Owners Manual

SQ16

MUSIC AND MORE

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1. Introduction

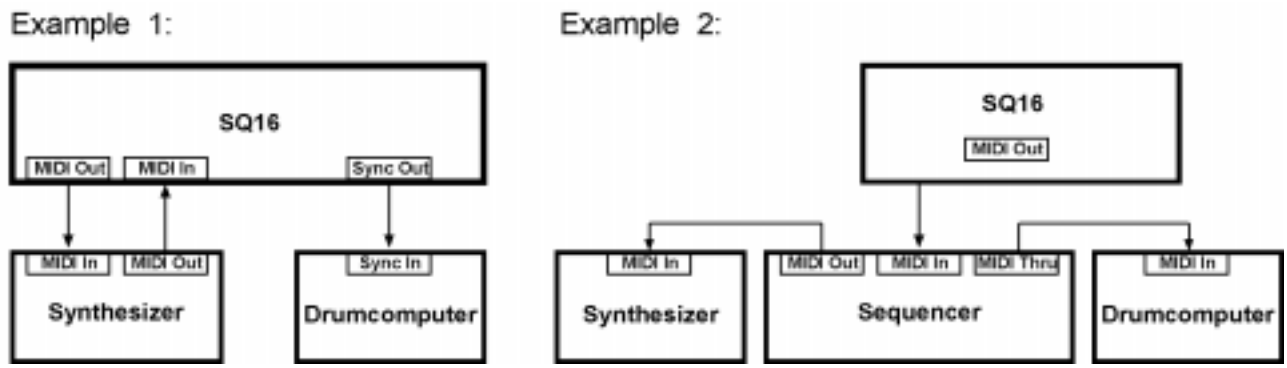
1.1. Basic usage of the SQ16

The SQ16 is predominantly used to create drum sequences. The SQ16 does not have a built-in sound source; instead it outputs MIDI data which control single drum instruments in an external drum expander or synthesizer. The SQ16 allows fast and simple changes of the rhythm of a drum sequence. All changes can be made while the drum sequence is playing and are immediately audible. That's why the SQ16 can also be used in a live setting.

With the exception of various synchronization commands (Sync, MIDI clock, Start/Stop/Continue) only Note commands are sent by the SQ16. Other MIDI data types like Pitch bend or Controllers were consciously omitted to avoid complicated and time consuming edit operations. For this purpose there are enough software sequencers in existence, which are often superior to a hardware sequencer. It would also defeat the purpose of the SQ16 - creating and editing drum sequences in a simple manner.

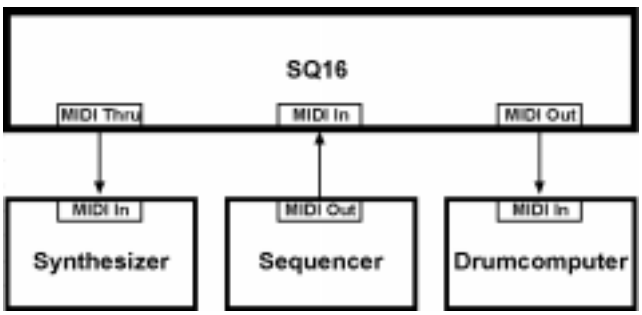
The SQ16 offers a wealth of functions which go far beyond a step sequencer in the usual sense, like Delay (Echo), Arpeggio or Rotate which helps create "irregular" rhythms.

Using the SQ16 as master:



- Example 1:
  The SQ16 controls the sounds and drumsets of a synthesizer. Simultaneously the synthesizer keyboard can be played; the notes can be recorded into the SQ16 or transformed into an arpeggio. In addition the SQ16 synchronizes a drum machine which has a sync input.
- Example 2:
  The SQ16 synchronizes an external sequencer. The drum sequence is transmitted via the synth's MIDI Thru to a drum machine. The external sequencer itself controls the synthesizer.

Using the SQ16 as slave:

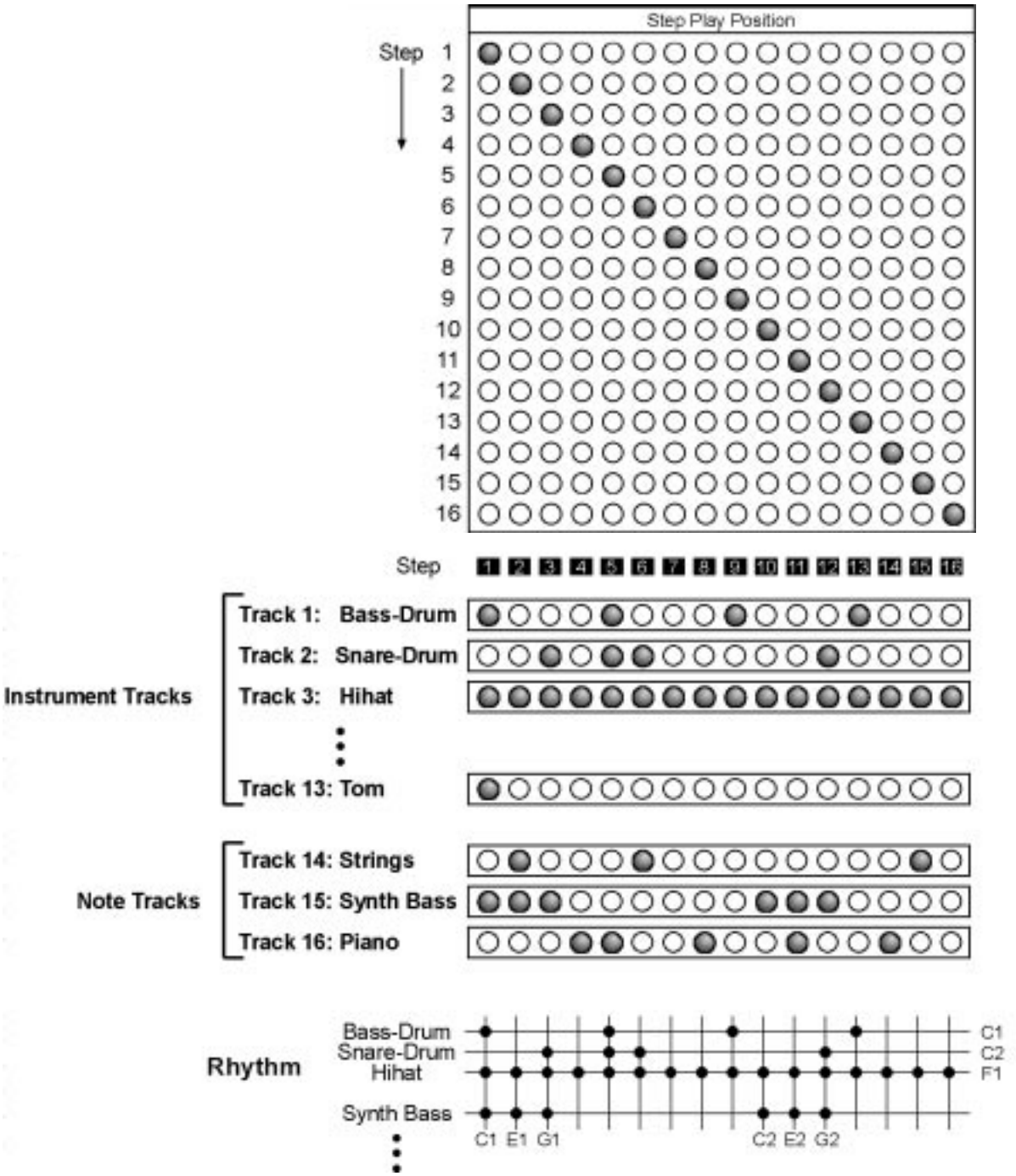


Here the SQ16 gets synchronized from an external sequencer. The SQ16 in turn controls the computer. If the external sequencer must control the synthesizer too, this can be done via the MIDI Thru of the SQ16 in case the external sequencer has just a single output.

1.2. Basic principles

- **Pattern**
  So-called "patterns" form the nucleus of the SQ16. They are rhythmical patterns that consist of a limited amount of steps (up to 16).

General architecture of a pattern:



Each pattern contains 16 tracks. Each track contains exactly one note per step. Within each instrument track all notes are the same. If the SQ16 is triggering a drum expander each instrument track plays a single drum instrument (drum expanders usually are built around drumsets in which each note is assigned to exactly one instrument).

Note tracks (track 14...16) can use different notes per step. If the SQ16 is triggering a synthesizer each note track plays back a melody which can be assigned to certain sounds. If the synthesizer also contains drum sets you can simultaneously play back Instrument tracks and note tracks. Each track has its own MIDI channel to allow an assignment to drumsets or sounds.

Creating a rhythm

The rhythm of a pattern depends on which step within each track are active or muted. Creating a rhythm with the SQ16 is fast and simple:

- Selecting a track
  The LED's above each Step button 1-16 show the status of each single step (Step is active or muted)
- Editing a track
  Each Step has its own button that toggles between the states of the Step.

Playing a pattern

When a pattern is playing all Steps are played back sequentially; e.g. Step 1, Step 2, Step 3... After the final step is reached the pattern starts again from the beginning. All tracks that have an active Step on the current Step Play Position output a MIDI note. Consequently, the number of simultaneous MIDI notes can vary between 0 and 16.

Because all steps are played back sequentially you can easily display the rhythmical structure of a pattern by putting one track above the other.

Display of current Step Play Position:

If a track is being edited and the pattern is played back each played step blinks. This sort of display is handy when editing a track.

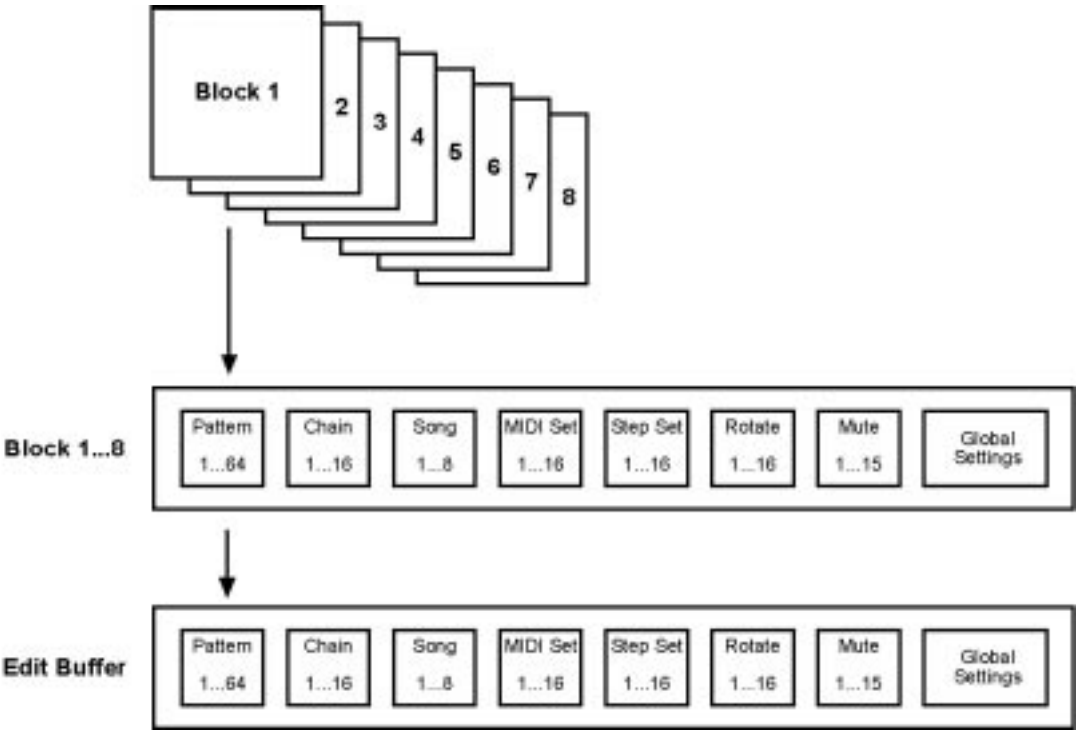
Editing note tracks

Since a note track can contain different notes different procedures are used to create a note track:

- Editing a note track (Insert/Delete/Transpose notes)
- Recording from an external keyboard

- **Songs and Chains:**
  Playing back different patterns sequentially can create longer rhythmical structures. This is done with either so-called Chains (pattern chains in fixed order) or Songs in which patterns can be grouped freely.
- **MIDI Sets:**
  A MIDI set is used to assign a note number and a MIDI channel to each instrument track or a MIDI send channel and a MIDI receive channel to each note track. Those data are not stored with a pattern! Each pattern can use one of 16 MIDI Sets. All tracks are assigned to the various MIDI channels as defined by the MIDI Set.
- **Step Sets:**
  The steps of each track don't have an own velocity setting. With a drum sequence it is often sufficient to use two different velocities to vary the volume of an instrument. For this purpose each track has its own accent track in which you can activate an accent for each single step. However the velocity values used here are determined by the Step Set (individually for each track). By assigning a Step Set to a pattern the velocity settings of this Step Set are used for each track of the pattern.
- **Rotate:**
  This function generates rhythmical variations by changing the Step Play Position; the original rhythm of the pattern (instrument tracks and note tracks) however remains unchanged. The SQ16 contains 16 Rotate settings. Each Rotate setting in turn contains different settings for each track.

1.3. Memory structure of the SQ16



- **Block**
  The 8 Blocks are memory areas for permanent storage of data. Data is not lost after power-down. Each Block contains the following data:
  - Pattern 1...64
  - Chain 1...16
  - Song 1...8
  - MIDI Set 1...16
  - Step Set 1...16
  - Rotate 1...16
  - Mute Setting 1...15
  - Global settings
- **Edit Buffer**
  The Edit Buffer is the "working area" of the SQ16. Only data in the Edit Buffer can be edited or played back. Data of a Block are edited or played back by loading this Block into the Edit Buffer and playing it/performing edit operations.

Anatomy of a SQ16-"session":

1. After powerup Block 1 is loaded automatically into the Edit Buffer. You can load a different block (but only one Block at a time) into memory.
2. If you just play back the Edit Buffer data without performing edit operations the Edit Buffer plays back an exact copy of the data of the loaded Block.
3. By performing edit operations only the data in the Edit Buffer is changed, not the data in the Block itself. If you want to make those changes permanent you need to store the Edit Buffer into the Block again.

   You can copy a Block (for example Block 1 to Block 3) by first loading Block 1 into the Edit Buffer and saving it into Block 3.
4. The Edit Buffer is volatile; all data are lost after powering down.

1.4. Synchronizing the SQ16 to other sequencers

- **Synchronizing with MIDI sequencers**
  Synchronization is done by MIDI clock. The SQ16 can be used either as Master (SQ16 controls external sequencer) or as Slave (SQ16 is controlled by external sequencer). This mode depends on the settings for Clock Source, Clock OUT On/Off and Autostart On/Off in the global settings (see 3.4).
- **Synchronizing drum machines with DIN sync**
  The SQ16 can control drum machines that have a DIN sync input. The SQ16 sends the commands Start, Stop ad Clock (24 ppq).

1.5. First steps

This section helps you to become familiar with the basic operation of the SQ16. If you have never before worked with an SQ16 you should follow these steps carefully.

1. Making connections

1.1. Connect the SQ16 to a MIDI expander that offers both drum instruments (as drumsets) and other sounds. Connect the SQ16's MIDI Out to the expander's MIDI In.

1.2. Connect the included power supply to the SQ16.

2. Turning on the SQ16

- On powerup Block 1 data is loaded into the Edit Buffer. The SQ16 is in Play Mode - Pattern with Pattern 1 selected. The tempo is set to 120 bpm.
- The 13 instrument tracks of Pattern 1 are set to send on MIDI channel 10 and are configured for a General MIDI drumset.
- The 3 note tracks of Pattern 1 are set to the following MIDI channels:

  note track n14: Channel 1
  note track n15: Channel 2
  note track n16: Channel 3

3. Starting the sequencer

Press the "Loop" button and start the SQ16 by pressing the "Start/Stop" button. You should hear a drum sequence with all 13 instrument tracks activated and all note tracks muted.

If the connected expander isn't playing at all check for:

- Wrong connections
- Incorrect MIDI setup in the expander (for example disabled MIDI In)
- The expander possibly doesn't have any drumkits or they are not set to receive on channel 10

If the instrumentation is not musically useful the expander probably uses a drum mapping different from the General MIDI standard. In this case you will have to change the instrument assignments in the SQ16 (see section 10).

4. Selecting a pattern for playback

4.1. Press step buttons 1...16 to play different patterns. The currently playing pattern is displayed in the right readout, the next selected pattern in the left readout.

4.2. Before continuing with the next step select Pattern 1.

5. Activating and muting instrument tracks

5.1. Press the "Inst/Note" button. Mute setting Co001 is selected; all 13 instrument tracks are activated; all three note tracks are muted.

5.2. Press the "arrow up" button in the left Select/Edit section several times to select different Mute settings.

5.3. Press the "arrow down" button in the left Select/Edit section until again Mute setting Co001 is active.

5.4. Press step button 1.13 to mute a single instrument track or mute all tracks with the "ALL OFF" button. You can turn back on a muted track by again pressing its corresponding step button. Use step button 14...16 to mute the note tracks n14, n15 and n16.

6. Editing an instrument track (On/Off track)

6.1. Mute all note tracks (n14...n16) and all instrument tracks except 3 and 12 (LED's 3 and 12 are lit). Instrument tracks 3 and 12 should trigger the following sounds:

instrument track 3:tambourine
instrument track 12: bass drum

We are going to edit track 12 now:

6.2. Activate the "Inst Step - On/Off" function.

6.3. Press the "arrow down" button in the left Select/Edit section several times until instrument track 12 is selected (left display: I12). The current Step Play Position is blinking shortly. All steps that light permanently will trigger a bass drum; all other steps are muted.

6.4. You can change the rhythm of the bass drum track by triggering the bass drum at different positions:

a. Press step button 1...16 to activate or mute single steps.
b. Mute all steps using the "ALL OFF" button.
c. Activate all steps using the "ALL ON" button.

Before continuing make the necessary edits to the On/Off track to activate Steps 1, 2, 3, 4 and 5.

7. Editing an instrument track (Accent track)

This section shows you how to edit the velocity (and hereby the volume) of single steps. This of course requires a velocity sensitive bass drum in the connected expander.

7.1. Activate the "Inst Step - Accent" function.
With the help of the "light band" interface you can see which step is currently played. Additionally each active step is blinking (1, 2, 3, 4 and 5).

7.2. Setting accents
You can set an accent for each step. This results in a higher velocity for this particular step. Accents are set with the appropriate step buttons. All steps without an accent are output with a common "low" velocity; all steps with an accent with a common "high" velocity.

Activate the accent for arbitrary steps. If you set an accent for a non-active step the step button will light permanently but of course no audible result will follow.

Before continuing make the necessary edits that the only accent is set on Step 3. Make according to example 6 the necessary edits that only Steps 1, 2 and 3 are active (and played).

8. Changing Accent settings for one track (requires velocity sensitive bass drum)

During steps 6 and 7 of your tour we have learnt how to edit the On/Off track and the Accent track for instrument track 12; both the On/Of track and the Accent track are pattern data. The accent track is responsible for the placement of accents; and of course now we'd like to know how to set the common velocity values for low and high velocity for the various tracks of a pattern. Those settings don't belong to the pattern data. Those individual velocity settings are edited and stored in a Step Set. A pattern then gets assigned a Step Set (the SQ16 contains 16 Step Sets) and the settings of this Step Set are used for the instrument tracks of the pattern.

Since Pattern 1 is currently using Step Set 1 you need to edit Step Set 1 to change the velocity settings for instrument track 12 (bass drum).

8.1. Activate the "Step Set Edit" function. The left display reads "I12"; this means all subsequent actions affect the velocity settings for instrument track 12.
8.2. Press "ACC Low" (step button 2). The right display shows the velocity value used for steps without accent (90). You ca change this value by pressing the "Up" or "Down" button (step buttons 11 and 12).
8.3. Press "ACC High" (step button 3). The right display shows the velocity value used for steps with accent (115). You ca change this value by pressing the "Up" or "Down" button (step buttons 11 and 12).

Make the necessary edits to achieve a difference in volume between ACC Low and ACC High.

Activating the Delay function

8.4. Press "ACC Mode" (step button 1). The right display reads "HL". This results in an accented output for Step 3 and a non-accented output for Step 1.
8.5. Press the "Up" button (step button 11). This changes the mode to "dn". You'll here an echo that starts on Step 3 (accent set) and decreases in volume (from ACC High to ACC Low).
8.6. Press the "Up" button again. This switches to "dr" mode. You'll here an echo that starts on Step 3 (accent set) and increases in volume (from ACC Low to ACC High).
8.7. Press the "Up" button again. This switches to "drn" mode. You'll here an echo that starts on Step 3 (accent set), increases in volume (from ACC Low to ACC High) and then decreases in volume (from ACC High to ACC Low).
8.8. Press the "Down" button (step button 12) until mode "dn" is selected. Press "Delay Repeat" (step button 4). The right display shows the number of repeats. You can change the value using the "Up" or "Down" buttons (step buttons 11 and 12). Before continuing with the next example set this value to 4.
8.9. Press "Delay Time" (step button 4). The right display shows the number of steps after which the echo starts. You can change the value using the "Up" or "Down" buttons (step buttons 11 and 12). Before continuing with the next example set this value to 4.

You can make individual assignments for Mode, Accent and Delay for each instrument track.

9. Assigning a specific instrument to an instrument track.

This section describes how to assign a different instrument to instrument track 12 (current setting: bass drum).

One instrument track - and hereby all steps of an instrument track - triggers exactly one MIDI note number; this results in one single drum sound. MIDI note C1 was assigned to Track 12; this is the note number for a bass drum in the GM drum set.

Assigning note numbers and MIDI channels is done via MIDI Sets. Each pattern gets assigned one of the 16 MIDI Sets in the SQ16. A MIDI Set contains all the note numbers and MIDI channels for the instrument tracks; those settings are edited directly in the MIDI Sets. The pattern contains just a pointer to a certain MIDI Set; the instrument tracks use the MIDI channels and note numbers of the assigned MIDI Set.

9.1. Activate "MIDI Set Edit".
9.2. Press "I Note #" (step button 1). The right display shows the note number that is assigned to instrument track 12.
9.3. Change the value using the "Up" or "Down" buttons (step buttons 11 and 12). Depending on the note number instrument track 12 will now play a different sound.
9.4. Leave "MIDI Set Edit" by pressing "Exit" (step button 13) and continue with example 11.

In examples 6 to 9 we have used instrument track 12 as our example; the process is similar for all other instrument tracks. You simply need to select a different instrument track to edit it. This is done via the "Arrow Up" and "Arrow Down" buttons in the left Select/Edit section. The left display shows the selected instrument track (I01...I13).

10.Assigning instruments and MIDI channels to the instrument tracks of a pattern

This section tells you how to assign an instrument and a MIDI channel to all instrument tracks. This is useful if you couldn't achieve a suitable instrumentation in example 3 or if you want to change the MIDI channel altogether.

A short description of the SQ16's workings:

An instrument track is playing exactly one drum instrument of an external expander by assigning one note number to this track (expanders usually group together drum sounds to drum sets). Of course also the MIDI channel must match.

Assigning note numbers and MIDI channels is done via MIDI Sets. Each pattern gets assigned one of the 16 MIDI Sets in the SQ16. A MIDI Set contains all the note numbers and MIDI channels for the instrument tracks; those settings are edited directly in the MIDI Sets. The pattern contains just a pointer to a certain MIDI Set; the instrument tracks use the MIDI channels and note numbers of the assigned MIDI Set.

When assigning instruments to instrument tracks it is useful to hear just the instrument track you want to edit. The SQ16 is doing this automatically when using the Mute setting "SGL".

10.1. Activate "Inst/Note".
10.2. Press the "Arrow Up" button in the left Select/Edit section until the left display reads "SGL".

Editing a MIDI Set (Note numbers and instrument channels for instrument tracks)

10.3. Activate "MIDI Set Edit"
10.4. Select instrument track I1. Press the "Arrow Up" button in the left Select/Edit section until the left display reads "I01".
10.5. Press "I Channel" (step button 2). The right display shows the MIDI channel for this instrument track. Change this value using the "Up" or "Down" buttons (step buttons 11 and 12).
10.6. Press "I Note #" (step button 1). The right display shows the note number for the current instrument track. Change this value using the "Up" or "Down" buttons (step buttons 11 and 12). Depending on the note number instrument track 12 will now play a different sound. You may have to change the MIDI channel for a suitable result, too (see 10.5).
10.7. Repeat 10.4...10.6 for the remaining instrument tracks I02...I13.
10.8. If you've found a suitable instrumentation you should store it according to example 16 (storing changes into Block 1).
10.9. Turn off the SQ16 and start over with example 2.

11.Loading a Block

Imagine you have made several changes and edits but want to revert to the original settings. This can be achieved by loading again Block 1 into the Edit Buffer.

11.1. Activate "Global".

11.2. Press "Load From Block" (step button 7) until the right display reads "ALL".

11.3. Press the "Enter" button (step button 14). When the left display reads "Yes" press the "Enter" button again to load Block 1.

11.4. Press "Exit" (step button 13) to leave "Global".

12.Playing a Song

This section describes the general principle behind songs.

12.1. Activate "Play Mode - Song". Song 1 is selected. Each song is made out of 14 Song Steps that are played back in a linear fashion. Each Song Step can play back one of 64 patterns and loop this pattern up to 32 times.

In Song 1 each Song Step plays Pattern 1. However, since each Song Step has different Mute settings various instruments are played during the song. This allows the creation of a song with few patterns.

12.2. Press "Loop" and start the SQ16 by pressing the "Start/Stop" button. The song is playing. The left display shows the currently playing Song Step, the right display shows the pattern loop.

Changing the Mute track for Song Steps:

12.3. Activate "Song Edit On/Off" while the song is playing. The song stops and the current Song Step is played back.

12.4. Press the "Arrow Up" or "Arrow Down" button in the left Select/Edit section to access Song Steps 1...14 (the number is shown in the left display). The LED's above the step buttons indicate which instrument tracks are active for this Song Step (LED on) and which are muted. Keep in mind that this particular Song uses Pattern 1 for each Song Step.

12.5. Change the Mute track for this Song Step using step buttons 1...16.

Before continuing with the next example stop the sequencer.

13.Playing back a Chain

This is an easy way to play several patterns after each other.

13.1. Activate "Play Mode - Chain". Chain 1 (C01) is selected. The LED's above the step buttons indicate which patterns will be played in sequence.

13.2. Press "Loop" and start the SQ16 by pressing the "Start/Stop" button. The blinking LED shows that pattern is currently playing.

Editing a Chain:

This is simply done by pressing step buttons 1...16. Press a step button to add or remove a pattern from a Chain.

14.Activating Rotate

This section is a simple demonstration of Rotate's capabilities.

14.1.Activate "Play Mode - Pattern". Pattern 1 is selected.

14.2.Press "Loop" and start the SQ16 by pressing the "Start/Stop" button. All instruments of the pattern are playing; the pattern repeats itself after 16 steps.

14.3.Activate "Rotate". Hold down the "Select" button in the left Select/Edit section and press simultaneously step button 1. This activates Rotate setting 1 as current Rotate setting; the left display reads "r01".

As you can hear Pattern 1 no longer repeats itself after 16 steps. By using Rotate you can vary the rhythm of Pattern 1 without changing the actual pattern itself.

14.4.Disable "Rotate" to hear Pattern 1 again in its normal state. Hold down the "Select" button in the left Select/Edit section and press simultaneously step button 1. The left display is empty (no Rotate setting active).

15.Changing basic pattern settings

15.1.Pattern length

This sets the final step for Pattern 1; e.g. the step after which Pattern 1 starts over.

- While Pattern 1 is playing activate "Pattern - Length".
- Change the pattern length using step buttons 1-16.

15.2.Pattern scale

This allows you to play back the pattern with double or half speed.

- While Pattern 1 is playing activate "Pattern - Scale". The current scale setting is 16 (step length 1/16).
- Press "Up" (step button 13). The speed has doubled (step length 1/32).
- Press "Down" (step button 12) until Scale 8 is displayed. The pattern plays now with half the speed compared to a setting of 16 (step length 1/8).

15.3.Pattern Step Set

You can assign a Step Set to Pattern 1; Pattern 1 then is going to use its accent settings.

- While Pattern 1 is playing activate "Pattern - Step Set". Currently Step Set 1 is assigned.
- Press step button 2 to assign Step Set 2 instead. While the instrument tracks have not been changed Pattern 1 sounds different now. This is a result of the Delay setting being active for almost all instrument tracks in Step Set 2 while it was active for a couple of tracks only in Step Set 1.

15.4.Pattern MIDI Set

You can assign a MIDI Set to Pattern 1; its note number assignments are used by the instrument tracks of the pattern.

- While Pattern 1 is playing activate "Pattern - MIDI Set". Currently MIDI Set 1 that contains GM drum set instrumentation is assigned to Pattern 1.
- Press step button 2 to assign MIDI Set 2 instead. The instrumentation of Pattern 1 sounds different because the instrument tracks are using different note numbers now.

You can set Pattern Length, MIDI Set and Step Set individually for each pattern.

16.Saving the Edit Buffer into a block.

All changes we have made so far took place in the Edit Buffer into which Block 1 was loaded at powerup. After switching off the SQ16 the contents of the Edit Buffer are lost. If you want to keep those changes you need to write them into one of the eight blocks before turning off the SQ16.

16.1.Activate "Global".

16.2.Press "Write To Block" (step button 8) until the right display reads "ALL".

16.3.Select the block you want to write into by pressing the "Up" or "Down" button (step buttons 11 and 12).

16.4.Press "Enter" (step button 14). When the left display reads "YES" press "Enter" again.

16.5.Press "Exit" (step button 13) to leave "Global".

17.Note tracks

Activating single steps and setting accents is the same as for instrument tracks. The same applies for Accent settings in Step Sets. However there exist additional functions for recording a note track and for arpeggios. Those functions are intended for a skilled user and are not explained at this point.

If you've followed the instructions up to this point you should be familiar with the basic operating principles of the SQ16. However we could not explain all functions; that's why you should read the remaining parts of the manual carefully, too.

2. Common functions

2.1. Tempo

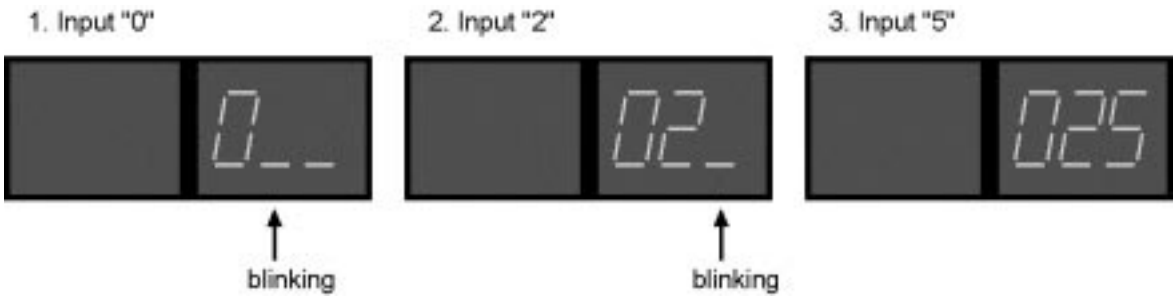
This determines the playback speed of the steps of a pattern. The Tempo setting is global for the pattern, chain and song play modes. The tempo is displayed in quarter notes per minute (beats per minute = BPM). Keep in mind that each pattern can have a different Scale setting. This can result in a different length for the pattern steps; you can have for example four steps per quarter note, eight steps per quarter note, two steps per quarter note... (See also 4.5.2). The Tempo setting determines the playback speed of the SQ16 as a whole while the Scale setting determines the playback speed for a single pattern.

The Tempo value can range between 20 and 255.

Setting a Tempo:

1. Activate "Tempo". The right display reads the current tempo in BPM.
2. Setting the tempo
   a. With the up/down buttons (step buttons 11 and 12)
   b. Entering the value directly with step buttons 1-9 and 0.

   The Tempo value must always have three digits. For a tempo of 25 it is necessary to enter "025"; e.g. you must press the buttons "0", "2" and "5".



If you press a button and the display doesn't change you have tried to enter an illegal value.

2.2. Start/Stop - Continue

- **Start/Stop**
  This is used to start or stop the SQ16. Connected hardware and software sequencers receive a start or stop command. After start MIDI clock is sent.

  - Play Mode - Pattern:starting with step 1 in current pattern
  - Play Mode - Chain:starting with step 1 and first Pattern in Chain
  - Play Mode - Song:starting with step 1 at song start position

  While the SQ16 is playing (either started with Start or Continue) you stop it by pressing the "Start/Stop" button a second time.

- **Continue**
  Continues playback at the previously stopped position. Connected hardware and software sequencers receive via Song Position Pointer the exact position to continue as well.

2.3. Loop

Turns Loop alternating on and off.

- Loop not active:SQ 16 stops after pattern end, song end or chain end (depending on play mode)
- Loop active:patterns, songs and chains are repeated after arriving at their final step

2.4. Select/Edit

Many edit functions are used to change settings for patterns, songs, MIDI Sets and so on. Because most of those settings exist several times it can be necessary to make double selections. For example, we have used the Inst Step Accent function. The accent track is part of a pattern; consequently we needed to select a pattern; but we also needed to select an instrument track I1..I13.

All this is done with the help of the Select/Edit section (the Copy function is without interest at the moment). The buttons in the left section select - depending on the current function - either instrument/note tracks or Song Steps (only in Song Edit). If no LED in the left section is active the currently selected function does not affect instrument or note tracks or Song Steps. The buttons in the right section select - again depending on the current function - patterns, Songs, Step Sets, MIDI Sets, Chains or Rotates. An LED shows which data type is affected.

The "Select" button and both "arrow" buttons have the same functionality in both sections.

- **Select**
  Selecting an instrument track (left section) or for example a pattern (right section) is done by holding down the "Select" button and pressing one of the step buttons. The LED's above the step buttons show the current selection. For example, to select instrument track 5 hold down the "Select" button and press the step button 5. Then release the "Select" button.

- **Arrow up**
  This button is used to select the next higher object; e.g. instrument tracks I1, I2, I3...I13. Holding the button down for longer than about a second will result in "scrolling" with increasing speed.

- **Arrow down**
  This button is used to select the next lower object; e.g. instrument tracks I13, I12, I11...I1. Holding the button down for longer than about a second will result in "scrolling" with increasing speed.

This method for selecting data is common for the whole SQ16. The next sections give detailed descriptions of each function and the necessary steps. After short practice you will be familiar with data selection and no longer need the aid of this manual.

3. Global

3.1. Panic

In the case of so called "hanging notes" (the connected expander won't turn off certain notes anymore) you can force those notes to stop with this function. "Panic" sends the following to the MIDI Out:

- All Notes Off (Channel 1...16)
- Reset All Controllers (Channel 1...16)

Selecting "Panic"

1. Activate "Global - Panic".
2. Press "Enter" button (step button 4) to send the Panic messages. If the SQ16 is in Start/Continue mode (currently playing) it is stopped.
3. Leave "Global" by pressing "Exit" (step button 13) or repeat Panic.

3.2. MIDI Dump

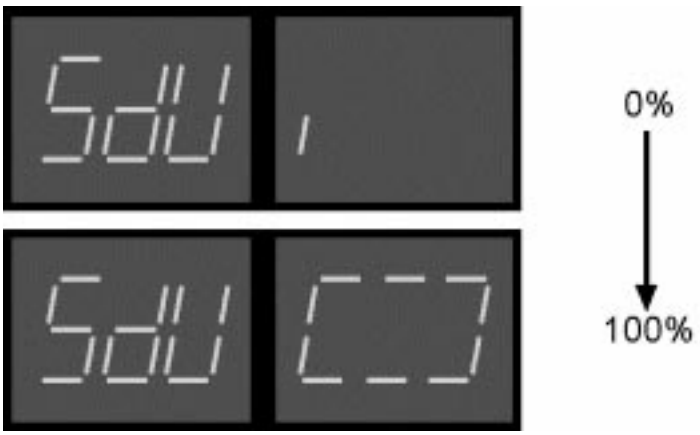
You can externally (for example on a computer or MIDI file player) store SQ16 data to archive your settings or to extend your storage capacity if the eight Blocks in the SQ16 isn't enough. Those data of course can be written back into the SQ16. A MIDI dump for the SQ16 contains all data, e.g.:

- Rotate 1...16
- Chain 1...16
- MIDI Set 1...16
- Step Set 1...16
- Song 1...8
- Pattern 1...64
- Mute Setting 1...15
- Global data: Tempo + Common Pattern + Clock Source + Clock Out ON/OFF + Autostart ON/OFF, including Note rec mode for Note Tracks 14, 15 and 16.

Sending a MIDI dump

All data residing in the Edit Buffer are sent as a MIDI dump. If you want to send one of the 8 blocks of the SQ16 you first need to load it into the Edit Buffer (see 3.5.4).

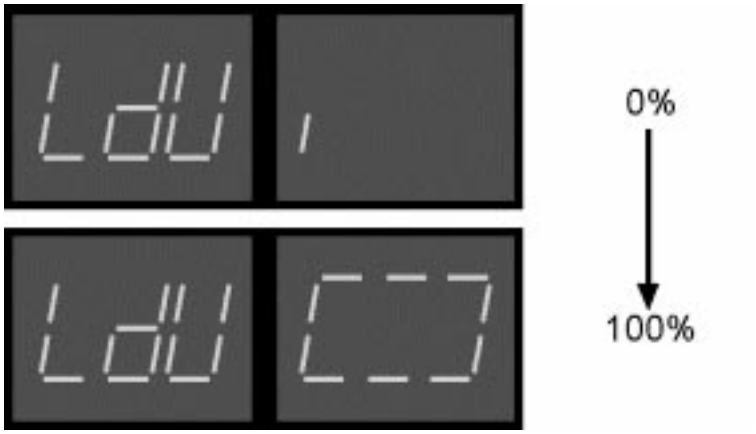
1. If a Song, Chain or pattern is currently playing stop the SQ16 by pressing the "Start/Stop" button.
2. Activate "Global - Write Dump".
3.
   a. Press the "Enter" button (step button 14) to start the MIDI dump. While the MIDI dump is sent (for about 9 seconds) the left display reads "SdU" while the right display shows the progress. After sending the MIDI dump "Global" is exited automatically.



   b. Do not start the MIDI dump and exit "Global" by pressing the "Exit" button (step button 13).

