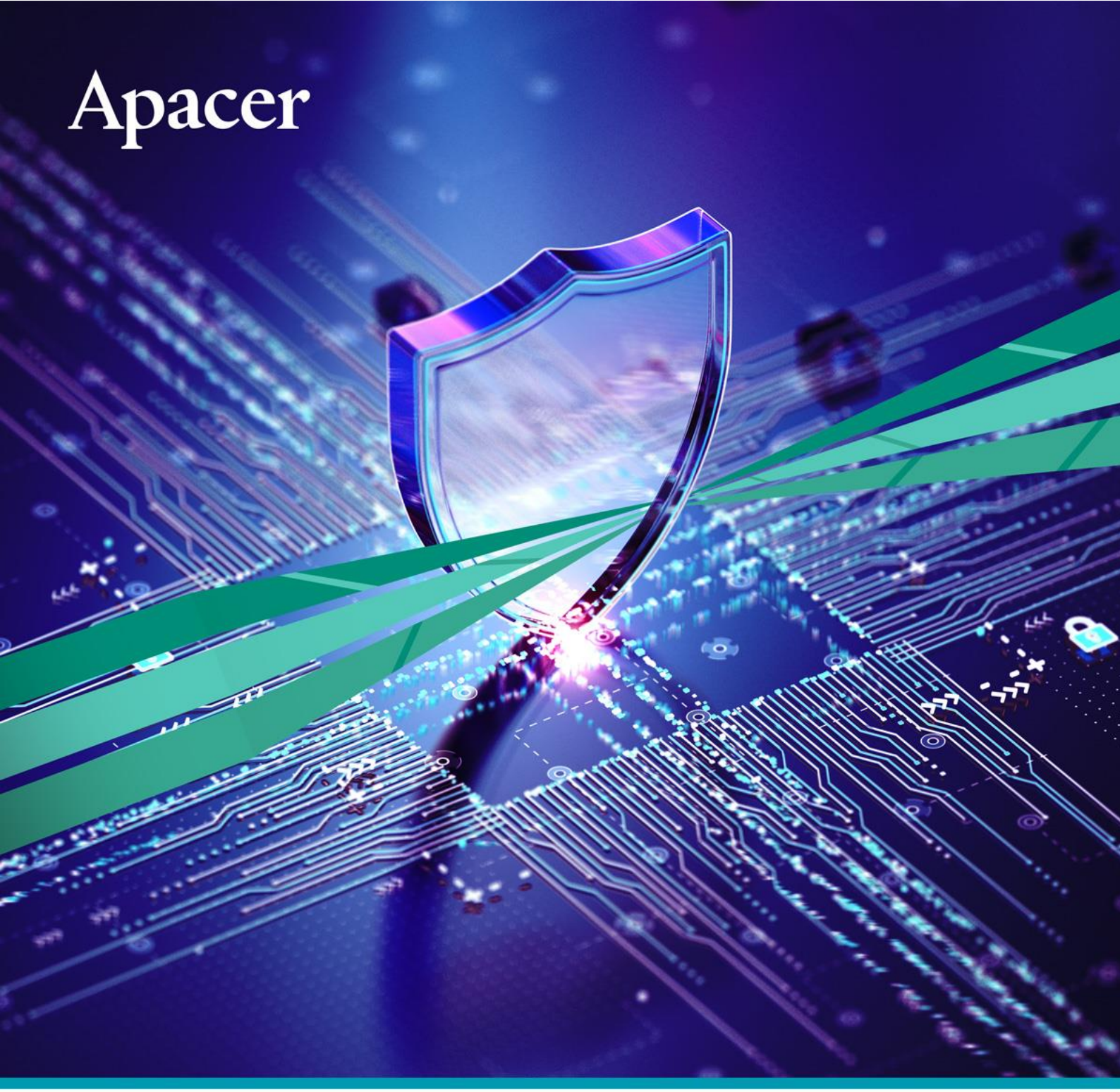
Apacer



# CoreVolt 2

## Addressing the Risks of Voltage Instability

Whitepaper

# 1.Introduction

In modern computing environments, the reliability of SSDs is crucial for maintaining data integrity and ensuring seamless operations. However, voltage instability—stemming from inconsistent power supplies, power surges, or environmental factors—poses significant risks. These fluctuations can corrupt data, damage internal components, and lead to costly downtime or device failure.

For businesses, such consequences translate into financial losses, damaged reputations, and missed opportunities, particularly in industries where reliability and uptime are critical. In mission-critical environments that depend on SSDs, these risks are simply unacceptable.

Protecting SSDs from voltage instability is essential to ensure consistent performance and safeguard valuable data.

Apacer's CoreVolt 2 technology, granted a patent certificate in the Republic of China (**Certificate No.: I864916**), offers an advanced solution that enhances protection and stability, ensuring SSD reliability even amid power fluctuations.



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# 2.Understanding CoreVolt 2

## Concept

CoreVolt 2 is an advanced power protection technology designed to enhance the reliability of SSDs by addressing the risks of voltage instability. While the solutions like DataDefender™ Plus can log instances of unstable voltage, they are limited to providing alerts without actively preventing damage from power fluctuations.

