi out socket.

The menu for managing external notes on the MIDI In input

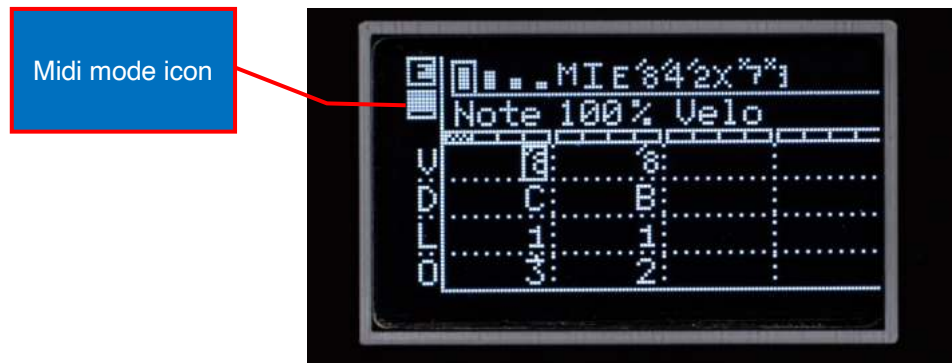
Midi Mode parameter is accessible on page 3 in the main menu.

It allows when the TS1 is connected to an external keyboard connected to the MIDI In socket to select a recording mode among the following:

Rec None:

Recording is disabled.

Note: The midi mode icon will display ' _ '.



RecOne:

In an EDIT session each note will be recorded at **the** location of the edit cursor. By turning **SELECT**, you can choose the Step position that will host the new note. To erase a played note, simply replay it on your keyboard, having first pressed the **SHIFT** button.

Note: The midi mode icon will display ' 1 '.

Rec Live:

In Sequence Play mode, the notes will be recorded next to the cursor position in the Step animation bar.

Note: The midi mode icon will display ' R '.

Ext-Transpose:

Allows you to transpose a sequence of the chosen mode by +/-12 semitones.

The transpose value is displayed on the first line after the max number of bars as "Tr +/- XX."

Note: The midi mode icon will display ' T '.

Local transposition

Transposition is active only on sequence modes 1,2,3,4/Chord:

Ex: **MODE** on position Seq1: the transposition will apply to sequence 1.

Global transposition

The transposition applies globally with **MODE** on the trigger or drums positions.

Note: Check in the settings mode that the selected MIDI channel (MIDI CHANNELS 1 page) corresponds to your MIDI keyboard or external note source.

Appendix 1

Using the Remote Controller app.

Thanks to the free MobmuPlat app available on iOS and Android systems, the TS1 can be controlled remotely via a touch device.

To start you have to install MobmuPlat app on your IOS or Android device.

Next, you will need to download from the RemoteApp1_6.zip file at

https://bvr-instruments.net/s/RemoteApp1_6.zip to your device.

Once transferred for example with Dropbox or AirDrop, it will be automatically detected and loaded into the MobmuPlat application .

To establish communication between the TS1 and your device, you will need to add a MIDI interface such as the ESI MidiMate EX.

Note: For iOS devices, you will need an "iOS device camera to Lightning adapter".

For Android devices and recent iOS devices, you will need a "USB-C to USB" adapter.

Once the MIDI interface is connected to your device and to the TS1 Midi In socket.

Configure in the Audio/Midi tab of MobmuPlat with your Midi interface.

