MP-KBD

MIDI Interface for KORG MONO / POLY Keyboard

Model 8-433
ver. 1.0

USER'S GUIDE

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1. INTRODUCTION

MP-KBD is a MIDI retrofit for Korg Mono / Poly synthesizer. The device enables instrument's tone generators to be controlled via MIDI as a MIDI expander. MP-KBD also synchronizes the arpeggiator speed with external sequencer MIDI clock.

All MP-KBD functions can be adjusted via MIDI parameters. Standard channel and system parameters or System Exclusive Messages are used. MIDI communication channel is user definable.

Setting of all parameters can be stored in internal user memory. Table 1 shows default factory settings.

Table 1 – "Factory Reset" settings of interface functions		
Function	Setting	Value of corresponding parameter
MIDI channel choice	13th channel	MIDI Channel : **12**
Keyboard shift setting	+53 semitones	Key Shift : **53**
Key priority setting	last key priority	Key Priority : **0**
Pitch Wheel range setting	±12 semitones	Pitch Wheel Range : **12**
Arpeggiator rate setting	internal generator	Arpeggio Clock Rate : **0**

1.1. INTERFACE FUNCTIONS

Interface controls the keyboard in parallel manner. The instrument's keyboard can also be used together with the MIDI notes. Interface can synchronize the arpeggiator to external MIDI clock or ignore the synchronization data and use instrument's internal clock generator. See pic. 1.

Pic. 1 – Block diagram
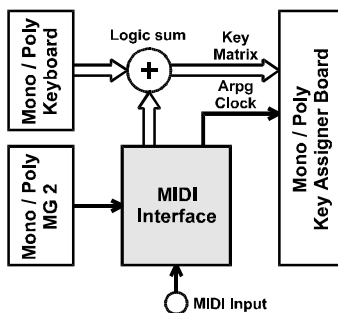
2. INTERFACE BASIC OPERATION

There are no indicators or switches on the interface. All parameters can be adjusted only via MIDI commands from external MIDI data source. Default settings from internal memory are set up during each instrument start-up.

All interface functions are adjustable via MIDI controllers or SysEx messages. There are five user adjustable parameters, described in the following chapters.

Pic. 2 – „Key Shift" parameter description

Range of acceptable MIDI Notes

Tone : / Note Nr.:

C0	0
C1	12
C2	24
C3	36
C4	48
C5	60
C6	72
C7	84
C8	96
C9	108
C10	120
G10	127

MIDI Notes

Key Shift = +0
Key Shift = +5
Key Shift = +17
Key Shift = +29
Key Shift = +41
Key Shift = +53
Key Shift = +65
Key Shift = +77
Key Shift = +84

Default shift after "Factory Reset"

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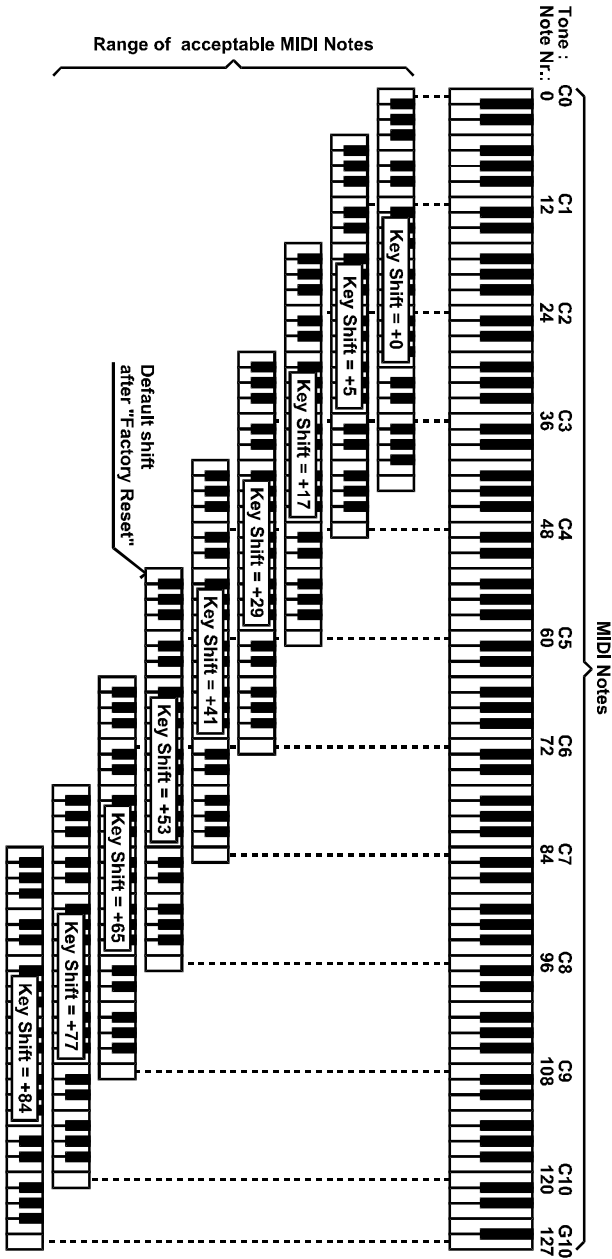
2.1. MIDI CHANNEL

