RETROKITS RK-006 MIDI IMPLEMENTATION

This is a technical document containing a list of MIDI System Exclusive commands you can use to program or read the RK-006 Master hub

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GENERAL RK006 SYSEX FORMAT:

```
F0 00 21 23 00 06 <CMD/RSP> <args...> F7

- each command will be acknowledged with a response from the 005.
- <args> are 7-bit packed: 7 bytes of 7-bit data is prequelled by a byte
  containing the MSBs
```

0x00:INQUIRY request

```
F0 00 21 23 00 06 00  F7
```

0x40:INQUIRY response

```
F0 00 21 23 00 06 40 00 10 00 12 00 F7
                  |  |  |  |  |  |
                  |  |  |  |  +--+-- SW version 16 bit, little endian, BCD:
                  |  |  |  |         so in this example 12 00 = 0x0012  =
                  |  |  |  |         0.1.2  (highest nibble not used)
                  |  |  +--+-------- HW version 16 bit, little endian, BCD:
                  |  |               so in this example 10 00 = 0x0010  =
                  |  |               1.0  (both highest nibbles not used)
                  |  +-------------- MSBs
                  +----------------- INQUIRY RESPONSE
```

SETPARAM_REQ

```
F0 00 21 23 00 06 03 00 <paramnr> <paramval> F7
```

SETPARAM_RSP

```
F0 00 21 23 00 06 43 00 <paramnr> <paramval> F7
```

GETPARAM_REQ

```
F0 00 21 23 00 06 04 00 <paramnr> F7
```

GETPARAM_RSP

```
F0 00 21 23 00 06 43 00 <paramnr> <paramval> F7
```

FACTORY_RESET_REQ

```
F0 00 21 23 00 06 05 F7
```

FACTORY_RESET_RSP

```
F0 00 21 23 00 06 45 F7
```

COMMITPARAMS_REQ

```
F0 00 21 23 00 06 07 00 <preset_nr> F7
F0 00 21 23 00 06 47 00 <res> F7
```

RECALL_PRESET_REQ
F0 00 21 23 00 06 0F 00 <preset_nr> F7

RECALL_PRESET_RSP
F0 00 21 23 00 06 4F 00 <res> F7

COMMITPARAMS_RSP
<res>
0 : OK
<>0 : failure code

<preset>
0..9 : ROM presets
(cannot be stored ! -> i.e. COMMIT_PRESET_REQ will fail for these)
10..11 : USER presets

<paramnr>

```
    0 = SOFTTHRU              : 0=off, 1=auto (only in stand-alone), 2=always
    1 = POLYMUX_MODE          : b76543210
                              :   ||||||||
                              :   |||||+++--> 000 = OFF
                              :   |||||       001 = port9,10
                              ;   |||||       010 = port8,9,10
                              ;   |||||       011 = port7,8,9,10
                              ;   |||||       100 = port6,7,8,9,10
                              ;   |||||       101 = port1,2,3,4,5,6,7,8,9,10
                              ;   |||||       110 =
                              ;   |||||       111 = -
                              :   ||||+-----> reserved
                              :    ++++------> input MIDI channel 1..16
    2 = ROUTING_MODE          ; 0 = off
                              ; 1 = split-brain: IN1 -> OUT1..5
                              ;                  IN2 -> OUT6..10
                              ;
                              ; 2 = MPE/chn splitout: CHN1 -> OUT1
                              ;                        CHN2 -> OUT2
                              ;                        ..
                              ;                        CHN10-> OUT10
                              ;                        CHN11-> OUT1..10
                              ;                        ..
                              ;                        CHN16-> OUT1..10
                              ; 3..255 = reserved
    3 = QUIRKS                ; b76543210
                              ;  |      +-> candlelight
                              ;  +--------> USBDEV quirk : identify as
                              ; 1xIN/1xOUT to avoid Android Chrome mobile
                              ; crash :-(
    4 = BOOT_INT_TEMPO        ; tempo of internal clock generator at boot
                              ;(in bpm: 0=off, 120=120.0bpm)
```