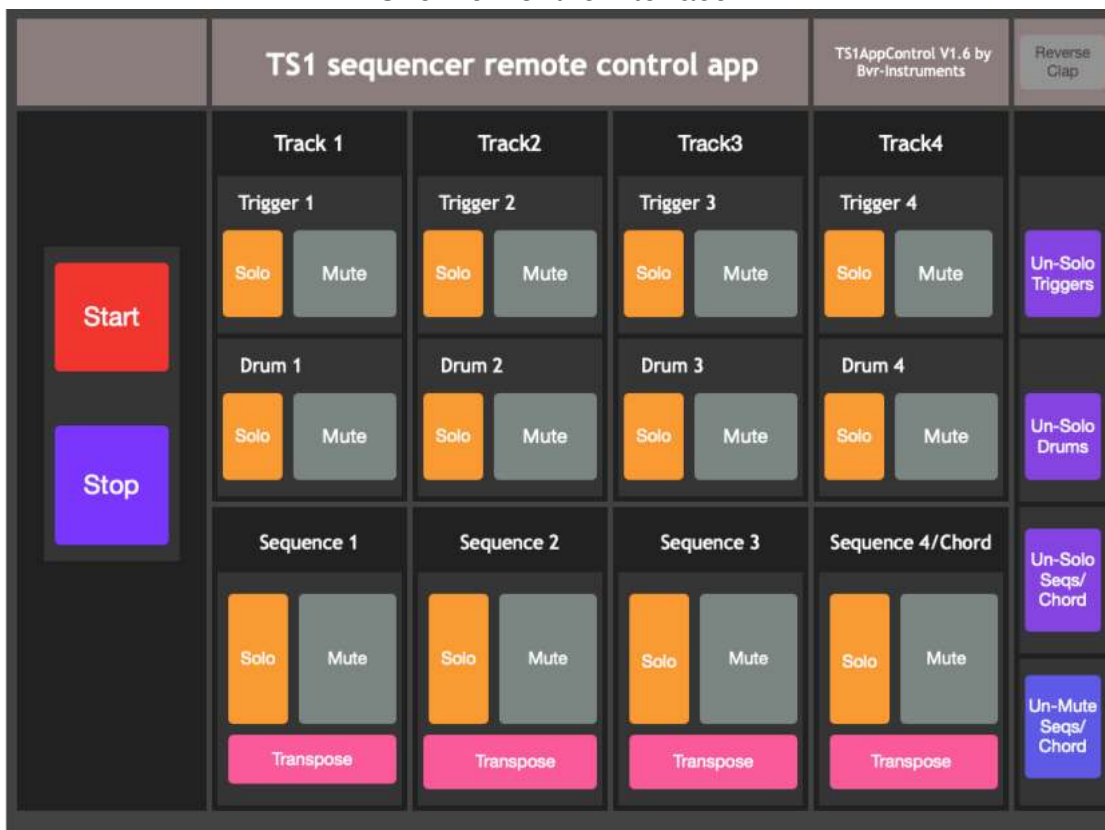
Choose in SelectDocument the RemoteApp1_6.mmp file.

You are ready to use the MobmuPlat on your touch device to control the TS1 remotely.

Note: there is nothing to configure in the TS1 to receive Midi controls from the interface.

These are transferred by the Midi channel 10, therefore do not use the Midi channel 10 as an input for any other use.

Overview of the interface.



Description of application controls

The interface is composed of the following control buttons:

“**START**” and “**STOP**” buttons are respectively used to activate and deactivate the sequencer games (outside the song mode).

For **trigger tracks**:

Each track **Tr1**, **Tr2**, **Tr3** and **Tr4** has a button to enable/disable the following functions:

- **Solo.**
- **Mute.**

For the **Drums tracks**:

Each **Dr1**, **Dr2**, **Dr3** and **Dr4** track has a button to enable/disable the following functions:

- **Solo**
- **Mute.**

For **sequences 1, 2, 3 and 4/ Chord**:

Each sequence **1, 2, 3 and 4/ Chord s** has a button which enables/disables the following functions:

- **Solo**
- **mute**
- **Transpose.**

Un-Solo buttons allowing you to globally deactivate the tracks in "Solo" mode.

At the bottom right of the interface, an **Un-Mute button** allows you to globally unmute all previously Muted sequences.

Appendix 2

TS1 demo sequences.

The TS1 has sequences that can be recalled from permanent memory for each of the following sequence types:

- Trigger, Drums.
- Sequence.
- Chord.

These sequences offer the user the possibility to quickly start an idea or a musical composition project.