This parameter sets the basic MIDI channel for communication with MIDI master system. Any of the 16 available channels can be set as MIDI OMNI mode as well. OMNI mode enables the instrument to receive data on all 16 MIDI channels simultaneously.

Parameter values are 0 to 16. Values 0 to 15 represent MIDI channels 1 to 16. Value 16 is for OMNI MODE. Value of this parameter can be adjusted only by MIDI System Exclusive Message – see chapter 3.3.

2.2. KEY SHIFT

Key Shift parameter transposes the keyboard. Range of the Key Shift is 0 to +84 semitones. When the 0 value is set the lowest key of the keyboard is equal to MIDI note 0 and the highest is equal to MIDI note number 43. When transposing +1 semitone the lowest key of the keyboard has assigned the MIDI note number 1 and the highest number 44 etc. – when transposing +84 semitones the lowest key of the keyboard has assigned MIDI note number 84 and the highest number 127. For more details see pic. 2.

Parameter values are 0 to 84. The value can be adjusted in two ways:
a) by MIDI controller (Control Changes) Nr. 16 – see chapter 3.1.2.
b) by SysEx Message – see chapter 3.3.

2.3. KEY PRIORITY

Value of the parameter adjusts incoming MIDI Note On/Off commands processing in case of all four tone generators of the instrument are being used.

Parameter values are 0 to 3.

0 → LAST: Last key priority – the last pressed key always replaces the first key pressed.
1 → HIGHER: Higher key priority – if the last pressed key is of higher tone than any of the previously pressed keys, the lowest key tone is replaced.
2 → LOWER: Lower key priority – if the last pressed key is of lower tone than any of the previously pressed keys, the highest key tone is replaced.
3 → NONE: No priority – if all four tone generators are being used, all Note On commands are ignored at the MIDI input.

The value can be adjusted in two ways:
a) by MIDI controller (Control Changes) Nr. 17 - see chapter 3.1.2.
b) by SysEx Message – see chapter 3.3.

2.4. PITCH WHEEL RANGE

Parameter adjusts maximum range of the pitch bend controlled by the MIDI command "Pitch Wheel" ("Pitch Bend").

Parameter values are 0 to 24. Value 0 switches the pitch bend off. MIDI command "Pitch Wheel" is ignored. Values 1 to 24 are equal to transposition semitones, therefore ±2 octave transposition is available.

The value can be adjusted in two ways:
a) by MIDI controller (Control Changes) Nr. 18 - see chapter 3.1.2.
b) by SysEx Message – see chapter 3.3.

2.5. ARPEGGIO CLOCK RATE

This parameter adjusts arpeggiator tempo. Parameter values are 0 to 127. Value of 0 switches instrument's internal clock generator on. (Arpeggio speed is adjusted by the MG2 - FREQUENCY knob on the instrument's panel or by external clock impulses form the ARPEGGIO TRIG IN connector on the rear panel.)

Parameter values 1 to 127 synchronize arpeggiator speed according to incoming "MIDI Clock" data. The higher the value of the parameter is set, the higher arpeggiator speed is provided. Value 1 represents 127 MIDI ticks between clock pulses, value 2 represents 126 MIDI ticks, etc. The highest value of 127 represents one MIDI tick between clock pulses. For conversion rates see Table 2.

