ROBOTIC BEAN

PORTATRON
TAPE SYNTHESIZER
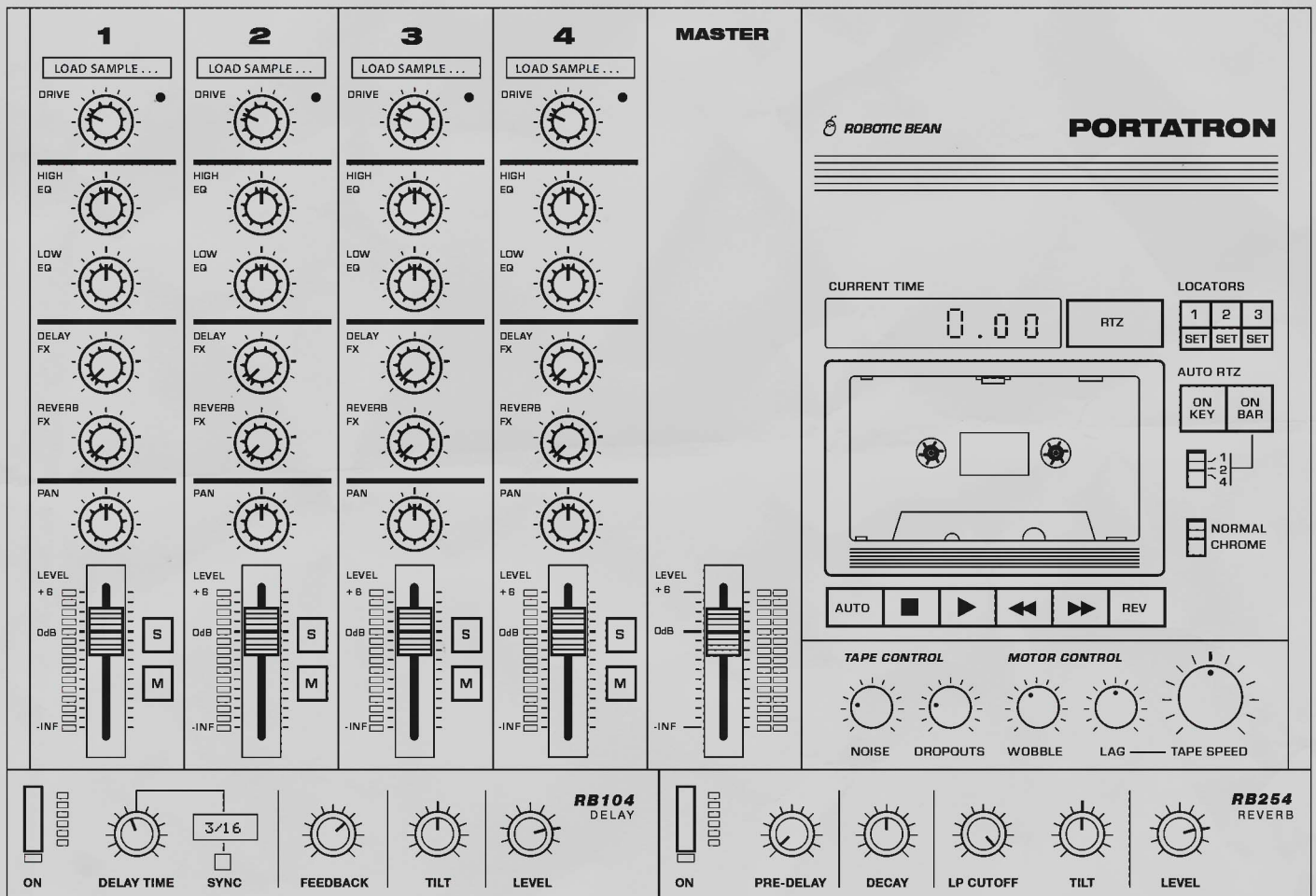
USER GUIDE

Version 1.1

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QUICKSTART

Five easy steps to get Portatron up and running:

1. Download the installer package

2. Install Portatron on your computer

3. Launch your DAW of choice

4. Create a software instrument track with Portatron

5. Click Play on Portatron or press some keys on your MIDI keyboard, and Portatron should start spinning!

INTRODUCTION

Thanks for buying or trying out Portatron!

