



SEQ-03 Module

Operating Manual

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1 Introduction

MFB's SEQ-03 module is a step-sequencer which is equally suited to trigger drum modules as well as to play and control synthesizers. In addition, each of the 12 available tracks may serve as an AR-envelope or LFO.

The SEQ-03 offers three operational modes that cover different applications:

1. **Mode 1:** This mode allows every track to be used either as CV- or gate-track, AR-envelope or LFO. Sequences can be up to four bars in length with an adjustable number of steps per bar. The speed, i.e. clock division is set globally for all tracks. Shuffle is available but only for use with the internal clock or at external clock with 24ppq resolution. Each track has a dedicated output.
2. **Mode 2:** The modus equals mode 1 but is fixed to a length of one bar. In exchange, this mode allows for poly-rhythmical patterns. Each track may have an individual number of steps as well as individual clock division. Shuffle is not available in this mode.
3. **Mode 3:** This mode is dedicated to control synthesizers when wanting to adjust CV values and gate-information per step simultaneously. There are two outputs assigned per track. Track 1 uses jacks CG1 for CV- and CG2 for gate output. Accordingly, this mode offers only six tracks. The track types are fixed in this mode.

Note: Switching operational modes forces the currently selected pattern to be initialized, i.e. all programmed step will be lost.

2 Setup

MFB's SEQ-03 is fully compatible to Doepfer's A-100 modular system - in size, bus-power and CV/Gate voltage. Connect the 10-pin MFB-cable to a corresponded 16-pin jack on the mainframe bus. Supply voltage needs to be +/- 12 volts. The wattage is +25/-5mA, the module size is 20HP (half pitches) equivalent to 101,3mm.

Attention: Please, check for correct polarity! The colored side of the connector-cable needs to point downwards (-12 V)!

3 General

We have been trying to develop a complex sequencer in a compact module format that is still easy to use. Hopefully, we have succeeded. However, it is still necessary for you to familiarize yourself with the basic principles of operating the SEQ-03.

The SEQ-03 will always be either in **Mute Mode**, where every track can easily be muted, or in **Record Mode**. This mode allows programming of the steps. In mute-mode the track-LED will be lit green, in record-mode the Track-LED will be lit red.

By pressing **Shift** the red LEDs will always indicate the sequencer operational mode. **Step-LED 14** will additionally indicate the start-mode (see below). By pressing the step-buttons, you may directly call up the functions **ClrBar**, **RemBar**, **ClrPatt**, **Init Patt**, **SeqMode1**, **SeqMode2**, **SeqMode3** and **StartMode** or a function with additional options to choose from. These so-called shift-functions are **LastStep**, **ClkDiv**, **TrkMode**, **Direction**, **Quantize**, **LFO Wave** and **Shuffle**. Here, the corresponding Step-LED and Shift-LED will be lit red. By using the step-buttons, the desired option can be selected until **Shift** is released to leave this menu.

4 First start - track types

Upon switching on the unit, the SEQ-03 will always enter **sequencer mode 1**. The **track-LED** will be lit green and the **step-buttons 1-12** can be used to mute the corresponding tracks. The initial sequence has a length of one bar. The BarUp-LED will be lit green, indicating that you are located in bar 1. The internal clock is initially selected and the clock- and start-jacks serve as outputs (to select an external clock, see clock settings). Press **Start** to start the sequencer.

The SEQ-03 offers four track types. Here is an exemplary introduction...

CV-Spur

To use track 1 as a CV-track, connect a cable to the **CG1** jack output and patch it to the CV-input of another module, e.g. an oscillator. Now, press **Start** to start the internal clock while adjusting the speed using the tempo control.

Setting up and programming a CV-track

To set this track up as a CV-track, carry out the following steps:

1. Press and hold the **Track** button
2. Press **Step 1** to select track 1
3. Release both buttons
4. Press a **Step** button to assign a step - the **Step-LED** flashes green
5. **Para1** adjusts the CV value
6. **Para2** adjusts the Portamento value
7. Repeat 4-6 to define further steps

Editing multiple steps

To edit several steps simultaneously, press and hold **Select** while pressing the corresponding **step-buttons**. All steps being selected and flashing can now be edited at the same time.

Gate-Track

Connect a cable to the second track (**CG2**) and patch it to the gate-input of an envelope or a comparable module.

Setting up and programming a gate-track

To set this track up as a gate-track, carry out the following steps:

1. Press and hold the **Track** button
2. Press **Step 2** to select track 2
3. Release both buttons
4. Press and hold **Shift**
5. Press **Step 3 (TrkMode)**
6. Release both buttons
7. Press **Step 2**
8. Press **Shift** to leave shift-mode
9. Press a **Step** button to assign a step - the **Step-LED** flashes green
10. **Para1** adjusts the gate intensity
11. **Para2** adjusts the gate length
12. Repeat 9-11 to define further steps

AR-envelope

Connect a cable to the third track (**CG3**) and patch it to the CV-input of an oscillator or another CV-controllable module.

