Six-Traq

Software Synthesizer

Version 1.0

http://www.fullbucket.de/music

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Introduction

The *Six-Traq* is a software synthesizer plug-in (VST2/VST3/AU/CLAP/AAX) for Microsoft Windows and Apple macOS simulating the classic Sequential Circuits *Six-Trak* synthesizer from 1984. It is written in native C++ code for high performance even on "lighter" systems. The main features are:

- Close simulation of the original hardware
- Visual sound editor and program browser
- Up to 96 voices polyphony
- Extended *Poly/Multi* modes
- Oscillator with three waveforms, additional white noise generator
- Classic self-resonating four-pole lowpass filter
- Individual envelopes for oscillator, filter and amplifier
- Low frequency oscillator (LFO)
- Onboard sequencer and arpeggiator
- SysEx import/export
- MTS-ESP (https://oddsound.com/) dynamic micro-tuning support
- All parameters can be controlled by MIDI controllers
- Plug-in supports Windows and macOS

The *Six-Traq* is based on the **iPlug2** framework maintained by **Oli Larkin and the iPlug2 team**. Big thanks, guys!!! Without your work it would not have been possible to create a resizable *Six-Traq* user interface.

To resize the plug-in you just grab the yellow triangle at the bottom right of the window and drag it. You can save the current window size using the menu entry "Save Window Size" in the *Options Menu*.

If you have trouble with the standard version of the *Six-Traq*, please grab the (sound-wise identical) "N" version of the plug-in which is based on the original **iPlug** framework.

About This Manual

I strongly recommend to search the Internet for the original *Six-Trak Operation Manual* and study it thoroughly. It will teach you a lot about working with the *Six-Traq* plug-in too, since I tried to implement most of the original features –including recording sequences and most of the "hidden functions".

Sometimes it is required to "press and hold a button" while doing something (for example changing a track's volume) or to access a special function (for example initialize a sound program).

In case of the *Six-Traq* plug-in, right-click the respective button to simulate the "pressed button" state.

Six Tracks To Rule Them All

Another hardware simulation, this time a famous synthesizer from a long gone and later resurrected company called *Sequential Circuits*. No, not the *Prophet*, but the *Six-Trak*. Being the very first *multi-timbral* synthesizer, it offered a new way to record at home – a bold step beyond! The *Six-Trak's* impact on the music community and industry cannot be underestimated.

In my younger days I always wanted to have *this* machine. Six different tracks (albeit monophonic) simultaneously available from a single device were pure luxury. But it came with a price, and that was usability. Today, I would not have the patience to work with the original hardware (nor its successor, the *Multi-Track*), but in the 80s the world was different...

I never got a *Six-Trak* – although it was rather cheap at the time, it still was to expensive for me. That (and because Nostalgia overwhelmed me) is the reason why I recreated the *Six-Trak* here in software.

Simulation Part I

Again I wanted to simulate a device that I do not own myself – almost impossible. But the manual and schematics of the *Six-Trak* as well as images of its firmware ROM are available on the Internet. Thus, I did the same as with my *Bucket ONE* plug-in: I built a prototype that simulates the micro-processor (a classic Zilog Z80) plus the hardware of the *Six-Trak* from which I modeled the final *Six-Traq* plug-in. The individual steps were straight forward:

- Translate the byte code of the ROM into a human readable assembler code using DASMx.
- Identify the specific input/output registers controlling the hardware components of the *Six-Trak* (oscillator, filter, amplifiers etc.) from the assembler code and the schematics.
- Emulate the Z80 and integrated it into the prototype plugin.

So far I got a reasonably working simulation of the *Six-Trak's* controller section, but not of the analog sound generator itself.

Simulation Part II

A single voice of the *Six-Trak* is built around a single CEM 3394[1] chip which basically does everything: It includes a VCO (Voltage Controlled Oscillator), a simple mixer for an additional input signal (white noise in case of the *Six-Trak*), a VCF (Voltage Controlled Filter), and a VCA (Voltage Controlled Amplifier). Only eight voltage lines are needed to control this chip (oscillator frequency, waveform selection, pulse width, mixer balance, filter cutoff, filter resonance, filter FM, and amplifier gain) – these voltages are calculated by the *Six-Trak* in real-time.

Now it would have been no problem to simulate all this stuff in the prototype, but there is an annoying fact about the original hardware: The oscillators are analog and tend to get out of tune pretty quickly. That's why the Sequential Circuits engineers implemented (as recommended by Curtis, the manufacturer of the CEM 3394) a

1 The CEM 3394 is also used in the Akai *AX-60* and the Doepfer *Dark Energy I*.

sophisticated algorithm to auto-tune the oscillators using additional hardware, bells and whistles. The analysis and simulation of the auto-tune mechanism turned out to be quite cumbersome while at the same time not very purposeful. Being a lazy guy, I skipped all that stuff and started to build the final *Six-Traq* plug-in, using the prototype as a reference for the *Six-Trak's* controller behavior.

