

LibPad/Analog Controller FAQ 1.0

SCEA Developer Support

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BODY

1. Controller Types

- a) *What is the Standard Analog Controller?*

The 16-Button Analog Controller SCPH-1150 / 1180, introduced in the US in late 1996, is physically identical to the standard 16-Button Controller, with the exception of the joystick like buttons located below the Start and Select buttons, between the grips, and a Mode Button/LED.

The two “sticks” allow the user to interface the application in an analog fashion, as opposed to the on-off fashion of the digital D-Pad. Instead of the 0-1 value reported by digital buttons the application reads the status of the “sticks” as a positional value between 0 and 255, where ± 128 is the position relative to the origin, along the respective axis.

The Mode button allows the user to select the ID that the controller reports to the application. This allows the 16-Button Analog Controller to emulate the standard 16-Button Controller and the Analog Joystick.

In Japan, what is the SCPH-1150 in the US and UK, was released as the SCPH-1180. The 1180 is different from the 1150 in that it contains a motor in the grip which produces vibration. This vibration is of a binary type, where each frame the application simply sends the controller a 0: Vibration OFF or 1: Vibration ON.

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- b) *What is the Dual Shock Analog Controller?*

The Dual Shock Analog Controller SCPH-1180, is Sony's newest analog device. Physically it is identical to the 16-button Analog Controller SCPH-1150/1180. Functionally it differs from the 16-Button Analog Controller in that the Analog Joystick emulation is no longer supported, two modes of vibration are simultaneously available, and it supports Expanded Protocol for controller-to-PlayStation communications.

The Dual Shock Analog Controller supports the binary vibration of the Japanese 16-Button Analog Controller, thus it accepts old-style vibration commands (SendPad() in Libetc.lib) intended for the SCPH-1180. In addition, it contains a second actuator that supports variable vibration. This actuator accepts a value between 0-255 where 0 = Lowest Frequency and 255 = Highest Frequency. The Frequency effectively translates to the number of pulses per second.

Being an Expanded Protocol Controller, when used in conjunction with Libpad, the Dual Shock Analog Controller provides the following functionality:

- Query number of actuators (vibrator)
- Query actuators functions
- Query actuators current drain
- User specified alignment of actuator control data
- Check possible combinations of actuators that can be operated simultaneously
- Query ID modes supported by controller
- Switch ID modes from program
- Switch Lock/Unlock of Mode switch

c)What is the Analog Joystick?

The Analog Joystick is a flight-stick like controller, with two full-size joysticks providing analog input. The data from these sticks is interpreted in the same manner as the 16-Button Analog controller.

The Analog Joystick can also emulate the standard 16-button Controller.

d)What is the neGcon?

The neGcon is Namco's implementation of an analog controller, with a single "twist" interface as opposed to the "sticks" interface found on the Sony analog controllers. The neGcon uses the additional analog channels for three analog push-buttons.

2. Calibration

a)Must I provide a calibration screen for the Dual-Shock SCPH-1200?

No, you are not required to provide a calibration screen when supporting the Dual Shock Analog Controller. As a matter of fact, because the Dual Shock Analog Controller is "auto-calibrating" the TRC requires you DO NOT perform calibration for maximum travel (The minimum and maximum value obtained on each axis) or center (value obtained when no force is exerted on the stick).

This is not to say that you should not provide other forms of "calibration" such as, sensitivity, max value honored by the application, etc.

Note: it is strongly recommended that the application treat a value of 128 ± 25 as 0, effectively a dead-zone, in order to prevent "jitter".

b)Must I still provide a calibration screen for the Standard Analog Controller SCPH-1150 ?

Yes, per the TRC you must provide the capability to calibrate and correct Maximum Travel and Center Position when an SCPH-1150 is detected. For example calibration code please refer to the Developers Web Site.

3. Technical Misc.

a)The Dual Shock Analog Controller and 16-Button Analog Controller both report the same ID, How do I tell them apart?