Setting up and programming an AR-envelope track

To set this track up as an AR-envelope, carry out the following steps:

1. Press and hold the **Track** button
2. Press **Step 3**
3. Release both buttons
4. Press and hold **Shift**
5. Press **Step 3**
6. Release both buttons
7. Press **Step 3**
8. Press **Shift**
9. Press a **Step** button to assign a step - the **Step-LED** flashes green
10. **Para1** adjusts the attack time
11. **Para2** adjusts the release time
12. Repeat 9-11 to define further steps

LFO-Track

Connect a cable to the fourth track (**CG4**) and patch it to another CV-input of a module.

Setting up and programming an LFO-track

To set this track up as an LFO, carry out the following steps:

1. Press and hold the **Track** button
2. Press **Step 4**
3. Release both buttons
4. Press and hold **Shift**
5. Press **Step 3**
6. Release both buttons
7. Press **Step 4**
8. Press **Shift**
9. Press a **Step** button to assign a step - the **Step-LED** flashes green
10. **Para1** adjusts the LFO tempo
11. **Para2** adjusts the LFO intensity
12. Repeat 9-11 to define further steps

5 Track Mute

Press the **Track button** repeatedly until the track-LED is lit green to enter **Mute mode**. Now, tracks 1-12 can be muted using the corresponding **Step** buttons. A muted track is indicated by a red LED for that step.

Note: In sequencer operational modes 1 and 2, the 12 tracks can be muted using step-buttons 1-12 with the corresponding step-LEDs being lit red. In operational mode 3 only six tracks are available. Use step-buttons 1-6 to mute these tracks.

6 Record Mode

Pressing the **Track button** repeatedly until the track-LED is lit red to enter **Record mode**.

Selecting and programming a track

Select a track first by carrying out the following steps:

1. Press and hold **Track**
2. Select the track by pressing the corresponding **Step button**
3. Release both buttons

The steps are set using the corresponding **Step** buttons. Press and hold **Select** to adjust several steps simultaneously.

The **step-LED** of the step set last will flash green. While the **step-LED** is lit green, two parameters can be adjusted using the potentiometers **Para1/Para2**. With the parameters being set, select the next step to edit. Alternatively, press **Select** to avoid displacing the parameters.

Track-Parameters

The parameters that can be adjusted using **Para1** and **Para2** depend upon the track-type being selected

CV-track

- Para1:** CV, depending on the quantize-parameter:
3,5,7 octaves in semitones or
0-8 volts with no quantization
- Para2:** Portamento

Gate-track

- Para1:** Gate-voltage, adjustable from 6.5 to ca. 9.5 volts, all MFB-drum-modules offer dynamic triggering to control the output volume
- Para2:** Gate-length, adjustment range 4-250ms
- Note:** Depending on the tempo, gates may overlap and merge two succeeding gate triggers into one.

AR-envelope

The envelopes use an exponential type of control. The maximum output is 8 volts.

- Para1:** Attack-time,
Adjustment range: ca. 2.5-700ms
- Para2:** Release-time,
Adjustment range: ca. 2.5-700ms

LFO

An individual waveform shape can be selected per LFO, being valid for all steps of a track. However, the amplitude and the tempo can be set per step.

A special feature is the non-existing neutral zero-line for the LFO which rather oscillates between zero volts and the defined maximum value (Para2). As with all other track types, parameters 1 and 2 are programmable. In addition, the LFO is reset with each step, making lively "LFO-sequences" possible.

- Para1:** Tempo: ca. 8s to 10Hz
- Para2:** CV, depending on the quantize-parameter:
3, 5 or 7 octaves in semitones or
0-8 volts with no quantization

Editing existing steps

Each programmed step can be edited at any time. In addition, it is also possible to edit multiple steps at once. This way, new steps as well as existing steps can be edited in one move.

1. Press and hold **Select**
2. Press all **step-buttons** for the steps to be edited, existing or new one
3. Release **Select**
4. Adjust **Para1 and/or Para2**. All steps will now share the same value.
5. Press **Select** again to leave edit-mode. All **Step-LEDs** should now be lit permanently.

Note: With CV-tracks, the control voltage may not only be altered by the Para1-control but also using the **BarUp** and **BarDown** buttons. This action works relatively to allow transposing a full sequence up or down.

7 Working with bars

Switching between bars

Switch between bars using **BarUp-** and **BarDown**.

Copying bars

Initially, a new pattern has a length of one bar. By pressing **BarUp**, the contents of the first bar will be duplicated (with bar 2 being selected), allowing to create fast variations. By pressing **Shift** additionally, just an empty bar will be added.

Note: This operation is only possible in operational modes 1 and 3.

Individual bars may also be deleted or shifted (see Shift-functions).

In record-mode, moving LEDs will indicate that the selected bar is currently played.