Simulation Part III

Not much to say here, except that the *Six-Trak* turned out to be a machine that lacks user-friendliness. Thus, I decided to add some extras like the sound editor and the Configuration section, and I removed some restrictions, for example the impossibility to edit programs while in Sequencer mode etc.

Of course there is much more in the plug-in: Full polyphony in Multi mode, MIDI import and Sync-to-Host for the sequencer, program browser and much more.

Words Of Wisdom

So here is *Six-Traq* plug-in – feature-wise in no way a competitor to modern software instruments. And of course it does not sound like the original *Six-Trak* – but you would not have expected that, do you? ☺

Acknowledgments

- **Oli Larkin** and the **iPlug2** team.
- **kraftraum** (https://soundcloud.com/kraftraum) – I was able to win him for Beta Testing again – thank you!!!
- **My family** for bearing me and my crude hobby.

No, I am not affiliated with Sequential Circuits (nor KORG) in what relation ever except that I find myself entangled with their instruments. ☺

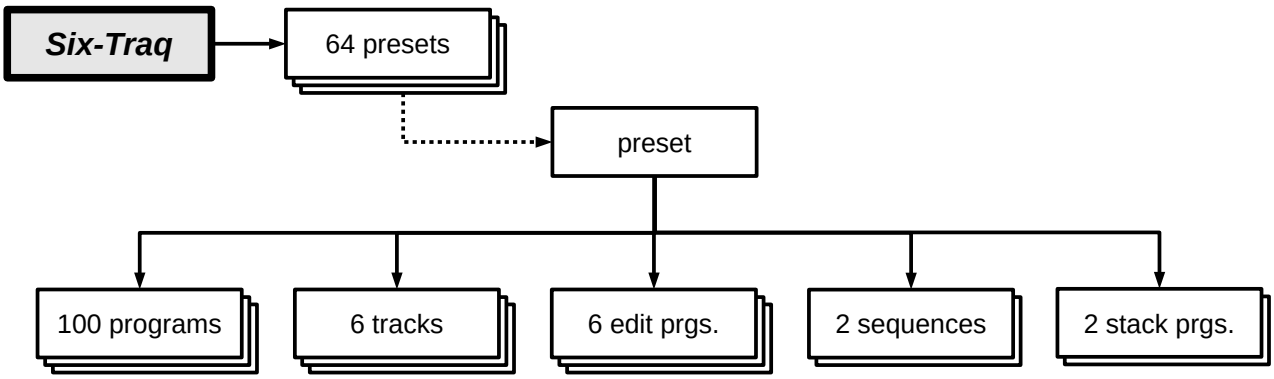
Overview

The *Six-Traq* plug-in features six tracks that can play individual sound programs, a sequencer and an arpeggiator. It is up to 96 voices polyphonic.

Presets And Programs

Originally, the *Six-Trak* provided 100 sound programs or patches (called "programs") and up to two multi-track sequences. All the track settings (volume and program), which can be referred to as a "multi-track project", where bound to one of the two sequences. Thus, if you wanted to create a new project, you had to erase at least one of the existing sequences and freshly setup your project – often from scratch. Ouch.

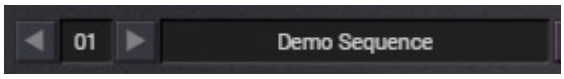
The *Six-Traq* plug-in comes with 64 presets (called "presets"): Each preset features a full set of 100 programs, up to two sequences, and individual settings for each of the six tracks (including potentially edited versions of the sound programs). This way you can immediately switch between "projects" without redoing and potentially loosing your project settings.



Note that the 64 presets do not share the 100 sound programs: Each preset can have its own set of 100 different sounds! Furthermore, the *Six-Trak* programs only had numbers (0–99) – *Six-Traq* adds a convenient naming capability for Programs.

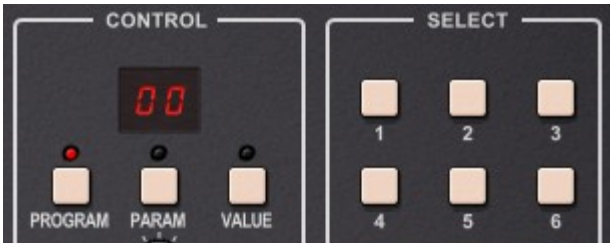
Selecting Presets

Just click on the number of the preset in the top section of the *Six-Traq* to open a context menu with available presets, or click the arrows to select the next or previous preset.