Loading a MIDI dump into the SQ16

You can send dumps to the SQ16 as long as it is in stop mode (not playing). If the SQ16 receives a dump it verifies the data integrity (dumps must sent back unchanged). If it is a valid dump the left display reads "LdU" while the right display shows the progress.



A MIDI dump is always sent into the Edit Buffer. If you want to keep it in the SQ16 you need to explicitly store it into one of the 8 Blocks (see 3.5.4).

3.3. Common Pattern

Each pattern uses individual MIDI Set and Step Set assignments and individual settings for Pattern Length and Pattern Scale (see 4.5). The Common Pattern function is useful for assigning the same MIDI Set or Step Set to each Pattern or to make the same settings for Pattern Length or Pattern Scale for all patterns.

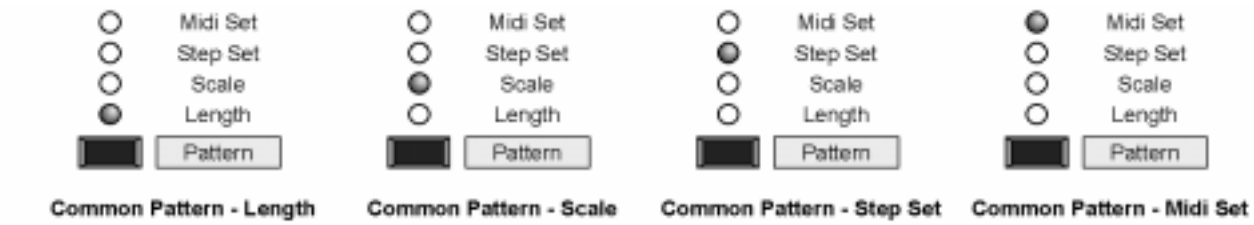
Example: You have used different lengths for your patterns but now want all Patterns to have a length of 16 steps. Activate Common Pattern and set as a common value for all Patterns the length to 16 steps (the individual length settings are still there but no longer active; the Common Pattern setting overrides them). If you at a later point want to use the individual lengths again you simply need to disable the Common Pattern length (in our case: 16 steps).

Editing Common Pattern settings:

Editing those settings means: Individually activating or deactivating Common Pattern settings for Length, Scale, MIDI Set and Step Set and - if necessary - setting the desired values.

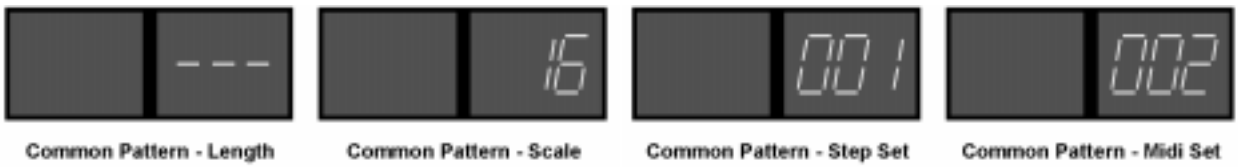
- Common Pattern not active; Patterns use individual pattern settings
- Common Pattern active; Patterns use Common Pattern settings

1. Activate Global - Common Pattern
2. Selecting the Pattern setting Length, Scale, MIDI Set or Step Set you want to make Common Pattern settings for. Press Common Pattern button (step button 3) until the desired setting is active.



3. Edit with the up/down buttons (step buttons 11 and 12) the setting. Example: Pattern length - if the right display reads "---" Common Pattern is not active; the Patterns use their individual settings. If the display reads 001...016 Common Pattern is active and all Patterns use the displayed Pattern Length. The following settings are possible:
   - Length:001...016 (Common Pattern active) or "---" (Common Pattern not active)
   - Scale:1, 2, 4, 8, 16, 32 (Common Pattern active) or "---" (Common Pattern not active)
   - Step Set:001...016 (Common Pattern active) or "---" (Common Pattern not active)
   - MIDI Set:001...016 (Common Pattern active) or "---" (Common Pattern not active)
4. Repeat step 2 and 3 to change other Common Pattern settings or press "Exit" (step button 13) to leave Global.

Example:



- patterns use individual length settings.
- All patterns use Scale value 16.
- All patterns use Step Set 1 and MIDI Set 2.

3.4. Clock Source, Clock out On/Off, Autostart On/Off

Those settings control the MIDI-synchronization to other sequencers/drum computers and are common to patterns, chains and Songs.

• Clock Source - Autostart On/Off

Clock Source IC: The SQ16 always uses its internal clock regardless if it is started internally (via Start/Stop/Continue buttons) or externally (via Start/Continue message). External start is only possible if Autostart is set to On (if Autostart is set to off no external starting is possible).

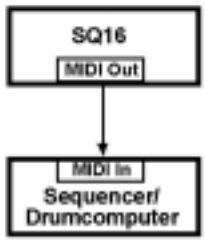
Clock Source IEC: The SQ16 uses its internal clock if it is started internally (via Start/Stop/Continue buttons). When started externally the external MIDI clock is used for synchronization. External start is always possible - regardless of the Autostart setting.

• Clock OUT On/Off

This setting determines if after an internal start of the SQ16 (via Start/Stop/Continue buttons) MIDI clocks are being sent (Clock out=On) or not (Clock OUT=Off). Regardless of this setting the SQ16 still sends the appropriate MIDI message for each internal Start/Stop/Continue.

Examples for synchronizing the SQ16 to other devices:

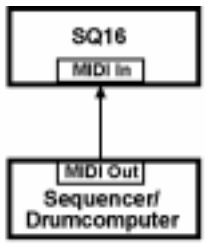
- **SQ16 as master**



Clock Source	Autostart	Clock out	SQ16 sends
x	x	Off	Start/Stop/Continue
x	x	on	Start/Stop/Continue+Midi-Clock

x: without effect

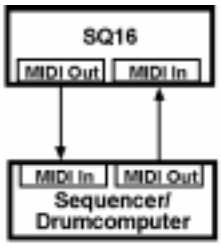
- **SQ16 as slave**



Clock Source	Autostart	Clock out	SQ16 receives
IC	Off	x	—
IC	On	x	Start/Stop/Continue
IEC	x	x	Start/Stop/Continue+Midi-Clock

x: without effect

- **SQ16 as master/slave**



Clock Source	Autostart	Clock out	SQ16 sends	SQ16 receives
IC	Off	Off	Start/Stop/Continue	—
IC	On	Off	Start/Stop/Continue	Start/Stop/Continue
IC	Off	On	Start/Stop/Continue+Midi-Clock	—
IC	On	On	Start/Stop/Continue+Midi-Clock	Start/Stop/Continue
IEC	x	Off	Start/Stop/Continue	Start/Stop/Continue+Midi-Clock
IEC	x	On	Start/Stop/Continue+Midi-Clock	Start/Stop/Continue+Midi-Clock

x: without effect

Changing the settings for Clock Source, Clock OUT On/Off and Autostart On/Off

1. Activate Global and the desired function (Clock Source, Clock OUT On/Off or Autostart On/Off)
2. Using the up/down buttons (step buttons 11 and 12) make the desired changes:
   - IC or IEC (Clock Source)
   - On or Off (Clock OUT On/Off or Autostart On/Off)
3. Leave Global by pressing "Exit" (step button 13)

3.5. Load from Block - Write to Block

This function is used to load data from one of the 8 Blocks into the Edit Buffer or to write data from the Edit Buffer into one of the 8 Blocks. You have the following choices:

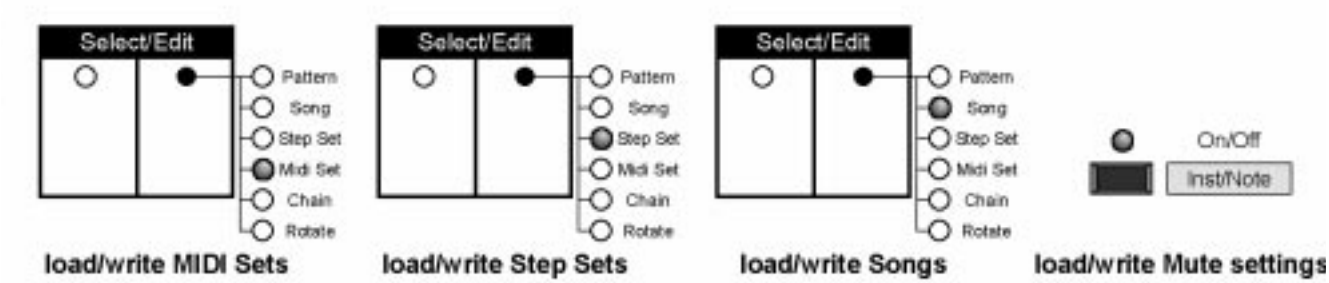
- Load/Write Pattern:single Pattern, arbitrary Pattern or all Patterns (1...64)
- Load/Write Chain:single Chain, arbitrary Chain or all Chains (1...16)
- Load/Write Rotate:single Rotate, arbitrary Rotate or all Rotates (1...16)
- Load/Write MIDI Set:single MIDI Set, arbitrary MIDI Set or all MIDI Sets (1...16)
- Load/Write Step Set:single Step Set, arbitrary Step Set or all Step Sets (1...16)
- Load/Write Song:single Song, arbitrary Song or all Songs (1...8)
- Load/Write Mute:single Mute, arbitrary Mute or all Mutes (Mute 1...14: Co001...Co014, Mute 15: SNG)
- Load/Write Global settings: Tempo + Common Pattern + Clock Source + Clock OUT On/Off + Autostart On/Off, including Note Rec Mode for Note Tracks 14, 15 and 16)
- Load/Write complete Block:All Patterns, Chains, Rotates, Songs, MIDI Sets, Step Sets, Mutes and Global settings

Important: On powerup Block 1 data is loaded into the Edit Buffer. All subsequent edits affect exclusively the Edit Buffer. If you want to make those changes permanent you have to explicitly store them into one of the 8 Blocks (single data types or the whole block). The data in the Edit Buffer is lost when you power down the SQ16 while the data in the 8 Blocks is retained (see also 1.3).

3.5.1. Loading/Writing Rotates, Songs, Chains, MIDI Sets, Step Sets, or Mute settings

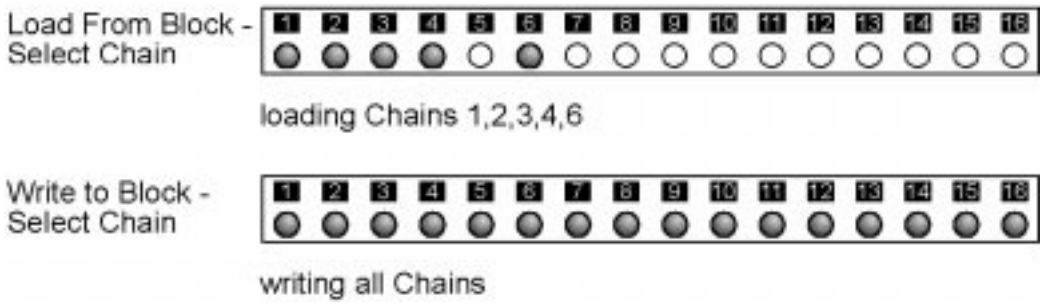
1. Activate "Global"
2. Press "Load From Block" or "Write To Block" until the LED for the desired data type lights up

   Examples



3. Select the Block you want to load from or you want to write into with the up/down buttons (step buttons 11 and 12); the left display shows the appropriate Block 1...8.
4. Select which Rotates/Chains/MIDI Sets/Step Sets/Songs/Mutes you want to load or write. Keep the "Select" button in the right Select section pressed and make the following selections:
   a. Press step buttons 1 to 16 (1 to 8 for Songs, 1 to 15 for Mutes) to select several Rotates/Chains/MIDI Sets/Step Sets/ Songs/Mutes.
   b. Press a single step button for at least a second to select a single Rotate/Chain/MIDI Set/Step Set/Song/Mute.
   c. Press "ALL OFF" to select Rotate/Chain/MIDI Set/Step Set/Song/Mute 1.
   d. Press "ALL ON" to select all Rotates/Chains/MIDI Sets/Step Sets/Songs/Mutes.
5. Press "Enter" (step button 14). If the left display reads "YES" press
   a. Again "Enter" to load/write.
   b. "Exit" (step button 13) to abort and to leave "Global".
6. After loading/writing press "Exit" (step button 13) to leave "Global" or repeat step 2 to 5 to load/write other data.

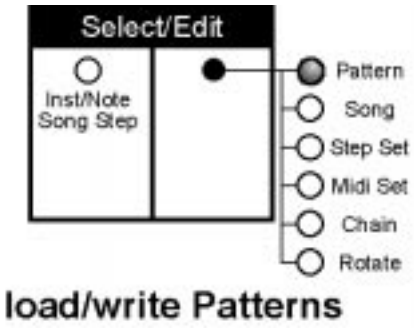
Examples:



3.5.2. Loading/Writing Patterns.

You can load/write a single pattern, several patterns within a pattern group or all patterns (1...64) within a block.

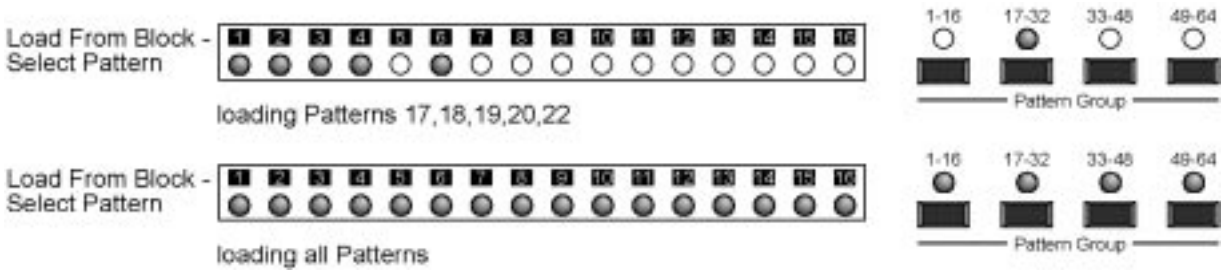
1. Activate "Global".
2. Press "Load From Block" or "Write To Block" until the LED for Patterns in the right Select section lights up.



load/write Patterns

3. Select the Block you want to load from or you want to write into with the up/down buttons (step buttons 11 and 12); the left display shows the appropriate Block 1...8.
4. Choose which Pattern(s) you want to load/write. Keep the "Select" button in the right Select/Edit section pressed and make the following selections:
   4.1. Loading/Writing all Patterns: Press "ALL ON" button until all Pattern groups are selected (all LED's above the Pattern group buttons light up).
   4.2. Loading/Writing Patterns within a Pattern group: Select the desired Pattern group with the appropriate Pattern group button (no Patterns are loaded from/written into the unselected Pattern groups).
      a. Press step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Patterns 1 to 16 if Pattern Group 1-16 is selected; Patterns 17 to 32 if Pattern group 17-32 is selected, Patterns 33 to 48 if Pattern group 33-48 is selected and Patterns 49 to 64 if Pattern group 49-64 is selected.
      b. Press a single step button for at least a second to select a single Pattern.
      c. Press the "ALL OFF" button to select the first pattern in the selected Pattern group.
      d. Press the "ALL ON" button to select all Patterns within the selected Pattern group.
      e. Selecting all 64 Patterns: Press "ALL ON" button until all Pattern groups are selected (all LED's above the Pattern group buttons light up).
5. Press "Enter" (step button 14). If the left display reads "YES" press
   a. again "Enter" to load/write.
   b. "Exit" (step button 13) to abort and to leave "Global".
6. After loading/writing press "Exit" (step button 13) to leave "Global" or repeat step 2 to 5 to load/write other Patterns.

Examples:



3.5.3. Loading/Writing Global settings

The following data is loaded/written:

- All Common Pattern settings
- Settings for Clock Source, Clock OUT On/Off and Autostart On/Off
- Tempo
- Note Rec Mode for note tracks 14, 15 and 16

1. Activate Global
2. Press "Load From Block" or "Write To Block" until the LED for Global data in the light Select section lights up.
3. Select the Block you want to load from or you want to write into with the up/down buttons (step buttons 11 and 12); the left display shows the appropriate Block 1...8.
4. Press "Enter" (step button 14). If the left display reads "YES" press
   a. Again "Enter" to load/write.
   b. "Exit" (step button 13) to abort and to leave "Global".
5. After loading/writing press "Exit" (step button 13) to leave "Global".

3.5.4. Loading/Writing a complete Block

All Rotates, Chains, MIDI Sets, Step Sets, Songs, Patterns, Mute settings and the Global settings are loaded/written.

1. Activate Global
2. Press "Load From Block" or "Write To Block" until the LED for "ALL" in the right Select section lights up.
3. Select the Block you want to load from or you want to write into with the up/down buttons (step buttons 11 and 12); the left display shows the appropriate Block 1...8.
4. Press "Enter" (step button 14). If the left display reads "YES" press
   a. Again "Enter" to load/write.
   b. "Exit" (step button 13) to abort and to leave "Global".
5. After loading/writing press "Exit" (step button 13) to leave "Global".

4. Pattern

4.1. Introduction

4.1.1. What is a Pattern and what is its purpose?

A Pattern is a rhythmical structure built out of a number of steps (1...16). Each Step again can contain different note data. If a Pattern is played back those note data are played sequentially and sent via the MIDI Out. You can create longer rhythms (with more than 16 steps) by building several patterns and linking them. This is done either with Chains (Pattern Chains with a fixed order, see 9.1) or Songs (see 10.1) which can play Patterns in random order and with several repetitions.

The SQ16 contains 64 freely programmable Patterns.

4.1.2. Step data for a Pattern

The following picture shows the step data for a Pattern; please note the limitation of 16 steps maximum.

	Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	MIDI Channel
Instrument Tracks	Track 1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	10
	Track 2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	15
	Track 3	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	F1	10
	Track 4	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	10
	Track 5	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	C3	15
	Track 6	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	15
	Track 7	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	10
	Track 8	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	F3	10
	Track 9	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	E1	10
	Track 10	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	E2	10
	Track 11	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	D1	10
	Track 12	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	10
	Track 13	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	D2	15
Note Tracks	Track 14	C1	F1	C1	C3	C1	C1					C2		C1				1
	Track 15				C1	C2	C1	E1	G1	C1				C1	G1	C1	C2	2
	Track 16	E1		C1	C2	C1	F1	C1	A1	C2	C1		A1		C1		C1	3

A Step contains exclusively note data, up to 16 different notes per step. Each step contains only a note number but not velocity or MIDI channel.

Let's start with an explanation how to edit the note numbers for each step.

Editing the note numbers for each step

For simplicity's sake we have grouped the notes into tracks. For example, Track 1 contains Note 1 of step 1, note 1 of step 2, note 1 of step 3 and so on; Track 12 contains Note 12 of Step 1, Note 12 of Step 2, Note 12 of Step 3 and so on.

This results in 16 tracks per Pattern, with each track containing 16 notes (which are played sequentially). Tracks 1 to 13 are so called instrument tracks while tracks 14 to 16 are so-called note tracks. Both serve a different purpose:

- **Instrument Tracks (I1...I13)**
  They are used for creating drum sequences. Each instrument track (and hereby all notes of an instrument track) is assigned exactly one note number and one MIDI channel. If you control a drum expander each instrument track triggers one drum instrument, for example track 1: bass drum, track 2: snare and so on.

  An instrument track is - as already described - assigned just a note number and a MIDI channel. It is not possible and necessary to edit the note numbers for each step of an instrument track. How you make those assignments and how to control the velocity for single steps is described in section 4.2.1.

- **Note tracks (n14...n16)**
  As you can see from the picture note tracks differ insofar as they contain different note numbers (or no notes at all) per track. They are used to play back simple (monophonic) melodies. As with instrument tracks, each note track uses one single MIDI channel.

  There exist two different methods to input notes into a note track:
  - Recording notes from an external MIDI keyboard (see section 11)
  - Manual input and editing of single notes

  How to edit a note track, how to assign a MIDI channel to it and how to control its velocity is described in section 4.3.1.

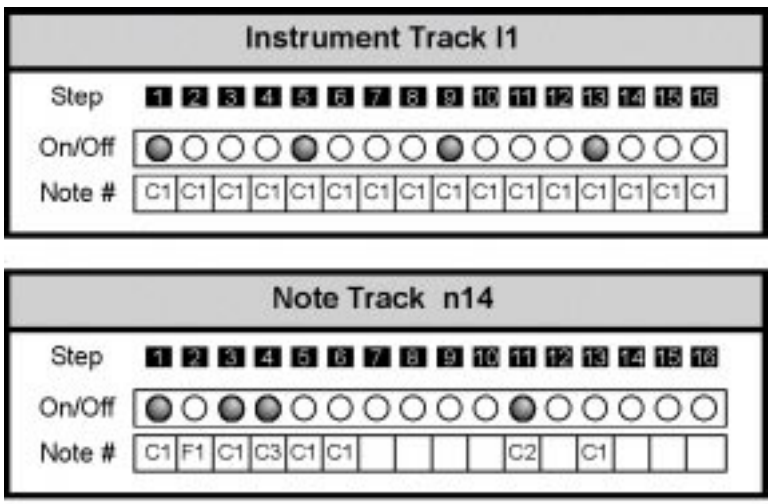
4.1.3. Creating a Pattern - Playing back a Pattern

Creating a pattern rhythm

According to section 4.1.2 all steps of an instrument track contain the same note number while all steps of a note track can contain various notes or no note at all. You can create different rhythms by enabling several steps and disabling other steps per track.

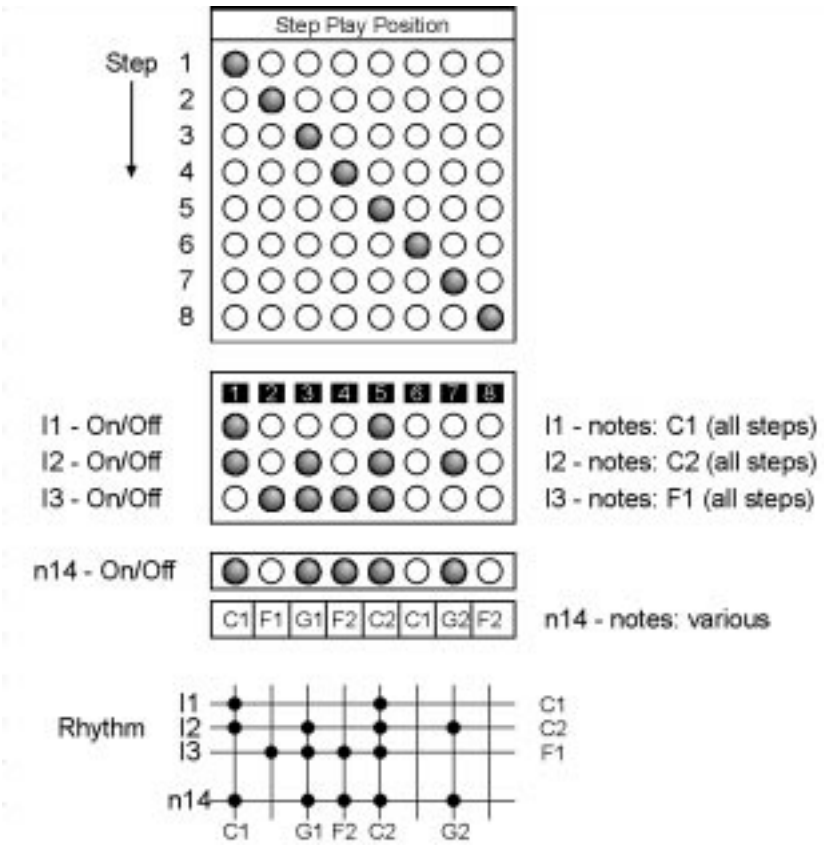
To accomplish this there's a separate On/Off track for each Pattern track in which you can turn on and off single steps.

Example



The instrument track I1 outputs notes only on steps 1, 5, 9 and 13; the note track n14 only on steps 1, 3, 4 and 11.

Playing back a pattern:



When playing back a pattern all steps are played sequentially starting with step 1. Each pattern has its own pattern Length, e.g. a number of steps after which the pattern starts over. In the above example the pattern length is 8 steps; the pattern is playing Step 1, 2, 3...8 and then starts from the beginning. The Step Play Position is the currently playing step within the pattern.

For each bar the instrument tracks and note tracks are played but; but only if the On/Off track for the instrument track and note track is set to "On" on the Step Play Position. If the On/Off track is "Off" a rest is "played", e.g. nothing. An instrument track triggers the same note for all active steps while a note track can trigger different notes. All instrument tracks and all note tracks follow the same principle.

4.1.4. Pattern functions - Overview

Function	
Inst Step	**display/edit instrument tracks I1...I13**
On/Off	display/edit On/Off tracks
Accent	display/edit Accent tracks
Note Step	**display/edit note tracks n14...n16**
On/Off	display/edit On/Off tracks
Accent	display/edit Accent tracks
Hold	display/edit Hold tracks
Note/Edit	display/edit notes
Pattern	**common pattern settings**
Length	set Pattern Length
Scale	set Pattern Scale
Step Set	assigning a Step Set to a pattern
Midi Set	assigning a MIDI Set to a pattern
Note Rec	**recording the note track of a pattern**
Mode	selecting record mode (common for all patterns)
Step	display/edit step record track of a note track

4.2. Instrument tracks

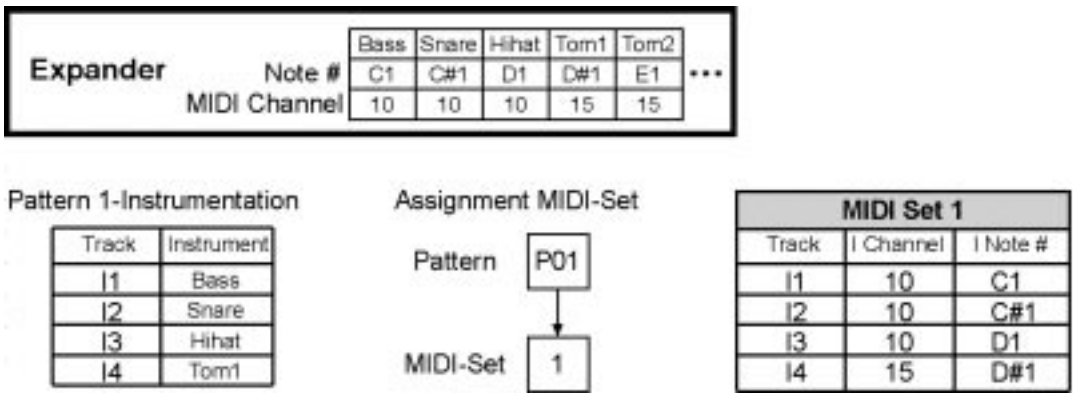
4.2.1. Structure and data of instrument tracks

The 13 instrument tracks of a pattern are used for creating drum sequences. Each instrument track is triggering exactly one drum instrument in a drum expander by assigning a note number to the instrument track which in turn has its representation in a drum instrument in the drum expander (drum expanders usually group certain drum instruments with different note numbers into drumsets). Of course also the MIDI channel for the instrument track must match the desired MIDI channel for the drumset.

Assigning note numbers and MIDI channels to instrument tracks:

The assignment of note numbers and MIDI channels to an instrument track is done via MIDI Sets. A MIDI Set contains the note numbers and MIDI channels for the instrument tracks; all editing of those settings also takes place there. A pattern contains just a pointer to a MIDI Set. The instrument tracks of a pattern then use the note number and MIDI channel assignments made in the MIDI Set.

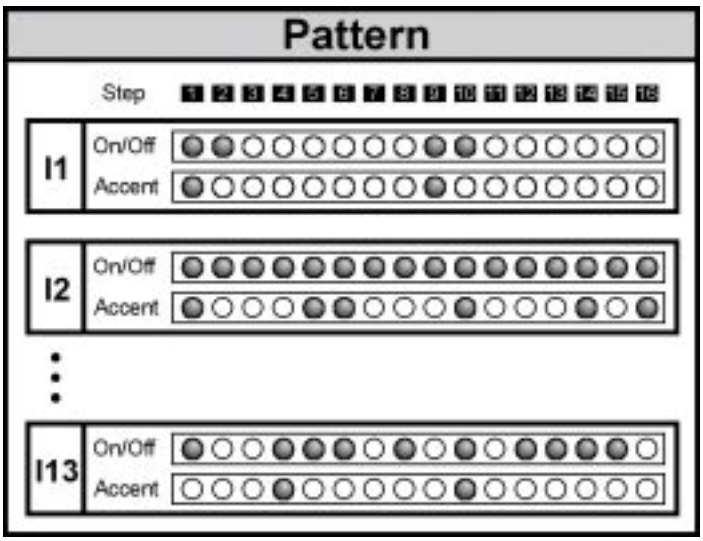
Example:



The instrument tracks I1...I4 from Pattern 1 shall play certain instruments in the connected expander (Pattern 1 - instrumentation). Pattern 1 is assigned a certain MIDI Set, for example MIDI Set 1. To achieve the desired instrumentation for Pattern 1 you have to make the necessary settings in MIDI Set 1 to match the instrument tracks and the desired MIDI channels and note numbers.

Additional information about MIDI Sets can be found in section 5.

Instrument Track Data:

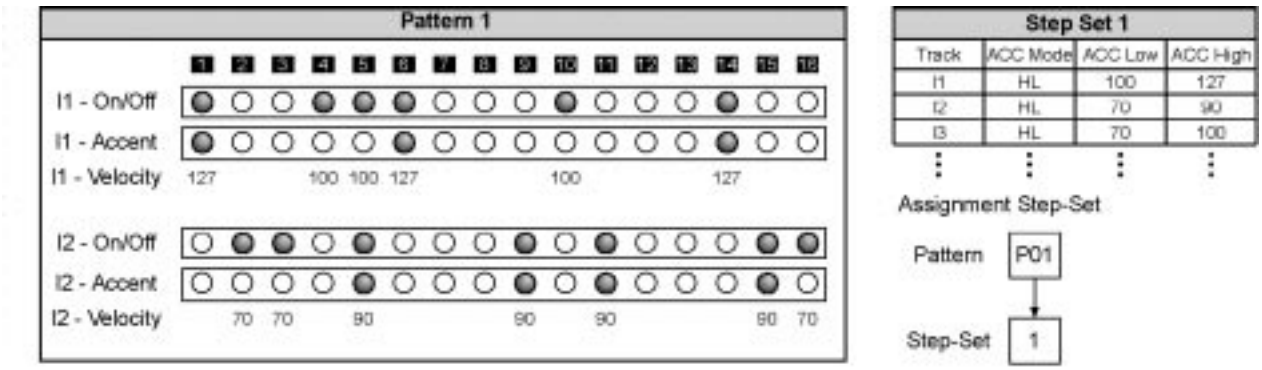


- **On/Off Track**
  Each of the Instrument Tracks I1...I13 has its own On/Off track which turns steps on and off. A Step can have "On" status (in this case it gets played) or it can have "Off" status (in this case a rest is played).
- **Accent Track**
  Additionally each Instrument Track "owns" an accent track that controls the velocity of the activated steps. The SQ16 does not offer individual velocities for each single step since this would have made editing much more complicated and time consuming. For drums sequences it is often sufficient to use just two different velocities - one for "normal" hits and one for "accented" hits. To allow a simple access to those two different velocities we have created the accent track: You can make two different settings (ACC-High and ACC-Low) for each instrument track. The Accent track turns the Accent for each active step simply on and off. All Steps without activated accent use the ACC-Low value as velocity; all steps with activated accent use the ACC-High value instead. Turning accents on and off is easy: After selecting "Inst/Step - Accent" the 16 LED's above the step buttons show for which step accent is active or not. You can then turn on/off an accent simply by pressing the appropriate step button.

Editing the velocity settings for "Accent On" and "Accent Off" (ACC-High and ACC-Low)

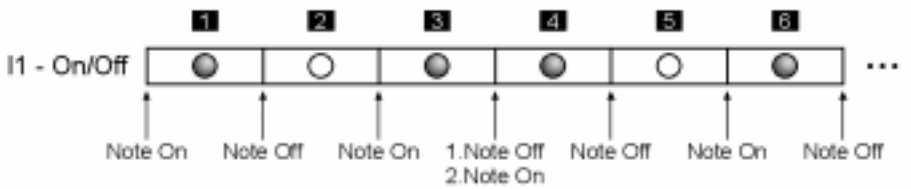
The assignment of different Low and High values is done via Step Sets. A Step Set contains the Low and High velocity values for the instrument tracks; all editing of those settings also takes place there. A pattern contains just a pointer to a Step Set. The instrument tracks of a pattern then use the Low and High velocity settings found in the assigned Step Set.

Example:



Each Step Set contains an ACC Mode setting for each instrument track. The setting "HL" means that all steps use either the ACC-Low value (accent not active) or the ACC-High value (accent active). There exist other ACC modes that are used to trigger echoes (delays). A detailed description of the ACC modes can be found ins section 6.3.1. This section also describes the various possibilities of the Step Sets.

Note Length Of Instrument Steps:

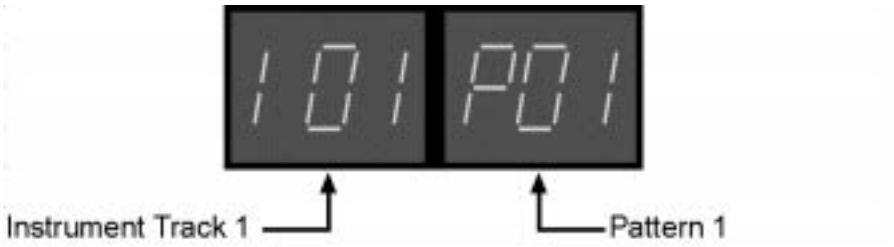


All sent Note On/Off commands have the same note number and the same MIDI channel. At the beginning of the current play step (On/Off = On) is always sent a Note On command; at the end of the Step a Note Off command. If several subsequent steps are active first a Note Off command is sent and immediately after it a Note On Command (see Step 3 -> Step 4 in the above example).

4.2.2. Editing the instrument tracks of a pattern

1. Activate "Inst/Step" and either
   - On/Off to edit the On/Off track for an instrument track or
   - Accent to edit the Accent track for an instrument track

The left display shows the current instrument track; the right display shows the current pattern.



2. Select the pattern you want to edit (P01...P64):
   a. Using the "arrow" buttons in the right Select/Edit section
   b. Keep the "Select" button in the right Select/Edit section pressed and select by pressing step buttons 1...16 one of the Patterns in the current Pattern group
   c. Select a different Pattern group.
3. Select the instrument track you want to edit (I1...I13):
   a. Using the "arrow" buttons in the left Select/Edit section
   b. Keep the "Select" button in the left Select/Edit section pressed and select by pressing step buttons 1...13 an instrument track.
4. Editing the On/Off track or the Edit track
   a. Turn on/off single steps or accents by pressing step buttons 1...16
   b. Turn on all steps or accents by pressing the ALL On button
   c. Turn off all steps or accents by pressing the ALL Off button

Editing Accents:

An active accent has only audible results if the same step is also set to "On". To avoid "invalid" accents all the activated steps blink also when editing the accent track. The blinking status however is different:

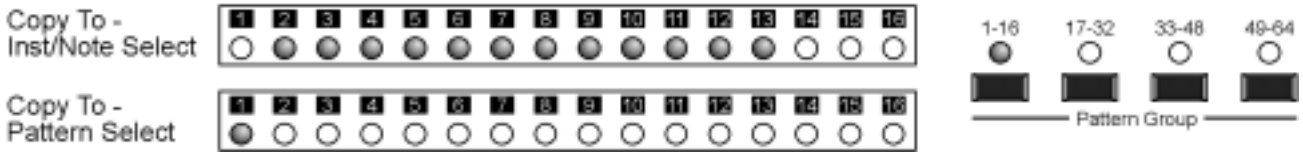
- Step is not lighting at all: Step is neither in the On/Off track nor in the Accent track activated
- Step is blinking short: Step is active in the On/Off track
- Step lights but is turned off for short time: Step is active both in the On/Of track and the Accent track
- Step lights permanently: Step is active only in the Accent track (no audible result; invalid accent).

4.2.3. Copying the currently edited On/Off track or Accent Track

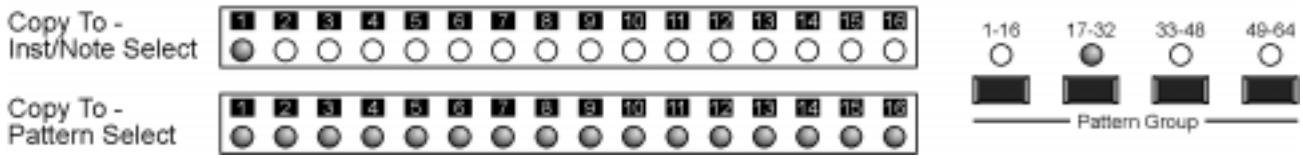
If Inst/Step - On/Off or Inst/Step - Accent is active you can copy the On/Off track or Accent track for the currently edited instrument or Pattern. For example, you are editing the On/Off track for Pattern 1 and instrument track 1. You can copy this On/Off track to other instrument tracks within the same Pattern or to other Patterns.