Both LEDs for **BarUp-** and **BarDown** display the currently selected track:

BarUp green, BarDown off: Bar 1

BarUp red, BarDown off: Bar 2

BarUp off, BarDown green: Bar 3

BarUp off, BarDown red: Bar 4

8 Loading and saving sequences

The SEQ-03 allows storing a total of 48 patterns, being organized in three banks of 16 patterns each. To switch between banks carry out the following steps:

1. Press and hold **Shift**
2. Pressing **LoadPatt** will advance the bank selection by one. The LED will display the currently selected bank.
3. Release **Shift-Taste** when the desired bank has been reached

LoadPatt-LED

Off: Bank 1 Green: Bank 2 Red: Bank 3

Loading Patterns

1. Press and hold **LoadPatt** - the last selected pattern is indicated by a green step-LED
2. **Step** buttons 1-16 select the patterns of the current bank
3. Release **LoadPatt** - the pattern will be switched upon the next bar

Saving patterns

1. Press and hold **SavePatt** - the last selected pattern is indicated by a green step-LED
2. **Step** buttons 1-16 select the patterns of the current bank
3. Release **SavePatt** - the pattern is saved and the **SavePatt-LED** will flash red shortly

9 Shift-functions

9.1 Shift-functions with options

To adjust these functions carry out the following steps:

1. Press and hold **Shift**
2. Press the corresponding **Step** button to select a function
3. Release **Shift**
4. **Shift LED** + **Step LED** will flash red
5. Adjust the option using the **Step** buttons
6. Confirm by pressing **Shift**

LastStep

Use step-button 1-16 to set the number of steps per bar. With the exception of **SeqMode2** this setting affects all tracks - no matter if in mute- or record-mode. In **SeqMode2** the number of steps can be set per track. Depending whether you are in mute- or record-mode, all tracks or just the currently selected track will be adjusted.

ClkDiv

The step buttons 1-16 are used to set the clock divider:

Step 1: 1 = 96th	Step 9: 24 = 4th
Step 2: 2 = 48th	Step 10: 32 ½ triplets
Step 3: 3 = 32th	Step 11: 48 ½
Step 4: 4 = 16th triplets	Step 12: 64 2/3
Step 5: 6 = 16th	Step 13: 96 1
Step 6: 8 = 8th triplets	Step 14: 128 1 1/3
Step 7: 12 = 8th	Step 15: 192 2
Step 8: 16 = 4th triplets	Step 16: 288 4

With the exception of **SeqMode2** this setting affects all tracks -

no matter if in mute- or record-mode. In **SeqMode2** the number of steps can be set per track.

Depending whether you are in mute- or record-mode, all tracks or just the currently selected track will be adjusted.

TrkMode

This function is only available in operational modes **SeqMode1** and **SeqMode2**. In **SeqMode3** all track-types are fixed (see SeqMode3).

Depending whether you are in mute- or record-mode, all tracks or just the currently selected track will be adjusted.

Step 1: CV-track
Step 2: Gate-track

Step 3: AR-envelope
Step 4: LFO

Direction

This option sets the order of the sequencer steps being played.

Step 1: up
Step 2: down

Step 3: alternating
Step 4: random

Depending whether you are in mute- or record-mode, all tracks or just the currently selected track will be adjusted.

Quantization

This option sets the adjustment range for **Para1**.

Step 1: 3 octaves, quantized in semitones
Step 2: 5 octaves, quantized in semitones
Step 3: 7 octaves, quantized in semitones
Step 4: not quantized, ca. 0-8 volts

Depending whether you are in mute- or record-mode, all tracks or just the currently selected track will be adjusted.

LFO wave

This option sets the waveform shape for a track being used as LFO in record-mode.

- 1 Step 1: saw tooth ascending Step 3: sine
- 2 Step 2: saw tooth descending Step 4: square

Sync I/O

This option selects the clock source.

Step 1: internal clock, clock out: 16th, tempo control active

Step 2: internal clock, clock out: 24ppq

Step 2: external clock, 16th

Step 3: external clock 24ppq

Shuffle

This option sets the shuffle intensity by pressing step-buttons 1-16:

Step 1: no shuffle

Steps 2-16: 15 shuffle-intensity

This function is only available in operational modes

SeqMode1 and **SeqMode3**. With the clock source being set to external, Shuffle is only possible with Sync I/O-mode being set to external 24ppq.

Note: ClockDiv should be set to 16th!

9.2 Shift-functions without options

To adjust these functions carry out the following steps:

1. Press and hold **Shift**
2. Press **Step**
3. Release both buttons
4. The function is carried out

ClrBar

In record-mode, the current track will be deleted. In mute-mode, all steps of the current bar will be deleted in all tracks.

RemBar

This function removes a bar. Here, the following bars are moved forward in time respectively. A sequence of originally four bar length will turn into a three bar sequence.

ClrPatt

This function deletes all steps of the selected pattern. However, all track-settings such as TrkMode, Quantize, LFO Wave, LastStep, Direction and ClkDiv are being kept.

InitPattern

This function initializes the selected pattern. Here, all steps are deleted and all track-settings are reset to their initial states.

SeqMode1

The sequencer is set to operational mode 1.

SeqMode2

The sequencer is set to operational mode 2.

SeqMode3

The sequencer is set to operational mode 3.

Note: Switching operational modes forces the currently selected pattern to be initialized, i.e. all programmed step will be lost. To keep your pattern, please save in advance.

StartMode

This function adjusts the behavior of the **Start/Stop-jack**. Depending on sync I/O setting, this jack serves as input or output.

Step-LED red/off

DIN sync-mode/ MFB-mode