Selecting Programs

Click the PROGRAM button in the Control section and type the two-digit program number in the Select section.



Alternatively, you can select a program similar to the presets in the lower EDIT TRACK section. When the LINK PROGRAMS checkbox is activated, the same program is selected for all tracks – else it is selected only for the current track.

Another way is to select the program from the Configuration section (see *The Configuration Section*).

Playing A Program

How a program is played depends on the current configuration. Normally – in the standard "Six-Trak" configuration – it will be played six-voice polyphonically using the six tracks. However, there are multiple ways to change this behavior…

Running A Sequence

Provided that a sequences are already loaded, just click on one of the two sequence buttons SEQ A or SEQ B in the Sequencer section. More on sequences see section *Sequencer*.

Running The Arpeggiator

Click on the UP/DOWN or ASSIGN button in the Arpeggiator section, then press some keys on the keyboard. If nothing happens, check the current configuration (see *The Configuration Section*). More on the arpeggiator see section *Arpeggiator*.

Common Controls

This section contains four knobs that handle overall parameters – note that all these parameters will be stored per preset.

- **Master Tune**
  The overall tuning of the *Six-Traq*.
- **Pitch Bend**
  The amount of bending applied when receiving MIDI Pitch Bend data (up to ± 24 notes).
- **Wheel To LFO**
  The amount of modulation applied to the LFO when receiving MIDI Modulation Wheel data.
- **Master Volume**
  The final volume of the instrument.

Track Outputs

In addition to the main stereo output, the *Six-Traq* plug-in can send the stereo signal of each track to its own individual output, provided your DAW/hosts supports this feature (nowadays, most will do).

Editing Programs

Here is the hard way: In the Control section, click the PARAM button and type the number of the desired parameter (e.g. "19" for Filter Cutoff) in the Select section. Now wiggle the VALUE knob to change the parameter's value. If you want to *see* the new value, click the VALUE button. Do this for all parameters of the program you would like to change. Don't forget so record (store) your program!

Sounds like a bad joke, but in 1984 this was the way to go. But modern technology and German inventive spirit ☺ provide a solution for the 21st century: Just edit your parameters using the Sound Editor of the *Six-Traq* plug-in. And if LINK PROGRAMS is deactivated, you can even edit the programs of each track individually!

Once the value of a parameter deviates from the value stored in the program, the color of the program's name changes from white to amber. Now if you wan to change the current program without recording (storing) it, you will get a warning (you can turn this warning off via the *Options Menu*).

Recording Programs

[Why did Sequential Circuits use the term "Record" instead of "Store"? No idea.]

To record (store) a program, you can click the RECORD button in the Control section – the LED above button will be lit. Then type the number of the destination program in the Select section. After that the LED will get off, and the sound data is stored to the new program number.

Another way is to right-click the PROGRAM button in the Control section. Now a context menu opens from where you can store your current sound data to one of the 100 programs (see section *Program Menu*).

And yet another way is to use the Browser.

Browsing Programs

The Browser of the *Six-Traq* is a very helpful yet sophisticated tool for managing programs. Just click the BROWSE button to open the browser panel.

On the left-hand side you can select the source of the programs to browse.

- When INTERNAL is active, the list below will show all the 64 presets that are currently "loaded" within the *Six-Traq*.
- When FILE is active, you can select a file on your computer (FXP, FXB or SysEx). The list below will show all presets contained in that file.

Once you click a preset in the left-hand list, its contents (programs) are shown in the main window under PROGRAMS. Clicking one of these programs will load it to the current program number of the current track which you can select on the top of the browser panel. When browsing an INTERNAL preset, the browser will display the current sound programs of the six tracks (named "T1" to "T6"), too: Since a preset stores the *potentially edited* sound data of a track program as well, these programs may *differ* from the *stored* programs.

To record (store) the selected program under the current program number, just press RECORD. If you want to store *all* enlisted programs (i.e. the contents of the whole preset) click RECORD ALL PROGRAMS. You can also save the selected program or the whole bank to a SysEx file.

In the beginning, handling the Browser can be a bit confusing – sometimes it might not be clear what is getting where, and you really have to understand the concept of *Presets* and *Programs*. But don't worry, you'll get used to it… maybe.

A Word About Factory Programs

All the factory programs of the *Six-Traq* are "backed into" the plug-in itself – there is no way of "losing" them. Restoring factory programs can be done by right-clicking the PROGRAM button in the Control section and selecting the respective command in the context menu.

The Configuration Section

If you want to dive more into setting up the *Six-Traq*, it is crucial to understand the various possible configurations and track settings.