To reload the sequences, activate "Ld Factory (90)" in Settings mode.

This will copy the pre-recorded sequences into the memory areas specified in the table below.

Type of sequences	Copy into memory zones
4 note sequences.	90 to 93
8 step sequences.	90 to 97
Chord sequences.	40 to 43

Note1: The copied memory locations can always be modified or erased by the user.

Note2: It is recommended to copy the pre-recorded sequences to another part of the memory to preserve the presets for their reuse for other compositions.

List of the 8 types of sequences with their instrument:

No.	Pos	Sequence names	Number Tracks	Instrument List				MIDI Notes for TR-505
				1	2	3	4	
1	90	UkGarage	5(*)	Kick	clap	Cat	rim	35,39,42,37
2	91	DubStep	4	Kick	snare	Cat	O-Hat	35,38,42,46
3	92	Trap	3	Kick	snare	Cat	-	35,38,42,46
4	93	FootWork	4	Kick	clap	Cat	rim	35,39,42,37
5	94	DrumNBass	4	Kick	snare	Cat	O-Hat	35,38,42,46
6	95	Jungle	4	Kick	snare	Cat	O-Hat	35,38,42,46
7	96	DepHouse	4	Kick	clap	Cat	O-Hat	35,39,42,46
8	97	hip hop	3	Kick	snare	Cat	-	35,38,42,46

(*) The 5th track is in sequence 98. It can be played in Drum mode in addition to the 4 tracks selected in Trigger mode.

Note3: Closed HI Hat = C-Hat, Open HI Hat = O-Hat, RimShot = Rim.

Appendix 3

TS1 Service Mode

The service mode of the TS1 is a special mode which allows the permanent data memory areas of the TS1 to be erased and initialized.



This mode is only accessible when the device is powered on.

To access the service mode of the TS1, follow these steps:

- Press and hold the **SHIFT** button.
- Press the **EDIT** button.
- Power on the TS1.

You will see a first line displaying the Hardware version of your TS1.

Ex: "HW To B 2".

ERASE ALL		TRIGGERS
		SEQUENCES
	SELECT	CHORDS
		SONGS
		SCENES

SELECT allows you to choose the memory area to be erased from the following:

- Trigger.
- Sequences.
- Chords.
- Songs.
- Scenes.

Pressing **SHIFT** (hold down) then **START/STOP** allows you to start erasing the selected area.

Pressing **MENU** allows you to quit the service mode and start the TS1 in its nominal operation.

Important: Deleting a memory zone is permanent.

Note 1: Do not disconnect the TS1 power supply during the memory erasing period.

Note 2: The service mode does not offer the possibility of erasing all the memory zones at the same time, the user can do this step by step.

Restrictions

The TS1 has certain limitations including the following:

Transposition of notes in CV/Gate can exceed the limit(s) of the oscillator which is receiving the 1volt/octave command, also certain "limit" values of notes or octaves associated with the transposition +/-12 of the TS1 may not correspond to the expected result.

The TS1 responds to external MIDI notes ranging from 0 to 127 and to the MIDI "Start" command and CC messages for Mutes. See appendix A
MIDI reception can be disturbed by too many commands:

- SMPTE Messages,
- Active Sensing,
- Arpeggiators causing information overload.

Thru / Filter type filter box between the keyboard and the MIDI input of the TS1.

The TS1 does not allow you to choose a note duration that overlaps the next one, in order to avoid the problem of notes that will not be deactivated during the game.

The recording of notes with a MIDI keyboard is limited to the number of measures selected in the Max Bars parameter, i.e. 1.2 or 4 measures, all the notes recorded will have a fixed duration of a sixteenth note: it is up to the user to choose the note duration later.

The use of a Midi splitter cable makes it possible to control two Midi devices with the Midi Out output of the TS1, however depending on the length of the cables and the reception sensitivity of the connected devices, it will be necessary to use a splitter box. Midi splitter type to ensure proper operation of MIDI with optimal synchronization. The use of MIDI Thru sockets on your equipment will allow you to chain the MIDI signal with excellent quality.

