**MIDIdocs**

# Configuring Tracks

Forum Discussion Thread - for comments, corrections, or questions about this article

Some information about track provisioning, and some of the things you may want to do when you're first setting up a track.

## Track Memory Requirements

The SEQ is a 16 track sequencer, but each track is basically a collection of Trigger and Parameter Layers - each step in a track records several layers of information. The more layers of information that are recorded, the more memory will be required to store each step.

Each step in a Parameter Layer can store 128 values. It takes 7 bits of memory to represent the range 0-127. So, each step in each Parameter Layer requires 7 bits of memory. Storing 16 steps of one Parameter Layer would require 16×7 = 112 bits.

Each step in a Trigger Layer only contains an on or off value. That can be represented with one bit - a zero or a one. So, storing 16 steps of one Trigger Layer only requires 16 bits of memory.

The SEQ allots a certain amount of memory to each track - 1024 bytes (or 8192 bits) dedicated to storing Parameter Layer information, and 2048 bits for Trigger Layer information. The longer the track (ie: the more steps are contained in the track), the less layer information will be able to be stored in this amount of allotted memory - a track of a given length will be able to store half as many layers as a track half as long.

Note that the instruments in a drum track are basically the same thing as Trigger Layers - they have an on and off value for each step (eg: is the snare drum played here? yes/no)

The SEQ conveniently provides predefined track types which divide up the available memory in

| Mode | Steps | Parameter Layers | Trigger Layers | Instruments |
|---|---|---|---|---|
| Note | 64 | 16 | 8 | 1 |
| Note | 128 | 8 | 8 | 1 |
| Note | 256 | 4 | 8 | 1 |
| Chord | 64 | 16 | 8 | 1 |
| Chord | 128 | 8 | 8 | 1 |
| Chord | 256 | 4 | 8 | 1 |
| CC | 64 | 16 | 8 | 1 |
| CC | 128 | 8 | 8 | 1 |
| CC | 256 | 4 | 8 | 1 |
| Drum | 64 | 1 | 2 | 16 |
| Drum | 128 | 2 (32 steps only) | 1 | 16 |
| Drum | 128 | 1 | 2 | 8 |
| Drum | 256 | 2 (64 steps only) | 1 | 8 |
| Drum | 64 | 1 | 1 | 16 |
| Drum | 128 | 1 | 1 | 8 |
| Drum | 256 | 1 | 1 | 4 |

various ways.

If you do the math on that chart, it looks like there must be some memory overhead that I didn't take into account that makes each step of a Parameter Layer require 1 full byte of memory rather than just 7 bits. But whether the above is 100% accurate or not, it's probably way more than you need to know in order to operate the SEQ anyway.

## Who Cares? I Just Want to Initialize a Track.

Fine.

Press MENU + GP Button #2 to enter the TRACK EVENT Page, which looks like this:

```
Trk. Type Steps/ParL/TrgL Port Chn EditLayer  controls
G1T1 Note    64  16    8  USB1   1 Name  A    Note                    PRESETS  INIT
```

Turning Encoder #1 selects which track you're working with. Turn Encoder #2 to choose one of the track types from the table above. After you've chosen a track type, press and hold GP#16 for two seconds to initialize the track to your chosen track type.

## Port and MIDI Channel Assignment

Self explanatory. Read the uCapps manual if you don't understand this concept.

## Parameter Layer Assignments

After you've initialized the track, the options displayed on the right side LCD on the TRACK EVENT Page will vary depending on what track type you chose.

### NOTE, CHORD, and CC Tracks

Parameter Layers (including the chord layer type) can be assigned on the right LCD. These three track types are essentially the same, the main difference is the Parameter Layers that are assigned by default. For example, the first Parameter Layer of a NOTE track type is a NOTE Layer, whereas a CHORD track's first Parameter Layer is a CHORD layer, and a CC Track's first layer is a CC Layer. But there's nothing stopping you from assigning CHORD layers to a NOTE or CC track. The predefined track types are provisioned for your convenience, so you don't have to go to the trouble of reassigning a bunch of layers every time you initialize or clear a track.

### DRUM Tracks

Drum Tracks are different. Drum tracks have only 1 or 2 Parameter Layers, and only 1 or 2 standard Trigger Layers (eg: accent, roll, gate, etc.). Drum Tracks also have multiple (up to 16) “instruments” - each of these is basically just a trigger layer (eg: does the snare drum play on this step? yes/no).