Original *Six-Trak* Keyboard Modes

The original *Six-Trak* basically sports five "keyboard modes" (the *Six-Trak* manual does not explicitly denote these modes, so I chose my own names for them):

- "Play Mode":
  Just plays a program six-voice polyphonically and *homophonically*: All voices play the same sound! The notes themselves are more or less sequentially scheduled to the six tracks.
- "Sequencer Mode":
  Plays one of the two sequences A or B. Each track can have its own program and volume setting. You can play along on the remaining tracks (if any) using your on program.
- "Arpeggiator Mode":
  Plays a monophonic arpeggio on track 6. If the arpeggio is latched, you can play a different program on the remaining 5 tracks (five-voice polyphonically).
- "Stack Mode":
  Plays up to six tracks in unison – each track can have its own program and volume setting.
- "Multi Mode":
  This mode sets the *Six-Trak* to the MIDI Mono Mode. Each track can have its own program and volume setting and responds only to MIDI data sent to its respective MIDI channel.

Note that each track of the *Six-Trak* corresponds to exactly one voice and thus is monophonic!

The *Six-Traq* Configurations

Well, I think the five "keyboard modes" are pretty limited, and the *Six-Traq* plug-in should have more options. So I moved to something I call "configurations".

A configuration consists of the individual settings of the six tracks, namely:

- **MIDI channel** (1–16, omni, off)
  Sets the MIDI channel of the track.
- **Mode** (M/L/P)
  A track can be **M**onophonic with or without "**L**egato" (single trigger) of fully **P**olyphonic – that's something new!

- **Cycle** (on/off)
  Defines if the next played note will be scheduled to the next cycled track or "remains" within the current track.
- **Program number**
  Defines the sound program for the track (if LINK PROGRAMS is active, all tracks use the same program).
- **Tuning**[2]
  (De)tunes the track. This way you can detune tracks against each other.
- **Transpose**[2]
  Transposes the track by ±24 notes.
- **Volume**
  Sets the track volume.
- **Panorama**
  Sets the track panorama (stereo position).

To see and edit the details of a configuration, just activate the CONFIG button in the top section of *Six-Traq*.

Note that clicking the RESET button will set Volume, Panorama, Tuning and Transpose to default values.

Link Programs

As stated above, if LINK PROGRAMS is active, all tracks will use the same program (*homophonic*, see above). But if it is deactivated, each voice can have its individual sound program – that is not possible on the original hardware and can lead to weird results!

Configuration Templates

The drop-down box at the top middle of the Configuration section allows you to select one of the configuration templates which are starting points for different project scenarios:

- "Six-Trak"
  This corresponds to the original *Six-Trak's* "Play Mode": All tracks are set to monophonic and cycled. Thus, *Six-Traq* is setup to six-voice polyphony with cyclic note-to-track scheduling.
- "Six-Track Legato"
  Similar to "Six-Trak", but now all tracks are set to "Monophonic Legato" (single trigger).
- "Single Poly"
  All tracks are set to "Polyphonic", but only tracks 1 is active. Now select a program and play *Six-Traq* up to 96-voice polyphonically!
- "Double Poly"
  All tracks are set to "Polyphonic", but only the tracks 1 and 2 are active. Now select a program, detune tracks 1+2, tweak the panorama etc. and play *Six-Traq* up to 96-voice polyphonically!

2 To view this parameter, you may have to toggle the TUN/TRP box in the header row.

- "Multi Mono"
  This corresponds to the original *Six-Trak's* "Multi Mode": All tracks are set to monophonic but to different MIDI channels. Thus, *Six-Traq* is setup to a six-fold monophonic multi-timbral mode.
- "Multi Poly"
  Similar to "Multi Mono", but now all tracks are set to "Polyphonic" – *Six-Traq* is setup to a six-fold polyphonic multi-timbral mode.
- "Super Stack"
  All tracks are set to non-cycled polyphonic and to the same MIDI "channel" (omni). Thus, all six tracks are stacked – but polyphonically!
- "Double Poly Arpeggiated"
  … also known as "kraftraum's Arpeggiator Mode": Same as "Double Poly", but now the tracks 1 and 2 are set to MIDI channel 6 of the arpeggiator.
- "All Arpeggiated"
  Same as "Six-Trak", but now all tracks are set to MIDI channel 6 of the arpeggiator. When you start the arpeggiator, the notes will be cycled through the six tracks, and with different track settings you can get some weird results!

Note 1: If a track setting does not correspond to one of the template configurations, the template drop-down box will display "User Configuration".

Note 2: Of course you still can deactivate LINK PROGRAMS and select individual programs per track. No limits!

Sequencer

According to today's standards, the sequencer of the *Six-Track* is pretty basic, but in 1983 it was an incredible fantastic addition to a synthesizer – and it was multi-timbral, although limited to 800 notes. Thus, the *Six-Track* was something like the very first Work Station (it just lacked effects like delay or reverb)!