The value can be adjusted in two ways:
a) by MIDI controller (Control Changes) Nr. 19 - see chapter 3.1.2.
b) by SysEx Message – see chapter 3.3.

Table 2 – Conversion of parameter value to length of arpeggiator interval											
Parameter value	interval between clock pulses in notes										
	1/2	1/2 triplet	1/4	1/4 triplet	1/8	1/8 triplet	1/16	1/16 triplet	1/32	1/32 triplet	1/64 triplet
0	*)	*)	*)	*)	*)	*)	*)	*)	*)	*)	*)
1	-	-	-	-	-	-	-	-	-	-	127
2	-	-	-	-	-	-	21	-	42	63	126
3	-	-	-	-	-	-	-	-	-	-	125
4	-	-	-	-	-	-	-	31	-	62	124
5	-	-	-	-	-	-	-	-	41	-	123
6	-	-	-	-	-	-	-	-	-	61	122
7	-	-	-	-	-	-	-	-	-	-	121
8	-	-	5	-	10	15	20	30	40	60	120
9	-	-	-	-	-	-	-	-	-	-	119
10	-	-	-	-	-	-	-	-	-	59	118
11	-	-	-	-	-	-	-	-	39	-	117
12	-	-	-	-	-	-	-	29	-	58	116
13	-	-	-	-	-	-	-	-	-	-	115
14	-	-	-	-	-	-	19	-	38	57	114
15	-	-	-	-	-	-	-	-	-	-	113
16	-	-	-	7	-	14	-	28	-	56	112
17	-	-	-	-	-	-	-	-	37	-	111
18	-	-	-	-	-	-	-	-	-	55	110
19	-	-	-	-	-	-	-	-	-	-	109
20	-	-	-	-	9	-	18	27	36	54	108
21	-	-	-	-	-	-	-	-	-	-	107
22	-	-	-	-	-	-	-	-	-	53	106
23	-	-	-	-	-	-	-	-	35	-	105
24	-	-	-	-	-	13	-	26	-	52	104
25	-	-	-	-	-	-	-	-	-	-	103
26	-	-	-	-	-	-	17	-	34	51	102
27	-	-	-	-	-	-	-	-	-	-	101

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Table 2 – Conversion of parameter value to length of arpeggiator interval (continued)											
Parameter value	interval between clock pulses in notes										
	1/2	1/2 triplet	1/4	1/4 triplet	1/8	1/8 triplet	1/16	1/16 triplet	1/32	1/32 triplet	1/64 triplet
28	-	-	-	-	-	-	-	25	-	50	100
29	-	-	-	-	-	-	-	-	33	-	99
30	-	-	-	-	-	-	-	-	-	49	98
31	-	-	-	-	-	-	-	-	-	-	97
32	2	3	4	6	8	12	16	24	32	48	96
33	-	-	-	-	-	-	-	-	-	-	95
34	-	-	-	-	-	-	-	-	-	47	94
35	-	-	-	-	-	-	-	-	31	-	93
36	-	-	-	-	-	-	-	23	-	46	92
37	-	-	-	-	-	-	-	-	-	-	91
38	-	-	-	-	-	-	15	-	30	45	90
39	-	-	-	-	-	-	-	-	-	-	89
40	-	-	-	-	-	11	-	22	-	44	88
41	-	-	-	-	-	-	-	-	29	-	87
42	-	-	-	-	-	-	-	-	-	43	86
43	-	-	-	-	-	-	-	-	-	-	85
44	-	-	-	-	7	-	14	21	28	42	84
45	-	-	-	-	-	-	-	-	-	-	83
46	-	-	-	-	-	-	-	-	-	41	82
47	-	-	-	-	-	-	-	-	27	-	81
48	-	-	-	5	-	10	-	20	-	40	80
49	-	-	-	-	-	-	-	-	-	-	79
50	-	-	-	-	-	-	13	-	26	39	78
51	-	-	-	-	-	-	-	-	-	-	77
52	-	-	-	-	-	-	-	19	-	38	76
53	-	-	-	-	-	-	-	-	25	-	75
54	-	-	-	-	-	-	-	-	-	37	74
55	-	-	-	-	-	-	-	-	-	-	73
56	-	-	3	-	6	9	12	18	24	36	72
57	-	-	-	-	-	-	-	-	-	-	71
58	-	-	-	-	-	-	-	-	-	35	70
59	-	-	-	-	-	-	-	-	23	-	69
60	-	-	-	-	-	-	-	17	-	34	68
61	-	-	-	-	-	-	-	-	-	-	67
62	-	-	-	-	-	-	11	-	22	33	66
63	-	-	-	-	-	-	-	-	-	-	65
64	-	2	-	4	-	8	-	16	-	32	64
65	-	-	-	-	-	-	-	-	21	-	63
66	-	-	-	-	-	-	-	-	-	31	62
67	-	-	-	-	-	-	-	-	-	-	61
68	-	-	-	-	5	-	10	15	20	30	60

