

# MSQ-CC-BCR

MotionSeQuencer for ControlChanges for BCR2000 by wiring it to MBHP Synth-Patch-Editor & Motion-Sequencer 4 ControlChange (= CC-Automation)





## Introduction

i have the need to control and automate my Nord Drum2 [NORD DRUM 2](#)

So i connect a BlackBox between Sequencer & Synthesizers...

This Box is called MSQ\_CC\_BCR: **M**otion **S**equencer for **M**idi**C**ontrol**C**hange controlled via a **BCR2000** Midicontroller

### It acts as:

- **Midi Merger** NTE,CLK,PC merge with CC... & CCinput is a thing between MSQ\_CC\_BCR and BCR only since we have intelligent UI with Pages..
- **Patch Manager** it replaces the Synths internal Patch Storage, to even get more, because, each PC event from your Sequencer is multiplied by the BANK CC (CC 32)...
- **Motion Sequencer** Record your Controller Movements in a Sequence in 32th Resultion @ maximal 256 Steps length  
64th is possible, just a Factor in the code, but it will also reduce the max.Step length to 128 steps, also the midi traffic will go HI! imagine you automate  $8 \times 32 = 256$ CCs, and dump that @64th into your synth, over midi... ;)... but in cases like: drumcomputers, where a much things must be static to provide the percussive punching sound - there are normally not that much automations... so maybe for a drummachine 64th is a good yoice, but in my experience with a nord drum 2 (for which i have written the programm) in my expirience 64th is to high..... how ever i get lost in detail... =====  
*Features =====* - **Remote your Synths** by: *8x Midichannels with up to 32x Control Change (CC) For the BCR i only can provide 8x29, because i need some controlls to control the MB Program itself...*
- **Save the Patches** and dump it the 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..
- **Record CC-Motion-Sequences** use a footpedal connected to FSW1 on the backside of the BCR, to ARM/Disarm it... so you can tweedle 2 ore more CC @ once... but you dont have to, BCR-onboard is also a Button for it
- **PLAY Motions-Sequences**, up to 256 steps @ 32th rate... this steps of course are only right when you have choosen 4/4 in your Patch... elsewhere of course will differ a bit...but 256 is max.
- **VELOCITY MORPH** Add Velocity-Ammount to CCs
- **MERGE** incoming Midi-Notes/Clock/Pitchbend with Automated CCs.
- **Set Sequencer Beatstructure** - how to interprete Clock-ticks (4/4, 5/4, 6/4, 7/4...)
- **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 2 MSQ\_CC\_BCR 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 currently in the CODE itself (recompile

- Many of this features, especially the **System Settings would need a UI**, but that would it make bigger, more expensiv, and maybe more complex to use... & **this case is UI-less** - it is set once, for one multipart-synth+bcr2000, MSQ\_CC\_BCR 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 (1000Patches+3000 Variants) useless, so

once done, it is a black box loadet via Programchange! ... it is not that i cant program a good UI 😊, minimal is better here, there will be other MSQ outthere, be prebered for the MSQ\_CC\_2xLRE & MSQ\_CC\_ELO

==== 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

\* Midicontroller: 1x BCR2000 **Midibox:**

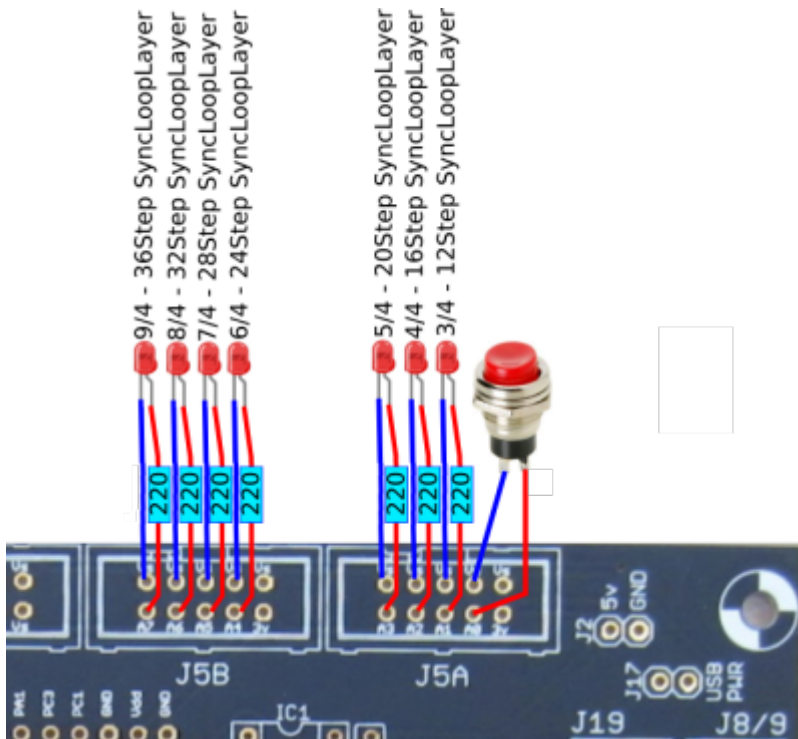
\* [core32](#)

