

# MSQ-CC-LRE V2

MotionSeQuencer for ControlChanges

for 2xLRE8x2 Boards

for 1x LRE5-LCD2 Boards

Synth-Patch-Editor & Motion-Sequencer 4 ControlChange (= CC-Automation)

## Introduction

Controls and automate a Nord Drum2 (Drum-Synth )[NORD DRUM 2](#)

### It acts as:

- **Midi Merger** NTE,CLK,PC merge with CC... - **Patch Manager** it replaces the Synths internal Patch Storage, each PC Number from your Sequencer is added by the BANK CC (CC 32), where each Nr is ADD 128 PC Numbers more...
- **Motion Sequencer** Record your Controller Movements in a Sequence in 32th Resultion @ maximal 256 Steps length

## Features

- **Remote your Synths** by: 8x Midichannels with up to 32x Control Change (CC)
- **Save the Patches** and dump it to Synth
- **Load hundrets of Patches** via received Program Change + the Bank-CC (CC32)
- **Save Patches** vie CC24 + CC value 0-127... when sending before a BankCC32 you can expand that to 128x128 patches
- **Record CC-Motion-Sequences - PLAY Motions-Sequences** up to 256 steps @ 32th rate -
- VELOCITY MORPH** Add Velocity-Ammount to CCs
- **MERGE** incoming Midi-Notes/Clock/Pitchbend with Automated CCs
- **Set Sequencer Beatstructure** - how to interpret Clock-ticks (4/4, 5/4, 6/4, 7/4...) - CC23
- **Global Page:** for example you use 8 simular Drum-Voices, with the Global you have 8 channel strips with dedicated Controlls, for example:  
8xVolume, 8xTone/Noise-Mix, 8xDistortion, 8xClick  
if you have one Synth over 2xMSQ\_CC\_LRE Tracks(booth set to MidiChannel 0, to get 64CCs instead of 32), then the Global Page: have the ability to show/edit a parameter from Track1Voice on Track1Global, and from Track2Voice on Track2Global... it depends how you set the Midichannel in the Systemsettings (which are hardcodet but via Mapping Array changeable)
- for one multipart-synth, MSQ\_CC\_LRE do all the Preset Store, and Automations, so it is one Unit > to use the Unit in a other way would make all the Patches (128x128 patches) useless, so once done, its bound to it, load all with Programchange! minimal is better here, there will be other **MSQs** outthere see [MSQ-CC-BCR](#)

# Hardware Requirements

## External Requirement:(for example)

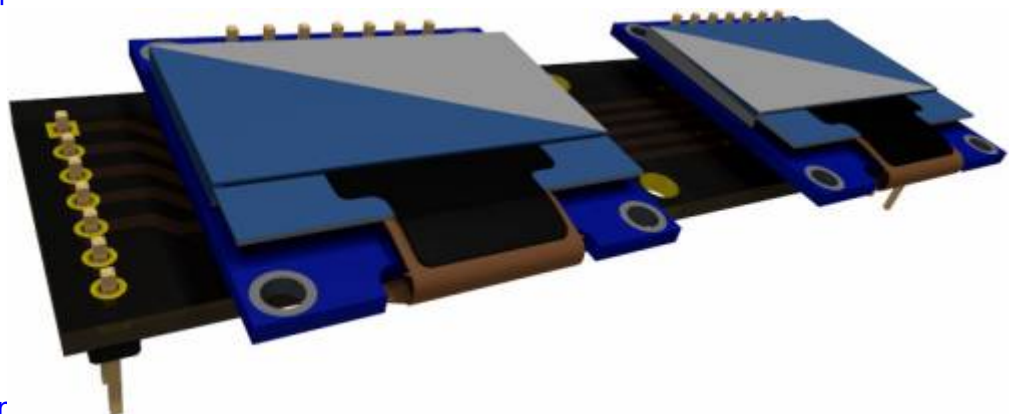
- Melody/Clock Source with ProgramChange-Output: [midibox\\_seq\\_v4l](#) oops that dont do PC...
- Melody/Clock Destination: NordDrum 2