<paramnr> (continued)

```
    5 = RESERVED5
    6 = RESERVED6
    7 = RESERVED7

    8 = FILT0_VID_L     : filter #0 VID Low byte
                          VID:  0xFFFF=USB_HOST_ALL
                                0xFFFE=USB_DEVICE
                                0xFFFD=DIN
                                0x0000=disabled
    9 = FILT0_VID_H     : filter #0 VID High byte
   10 = FILT0_PID_L     : filter #0 PID Low byte     PID
   12 = FILT0_CHN_L     : filter #0 channels 1..8
                          (bit0=channel1, bit1=channel2, etc.)
   13 = FILT0_CHN_H     : filter #0 channels 9..16
                          (bit0=channel9, bit1=channel10, etc.)
   14 = FILT0_EV        : filter #0 event filter:
                          b76543210
                          |||||||+--> midi clock
                          ||||||+---> midi start/stop/continue
                          |||+++----> reserved
                          ||+-------> OUT direction
                          |+--------> INP direction
                          +---------> ALL events
   15 = FILT0_RESERVED
   16 = FILT0_CABLES_L   : filter #0 cable match (bitmask)
                          in case of USB: JACK1..4 (for jacks 1..4)
   17 = FILT0_CABLES_H    in case of DIN: PORTS1..10 (1,2=IN/OUT, 3..10=OUT)
```

Filter block above repeated for 1-4:

```
filter #1
   18 = FILT1_VID_L
   19 = FILT1_VID_H
   20 = FILT1_PID_L
   21 = FILT1_PID_H
   22 = FILT1_CHN_L
   23 = FILT1_CHN_H
   24 = FILT1_EV
   25 = FILT1_RESERVED
   26 = FILT1_CABLES_L
   27 = FILT1_CABLES_H
```

```
filter #2
   28 = FILT1_VID_L
   29 = FILT1_VID_H
   30 = FILT1_PID_L
   31 = FILT1_PID_H
   32 = FILT1_CHN_L
   33 = FILT1_CHN_H
   34 = FILT1_EV
   35 = FILT1_RESERVED
   36 = FILT1_CABLES_L
   37 = FILT1_CABLES_H
```

```
filter #3
   38 = FILT1_VID_L
   39 = FILT1_VID_H
   40 = FILT1_PID_L
   41 = FILT1_PID_H
   42 = FILT1_CHN_L
   43 = FILT1_CHN_H
   44 = FILT1_EV
   45 = FILT1_RESERVED
   46 = FILT1_CABLES_L
   47 = FILT1_CABLES_H
```

```
filter #4
   48 = FILT1_VID_L
   49 = FILT1_VID_H
   50 = FILT1_PID_L
   51 = FILT1_PID_H
   52 = FILT1_CHN_L
   53 = FILT1_CHN_H
   54 = FILT1_EV
   55 = FILT1_RESERVED
   56 = FILT1_CABLES_L
   57 = FILT1_CABLES_H
```

```
58 = OUT1_MODE  : MIDI mode
                :  b76543210
                :   0|||||||
                :    +++++++--> reserved
                :
                : GATE-mode
                :  b76543210
                :   1|||||||
                :    ||||||+--> 0=POS, 1=NEG
                :    |||||+---> 0=SHORT, 1=LONG
                :    ||||+----> 0=gated by start/stop,
                :    ||||       1=not gated by start/stop
                :    ||||
                :    ++++-----> src   : 0000 = tempo clock
                :                       0001 = key gate all notes
                :                       0010 = key gate filtered by
                :                              note_number==36+OUTPORT
                :                     (so PORT1=36 only, PORT2=37 only etc.)
                :                       0011 =
                :                       0100 =
                :                       0101 =
                :                       0110 =
                :                       0111 = on
                :                       1000 = CV controller #1
                :                              (modwheel)
                :                       1001 = CV controller #2
                :                              (breath controller)
                :                       1010 = CV controller #70
                :                              (Sound Controller 1)
                :                       1011 = CV controller #71
                :                              (Sound Controller 2)
                :                       1100 = CV pitchbend
                :                       1101 = CV keytrack (key 36 and up)
                :                       1110 =
                :                       1111 =

   59 = OUT1_PPSN                : PPSN for clock divider (default = 24*4)
```

OUT_MODEx + PPSN definition above repeated for every port

```
Port #2
   60 = OUT2_MODE
   61 = OUT2_PPSN

Port #3
   62 = OUT3_MODE
   63 = OUT3_PPSN

Port #4
   64 = OUT4_MODE
   65 = OUT4_PPSN

Port #5
   66 = OUT5_MODE
   67 = OUT5_PPSN

Port #6
   68 = OUT6_MODE
   69 = OUT6_PPSN

Port #7
   70 = OUT7_MODE
   71 = OUT7_PPSN

Port #8
   72 = OUT8_MODE
   73 = OUT8_PPSN

Port #9
   74 = OUT9_MODE
   75 = OUT9_PPSN

Port #10
   76 = OUT10_MODE
   77 = OUT10_PPSN
```