\* [1xMidi IO](#) connect 1 midicontroller and 1 Note/Clock-Source/Destination

\* SD-Card, formated with FAT32, and the file "bcr1.syx" on it

\* Soldering Iron, Wires, PCB....

\* USB Power Supply... I tried to use the Midi-BUS-Power from BCR2000 but it is too weak! **Visual Feedback directly from MBHP** \* a Momentary Switch Connected to J5A Pin0 \* 7 LEDs in serial with 220Ohm each to GND connected to J5A Pin1-3 and J5B Pin0-4 The LEDs show via Gestic (Patterns) if something is wrong, done, busy, & show the Rythm structure: The Switch switches as Radio-Button thru the Rythm Structures (4/4, 5/4...), the LED-Indicating this. By Holding the Switch and Powering



the Core, it will Dump Out a Sysex Template to you



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Why BCR2000 ==== because I have 3 of them but they are too old dirty, damaged... i cant get a good price for it, so better hold it and make something

with it.

==== Setting up a BCR2000 ==== == Cabeling == MidiIO Porta Out »> BCR Midi IN  
AFTER Uploading the Sysex, and restarting the BCR connect:  
MidiIO Porta In »> BCR Midi OUT A

- == Upload the Sysex-Template == 1. unpack [bcr1.syx.zip](#) and put "bcr1.syx" on a SD-Card (root level)
- 2. Put SD-Card into CORE32
- 3. bridge J5A Pin0 to ground, or connect a switch to it, that you will need if you want to sequence other song structures then 4/4 (which is default)!
- 4. Power the core up.

...if the filestructure (patches) are already existent...then it takes less then half a minute to dump the BCR-2000 Layout Data...

You dont have to save the preset, it will make it automatic

...when no filestructure... then it will take about 16minutes... the core has to make 4000Patches\*32KB=139MB!!!!... so better:

\* Faking a filestructure: make a empty folder "mq" and put it on SD-Card, make the syx.dump, make your first simple standart patch, the sound you will start with...to the next 1000 Patches ;) so choose carefully, young jedi... then remove the Card, earse the "mq" folder on the card, and put it into the core again, now it will copy your "standart patch" to 4000 others

==== Frontpanels ==== == BCR2000 Stickers == The Blue Elements are the MBHP Remotes... the Rest is for the Synth

FSW Left: RECORD MSQ  
 FSW Right: Clear Sel MSQ

Push-Button of Rotary > VELO CLR ALL COPY PASTE SYS

Upper Button Row > Var1 Var2 Var3 Var4 RELOAD COPY LOAD AUTO MSQ  
 Lower Button Row > no need to label...its 1 2 3 4 5 6 7 8

1. Encoder Row (Push) BPF TYPE GAIN TYPE GAIN Q BPF FREQ PAN LEVEL  
 CLICK DISTORT

2. Encoder Row To/No <Mix> TYPE FREQ RESO ENV ATK/RTE MODE TYPE/DYN DECAY  
 FILTER FILTER ENV ATT ENV

3. Encoder Row DISTORT WAVE GAIN ENV DEC PUNCH BEND BEND-Time TUNE  
 TIMBRE TUNE

4. Encoder Row GAIN HI-DEC LO-DEC TYPE Spectra TONE> Loop Loop Velo REC CLR SEL  
 TONE ATT ENV <NOISE Indicate Length Morph <SYS\_Mode: OFF "0"

Hold "SYS" + Press "VELO"  
 = Route CC Mode  
 Press again "SYS" to save and leave

CC NR Val Min Val Max  
 SYS\_Mode: CC\_Route "1"

CH NR  
 SYS\_Mode: CH\_Part "2"

select a Part and moove encoder


UNTESTET, NOT SCALED!!!!