## Midibox:

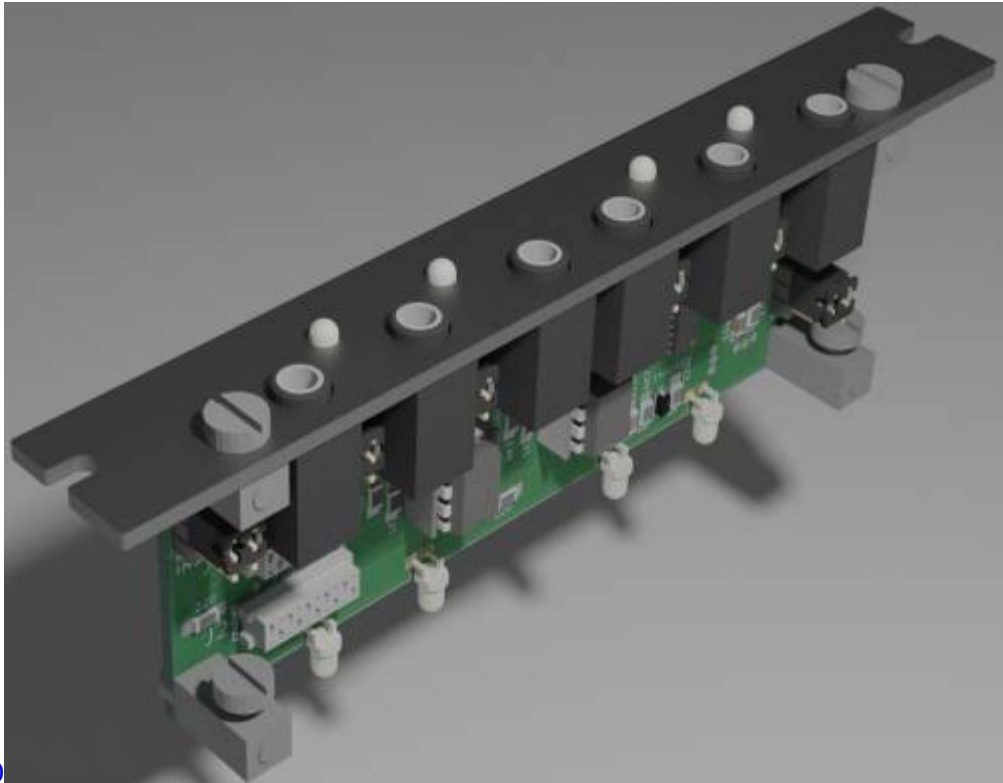
- 1x [core32](#)



- 1x [LRE5-LCD2](#)
- 2x [mb-lre8x2cs\\_pcb](#)



- 8x [LRE-OLED-Bar](#)
- 17x SSD1306 OLED Screens (smalles variant, 7 Pin)
- 1x DINX4



- 1x [Euro-Midi-IO](#)
- SD-Card, formatted with FAT32
- Soldering Iron, Wires, PCB....
- USB Power Supply

## Setting

### Cabeling MIDI

MidilO PortB Out »> Synth Midi IN  
MidilO PortB In »> Clock+Notes

### Cabeling Modules





## Firmware

V1. from 9.05.2018 [msq\\_cc\\_lre\\_v0.norddrum2.zip](#)

hardcodet for a NordDrum2 - but change-able in Mapping via a Array in Sourcecode:

this is the maping which says wich of the 32 internal CCs are one of the outhernal CCs (0-127):

```
// 4 CC Route Mode = 0; // In Synthesizer
const u8 CC_Map0[128] = { // CC_Map0 [Part] [Internal CC Nr] = value of external CC ==
// CC_Map1 [Midichannel] [RemoteSource] = Value of Synth/Destination
// CC-an-LRE: // 1st Row Horizontal // 2nd Row Horizontal // 3rd Row Horizontal // 4th Row Horizontal
// 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
{ 57, 56, 24, 23, 26, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 1 MidiCh 7
{ 57, 56, 24, 23, 28, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 2 MidiCh 8
{ 57, 56, 24, 23, 28, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 3 MidiCh 9
{ 57, 56, 24, 23, 28, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 4 MidiCh 10
{ 57, 56, 24, 23, 28, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 5 MidiCh 11
{ 57, 56, 24, 23, 26, 25, 10, 7, 25, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 50, 51, 49, 38, 58, 255, 255, 255, // Nord Drum 2 Voice 6 MidiCh 12
{ 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, //not in Use
{ 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, 255, //not in Use
}
```

This Mapping says which one of the 32 internal CCs are positioniered in the Mixer/Overview/Channelstrip-Mode

```
// 4 CC Route Mode = 1; // Re Channelstrip
const u8 CC_Map1[128] = { // CC_Map2 [Active_Strip_Set] [CC to remap to Map0]
// 1st Row Horizontal // 2nd Row Horizontal // 3rd Row Horizontal // 4th Row Horizontal
// 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set1 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set2 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set3 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set4 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set5 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set6 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set7 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set8 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set9 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set10 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set11 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set12 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set13 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set14 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set15 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set16 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set17 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set18 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set19 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set20 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set21 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set22 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set23 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set24 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set25 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set26 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set27 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set28 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set29 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set30 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set31 (Filter)
{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, // Channel-Strip-Set32 (Filter)
}
```

there are 8 deep edit pages, and 8 overview pages.

## CC Routing to Synths

MSQ\_CC\_LRE internal i have 8x32 CCs, they are always identical.

but with a simple input output matrix i can decide which CC it gets in real world.

each of the 8 Part can have midichannle 0-15...

So we talking about Mapping... in the moment it is made in the source code with a simple array.

## To Do

Since we have 18 Screens, write the code for it - special the labeling > Sys

Make a System Menue to set CC NRs on the fly...

maybe scale min max values for CC: for example different synths have only 0-3value instead of 0-127, by different functions like WAVEFORM...) - this will be interesting when using other synths then nord drum...

## Resources

## Community users working on it

- **Phatline** = Programming, Documentation...

Just let a Private message on the forum to user already involved, the sourcecode is includet in the

firmware .zip!!!

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