OK, I could have left out the sequencer from the *Six-Traq* plug-in – it's so old school, and especially programming a sequence is somehow a nuisance. But I wanted to have that 80s feeling…

Sequencing The *Six-Traq* Way

Just click on any of the buttons SEQ A or SEQ B and the sequencer will start to play – provided that a sequence already exists. Playback speed can be adjusted using the SPEED knob. It is also possible to synchronize the sequencer to the host's tempo via the SYNC knob (on the *Six-Trak* you had to turn the SPEED knob to the very left to activate MIDI Temp Synchronization).

Right-clicking on the buttons SEQ A or SEQ B will open a context menu where you can load an existing MIDI file into the respective sequence slot A or B (see section *Sequencer Menu*). However, note the following limitations:

- Track 1 to 6 will only playback notes of their respective MIDI channels 1 to 6. Notes for MIDI channels 7 to 16 will be ignored!
- In contrary to the original hardware, polyphonic playback per track is possible provided the track is set to Polyphonic mode (see *The Configuration Section*).

Each sequence slot A or B will have its own individual track settings (volume, program etc.). For accessing and editing them, I strongly recommend to use the Configuration section of *Six-Traq*, although it is possible to do it as described in the original *Six-Trak's Operation Manual* via short cuts: For example, to change the track volume you typically right-click the respective TRACK button (this will simulate a pressed button state) and wiggle the TRACK VOLUME knob.

Recording A Sequence

[You really want to do this? OK, get ready…]

The plug-in features a metronome-like click for recording – I guess that many *Six-Trak* users desperately missed such a feature for recording purposes, and I recommend to activate the click pressing the CLICK button. Note that the click will only appear on the main stereo output. The volume of the click signal can be set by right-clicking the CLICK button and wiggling the TRACK VOLUME knob.

To start recording click the TRACK RECORD button and the button of the sequence to record (SEQ A or SEQ B). Select the track(s) you want to record by clicking the respective TRACK button(s). Now play along – with the first note played on the keyboard, recording will start. To stop recording, press the TRACK RECORD or the sequence button again. Done.

Overdubbing An Existing Sequencer

Start playback of the sequence to overdub. Click the TRACK RECORD button and select the tracks to overdub. During the first loop of the sequence, the TRACK RECORD button will blink without recording anything – this is to "get ready" for recording. In the next loop, recording is "hot" and starts overdubbing once you play the first note. After that loop has finished, TRACK RECORD will get off and overdubbing is stopped.

Erasing A Track

Start playback of the sequence, right-click the TRACK RECORD button and click the TRACK button of the track to erase. Done.

Arpeggiator

The arpeggiator is pretty basic as well and offers two modes: UP/DOWN and ASSIGN. Click on the respective button, press some notes, and the arpeggiator will start immediately. In ASSIGN mode, the notes will be played in the order you have pressed them. Thus, you can emulate almost any other arpeggiator mode unavailable on the *Six-Trak/q*) like UP or DOWN – with the exception of a random mode.

To hold the currently arpeggiated notes, you can click the TRACK RECORD button. Now it is not possible to add anymore notes, so you better might use a sustain pedal instead.

Note that the arpeggiator always plays its notes at MIDI channel 6. By default – as on the original *Six-Trak* – track 6 is solely running the arpeggio, but the plug-in allows you to change this behavior: As soon as you assign another track to MIDI channel 6, this track will be arpeggiated as well (see also section *Configuration Templates*). And when the Cycle property is activated, the arpeggio while cycle through the respective tracks (as for example on the KORG Mono/Poly when "Poly" mode is selected for the arpeggiator).

Stack Mode

Stack mode is something like a "super unison mode" where you can stack up to 6 voices with different track settings and play them monophonically. Of course, with the Polyphonic track mode of the *Six-Traq* plug-in, it is now possible to play the polyphonically as well! There are two Stack program slots (A and B) that will store two different stacks.

Synthesizer Section

This section covers the synthesizer part of *Six-Traq* and its parameters.

Parameter Resolution

Originally, the resolution of *Six-Trak's* sound parameters is pretty low. For example, there are only 16 different values (0 to 15) available for each of the four envelope parameters Attack, Decay, Sustain and Release. This has to do with limitations of the hardware (think 1984!) etc.

Now I didn't wanted to inflate the memory requirements of the plug-in too much, so I went for a compromise: The resolution of all the "continuous" parameters can be increased to 8 bits which in most cases is enough (and of course is somehow in line with the 8-bit-architecture of *Six-Trak's* micro computer ☺). You can change the resolution using the PARAM switch: Clicking this parameter toggles between "Six-Trak" (original low resolution) and "Extended" (higher 8 bit resolution).