1. Activate "Copy To" in the Select/Edit section.
2. Select the instrument tracks to which the current On/Off track shall be copied. Keep pressed the "Select" button in the left Select/Edit section and make the following selections:
   a. Press Step buttons 1...13 shortly to select several instrument tracks.
   b. Press a single step button for at least a second to select a single instrument track
   c. Press "ALL OFF" button to select instrument track 1
   d. Press "ALL ON" button to select all instrument tracks
3. Select the Pattern into which the current On/Off track shall be copied. Hold down the "Select" button in the right Select/Edit section and make the following selections:
   a. Press step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Patterns 1 to 16 if Pattern Group 1-16 is selected; Patterns 17 to 32 if Pattern group 17-32 is selected, Patterns 33 to 48 if Pattern group 33-48 is selected and Patterns 49 to 64 if Pattern group 49-64 is selected.
   b. Press a single step button for at least a second to select a single Pattern.
   c. Press the "ALL OFF" button to select the first pattern in the selected Pattern group.
   d. Press the "ALL ON" button to select all Patterns within the selected Pattern group.
   e. Selecting all 64 Patterns: Press "ALL ON" button until all Pattern groups are selected (all LED's above the Pattern group buttons light up).
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example 1: Copying the currently edited On/Off track to the On/Off tracks of instrument I2...I13 in pattern 1



Example 2: Copying the currently edited On/Off track to the On/Off track of instrument I1 in pattern 17-32



4.3. Note Tracks

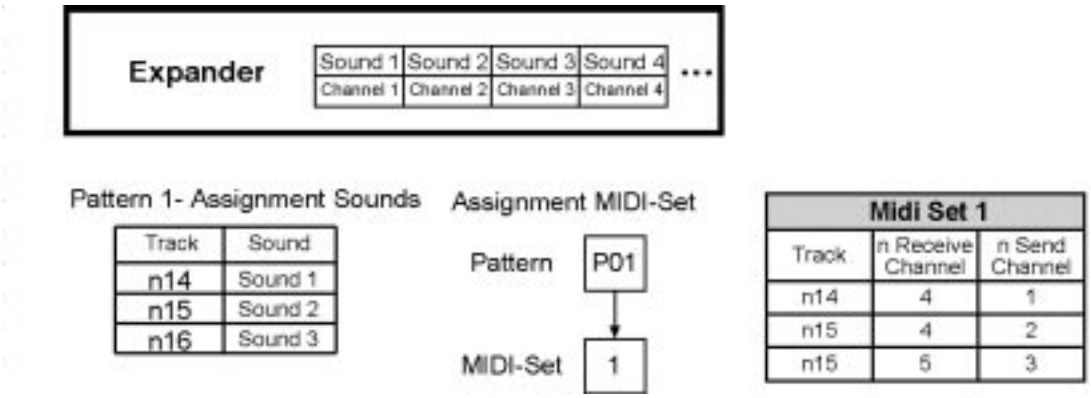
4.3.1. Structure and data of note tracks

The 3 note tracks of a Pattern are used to create simple monophonic melodies or bass lines. The steps of a note track can contain different note numbers, but they also use a common MIDI channel. Of course, to play a sound from an external expander the MIDI channels of the note track and the external expander must match.

Assigning MIDI channels to note tracks:

The assignment of MIDI channels to a note track is done via MIDI Sets, similar as for instrument tracks. A MIDI Set contains the MIDI channels for the note tracks; all editing of those settings also takes place there. A Pattern contains just a pointer to a MIDI Set. The note tracks of a Pattern then use the MIDI channel assignments made in the MIDI Set.

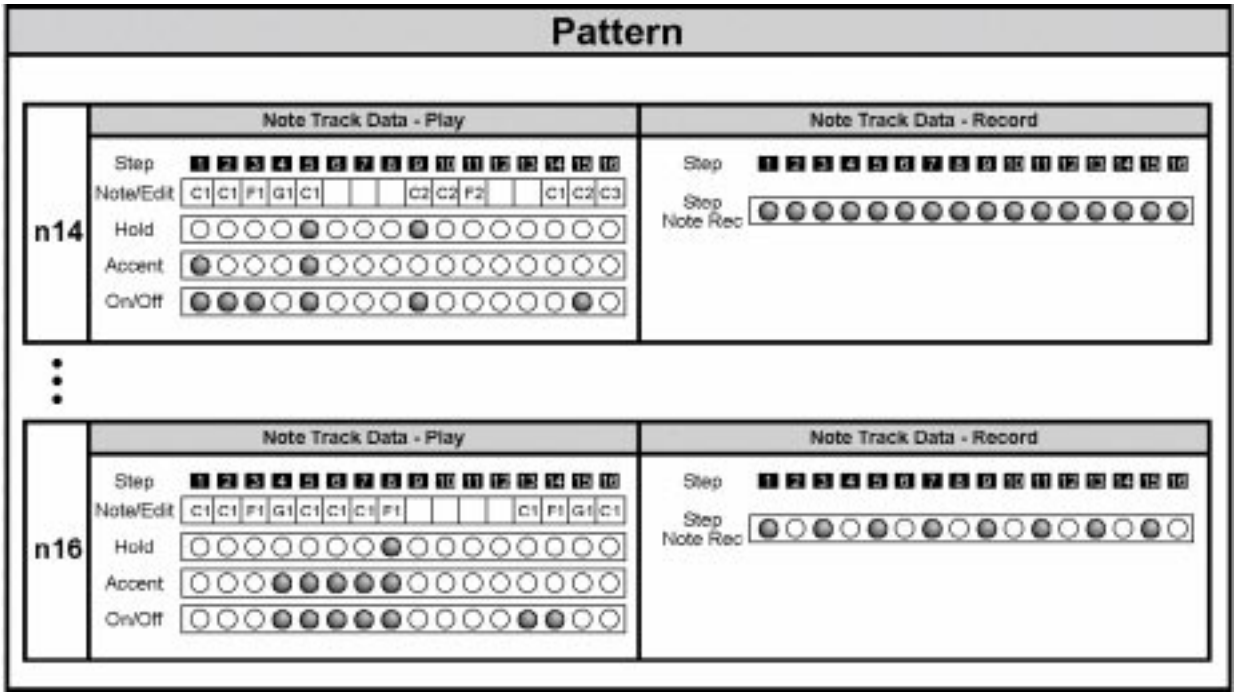
Example:



The note tracks n14, n15 and n16 from Pattern 1 shall play different sounds from a connected expander. Pattern 1 is assigned a certain MIDI Set, for example MIDI Set 1. To achieve the desired sound assignment for Pattern 1 you need to make the appropriate settings in MIDI Set 1 for the MIDI send channels (n send channel).

A MIDI Set also assigns an additional MIDI receive channel to each note track. This channel is used for recording notes from an external keyboard. Additional information about MIDI Sets can be found in section 5. Additional information about external recording can be found in section 11.

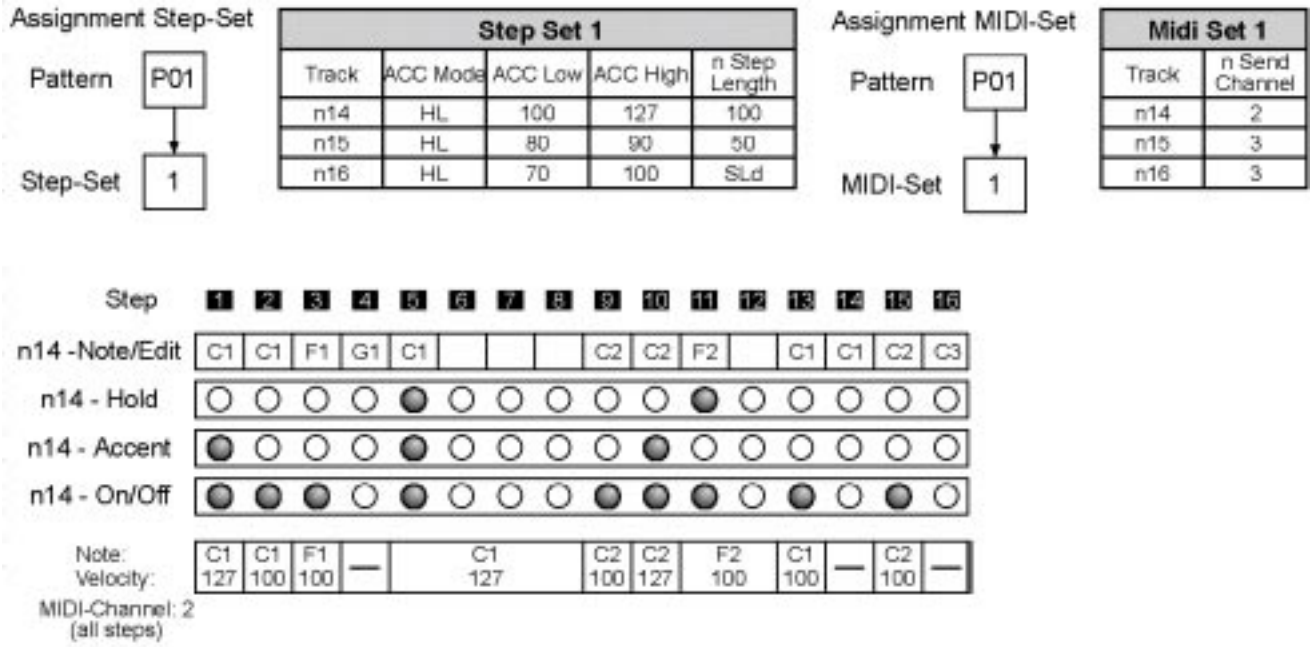
Note track data:



A note track contains data related to the playback or recording of this track. The track "Note - Rec Step" determines into which steps of the note track notes can be recorded (see 11.1.3). Here's a description of the playback data:

- **Note/Edit**
  This track contains the note numbers for one note track (one note per step). If you select this track (Note Step - Note/Edit) you are given several choices to edit the note numbers for this note track (note delete, copy, transpose; see 4.3.3). If a step does not contain any note number no note will be sent for this step, additionally this step can not be activated in the On/Off track.
- **On/Off**
  Each of the note tracks n14...n16 does have its own On/Off track in which you can activate single steps. Steps can only be activated if the Note/Edit track contains a note number for this step.
- **Accent**
  Similar to the instrument tracks each note track also has its own Accent track to control the velocity of the activated steps. The working of this track is identical for instrument tracks and note tracks and is described in detail in section 4.2.1. The actual result depends on the settings for ACC mode, ACC Low and ACC High in the assigned Step Set.
- **Hold**
  The Hold track is used to "hold" sent notes until the next active step. The Hold track contains for each step the Hold status On or Off.

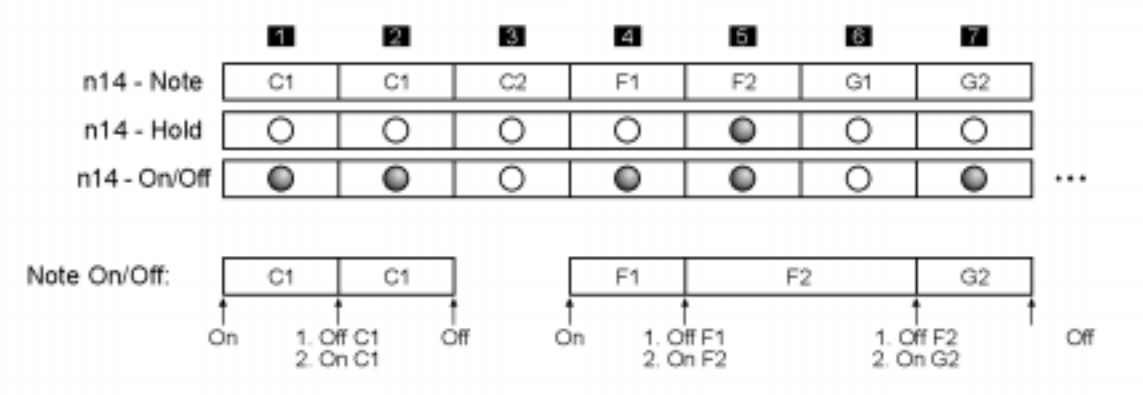
Example:



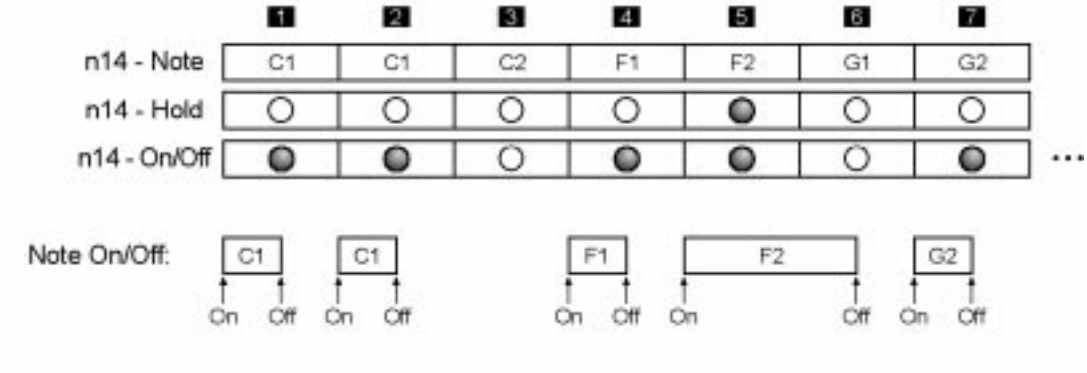
Pattern 1 uses the settings made in MIDI Set 1; this results in MIDI end channel 2 for note track n14 (all steps). Step Set one contains the settings ACC Mode "HL", ACC Low = 100 and ACC High = 127 for note track n14. All active steps (On/Off = On) with an active accent use velocity 127 while all active steps with non-active accent use velocity 100. For Step 5 "Hold" is active; this results in the note C1 being held until the next active step, e.g. Step 9. Something similar can be found at Step 11: Note F2 is held until the end of Step 12.

Note Length for note track steps:
The setting n step length in the MIDI Set is responsible for the length of the note track steps. You have the choices 50, 100 and SLd.

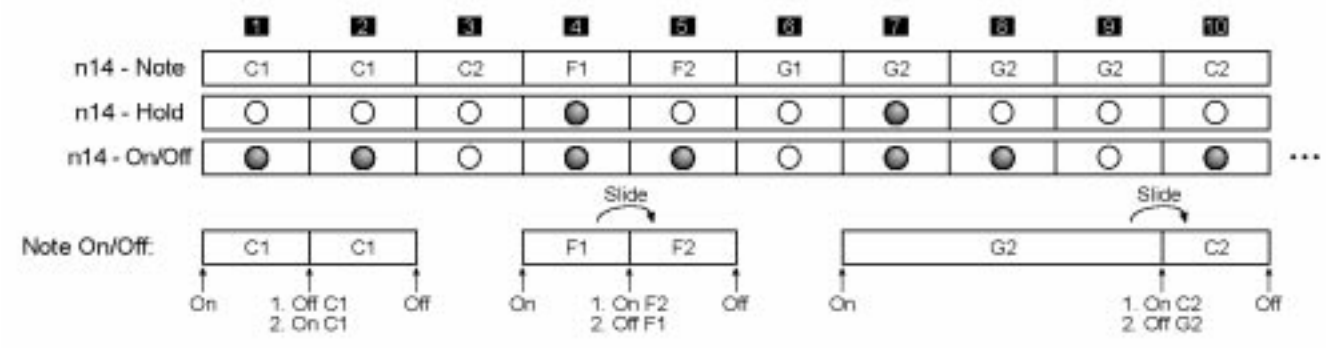
- **n step length 100**
  The note length is the same as the step length. Each note is turned off at the step end even if the same note follows immediately (notes or not held over).



- **n step length 50**
  The note length is half of the step length. Each note is turned off in mid-step. This also applies for the last step of a hold phrase (step 6 in the below example).



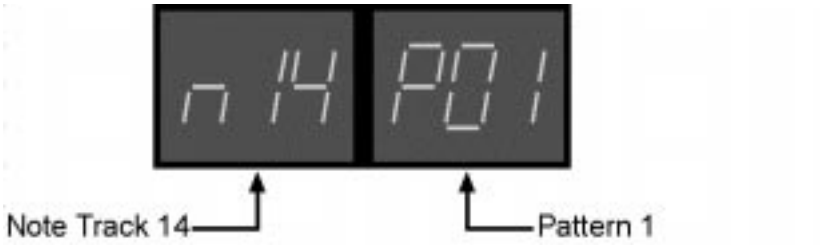
- **n step SLd**
  The note length is the same as the step length. If a note without hold (Step 5) follows a note with hold (Step 4) the Note On and Note off commands are exchanged; e.g. after step 4 first a Note On is sent for the Note F2 in Step 5, then a Note Off for the Note F1 in Step 4. This is triggering a Slide effect (Portamento) at the MAM devices MB33 and MB33II. If a note with Hold activated (G2 in step 7) is followed by the same note (G2 in Step 8) the second note is ignored. The Hold phase is active until a step with a different note number appears (C2 in Step 10). After the end of the Hold phase the Slider effect is activated again.



4.3.2. Editing the On/Off track, Accent track and Hold track of a Note Track

1. Activate Note/Step and either
   - On/Off to edit the On/Off track
   - Accent to edit the Accent track
   - Hold to edit the Hold track

   The left display shows the current note track, the right display shows the current pattern.



2. Select the Pattern you want to edit(P01...P64):
   a. using the "arrow" buttons in the right Select/Edit section
   b. Keep the "Select" button in the right Select/Edit section pressed and select by pressing step buttons 1...16 one of the Patterns in the current Pattern group
   c. Select a different Pattern group.
3. Select the instrument track you want to edit(I1...I13):
   a. Using the "arrow" buttons in the left Select/Edit section
   b. Keep the "Select" button in the left Select/Edit section pressed and select by pressing step buttons 1...13 an instrument track.
4. Editing the On/Off track or the Edit track
   a. Turn on/off single steps, accents or holds by pressing step buttons 1...16
   b. Turn on all steps, accents or holds by pressing the ALL On button
   c. Turn off all steps, accents or holds by pressing the ALL Off button

Editing the On/Off track

Different blinking of the step LED's shows which step contains a note number:

- step is not lighting at all: Step does not contain a note number and cannot be set to "On"
- step is blinking short: Step contains a note number but isn't set to "On" in the On/Off track
- step is lighting permanently: Step contains a note number and is set to "On" in the On/Off track

Editing Accents:

An active accent has only audible results if the same step is also set to "On". To avoid "invalid" accents all the activated steps blink also when editing the accent track. The blinking status however is different:

- step is not lighting at all: Step is neither in the On/Off track nor in the Accent track activated
- step is blinking short: Step is active in the On/Off track
- step lights but is turned off for short time: Step is active both in the On/Of track and the Accent track
- step light permanently: Step is active only in the Accent track (no audible result; invalid accent).

Editing the Hold track

Different blinking of the step LED's shows which step is set to "On" in the On/Off track:

- step is not lighting at all: Step is neither in the On/Off track nor in the Hold track activated
- step is blinking short: Step is active in the On/Off track
- step lights but is turned off for short time: Step is active both in the On/Of track and the Hold track
- step light permanently: Step is active only in the Hold track (no audible result; invalid hold).

4.3.3. Editing/Inserting Notes

You have selected Note Step On/Off, Note Step Accent or Note Step Hold and have selected a note track. If you now select Note Step Note/Edit you have the following choices:

If the note track already contains notes you can

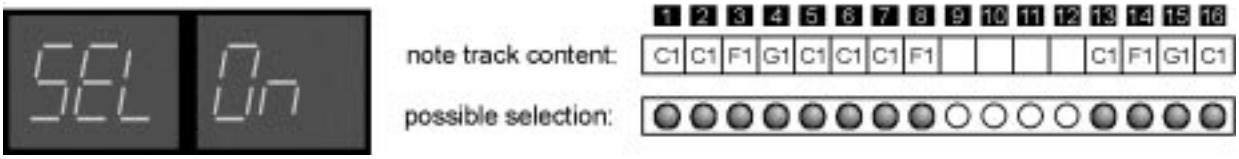
- **transpose them**
- **delete them**
- **edit single notes**
- **set all selected notes to the same note number**

If the note track contains just empty steps you can select one or more of those steps and

- **insert the same note into all those steps**
- **insert different notes.**

Editing existing notes

1. Activate Note Step - Note/Edit
2. Activate Step selection
   To select the steps you want to edit press the "Select" button in the right Select/Edit section until the display reads "SEL On". If this isn't possible and the display reads "SEL Off" the note track is empty and does not contain any notes. In this case you have to insert notes first.
3. Select the steps you want to edit



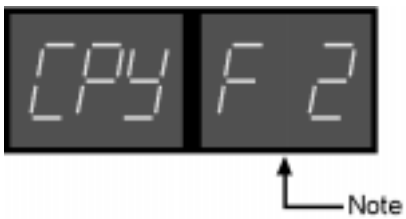
   All steps containing notes blink short. You can use the step buttons to select one or more of those steps. The selected steps light permanently. In the above example the "ALL ON" button was used to select all notes.

4. Editing
   a. Deleting all selected notes: Press the "Select" button in the left Select/Edit section until the display reads "dEL". Press the Enter button to delete or the Exit button to return to the step selection.
   b. Transposing all selected notes: Press the "Select" button in the left Select/Edit section until the display reads "Ud 000". Use the up/down buttons (step buttons 11 and 12) to enter the transposition value.



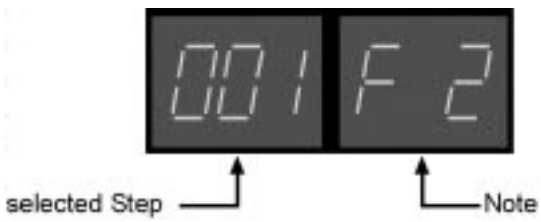
   Press the Enter button to transpose or the Exit button to return to the step selection.

   c. Setting all selected notes to the same note number: Press the "Select" button in the left Select/Edit section until the display reads "CPY".



   Use the up/down buttons (step buttons 11 and 12) to enter the desired common note number. Press the Enter button to set all selected notes to the same note number or the Exit button to return to the step selection.

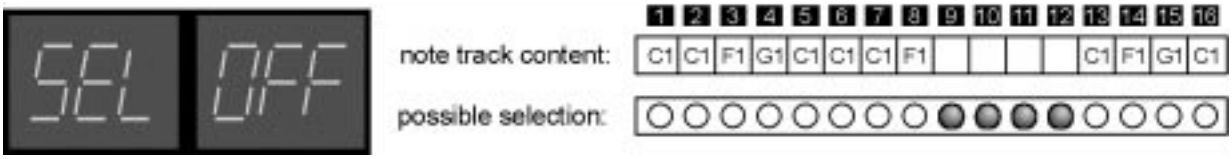
   d. Editing the selected notes separately: Use the "arrow" buttons in the left Select/Edit section to "walk" through the selected steps.



   Use the up/down buttons (step buttons 11 and 12) to edit the note of the selected step. All edits take place immediately and must not be confirmed with "Enter". Press "Exit" to return to step selection.

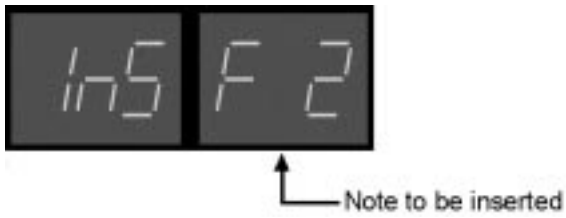
Inserting notes into empty steps

1. Activate Note Step - Note/Edit
2. Activate Step selection
   To select the steps you want to edit press the "Select" button in the right Select/Edit section until the display reads "SEL Off". If this isn't possible and the display reads "SEL On" all steps of the note track contain notes. In this case you need to delete notes first.
3. Select the steps you want to edit



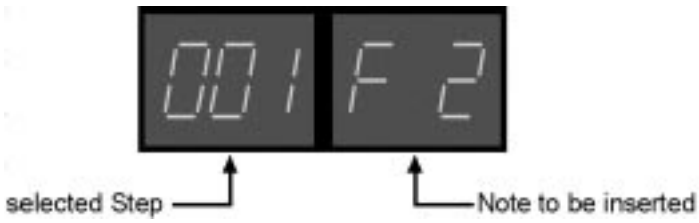
   All steps containing no notes blink short. You can use the step buttons to select one or more of those steps. The selected steps light permanently. In the above example the "ALL ON" button was used to select all empty steps.

4. Inserting notes
   a. Inserting the same note into all selected steps: Press the "Select" button in the left Select/Edit section until the left display reads "InS".



   The right display shows the note number you are about to insert. Use the up/down buttons (step buttons 11 and 12) to enter the desired value. Press the Enter button to insert the notes or Exit to return to step selection.

   b. Inserting different notes into the selected steps: Use the "arrow" buttons in the left Select/Edit section to "walk" through the selected steps.



   Use the up/down buttons (step buttons 11 and 12) to enter the value for the note you want to insert. Press Enter to insert the notes into all selected steps press "Exit" to return to step selection.

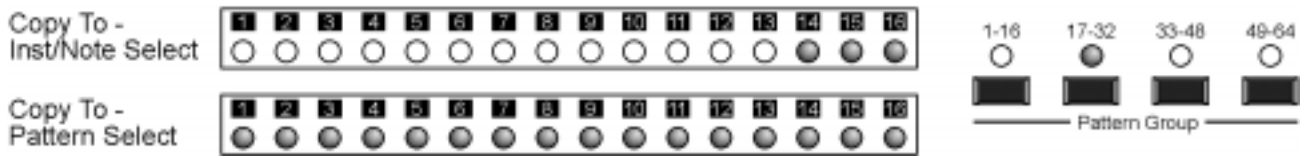
4.3.4. Copying the currently edited On/Off track, Hold track, Accent Track or notes

Depending on which of the functions Note Step - On/Off, - Accent, - Hold or - Note/Edit you have selected you have the choice to copy the On/Off track, Accent track, Hold track or the note data of the currently selected note track.

For example, you are editing the On/Off track for Pattern 1 and note track 14. You can copy this On/Off track to other note tracks within the same Pattern or to other Patterns.

1. Activate "Copy To" in the Select/Edit section.
2. Select the note tracks to which the current On/Off track shall be copied. Hold down the "Select" button in the left Select/Edit section and make the following selections:
   a. Press Step buttons 14...16 shortly to select several note tracks.
   b. Press a single step button for at least a second to select a single note track
   c. Press "ALL OFF" button to select note track 14
   d. Press "ALL ON" button to select all note tracks
3. Select the Pattern into which the current On/Off track shall be copied. Hold down the "Select" button in the right Select/Edit section and make the following selections:
   a. Press step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Patterns 1 to 16 if Pattern Group 1-16 is selected; Patterns 17 to 32 if Pattern group 17-32 is selected, Patterns 33 to 48 if Pattern group 33-48 is selected and Patterns 49 to 64 if Pattern group 49-64 is selected.
   b. Press a single step button for at least a second to select a single Pattern.
   c. Press the "ALL OFF" button to select the first pattern in the selected Pattern group.
   d. Press the "ALL ON" button to select all Patterns within the selected Pattern group.
   e. Selecting all 64 Patterns: Press "ALL ON" button until all Pattern groups are selected (all LED's above the Pattern group buttons light up).
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Copying the currently edited On/Off track to the On/Off track of note tracks 14...16 in pattern 17-32

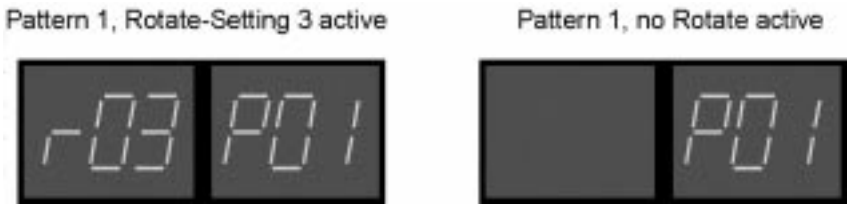


4.4. Playing back Patterns

Activating/Deactivating Rotate

You can play back Patterns normally without using Rotate or you can activate Rotate and select one of the 16 Rotate settings:

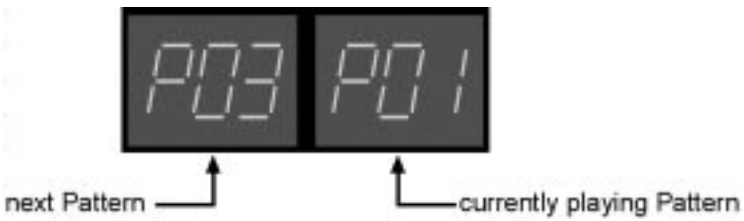
1. Activate "Play Mode - Pattern". The right display shows the current Pattern, the left display shows the current Rotate setting. The left display is empty if no Rotate setting is selected.
   a. Activating Rotate
      If no Rotate setting is activate keep pressed the "Select" button in the right Select/Edit section and press step button 1...16 to activate the desired Rotate setting for Play Mode - Pattern and Play Mode - Chain.
   b. Deactivating Rotate
      If a Rotate setting is active hold down the "Select" button in the right Select/Edit section and press the step button for the displayed Rotate setting. The left display goes off; Rotate is deactivated for Play Mode - Pattern and Play Mode - Chain.



Selecting a Pattern for Playback

1. Activate "Play Mode - Pattern". The right display shows the current Pattern, the left display shows the current Rotate setting. The left display is empty if no Rotate setting is selected.
2. Selection of the 64 Patterns:
   Use step buttons 1...16 to select a Pattern within the current Pattern group. If you select a different Pattern group the currently playing Pattern stays active. You need to explicitly select a new Pattern in the new Pattern group to switch to a different Pattern.

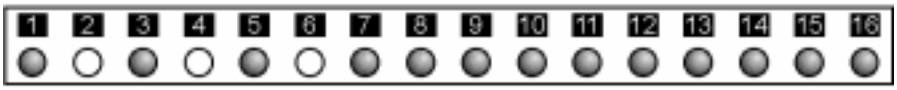
   Selecting a Pattern during Playback:
   After selecting a new Pattern the currently playing Pattern continues to its final step, then the new Pattern starts. While the previous Pattern is still playing the left display is blinking and displays the next pattern.



Muting instrument tracks and note tracks

The SQ16 has 16 different Mute settings that can be used to mute instrument tracks and note tracks. Using Inst/Note - On/Off you can select and edit a Mute setting. The selected setting is active for both Play Mode - Pattern and Play Mode - Chain. For example, if you want to listen to only instrument tracks 1 and 2 in play Mode Pattern you need to activate Inst/Note and to select a Mute setting which has instrument tracks 3..13 and all note tracks muted. A detailed description can be found in section 8.

1. Activate Inst/Note - On/Off.
2. Selecting the active Mute setting Co 001...Co 014, SNG or SGL:
   a. Using the "arrow" buttons in the left Select/Edit section.
   b. Hold down the "Select" button in the right Select/Edit section and press step button 1...16 to select the desired Mute setting.
   c. After releasing the "Select" button the LED's above the step buttons show which tracks are active (LED on) or muted (LED off)



4.5. Basic Pattern settings (Function pattern)

Each Pattern has basic settings for Length, Scale, Step Set and MIDI Set. They are common for all instrument tracks and note tracks of a Pattern. You can use different settings for each single Pattern. However you can use the function Global - Common pattern to assign the same Length setting, Scale setting, MIDI Set and Step Set to all patterns. See section 3.3.

4.5.1. Length

If a Pattern plays back all steps of this Pattern starting with step 1 are played sequentially. The Pattern length is the final step of a Pattern. After this step has been played the Pattern starts over.

Setting the Pattern length:

1. Activate "Pattern - Length".
2. Select the pattern you want to edit(P01...P64):
   a. Using the "arrow" buttons in the right Select/Edit section
   b. Hold down the "Select" button in the right Select/Edit section and press step button 1...16 to select a Pattern within the current Pattern group
   c. Select a different pattern group
3. use step buttons 1...16 to adjust the Pattern length. The Pattern length is displayed both by the LED's above the step buttons and in the right display.

4.5.2. Scale

The actual playback speed of the SQ16 depends on two things: First, the tempo determines how many beats (quarter notes) per minute are being played. The SQ16 sends 24 MIDI clocks per beat to synchronize external sequencers. The second thing responsible for playback speed is the Scale setting which determines how many steps are played per beat. You have the following choices:

- Scale 1: one step takes a whole note (1 step per 4 beats)
- Scale 2: one step takes a half note (1 step per 2 beats)
- Scale 4: one step takes a quarter note (1 step per beat)
- Scale 8: one step takes an eight note (2 steps per beat)
- Scale 16: one step takes a sixteenth note (4 steps per beat)
- Scale 32: one step takes a 32nd note (8 steps per beat)

Setting the Pattern Scale:

1. Activate "Pattern - Scale".
2. Select the Pattern you want to edit, see section pattern length
3. Use the up/down buttons (step buttons 11 and 12) to set the desired value. The Scale value is shown in the right display.

4.5.3. Step Set

You can assign one of the 16 Step Sets to a Pattern. Instrument tracks and note tracks then use the Accent settings made in the Step Set (see section 4.2.1 and 4.3.1).

Assigning a Step Set to a Pattern:

1. Activate "Pattern - Step Set".
2. Select the Pattern you want to edit, see section pattern length
3. Use step buttons 1...16 to assign one of the Step Sets to the Pattern. The assigned Step Set is displayed both by the LED's above the step buttons and in the right display.

4.5.4. MIDI Set

You can assign one of the 16 Step Sets to a Pattern. Instrument tracks and note tracks then use settings made there (note numbers and MIDI channel for instrument tracks, MIDI send channel and MIDI receive channel for note tracks), see section 4.2.1 and 4.3.1.

Assigning a MIDI Set to a Pattern:

1. Activate "Pattern - MIDI Set".
2. Select the Pattern you want to edit, see section pattern length
3. Use step buttons 1...16 to assign one of the MIDI Sets to the Pattern. The assigned MIDI Set is displayed both by the LED's above the step buttons and in the right display.

4.5.5. Copying the currently edited Length setting, Scale setting, Step Set setting or MIDI Set setting

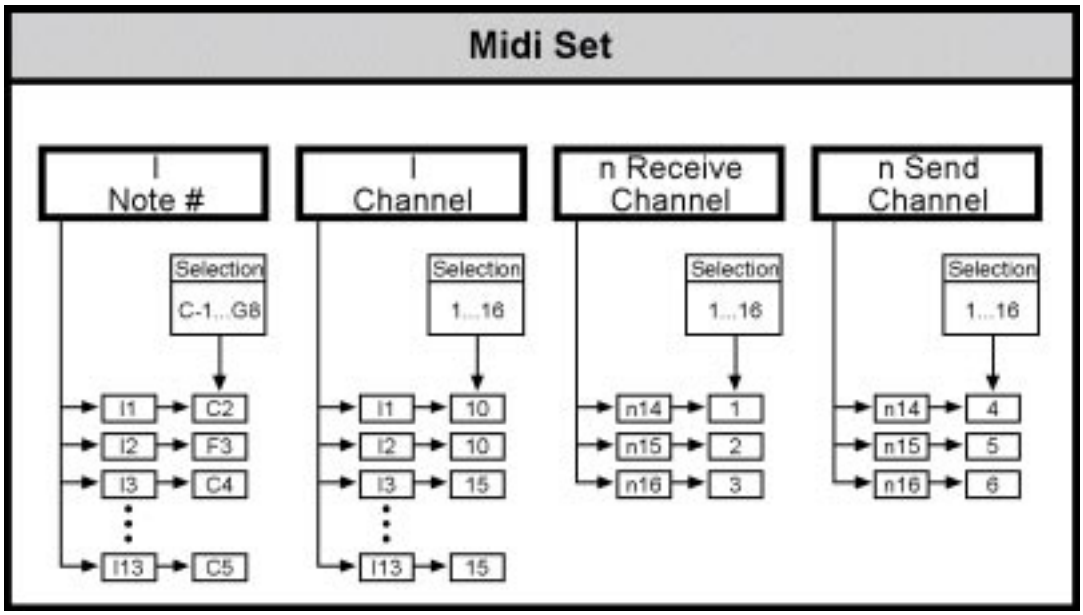
For example, you have selected Pattern - Length for Pattern 1. You can copy this setting to other Pattern.

1. Activate "Copy To" in the Select/Edit section.
2. Select the Pattern into which the current Pattern length shall be copied. Hold down the "Select" button in the right Select/Edit section and make the following selections:
   a. Press step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Patterns 1 to 16 if Pattern Group 1-16 is selected; Patterns 17 to 32 if Pattern group 17-32 is selected, Patterns 33 to 48 if Pattern group 33-48 is selected and Patterns 49 to 64 if Pattern group 49-64 is selected.
   b. Press a single step button for at least a second to select a single Pattern.
   c. Press the "ALL OFF" button to select the first pattern in the selected Pattern group.
   d. Press the "ALL ON" button to select all Patterns within the selected Pattern group.
   e. Selecting all 64 Patterns: Press "ALL ON" button until all Pattern groups are selected (all LED's above the Pattern group buttons light up).
3. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
4. Leave "Copy" with "Exit" (step button 13)

5. MIDI Set

5.1. Which data does a MIDI Set contain?

Each Block in the SQ16 contains 16 MIDI Sets. A MIDI Set is used to assign individual note numbers and MIDI channels to the instrument tracks and to assign individual MIDI send channels and MIDI receive channels to the note tracks. The following picture gives an overview of the MIDI Set data:



- **I Note #, I Channel**
  Instrument tracks are used to trigger drum sounds in drum expanders. Each instrument track is triggering exactly one drum instrument. This is done by assigning the note number for this drum instrument to the instrument track, of course also the MIDI channel must match.

