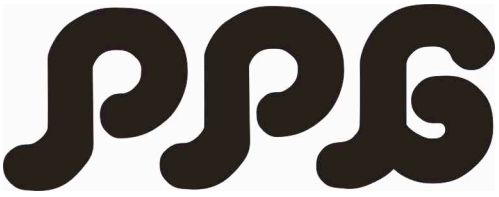

wave 2.2
wave 2.3
evu

MIDI IMPLEMENTATION

Content

1 Introduction

This paper describes the MIDI implementation with the following original versions of the operating systems
Wave 2.3 Synthesizer: Version 6.0
Wave 2.2 Synthesizer: Version 6.0
EVU Expander: Version 3.0

After power up, the instrument will send/receive on MIDI channel 1.

The paper does not include any information of later developments or changes by third party companies.

2 MIDI Modus

The MIDI mode is defined with the following procedure:

a) Wave 2.2 (or Wave 2.3 in Wave 2.2 mode)
Press <Program> to move to the main page
Move the cursor to Pos “MIDI”
Enter the MIDI definition (see below)

b) Wave 2.3
Press <Datatransfer> to move to the lower right of the main page
Move the cursor to the right to switch to the second main page
Move the cursor to Pos “MIDI”
Enter the MIDI definition (see below)

c) EVU
Press <Store> and <8> to prepare for MIDI definition
Press <P> and enter the MIDI definition (see below)

MIDI = 00	MIDI off. The instrument does not receive or send MIDI information
MIDI = 01 .. 16	MIDI Poly mode. The instrument sends and receives MIDI on the defined channel
MIDI = 17	MIDI Mono mode 1 (Wave 2.3 / EVU only): The instrument sends and receives on a different channel for each bank. Channels 1 to 8 were used.
MIDI = 18	MIDI Mono mode 2 (Wave 2.3 / EVU only): The instrument sends and receives on a different channel for each bank. Channels 9 to 16 were used.

In MIDI mono mode, the Wave sends and receives controller commands on the corresponding channel

3 Controller

The following Table lists the defined controllers

Function	Controller Number
Modulation Wheel	#1
Waves	#2
Filter Cutoff	#4
Volume	#7
Release Time	#8
Sustain Switch	#64, 66, 67
All Notes Off	#123, 125 ,126, 127
Poly Mode	#127 (selects the MIDI channel see above)
Mono Mode	#128

4 SysEx

Instrument pararameters can be received via MIDI SysEx. The following sequence is expected.

11110000	Status Byte	(F0 H)	→ **$F0**
0iiiiiii	Identification nummer for PPG	(i = 41)	→ **$29**
0sssnnnn	Substatus (s = 2) Channel-Nummer	(n = 0-15)	→ **$2x**
0mmmmmoo	Model (m = 0) Parameter-Bit 7,8	(o = 1)	→ **$03**
0ppppppp	Parameter-Bit 0-6	(p = 0-30)	→ **$yy**
0ddddddd	Parameterwert	(d = 0-127)	→ **$zz**
11110111	EOX	(F7 H)	→ **$F7**

x is used only in MIDI mono mode. In this mode it defines the Bank which will be addressed. In MIDI mode 17, channels $00 - $07 will be used, in MIDI mode 18, channels $08 - $0F will be used.

yy is the parameter to be changed (see table below) → 00 – 22 ($00 - $16), 20 ($1E)

zz is the value of the parameter to be changed → 00 – 127 ($00 - $7F)

List of the voice parameters:

0,1	($00. $01)	=	LFO Rate
2	($02)	=	WAVE Select Main OSC.
3	($03)	=	Fiter Cutoff
4	($04)	=	Envelope 1 Attenuator VCF
5	($05)	=	Envelope 2 Attenuator WAVE-Select
6	($06)	=	VCF Emphasis
7	($07)	=	Envelope 2 Attenuator Loudness
8	($08)	=	Attack Envelope 1
9	($09)	=	Attack Envelope 2
10	($0A)	=	Decay Envelope 1
11	($0B)	=	Decay Envelope 2
12	($0C)	=	Sustain Envelope 1
13	($0D)	=	Sustain Envelope 2
14	($0E)	=	Release Envelope 1
15	($0F)	=	Release Envelope 2
16	($10)	=	LFO Delay Time
17	($11)	=	Attack Envelope 3
18	($12)	=	LFO WAVE-Shape
19	($13)	=	Release Envelope 3
20	($14)	=	MOD-Wheel
21	($15)	=	Envelope 3 Attenuator
22	($16)	=	WAVE Select Sub.OSC.
30	($1E)	=	SOUND BANK SELECT: Selects one of the 8 sound banks. This defines also the bank that will receive the program change commands.

Example: Set the Attack of Envelope 2 to the value 33

$F0 $29 $20 $03 $09 $21 $F7

$F0: Start of SysEx
$29: PPG ID
$20: Sub status and Channel (ignored if not in MIDI mono mode)
$03: Model ID
$09: Attack Envelope 2
$21: Value 33
$F7: End of SysEx

5 Addendum: Hints

1) A well-known issue with PPG MIDI processing is buffer overflow. If the in strument receives too many MIDI commands, it is not fast enough to process all the commands. This might lead to garbage interpretation. The recommendation is to reduce the MIDI data flow as much as possible. Before sending to the instrument, filter out
   - controler commands which are not used,
   - Polyphonic Key Pressure commands
   - Channel Pressure commands
   - system common messages (maybe exclude SysEx)
   - system real time messages

2) It is observed that the instruments have troubles to process volume values higher than 124. Therefore it is suggested to only use controller commands for volume up to 124.