

Technical Description of DualSense Controller

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Introduction



DualSense Controller

The DualSense controller is part of a long history of video game controllers and innovation in the gaming industry. Originally known as a DualShock controller, derived from its dual vibration motors, the DualSense is part of Sony's PlayStation 5 console. The first DualShock was introduced in November 1997 as a peripheral for the Sony PlayStation (Bankhurst, 2020). Subsequently, the DualShock became a central part of Sony PlayStation consoles, with each generation giving consumers a new and updated take on the controller. Which led to the development of the DualSense controller, the fifth generation of the DualShock, that came with the newest PlayStation console. Many of the new features in the controller are quality of life changes, such as a bigger controller overall and longer battery life. However, the biggest addition is the haptic feedback that replaced the original dual vibration motors. Thus,

causing its name to be changed from DualShock to DualSense as it advertises that you'll be able to feel/sense different parts of games as though you were there through your hands.

Exterior



Front and back of DualSense Controller

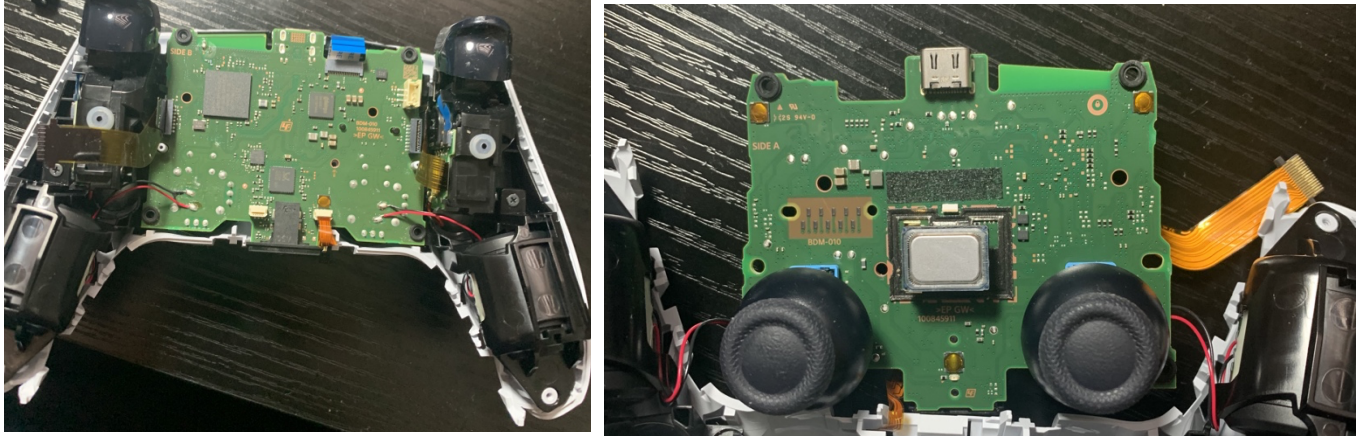
The DualSense controller is made up of plastic and rubber materials. In the outside it contains 19 functional buttons: D-Pad, Triangle/Circle/X/Square buttons, mute, PS Logo, L3/R3 joysticks, L1/L2/R1/R2, Share. Options, and touchpad button. It contains a 3.5 mm headphone jack port, as well as a USB-C port to support charging and wired connectivity.

Interior



DualSense rechargeable battery

The DualSense controller features a rechargeable 1560 mAH Lithium-ion battery. This battery is what powers the many motors and sensors of the controller (Omiotek, 2021). It's estimated to last around 7-8 hours in a full charge. Making it an improvement over its predecessor, DualShock 4, which featured a 4–6-hour battery life. The battery is connected to the motherboard and is the first thing you see when opening the controller

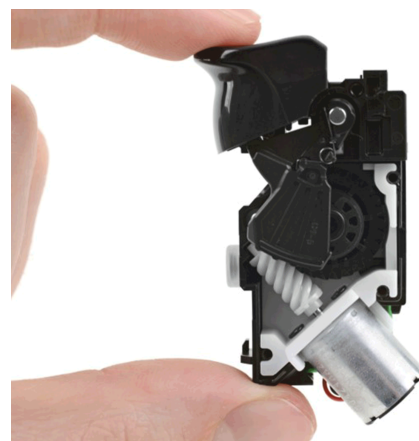


DualSense's motherboard

The DualSense's motherboard is where all the controller's functions are done. All main components are connected to it, including the battery, motors, sensors, and speakers. The haptic feedback components are soldered on as well as the analog sticks, which gets user input on a 360-degree rotation, and a USB-C port to enable charging. The midframe also detects the user's input as well as their position with respect to the controller using a three-axis gyroscope and three-axis accelerometer (Omiotek, 2021).



Vibration Motors



Adaptive Triggers (Omiotek, 2021)

The DualSense controller features adaptive triggers and a large vibration motor that'll make the controller rumble in certain situations. The way this works is that feedback will be sent from the game to the controller which will then vibrate depending on the message received. The adaptive triggers are a new addition, having a spiral motor that rotates creating more tension as you click down. It works the same way as the vibration motors, as it receives feedback from the device and depending on the message changes its rotation speed (Omiotek, 2021).

Conclusion

The DualSense controller features a plethora of improvements over its predecessors. For example, its longer battery life made possible by larger more energy efficient battery. Its addition of more sophisticated vibration motors and adaptive triggers changed the way games can be interacted with. Video game controllers have seen steady advances of technology with Sony being in the frontline of most of it. New ideas and ways to make the experience for consumers are being engineered constantly.

References

Bankhurst, A. (2020, April 8). *The evolution of the PlayStation Controller*. IGN. Retrieved March 26, 2022, from <https://www.ign.com/articles/the-evolution-of-the-playstation-controller>

Omiotek, S. (2021, October 12). *Sony DualSense Controller Battery Replacement*. iFixit. Retrieved March 26, 2022, from <https://www.ifixit.com/Guide/Sony+DualSense+Controller+Battery+Replacement/142053>