  Example:

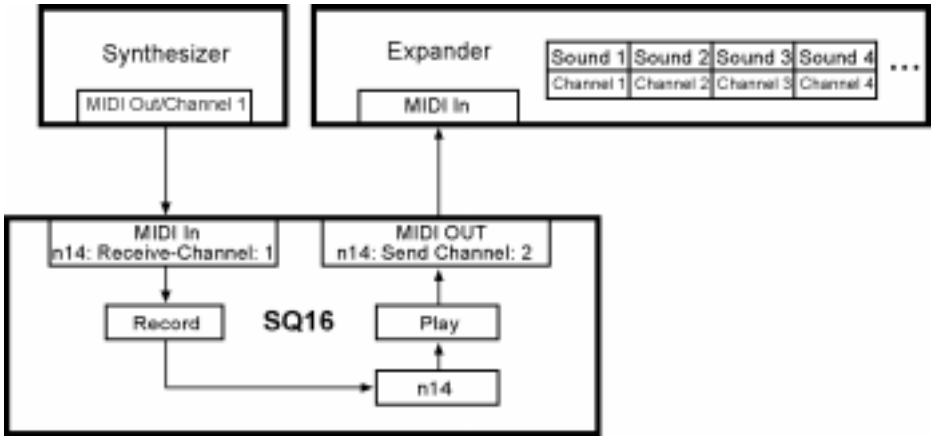
Drumset: Channel 1	Bass	Snare	Hihat	Tom1	Tom2	Tom3	...
	C1	C#1	D1	D#1	E1	F1	

Instrument Tracks SQ16	I Channel	I Note #	Instrument
I1	1	C1	Bass
I2	1	C#1	Snare
I3	1	E1	Tom1
I4	1	F1	Tom2

  Because different note numbers were assigned to them instrument tracks 1...4 trigger different instruments in a drumset.

  Keep in mind that all steps of ONE instrument track have the same note number. It is not possible to assign different note numbers to the steps of a single instrument track.

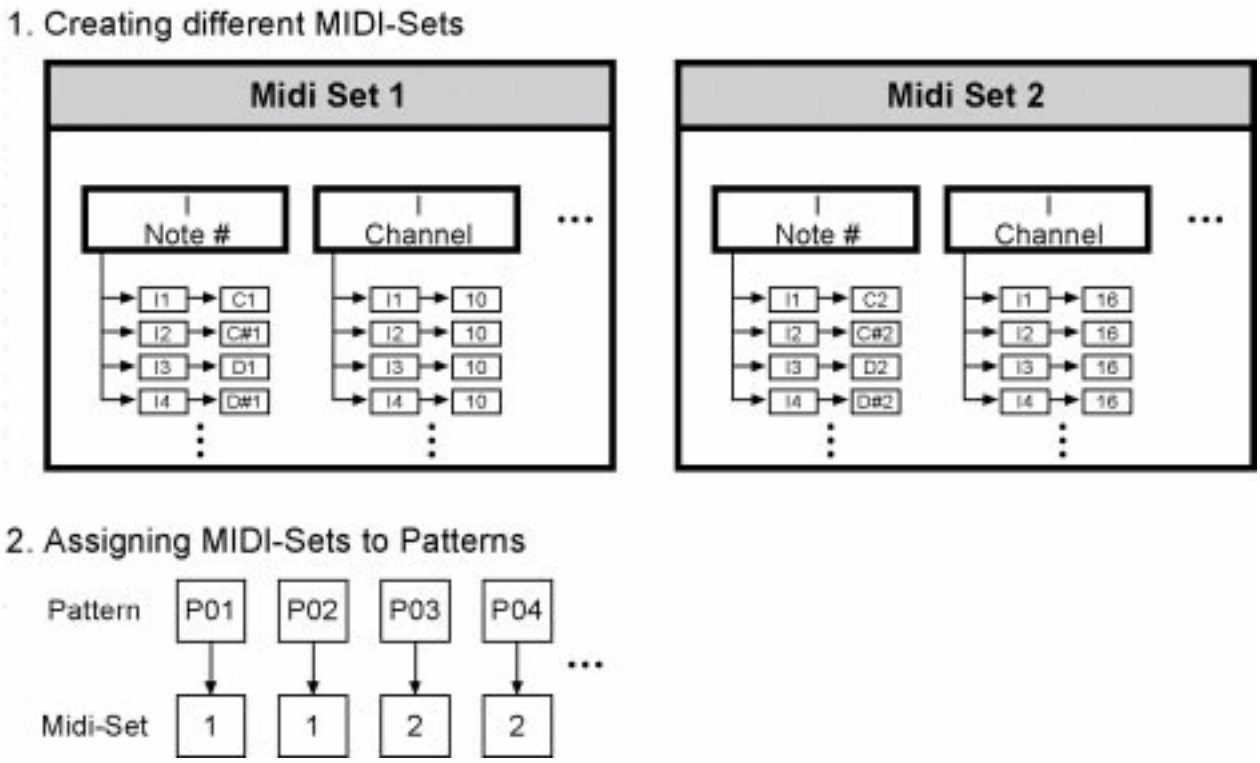
- **n Receive Channel, n Send Channel**
  Each note track can have a different MIDI send channel and MIDI receive channel. The following picture shows how this is accomplished:



For example, you want to use an external synthesizer to record note data on note track 14 (for recording note tracks see section 11). Since the synthesizer is sending on MIDI channel 1 the MIDI receive channel for note track 14 must also be set to 1. When playing back note track 14 you want it to use the sound on MIDI channel 2 in the connected expander; that's why you must set the MIDI send channel to 2.

5.2. Why and how to use MIDI Sets?

You can create different MIDI Sets in the SQ16 and assign those to different Patterns; or you can assign the same MIDI Set to all Patterns (see sections 3.3 and 4.5).



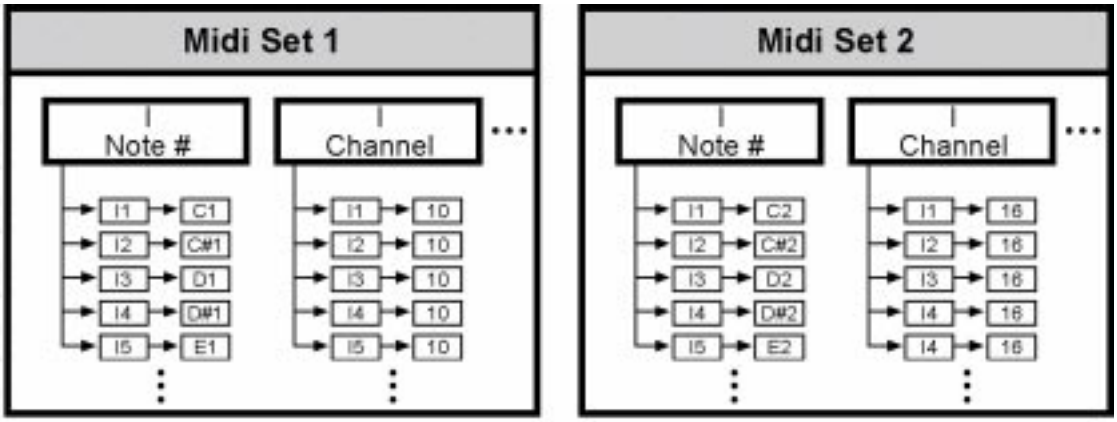
Depending on the settings made in the MIDI Set the Patterns use different note numbers and MIDI channels (instrument tracks) or different MIDI send channels and MIDI receive channels (note tracks). Patterns 1 and 2 play back instrument tracks 1...4 on MIDI channel 10; Patterns 3 and 4 play back instrument tracks 1...4 on MIDI channel 16. Additionally, Patterns 1 and 2 use different note numbers for instrument tracks 1...4 than Patterns 3 and 4.

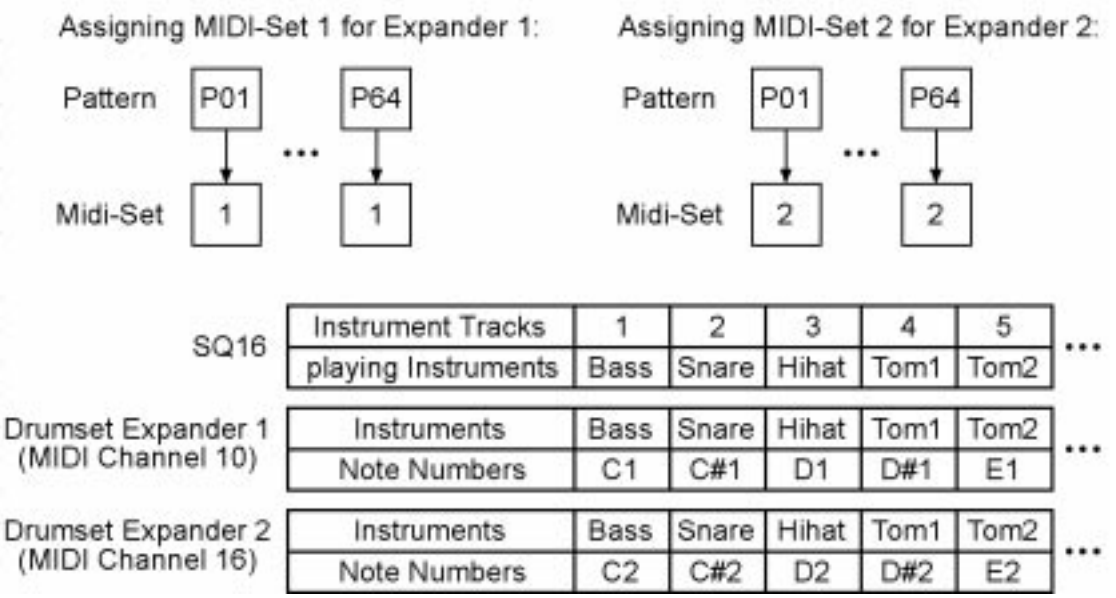
Using MIDI Sets to configure the SQ16 for different MIDI expanders:

Let's take an example: You have assigned the same MIDI Set (MIDI Set 1) to all Patterns and matched the settings for instrument tracks and note tracks to a certain expander (expander 1); let's pretend all instrument tracks sending on MIDI channel 10, instrument track 1 playing a bass drum, instrument track 2 playing a snare drum, instrument track 3 playing a hihat and so on.

If you connect a different expander (expander 2) it could happen that you get a completely different instrumentation because expander 2 uses different note numbers (and maybe also different MIDI channels) for its drum sounds. If you want to use the same instrumentation as with expander 1 you would either have to re-program MIDI Set 1 or to re-program expander 2.

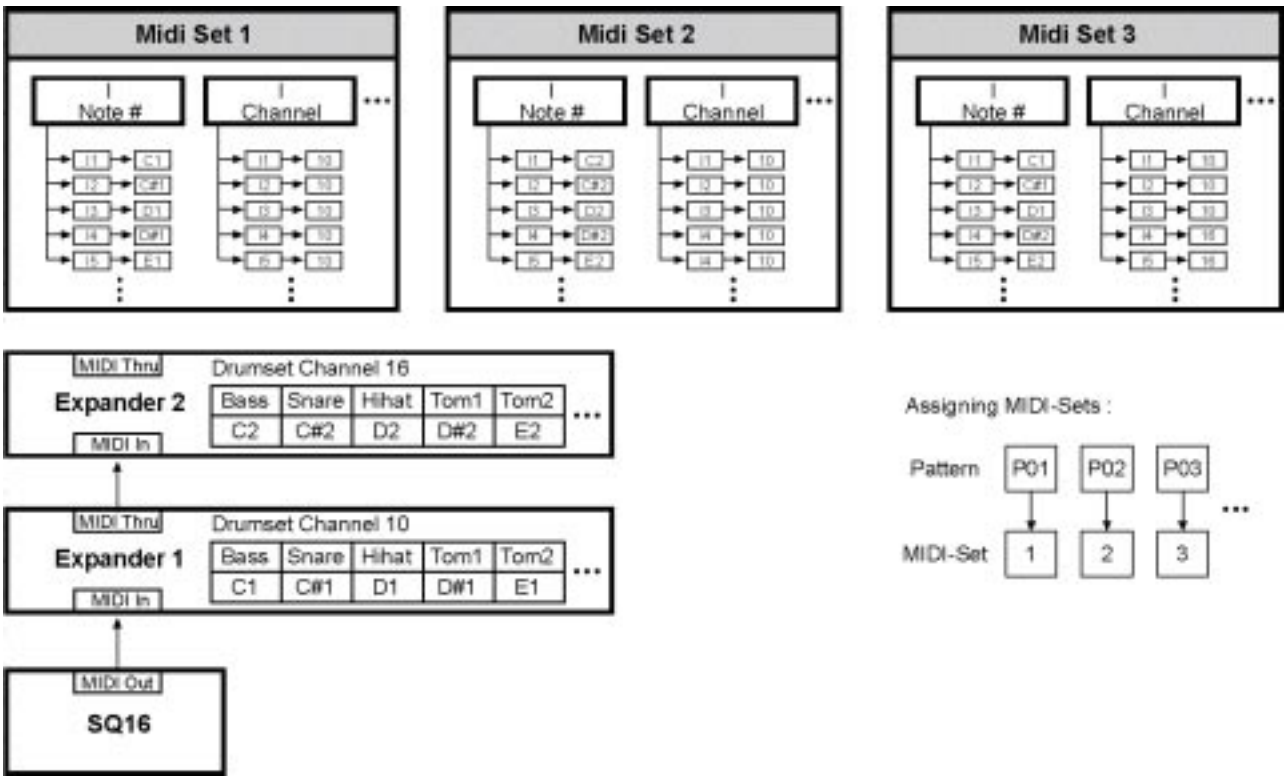
However the SQ16 has a very elegant solution for this problem; you simply create a second MIDI Set (MIDI Set 2) for expander 2 and assign this second MIDI Set to all Patterns. This is easily accomplished using Global - Common Pattern. The following graphics show the appropriate settings and assignments if you want to get the same instrumentation from expander 1 and expander 2.





SQ16	Instrument Tracks	1	2	3	4	5	...
	playing Instruments	Bass	Snare	Hihat	Tom1	Tom2	
Drumset Expander 1 (MIDI Channel 10)	Instruments	Bass	Snare	Hihat	Tom1	Tom2	...
	Note Numbers	C1	C#1	D1	D#1	E1	
Drumset Expander 2 (MIDI Channel 16)	Instruments	Bass	Snare	Hihat	Tom1	Tom2	...
	Note Numbers	C2	C#2	D2	D#2	E2	

Using different Patterns to control different expanders:

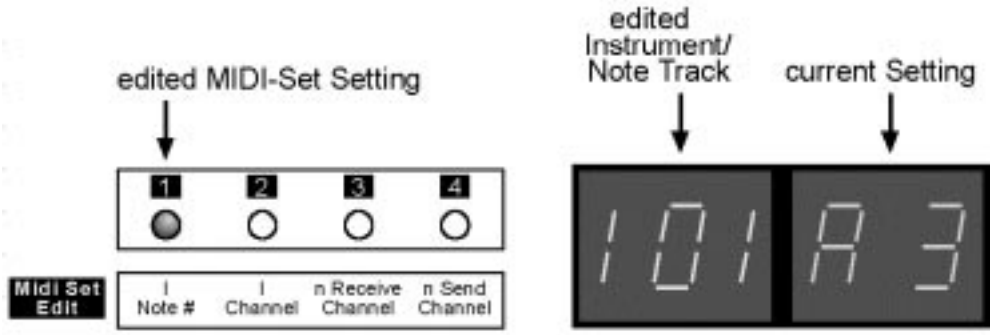


You have connected two expanders to the SQ16. The drum set in expander 1 is using MIDI channel 10; the drum set in expander 2 is using MIDI channel 16. The instrument tracks in Pattern 1 are triggering instruments in expander 1 (instrument track 1: bass drum, instrument track 2: snare drum, instrument track 3: hihat...). The instrument tracks in Pattern 2 are trigg e-ring instruments in expander 2, but basically the same drum instrument types. I Pattern 3 both expanders are triggered: instrument track 1 plays bass drum in expander 1, instrument track 2 plays snare in expander 1, instrument track 3 plays hihat in expander 1, instrument track 4 plays tom1 ins expander 2 and instrument track 5 plays tom2 also in expander 2.

5.3. Editing a MIDI Set

1. Activate Global - MIDI Set Edit
2. Select one of the 16 MIDI Sets:
   a. Using the "arrow" buttons in the right Select/Edit section; the MIDI Set is shown in the right display
   b. Keep pressed the "Select" button in the right Select/Edit section and use step buttons 1...16 to select a MIDI Set; the MIDI Set is shown in the right display
3. Use step button 1...4 to select which setting you want to edit. the right display shows the current value while the left display shows the instrument track or note track that uses this value.

   Example: Selection I Note #, current value for instrument track 1: A3



4. Select one of the instrument tracks i1...i13 or one of the note tracks n14...n16
   4.1. Selecting an instrument track to edit settings I Note # and I Channel
      a. Using the "arrow" buttons in the left Select/Edit section
      b. Keep pressed the "Select" button in the left Select/Edit section and use step buttons 1...13 to select an instrument track
   4.2. Selecting a note track to edit settings for n Receive Channel and n send Channel
      a. Using the "arrow" buttons in the left Select/Edit section
      b. Keep pressed the "Select" button in the left Select/Edit section and use step buttons 14...16 to select a note track
5. Change the value using the up/down buttons (step buttons 11 and 12). Possible choices see section 5.1.
6. Exit MIDI Set Edit by pressing Exit button (step button 13).

5.4. Copying MIDI Set data

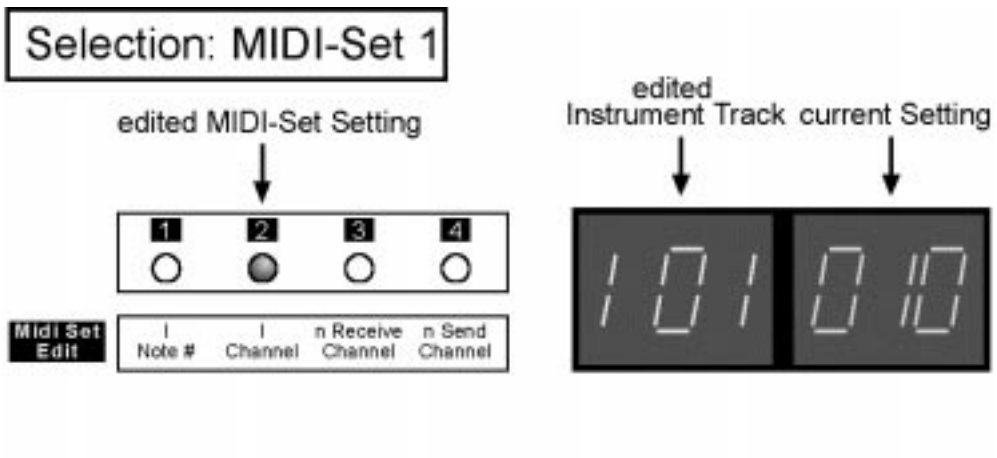
If you have selected MIDI Set Edit you can easily copy the value for the current edited instrument track or note track (for copying complete MIDI Sets see section 7.2).

5.4.1. Selected MIDI Set setting: I Note # or I Channel

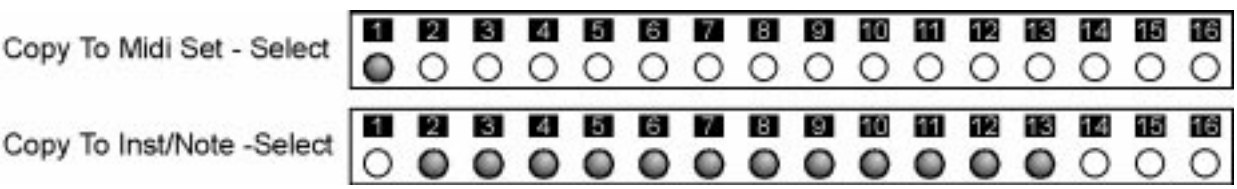
As an example, you have selected MIDI Set 1 and I Channel for instrument track 1 (current value: Channel 10). You can copy this setting to other instrument tracks within the same MIDI Sets or to different MIDI Sets.

1. Activate Copy To in the Select/Edit section.
2. Select the instrument track to which you want to copy the setting. Hold down the "Select" button in the left Select/Edit section and make the selection as follows:
   a. Press step buttons 1...13 shortly to select several instrument tracks
   b. Press step button 1...13 for at least a second to select a single instrument track.
   c. Press ALL OFF button to select instrument track 1
   d. Press ALL ON button to select all instrument tracks.
3. Select the MIDI Set(s) to which you want to copy the current setting. Please note that the setting is copied to all in Step 2. selected tracks. Hold down the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several MIDI Sets
   b. Press step button 1...16 for at least a second to select a single MIDI Set.
   c. Press ALL OFF button to select MIDI Set 1
   d. Press ALL ON button to select all MIDI Sets.
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Edited setting I Channel (channel 10) - instrument track 1, MIDI-Set 1



Copying I Channel (Channel 10) to instrument tracks 2...13 in MIDI-Set 1

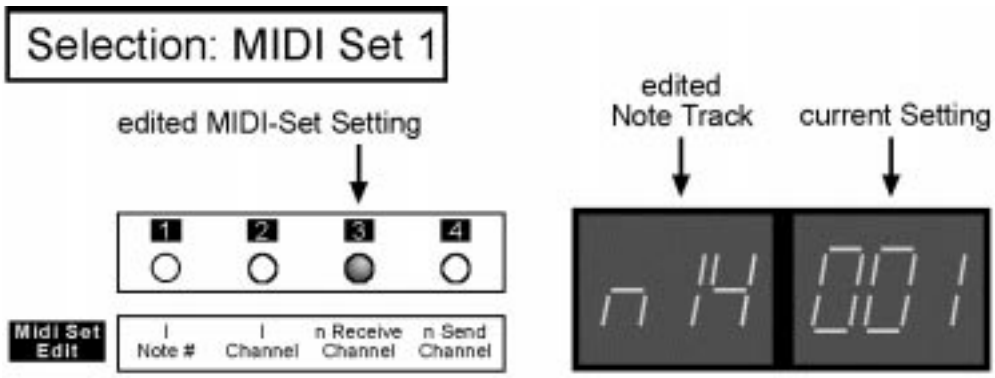


5.4.2. Selected MIDI Set setting: n Receive Channel or n Send Channel

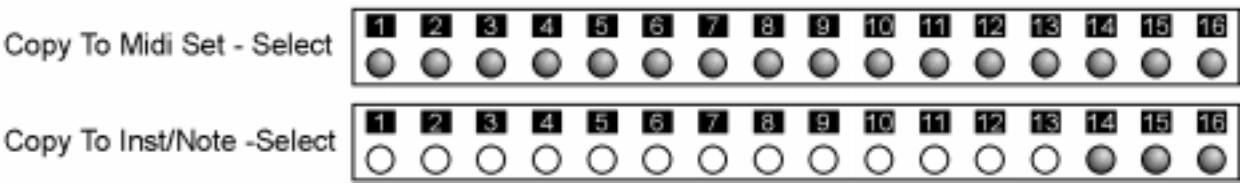
As an example, you have selected MIDI Set 1 and n Receive channel for note track 14 (current setting: Channel 1). You can copy this setting to other note tracks within the same MIDI Sets or to different MIDI Sets.

1. Activate Copy To in the Select/Edit section.
2. Select the note track to which you want to copy the setting. Keep pressed the "Select" button in the left Select/Edit section and make the selection as follows:
   a. Press step buttons 14...16 shortly to select several note tracks
   b. Press step button 14...16 for at least a second to select a single note track.
   c. Press ALL OFF button to select note track 14
   d. Press ALL ON button to select all note tracks.
3. Select the MIDI Set(s) to which you want to copy the current setting. Please note that the setting is copied to all in Step 2. selected note tracks. Keep pressed the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several MIDI Sets
   b. Press step button 1...16 for at least a second to select a single MIDI Set.
   c. Press ALL OFF button to select MIDI Set 1
   d. Press ALL ON button to select all MIDI Sets.
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Edited setting n Receive Channel (Channel 1) - note track 14, MIDI-Set 1



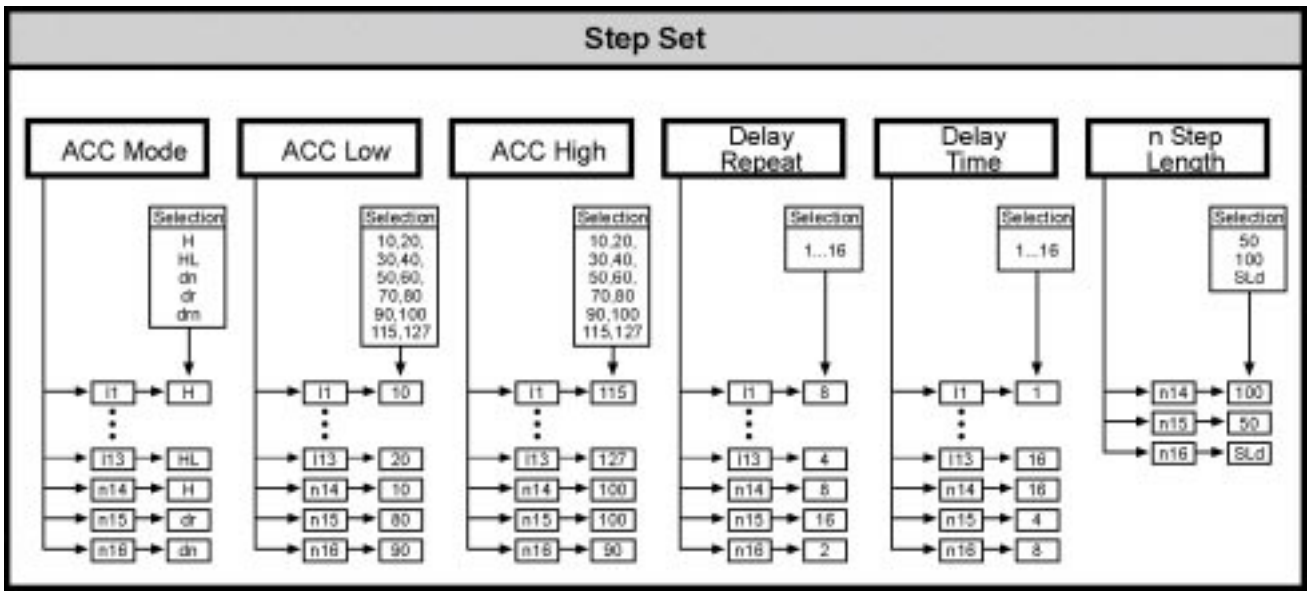
Copying n Receive Channel (Channel 1) to note tracks 14...16 in all MIDI-Sets



6. Step Set

6.1. Which data does a Step Set contain?

Each Block in the SQ16 contains 16 different Step Sets. Each Step Set holds individual settings for instrument tracks and note tracks as shown in the following graphic:

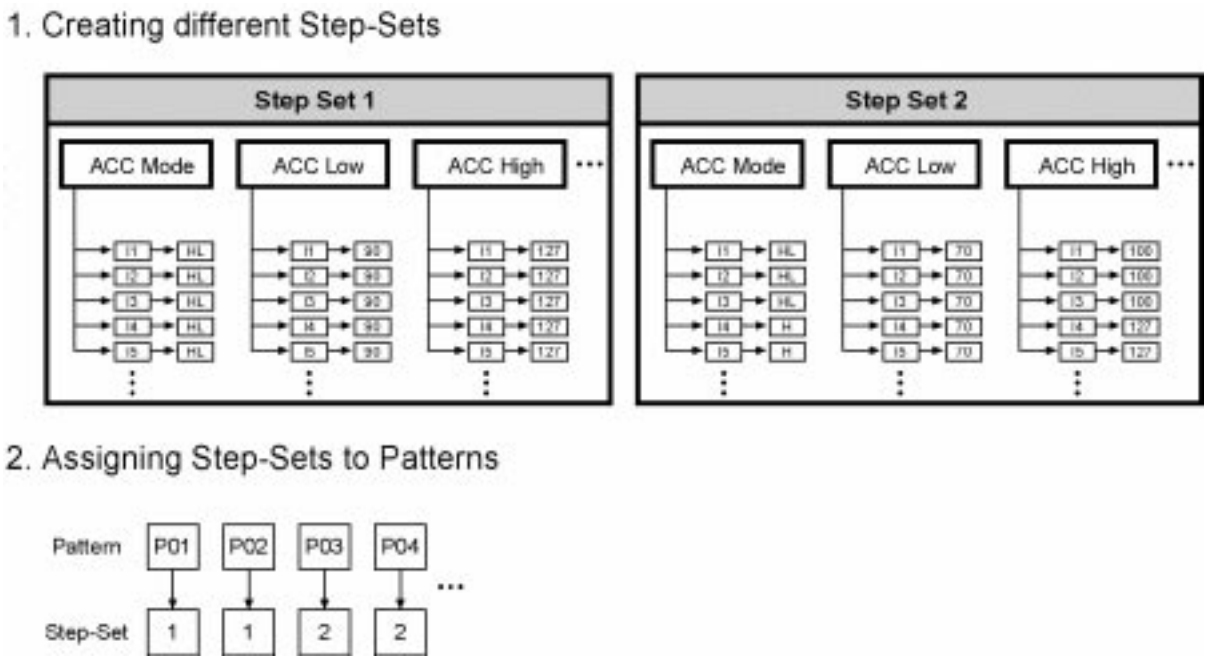


- **ACC Mode**
  Determines how active accents affect the velocity values for the instrument tracks and note tracks. Possible values are Mode "H" (regardless of the accent track always ACC-High is used), "HL" (accent active: ACC-High; accent not active: ACC-Low) and the modes "dn", "dr" and "drn" which generates echoes similar to an electronic delay device. Each instrument track and note track can have its own ACC mode setting.
- **ACC Low/High**
  These are the two velocity values (possible values: 10...127) which are used depending on the accent track if the ACC mode setting is "HL". If one of the delay modes is active those settings determine the shape of the echoes. Each instrument track and note track can have its own ACC Low/High values.
- **Delay Repeat**
  Number of echoes (1...16) if one of the delay modes is active; this setting can be made individually for each instrument track and note track.
- **Delay Time**
  Rests between two echoes in steps (1...16); this setting can be made individually for each instrument track and note track.
- **n Step Length**
  Determines the length for each step of a note track; this setting can only be mode individually for each note track and not for instrument tracks.

6.2. Why and how to use Step Sets?

A drum sequence becomes a more "live" character if the instruments play with different volumes and vary their volume during playback. While it would be thinkable to create individual velocities for each instrument and each step this would also mean a tremendous amount of time necessary for editing this information, not even to think about making fast and simple changes. The SQ16 uses its Accent track (within a Pattern each instrument track and note track has its own accent track) to solve this problem: The give single steps a higher velocity (and hereby a higher volume) one needs simply to activate the accent for this step and track. Then you assign a Step Set to the Pattern that has different settings for ACC Low and ACC High (assigning Step Sets see sections 3.3 and 4.5).

Examples:



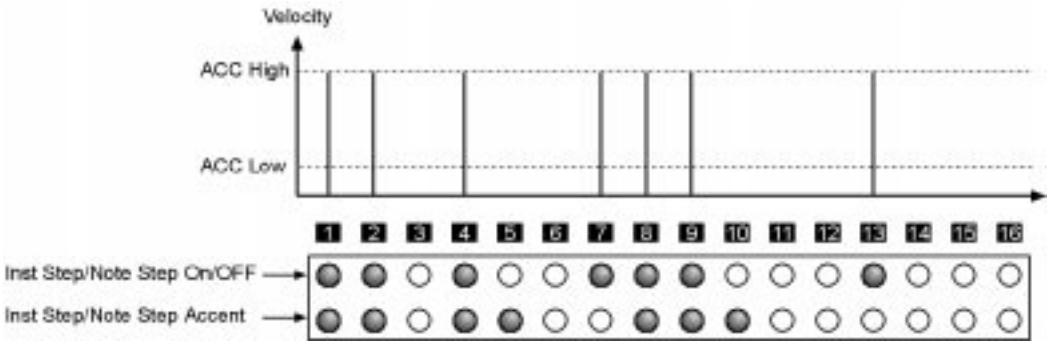
In Pattern 1 and 2 ACC Mode "HL" is active for instrument tracks 1 to 5. If no accent is set for those tracks velocity value 90 is used (ACC Low); if an accent is set velocity value 127 (ACC High). In Pattern 3 and 4 ACC Mode "HL" is also active for instrument tracks 1 to 3; however those tracks use velocity value 70 for non-accented steps and velocity value 100 for accented steps. For instrument tracks 4 and 5 ACC Mode "H" is active; regardless of the settings in the accent tracks always velocity 127 is used.

6.3. Description of Step Set settings

6.3.1. ACC Mode, ACC Low, ACC High, Delay Repeat, Delay Time

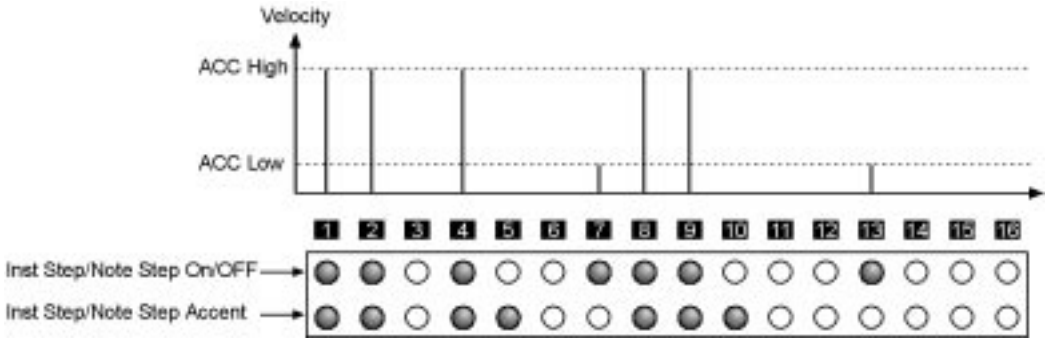
Please note: In the following section we call steps "active" if they are set to "on" in the On/Off tracks for the instrument tracks or note tracks. If no velocity value is shown above a step no note is sent.

- **ACC Mode: H**



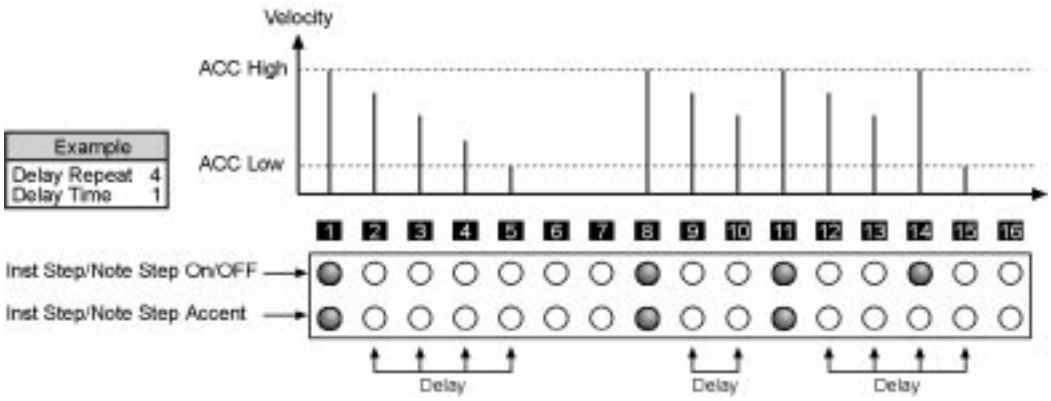
All active steps are sent with Velocity value ACC High. The Accent track is ignored.

- **ACC Mode: HL**



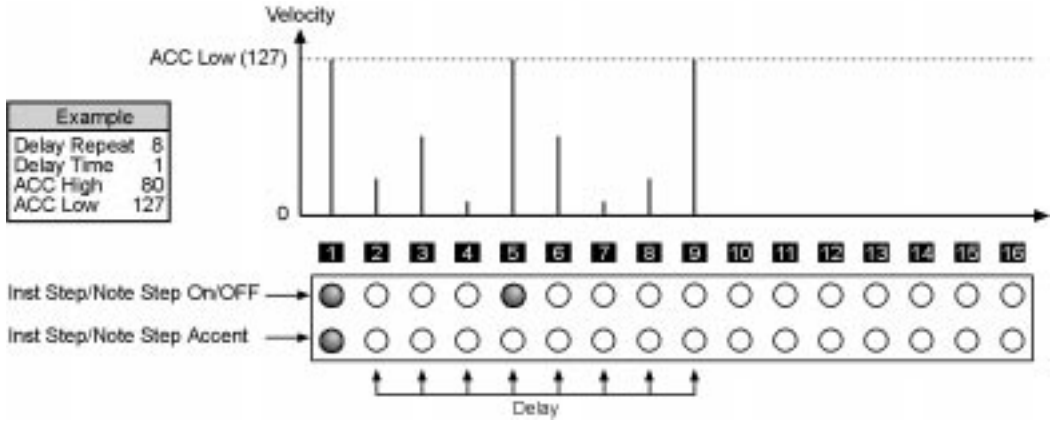
All active steps with active Accent are sent with velocity value ACC High, all active steps without active Accent are sent with velocity value ACC Low. Accents for non-active steps are ignored.