In Order to better understand the Routing of the Internal CCs to externals:

PART 1-6 Nord Drum2								MASTER	Group
Click		Distortion		BPF		Attenuator			Label
Type	Gain	Type	Gain	Q	Freq	Pan	Level		CC-Nr-Synth
57	56	24	23	26	25	10	7		255: „not used“
0	0	0	0	0	0	0	0		Min Value
127	127	127	127	127	127	127	127	Max Value	
0	1	2	3	4	5	6	7	CC-Nr-BCR	
Filter		Filter Envelope			ATT-ENV			NOISE	Group
Type	Q	Frequency	ENV	ATK/RTE	MODE	TYP/DYN	DECAY		Label
15	17	14	16	18	19	20	21 oder 22?		CC-Nr-Synth
0	0	0	0	0	0	0	0		255: „not used“
127	127	127	127	127	127	127	127		Min Value
8	9	10	11	12	13	14	15	Max Value	
TIMBRE		TUNE			TONE	Group			
WAVE	Gain	ENV	Decay	Punch		Bend	Bend Time	Tune	Label
46	52	53	47	48		54	55	1277	CC-Nr-Synth
0	0	0	0	0		0	0	LSB61	255: „not used“
127	127	127	127	127		127	127	MSB31	Min Value
16	17	18	19	20	21	22	23	Max Value	
TONE ATT ENV TONE			TONE	<MIX>	Motion Sequencer			TONE & MIX	Group
HI-Decay	LO-Decay	Decay Type	Spectra	Tone/Noise	Indicator	Length	Morph		Label
50	51	49	30	58	255	255	255		CC-Nr-Synth
0	0	0	0	0	0	0	0		255: „not used“
127	127	127	127	127	127	127	127		Min Value
24	25	26	27	28	29	30	31	Max Value	
<p>each Vertical Row can be thought copied 8 times per Map, i just wrote them on one Sheet to see what each Map can do</p>									
Channel Strip Mapping								Channel Strip 1 - Mixer	
Click	Noise Filter	Noise						Group	
Gain	Q	LO-Decay						Label	
1	8	15				255	255	Re-Map	
0	1	10	3	4	5	6	7	255: „not used“	
								CC-Nr-BCR	
<MIX>	Noise Filter	Timbre						Group	
Noise/Tone	Frequency	LO-Decay						Label	
28	9	19				255	255	Re-Map	
8	9	10	11	12	13	14	15	255: „not used“	
								CC-Nr-BCR	
Distortion	BPF	Tone						Group	
Gain	Q	HI-Decay						Label	
3	4	24				255	255	Re-Map	
16	17	18	19	20	21	22	23	255: „not used“	
								CC-Nr-BCR	
Attenuator	BPF	TONE						Group	
Level	Freq	LO-Decay						Label	
7	5	25				255	255	Re-Map	
24	25	26	27	28	29	30	31	255: „not used“	
								CC-Nr-BCR	

==== MBHP ===== Software ===== Firmware ===== V1. from 17.02.2018 [msq\\_cc\\_bcr\\_v1.norddrum2.zip](https://midibox.org/dokuwiki/doku.php?id=msq_cc_bcr_v1.norddrum2.zip) hardcodet for a NordDrum2 (also newest sysex for the BCR includet)

===== CC Routing to Synths ===== MSQ\_CC\_BCR 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. this array could be saved and loadet from SD-Card aka "SYS settings", and this array could be editet by a simple editor...  i dont have a glue about this, nor time no interest in doing this...

the format of this setting is simple, the file starts with (converted from hex) mq04 and then the Routing array starts [32][127] for those how know how to program a simple interface for it

===== To Do ===== Nothing it is done!

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 ==== [BCR-Manual](#)

[BCR-SYSEX-GUIDE](#)

[TOKEN-Reference](#)

[BC-Convert](#) Convert SYX into Textfile to Edit and reverse... better then every BCR Editor! But Windows only... i run a oracle virtualbox with a VM-W7 under Linux, with a shared folder

==== Community users working on it ===== \* [Phatline](#) = Programming, Documentation...

Just let a Private message on the forum to user already involved, the sourcecode is included in the firmware .zip!!!

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