The 4-track cassette recorder was an important step in home recording in the 80s. Lately these old machines have become popular again, much thanks to their unique lofi sound and slightly unpredictable behaviour. Portatron is a sample-based VST3/AU/AAX instrument that mimics having one of these machines in your DAW. It plays tape loops and can be pitched, either from the Tape Speed knob or from a MIDI keyboard. You can use it in many different ways:

- **Playing drones along with the DAW transport**
  When Auto Play is active, Portatron starts and stops along with your DAW. Create a nice and evocative tape loop using 1-4 layered samples and the built-in FX. Keep it running along with your song, and maybe automate Master Level or Play/Stop to control when it plays or not. Use Auto RTZ on Bar if you want it to restart on even bars to create a loop feeling. Check out the Drones patches in the Library sound bank for some examples.

- **Play tape loops like an instrument with layered samples**
  Layer some samples and play them from your MIDI keyboard like a monophonic Mellotron with Lag as portamento. Use Auto RTZ on Key if you want the Tape Loop to retrigger on each key press. Load a sample with different chords and set the Locators to different parts of the tape loop for triggering them. Check out the Instrument patches in the Library sound bank for some examples.

- **Play chords and ambiences using the faders**
  This is a method used by Alessandro Cortini in Nine Inch Nails amongst others. Create samples of different chords, and load them on separate tracks. Map faders on you MIDI controller to the Track Level faders on Portatron, and then crossfade the tracks for different parts of the song. Use Pitch Bend or map a separate knob to Tape Speed to create nice pitch deviations. Check out the Fader Instrument patches in the Library sound bank for some examples.

During development we have found that Portatron is a really inspiring tool and that it's easy to create "happy accidents". The lofi sound and built-in effects quickly generates an evocative atmosphere, that often turns out to be the seed for a new track.

We hope you will like and get much use from Portatron!

The Robotic Bean team, February 2022

INSTALLATION

Portatron comes in three flavours: VST3 and AAX (Win/Mac), and AU (Mac).

When buying directly from Robotic Bean, you will receive a **license key** that can "unlock" Portatron from the Demo Mode. If you got Portatron from a third party store, you will receive an **activation code**, which you can enter into Portatron to issue a license key.

Follow these steps to install Portatron on your computer:

1. Download the installer package. Links to the packages were included in the email from the shop, or go to https://roboticbean.com/download-portatron/

2. If you are on a Mac, open the installer package dmg (disk image file).

3. Double-click to launch the installer, and follow the instructions. You can select which plugin formats you want to install (VST3/AU/AAX) and whether you want to install the Portatron Presets sound bank or not.

4. Open your DAW of choice.

5. Create a track with Portatron.

6. In the Display, click Activate.

7. Enter the name you used when buying, and the license key or activation code you received by email.

   If you got Portatron directly from Robotic Bean's shop, please make sure to use the same spelling as it appears in the email.

8. Click Activate.

9. If you entered an activation code rather than a license key, Portatron will ask for your email and contact Robotic Bean's server to automatically issue a license and activate Portatron.

All done! Your licensed copy of Portatron should now be installed.

THE FRONT PANEL

MENU BAR

There are som global controls in a bar at the top of the device:

1. **Undo/Redo** - Portatron has a built-in undo system, so you can always get back the sound you had a moment ago. Cmd/Ctrl+Z should work in most DAWs.

2. **Library** - Portatron comes with a sound bank with some hopefully useful and inspiring presets and samples. Here you can load the Library presets.

3. **Patch Name** - Click this to get a popup list of all patches in the current location.

4. **Load/Save** - load and save patches from and to disk. The patch format is called .cassette and includes all the samples and settings used in the patch, so it is completely self-contained. This means that you can easily share Portatron patches without having to include the samples separately.

5. **Tape Editor** - Click this to open the Tape Editor and tweak the samples (more below).

6. **Popup Menu** - a list with these settings:

    a. **Reset Device** - Clear all samples and set all controls to the default values.

    b. **Show Trimmer Panel** - Open the panel to fine-tune Wow, Flutter and Drift.

    c. **Show Tooltips** - Switches tooltip overlays on or off.

    d. **Snap to Objects** - When this is checked, the playhead, locators, sample handles etc snap to each other for easier editing.

    e. **Version number** - Please include this if you report a problem to our support.

MIXER SECTION

This is where you balance and filter your four tracks.