- **ACC Mode: dn (forward delay)**

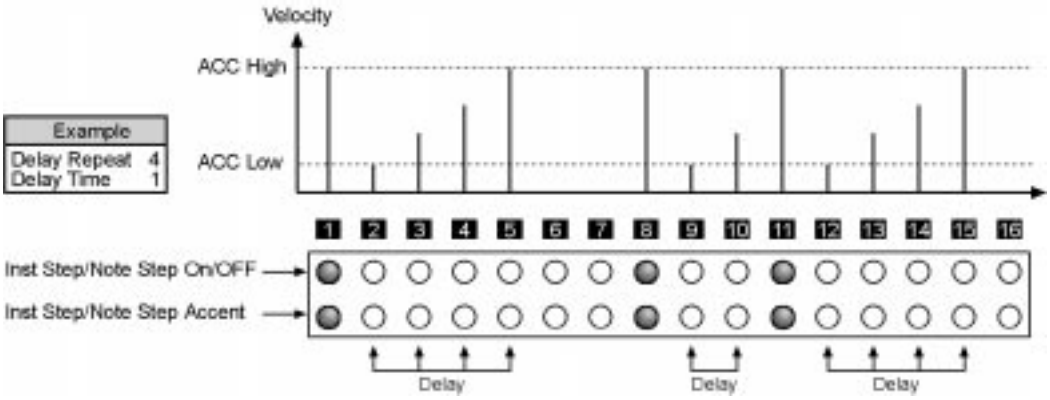


A Delay is started at an active step with active accent; this step has the velocity value ACC High. A number of echoes is created; this number is determined by the setting "Delay Repeat". The velocity decreases for each echo and has the velocity value ACC Low for the final echo. The setting "Delay Time" determines the time between two echoes. If this setting has the value "1" an echo is generated for each step; if this setting has the value "3" an echo is generated for each third step, with two steps resting between echoes.

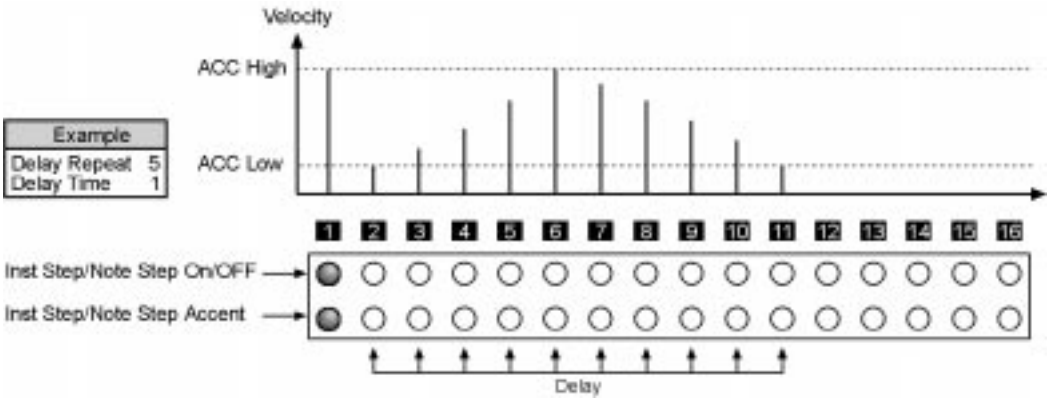
- Each active step with activated accent starts a new delay, regardless if the previous delay was finished.
- Active steps without accent - even when they fall between two echoes or on the same step as an echo - always use the ACC High velocity value.
- All active steps with activated accents always use the ACC High velocity value.
- If a delay isn't finished at the end of a Pattern it continues into the next Pattern. As an example, if you are triggering at the final step of a Pattern (Pattern length: 16 steps) a delay with 5 Delay Repeats and Delay Time 1 the echoes will occur on the first 5 steps of the next Pattern.
- If the ACC Low value is higher than the ACC High value you will get an uneven delay contour depending on the settings. Each active step (with or without accent) uses the ACC Low velocity value.



- **ACC Mode "dr" (reverse delay)**
  This mode is similar to ACC Mode "dn" except the echoes start with the ACC Low value and increase in velocity. The final echo uses the ACC High value.



- **ACC Mode "drn" (forward-reverse delay)**



The Mode generates a forward delay with increasing velocity values from ACC Low to ACC High followed by a reverse delay with decreasing velocity values from ACC High to ACC Low. Both delays use the number of repeats made with the "Delay Repeats " setting. The complete delay phase is twice as long as the setting "Delay repeats". The setting "Delay Time" determines the time between two echoes. If this setting has the value "1" an echo is generated for each step; if this setting has the value "3" an echo is generated for each third step, with two steps resting between echoes.

- A new delay can only be triggered if the previous delay phase has completely finished. In this case those notes are played using the ACC High velocity setting.
- Active steps without accent - even when they fall between two echoes or on the same step as an echo - always use the ACC High velocity value.
- All active steps with activated accents always use the ACC High velocity value.
- If a delay isn't finished at the end of a Pattern it continues into the next Pattern. As an example, if you are triggering at the final step of a Pattern (Pattern length: 16 steps) a delay with 5 Delay Repeats and Delay Time 1 the echoes will occur on the first 5 steps of the next Pattern.
- If the ACC Low value is higher than the ACC High value you will get an uneven delay contour depending on the settings.

6.3.2. n Step Length

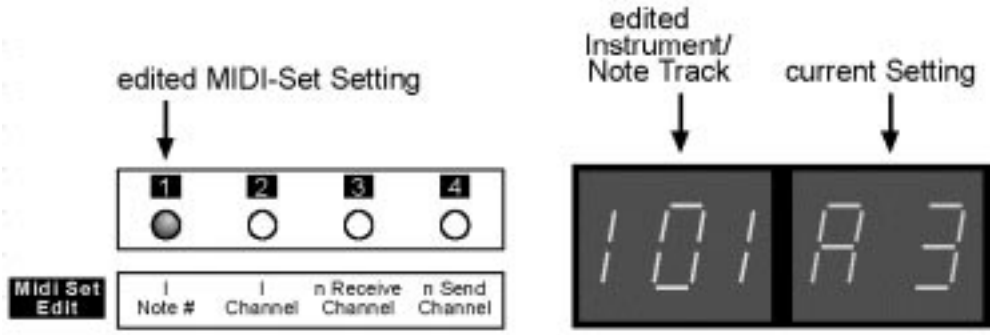
This setting determines the length for each note of a note track. The settings are explained in detail in section 4.3.1. You can enter the following values:

- **n Step Length 50**
  The note length equals half of the step length. As an example: Step Length Sixteenth (Scale 16) -> note length 32nd notes
- **n Step Length 100**
  The note length equals the step length.
- **n Step Length Slide**
  The note length equals the step length. This settings differs to n Step Length 100 insofar as a Slider can be generated for the devices MB33 and MB33II (made by MAM) if the hold setting is active for this step.

6.4. Editing a MIDI Set

1. Activate Global - MIDI Set Edit
2. Select one of the 16 MIDI Sets:
   a. Using the "arrow" buttons in the right Select/Edit section; the MIDI Set is shown in the right display
   b. Keep pressed the "Select" button in the right Select/Edit section and use step buttons 1...16 to select a MIDI Set; the MIDI Set is shown in the right display
3. Use step button 1...4 to select which setting you want to edit. the right display shows the current value while the left display shows the instrument track or note track that uses this value.

   Example: Selection I Note #, current value for instrument track 1: A3



4. Select one of the instrument tracks i1...i13 or one of the note tracks n14...n16
   4.1. Selecting an instrument track to edit settings I Note # and I Channel
      a. Using the "arrow" buttons in the left Select/Edit section
      b. Keep pressed the "Select" button in the left Select/Edit section and use step buttons 1...13 to select an instrument track
   4.2. Selecting a note track to edit settings for n Receive Channel and n send Channel
      a. Using the "arrow" buttons in the left Select/Edit section
      b. Keep pressed the "Select" button in the left Select/Edit section and use step buttons 14...16 to select a note track
5. Change the value using the up/down buttons (step buttons 11 and 12). Possible choices see section 5.1.
6. Exit MIDI Set Edit by pressing Exit button (step button 13).

6.5. Copying MIDI Set data

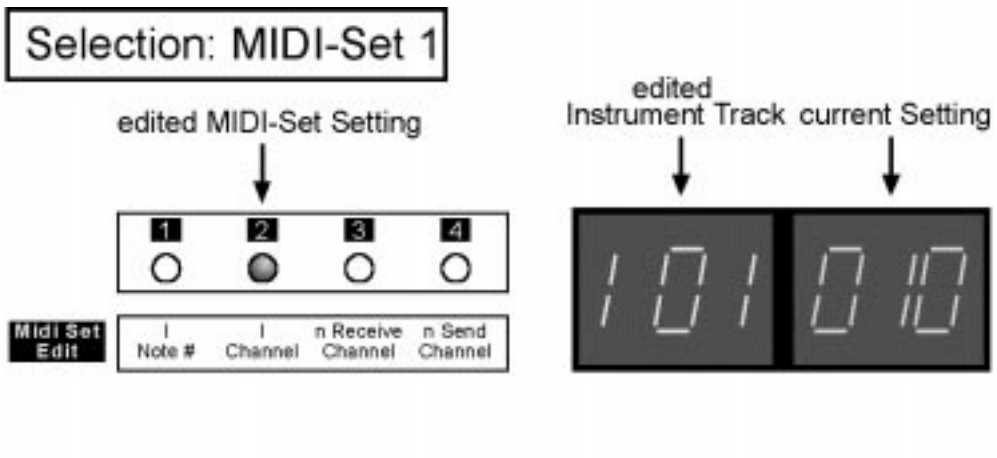
If you have selected MIDI Set Edit you can easily copy the value for the current edited instrument track or note track (for copying complete MIDI Sets see section 7.2).

6.5.1. Selected MIDI Set setting: I Note # or I Channel

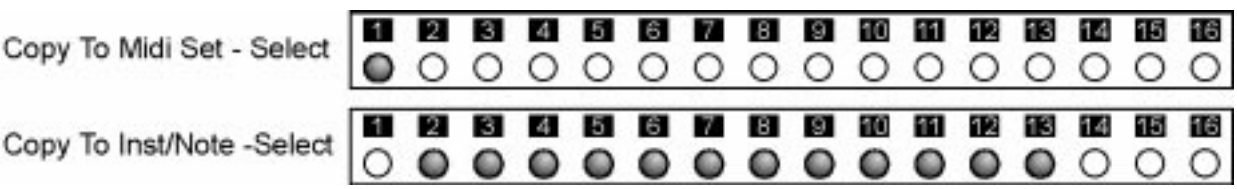
As an example, you have selected MIDI Set 1 and I Channel for instrument track 1 (current value: Channel 10). You can copy this setting to other instrument tracks within the same MIDI Sets or to different MIDI Sets.

1. Activate Copy To in the Select/Edit section.
2. Select the instrument track to which you want to copy the setting. Hold down the "Select" button in the left Select/Edit section and make the selection as follows:
   a. Press step buttons 1...13 shortly to select several instrument tracks
   b. Press step button 1...13 for at least a second to select a single instrument track.
   c. Press ALL OFF button to select instrument track 1
   d. Press ALL ON button to select all instrument tracks.
3. Select the MIDI Set(s) to which you want to copy the current setting. Please note that the setting is copied to all in Step 2. selected tracks. Hold down the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several MIDI Sets
   b. Press step button 1...16 for at least a second to select a single MIDI Set.
   c. Press ALL OFF button to select MIDI Set 1
   d. Press ALL ON button to select all MIDI Sets.
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Edited setting I Channel (channel 10) - instrument track 1, MIDI-Set 1



Copying I Channel (Channel 10) to instrument tracks 2...13 in MIDI-Set 1

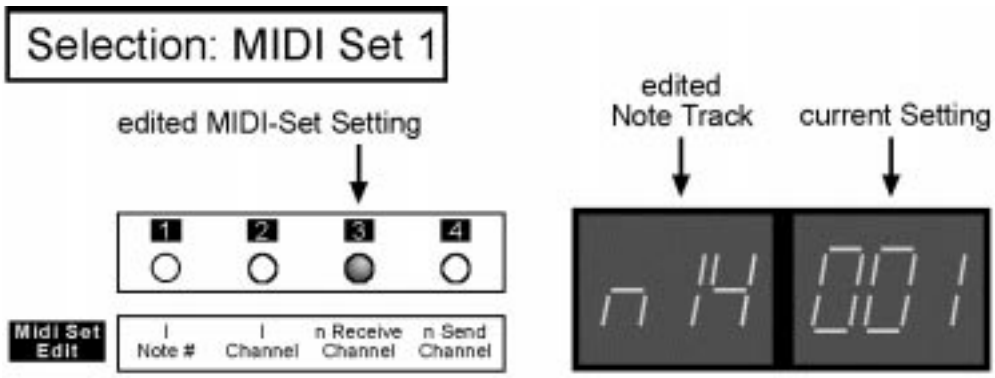


6.5.2. Selected MIDI Set setting: n Receive Channel or n Send Channel

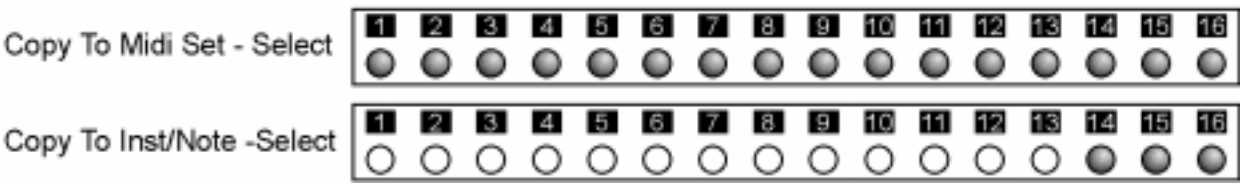
As an example, you have selected MIDI Set 1 and n Receive channel for note track 14 (current setting: Channel 1). You can copy this setting to other note tracks within the same MIDI Sets or to different MIDI Sets.

1. Activate Copy To in the Select/Edit section.
2. Select the note track to which you want to copy the setting. Keep pressed the "Select" button in the left Select/Edit section and make the selection as follows:
   a. Press step buttons 14...16 shortly to select several note tracks
   b. Press step button 14...16 for at least a second to select a single note track.
   c. Press ALL OFF button to select note track 14
   d. Press ALL ON button to select all note tracks.
3. Select the MIDI Set(s) to which you want to copy the current setting. Please note that the setting is copied to all in Step 2. selected note tracks. Keep pressed the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several MIDI Sets
   b. Press step button 1...16 for at least a second to select a single MIDI Set.
   c. Press ALL OFF button to select MIDI Set 1
   d. Press ALL ON button to select all MIDI Sets.
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Edited setting n Receive Channel (Channel 1) - note track 14, MIDI-Set 1



Copying n Receive Channel (Channel 1) to note tracks 14...16 in all MIDI-Sets



7. Copy

You can use this function to copy data within the Edit Buffer. You have the following options:

- copying single settings from a Pattern, Step Set, MIDI Set, Mute or Rotate
- copying whole Patterns, Chains, MIDI Sets, Step Sets and Rotates

7.1. Copying single settings

If you are editing the data of a Pattern, Step Set, MIDI Set, Mute or Rotate you can copy the currently edited value using the function Copy To. This is possible for the following data types or functions:

- Inst Step (all subfunctions)
- Note Sep (all subfunctions)
- Rotate (all subfunctions)
- Note Rec (Step)
- Pattern (all subfunctions)
- Inst/Note - On/Off (Mute settings)
- Step Set Edit (all subfunctions)
- MIDI Set Edit (all subfunctions)

As an example: You have activated Inst Step - Accent and you are editing the Accent track for instrument 1 in Pattern 1. Using the function Copy To you can copy the Accent track for instrument 1 in Pattern 1 to other instruments or Patterns. A detailed description can be found in the sections dealing with the appropriate data types/functions.

7.2. Copying Patterns, Songs, Chains, MIDI Sets, Step Sets and Rotates

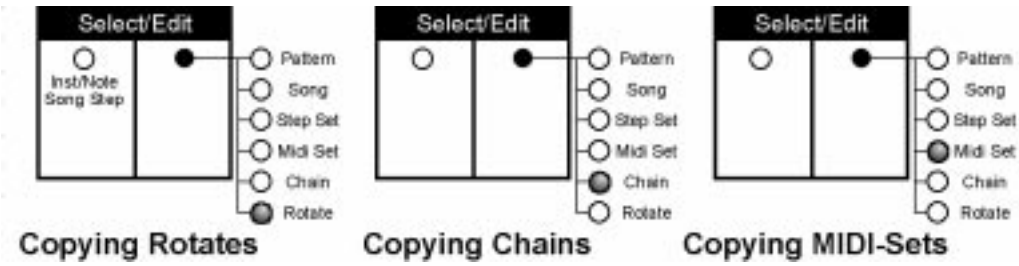
Using the function Copy From you can select which data you want to copy. Using the function Copy To you select then where you want to copy those data to. All settings of a Pattern, Song, Chain, MIDI Set, Step Set and Rotate are copied here.

Copying Songs, Chains, MIDI Sets, Step Sets and Rotates

A single Rotate/Chain/MIDI Set/Step Set or Song can be copied to several Rotates/Chains/MIDI Sets/Step Sets or Songs.

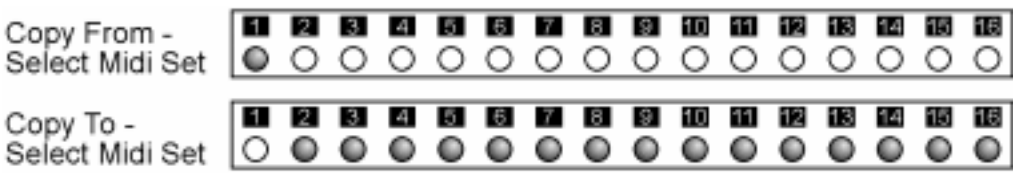
1. Activate Copy From until the desired LED right to the Select/Edit section lights up.

   Example:



2. Select which Rotate/Chain/MIDI Set/Step Set or Song shall be copied: Keep pressed the "Select" button in the right Select/Edit section and press step button 1...16 for the desired selection (step button 1...8 when copying Songs).
3. Activate "Copy To" to select the Rotates/Chains/MIDI Sets/Step Sets or Songs to which you want to copy. Keep pressed the "Select" button in the right Select/Edit section and make your selection as follows:
   a. Use step buttons 1...16 to select several Rotates/Chains/MIDI Sets/Step Sets (step buttons 1...8 for Songs).
   b. Press step button 1...16 for at least a second to select a single Rotate/Chain/MIDI Set/Step Set or Song
   c. Press ALL OFF button to select Rotate/Chain/MIDI Set/Step Set/Song 1.
   d. Press ALL ON to select all Rotates/Chains/MIDI Sets/Step Sets/Songs.
4. Press "Enter" button (step button 14). If the left display reads "YES" press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Repeat steps 1-4 to copy other data or leave "Copy" with "Exit" (step button 13)

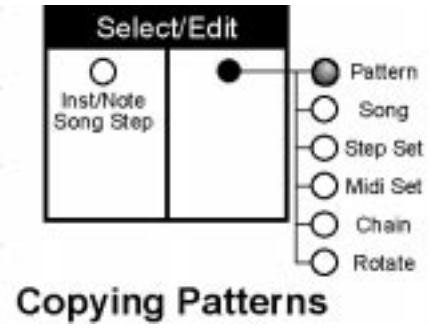
   Example: Copying Midi Set 1 to Midi Set 2...16



Copying Patterns:

A single Pattern or several Patterns from a Pattern group can be copied.

1. Press Copy From until the "Pattern" LED lights up

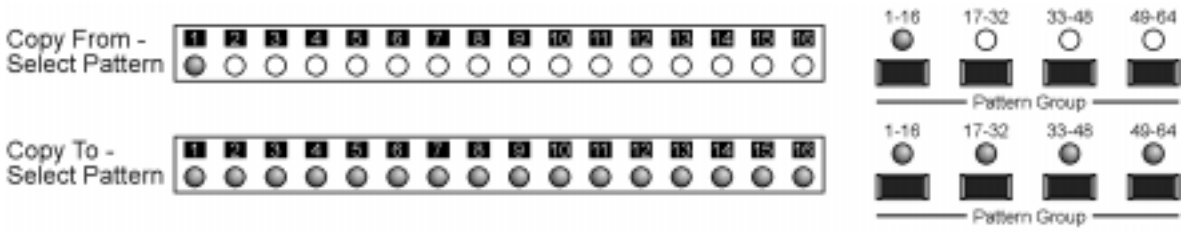


Copying Patterns

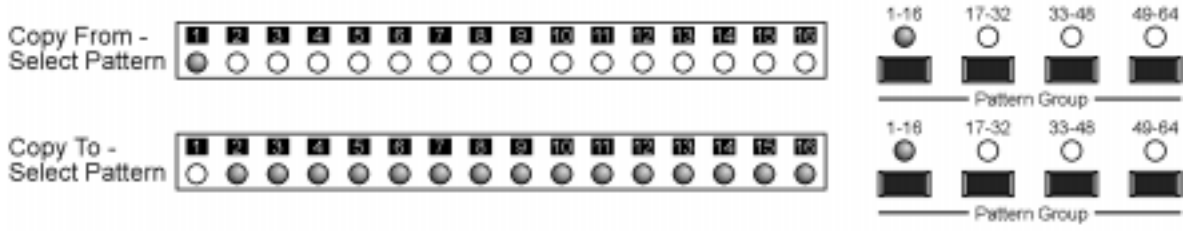
2. Select from which Pattern group you want to copy: Keep pressed the "Select" button in the right Select/Edit section and select the desired Pattern group.
3. Select which Patterns from this group you want to copy: Keep pressed the "Select" button in the right Select/Edit section and make your selection as follows:
   a. Press Step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Pattern 1 to 16 if Pattern group 1-16 is selected, Pattern 17 to 32 is Pattern group 17-32 is selected, Pattern 33 to 48 if pattern group 33-48 is selected and 49 to 64 if Pattern group 49-64 is selected.
   b. Press step button 1...16 for at least a second to select a single Pattern
   c. Press ALL OFF button to select the first Pattern (1, 17, 33, 49) within the selected Pattern group.
   d. Press ALL ON button to select all Patterns within the selected Pattern group.
4. Select the Patterns onto which the Patterns selected in step 3 shall be copied:
   4.1. Just one Pattern was selected in step 3 and shall be copied to all Patterns: Press ALL ON button until all Pattern groups are selected (LED's above Pattern group buttons light up)
   4.2. Just one Pattern was selected in step 3 which shall be copied to several Patterns in the same Pattern group or in a different Pattern group: Keep pressed the "Select" button in the right Select/Edit section and select the desired Pattern group. While keeping pressed the "Select" button in the right Select/Edit section select the Patterns within the Pattern group as follows:
      a. Press Step buttons 1...16 shortly to select several Patterns. Step buttons 1 to 16 equal Pattern 1 to 16 if Pattern group 1-16 is selected, Pattern 17 to 32 is Pattern group 17-32 is selected, Pattern 33 to 48 if pattern group 33-48 is selected and 49 to 64 if Pattern group 49-64 is selected.
      b. Press step button 1...16 for at least a second to select a single Pattern
      c. Press ALL OFF button to select the first Pattern (1, 17, 33, 49) within the selected Pattern group.
      d. Press ALL ON button to select all Patterns within the selected Pattern group.
   4.3. Several Patterns were selected in step 3; as an example, Patterns 1, 2, 3 (selected Pattern group: 1-16)
      a. Copying Patterns 1, 2, 3 to different Patterns in the same Pattern group: Keep pressed the "Select" button in the right Select/Edit section and select Pattern group 1-16. While keeping pressed the "Select" button in the right Select/Edit section use step buttons 1...16 to select the target patterns within the pattern group. As an example, when pressing step button 4 the target patterns are 4, 5 and 6 (Pattern 1 is copied to Pattern 4, Pattern 2 is copied to Pattern 5 and Pattern 3 is copied to Pattern 6); or when pressing step button 8 the target patterns are 8, 9 and 10 (Pattern 1 is copied to Pattern 8, Pattern 2 is copied to Pattern 9 and Pattern 3 is copied to Pattern 10). The number of target patterns always equals the number of source patterns; in addition target patterns and source patterns must be different (as an example, selecting target patterns 2, 3, 4 or 3, 4, 5 would not be possible). Selecting Patterns 1, 2, 3 as target patterns would be possible but nothing would happen.
      b. Copying Patterns 1, 2, 3 to Patterns in a different Pattern group: Keep pressed the "Select" button in the right Select/Edit section and select Pattern group 17-32 or 33-48 or 49-64. While keeping pressed the "Select" button in the right Select/Edit section use step buttons 1...16 to select the target patterns within the pattern group. As an example, in Pattern group 17-32 when pressing step button 1 the target patterns are 17, 18 and 19 (Pattern 1 is copied to Pattern 17, Pattern 2 is copied to Pattern 18 and Pattern 3 is copied to Pattern 19); or in Pattern group 17-32 when pressing step button 8 the target patterns are 24, 25 and 26 (Pattern 1 is copied to Pattern 24, Pattern 2 is copied to Pattern 25 and Pattern 3 is copied to Pattern 26).

5. Press "Enter" button (step button 14). If the left display reads "YES" press "Enter" again to copy or "Exit" (step button 13) to abort.
6. Repeat steps 1-5 to copy other patterns or leave "Copy" with "Exit" (step button 13)

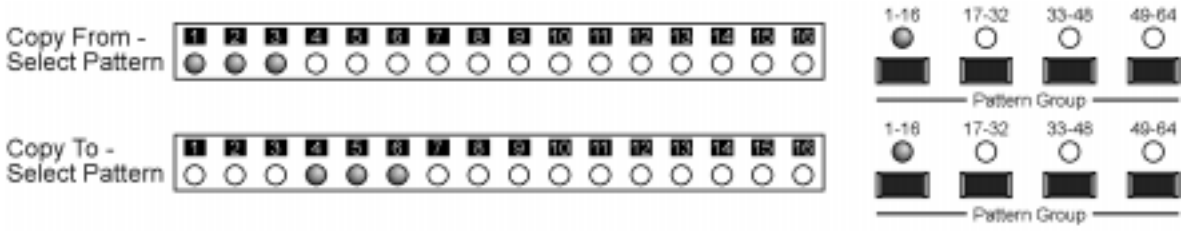
Example 1: Copying Pattern 1 to all Patterns



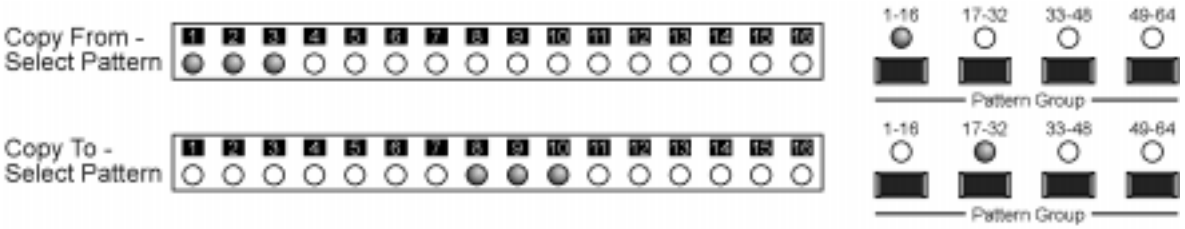
Example 2: Copying Pattern 1 to Patterns 2-16



Example 3: Copying Pattern 1,2,3 to Patterns 4,5,6 (1 to 4, 2 to 5, 3 to 6)



Example 4: Copying Pattern 1,2,3 to Patterns 24,25,26 kopieren (1 to 24, 2 to 25, 3 to 26)



8. Mute settings

Each Block in the SQ16 contains 16 different settings for individual mutes affecting instrument tracks and note tracks. Those Mute settings allow especially in a live setting fast switching between mutes for instrument tracks and note tracks. As an example, if you want to play alternating just the instrument tracks and then just the note tracks you create one Mute setting that has all note tracks muted and a second setting that has all instrument tracks muted. If you toggle between those two settings you hear either just the instrument tracks or just the note tracks. There are different kinds of Mute settings:

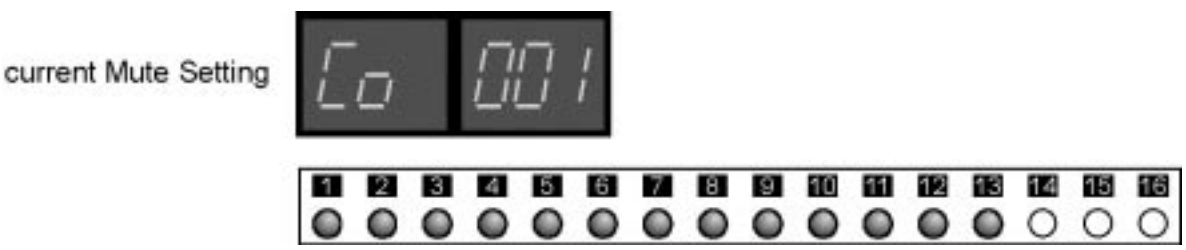
- **1...14: Co 001...Co 014**
  Various Mute settings for Play Mode - Pattern or Play Mode - Chain. All instrument tracks and note tracks can be muted individually.
- **15: SNG**
  A single Mute setting in which also all instrument tracks and note tracks can be muted individually. This setting becomes automatically active if you switch to Play Mode - Song. However this setting can also be used in Play Mode - Pattern and Play Mode - Chain.
- **16: SGL**
  SGL can only be activated in Play Mode - Pattern and Play Mode - Chain; not in Play Mode - Song. When this setting is active just one single track can be heard, all other tracks are muted. If you edit specific data in the instrument tracks or note tracks just the edited track becomes audible, all other tracks are muted. As an example, you have selected Inst/Step On/Off: If you start to edit instrument 4 you will also hear just instrument 4. If you them switch to instrument 1 you will again hear just instrument 1.

  This automatic Mute switching works for the following functions:
  - Inst/Step: all subfunctions
  - Note/Step: all subfunctions
  - Rotate: Delay, Shift, and Reset
  - Step Set Edit: all subfunctions
  - MIDI Set Edit: I Note #, I Channel, n Receive Channel, n Send Channel

Editing Mute settings:

1. Activate "Inst/Note - On/Off".
2. Select the Mute setting you want to edit: During Play Mode - Song you can only edit setting "SNG", during Play Mode - Pattern each of the 16 settings.
   a. Using the "arrow" buttons in the left Select/Edit section.
   b. Keep pressed the "Select" button in the left Select/Edit section and press one of the step buttons to select the desired Mute setting. Step buttons 1...14 equal mute settings Co 001...Co014; step button 15 equals "SNG" and step button 16 equals "SGL". Release "Select" button.
3. Editing the Mute settings: The LED's above the step buttons indicate which tracks are audible (LED on) and which are muted (LED off).
   a. For Mute settings Co 001...14 and "SnG" press single step buttons to mute or unmute a track. The Mute setting "SGL" cannot be edited.
   b. Press ALL OFF button to mute all tracks (not available for "SGL")
   c. Press ALL ON button to unmute all tracks (not available for "SGL")

   Example: For Mute setting C 001 unmuting all instrument tracks, muting all note tracks

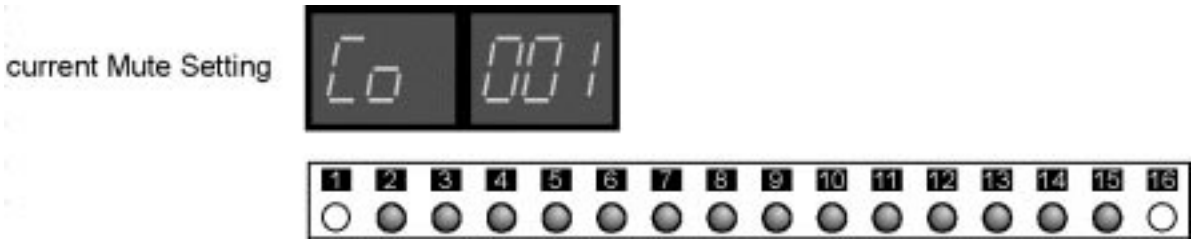


Copying Mute Settings:

If one of the Mute settings Co 001...Co 014 or "SnG" is selected it can be copied to a different Mute setting - except SGL.

1. Press "Copy To" in the Select/Edit section
2. Select the Mute setting onto which the current Mute setting shall be copied. Keep pressed the "Select" button in the right Select/Edit section and make your selection as follows:
   a. Press step buttons 1...15 shortly to select several Mute settings
   b. Press step button 1...15 for at least a second to select a single Mute setting
   c. Press ALL OFF button to select Mute setting 1.
   d. Press ALL ON button to select all Mute settings.
3. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
4. Leave "Copy" with "Exit" (step button 13)

Example: Copying Mute setting Co 001 to Mute settings Co 002...Co 014 and SNG

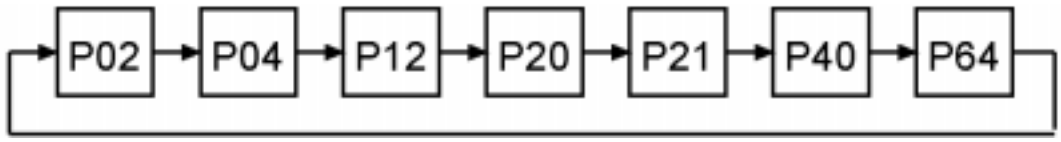


9. Chain

9.1. Chain Structure

A Chain is a simple way to play Patterns sequentially. Each Chain can contain various Patterns from within a Pattern group. Those Patterns are played in fixed order, starting with Pattern with the smallest Pattern number up to the one with the highest Pattern number. Each Pattern is played once; all Patterns use a common Mute setting. Additionally a common Rotate can be selected for all Patterns (or no Rotate at all).

Example:



9.2. Chain playback

Activating/deactivating Rotate:

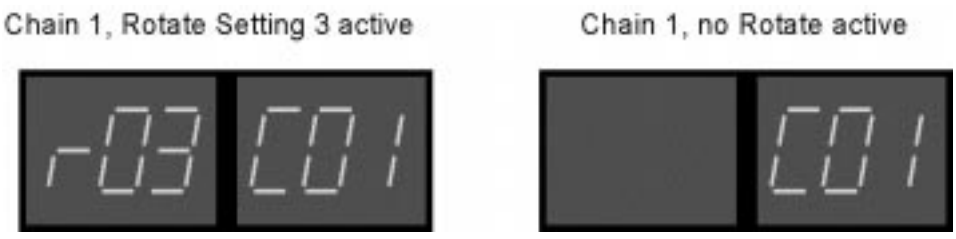
A Rotate setting is common to both Play Mode - Pattern and Play Mode - Chain; however this setting must be made in Play Mode - Pattern. If no Rotate setting was selected in Play Mode - Pattern no Rotate setting will be active during Play Mode - Chain.

1. Activate "Play Mode - Pattern". The right display shows the Pattern number, the left display shows the current Rotate setting. If no Rotate setting was selected the display is empty.
   a. Activating Rotate
      If no Rotate setting is active keep pressed the "Select" button in the right Select/Edit section and press step button 1...16 to select a Rotate setting for both Play Mode - Pattern and Play Mode - Chain.
   b. Deactivating Rotate
      If a Rotate setting is active keep pressed the "Select" button in the right Select/Edit section and press the step button that equals the current Rotate setting. The left display will go off; no Rotate setting is active for both Play Mode - Pattern and Play Mode - Chain.

Selecting a Chain:

1. Activate "Play mode - Chain". The right display shows the Chain number, the left display shows the current Rotate setting if a Rotate setting is active.
2. Select one of the 16 Chains.
   a. Using the "arrow" buttons in the right Select/Edit section (Chain number is shown in the left display)
   b. Keep pressed the "Select" button in the right Select/Edit section and press step buttons 1...16 to select a Chain

   Example:



Muting instrument tracks and note tracks:

The SQ16 contains 16 different Mute settings for instrument tracks and note tracks. Using the function Inst/Note - On/Off you can select one of those settings and edit it. The selected Mute setting is active for both Play Mode - Pattern and Play Mode - Chain. As an example, if you want to listen during Play mode Chain to just instruments 1 and 2 you activate "Inst/Note" and select a Mute setting that has instrument tracks 3...13 and all note tracks muted. A detailed description can be found in section 8.

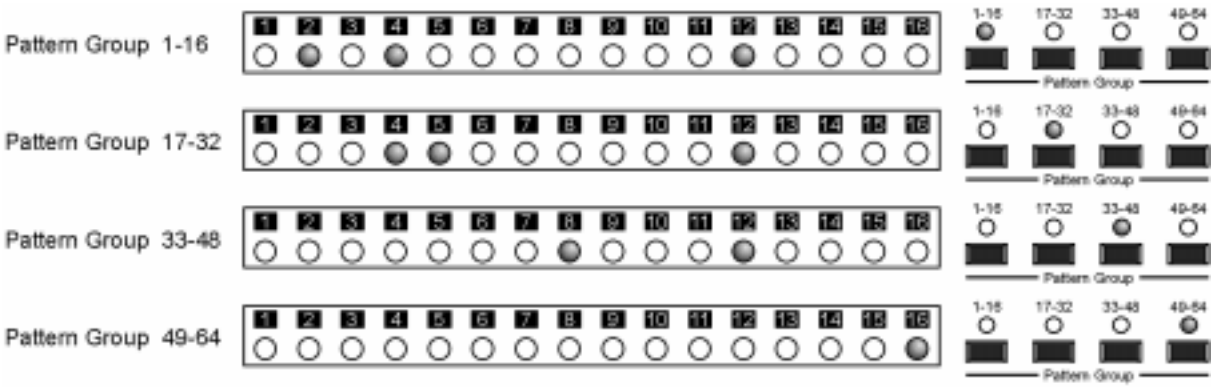
1. Activate "Inst/Note - On/Off".
2. Select desired Mute setting Co 001...Co 014, Sng or SGL
   a. Using the "arrow" buttons in the left Select/Edit section
   b. Keep pressed the "Select" button in the left Select/Edit section and press step button 1...16 to select the desired Mute setting. After releasing the "Select" button the LED's above the step buttons show which tracks are muted (LED off) and which are unmuted (LED on).

Editing a Chain (Assigning Patterns to a Chain):

A Chain can contain any of the 64 Patterns:

1. Select Pattern group 1-16 to assign Patterns 1 to 16 to the Chain
2. Press step buttons 1...16 to assign a pattern to the Chain. The LED's above the step buttons show which Pattern is part of the Chain (LED On: Part of the Chain; LED off: not part of the Chain).
3. Select Pattern group 17-32 to assign Patterns 17 to 32 to the Chain
4. Press step buttons 1...16 to assign a pattern to the Chain. Step button 1 equals Pattern 17; step button 2 equals Pattern 18 and so on. The LED's above the step buttons show which Pattern is part of the Chain (LED On: Part of the Chain; LED off: not part of the Chain).
5. Continue for Pattern groups 33-48 and 49-64 similar to steps 1 and 2.