Unison Mode

Six-Traq also sports a Unison mode where 6 voices are slightly detuned, stacked and played monophonically all together. It can be activated using the MODE switch.

With the original hardware it is not always possible to have all six voices available for Unison mode, because the six voices are shared between sequencer, arpeggiator and keyboard. But if you set a track of the *Six-Traq* plug-in to Polyphonic mode, a Unison program will be guaranteed to have six voices!

Oscillator

The oscillator features the three waveforms *Triangle*, *Sawtooth* and *Pulse* (with variable pulse width) which can be activated individually. The frequency can be coarsely adjusted from 0 to 48 notes and finely adjusted from 0 to one note. Of course, the LFO is able to modulate frequency as well as pulse width. There is also a separate invertible ADSR envelope for frequency modulation and a Glide (Portamento) function.

Filter

The filter input is derived from an adjustable mixture of the oscillator signal and a white noise source. The filter itself is a four-pole lowpass and capable of self-resonating. It has its own ADSR envelope and can be modulated by both the LFO and the oscillator, resulting in cool distortion or Ring modulator-like sounds.

Amplifier

The amplifier has a programmable volume parameter and its own ADSR envelope. Note that the original *Six-Trak* is not velocity-sensitive – I added this standard feature for convenience.

LFO

The LFO comes with two waveforms, *Triangle* and *Rectangle*. Speed and modulation amount are the only other parameters here. Furthermore, the modulation wheel will control the LFO amount with respect to the setting of the WHEEL TO LFO knob (see section *Common Controls*).

MIDI Parameter Control

Like the hardware, *Six-Traq* allows all 36 original sound parameters to be controlled by MIDI Control Change (CC) commands (this functionality can be turned on or off via the *Options Menu)*. The default number of the MIDI CC controller is given in the *Sound Parameters* table and can be overridden by the Learn function (see sections *MIDI Control Change Messages* and *MIDI Learn*).

Note that MIDI CCs depend on their associated MIDI channel: If for example a MIDI CC is sent on channel 4 and tracks 1 and 2 of *Six-Traq* are both set to receive on channel 4 while track 3 receives on channel 5, then the MIDI CC will affect the respective sound parameter of *both* tracks 1 and 2 but *not* of track 3. Thus it works the same as with played notes. ☺

Plugin Handling

The *Six-Traq* plug-in has many other features/functions hidden in various (context) menus which will be explained in this section.

Options Menu

This menu open when you click the MENU button in the top section.

Copy Preset	Copy current preset to internal clipboard
Paste Preset	Paste internal clipboard to current preset
Init Preset	Initialize the current preset
Load Preset	Load a FXP file containing a preset to *Six-Traq's* current preset
Save Preset	Save *Six-Traq's* current preset to a FXP file
Load Bank	Load a FXB bank file containing 64 presets into *Six-Traq*
Save Bank	Save *Six-Traq's* 64 presets to a FXB bank file
Select Startup Bank	Select the bank file that should always be loaded when *Six-Traq* is started
Load Startup Bank	Load the Startup bank file; can also be used to check what the current Startup bank is
Unselect Startup Bank	Unselect the current Startup bank
Default Path for Preset Files...	Sets the default path for preset and bank files
Show Configuration At Startup	Sets if the Configuration section should be opened at startup
Receive Parameter CCs	Sets if *Six-Traq should* receive the original *Six-Trak* MIDI CCs for parameter control
Don't Ask To Commit	Set globally if *Six-Traq* should not asked to commit any of your changes (**use at your own risk!**)
MIDI Thru	Set globally if MIDI data sent to the *Six-Traq* should be sent through to its MIDI output
Ignore Program Change	Set globally if MIDI Program Change data sent to the *Six-Traq* should be ignored
Reload Configuration	Reload the *Six-Traq's* configuration file (see section *The sixtraq.ini Configuration File*)
Save Configuration	Save the *Six-Traq's* configuration file (see section *The sixtraq.ini Configuration File*)
Window Size...	Change the window size of the *Six-Traq*
Save Window Size	Stores the current window size to the configuration file so that it will be restored next time you load the *Six-Traq*

Check Online for Update	When connected to the Internet, this function will check if a newer version of the *Six-Traq* is available at fullbucket.de
Visit fullbucket.de	Open fullbucket.de in your standard browser

Program Menu

This context menu opens when you right-click on the PROGRAM button in the Control section.