7. **Sample Slot** - This display what sample is currently loaded in the track. Click it to get a contextual menu where you can load and remove samples.

    a. **Browse…** - Load a sample from disk.

    b. **Remove Sample** - Removes the sample from the track so that it becomes empty and silent.

    c. **Library** - Load samples from the Library sound bank.

    d. **Sample List** - Shows a list of samples in the current location, i.e. where you last loaded a sample.

8. **Drive** - Controls the amount of tape saturation applied to the sample. More Drive produces more distortion and compression. It simulates how hard you hit the tape when recording, so raising Drive will reduce the noise level for the track.

9. **EQ** - Bass and Treble shelf filters with +/- 24dB at 100 Hz and 7.5 kHz respectively.

10. **Delay and Reverb Sends** - Taps part of the signal to the Reverb and Delay FX. The Sends are Post Fader, so if you lower the Track Level the signals to the FX will be lowered as well.

11. **Pan** - Positions the Track's signal in the stereo field.

12. **Track Level** - Sets the volume for each track. Please note that each track has its own noise, so having a fader up means louder noise, even if no sample is loaded.

13. **Mute and Solo** - Use Mute to turn a Track off, and Solo to mute all other tracks. The FX sends are muted and soloed together with the Track output.

14. **Master Level** - Sets the output volume for Portatron. There is a Master Limiter after the the Master Level fader, making sure that extremely loud sounds will not distort the output.

TAPE SECTION

There are quite a few controls for controlling where and at what speed the tape loop is played.

15. **Current Time** - This display shows where in the tape loop the playback is currently at, in seconds.

16. **RTZ** - Clicking Return To Zero instantaneously moves playback to the start of the tape loop. You can also trigger this by pressing C#1 on your MIDI keyboard.

17. **Locators** - You can set 3 positions in the tape loop the you then can jump to by pressing the L1-L3 buttons, or by playing F#1, G#1 and Bb1 on your MIDI keyboard. This can be useful if you have a longer sample with different chords at different times for example. You set a locator by clicking its SET button, or by dragging its handle in the Tape Editor (see below).

18. **Tape Hatch** - Click this to the left or right to flick through different built-in cassette designs, or adding your own. Read more below about Custom Cassette Artwork!

19. **Auto RTZ on Key** - When this is active, the tape jumps to the beginning of the tape loop each time a MIDI key is pressed. This turns Portatron into a monophonic Mellotron more or less. If you play legato (overlapping) notes, the sample is slowly moved to the new pitch without retriggering (also known as portamento or glissando) with the current Lag setting (see below).

20. **Auto RTZ on Bar** - When this is active, the tape jumps to the beginning of the tape loop every 1, 2, or 4 bars. Although Portatron is not really designed to play tempo matched samples, this is a way to easily create repeating ambient loops and similar.

21. **Normal / Chrome** - Here you can choose between two types of tapes. Chrome tapes (or type II as they also are called) have more linear treble and lower noise.

22. **Transport Controls**:

    a. **Auto Play/Stop** - When this is active, Portatron starts and stops playback along with your DAW. Use this mode for drones. You can also automate this parameter by recording Play/Stop button presses, or drawing automation curves, to control when Portatron plays in your song.

    b. **Play/Stop** - Just like on a tape deck, this starts and stops playback. Double-clicking Stop moves playback back to zero seconds (Return To Zero). You can also trigger these by pressing C1 and D1 on your MIDI keyboard.

    c. **Rewind/Fast Forward** - Quickly "scroll" backwards or forwards in the tape loop. You can automate these for nice effects. You can also trigger these by pressing E1 and F1 on your keyboard.

    d. **Reverse** - When this is active, the tape loop goes backwards. You can also engage Reverse momentarily by pressing the G1 key on your MIDI keyboard.

23. **Noise Level** - Controls the tape hiss level. Please note that each individual track has its own noise, so if you use all 4 tracks the noise will be louder than if you only use one. Just like in the good old days!

24. **Dropouts Amount** - Dropouts simulates a worn tape with mostly poor treble playback.

25. **Wobble** - This knob scales the combined effect of the different tape speed modulations. Real tape decks are not perfect when it comes to playback. The tape speed can vary slightly due to alignment of the capstan, worn or dirty parts, or many other things. There are also controls for fine tuning individual parameters for these under a hatch that you can open by clicking any of the 4 screws, or from the Popup Menu.

   a. **Flutter** - A high frequency variation (6 to 100Hz)

   b. **Wow** - A lower frequency variation (0.5 to 6Hz)

   c. **Drift** - A very slow random pitch change, intertwined with more jagged jumps. This simulates a bad motor and sticky tape. Drift becomes more prominent when the Wobble knob is above 60%.