Example:



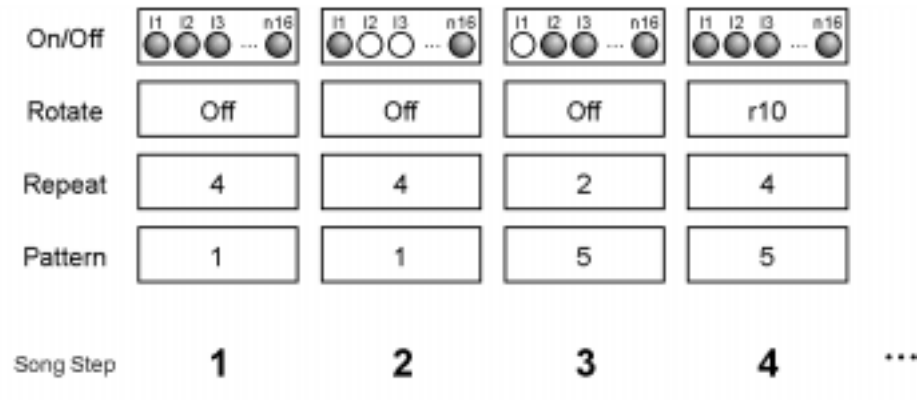
10. Song

10.1. Song structure

Using a Song you can play Patterns in arbitrary order. A Song is created out of single Song Steps (up to 152) which are played sequentially. To each step a Pattern can be assigned, together with the following settings:

- Number of repeats for this Pattern
- Rotate setting for this Pattern
- Mute setting for instrument tracks and note tracks.

Example:



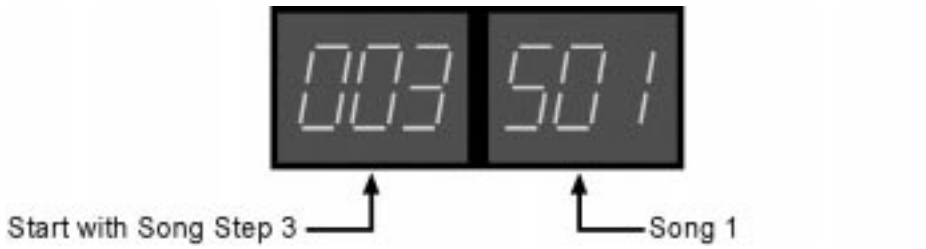
In the above example Song Step 1 uses Pattern 1 which is repeated four times while no Rotate setting as active. The same applies to Song Step 2 however instrument tracks 2 and 3 are muted. Song Step 3 uses Pattern 5 that is repeated 2 times and has instrument track 1 muted. Finally in Song Step 4 Pattern 5 is used, uses Rotate setting 10 and is repeated 4 times.

10.2. Playing a Song

Selecting Song number and Song start position:

1. Activate "Play Mode - Song".
2. Press step buttons 1...8 to select the desired song. The LED's above the step buttons and the right display shows the selected Song.
3. Use the "arrow" buttons in the left Select/Edit section to select the Song Step from which you want to start (Song Step is shown in the left display).

Example

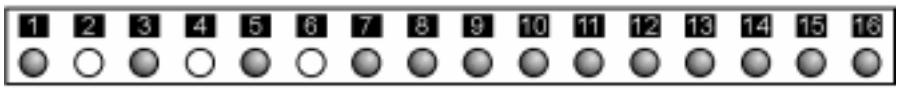


Muting instrument tracks and note tracks:

Even while each Song Step can have its own settings for muting instrument tracks and note tracks the SQ16 also offers a global Mute setting that is common for all Songs and Song Steps. As an example, this allows muting of single tracks during Song playback without having to edit the single Mute settings for the Song Steps.

1. If the SQ16 is in Play Mode - Song, activate "Inst/Note - On/Off".
2. Press Step buttons 1...16 to mute the desired tracks.

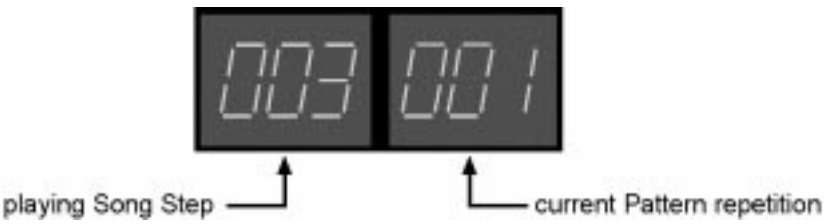
   Example:



   In Play Mode - Song instrument tracks 2, 4 and 6 are muted, This applies to all Songs and Song Steps.

Playing a Song:

If you press "Start/Stop" the Song starts with the selected Song Step. The left display shows the currently playing Song Step and the right display shows the current repeat for this Pattern:



If you stop playback by pressing "Start/Stop" again and continue using the "Continue" button the Song will start at the same position it was stopped.

10.3. Editing a Song

Selecting the Song and Song step you want to edit (stop mode):

1. Activate "Song Edit" (and one of its subfunctions).
2. Select the desired Song Step using the "arrow" buttons in the left Select/Edit section (Song step is shown in the left display).
3. To select the desired Song keep pressed the "Select" button in the right Select/Edit section and press step buttons 1...8 or use the "arrow" buttons in the left Select/Edit sections. During selecting a song the display changes as follows:



Selecting the Song and Song step you want to edit (start/continue mode):

If you activate "Song Edit" during playback the currently playing Song Step will be repeated permanently. The Song Step settings now can be changed and monitored simultaneously. Using the "arrow" buttons in the left Select/Edit section you can select different Song Steps.

Assigning a Pattern to a Song Step - Activating/Deactivating Rotate

1. Activate "Song Edit - Pattern".
2. Use the up/down buttons (step buttons 11 and 12) to assign a Pattern to the Song Step, alternatively you can use step buttons 1-9, 0.
3. Press the Enter buttons to activate the Rotate setting for this Song Step. You can deactivate Rotate by pressing Enter again. The right display shows the Pattern Number and simultaneously whether Rotate is active or not.



Please note: The function Song Edit - Rotate is used to select which Rotate setting is active.

Editing Pattern repeats:

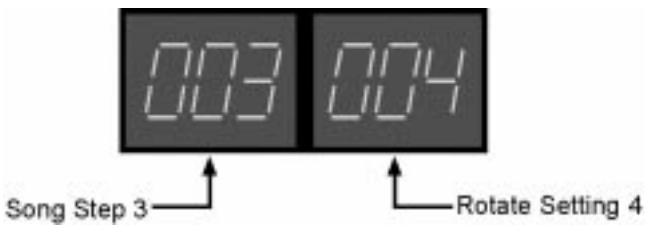
1. Activate "Song Edit - Repeat".
2. Use the up/down buttons (step buttons 11 and 12) to enter how often the assigned Pattern shall be played (1 to 32 times); alternatively you can use step buttons 1-9, 0.



Assigning a Rotate setting to a Song Step:

One of the 16 different Rotate settings can be assigned to a Song Step. The Rotate setting is only active if it was turned on with the function Song Edit - Pattern. In this case the Rotate On/Off setting determines which instrument tracks and note tracks are affected.

1. Activate "Song Edit - Rotate".
2. Use the up/down buttons (step buttons 11 and 12) to enter the desired Rotate setting; alternatively you can use step buttons 1-9, 0.



Muting instrument tracks and note tracks within a Song Step

If you want to create a Song in which various instruments appear one after another (first bass drum, then bass drum an hihat, then bass drum, hihat and snare) it is sufficient to create a single Pattern containing all the instruments. Turning on those instruments after another is achieved by using the same Pattern for different Song Steps and programming different Mute settings per Song Step.

1. Activate "Song Edit - On/Off".
2. Use step buttons 1...16 to mute the desired tracks. If the LED isn't lighting the instrument is muted.

Example:



If a bass drum is assigned to instrument 1, a hihat to instrument 2 and a snare to instrument 3 the Song starts with bass drum alone, then the hihat is added and then the snare.

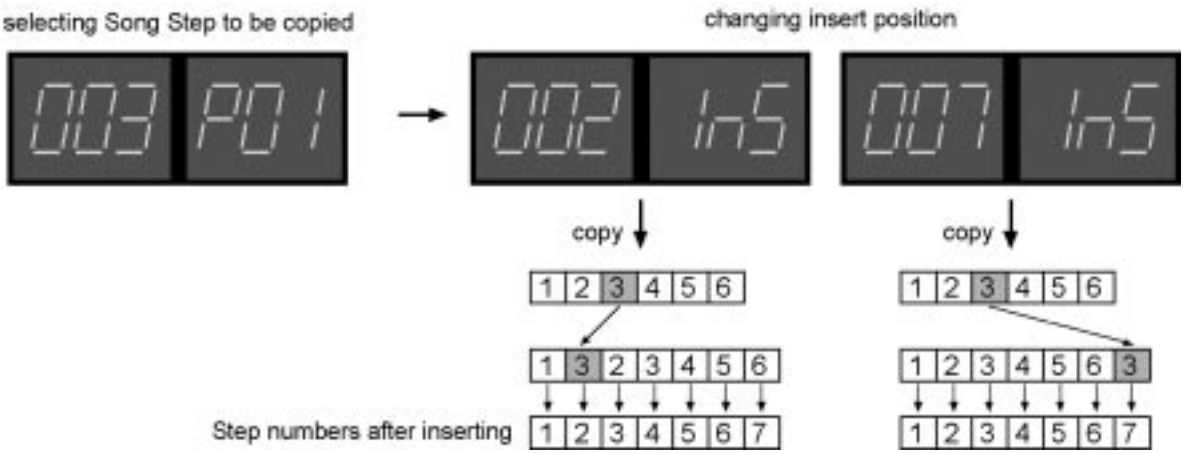
10.4. Copying and inserting Song Steps

You can insert new Song Steps into a Song by copying a single Step or a continuos group of Steps and inserting them at a different location. All data of a Song Step gets copied. If the Song contains just one Song Step only this single Step can be copied and inserted; the resulting Song has 2 Song Steps (1 + 2). Now either Song Step 1 or 2 or both can be copied and inserted; the resulting Song contains either 3 or 4 Song Steps.

10.4.1. Copying and inserting a single Song Step

1. Activate either "Song Edit - Rotate", "Song Edit - Pattern" or "Song Edit - Repeat".
2. Select the Song Step you want to copy and insert using the "arrow" buttons in the left Select/Edit section (Song Step is shown in the left display)
3. Press "Ins" (step button 16). The default insert position is the Song end; the selected Song Step gets copied and inserted at the end of the Song.
4. If desired select a different insert position using the up/down buttons (step buttons 11 and 12)
5. Press "Enter" (step button 14) to copy and insert or "Exit" (step button 13) to abort

Example: Copying Song Step 3; Song length: 6 Song Steps



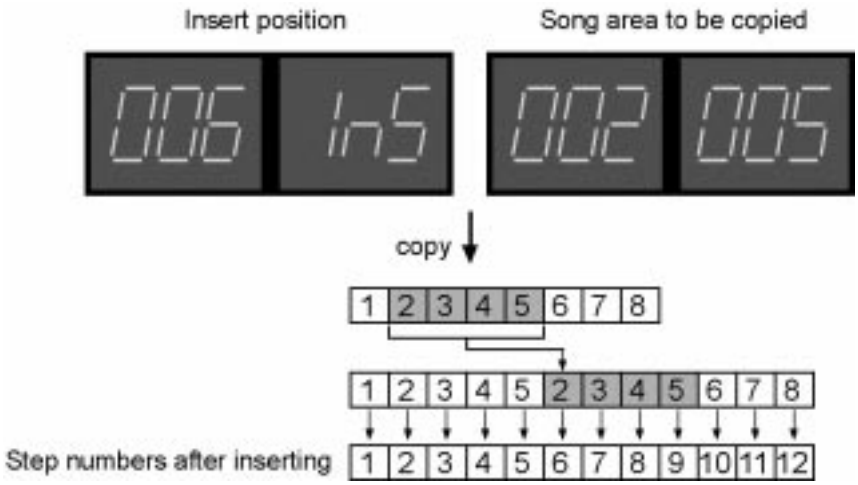
If Song Step 2 is entered as insert position Song Step 3 is copied and inserted after Song Step 1. Song Steps 2...6 are shifted one Song Step and are now Song Step 3...7.

10.4.2. Copying and inserting several Song Steps

This is done by selecting a continuos group of Song Steps (as an example: Song Steps 1 to 4), copying them and inserting them at a different location in the Song.

As an example: A Song contains 8 Song Steps; Song Steps 2 to 5 shall be copied and inserted at the 6. position, e.g. after Song Step 5.

1. Activate either "Song Edit - Rotate", "Song Edit - Pattern" or "Song Edit - Repeat".
2. Press "Ins" (step button 16) and use the up/down buttons (step buttons 11 and 12) to enter Song Step 6 as the insert position (left display reads: 006).
3. Press "Ins" again (left display blinks). Use the up/down buttons (step buttons 11 and 12) to enter the Song Step number at which the group you want to copy starts.
4. Press "Ins" again (right display blinks). Use the up/down buttons (step buttons 11 and 12) to enter the Song Step number at which the group you want to copy ends.
5. Press "Enter" (step button 14) to copy and insert or "Exit" (step button 13) to abort

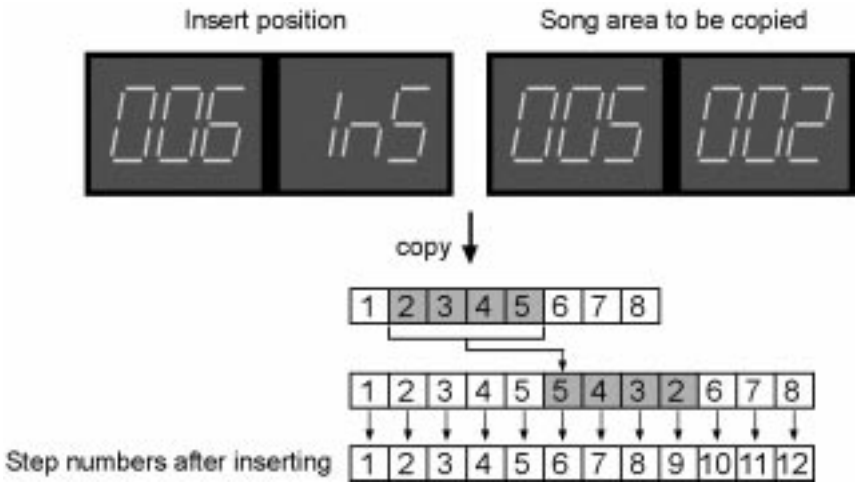


Song Steps 6..8 are shifted by 4 positions and are now Song Steps 10...12.

Copying a group of Song Steps and inserting them in reverse direction:

If you exchange the value for start and end of the Song Step group you want to copy the Song Steps are reversed before inserting.

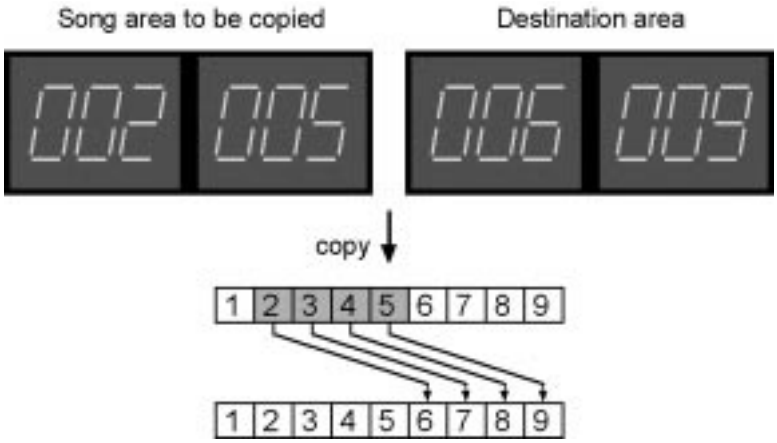
Example: Copying Song Steps 5 to 2 and inserting them at the 6. position.



10.4.3. Copying Song Steps without inserting

A single Song Step or a continuos group of Song Steps can be copied onto other Song Steps. In this case the data in the target Song Steps is overwritten, no new Song Steps are generated. To do this one first selects the source area (as an example: Song Steps 2 to 5) and then the target area (as an example: Song Steps 6 to 9; the song has to contain at least 9 Steps). Song Step 2 is copied onto Song Step 6, Song Step 3 is copied onto Song Step 7, Song Step 4 is copied onto Song Step 8 and Song Step 5 is copied onto Song Step 9.

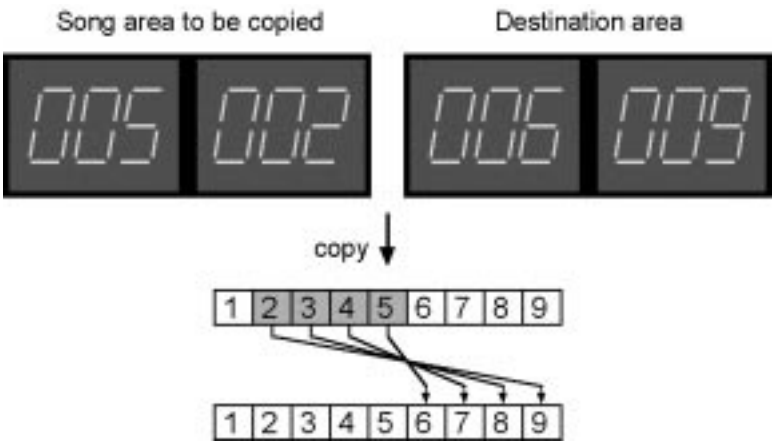
1. Activate either "Song Edit - Rotate", "Song Edit - Pattern" or "Song Edit - Repeat".
2. Activate "Copy From" in the Select/Edit section (left display blinks)
3. Enter the start step of the source area using the up/down buttons (step buttons 11 and 12), as an example: Song Step 2
4. Press again "Copy From" in the Select/Edit section (right display blinks)
5. Enter the end step of the source area using the up/down buttons (step buttons 11 and 12), as an example: Song Step 5
6. Press "Copy To" in the Select/Edit section
7. Enter the start step of the target area using the up/down buttons (step buttons 11 and 12), the Song Step is shown in the left display, as an example: Song Step 6. The end of the target area is calculated automatically and is shown in the right display.
8. Press "Enter" (step button 14) to copy or "Exit" (step button 13) to abort.
9. Leave "Copy" by pressing "Exit" (step button 13).



Copying a group of Song Steps in reverse direction:

If you exchange the value for start and end of the Song Step group you want to copy the Song Steps are reversed before copying.

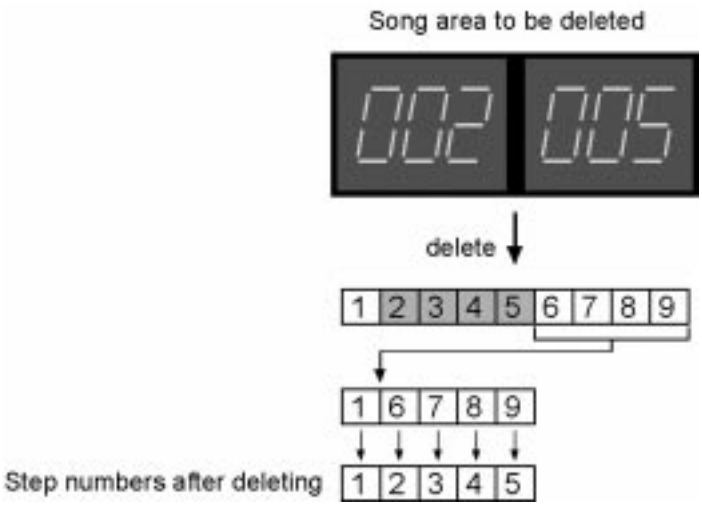
Example: Copying Song Steps 5 to 2 to Song Steps 6 to 9.



10.5. Deleting Song Steps

You can delete single Song Steps or a continuos group of Song Steps. As an example: A Song contains 9 Song Steps and you want to delete Song Steps 2 to 5.

1. Activate either "Song Edit - Rotate", "Song Edit - Pattern" or "Song Edit - Repeat".
2. Press "Del" (step button 15); the left display blinks. Enter the start Song Step of the area you want to delete using the up/down buttons (step buttons 11 and 12), as an example: Song Step 2 (left display reads: 002)
3. Press "Del" again, the right display blinks. Enter the end Song Step of the area you want to delete using the up/down buttons (step buttons 11 and 12), as an example: Song Step 5 (left display reads: 005). If you want to delete just a single step enter the same value in start and end.
4. Press "Enter" (step button 14) to delete or "Exit" (step button 13) to abort



11. Recording note tracks

If you have an external keyboard connected to the MIDI In of the SQ16 you can play it and record the notes into the note tracks of a Pattern. After recording you can edit the results (see section 4.3.3) or store the Pattern permanently into a Block.

Note can only be recorded one note track at a time. If you want to record into all note tracks you have to do this one track after another.

11.1. Recording in Play Mode - Pattern

Basic Operation:

1. Selecting Pattern and which note track within the Pattern you want to record on
2. Setting the MIDI receive channel for the selected note track
3. Selecting the steps within the selected track onto which you want to record
4. Choosing recording mode
5. Recording

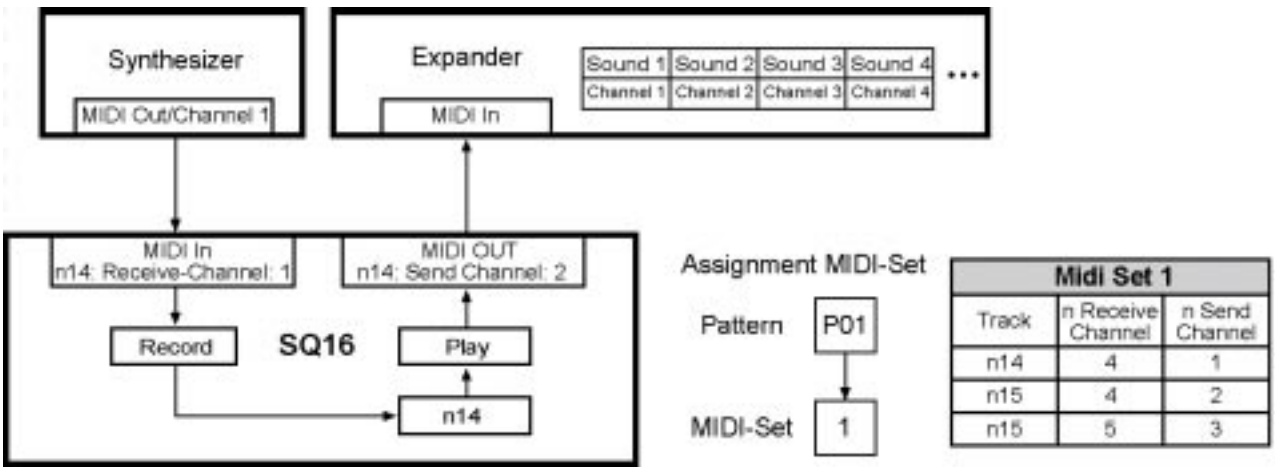
11.1.1. Selecting a Pattern and a note track within the Pattern

1. Activate "Note Rec - Step".
   The left display shows the selected note track, the right display shows the selected Pattern.
2. Selecting a pattern:
   a. Using the "arrow" buttons in the right Select/Edit section
   b. Keep pressed the "Select" button in the right Select/Edit section and press step buttons 1...16 to select a pattern within the currently selected Pattern group.
   c. Select a different Pattern group
3. Select note track (n14...n16) onto which you want to record:
   a. Using the up/down buttons in the left Select/Edit section
   b. Keep pressed the "Select" button in the left Select/Edit section and press step buttons 14...16 to select the desired note track.

11.1.2. Setting the MIDI receive channel for the selected note track

The MIDI receive channel for the note track must match the send channel of the connected keyboard. the note tracks n14...n16 of a Pattern use the MIDI receive channel setting made in the MIDI Set which was assigned to this Pattern. To change the MIDI receive channel of a note track you have to change the setting in the appropriate MIDI Set (see section 5.3). Keep in mind the a note track uses the MIDI send channel setting for playback and hat this setting can differ from the MIDI receive channel setting.

Example:



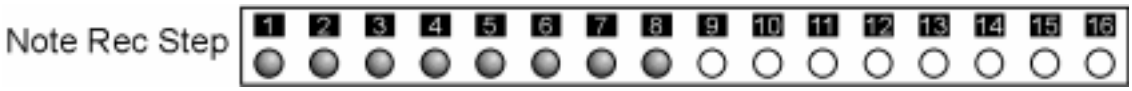
As an example, you want to record onto note track 14 in pattern 1 from a keyboard which is sending on channel 1; for playback you want to use sound 3 in the expander. MIDI Set 1 contains the necessary settings for this; you then need to assign MIDI Set 1 to Pattern 1.

11.1.3. Editing the Step recording track

Each note track has its own step recording track. Here you can select onto which steps shall be recorded.

1. Activate "Note Rec - Step".
2. Select onto which steps you want to record:
   a. Press step buttons 1..16 to select steps
   b. Press ALL ON to select all steps
   c. Press ALL OFF to deselect all steps.

   Example:



   Only Steps 1...8 are going to be recorded.

Please note: You can copy the step recording track to other note tracks or other Patterns. If you have selected Note Rec Step press Copy To in the Select/Edit section. Select target Patterns and target note tracks. The whole procedure is similar to copying On/Off tracks, Accent tracks and Hold tracks of a note track (see section 4.3.4).

11.1.4. Selecting Recording Mode

1. Activate "Note Rec - Mode".
2. Select a recording mode using the up/down buttons (step buttons 11 and 12)

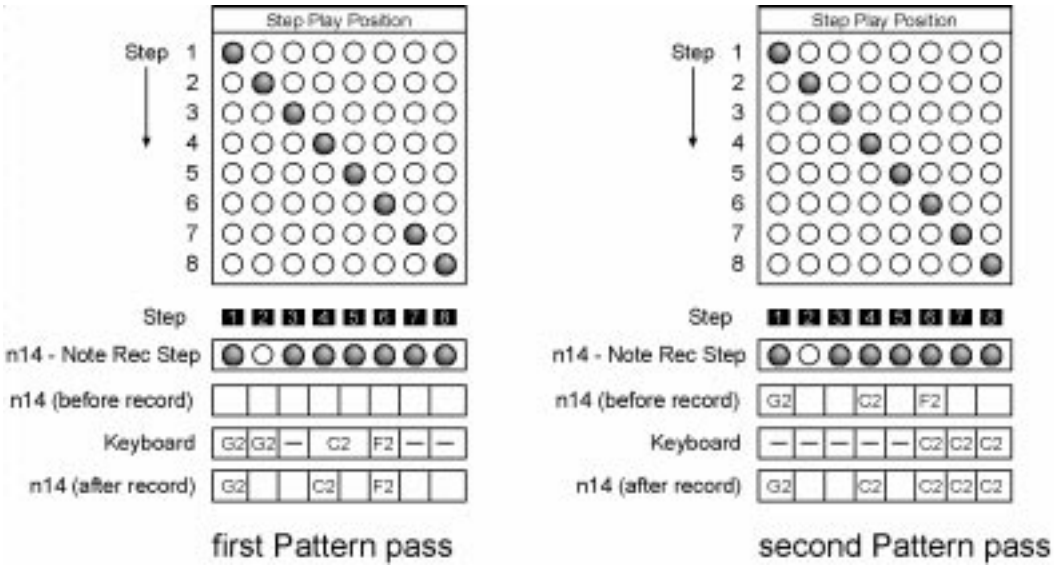
You can select an individual recording mode for each note track (as an example: n14: SGL STP, n15: SGL LEG, n16: SGL ALL). The recording mode for one note track is global for all Patterns in the SQ16.

11.1.5. Recording (Modes: SGL STP, SGL LEG, and SGL ALL)

1. Press "Rec On".
2. Press "Loop" if you want to make several recording passes
3. Start the pattern by pressing "Start/Stop"
   Recording is now active for the selected note track; all remaining instrument tracks and note tracks are played back normally. The current Step Play Position is displayed if you press Note Rec Step.
4. Recording notes
   Play single notes on the keyboard. If you play several notes at once while being in one of the modes SGL STP, SGL LEG or SGL LEG only the last played note is recorded.

- **Mode SGL STP:**
  The played note is recorded into the current step. The current Step Play Position is displayed if you press Note Rec Step. Is a note held over several steps it is only recorded into the first step; the following steps are not recorded.

  Example: Recording of note track n14, Pattern length: 8, Loop: On



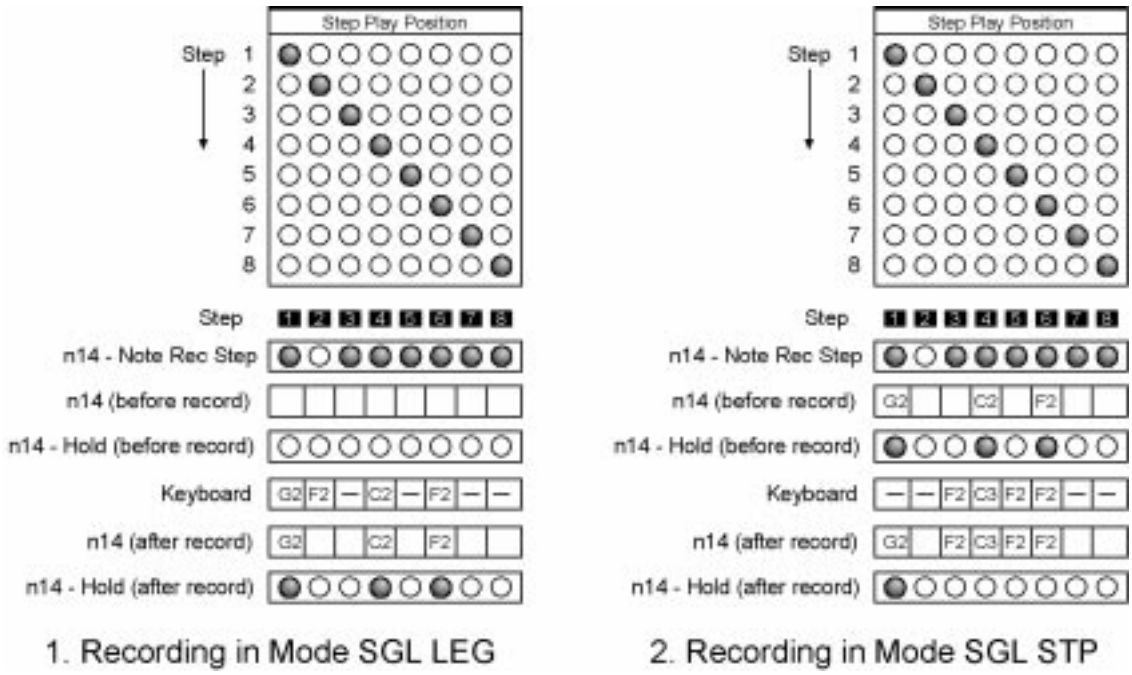
During the first pass Steps 1, 4 and 6 are recorded. Step 2 isn't recorded because it isn't set to "On" in the Step recording track. Note C2 is held over Steps 4 and 5 and only recorded in Step 4. During the second pass Step 6 is overwritten and Steps 7 and 8 are newly recorded.

During each pass the already recorded notes are kept (unless you play a new note at this point) so you can overdub various passes.

- **Mode SGL LEG**
  This mode has an important difference to mode SGL STP: All recorded Steps are activated in the Hold track. When playing back the recorded track are notes are played legato, e.g. they are held to the start of the next note.

  Please note: If you continue to record in mode SGL STP after having made a recording in mode SGL LEG Hold is turned off again for all recorded Steps.

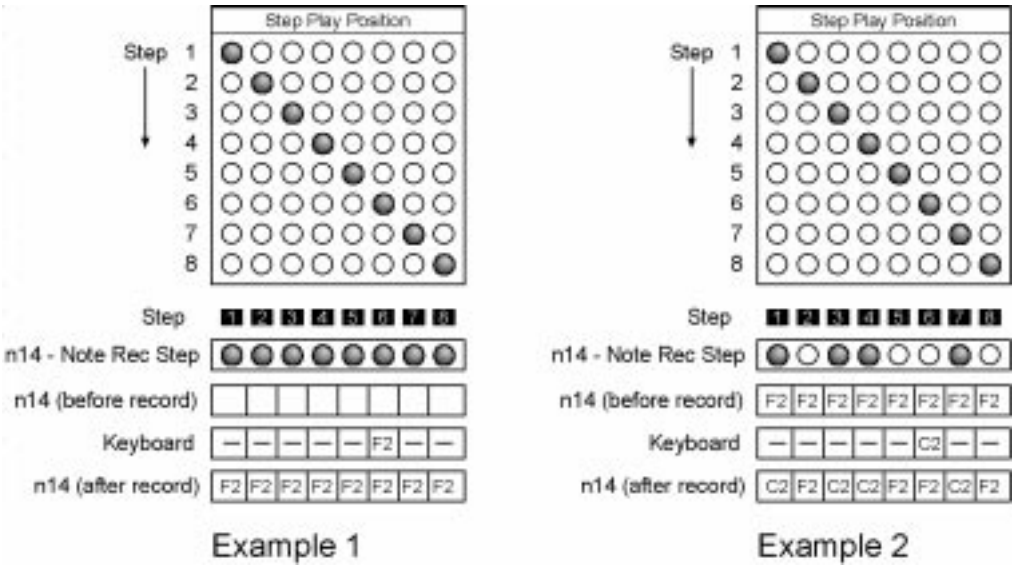
  Example: Recording of note track n14, Pattern length: 8, Loop: On



During the first pass Steps 1, 4 and 6 are recorded and simultaneously Hold is also set for Steps 1, 4 and 6. After this the recording continues in mode SGL STP; Steps 3...6 are recorded now and Hold is again turned off for Steps 4 and 6. Since Step 1 isn't recorded again Hold stays active for this Step.

- **Mode SGL ALL:**
  When using this mode all Steps which are active in the Step recording track are filled with the same note played on the keyboard. It doesn't matter at which point the note is played. All Steps that are not set to "On" in the Step recording track are unaffected.

  Example: Recording of note track n14, Pattern length: 8, Loop: On

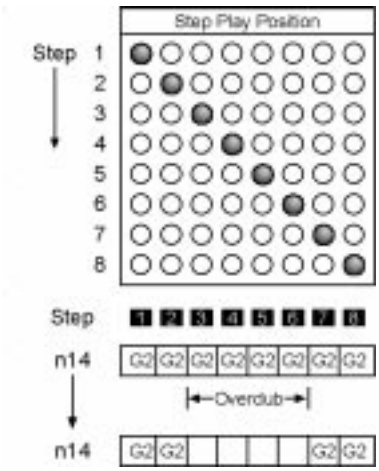


  In example 1 the note F2 is recorded into all steps. For example 2 the step recording tracks was changed so that only Steps 1, 2, 3 and 7 are recorded; Steps 2, 5, 6 and 8 remain unchanged.

5. Deleting notes (only possible in modes SGL STP, SGL LEG and SGL ALL)

   Using the Overdub button you can easily delete notes during recording. While you keep pressed the Overdub button the notes at the current Step Play Position are deleted. To delete a complete note track keep pressed the Overdub button for a complete Pattern cycle.

   Example:



6. Finishing recording
   Press "Rec On" button to finish recording.

11.1.6. Recording (Mode: Arp - UP1/UP2/do1/do2/Ud1/Ud2/ST2/Co1/Co2/Co3)

Those modes use the arpeggiator principle; you can play one or several notes on the keyboard here. The notes are then distributed to the steps according to the selected mode (one note per step).

As opposed to common arpeggiators the arpeggio pattern repeats itself with each Pattern repetition. This means that the arpeggio always matches the remaining tracks of the Pattern regardless of the number of arpeggio notes.

1. After selecting one of the arpeggio modes (see 11.1.4) and activating the desired steps in the Step recording track (see 11.1.3) press either Overdub or Rec On.
   - Overdub
     The arpeggio isn't actually recorded into the note track; e.g. when using Overdub the arpeggio is played instead of the notes in the note track. The note track data remain unchanged and are not overwritten. If you turn off Overdub the previous note track is played.

     Additionally the arpeggio always is built out of the current number of played notes, e.g. if you press C, E, G on the keyboard the arpeggio is made out of exactly those three notes. Each time you release one key or press an additional key the arpeggio is immediately updated. Release all keys and the arpeggio stops.

     Use this mode for "live" arpeggios.

   - Rec On
     The arpeggio is recorded into the note track; e.g. when using Rec On the arpeggio is both played back and simultaneously recorded into the note track. If you turn off Rec On the note track contains the recorded arpeggio; you can then write the Pattern permanently into a Block.

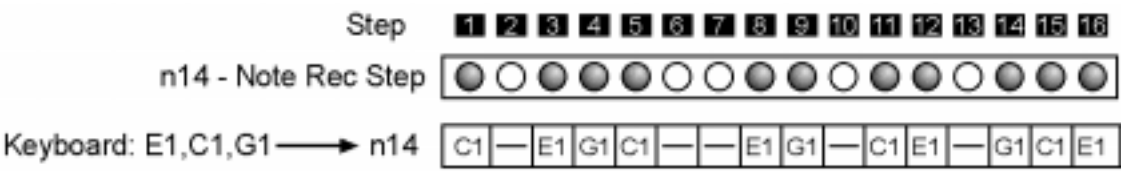
     As opposed to the Overdub function the arpeggio is only updated when pressing an additional key on the keyboard. Releasing keys doesn't change the arpeggio. If you release all keys the arpeggio continues to play.

