New Model Analog Controller(Revised Version:11/20/96)

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"PlayStation Expo" was held from November 1st till 4th at Makuhari Messe. We, SCEI exhibited the new model analog controller with vibration device for reference. Following is the release schedule and technical information of this new controller:

[1] Overview

The new controller is a standard controller with two 2-axis(horizontal and vertical directions) analog levers and vibration device to support even wider range of games.
All software functions except for the vibration device are either equivalent to the analog joystick mode or analog controller mode with additional buttons allocated to the analog levers.

[2] Design Overview

The new controller is a standard controller plus 2 analog levers. One lever is placed between "SELECT" and downward directional buttons, and the other between "START" and "X" buttons.

[3] Release

As of today, the detail schedule for both tool and mass production has not been determined. Please contact SCE Business Affairs if you have a plan to support the new model controller for titles that will be released by the end of this year.

[4] Technical Information

4-A Controller ID

Three controller IDs below can be selected with a mechanical switch:

- 0x41: Standard Controller
- 0x53: Analog Joystick
- 0x73: Analog Controller

4-B Vibration device

The vibration device can be set ON/OFF by only a program software. From safety point of view, when there is no data transmission with the controller for more than 140msec, the vibration device will be set off.

4-C Updated Library (LIBAPI)

As stated in the section 4-D, a new LIBAPI function for sending data to the controller is required for the ON/OFF operations. The updated LIBAPI library is planned to be released at the same time as the controller with the vibration device for programming.
Since data can be sent in parallel with receiving data(e.g. status data of the controller button) at every V-Sync interruption, it will not affect the CPU time available for an application. Moreover, sending ON/OFF data to the controller without the vibration device will not cause any problem.

4-D Specification of the New Library Function

SendPAD Sets controller send buffer

Syntax

```
void SendPAD(bufA, lenA, bufB, lenB )
char *bufA, *bugB;
long  lenA, lenB;
```

Arguments

bufA, bufB Buffer for sending data

lenA, lenB Length (in bytes) of the buffer for sending data Explanation

This function registers sending data buffer for controller
At every V-Sync interruption, the target device ID and data set to the buffer is sent. The buffer becomes invalid once it is sent.

Byte	Description
0	Flag to specify validity of the buffer data 0x00 Invalid, 0x01 Valid Other values Undefined
1	Target Device ID
2 -	Data to be Sent(Sending data length = Received data length)

Return Value

None

Remarks

Buffer Setting for New Analog Controller with Vibration device:

Target Device ID	0x03(Vibration), others:Vibration Off
Data to be sent (First Byte)	0x01:Vibration ON, 0x00:OFF Others: Undefined
(Second byte and after)	Always 0x00,others: Undefined

Warning:
Vibration device can be set on only within one V-Sync interval; between two V-Sync interruptions.
Thus to keep the vibration device on, following must be set at every V-Sync interruption.

- Target device ID
- Vibration: ON
- Buffer data flag: VALID

4-D Maximum Number of Concurrent Connections

Up to 2 controllers without multi-tap and 8 controllers with two multi-taps can be concurrently connected. This limit is equivalent to the standard controller.
Due to electricity limitation, only two controllers can set the vibration device on at the same time. This maximum number may be changed to the larger number upon release.

4-F How to operate Vibration device with multi-tap

To operate the new analog controller with vibration device when it is connected to a multi-tap, you need to use data transmission function SendTAP, in LIBTAP that will be released at the same time as the

development hardware with the vibration device. SendTAP has the same functional specification as SendPAD.

Following shows the details of send buffer used for SendTAP function:

Byte	Description
0	Flag to specify validity of the buffer data 0x00 Invalid, 0x01 Valid Other values Undefined
1	Target device ID of Controller A
2-6	Data to be sent to Controller A
7	Target device ID ofController B
8-12	Data to be sent to Controller B
13	Target device ID of Controller C
14-18	Data to be sent to Controller C
19	Target device ID of Controller D
20-24	Data to be sent to Controller D

To send a data in a buffer;
- Write 0x01 into the byte 0
- Call SendTAP function

Upon V-Sync interruption immediately after the function call, the data in a buffer is sent.

The target device ID (0x03 for Vibration device) and contents of the data to be sent(0x01 for ON) are the same forSendPAD function.

4-G Calibration

In Japan, the current acceptance criteria for the master titles that support the analog controller requires to include at least the built-in calibration function described below, and the same criteria applies to the analog controller with the vibration device as well:

0 position calibration
Setting the play(space for movement)
Sensitivity
Detection of max. stick movement value

4-H Life of Vibration Device

The life of the vibration device depends on the number of ON/OFF operations.

It is highly recommended not to set the vibration device ON and OFF many times as it extremely shorten the life.

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