CoreVolt 2 takes data protection a step further by offering real-time monitoring and automatic voltage regulation, ensuring uninterrupted and stable SSD performance. By integrating CoreVolt 2 with DataDefender™ Plus, Apacer provides a more comprehensive solution to safeguard both the data and longevity of SSDs in environments where power stability is unpredictable.



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## How It Works

CoreVolt 2 operates through an integrated, real-time voltage detection system that continuously monitors the input voltage supplied to the SSD. This technology is designed to identify any form of voltage instability, whether from power drops or other fluctuations. As soon as the system detects a deviation in the voltage beyond acceptable thresholds, it immediately triggers the activation of a backup power system. This detection occurs rapidly, ensuring that there is no delay in responding to power disruptions, which is crucial for protecting data and maintaining operational continuity.

Once voltage instability is detected, the CoreVolt 2 power circuit activates backup power supplied by polymer capacitors. These capacitors temporarily take over, providing the necessary power to stabilize the SSD's operation during the fluctuation. The capacitors act as a buffer, compensating for any voltage variations and ensuring that the SSD continues to operate smoothly without any interruptions. This process is illustrated in Figure 1.

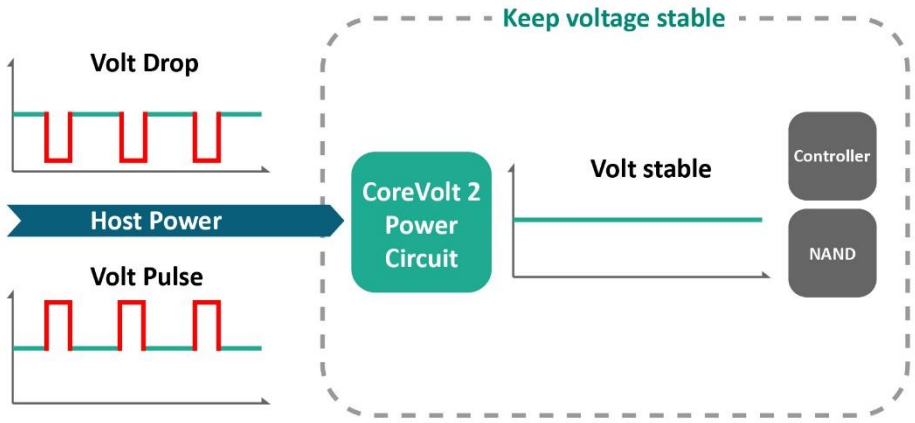


**Figure 1: CoreVolt 2 – Power Stabilization Mechanism**

Note: The under/overvoltage thresholds are set at ±5% for 3.3V SSDs and ±10% for 5V SSDs.

This automatic process takes place seamlessly in the background, without any need for manual intervention, safeguarding against data corruption, hardware damage, or system failure. By using polymer capacitors for backup power, CoreVolt 2 ensures reliable and efficient SSD performance, even in environments with unstable power supplies, minimizing the risk of downtime.



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# 3.Industries and Applications Leveraging CoreVolt 2

CoreVolt 2 is ideal for industries requiring high reliability and uninterrupted operation, particularly in environments with voltage instability. It serves sectors like industrial computing, rugged systems, aerospace, transportation, mining, and robotics, where equipment faces harsh conditions, power fluctuations, and potential surges.

### Mission-Critical Industries

CoreVolt 2 is designed for industries that demand continuous operation and stability. It ensures reliable power in critical sectors such as industrial computing and aerospace. These industries rely on stable power to avoid costly downtime or system failure, and CoreVolt 2 provides the necessary reliability to keep essential equipment running smoothly in the most demanding environments.

### Heavy-Duty Battery Requirements

For industries such as mining, robotics, and industrial computing that depend on heavy-duty batteries, CoreVolt 2 provides an advanced data protection feature to ensure reliable and efficient SSD performance, enhancing the overall reliability of battery-powered systems in challenging environments.

### High Voltage Instability Environments

CoreVolt 2 excels in environments where voltage instability is a constant concern, such as transportation and rugged systems. Its ability to protect against power fluctuations or transient spikes ensures that equipment remains operational, providing the stability required for systems exposed to unpredictable power conditions.

In these industries, protecting critical data and ensuring stable performance are non-negotiable. CoreVolt 2's ability to stabilize voltage fluctuations and prevent data corruption makes it an essential solution for applications that cannot afford downtime or data loss. Whether in manufacturing or transportation, CoreVolt 2 delivers the durability and protection needed for mission-critical systems.



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# 4.Conclusion

In conclusion, as SSDs continue to play a critical role in modern computing, ensuring their reliability against power fluctuations is essential. Voltage instability, whether from inconsistent power supplies or environmental factors, poses serious risks to data integrity and operational efficiency. The consequences of data corruption, downtime, or hardware damage can be devastating, particularly for businesses that rely on SSDs for mission-critical tasks.

Apacer's CoreVolt 2 technology addresses these challenges by providing advanced protection against voltage instability. When voltage fluctuations are detected, the SSD automatically engages backup power supplied by polymer capacitors to stabilize the voltage, ensuring uninterrupted operation. This mechanism not only prevents data corruption but also enhances the overall longevity and performance of SSDs, allowing businesses to maintain reliable operations even during power disruptions.



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