On the right LCD, you can assign the 1 or 2 Parameter Layers that are provisioned for the selected Drum Track Type. You can also set up the track's “instruments.” For each drum track instrument, you can:

- set a midi note - the SEQ will send this note out the selected Port/Channel on every active step for that instrument. The note you choose should be the note that triggers the sound you want to play on your external drum machine/sampler/whatever. If you hook the Drum Track up to a synth instead of a drum machine, the synth would simply play the selected note on every active step; and
- assign a name (press GP#8 to edit the name, or just accept the default name provided).

If the Track has an Accent trigger layer, you can also set the VelA and VelN values - these represent the Normal Velocity (VelN) of the instrument, and the Velocity at which the instrument will play if an Accent is triggered (VelA). VelN will not be available if the track has a velocity layer.

**Shorter Parameter Layers in some drum tracks**: Some drum tracks have parameter layers with less steps than the maximum number of steps in the track. For example, the 128 step drum track with 2 x 32 step Parameter Layers has two Parameter Layers which are only 32 steps long. If the track length is set to 128, then the Parameter Layers will repeat 4x over the whole length of the track.

## Track Length (LEN)

Press MENU + GP Button #6 to enter the TRACK LENGTH Page

```
Trk.   Length  Loop          QuickSel      Quick Selection: Length
G1T1    16/32    1            Length   4   8   16   24   32   64  128  256
```

Look at the track types table above again for a second. Each track type has a number of steps. That's the MAXIMUM number of steps for the track, but the track will not initialize with that as its length. Instead, tracks have a length of 16 when they are first initialized - ie: only the first 16 steps will play. You can increase the track length (here on the LEN Page), but only up to the maximum number of steps provisioned for the track type you selected.

You can choose a track length manually with Encoder #2 (this is good for selecting non-standard phrase lengths), or you can press one of the quickselect buttons on the right LCD to choose from a list of predefined lengths: 4, 8, 16, 32, 64, 128, or 256 steps. Lengths longer than the maximum number of steps provisioned for the track will not be shown in this list (they'll appear as “—”).

# Track Timebase/Clock Divider (DIV)

Pressing MENU + GP Button #5 opens the TRACK DIVISION (DIV) Page.

```
Trk. Clock Divider  Synch to Measure          Quick Selection: Timebase
G1T1  16 (normal)   yes              1   2   4   8   8T  >16<  16T  32
```

This page allows you to change the resolution of the track (change the number of beats each step in the track represents) by dividing the midi clock. Read the Track Clock Divider Page section of the uCapps SEQ Menu Pages Manual for more information on this feature. Different tracks can have different dividers (for example, you could have a track where every step is a whole note playing alongside other tracks where every step is a sixteenth note or quarter note.) You can also use the clock divider to create unusual time signatures, and playing tracks with different dividers together can create interesting polyrhythms.

**Sync to Measure** - when this is activated, the track will jump to the start of the measure in sync with the other tracks. When it's not active, the track will play its full measure without reference to what the other tracks are doing. If the track has an unusual clock divider it may drift out of sync with the other tracks over time. This can create some interesting effects.

# Trigger Layer Assignments

MENU + GP Button #9 takes you to the Trigger Layer Assignments page.

```
Trk. Gate Acc. Roll Glide Skip R.G  R.V No Fx
G1T1  >A<   B    C    D    E    F    G   H
```

See the MIDIdocs article on Trigger Layers or the Trigger Assignments Page section of the uCapps SEQ Menu Pages Manual for more information on this feature.

Remember that you can assign more than one trigger to a single Trigger Layer, making it a “multi” trigger layer which sends all of the assigned triggers on every step where the Trigger Layer is set to 'on'.

Most track types include all 8 types of Trigger Layers, so you really don't need to worry about reassigning them. But the ability to assign trigger layers can be useful for drum tracks, which don't have many trigger layers.

# The TRACK MODE Page

MENU + GP#3 opens the TRACK MODE Page.

```
Trk.    off      Transpose          Bus Hold  Sort  Restart  ForceScale  Sustain
G1T1     >Normal<  Arpeggiator      1   on    on    off      off         off
```

Read the Track Mode Page section of the uCapps SEQ Menu Pages Manual for more information on the options on this page.

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