Parameter value	interval between clock pulses in notes										
	1/2	1/2 triplet	1/4	1/4 triplet	1/8	1/8 triplet	1/16	1/16 triplet	1/32	1/32 triplet	1/64 triplet
69	-	-	-	-	-	-	-	-	-	-	59
70	-	-	-	-	-	-	-	-	-	29	58
71	-	-	-	-	-	-	-	-	19	-	57
72	-	-	-	-	-	7	-	14	-	28	56
73	-	-	-	-	-	-	-	-	-	-	55
74	-	-	-	-	-	-	9	-	18	27	54
75	-	-	-	-	-	-	-	-	-	-	53
76	-	-	-	-	-	-	-	13	-	26	52
77	-	-	-	-	-	-	-	-	17	-	51
78	-	-	-	-	-	-	-	-	-	25	50
79	-	-	-	-	-	-	-	-	-	-	49
80	1	-	2	3	4	6	8	12	16	24	48
81	-	-	-	-	-	-	-	-	-	-	47
82	-	-	-	-	-	-	-	-	-	23	46
83	-	-	-	-	-	-	-	-	15	-	45
84	-	-	-	-	-	-	-	11	-	22	44
85	-	-	-	-	-	-	-	-	-	-	43
86	-	-	-	-	-	-	7	-	14	21	42
87	-	-	-	-	-	-	-	-	-	-	41
88	-	-	-	-	-	5	-	10	-	20	40
89	-	-	-	-	-	-	-	-	13	-	39
90	-	-	-	-	-	-	-	-	-	19	38
91	-	-	-	-	-	-	-	-	-	-	37
92	-	-	-	-	3	-	6	9	12	18	36
93	-	-	-	-	-	-	-	-	-	-	35
94	-	-	-	-	-	-	-	-	-	17	34
95	-	-	-	-	-	-	-	-	11	-	33
96	-	1	-	2	-	4	-	8	-	16	32
97	-	-	-	-	-	-	-	-	-	-	31
98	-	-	-	-	-	-	5	-	10	15	30
99	-	-	-	-	-	-	-	-	-	-	29
100	-	-	-	-	-	-	-	7	-	14	28
101	-	-	-	-	-	-	-	-	9	-	27
102	-	-	-	-	-	-	-	-	-	13	26
103	-	-	-	-	-	-	-	-	-	-	25
104	-	-	1	-	2	3	4	6	8	12	24
105	-	-	-	-	-	-	-	-	-	-	23
106	-	-	-	-	-	-	-	-	-	11	22
107	-	-	-	-	-	-	-	-	7	-	21
108	-	-	-	-	-	-	-	5	-	10	20
109	-	-	-	-	-	-	-	-	-	-	19

Table 2 – Conversion of parameter value to length of arpeggiator interval (continued)

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Table 2 – Conversion of parameter value to length of arpeggiator interval (continued)											
Parameter value	interval between clock pulses in notes										
	1/2	1/2 triplet	1/4	1/4 triplet	1/8	1/8 triplet	1/16	1/16 triplet	1/32	1/32 triplet	1/64 triplet
110	-	-	-	-	-	-	3	-	6	9	18
111	-	-	-	-	-	-	-	-	-	-	17
112	-	-	-	1	-	2	-	4	-	8	16
113	-	-	-	-	-	-	-	-	5	-	15
114	-	-	-	-	-	-	-	-	-	7	14
115	-	-	-	-	-	-	-	-	-	-	13
116	-	-	-	-	1	-	2	3	4	6	12
117	-	-	-	-	-	-	-	-	-	-	11
118	-	-	-	-	-	-	-	-	-	5	10
119	-	-	-	-	-	-	-	-	3	-	9
120	-	-	-	-	-	1	-	2	-	4	8
121	-	-	-	-	-	-	-	-	-	-	7
122	-	-	-	-	-	-	1	-	2	3	6
123	-	-	-	-	-	-	-	-	-	-	5
124	-	-	-	-	-	-	-	1	-	2	4
125	-	-	-	-	-	-	-	-	1	-	3
126	-	-	-	-	-	-	-	-	-	1	2
127	-	-	-	-	-	-	-	-	-	-	1
Note.: *) tempo of arpeggiator is controlled by internal clock generator											