Record/Store Program...	Record/store the current program, potentially under a different program number
Init Program	Initialize the current program
Load Program SysEx File	Load a SysEx file to the current program
Save Program SysEx File	Save the current program to a SysEx file
Load Program Bank SysEx File	Load a SysEx bank file into *Six-Traq's* current preset
Save Program Bank SysEx File	Save the 100 programs of *Six-Traq's* current preset to a SysEx bank file
Additionally Save Enhanced Program Data	When saving a SysEx program file, additionally save the enhanced parameter values, too (see section *Parameter Resolution*)
Restore Factory Program	Restore the current factory program
Restore All Factory Programs	Restore all 100 factory programs
Default Path for Program Files...	Sets the default path for program and bank SysEx files

Sequencer Menu

This context menu opens when you right-click on the SEQ A or SEQ B buttons in the Control section.

Load Sequence A/B From MIDI File	Load a MIDI file to sequence A or B
Save Sequence A/B To MIDI File Type 0	Save sequence A or B to a MIDI file of type 0
Save Sequence A/B To MIDI File Type 1	Save sequence A or B to a MIDI file of type 1
Clear Sequence A/B	Clear sequence A or B
Default Path for Sequence Files...	Sets the default path for sequence/MIDI files

The *sixtraq.ini* Configuration File

The *Six-Traq* is able to read some settings from a configuration file (`sixtraq.ini`). The exact location of this file depends on your operating system and will be displayed when you click on "Reload" or "Save Configuration".

MIDI Control Change Messages

Apart from the default MIDI Control Change associations (see section *MIDI Parameter Control*) it is possible to control all parameters of the *Six-Traq* by MIDI controllers, or more precise: Each MIDI controller (except *Modulation Wheel* and *Sustain Pedal*) can control one of *Six-Traq*'s parameters. The mapping is defined in the `sixtraq.ini` for example like this:

```
[MIDI Control]
CC7  = 3   # Master Volume
CC70 = 100 # Track 1 Filter Cutoff
CC71 = 101 # Track 1 Filter Resonance
...
```

The syntax is straight forward:

```
CC<controller number> = <parameter ID>
```

Given the above example, controller 7 directly controls the overall *Volume* parameter, controller 70 the *Filter Cutoff* of the first track etc. As you can see, comments are introduced by the Pound sign (#); they are here just for description purposes and completely optional. Note that the *controller number* can run from 0 to 110, with the exception of 1 (*Modulation Wheel*) and 64 (*Sustain Pedal*); the latter two are simply ignored.

MIDI Learn

The easiest way to (re)assign MIDI controllers to *Six-Traq* parameters is to use the *MIDI Learn* function. To activate MIDI Learn, click on the LEARN button and wiggle both the MIDI controller and the *Six-Traq's* parameter that you want to link. If you want to unlearn the assignment, right-click the LEARN button (the label now reads "UNLEARN") and activate it. Now wiggle the MIDI controller or the parameter that you want to unlearn.

Plug-In Parameters

General Parameters

parameter	id	description
Master Tune	0	Master tune (± 1 note)
Pitch Bend	1	Pitch Bend amount (± 12 note)
Wheel To LFO	2	Mod. Wheel to LFO amount
Master Volume	3	Master volume
Mode	4	*Six-Traq's* operation mode: *Normal*, *Sequence A*, *Sequence B*, *Arpeggiator Up/Down*, *Arpeggiator Assign*, *Stack A*, *Stack B*
Link Programs	5	Link the track's programs (*On* or *Off*)
Param. Resolution	6	Resolution of the sound parameters (*Six-Trak* or *Extended*)
Speed	37	Sequencer/Arpeggiator speed
Sync to Host	38	Sequencer/Arpeggiator synchronization to host/DAW
Track Prg 1-6	7–12	Selected program for each track
Seq A Prg 1-6	13–18	Track programs for Sequence A
Seq B Prg 1-6	19–24	Track programs for Sequence B
Stack A Prg 1-6	25–30	Track programs for Stack A
Stack B Prg 1-6	31–36	Track programs for Stack B

Track Parameters

The parameters listed here for track 1 are repeated for track 2 (id 46–52), track 3 (id 53–59), track 4 (id 60–66), track 5 (id 67–73), and track 3 (id 74–80).

parameter	id	description
Track 1 MIDI Channel	39	MIDI channel for track 1 (1 to 16, *All/Omni*, *X/Off*)
Track 1 Mode	40	Track mode: *Monophonic*, *Polyphonic*, *Legato*
Track 1 Cycle	41	Track cycling (*On* or *Off*)
Track 1 Tune	42	Track tuning (± 1 note)
Track 1 Transpose	43	Track transpose (± 24 note)
Track 1 Volume	44	Track volume
Track 2 Panorama	45	Track panorama

Sound Parameters

The parameters listed here for track 1 are repeated for track 2 (id 118–154), track 3 (id 155–191), track 4 (id 192–228), track 5 (id 229–265), and track 6 (id 266–302).

