

# 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 hardcoded 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\\_v4](#) | 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

MidiIO PortB Out »> Synth Midi IN

MidiIO PortB In »> Clock+Notes

### Cabeling Modules

# MSQ-CC-LRE-8x2



## Frontpanels

## MBHP

see [LRE-OLED-Bar](#)



## Software

# Firmware

V2. from x.02.2022msq\_cc\_lre\_v2.norddrum2.zip - published when finished

Initialized for a NordDrum2 - but change-able in Mapping via a Array in Sourcecode or via System-Menue:

this is the mapping 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_Map0 [Midichannel] = Value of SynthDescription
  // 1st Row Horizontal (top-row) // 2nd Row Horizontal // 3rd Row Horizontal // 4th Row Horizontal
  // CC-on-LRE: 0 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 // Nord Drum 2 Voice 1 MidiCh 7
  { 57, 56, 34, 23, 28, 25, 18, 7, 15, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 58, 51, 49, 38, 58, 255, 255, 255}, // Nord Drum 2 Voice 2 MidiCh 8
  { 57, 56, 34, 23, 28, 25, 18, 7, 15, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 58, 51, 49, 38, 58, 255, 255, 255}, // Nord Drum 2 Voice 3 MidiCh 9
  { 57, 56, 34, 23, 28, 25, 18, 7, 15, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 58, 51, 49, 38, 58, 255, 255, 255}, // Nord Drum 2 Voice 4 MidiCh 10
  { 57, 56, 34, 23, 28, 25, 18, 7, 15, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 58, 51, 49, 38, 58, 255, 255, 255}, // Nord Drum 2 Voice 5 MidiCh 11
  { 57, 56, 34, 23, 28, 25, 18, 7, 15, 17, 14, 16, 18, 19, 20, 21, 46, 52, 53, 47, 48, 54, 55, 254, 58, 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, 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, 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 Map1 [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, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128}, // 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, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128}, // Channel-Strip-Set2 (Decay)
  { 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, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128}, //not used
  { 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, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128}, //not used
  ...
};
// CC_Map1[0] = show CC_Map0[x] = Synth-CC:96 = ClickLevel-CC
// to get: CC_Map0[0-7] CC_Map1[0-7] ] = 50CC-Nr = ClickGain CC_Map0[8-15] CC_Map1[8-15] ] = 50CC-Nr = Bal
// to get: CC_Map0[16-23] CC_Map1[16-23] ] = 25CC-Nr = N.Filter CC_Map0[24-31] CC_Map1[24-31] ] = 17CC-Nr = N.Rev For Value: beat[0].CC_Store[32]
// to get: CC_Map0[32-39] CC_Map1[32-39] ] = 21CC-Nr = N.Decay CC_Map0[40-47] CC_Map1[40-47] ] = 47CC-Nr = Timbre
// to get: CC_Map0[48-55] CC_Map1[48-55] ] = 255CC-Nr = Nothing-will be filtered out! = blank out LEDRING
```

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

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