Two major changes from the 16-Button Analog Controller to the Dual Shock Analog Controller are the removal of Analog Joystick emulation, and the addition of vibration functionality, including an analog actuator (variable vibration). These differences may be used by the application to determine which analog controller is connected.

Two methods are described below:

int PadInfoMode(int port, int term, int offs):

Call PadInfoMode with the first argument *port* set to the target port (0x00 for port 1 or 0x10 for port 2), the second argument *term* set to a value of 0x2 (or use the Macro InfoModeCurExID defined in Libpad.h), the third argument is ignored. When called with these values, the function will return 0x0 for any controller other than the Dual-Shock.

int PadInfoAct(int port, int actno, int term)

Call PadInfoAct with the first argument *port* set to the target port (0x00 for port 1 or 0x10 for port 2), the second argument *actno* set to a value of -1, and the third argument to any value between 1 and 4. When called with these values, the function will return 0x0 for any controller other than the Dual-Shock.

Note: wait for PadGetState() to return *PadStateStable*, prior to calling this function. If it is called in any state other than *PadStateStable* even a Dual-Shock would return a value of 0x0.

For further details on the above mentioned functions please refer to Libpad_e.txt included with Dshock.zip in the Programmers files are of the Developers Web Site.

b)When the 16-Button Analog Controller is in Analog Joystick mode (Flight Stick), the button mappings are in correct. The Square is the L1, Circle the L2 etc.

On the 16-Button Analog Controller in Analog Joystick mode the L1, L2, R1, and R2 buttons are mapped to the π , \star , \square , and \downarrow buttons. This is by design and is not considered a bug. The application is free to re-map the buttons in software upon detection of a Flight Stick ID, but be aware the re-mapping may make it difficult to use the “real” Analog Joystick. A possible solution would be to allow the user to choose from

two sets of button mappings, one for the “real” Flight Stick, unaltered, another for the Analog joystick emulation, control and top buttons swapped.

c)When the 16-Button Analog Controller is in Analog Mode (Red light), If I hold down L1 or L2, hold either of the analog sticks in a position other than center, and press the Mode button three times returning to analog mode, when I let go of the stick an off-center value ($> 180 \pm 25$) is always returned.

This is a calibration function of the hardware and cannot practically be corrected by the application. The controller will continue to output the off-center values until it is unplugged and reinserted, or the PlayStation is powered-off.

d)When I use the two or more Dual Shock Analog Controllers with a Multi-Tap the second and third Dual Shock Analog Controllers do not vibrate. Do Dual Shock Analog Controllers work with the Multi-Tap?

The actuators on the Dual Shock Analog Controller draw power from the PlayStation. Current drains above 60 units, may adversely affect the PlayStation's operation. Thus, Libpad monitors the total current drain to ensure it does not exceed 60 units per frame. If it receives vibration requests from the application that would result in exceeding this limit, those requests are ignored and the target controllers will not vibrate.

The potential current drain can be calculated by subtracting 10 units for Actuator 0 (binary), and 20 units for Actuator 1 (variable) for each controller in port order. Thus a single controller in each port operating both actuators simultaneously would not present a problem, but when using a multi-tap this limit must be considered. For example:

Case 1: All controllers connected to port 00,01,02,03 request to operate

actuator 1 (20 units).

Add current drain in port number order. If total current drain exceeds 60 units, its request will be ignored. Thus, in the case actuators with port 00,01,02 will be in operation and requests from 03 will be ignored.

Case 2:Port 00 requests actuator 1 and 2 (10,20 units)

Port 01 requests actuator 2 (20 units)

Port 02 requests actuator 2 (20 units)

Port 03 requests actuator 1 (10 units)

The sum of current drain of port 00 and port 01 is 50 units. If it accepts actuator 1 of port 02, total current drain exceeds 60 units. So the request from port 02 will be ignored. However, request from port 03 will be accepted, since the total current drain will not exceed 60 units.

For more information please refer to the pad_e.txt document contained in Dshock.zip in the programmer Files area of the Developers Web Site.

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