parameter	id	MIDI CC	description
Coarse Frequency	81	2	Oscillator transpose (0–48 notes)
Fine Frequency	82	3	Oscillator tuning (up to one note)
Glide Rate	83	4	Portamento speed
LFO to OSC	84	5	Frequency modulation by LFO (Off/On)
OSC Env Amount	85	6	Frequency modulation by oscillator envelope
OSC Env Invert	86	7	Invert oscillator envelope (Off/On)
OSC Env Attack	87	8	Attack time of oscillator envelope
OSC Env Decay	88	9	Decay time of oscillator envelope
OSC Env Sustain	89	10	Sustain level of oscillator envelope
OSC Env Release	90	11	Release time of oscillator envelope
OSC Sawtooth	91	12	Sawtooth wave (Off/On)
OSC Triangle	92	13	Triangle wave (Off/On)
OSC Pulse	93	14	Pulse wave (Off/On)
OSC Pulse Width	94	15	Manual pulse width
OSC LFO to PW	95	16	Pulse width modulation by LFO (Off/On)
LFO Frequency	96	17	Speed of LFO
LFO Amount	97	18	Modulation amount of LFO
LFO Shape	98	19	Waveform of LFO (Triangle/Rectangle)
OSC/Noise Mixer	99	20	Oscillator and white noise mixer
Filter Cutoff	100	21	Filter cutoff frequency
Filter Resonance	101	22	Filter resonance
Filter Env Amount	102	23	Filter cutoff modulation by filter envelope
Filter Env Invert	103	24	Invert filter envelope (Off/On)
Filter Env Attack	104	25	Attack time of filter envelope
Filter Env Decay	105	26	Decay time of filter envelope
Filter Env Sustain	106	27	Sustain level of filter envelope
Filter Env Release	107	28	Release time of filter envelope
LFO to Filter	108	29	Filter cutoff modulation by LFO (Off/On)
Filter Key Track	109	30	Filter keyboard tracking
Filter Osc Mod Amount	110	31	Filter cutoff modulation by oscillator's triangle wave
Amp Env Attack	111	32	Attack time of amplifier envelope

parameter	id	MIDI CC	description
Amp Env Decay	112	33	Decay time of amplifier envelope
Amp Env Sustain	113	34	Sustain level of amplifier envelope
Amp Env Release	114	35	Release time of amplifier envelope
Voice Volume	115	36	Amplifier volume
Voice Mode	116	37	Voice mode: Single or Unison
Amp Velocity	117	–	Amplifier velocity sensitivity

Frequently Asked Questions

How do I install the Six-Traq *(Windows VST2 32 bit version)?*

Copy the files `sixtraq.dll` from the ZIP archive you have downloaded to your system's or favorite DAW's VST2 plug-in folder. Your DAW should automatically register the *Six-Traq* VST2 plug-in the next time you start it.

How do I install the Six-Traq *(Windows VST2 64 bit version)?*

Copy the file `sixtraq64.dll` from the ZIP archive you have downloaded to your system's or favorite DAW's VST2 plug-in folder. Your DAW should automatically register the *Six-Traq* VST2 plug-in the next time you start it.

Note: You may have to remove any existing (32 bit) `sixtraq.dll` from your VST2 plug-in folder or else your DAW may screw the versions up…

How do I install the Six-Traq *(Windows CLAP 32/64bit version)?*

Copy the file `sixtraq32.clap` (32 bit) or `sxtraq64.clap` (64 bit) from the ZIP archive you have downloaded to the `C:\Program Files\Common Files\CLAP` folder. If your DAW supports the CLAP format, it will automatically register the *Six-Traq* CLAP plug-in the next time you start it.

How do I install the Six-Traq *(Windows VST3 64 bit version)?*

Copy the file `sixtraq.vst3` from the ZIP archive you have downloaded to your system's or favorite DAW's VST3 plug-in folder. Your DAW should automatically register the *Six-Traq* VST3 plug-in the next time you start it.

How do I install the Six-Traq *(Windows AAX 64 bit version)?*

Copy the file `sixtraq_AAX_installer.exe` from the ZIP archive you have downloaded to any of your system's folder and run it. Your AAX-enabled DAW (Pro Tools etc.) should automatically register the *Six-Traq* AAX plug-in the next time you start it.

How do I install the Six-Traq *(Mac)?*

Locate the downloaded PKG package file in Finder (!) and do a right- or control-click on it. In the context menu, click on "Open". You will be asked if you really want to install the package because it comes from an "unidentified developer" (me ☺). Click "OK" and follow the installation instructions.

What is the plug-in ID of the Six-Traq*?*

The ID is **`6trq`**.

Come on, Bucketeer, yet another boring simulation?

Yup, nostalgia. If you get bored, don't download it. The trash bin is your friend, too.