3. MIDI IMPLEMENTATION

Interface has only MIDI input - therefore it only receives MIDI commands. Interface recognizes channel commands, common system commands and System Exclusive messages.

3.1. CHANNEL COMMANDS

Interface receives MIDI commands on selected MIDI channel (parameter "MIDI Channel"). In OMNI mode, interface receives data on all 16 MIDI channels simultaneously.

3.1.1. NOTE ON/OFF

Interface receives Note On/Off on selected MIDI channel. "Key Shift" parameter defines assignment of MIDI notes to instrument's keys. When four valid MIDI notes are received (all four tone generators are sounding), all following received MIDI Note commands are processed according to „Key Priority" parameter setting.

3.1.2. CONTROL CHANGES

Interface recognizes standard MIDI controllers Nr. 64, 120, 121, 123. Other controllers are used for adjusting temporary settings of internal parameters (controllers 16 to 19). All acceptable controllers are received on MIDI channel chosen by "MIDI Channel" parameter.

CC 64 – Hold

The controller works in standard way: It holds tone generators sounding all the time while the "Hold" pedal is pressed. Values (second databyte) 64 to 127 are recognized as ON (pedal pressed), values 0 to 63 are recognized as OFF (pedal released).

If the controller is active and Note On command for currently sounding note is received, the envelope generator is not trigged again – therefore percussive sounds are not played.

CC 120 – All Sound Off

When the controller is received (second databyte must have value of 0) all tone generators are muted regardless whether they are kept active by "Note On" command or the "Hold" controller.

CC 121 – Reset All Controllers

When the controller is received (the second databyte must have value of 0) „Hold" controller is switched off and „Pitch Wheel" controller is adjusted into center position.

CC 123 – All Notes Off

When the controller is received (the second databyte must have value of 0) all tone generators are muted if "Hold" controller is inactive. If "Hold" is active "All Notes Off" command is executed after "Hold" pedal release.

CC 16 – Key Shift

Received value of the controller (its second databyte) adjusts the "Key Shift" parameter - see pic. 3 and tab. 3. Value of the parameter is adjusted only temporarily - until next instrument restart.

| Table 3 – Conversion of CC 16 value to "Key Shift" parameter value (in semitones)															
CC	Shift	CC	Shift	CC	Shift	CC	Shift	CC	Shift	CC	Shift	CC	Shift	CC	Shift
0	+0	16	+10	32	+21	48	+31	64	+42	80	+53	96	+63	112	+74
1	+0	17	+11	33	+21	49	+32	65	+43	81	+53	97	+64	113	+75
2	+1	18	+11	34	+22	50	+33	66	+43	82	+54	98	+65	114	+75
3	+1	19	+12	35	+23	51	+33	67	+44	83	+55	99	+65	115	+76
4	+2	20	+13	36	+23	52	+34	68	+45	84	+55	100	+66	116	+77
5	+3	21	+13	37	+24	53	+35	69	+45	85	+56	101	+67	117	+77
6	+3	22	+14	38	+25	54	+35	70	+46	86	+57	102	+67	118	+78
7	+4	23	+15	39	+25	55	+36	71	+47	87	+57	103	+68	119	+79
8	+5	24	+15	40	+26	56	+37	72	+47	88	+58	104	+69	120	+79
9	+5	25	+16	41	+27	57	+37	73	+48	89	+59	105	+69	121	+80
10	+6	26	+17	42	+27	58	+38	74	+49	90	+59	106	+70	122	+81
11	+7	27	+17	43	+28	59	+39	75	+49	91	+60	107	+71	123	+81
12	+7	28	+18	44	+29	60	+39	76	+50	92	+61	108	+71	124	+82
13	+8	29	+19	45	+29	61	+40	77	+51	93	+61	109	+72	125	+83
14	+9	30	+19	46	+30	62	+41	78	+51	94	+62	110	+73	126	+83
15	+9	31	+20	47	+31	63	+41	79	+52	95	+63	111	+73	127	+84

