AX-7 MIDI Implementation

1 – RECEIVE DATA
All recognized MIDI messages from MIDI-IN are retransmitted on MIDI-OUT-A, with no effect on internal AX-7 performance, except for the AX-7 Patch SYS-EX messages that are used to modify the AX-7 parameter area.
Refer to “System exclusive message” description.

2 – TRANSMIT DATA

Channel voice Message

■ Note off

Status Second Third  
9nH kkH 00H

n=MIDI channel number: 0H – FH (ch.1 – ch.16)  
kk=Note number: 00H – 7FH (0 – 127)  
00H = Velocity (0)

■ Note on

Status Second Third  
9nH kkH vvH

n=MIDI channel number: 0H – FH (ch.1 – ch.16)  
kk=Note number: 00H – 7FH (0 – 127)  
vv=Velocity 01H – 7FH (1 – 127)

■ Control Change

Status Second Third  
BnH ccH vvH

n=MIDI channel number: 0H – FH (ch.1 – ch.16)  
cc=Control change number: 00H – 7FH (0 – 127)  
vv=Control change value 00H – 7FH (0 – 127)

■ Program Change

Status Second  
CnH ppH

n=MIDI channel number: 0H – FH (ch.1 – ch.16)  
pp=program change number: 00H – 7FH (prog. 1 – prog.128)

■ Channel After Touch

Status Second  
DnH vvH

n=MIDI channel number: 0H – FH (ch.1 – ch.16)  
vv=value: 00H – 7FH (0 – 127)
Pitch Bend Change

<table>
<thead>
<tr>
<th>Status</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnH</td>
<td>llH</td>
<td>mmH</td>
</tr>
</tbody>
</table>

n=MIDI channel number: 0H – FH (ch.1 – ch.16)
l, mm=value: 00H, 00H – 7FH, 7FH (-8192 ~ +8191)

System Realtime Message

- Active Sensing
  
  Status
  
  FEH

  * This will be transmitted constantly at intervals of approximately 250ms

- Timing Clock
  
  Status
  
  F8H

- Start
  
  Status
  
  FAH

- Stop
  
  Status
  
  FCH

System Exclusive Message

- Data Transfer
  
  AX-7 transmit “Data set 1 (DT1)” message when Data Dump Function is activated

- Data set 1 (DT1) (12H)

<table>
<thead>
<tr>
<th>Status</th>
<th>Data byte</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0H</td>
<td>41H, 10H, 00H, 02H, 12H, aaH, bbH, ccH, ddH, ....eeH, sum,</td>
<td>F7H</td>
</tr>
</tbody>
</table>

Byte Description

- 41H Manufacturer’s ID (Roland)
- 10H Device ID (dev => 10H)
- 00H Model ID (MSB) (Model AX-7)
- 02H Model ID (LSB)
- 12H Command ID (DT1)
Each AX-7 Patch is composed of 49 bytes. When these bytes are transmitted by SYS EX, they are divided in eight byte groups.
The first data byte of each group contains the status of the BIT7 contained in each one of the next seven bytes.
3 – AX-7 Patch address

**Bulk Dump**
You can send or receive bulk data which contains a large amount of parameter data by using Bulk Dump communication. It is used for storing bulk data in a sequencer or a computer.

The address for each AX-7 patch is as follows:

<table>
<thead>
<tr>
<th>Patch Number</th>
<th>1st address byte</th>
<th>2nd address byte</th>
<th>3rd address byte</th>
</tr>
</thead>
<tbody>
<tr>
<td>PATCH-001----&gt;</td>
<td>01H</td>
<td>00H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-002----&gt;</td>
<td>01H</td>
<td>01H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-003----&gt;</td>
<td>01H</td>
<td>02H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-004----&gt;</td>
<td>01H</td>
<td>03H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-005----&gt;</td>
<td>01H</td>
<td>04H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-006----&gt;</td>
<td>01H</td>
<td>05H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-007----&gt;</td>
<td>01H</td>
<td>06H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-008----&gt;</td>
<td>01H</td>
<td>07H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-009----&gt;</td>
<td>01H</td>
<td>08H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-010----&gt;</td>
<td>01H</td>
<td>09H</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-011----&gt;</td>
<td>01H</td>
<td>0AH</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-012----&gt;</td>
<td>01H</td>
<td>0BH</td>
<td>00H</td>
</tr>
<tr>
<td>:</td>
<td>:</td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td>PATCH-127----&gt;</td>
<td>01H</td>
<td>7EH</td>
<td>00H</td>
</tr>
<tr>
<td>PATCH-128----&gt;</td>
<td>01H</td>
<td>7FH</td>
<td>00H</td>
</tr>
</tbody>
</table>
AX-7 Patch Structure

01) Upper Data Entry Assign
02) Lower Data Entry Assign
03) Split_value
04) Upper Midi Channel
05) Lower Midi Channel
06) Upper Volume
07) Lower Volume
08) Upper Panpot
09) Lower Panpot
10) Upper Expr
11) Lower Expr
12) Upper Reverb
13) Lower Reverb
14) Upper Chorus
15) Lower Chorus
16) Upper Delay
17) Lower Delay
18) Upper Portam
19) Lower Portam
20) Upper cc00
21) Lower cc00
22) Upper cc32
23) Lower cc32
24) Upper PgCh
25) Lower PgCh
26) Not used in AX-7
27) Not used in AX-7
28) Tempo
29) Transpose
30) bit0 Upper Hold On/Off
    bit1 Lower Hold On/Off
    bit2 Upper Modulation On/Off
    bit3 Lower Modulation On/Off
    bit4 Upper After Touch On/Off
    bit5 Lower After Touch On/Off
    bit6 Upper Pitch Bend On/Off
    bit7 Lower Pitch Bend On/Off
31) bit0,bit1 Upper velocity 0,0 LL; 0,1 L; 1,0 M; 1,1 H
    bit2,bit3 Lower velocity 0,0 LL; 0,1 L; 1,0 M; 1,1 H
    bit4 Upper Mono/Poly 0=MONO; 1=POLY
    bit5 Lower Mono/Poly 0=MONO; 1=POLY
    bit6 Transpose On/Off
32) bit0,bit1,bit2 Upper Octave 0,0,0 = –2; 0,0,1 = –1; 0,1,0 = 0; 0,1,1 = +1; 1,0,0 = +2
    bit3,bit4,bit5 Lower Octave 0,0,0 = –2; 0,0,1 = –1; 0,1,0 = 0; 0,1,1 = +1; 1,0,0 = +2
    bit6,bit7 Keyboard mode 0,0 = Whole upper; 0,1= Whole lower; 1,0=Split; 1,1=Layer
33) bit0,bit1 Upper Foot Pedal 0,0 = OFF; 0,1 = ON; 1,0=INV
    bit2,bit3 Lower Foot Pedal 0,0 = OFF; 0,1 = ON; 1,0=INV
    bit4,bit5 Start/Stop/F8 transmission 0,0 = OUT A; 0,1 = OUT B; 1,0 = OUT A + OUT B
    bit6 F8 transmission On/Off

* In the AX-7, the successive bytes are all unused