26. **Lag** - Controls how fast the motor changes tape speed. The more Lag, the more portamento or glissando you get, both in Play/stop and when you change pitch (tape speed) between notes.

27. **Tape Speed** - An offset for the overall Tape Speed. 100% equals normal playback speed.

Custom Cassette Artwork

To personalise your patches, you can create and add your own cassette designs. Just right-click the Tape Hatch to browse images on your disk, or drag and drop an image onto the Tape Hatch. The image must be a PNG that is 442x282 pixels. There is a Photoshop template available on the Portatron product page.

The holes for the tape spools are automatically punched out, so you don't need to worry about them when creating your design.

FX SECTION

Portatron has two built-in effects: a Delay and a Reverb. They are routed as send effects, and the effect returns are mixed together with the Track outputs to the Master Bus.
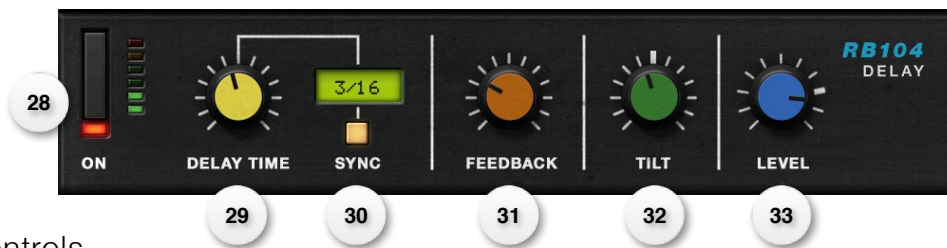
Delay Controls

28. **Delay On/Off** - Turns the Delay on and off. Handy if you want to temporarily mute the effects.

29. **Delay Time** - Sets the Delay Time (or Rate) for the delays. There are actually two separate Delay Times: one measured in milliseconds, and the Synced Delay Time measured in note lengths.

30. **Sync On/Off** - Selects if the Delay should be synced to the DAW tempo or free running.

31. **Feedback** - Raise this if you want more repeats.

32. **Tilt** - We put a Tilt EQ in the delay feedback loop, to make each repeat slightly darker or brighter.

33. **Delay Level** - The output level from the delay.

Reverb Controls

34. **Reverb On/Off** - Turns the Reverb on and off. Handy if you want to temporarily mute the effects.

35. **Pre-Delay** - an initial delay before the reverb starts. A longer Pre-Delay makes the reverb sound like coming from a larger room.

36. **Decay** - How long the reverb is.

37. **LP Cutoff** - This Low Pass Filter gradually removes more treble from the reverb.

38. **Tilt** - The Reverb Tilt EQ allows you to make the reverb darker or brighter.

39. **Reverb Level** - The output level from the Reverb.

THE TAPE EDITOR

The Tape Editor is where you construct your tape loop. You open it by clicking the Tape Editor button in the Menu Bar, and close it by either click the button again, or click anywhere in the panel below the Tape Editor.

These are the controls in the Tape Editor:

40. **Playhead** - This indicates where in the Tape Loop Portatron is playing. You can reset it by clicking in the lower part of the ruler.

41. **Tape Loop Length** - You set how long you want your tape loop to be by dragging the Tape Loop Marker. When the playhead reaches this, it will jump back to zero.

42. **Locator Markers** - There are markers for the three Locators that you can drag and place where you want. The playhead can't play outside the tape loop, so if you place a Locator after the Tape Loop Length marker, triggering the Locator will act like a Return To Zero.

43. **Sample Slot shortcut** - Here you can load samples, just like in the Mixer Section Sample Slot.

44. **RTZ and Locator shortcuts** - Shortcuts for these features.

45. **Zoom Buttons** - see below in Moving About In The Editor.

46. **Reverse Sample** - Each track has a Reverse button. When this is active, the sample on that track will play backwards. Please note that you can also reverse the whole tape transport as well.

MOVING ABOUT IN THE EDITOR

You can scroll horizontally in the Tape Editor by using the scroll bar at the bottom of the view. You can also use gestures on your track pad or similar device. When hovering above the Tape Editor background, the mouse pointer becomes a hand tool, with which you can grab the background and scroll left and right.