Bugs

With a growing number of features, the TS1 has become a complex multitrack sequencer that embeds many lines of code.

Also like any product with embedded software, it may be subject to bugs.

If you encounter or discover a software or hardware problem, consider reporting **this** information **or** any **problem** to contact.bvrinstruments@gmail.com

Also, it is important to clearly comment on the condition(s) in which you encountered this problem (context, composition of the sequences, etc.) in order to help solve or correct this problem as quickly as possible.

Technical specifications

Sequencer with 12 sequences played simultaneously:

- Step Sequences: 64 steps with 4 bars each.
- 4 Note Sequences: 64 notes with 4 bars each.

Central rotary selector for direct access to modes:

- Trigger/Drum, Sequences 1,2,3,4/Chord.
- Song, Scene/Settings.

Ability memory:

- 99 Trigger/Drum sequences.
- 99 Note sequences.
- Chord sequences (seq4 mode with Seq4 as Chord option).
- 99 Scenes for recalling Trigger/Drum and Sequences.
- 49 Song containing the sequence of scenes with their repetitions.

CV/Gates interface with 10 connectors: 3.5 jack socket.

- ExtStart input for Start/Stop, ext -Step, Reset, MuteTr1.
- 1 TR5/CLK output for external clock or Drum output (1-5).
- 4 trigger outputs: Tr1, Tr2, Tr3, Tr4.
- 4 Cv / Gates outputs for SQ1 and SQ2 (1Volt per Octave).
- 1 DCO (LoFi / Sawtooth) from octave 0 to 3. On Cv /Gate1.

5-pin DIN MIDI input and output interface.

- 1 input for external keyboard and Ts1AppControl 1.6 (IPad/Android).
- 1 Midi output with 12 independent channels: 4 Seqs, 8 Triggers.
- Bpm received and sent on MIDI In and Out.
- Start/Stop via Midi in.

Display screen: 128x64, OLED.

Processor:

- ST-Micro Low Power, 64 KB Flash, update via STLINK V2.

Electrical:

- Power consumption: 60mA @ +12V, 15mA @ -12V.

Mechanical:

- Aluminum front face. Size HE16, 80x128mm. Weight: 130g.
- 23mm depth.

Regulations

The TS1 complies with the following regulations:

- RoHS: " Restriction of the use of certain Hazardous Substances in electrical and electronic equipment ".
- CE: compliance with the requirements set by community regulations within the European Union.
- The TS1 must be recycled like WEEE (Waste Electrical and Electronic Equipment), which must be sent to a specific collection point, or collected by an organization that will ensure their further processing.

Ethical Choices:

The TS1 is equipped with a low-power processor and does not seek to fit into the increasing power increase of electronic products with the energy expenditure which is also going crescendo.

- As a result, the TS1 has electronics with reduced consumption: 60mA under +12V/-12V.
- The TS1 is designed, manufactured, tested in France and intended to be a quality and durable product with the possibility of repairing it.

Cleaning the TS1:

The TS1 should be cleaned with a microfiber type cloth.

- Do not use solvents or abrasive fabrics.
- On lexan screen protection you can use a blower bulb to remove dust particles if necessary.

Peoples' security:

The TS1 should not be exposed to the following conditions:

- Extreme temperatures or excessive humidity.
- Electrical voltages exceeding +12V /-12V.
- Reverse polarity.

Electrical installation of the TS1

The TS1 is powered via a connector fitted with a polarizer to avoid a connection error.

- A supplied cable allows you to connect the TS1 to your power supply.
- Power consumption is 60mA on +12V/12V.

Software Updates

Bvr-Instruments regularly offers updates for the TS1, which aim to bring improvements and fix possible bugs. These updates are essential to keep the TS1 up to date, improve its performance and ensure an optimal user experience. It is recommended to regularly check the available updates at the following address: <https://bvr-instruments.net/support>.