     Please note: Even when not playing any key at all you can change the arpeggio by changing the Step recording track. Each change of the Step recording track updates the arpeggio if Rec On is active.

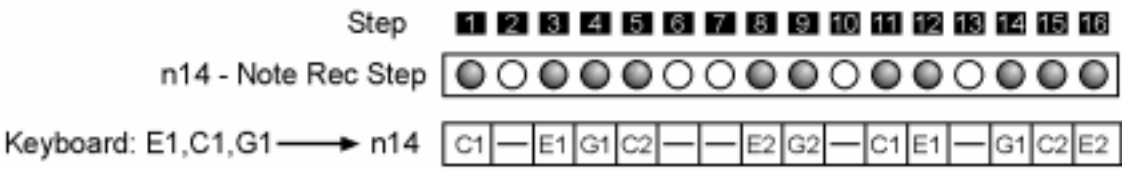
2. Playing (Overdub) or recording (Rec On) an arpeggio
   Start the Pattern by pressing "Start/Stop". The SQ16 is now read to play or record an arpeggio; all remaining tracks are played back normally.

   Play one or several keys on the keyboard. It follows a description of the resulting arpeggio depending on the selected arpeggio mode:

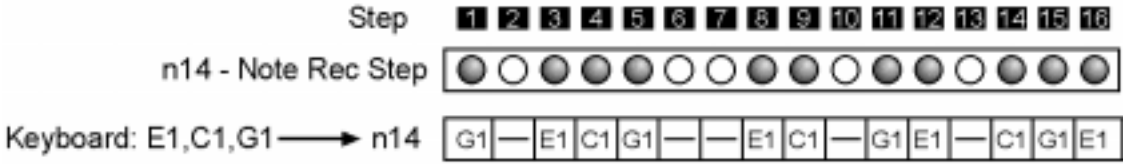
- **Mode Arp Up1**
  The notes are sorted from the lowest to the highest note and assigned one after another to steps.



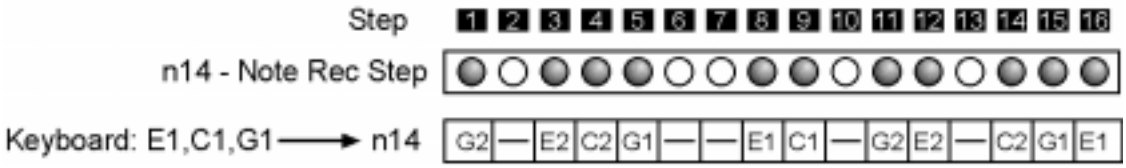
- **Mode Arp Up2**
  The notes are sorted from the lowest to the highest note, then a copy of the notes is transposed up by one octave and appended. Then the resulting notes are assigned one after another to steps.



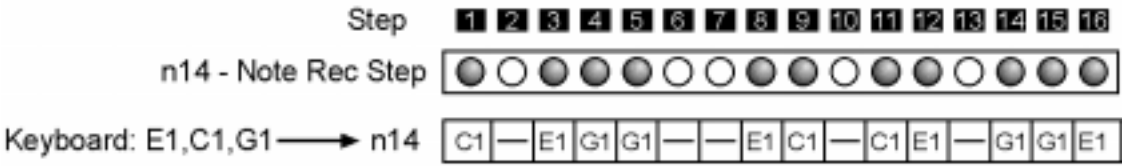
- **Mode Arp do1**
  The notes are sorted from the highest to the lowest note and assigned one after another to steps.



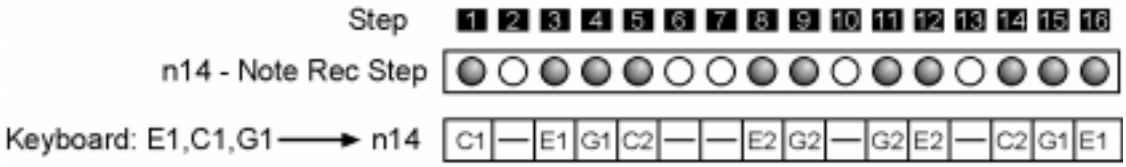
- **Mode Arp do2**
  The notes are sorted from the highest to the lowest note, then a copy of the notes is transposed down by one octave and appended. Then the resulting notes are assigned one after another to steps.



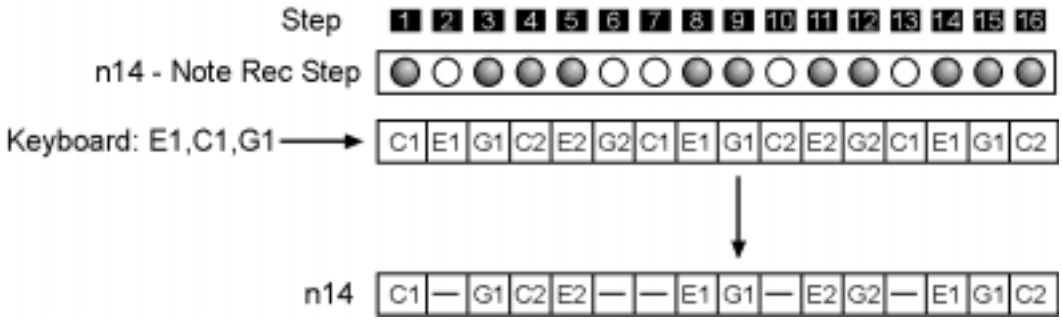
- **Mode Arp Ud1**
  The notes are sorted from the lowest to the highest note, then a copy of the notes is appended in reverse direction. Then the resulting notes are assigned one after another to steps.



- **Mode Arp Ud2**
  The notes are sorted from the lowest to the highest note, then a copy of the notes is transposed up by one octave and appended; the resulting notes are copied appended in reverse direction. Then the resulting notes are assigned one after another to steps.



- **Mode Arp St2**
  The notes are sorted from the lowest to the highest note, then a copy of the notes is transposed up by one octave and appended. Then the resulting notes are assigned one after another to the steps as if all steps would be enabled in the Step recording track. However all non-enabled steps are left empty when playing back the arpeggio; the result is a pattern with "gaps".



- **Modes Arp Co1, Arp Co2, Arp Co3**
  Those modes are different combinations of modes Arp Up1...Arp ST2. The resulting arpeggios have a more random character.

3. Finishing recording
   Press the Rec On or Overdub button to finish recording.

11.2. Recording in Play Mode - Chain/Play Mode - Song

Recording is similar to Play Mode - Pattern, however only the note track of the currently playing Pattern in the Chain or Song is recorded. Please keep in mind that the Step Recording tracks of the Patterns may differ; the same applies to the MIDI receive channels if the Patterns use different MIDI Sets.

Example: You have activated Play Mode - Chain and selected a Chain that plays Patterns 1, 2 and 3 after another. You want to record note track n14 using the mode Arp Ud1:

1. Select according to section 11.1.1 note track 14 and Pattern 1
2. Edit the Step recording track for Patterns 1, 2 and 3 (see section 11.1.4)
3. Select mode Arp Ud1 for note track 14 (see section 11.1.4)
4. Press either Overdub or Rec On
5. Start the Chain using the "Start/Stop" button

- Overdub
  Regardless of the currently playing Pattern you can create your arpeggio. Note track 14 for each Pattern remains unchanged.

- Rec On
  If you press keys on the connected keyboard the arpeggio is recorded into the currently playing Pattern (as an example: Pattern 1). If Pattern 2 continues and you press different keys a new arpeggio gets recorded into note track 14 of Pattern 2. The same applies to Pattern 3. If Loop is On for the Chain Pattern 1, 2 and 3 keep their recorded arpeggio unless you play new keys at the keyboard.

  Using this strategy you can record the note track for several Patterns sequentially and with different notes.

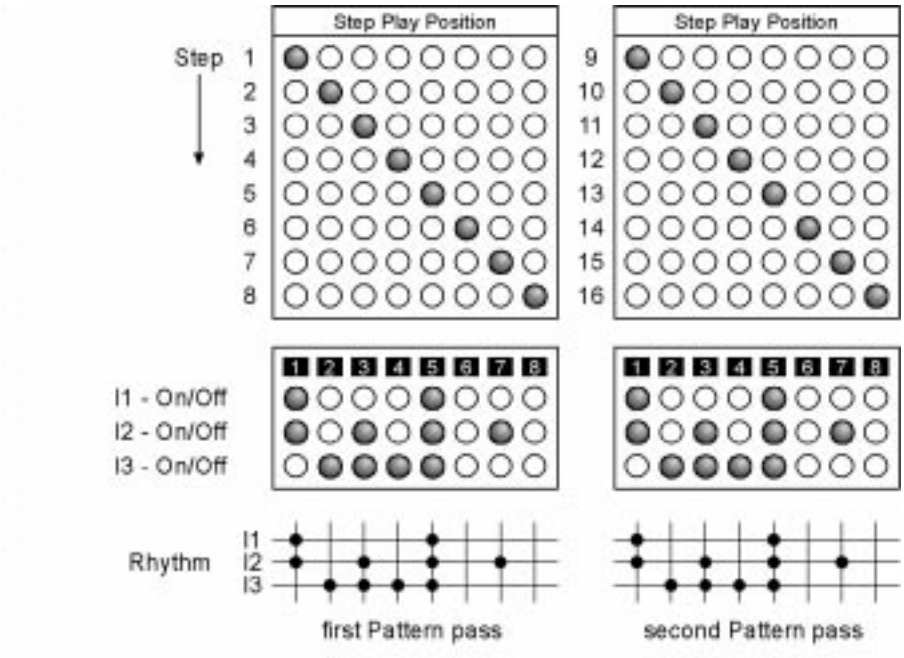
12. Rotate

12.1. Introduction

Playing Patterns without using Rotate:

When playing back Patterns normally (e.g. without using Rotate) each repetition of a Pattern results in the same rhythm. As an example, if the Pattern length is set to 8 Steps the rhythm repeats itself after those 8 steps:

Example: Pattern Length 8



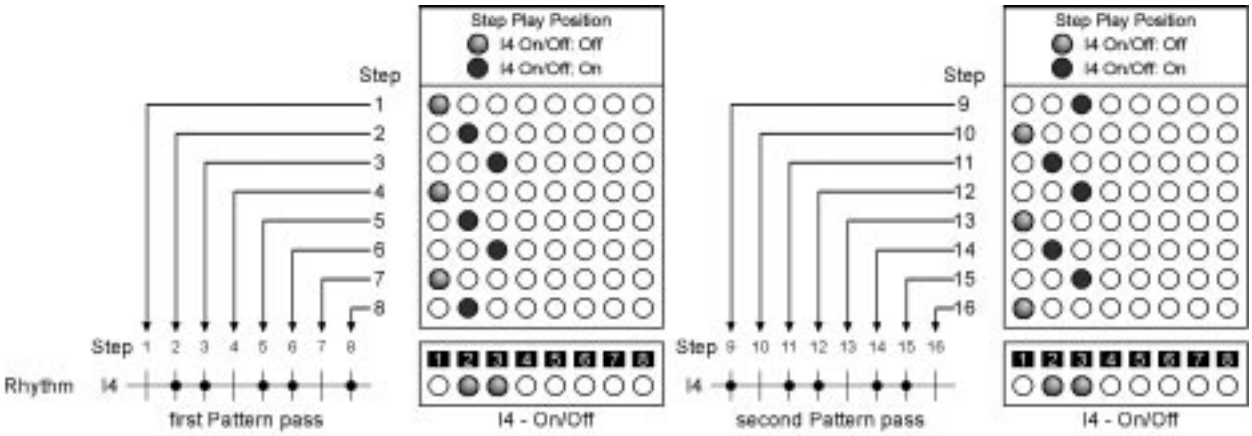
Our example shows a Pattern with a length of 8 Steps together with the On/Off tracks for instrument tracks I1, I2 and I3. When pressing the "Start/Stop" button the Step Play Position is Step 1. For each new Step it jumps one Step forward and after completing the Pattern it jumps back to Step 1. With each new Step the instruments which are enabled in the On/Off track are sent. If an instrument is set to Off a rest is "played". As an example, for Step 1 are sent instruments I1 and I2 while instrument I3 remains silent.

The rhythm of a Pattern is derived from the On/Off tracks for the instrument tracks and is the same for each Pattern repetition. The number Steps per Pattern equals the Pattern length. Different rhythms can only be achieved by creating different Patterns (with different rhythms) and assigning them sequentially to a Song. One disadvantage is that you have to create a Pattern for each different rhythm; another disadvantage is the possible "jagged" sound if the rhythms differ extremely.

Playing Patterns using Rotate:

The Rotate function generates variations in rhythm by changing the Step Play Position; the rhythm of the Pattern itself (e.g. the On/Off tracks) remains unchanged.

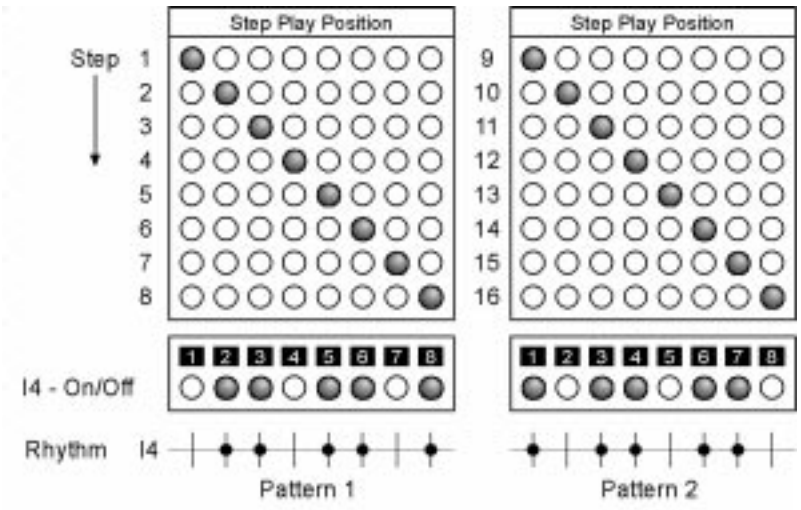
As an example: We use a Pattern with Pattern Length 8 in which Step 2 and 3 for Instrument I4 are set to "On". We want to change the Step Play Position so that always Steps 1, 2 and 3 are played after another. When reaching the Pattern end (after 8 Steps) no reset to Step 1 shall take place. If I4 is set to "On" for a Step the note is played (Step Play Position is marked dark). If I4 is set to "Off" for a Step a rest is played (Step Play Position is marked light).



Result: During the two passes of the Pattern different rhythms are generated although the actual Pattern rhythm (On/Off track for I4) remains the same. At the end of the third pass (after 24 Steps) the Step Play Position has again reached Step 1 and the same rhythm as in pass 1 is generated; the whole cycle starts over here.

achieving the same result without using Rotate:

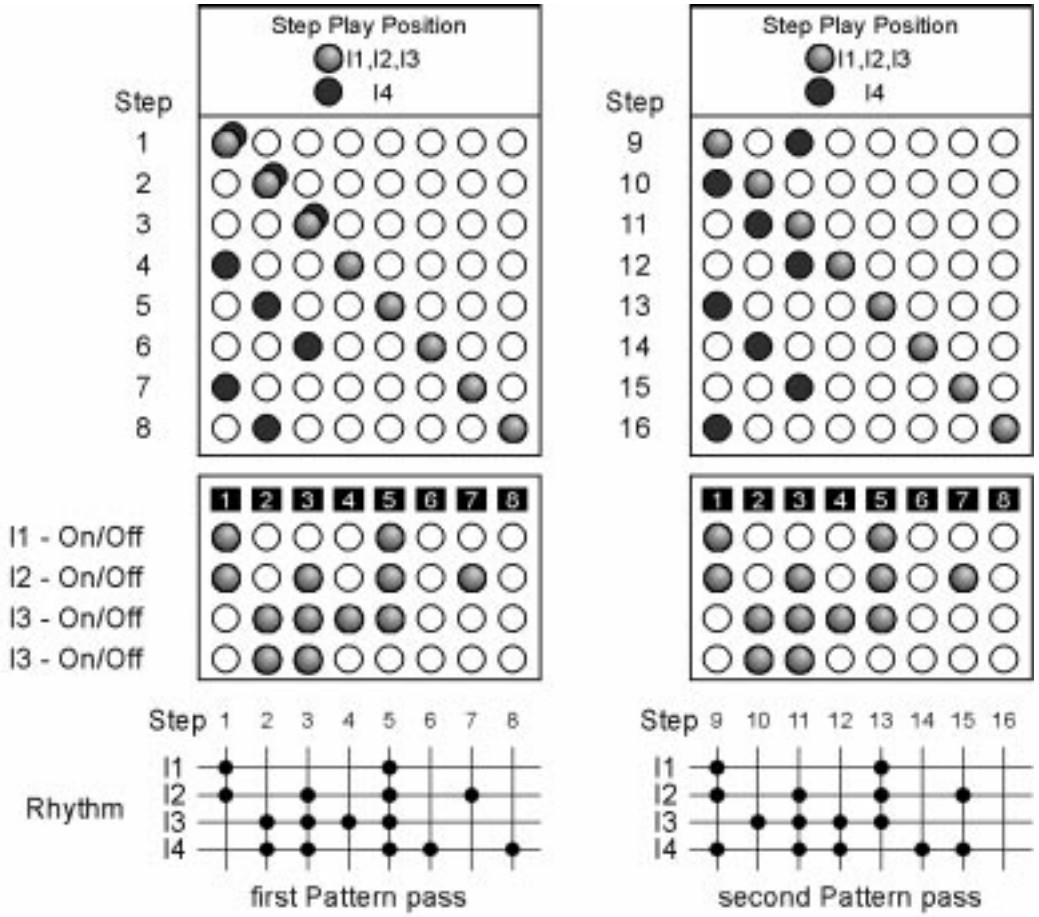
To generate the same rhythm without changing the Step Play Position you would have to create three different Patterns with different On/Off tracks for Instrument I4 and play them sequentially. The first two of those Patterns are show below:



Playing Patterns with and without using Rotate:

The Rotate function isn't global for all tracks of a Pattern; it can be activated for arbitrary tracks. This means that all tracks for which Rotate isn't active are played using the normal Step Play Positions (Step 1, 2...Pattern length) while the other tracks are played with the changed Step Play Position.

Example: I1, I2, and I3 without Rotate, I4 with Rotate



For Instruments I1...I3 each pass results in the same rhythm and the same Pattern Play Position while Instrument I4 uses different Pattern Play Positions and hereby generates a different rhythm.

12.2. How to activate Rotate:

The SQ16 contains 16 different Rotate settings (Rotates). Each Rotate holds individual settings for the Step Play Position for each instrument track and note track. Additionally you can turn the function on and off individually for each instrument track and note track.

You can activate the Rotate function while being in Play Mode - Chain or Play Mode - Pattern; in this case you can select one of the 16 Rotates. The instrument tracks and note tracks then use the settings found in the assigned Rotate setting (for activating and selecting Rotates see section 4.4).

While being in Play Mode - Song you can individually activate the Rotate for each Song Step. If Rotate is active for a Song Step an arbitrary Rotate setting can be assigned, as an example Rotate 1 for Song Step 1, Rotate 3 for Song Step 2, no Rotate active for Song Step 3... (for activating and selecting Rotates in Play Mode - Song see section 10.3).

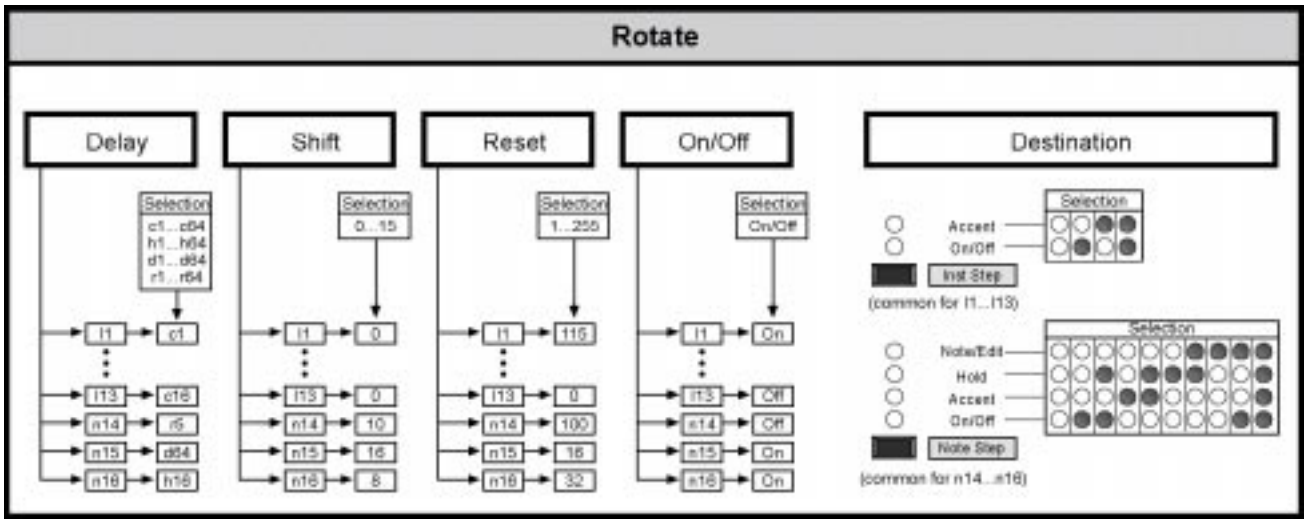
12.3. How to use Rotate

As described in section 12.1 the Step Play Position is changed when using Rotate. This results in rhythmic figures that go beyond the rigid Pattern structure; rhythmic figures that repeat after several passes of a Pattern and are not restricted to the length of a single Pattern. Depending on the settings Rotate can be used for the following applications:

- Creating random rhythms
- playing instruments in different meters (e.g. Instrument Track 1 play in 4/4; Instrument Track 2 in 3/4) regardless of the fixed Pattern length
- Creating rests
- Creating different rhythms for Pattern repeats

12.4. Rotate Data

The following picture shows the various Rotate Data



12.5. Operation principles of the Rotate function

12.5.1. Delay, Shift, Reset Mode

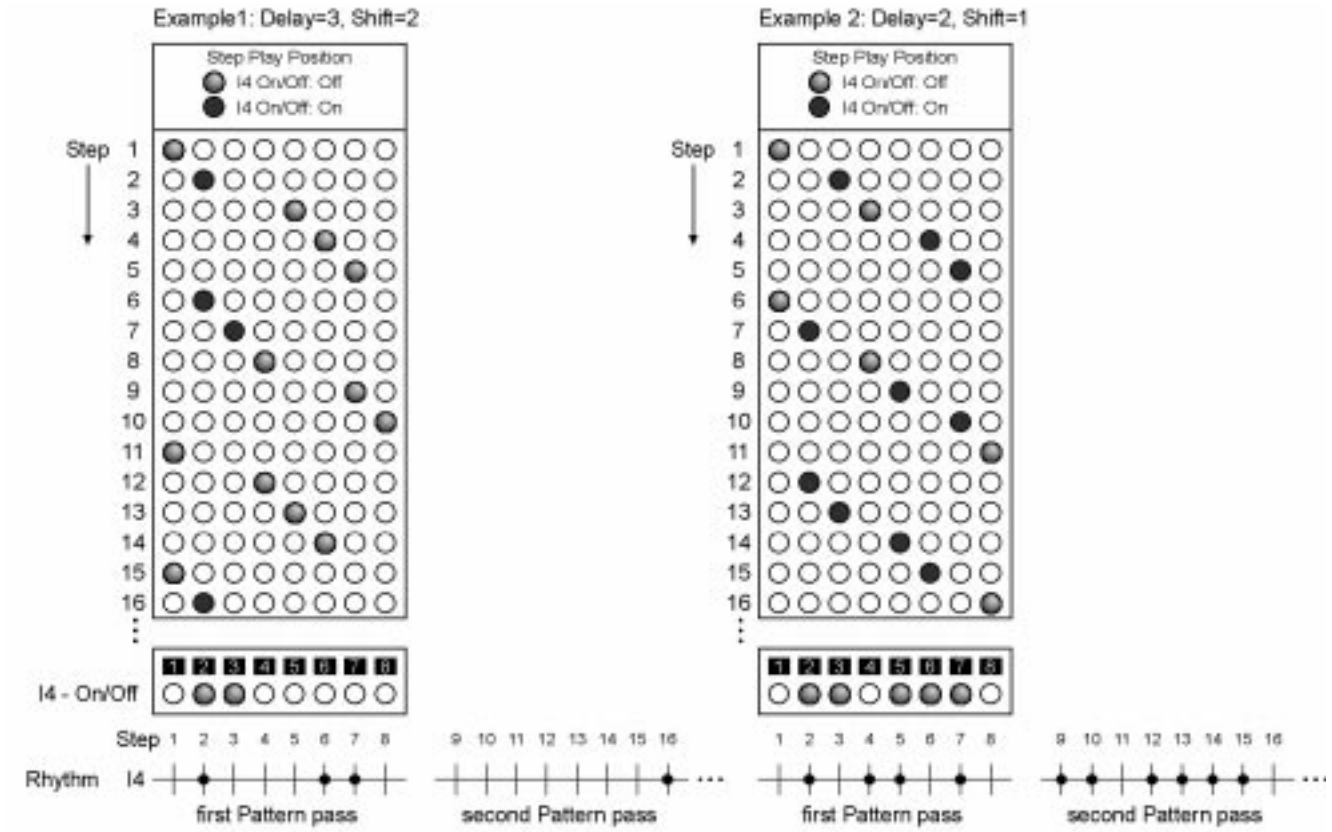
Those settings are used to create different Step Play Positions for Instrument Tracks and Note Tracks. You can create those different Step Play Positions by using different values for Delay, Shift, Reset and by selecting the desired Rotate mode r, d, c or h. The latter is entered together with the Delay value.

- **Mode d:**
  This mode is used to create random rhythms. After a certain number of steps (Delay) the Step Play Position is incremented by a certain number of steps (Shift):
  - Start: Step Play Position = Step 1 if Delay>1
    Step Play Position = Step(1+<Shift>), if Delay=1
  - Step Shift: Immediately after Start: After (<Delay-1>) Steps incrementing the Step Play Position by (<1+Shift>) Steps
    Otherwise: After <Delay> Steps incrementing the Step Play Position by (<1+Shift>) Steps

    The Step Play Position can never exceed the Pattern Length. As an example, if the Pattern Length is 8 and the current Step Play Position is Step 6 a Step Shift of 5 Steps results in a new Step Play Position of 3.

  - no Step Shift (Shift=0): The Step Play Position is incremented by 1 with each Step. If the Step Play Position is the final Pattern Step (for example 8 with a Pattern Length of 8) a Reset to Step 1 is performed.
  - the Reset value has no significance here

  Examples: Pattern Length 8

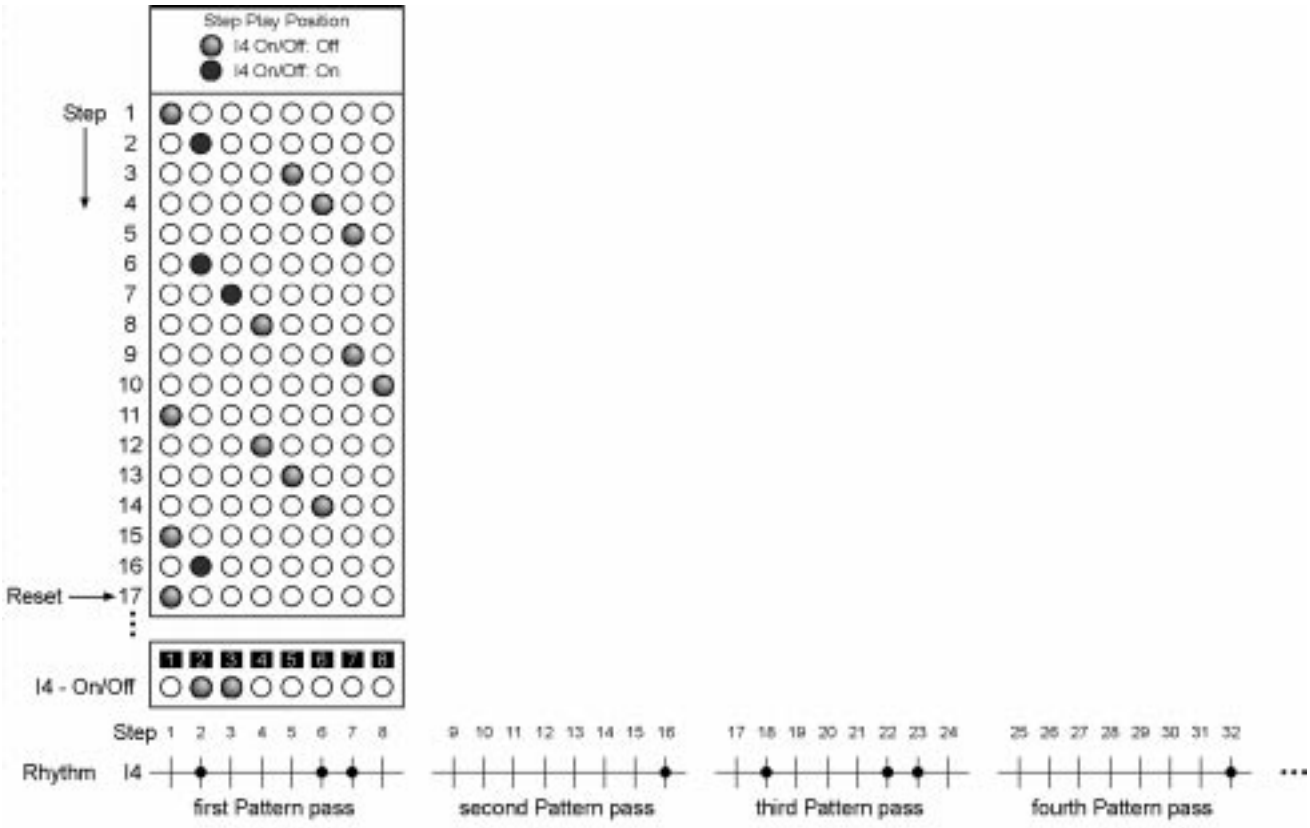


Example 1:
Since the Delay setting is larger than 1 the Step Play Position after starting is 1. The first Step Shift happens after (<Delay>-1); after two Steps at Step Play Position 2. The new Step Play Position then is 2 + (1+<Shift>) Steps = Step 5. The Step Play Position is incremented as usual until after <Delay> Steps (3 Steps) a new Step Shift takes place at Step Play Position 7. In theory the Step Play Position would again be incremented by 3; this would result in Step Play Position 10. However since the Pattern Length is only 8 the new Step Play Position is (Step Play Position - Pattern Length = 10 - 8 = 2). Now the Step Play Position is incremented us usual until after three Steps (at Step Play Position 4) the next Step Shift takes place.

After 14 Steps (at Step 15) we have the same situation from which we started in the beginning; this means that this track repeats itself every 14 Steps. If Rotate is only active for Instrument I4 the rhythm for all other tracks repeats itself every 8 steps (Pattern Length) while the rhythm for I4 repeats itself every 14 steps. If you make different Rotate settings for other tracks you can get a very complex result which at times may have random character.

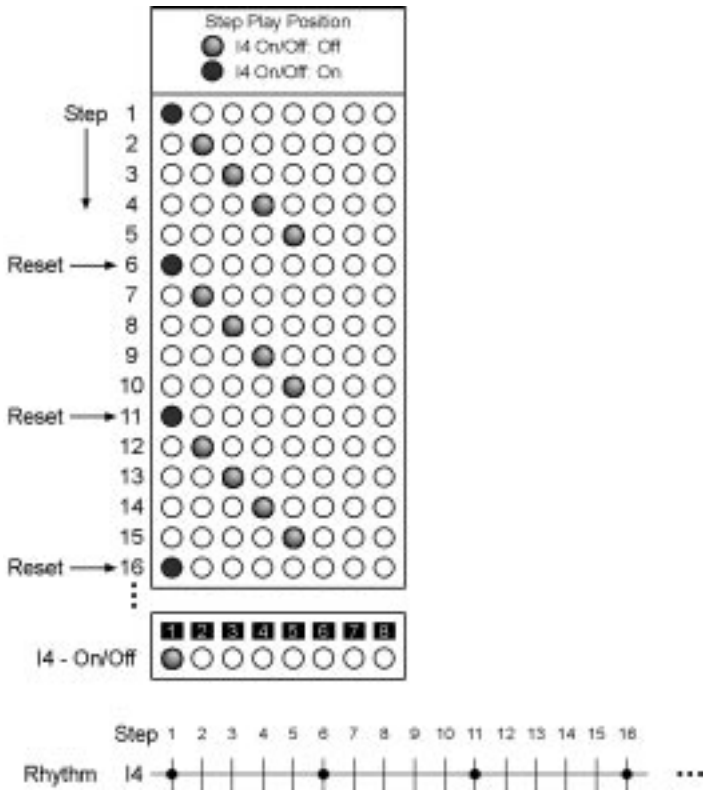
- **Mode r:**
  This mode is similar to Mode d; additionally a reset to Step Play Position 1 is performed after a determined number of steps. When using mode d the way the rhythm repeats itself is completely dependant on the Delay and Shift settings and it can be hard to find the correct settings here. In mode d the rhythm always repeats itself after <Reset> steps regardless of the Delay and Shift settings.

  Example1: Pattern Length 8, Delay = 3, Shift = 2, Reset = 16



Up to including step 16 the rhythm is similar to the one in example 1 for mode d. After 16 steps (at step 17) a Reset is performed and the whole Rotate starts over. The next Reset again takes place after 16 steps (at Step 33). The rhythm repeats itself every 2 Pattern passes and so is running in sync to the normal Pattern rhythms (without Rotate).

Example 2: Pattern Length 8, Delay = as desired, Shift = 0, Reset = 5

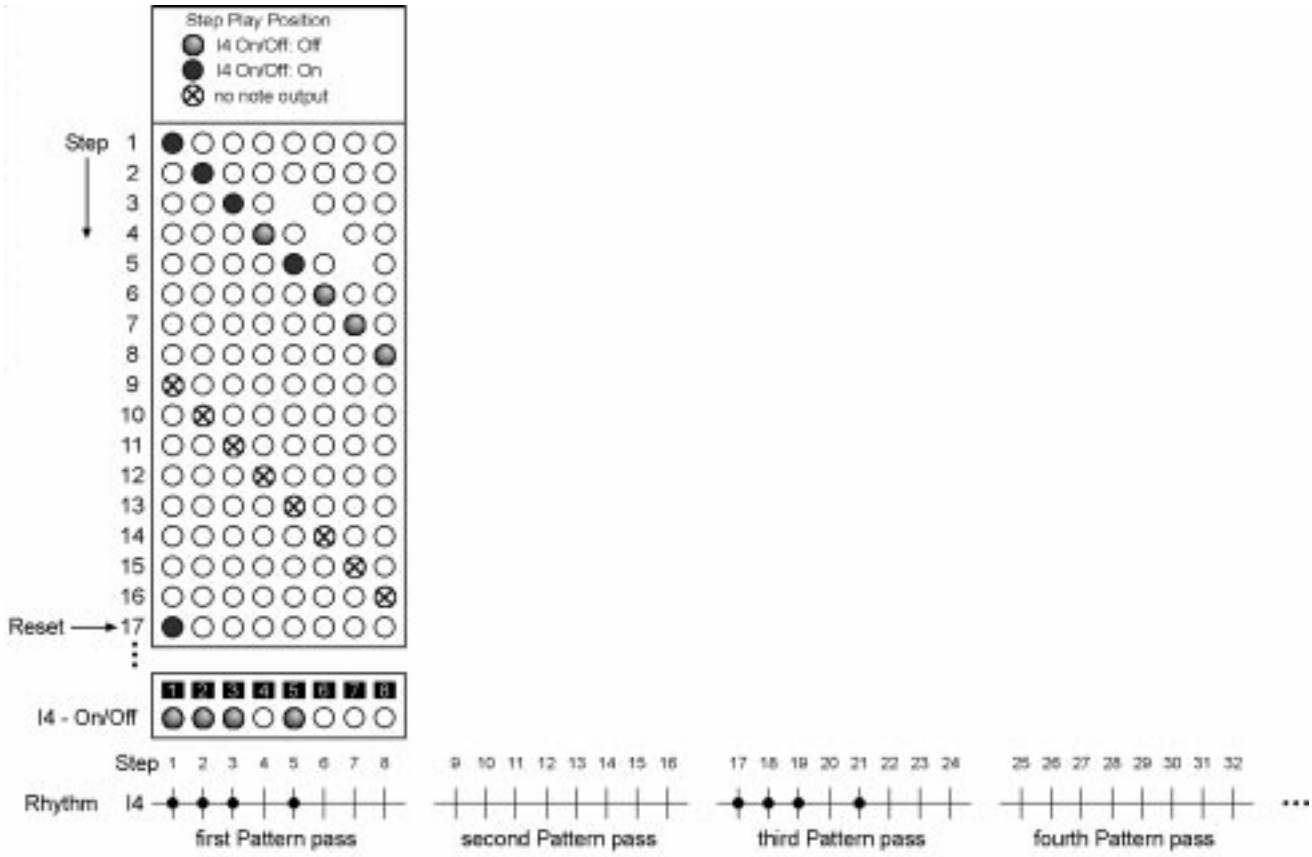


If Shift = 0 the Step Play Position is incremented for each Step as usual by one; the Delay setting isn't used here. Every 5 steps a Reset to Step 1 takes place; this makes Instrument I4 react as if its Pattern Length would be 5 steps. All other instruments without Rotate use the normal Pattern Length of 8 steps. You can use this mode to create different meters for various tracks.

- **Mode h:**
  This mode is useful for generating longer rests. After starting the Pattern plays for <Delay> steps normally. Then no notes are played until the <Reset> Step is reached and a reset is performed. Until the Reset the Step Play Position is incremented as usual by one for each step. After the Reset the Pattern again plays for <Delay> steps normally. If the Shift value is larger than 0 after each Reset the Step Play position is additionally incremented by <Shift> steps.

