

DualSense Windows API

Version 0.1

Ludwig Füchsl

November 21, 2020

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1 Important information

1.1 Trademarks and affiliation

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Using this library may void your / your clients / your users / your customers controllers warranty! You as the redistributor of the precompiled or self compiled library have to make sure the controller will not be damaged by the functionality you use or at least point out the possible risk to your users / clients / customer!

Probably no damage or failure at all. This statement is just for my own safety!

1.2 Sources

This work is derivative from others work. Special thanks goes to:

- GitHub user dogtopus:
<https://gist.github.com/dogtopus/894da226d73afb3bdd195df41b3a26aa>.
- Reddit user ginkgobitter: https://www.reddit.com/r/gamedev/comments/jumvi5/dualsense_haptics_leds_and_more_hid_output_report/
- GitHub user Ryochan7: <https://github.com/Ryochan7/DS4Windows/tree/dualsense-integration>
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- And the amazing community at DS4Windows <https://github.com/Ryochan7/DS4Windows/issues/1545>

1.3 License

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2 Introduction

Welcome to the DualSense on Windows API documentation. This API will help you integrating the Sony PS5 DualSense controller into your application or game for Windows. This document will guide you through the complete flow of integration. Starting with learning the DualSense Features up to deeply understanding every feature of this api.

The documentation is structured as follows:

- Descriptions of the DualSense's features
- installation and self compiling
- getting started guide
- api references

We recommend starting with reading through all features as far as you are not familiar with the DualSense controllers feature. Continuing with the installation and getting started guide to get your own demo application up and running. Then you can use the API references to integrate the api into your application.

3 Features

In the following section the features of the DualSense controller will be explained.

3.1 Overview

- **Connectivity** The DualSense controller can be used via Bluetooth or USB (USB C).
- **Integrated battery** Featuring an integrated battery the DualSense controller is best used via Bluetooth. The controller can be charged via USB type-C.



(a) Front View



(b) Rear View

Figure 1: The DualSense controller

The DualSense controller features the following peripherals:

- Two XY-Axis analog sticks with integrated push button.
- Two adaptive triggers (are able to provide feedback).
- Two shoulder buttons.
- DPad with the ability to press two neighbor buttons simultaneously.
- The default Square, Cross, Circle and Triangle PlayStation buttons.
- Dual-touch touchpad with integrated push button, surrounded with five player indication LEDs on the bottom and RGB-LED lightbar on the sides.
- Menu, share, microphone mute and PlayStation button.
- 3-Axis Accelerometer and Gyroscope.

- Two rumble motors (Hard and Soft one). Can alternatively used as haptic feedback (not supported yet).
- Integrated speaker and microphone.
- Stereo audio jack.

3.2 Feature List

Analog sticks Each analog stick has two axis with 8-Bit precision each. The analog sticks will automatically return to their center position if released. They are mapped to the range -128 to 127 where 0 means center, -128 means left/bottom on X/Y-Axis and 127 means right/top on X/Y-Axis. Using the analog values requires the correction of the dead zones, because a released stick will most likely not have the value $R_{xy}(0; 0)$ it will be a bit off. Same goes for the extreme values which will also be off and not be exactly $T_{xy}(0; 127)$, $L_{xy}(-128; 0)$, etc..



Figure 2: Analog sticks

Adaptive trigger The DualSense controller features two 8-Bit analog triggers. It is possible to read the trigger values as 8-Bit continuous values or alternatively as binary button input. Aside from the normal trigger operation the adaptive triggers can be configured to simulate various force feedback effects. It is possible for example to simulate a gun trigger.



Figure 3: Adaptive triggers

Bumpers The two L/R Bumpers located over the adaptive triggers can be read as normal button inputs.



Figure 4: L/R Bumpers

DPAD and PS Buttons The DualSense controller feature a DPAD and the default well know PlayStation Square, Cross, Circle and Triangle buttons. The DPAD is capable of registering two simultaneously pressed buttons, however the two buttons must be neighbors. The PS-Buttons are being registered as four individual binary values.



Figure 5: DPAD and PS-Buttons

Other Buttons The DualSense controller feature several more buttons. These are:

- **Menu button** Should be used to open the in-game menu.
- **Share button** Should be used to open the in-game photo mode.
- **PlayStation button** Can be used to open a in-game overlay (Look at the known issues to get an additional use case of this button).
- **Mic button** Should be used to mute the microphone.

All the listed buttons are readable through individual binary values.



Figure 6: Left to right, top to bottom: Share, Menu, PlayStation and Mic Buttons