To perform the TS1 update, you will need a 3-pin cable which will be connected to an STLINK V2 programming key. This STLINK V2 programming key will in turn be connected to your computer via USB.

When you purchase the TS1, it comes with the STLINK dongle attached to the 3-wire cable that will be needed to reprogram the TS1.

Be sure to follow the update instructions carefully to avoid any issues and to ensure a successful update of your TS1.

Installation of STVP reprogramming software.

The programmer works with the STVP reprogramming software which must be installed beforehand, it is available on the following page:

<https://www.st.com/en/development-tools/stvp-stm8.html>

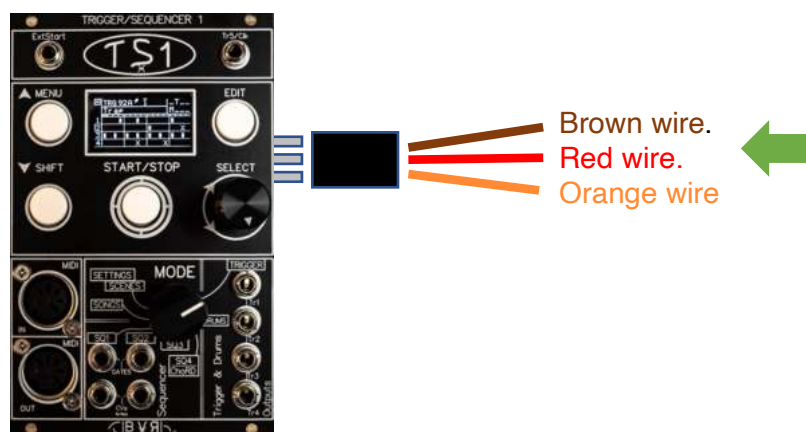
From the bvr-instruments web site:

<https://www.dropbox.com/s/vpq8mvl6hez8o2/ST-LINK%20Utility%20v4.6.0.exe?dl=0>

Connecting the reprogramming connector.

The 3-pin connector that is plugged into the STLINK-V2 reprogramming key will need to be connected to the TS1 on the right side of the PCB.

The direction of the connector is marked by colors from top to bottom.



Note 1: The TS1 will need to be powered during the update.

The USB port of the reprogramming key must be connected to a USB port and previously recognized by the computer.

Note 2: The “HowToUpdateTs1Firmware” video shows the steps to program or save the TS1 Firmware. <https://youtu.be/gT08cuatOGQ>

Summary of actions to update the TS1.

- 1) Install STVP software, download from web site.
<https://www.dropbox.com/s/vpq8mvl6hez8o2/ST-LINK%20Utility%20v4.6.0.exe?dl=0>
- 2) Launch the STVP software.
- 3) Load the “firmware.s 19” file
 - **File/open/ file_name.**
- 4) Configure mode
 - **Configure/configure ST visual programmer.**

Hardware	=ST-LINK.
Port	= USB.
programming mode	= SWIM.
Device	= STM8L15xC8.

- 5) Ensure good connections between the PC or Mac, the St-link key and the TS1.
Note: if you are on MAC computer you have to use a virtual machine software like ParallelDesktop to run .exe files.
- 6) If the reprogramming key is not or no longer recognized by the PC: change the USB Port or reconnect it (...whims of Windows).
- 7) Programming the TS1
 - **Program/ Current Tab.**
- 8) The programmer LED flashes while downloading.
Note: The downloading time is short and takes normally less than 6 seconds.
- 9) Display in the STVP results window:

```
"< PROGRAM MEMORY programming completed.  
> Verifying PROGRAM MEMORY area...  
Cut Version and Revision of device: 1.1  
< PROGRAM MEMORY successfully verified . »
```

Important: After any TS1 update:

- Disconnect the 3-pin connector from the TS1.
- Switch off then switch on the TS1.
- After an update it is necessary to reset the settings
 - In the Settings mode select page 1:
 - Init Settings -> On, then press **SELECT**.
- Switch off then switch on the TS1.