  - Start: Step Play Position = Step 1; normal output
  - after <Delay> steps output stops
  - after <Reset> steps a Reset takes place; the SQ16 returns to normal output and the current Step Play Position is incremented by <Shift> steps

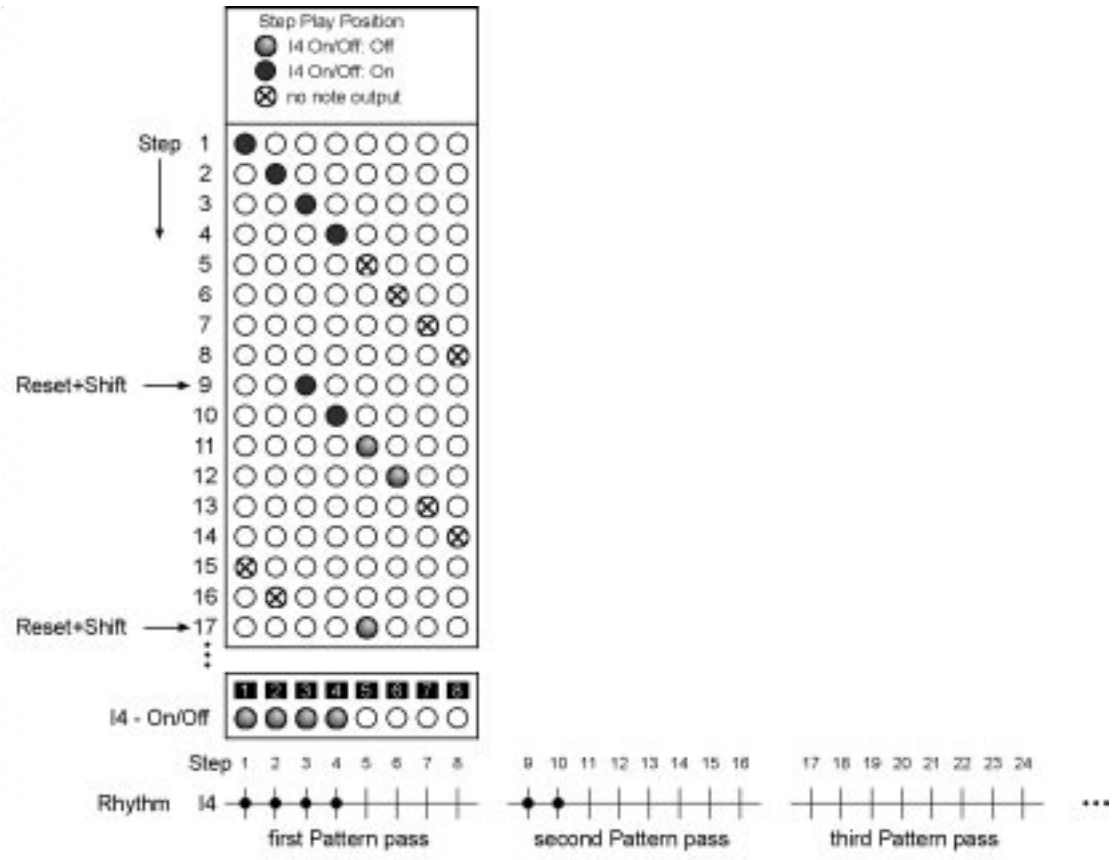
  Example 1: Pattern Length 8, Delay = 8, Reset = 16, Shift = 0



For the first 8 steps (Delay) the notes play normally, for the next 8 steps the output is suppressed. After 16 steps (Reset) with Step 17 the notes start again playing and everything starts over. By using different values for Reset and Delay you can generate different rhythmical structures, like:

- Reset = 32, Delay = 8: 1 normal Pattern pass + 3 silent Pattern passes
- Reset = 32, Delay = 24: 3 normal Pattern passes + 1 silent Pattern pass
- Reset = 128, Delay = 16: 2 normal Pattern passes + 14 silent Pattern passes

Example 2: Pattern Length 8, Delay = 4, Reset = 8, Shift = 2

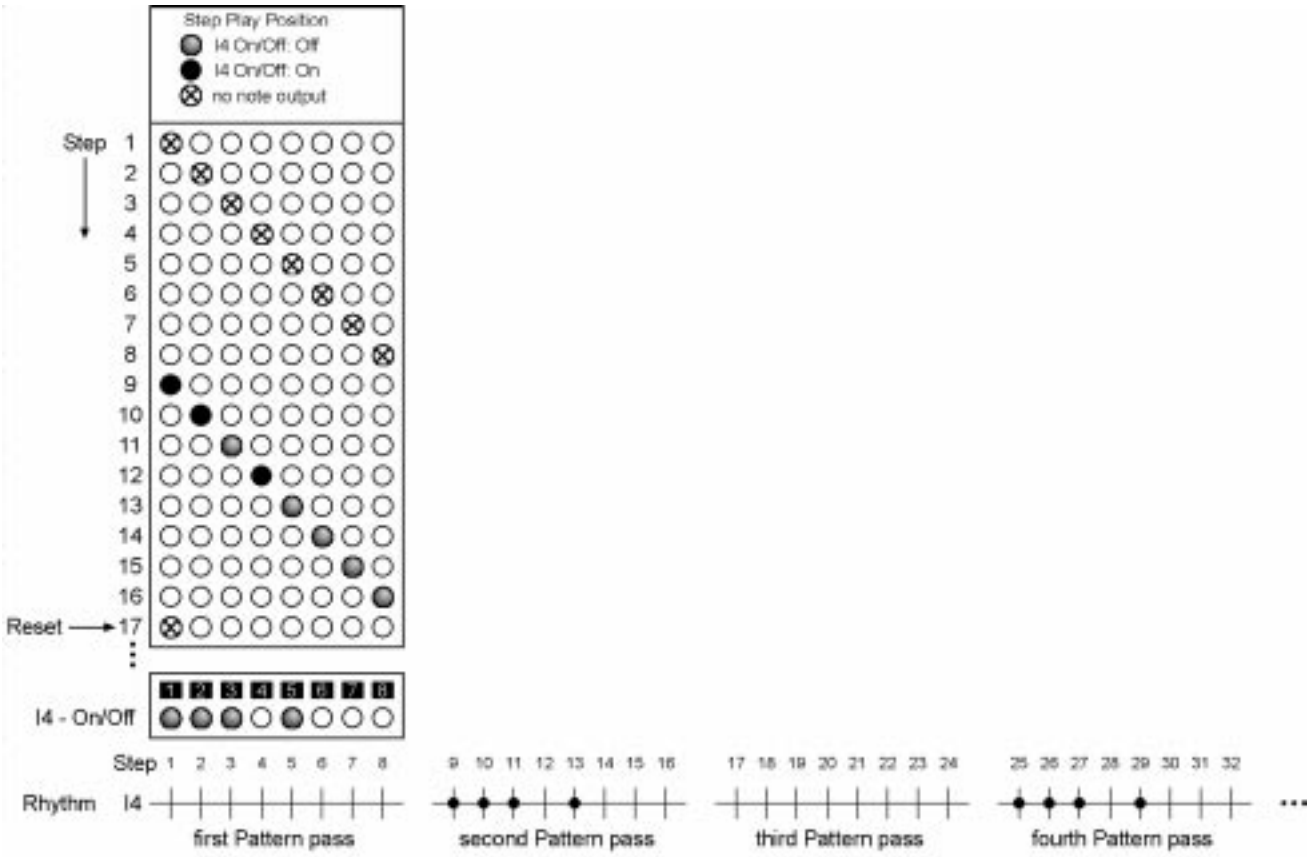


For the first 4 steps (Delay) the notes are played normally; for the next 4 steps the output is suppressed. After 8 steps (Reset) at step 9 the playing starts again; additionally the Step Play Position is incremented by 2 steps; now everything starts over. The Step Shift generates an irregular rhythm for the next Pattern passes.

- **Mode C**
  This mode is similar to mode h; however playing phase and rest phase are exchanged. After starting the Pattern the output is suppressed for <Delay> steps. Then normal playing continues until after <Reset> steps a Reset takes place. Until the Reset the Step Play Position is incremented as usual by one for each step. After the Reset again the output is suppressed for <Delay> steps. If the Shift value is larger than 0 after each Reset the Step Play Position is additionally incremented by <Shift> steps.

  - Start: Step Play Position = Step 1; no output
  - after <Delay> steps output starts
  - after <Reset> steps a Reset takes place; the output again is suppressed and the current Step Play Position is incremented by <Shift> steps

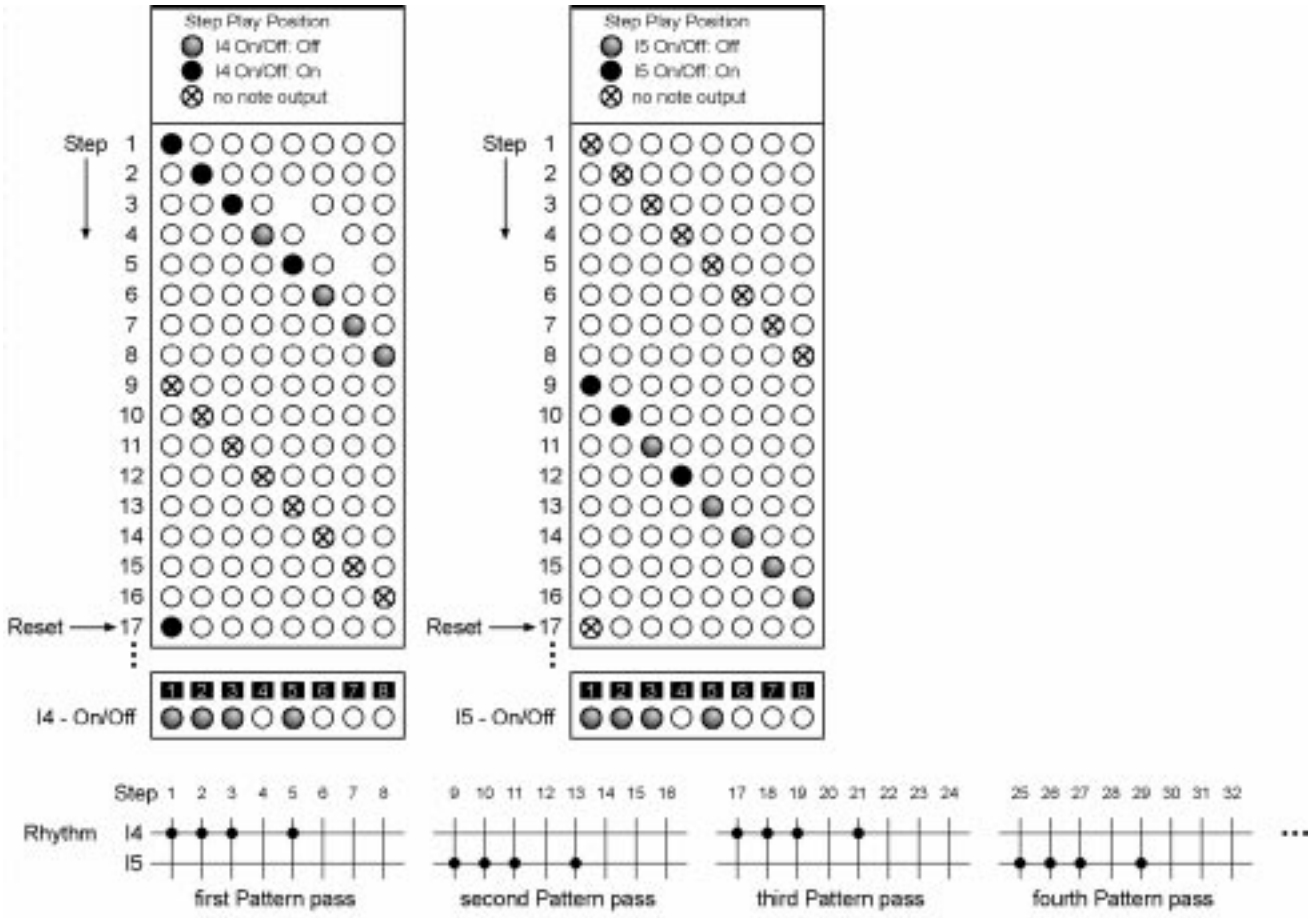
  Example 1: Pattern Length 8, Delay = 8, Reset = 16, Shift = 0



For the first 8 steps the output is suppressed; for the next 8 steps the notes play normally. After 16 steps (Reset) at step 17 the output is again suppressed and everything starts over.

Example 2: Pattern Length 8, mode c and h combined

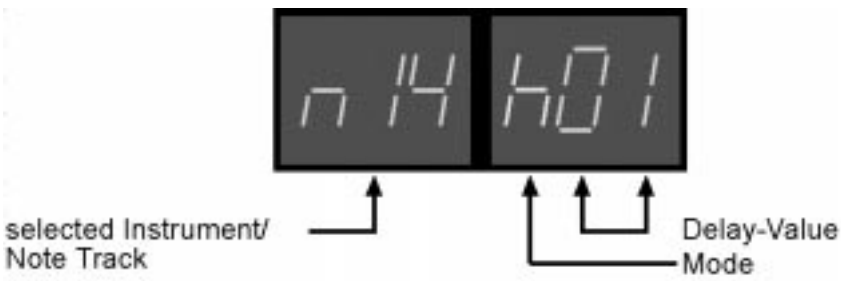
- I4: mode h, Delay = 8, Reset = 16, Shift = 0
- I5: mode c, Delay = 8, Reset = 16, Shift = 0



During the first pattern pass (step 1 to 8) instrument I4 is played normally while the output for instrument I5 is suppressed. During the second pass I4's output is suppressed while I5 plays normally. This switches for any subsequent pattern pass.

Editing Delay, Shift, Reset and Mode settings:

1. Activate either
   - "Rotate - Delay" to change the Delay and Mode settings
   - "Rotate - Shift" to change the Shift setting
   - "Rotate - Reset" to change the Reset setting
2. Select one of the 16 Rotate settings:
   a. using the "arrow" buttons in the right Select/Edit section (Rotate number is shown in the right display)
   b. Keep pressed the "Select" button in the right Select/Edit section and press Step button 1...16 to select the desired Rotate setting (Rotate number is shown in the right display)
3. Select the instrument track I1...I13 or the note track n14...n16 which settings you want to edit
   a. using the "arrow" buttons in the left Select/Edit section
   b. Keep pressed the "Select" button in the left Select/Edit section and press Step button 1...16 to select the desired track
4. Change the settings for Delay, Reset and Shift using either the Up/Down buttons (step buttons 11, 12) or use step buttons 1-9, 0 to input value:
   - Delay: 1...64
   - Shift: 0...15
   - Reset: 1...255
5. Selecting the Mode
   5.1. Press Rotate Delay
   5.2. Press the Enter button (step button 14) to select the desired mode. The mode is shown in the right display together with the Delay setting.

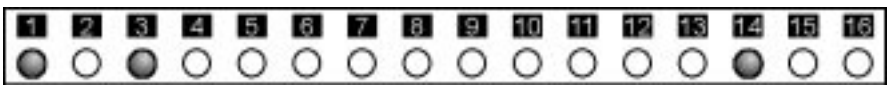


12.5.2. On/Off

You can activate the Rotate function separately for each track; this is also stored with the Rotate setting.

1. Activate "Rotate - On/Off".
2. Select one of the 16 Rotate settings:
   a. using the "arrow" buttons in the right Select/Edit section (Rotate number is shown in the right display)
   b. Keep pressed the "Select" button in the right Select/Edit section and press Step button 1...16 to select the desired Rotate setting (Rotate number is shown in the right display)
3. Use step buttons 1-13 to turn on/off Rotate for instrument tracks and step buttons 14-16to turn on/off Rotate for note tracks.:

   Example: On/Off for Rotate setting 1

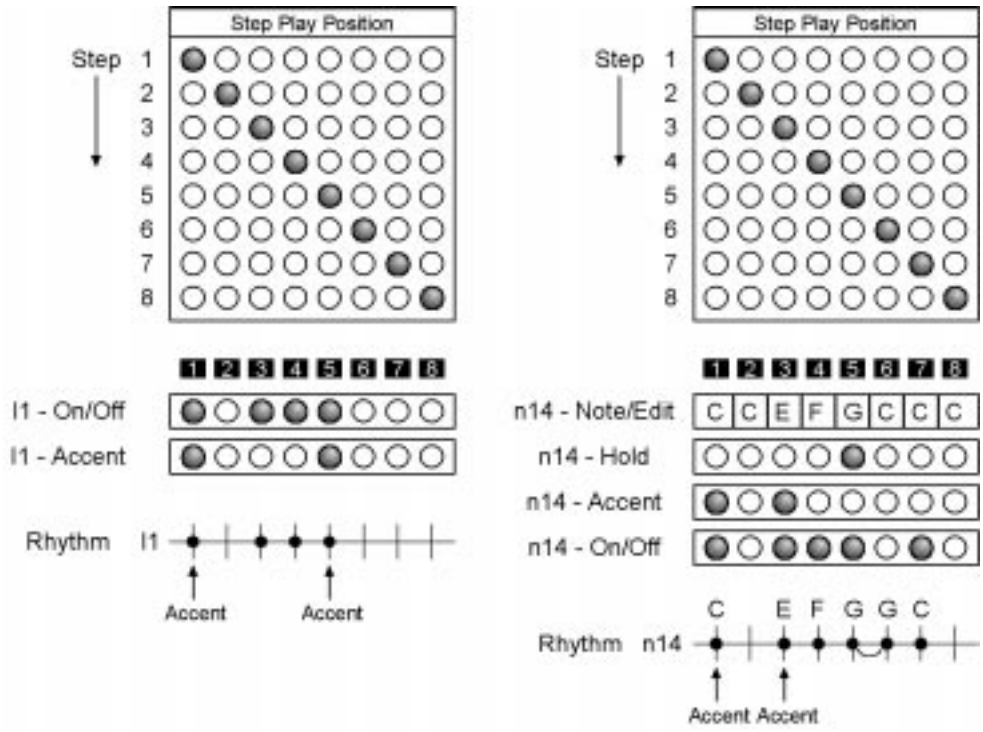


Rotate is only active for instrument tracks I1 and I2 and note track n14. If you activate the Rotate setting during Play Mode - Pattern or Play Mode - Chain only I1, I2 and n14 are affected by the Delay, Shift, Reset and Mode settings made for each track in Rotate setting 1. All other tracks are played in normal fashion. If Play Mode - Song is active the Rotate function becomes active for each Song step the uses Rotate setting 1 as active Rotate setting; even here only I1, I2 and n14 are affected.

12.5.3. Destination

The previous examples demonstrated the effects Rotate has when using this function for the Step Play Position while retaining Pattern data. If the Step Play Position for the On/Off track of an instrument track or note track is changed this changes the note output and the rhythm. But what happens to the Accent track or the Hold and Note data of a Note track?

Let's look at an example without Rotate first:

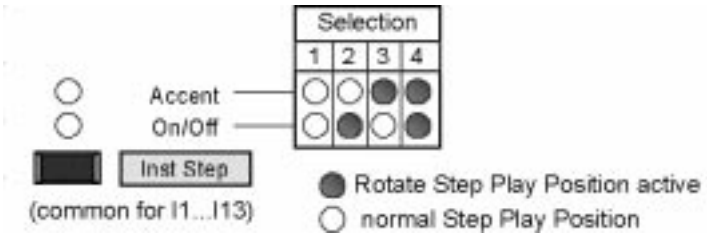


Instrument tracks or note tracks only then "play" if a Step is activated for the current Step Play Position in the On/Off track. If an Accent is set at the same position the note is played with an Accent. Note tracks play the programmed note and also use information from the Hold track. The Step Play Position hereby affects all data in an instrument track or note track. As an example, if the current Step Play Position is 5, On/Off track, Accent track, Hold track and the programmed note are taken into account.

Now let's look at what happens when Rotate is active: The Rotate function can affect single, several or all instrument and note tracks. When looking at instrument tracks, Rotate can for example only affect the On/Off track while the Accent track remains unaffected and vice versa. Which settings are affected by Rotate is set with the Destination parameter. This parameter is common for all instrument tracks and note tracks.

12.5.4. Destination for instrument tracks

Instrument tracks have four possible Destination values:



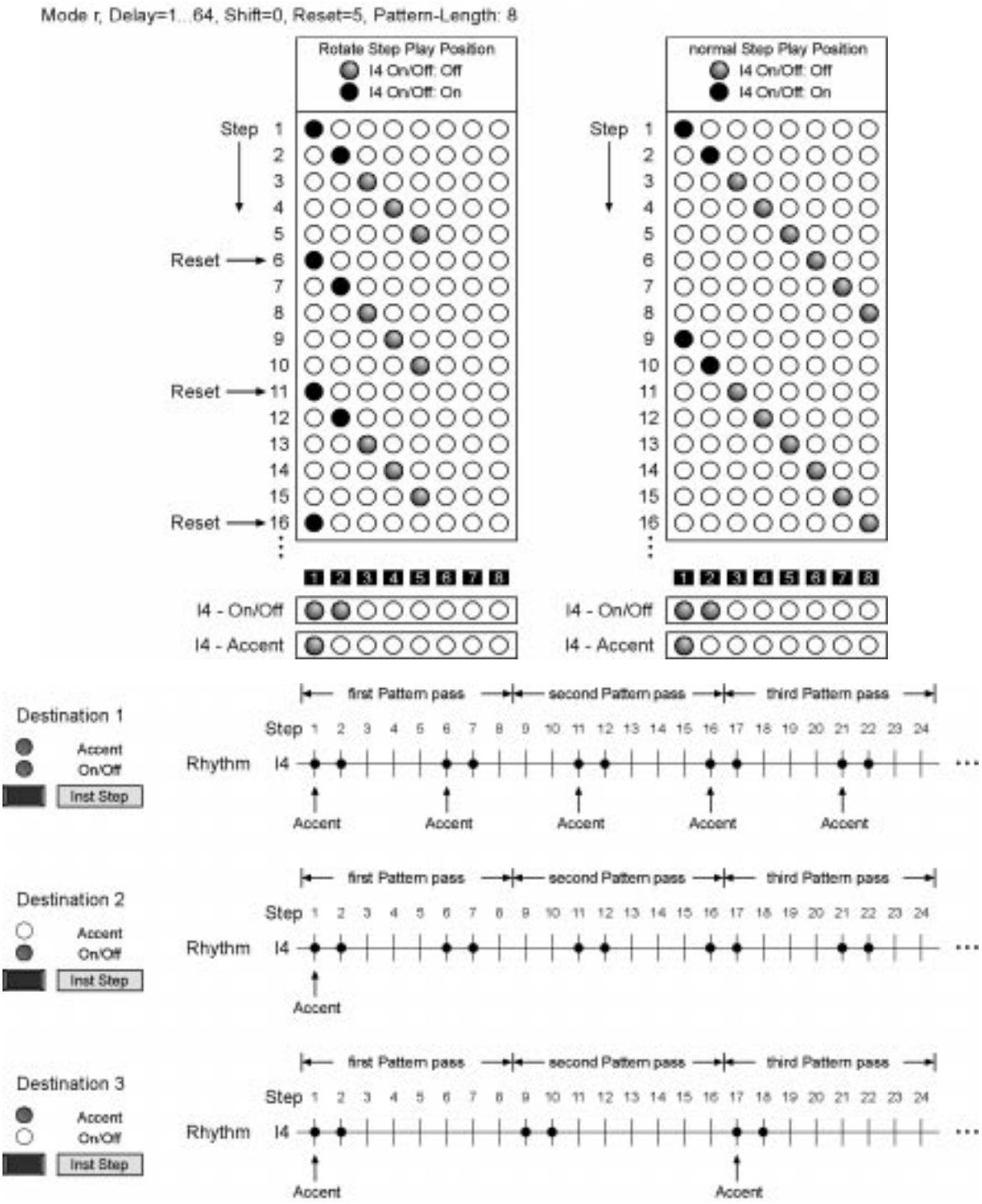
The LED's indicate which data is affected by the Rotate setting. The Destination value is common for all instrument tracks.

Changing the Destination setting:

1. Activate "Rotate" (sub-function irrelevant)
   The LED's show the current Destination setting for the instrument tracks.
2. Press "Ins Step" button until the desired Destination setting is displayed.

Important note:
If Rotate was pressed the "Inst Step" button is used for changing the Rotate destination and no longer used to edit the On/Off track or Accent track of a Pattern. To do the latter you need to exit "Rotate" by pressing "Pattern" or "Inst/Note". If you subsequently press "Inst Step" you can again edit the On/Off tracks and Accent tracks of a Pattern.

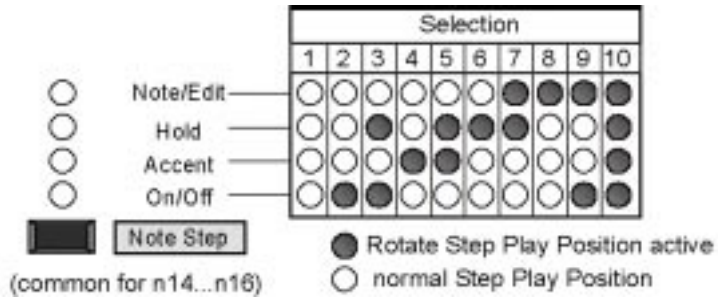
Examples:



- Destination 1: The Rotate settings affect both the Accent track and the On/Off track resulting in synchronized Accents and notes.
- Destination 2: The Rotate settings affect only the On/Off track. Accents are played at their normal step position and so are only active at Steps 1 and 17. Theoretically there's also an Accent at Step 9, however since no note is played here nothing happens.
- Destination 3: The notes are played at their normal step position (Step 1, 2, 9, 10...). The Accents are affected by the Rotate settings and are theoretically active at Steps 1, 6, 11, 16, 21...; however they are (naturally) only audible if at the same step a note is played.

12.5.5. Destination for note tracks

Note tracks have ten possible Destination values:



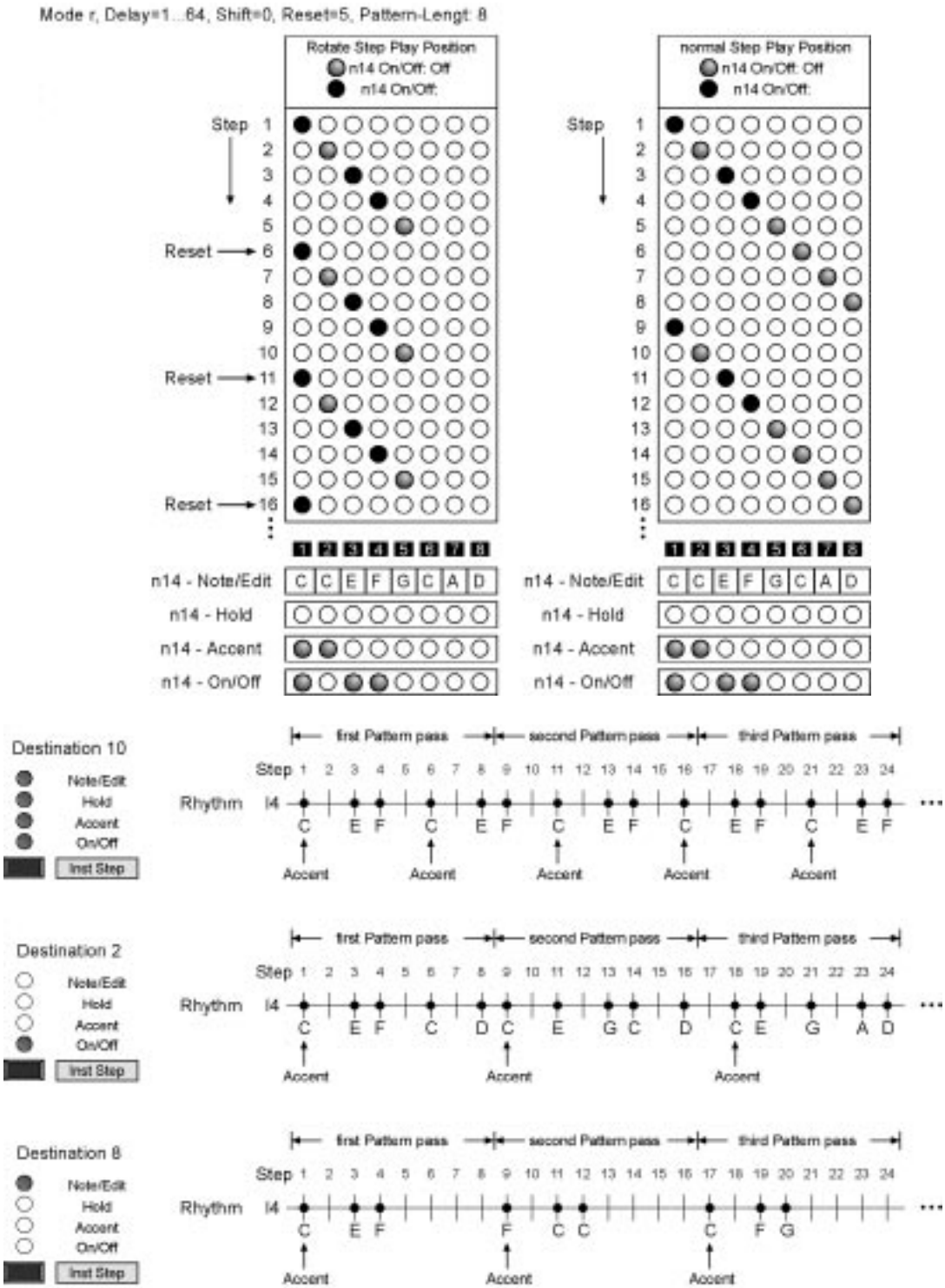
The LED's indicate which data is affected by the Rotate setting. The Destination value is common for all note tracks.

Changing the Destination setting:

1. Activate "Rotate" (sub-function irrelevant)
   The LED's show the current Destination setting for the note tracks.
2. Press "Note Step" button until the desired Destination setting is displayed.

Important note:
If Rotate was pressed the "Note Step" button is used for changing the Rotate destination and no longer used to edit the Note track of a Pattern. To do the latter you need to exit "Rotate" by pressing "Pattern" or "Inst/Note". If you subsequently press "Note Step" you can again edit the Note track of a Pattern.

Examples (without Hold):



- Destination 10: The Rotate settings affect all data of the Note track. On/Off, Accents and Notes are repeated every 5 Steps (without Rotate this would happen every 8 Steps).
- Destination 2: The Rotate settings affects only the On/Off track. Accents and Notes use their normal step positions. Accents are theoretically active at Steps 1, 2, 9, 10, 17 and 18 however have only an audible effect if a Note is played at the same step, at Steps 1, 9 and 18. Since the Rotate setting affects the On/Off track the rhythm of the Pattern repeats itself every 5 Steps while the Notes repeat every 8 Steps.
- Destination 8: The Rotate settings affect only the Note data. The Rhythm and the Accents remain as if Rotate wasn't active and remain identical for each Pattern pass. The Notes however seem to be generated at random. For Step 9 the Rotate Step Play Position is Step 4 (Note = F); for Step 11 the Rotate Step Play Position is Step 1 (Note = C).

12.6. Copying Rotate data

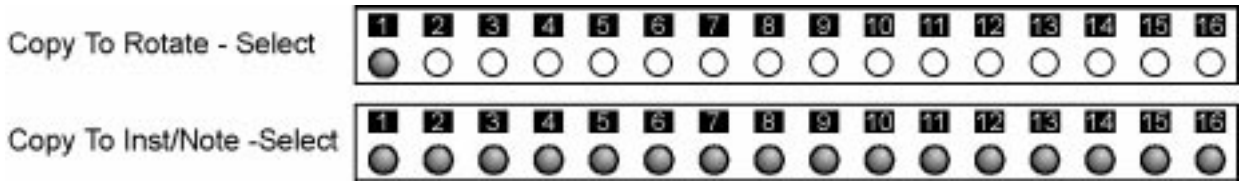
If you have selected one of the Rotate functions (Delay, Shift, Reset or On/Off) you can easily copy the currently edited setting (for copying complete Rotates see section 7.2).

12.6.1. Selected function: Delay, Shift or Reset

As an example, you have selected Rotate 1 and you are currently editing the Shift setting for instrument track 1 (as an example: current value = 7). You can copy this value to other instrument tracks within the same Rotate or to different Rotates.

1. Press "Copy To" in the Select/Edit section.
2. Select the instrument track or note track to which you want to copy the setting. Keep pressed the "Select" button in the left Select/Edit section and make the selection as follows:
   a. Press step buttons 1...13 shortly to select several tracks
   b. Press step button 1...13 for at least a second to select a single track.
   c. Press ALL OFF button to select instrument track 1
   d. Press ALL ON button to select all instrument and note tracks.
3. Select the Rotate(s) to which you want to copy the current setting. Please note that the setting is copied to all in Step 2. selected tracks. Keep pressed the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several Rotates
   b. Press step button 1...16 for at least a second to select a single Rotate.
   c. Press ALL OFF button to select Rotate 1
   d. Press ALL ON button to select all Rotates.
4. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
5. Leave "Copy" with "Exit" (step button 13)

Example: Copying the currently edited Rotate setting to all instrument/note tracks in Rotate 1



12.6.2. Selected function: On/Off

As an example: You have activated Rotate 1. You can copy the On/Off data to other Rotates.

1. Press "Copy To" in the Select/Edit section.
2. Select the Rotate(s) to which you want to copy the on/off data from Rotate 1. Keep pressed the "Select" button in the right Select/Edit section and make the selection as follows:
   a. Press step buttons 1...16 shortly to select several Rotates
   b. Press step button 1...16 for at least a second to select a single Rotate.
   c. Press ALL OFF button to select Rotate 1
   d. Press ALL ON button to select all Rotates.
3. Press "Enter" button (step button 14). Press "Enter" again to copy or "Exit" (step button 13) to abort.
4. Leave "Copy" with "Exit" (step button 13)

12.7. Tips and tricks

As you could see in the previous examples the Rotate function can be used to create very unique rhythmic patterns. On the other hand the results can be a bit unpredictable. It's probably the easiest to use Rotate by trial-and-error, e.g. changing a setting and listening to the results. In addition it is necessary to be familiar with the general working principles of the SQ16. But always keep in mind: Rotate doesn't change the data of a Pattern; it simply changes how the data are played back. So if you get stuck you can simply turn off Rotate and get back to the original Pattern.

A couple of notes:

- If you use Rotate to create "semi-random" rhythms you get (as opposed to true randomness) the same rhythm for a Pattern, Chain or Song.
- If you change the Rotate settings during Playback you may not always get a correct result. You will get the correct result if you stop the SQ16 after making a change and then start it again.
- If you change the data for a pattern you also change the effects of an activated Rotate. This is especially audible when changing the On/Off tracks or the Pattern length.
- Play Mode - Song: If a Song Step without Rotate is followed by a Song Step with Rotate an internal Reset of the Step counter takes place. So the first Step using a Rotate will always have the same Rotate effects. On the other hand, if you have activated Rotate for all Song Steps and if you now insert a new Song Step (for example after Song Step 5) or if you change the number of repetitions for a Song Step you may get different Rotate results for the subsequent Song Steps.
- **Display of Rotate Step Play Position:**
  If you have activated one of the Rotate functions (Delay, Shift or Reset) the LED's above the step buttons display the current Step Play Position for the currently selected track. However for this to work the SQ16 has to be in Play mode. This display is useful for getting a "random" Step Play Position. Just vary the values for Delay, Shift and Reset until you get an irregular display. In addition you can see if the Step Play Position doesn't change at all and always remains at the same step. This can happen if you set the Reset value to 1 while being in Rotate mode r. In this case the Step Play Position would be reset to Step 1 after each step and consequently remain permanently on Step 1. In modes c and d no Step Play Position is displayed during the rest phase (all LED's off).

IMPORTANT SAFETY INSTRUCTIONS

Read all instructions before using the SQ16

Do not use the SQ16 near water - for example near a bathtub, washbowl, kitchen sink, in a wet basement, on a wet bar, or near or in a swimming pool.

The SQ16 should be situated so that its location or position does not interfere with its proper ventilation.

The SQ16 should be located away from heat sources such as radiators, heat registers, fireplaces, stoves, or ovens.

The SQ16 should only be connected to a power supply of the type described in the operating instructions and as marked on the product.

The power supply of the SQ16 should be unplugged from the outlet when left unused for a long period of time.

Care should be taken so that objects do not fall and liquids are not spilled into the enclosure of the SQ16 through openings.

The product should be serviced by qualified service personnel when:

- the power supply cord has been damaged; or
- Objects have fallen, or liquid has been spilled into the product; or
- the product has been exposed to rain; or
- the product does not appear to operate normally or exhibits a marked
- change in performance; or
- the product has been dropped or the enclosure damaged.

All servicing should be referred to qualified service personnel.

Specifications

Concept	Pattern-based MIDI sequencer with 16 steps per Pattern Step Data: 13 instrument tracks (1 note per step, fixed note number, On/Off message) 3 note tracks (1 note per step, arbitrary note number, On/Off message)
User Data	8 blocks, each containing -64 Patterns -8 Songs -16 Chains -16 MIDI Sets -16 Step Sets -16 Rotate settings -15 Mute settings
Play modes	Pattern Song (sequential playback of arbitrary Patterns) Chain (chaining Patterns)
Special functions	- recording note tracks inrealtime (via MIDI In); different recoed modes (Step, Arpeggio...) - creation of rhythmical variations using the Rotate function - Delay (Echo) function
Controls	47 buttons
Displays	62 LEDs, 7-segment displays
Connections	MIDI In MIDI Out MIDI Thru Sync Out Connector for external power supply (12V AC/830mA)
Consumption	2 W
Dimensions	320mm x 60mm x 173mm (WxHxD)
Weight	1,4 Kg
Accessories	external power supply (12V AC/830mA)