**Pic. 3 – Conversion of CC 16 value to "Key Shift" parameter value**
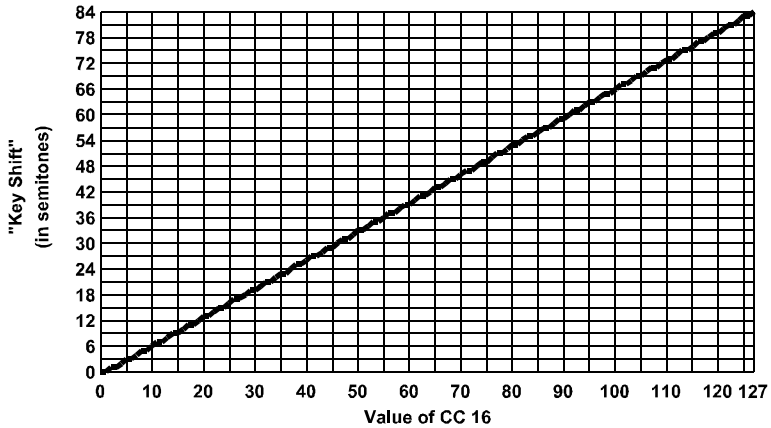
CC 17 – Key Priority

Received value of the controller (its second databyte) adjusts the „Key Priority" parameter - see pic. 4 and tab. 4. Value of the parameter is adjusted only temporarily - until next instrument restart.

Table 4 – Conversion of CC 17 value to "Key Priority" parameter value			
CC	Priority	CC	Priority
0 ~ 31	Last	64 ~ 95	Lower
32 ~ 63	Higher	96 ~ 127	None

Pic. 4 – Conversion of CC 17 value to "Key Priority" parameter value
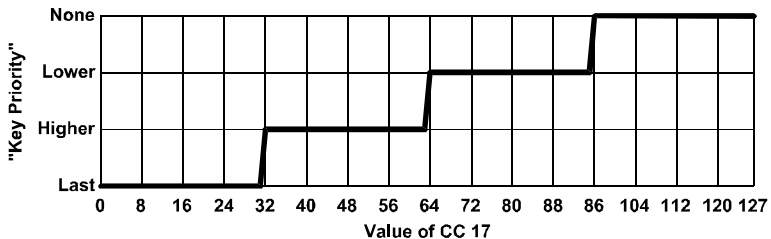
CC 18 – Pitch Wheel Range

Received value of the controller (its second databyte) adjusts the "Pitch Wheel Range" parameter - see pic. 5 and tab. 5. Value of the parameter is adjusted only temporarily - until next instrument restart.

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Table 5 – Conversion of CC 18 value to "Pitch Wheel Range" parameter value (in semitones)									
CC	Range	CC	Range	CC	Range	CC	Range	CC	Range
0 ~ 4	±0	25 ~ 29	±5	50 ~ 54	±10	75 ~ 79	±15	100 ~ 104	±20
5 ~ 9	±1	30 ~ 34	±6	55 ~ 59	±11	80 ~ 84	±16	105 ~ 109	±21
10 ~ 14	±2	35 ~ 39	±7	60 ~ 64	±12	85 ~ 89	±17	110 ~ 114	±22
15 ~ 19	±3	40 ~ 44	±8	65 ~ 69	±13	90 ~ 94	±18	115 ~ 119	±23
20 ~ 24	±4	45 ~ 49	±9	70 ~ 74	±14	95 ~ 99	±19	120 ~ 127	±24

