"Maple Bus 1.0"
Peripheral Hardware Specifications

pop'n music controller
for KONAMI Co.

Revision 0.90

<u>Revision:</u>

    0.80   October 21 1998   First distribution

    0.90   November 17 1998   Second distribution   P9 Date correction 10/22 → 10/29

* Items added in the latest revision are indicated by ▮. Items deleted in the latest revision are indicated by ▬.

CONTENTS:

1   pop'n music CONTROLLER FUNCTION CONDITIONS

1.1   pop'n music controller function definition

This section describes an input-type man-machine interface.
The pop'n music controller function conforms to the "Maple Bus 1.0" Standard Specifications and belongs to the "FT_0:Controller" function type.

1.2   Function elements

The pop'n music controller in composed of the following function elements.
These elements are found among the function elements defined in the FT_0:Controller function.
· Digital direction buttons   : Ra,La,Da,Ua
· Digital buttons   : A,B,C,X,Y,Start

1.3   Detailed description of constituent elements

The following is a detailed description of the each element comprising the
pop'n music controller function.

① Digital direction buttons   : Ra,La,Da,Ua
   These are digital type keys (buttons) which obtain 2 values: push and release (=ON/OFF).
   Ra primarily indicates the right side, right direction, La primarily indicates the left side, left direction, Da primarily indicates the bottom side,down direction, in front of the player, Ua primarily indicates the top side, up direction, away from the player.
   The values are: push = '0', release = '1'.

② Digital buttons   : A,B,C,X,Y,Start
   These are digital type keys (buttons) which obtain 2 values: push and release (=ON/OFF).
   Button arrangement is arbitrary.
   ON values for multiple keys (buttons) must be able to be detected simultaneously.
   The values are: push = '0', release = '1'.

2   pop'n music CONTROLLER FUNCTION OPERATION

The pop'n music controller function is manufactured in accordance with the operation of the "FT_0:Controller" function.

① Key scan

The key data for the digital keys (buttons) is constantly updated.

Also, data requests from the host are always promptly responded and replied to.

Key scan is without priority, and all keys (buttons) are readable simultaneously.

② Optimization and conditions

  a) The direction buttons and digital buttons are able to detect the ON value for a multiple number of buttons simultaneously.

  b) If two or more keys (buttons) are pressed simultaneously, keys not pressed will not produce ON (will not generate key data).

  c) A chattering cancel function is included.

3   DEVICE ID

The pop'n music controller device ID is in accordance with the device ID definition in the "Maple Bus 1.0" Standard Specifications.
The notation is that of the host's memory image.

3.1   Configuration of the pop'n music controller device ID.

The device ID consists of 16 bytes (128 bits).

Bit	7	6	5	4	3	2	1	0
1st Data	0	0	0	0	0	0	0	0
2nd Data	0	0	0	0	0	0	0	0
3rd Data	0	0	0	0	0	0	0	0
4th Data	0	0	0	0	0	0	0	1
5th Data	0	0	0	0	0	0	0	0
6th Data	0	0	0	0	0	0	0	0
7th Data	0	0	0	0	0	1	1	0
8th Data	1	1	1	1	1	1	1	1
9th Data	0	0	0	0	0	0	0	0
10th Data	0	0	0	0	0	0	0	0
11th Data	0	0	0	0	0	0	0	0
12th Data	0	0	0	0	0	0	0	0
13th Data	0	0	0	0	0	0	0	0
14th Data	0	0	0	0	0	0	0	0
15th Data	0	0	0	0	0	0	0	0
16th Data	0	0	0	0	0	0	0	0

Fig. 3.1 Device ID

FT   : Designates the function type the peripheral is equipped with.   (1st Data～4th Data)
FD1   : Designates the function definition block of the first function.   (5th Data～8th Data)
FD2   : Designates the function definition block of the second function. (9th Data～12th Data)
FD3   : Designates the function definition block of the third function.   (13th Data～16th Data)

① FT_0～FT_{31}: Function type
     Designates the function that the peripheral device is equipped with.
     There are 32 function types altogether.