You can zoom by clicking in the Tape Editor background (when the hand tool is active) and drag up or down. There are also three zoom shortcut buttons in the lower left corner:

- **Zoom Out** - Fit the longest sample in the view
- **Zoom Loop** - Fit the tape loop in the view
- **Zoom In** - Maximum resolution

EDITING SAMPLES

After you have loaded your sample to a track, this is what you can do with it:

- **Move** - Click and drag a sample to move it in time
- **Resize** - You can mask (make it shorter) a sample both to the right and left by grabbing the handles at the start and end of each clip. If you extend a sample beyond its start or end, it will start to repeat. This is indicated by triangular indents in the sample background color.

If a sample extends over the Tape Loop range, it will wrap around to the beginning of the Tape Loop. This can sometimes be a little puzzling, but it works just like if you recorded something to a real tape loop!

CROSSFADE

To avoid digital clicks we apply a 5ms crossfade in some circumstances:

- At sample start and end
- Overlapping samples (when a sample has wrapped around the Tape Loop and overlaps itself)
- When the playhead repositions due to RTZ or using the Locators

ABOUT SAMPLES AND REFERENCES

When you save a Portatron **patch** (.cassette file extension), the samples and custom artwork used are included in the file. This makes the patch self-contained and portable (which is good), but the file size grows large (not so good). Still, we prefer using some extra disk space over having missing samples.

If you load a sample from disk into Portatron, and then save the **song/project file** in your DAW, Portatron only stores a reference (a file path) to the sample you used. So if you later move or delete the sample, Portatron won't find it when loading the song again. If this happens, Portatron will show a Missing Samples dialog where you can either locate the sample again, or remove it from the device.

KEYBOARD LAYOUT

The keyboard layout has one octave for key switches, and 3 octaves for playing.
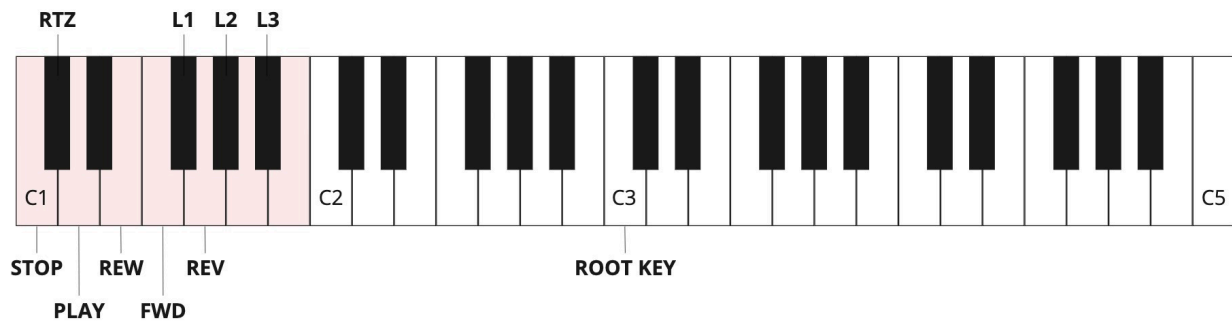
KEY	FUNCTION
C1	Stop
C#1	RTZ (Return To Zero)
D1	Play
E1	Rewind
F1	Fast Forward
F#1	Locator 1
G1	Reverse
G#1	Locator 2
Bb1	Locator 3
C2-C5	Playable area, with C3 as root key.

KEYBOARD MODIFIERS

To speed up the workflow, Portatron comes with some keyboard modifiers:

• Cmd/Ctrl + click a control to reset it to default

• Shift + drag a knob for more precise control

• Ctrl/Cmd - Prevent snapping the movement while moving a locator or moving/resizing a sample in the Tape Editor.

• Cmd/Ctrl + Z for Undo

• Cmd/Ctrl+Shift+Z for Redo

CREDITS

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Vocal and whistling samples by **Anja Bigrell** - https://bynmusik.se

Piano and vibraphone samples played by **Pelle Jacobsson** - https://www.facebook.com/pillowpeacemusic

Additional patches by **Navi Retlav** - https://business.facebook.com/NaviRetlavStudio

Portatron uses some code from stmlib written by **Émilie Gillet** and released under the MIT license:

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