Pic. 5 – Conversion of CC 18 value to "Pitch Wheel Range" parameter value
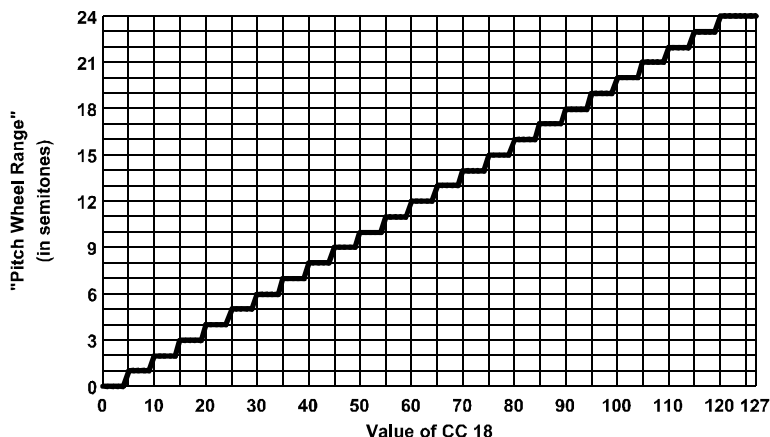
CC 19 – Arpeggio Clock Rate

Received value of the controller (its second databyte) adjusts the "Arpg Clock Rate" parameter. Value of the parameter is adjusted only temporarily - until next instrument restart.

3.1.3. PITCH WHEEL (PITCH BEND)

"Pitch Wheel" ("Pitch Bend") has standard function – it changes the tune of played notes. The minimum / maximum range is adjusted by the „Pitch Wheel Range" parameter (±0 to ±24 semitones).

Since the interface does not have direct access to control voltage (CV) of tone generators, the tone is not detuned continuously but in semitone steps. Together with note tune changes the envelope generators are triggered.

3.2. COMMON SYSTEM COMMANDS

3.2.1. CLOCK

If "Arpg Clock Rate" parameter is equal to 0, MIDI clock commands are ignored. For values of "Arpg Clock Rate" higher than 0, interface receives synchronization impulses of MIDI Clock (status byte F8h) for arpeggiator tempo (see chapter 2.5.).

Maximum arpeggiator tempo is limited by the instrument's hardware. When extremely high speeds of MIDI Clock and song tempo are used, the arpeggiator can play out of the tempo or omit several notes.

3.2.2. RESET

Complete interface reset is done after receiving "Reset" command (status byte FFh) – all parameters are set to their default values stored in internal memory.

3.3. SYSTEM EXCLUSIVE MESSAGES

System Exclusive communication enables the user to adjust values of all interface parameters.

System Exclusive Message structure is always as follows:

F0h	Start SysEx
00h 20h 21h	Manufacturer ID
ii	Device ID
57h	Model ID
aa	Address
dd…dd	Data
xx	Checksum
F7h	End SysEx

The description of values is as follows:

ii : Identification number of the interface – same as the actual number of the MIDI channel (00h to 0Fh) or universal ID (7Fh).
aa : Parameter number. Allowed address range is 00h to 05h :
   00h = **MIDI Channel** – receiving MIDI channel
   01h = **Key Shift** – keyboard transpose
   02h = **Key Priority** – key priority parameter
   03h = **Pitch Wheel Range** – Pitch bend range
   04h = **Arpeggio Clock Rate** – clock source selection for the arpeggiator
   05h = **All** – change of all parameters in internal memory
   For addresses **aa** = 00h to 04h, value of one parameter is changed only temporarily – new value is valid until next change is done or the instrument is turned off.
   For address **aa** = 05h, values of all parameters are changed permanently, new values are stored in internal memory.
dd…dd : New value of the parameter(s)
   For addresses **aa** = 00h to 04h, datablock includes only one byte with value of parameter. For address **aa** = 05h, datablock includes block of five bytes with values of all parameters (in order: MIDI Channel, Key Shift, Key Priority, Pitch Wheel Range, Arpeggio Clock Rate).
xx : Checksum – seven-bit sum of the Model ID to Checksum bytes must be equal to zero.