② FD_{31}～FD_0: Function definition block
     Defines the individual elements which constitute the function.

4   DATA FORMATS

This section explains the pop'n music controller function data formats.
The notation is that of the host's memory image.

4.1   Read format

The read format is the key data format used when the pop'n music controller function data is read.
The data format size is 8 bytes.

Bit	7	6	5	4	3	2	1	0
1st Data	Ra	La	Da	Ua	Start	A	B	C
2nd Data	1	1	1	1	1	X	Y	1
3rd Data	0	0	0	0	0	0	0	0
4th Data	0	0	0	0	0	0	0	0
5th Data	1	0	0	0	0	0	0	0
6th Data	1	0	0	0	0	0	0	0
7th Data	1	0	0	0	0	0	0	0
8th Data	1	0	0	0	0	0	0	0

Fig. 4.1 Read format

Key data explanation

    1st   : Digital button data (ON=0, OFF=1)
    2nd   : Digital button data (ON=0, OFF=1)
    3rd   : Analog axis 1 (A1) data. Because there is no analog, this is designated as "00h".
    4th   : Analog axis 2 (A2) data. Because there is no analog, this is designated as "00h".
    5th   : Analog axis 3 (A3) data. Because there is no analog, the median point is designated as "80h".
    6th   : Analog axis 4 (A4) data. Because there is no analog, the median point is designated as "80h".
    7th   : Analog axis 5 (A5) data. Because there is no analog, the median point is designated as "80h".
    8th   : Analog axis 6 (A6) data. Because there is no analog, the median point is designated as "80h".

4.2   Write format

No write format exists for writing pop'n music controller function data.
pop'n music controller functions are read only.

5   pop'n music CONTROLLER FUNCTION INFORMATION

This chapter explains device-specific information (device statuses).
Data is recorded as is in order to prevent device statuses from being rewritten or erased.

5.1   Types

Fixed Device Status

> This is a set form of device status that must absolutely be designated. It consists of a 112 byte format.
> Operation and connection cannot be guaranteed unless all items are designated.

Free Device Status

> This is a device status that can be freely used by the individual devices.
> The volume is a maximum of 908 bytes.

5.2   Fixed Device Status

The Fixed Device Status must designate all of the following items.

① Device ID
>   Capacity   : 16 bytes (00000001000006FF0000000000000000)
>   Explanation   : This indicates the device ID for the Arcade Stick function.
>>   FT   : controller
>>   FD1   : Ra,Da,Ua,La,S,A,B,C,X,Y
>>   FD2   : none
>>   FD3   : none

② Destination
>   Capacity   : 1 byte (FFh)
>   Explanation   : Worldwide

③ Connection direction
>   Capacity   : 1 byte
>>   No expansion devices connect to the pop'n music controller, so this item is set to (00h).

④ Product name
>   Capacity   : 30 bytes
>   Description   : "pop'n music controller" is designated in one byte characters.
>>   A space code (20h) is inserted for unused space.

⑤ License
>   Capacity   : 60 bytes
>   Description   : "Produced By or Under License From SEGA ENTERPRISES,LTD" is designated in one byte characters.

A space code (20h) is inserted for unused space.

⑥ Standby current consumption

    Capacity   : 2 bytes

    Description   : The current consumption for temporary stop condition is designated in hexadecimal notation in units of 0.1mA.

                       The standby current consumption for pop'n music controller is 17mA, which is designated as "00-AA h".

⑦ Maximum current consumption

    Capacity   : 2 bytes

    Description   : The maximum current consumption is designated in hexadecimal notation in units of 0.1mA.

                       The maximum current consumption for pop'n music controller is 30mA, which is designated as "01-2C h".

5.3   Free Device Status

The Free Device Status area is available for product planners, developers, designers and programmers to enter any information they wish. It is obtained by the host with the All Device Request.
When using this area for application software, it must support data parallelism.

    "Version□1.000,1998/10/2229,315-6125-AK□,Da,Ua,Ra,La,a,b,c,x,y,Start□Bottonn"

6 AFTERWORD

Until the official version (Rev. 1.0) is distributed, contents will be modified to a small or large extent.