For the **dd** data-byte:

aa = 00h →   **dd** = 00h ~ 10h, value 00h to 0Fh represents MIDI channel number 1 to 16, value 10h for OMNI
aa = 01h →   **dd** = 00h ~ 54h, value sets keyboard transposition in semitones +0 to +84
aa = 02h →   **dd** = 00h ~ 03h, value 00h sets priority "Last", value 01h sets "Higher", value 02h sets "Lower" and value 03h sets no priority "None" mode
aa = 03h →   **dd** = 00h ~ 18h, value adjusts maximum pitch bend range ±0 to ±24 semitones

aa = 04h →   **dd** = 00h ~ 7Fh, value 00h selects internal clock generator of the instrument, values 01h to 7Fh adjust speed for external MIDI Clock control

aa = 05h →   **dd…dd** is block of five databytes with values described above

Example 1.: Temporary change of MIDI channel to channel Nr. 1

Start SysEx	F0h	
Manufacturer ID	00h 20h 21h	
Device ID	7Fh	(universal ID)
Model ID	57h	
Address	00h	(parameter "MIDI Channel")
Data	00h	(1st channel)
Checksum	29h	(57h+00h+00h+29h = 00h)
End SysEx	F7h	

Example 2.: Permanent change of all parameters to values - MIDI Channel = OMNI, Key Shift = 41, Key Priority = NONE, Pitch Wheel Range = ±24 semitones, Arpeggio Clock Rate = 1/32

Start SysEx	F0h	
Manufacturer ID	00h 20h 21h	
Device ID	7Fh	(universal ID)
Model ID	57h	
Address	05h	(all parameters)
Data	10h 29h 03h 18h 7Dh	(values listed above)
Checksum	53h	(57h+05h+10h+29h+03h+18h+7Dh+53h = 00h)
End SysEx	F7h	

For easier SysEx Message creation please use the software generator available on enclosed CD-ROM or at "http://www.chd-el.cz".

Cakewalk™ or Sonar™ users can use pre-defined Studio Ware Panel for easier operation, available on enclosed CD-ROM.

4. WARRANTY CONDITIONS

Equipment comes with **thirty-month warranty** starting from the date of equipment take-over by the customer. This date must be specified on warranty list together with dealer's confirmation.

During this period of time, all defects of equipment or its accessories, caused by defective material or faulty manufacturing, will be removed free of charge.

Warranty repair is asserted by the customer against the dealer.

Warranty period is to be extended for the time period, during which the product was under the warranty repair.

Relevant legal regulations take effect in case of cancellation of purchase contract.

Customer will lose the right for free warranty repair, if he will not be able to submit properly filled out warranty list or if the defects of the product had been caused by:

- unavoidable event (natural disaster),
- connecting the device to incorrect supply voltage,
- inputs or outputs overloading by connecting the signals source or load source with not-corresponding characteristics etc.,
- faulty equipment operation, which is in conflict with instructions referred-to in the operating manual,
- mechanical damage caused by customer during transportation or usage of equipment,
- unprofessional interference with the equipment or by equipment modification without manufacturer's approval.

APPENDIX

A. MIDI IMPLEMENTATION CHART

Device : **MP-KBD**   Date : 5 / 2008
Model : **8-433**   Version : 1.0

Function		Transmission	Reception	Remarks
Basic	Default	X	13	
Channel	Changed		1~16	[1]
Mode	Default	X	Mode 3	[2]
	Messages		X	
Note Number		X	0~127	[3]
Velocity	Note ON	X	X	
	Note OFF	X	X	
After	Key's	X	X	
Touch	Channel's	X	X	
Pitch Bender		X	O	
Control	16	X	O	Own CC – Key Shift
Changes	17	X	O	Own CC – Key Priority
	18	X	O	Own CC – Pitch Wheel Range
	19	X	O	Own CC – Arpg Clock Rate
	64	X	O	Hold
	120	X	O	All Sound Off
	121	X	O	Reset All Controllers
Program Change		X	X	
System Exclusive		X	O	See description
System	Song Position	X	X	
Common	Song Select	X	X	
	Tune	X	X	
System	Clock	X	O	
Real Time	Command	X	X	
Others	Local ON/OFF	X	X	
	All Notes Off	X	O	
	Active Sensing	X	X	
	Reset	X	O	

Notes :
[1] Can be changed by SysEx Msg
[2] Can be changed to Mode 1 by SysEx Msg
[3] Only 44 Notes can be accepted at a time - range depends on "Key Shift" parameter setting

Mode 1 : **OMNI ON, POLY**   Mode 2 : **OMNI ON, MONO**   **O** : Yes
Mode 3 : **OMNI OFF, POLY**   Mode 4 : **OMNI OFF, MONO**   **X** : No