



HITACHI itPOWER UPS SYSTEM FOR DATA CENTER APPLICATION

ABOUT DATA CENTER APPLICATION

A data center is a physical critical infrastructure facility that houses and manages an organization's IT operations and equipment, including servers, storage systems, networking devices, and applications. Designed for high availability, data centers ensure continuous access to data and services by incorporating redundant power supplies, advanced cooling systems, and robust security measures. Modern data centers leverage cutting-edge technologies to optimize performance, enhance security, and support scalability, making them essential for businesses of all sizes. These facilities are pivotal in enabling digital transformation, supporting cloud computing, and facilitating seamless data management, thereby driving innovation and efficiency across various industries.

Functions of a Data Center:

- **Data Storage and Management:** Data centers store vast amounts of data and ensure its availability for processing and retrieval. They utilize data management systems to organize and protect the data.
- **Hosting and Running Applications:** Data centers host applications and services, such as email, websites, databases, and enterprise software, ensuring they run smoothly and are accessible to users.
- **Disaster Recovery and Business Continuity:** Data centers play a vital role in disaster recovery and business continuity planning by providing backup and redundancy to prevent data loss and minimize downtime during emergencies.

Types of Data Centers

- **Enterprise Data Centers:** Owned and operated by a single organization, these facilities support the company's internal operations and services.
- **Colocation Data Centers:** These facilities rent space, power, and cooling to multiple organizations, allowing them to house their own equipment in a shared environment.
- **Cloud Data Centers:** Owned and operated by cloud service providers, these data centers provide scalable and on-demand resources to multiple customers over the internet.
- **Edge Data Centers:** Smaller facilities located closer to the end-users, designed to reduce latency and improve performance for applications that require real-time processing.

Data centers are essential for modern business operations, providing the infrastructure needed to support digital services and applications. They enable organizations to handle large volumes of data, ensure data security, and maintain high levels of performance and availability. As businesses continue to embrace digital transformation, the role of data centers becomes increasingly critical in enabling innovation, efficiency, and competitiveness.

CHALLENGE/ISSUES

Data centers consume vast amounts of electricity to power servers, storage systems and cooling equipment. This high energy demand can strain local power grids, especially in regions with limited power infrastructure. When a data center experiences a power failure / fluctuation, it can face several significant challenges:

- **Downtime and Service Disruption**
 - **Service Interruption:** The immediate effect of a power failure is the disruption of IT services, causing downtime for applications, websites, and other critical services. This can impact business operations, customer experience, and potentially result in financial losses.
 - **Data Loss:** If a power failure occurs without proper backup systems, there is a risk of data loss or corruption, especially if transactions or data processing were in progress at the time of the outage.
- **Hardware Damage**
 - **Equipment Failure:** Sudden loss of power can cause hardware components to fail. Servers, storage devices, and network equipment might suffer damage due to improper shutdowns.
 - **Increased Wear and Tear:** Repeated power failures can shorten the lifespan of equipment due to the stress of sudden power loss and subsequent power surges when power is restored.
- **Recovery and Restart Issues**
 - **Long Recovery Times:** Restarting systems and restoring services can be a time-consuming process, especially if proper disaster recovery plans are not in place.
 - **Complex Recovery Processes:** Ensuring that all systems come back online correctly and in sync can be complex, particularly for large and intricate IT environments.
- **Financial Impact**
 - **Loss of Revenue:** Downtime can lead to lost sales and revenue, especially for businesses that rely heavily on online transactions.
 - **Increased Operational Costs:** Power failures can lead to increased operational costs due to emergency repairs, equipment replacements, and overtime for IT staff to manage the recovery.
- **Reputation Damage**
 - **Customer Dissatisfaction:** Prolonged or frequent service outages can lead to customer dissatisfaction and loss of trust.
 - **Brand Damage:** Repeated power failures and resulting service disruptions can harm a company's reputation and market position.
- **Security Vulnerabilities**
 - **Increased Risk of Cyberattacks:** During power outages, security systems may be compromised, increasing the risk of cyberattacks and unauthorized access to sensitive data.
 - **Physical Security Risks:** Power failures can also affect physical security measures, such as surveillance cameras and access control systems, making the data center more vulnerable to physical breaches.
- **Compliance Issues**
 - **Regulatory Non-compliance:** Data centers must comply with various industry standards and regulations. Power failures that lead to data loss or service disruptions can result in non-compliance and potential legal repercussions.

NEED FOR THE SOLUTION

Ensuring a continuous and stable power supply is crucial for data centers. Power outages or fluctuations can lead to significant downtime and data loss. To mitigate this, data centers often rely on backup generators and uninterruptible power supplies (UPS). Utilizing an Uninterruptible Power Supply (UPS) in a data center is crucial for several reasons:

- **Ensuring Continuity of Operations**
A UPS system provides immediate backup power to critical systems and equipment in the event of a power outage. This helps prevent service interruptions and ensures that servers, storage systems, and networking equipment continue to operate without any downtime. Continuity is vital for maintaining business operations, particularly for mission-critical applications and services.
- **Protecting Against Power Fluctuations**
Power fluctuations such as surges, sags, and brownouts can damage sensitive electronic equipment in data centers. A UPS stabilizes the power supply, protecting equipment from these harmful fluctuations and ensuring that the voltage levels remain within safe limits.
- **Preventing Data Loss and Corruption**
Sudden power outages can result in data loss or corruption, especially if data transactions are interrupted. A UPS provides enough time for systems to perform an orderly shutdown or to switch to a backup power source, thereby safeguarding data integrity.
- **Enabling Graceful Shutdowns**
In the event of a prolonged power outage, a UPS allows for an orderly and controlled shutdown of systems and servers. This prevents abrupt shutdowns that can cause hardware damage, data corruption, and loss of important configurations.
- **Enhancing System Reliability and Availability**
By providing a reliable power source during outages, a UPS enhances the overall reliability and availability of data center operations. This is critical for meeting Service Level Agreements (SLAs) and ensuring that services are consistently available to users and customers.
- **Supporting Business Continuity and Disaster Recovery**
A UPS is an integral component of business continuity and disaster recovery plans. It ensures that critical systems remain operational during short-term outages and provides the necessary time to switch to backup power systems, such as generators, or to initiate disaster recovery protocols.
- **Reducing Financial Impact**
Downtime can have significant financial implications, including lost revenue, productivity, and customer trust. A UPS minimizes the risk of downtime, helping to reduce the potential financial impact of power disruptions.
- **Compliance with Industry Standards**
Many industry regulations and standards require data centers to implement power protection measures, including the use of UPS systems. Ensuring compliance with these standards helps avoid legal and regulatory issues.

HITACHI'S OFFERED PRODUCT / SOLUTION

Hitachi's HM33 Series UPS Systems have been instrumental in addressing several challenges faced by data centers, particularly in terms of power management and reliability. With the HM33 Series itPower UPS in parallel configuration with separate battery banks, systems offer enhanced resilience and performance.

- **Ensuring Continuous Power Supply**

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The HM33 Series offers exceptional safeguards against power disruptions, ensuring high availability and reliability for critical applications. Its modular design allows for redundancy options and flexible battery configurations, which enhance system reliability and minimize downtime.

- **Advanced Power Conditioning**

With best-in-class true online, double conversion technology, the HM33 Series eliminates power disturbances such as transients, noise, and voltage fluctuations. This ensures that sensitive electronic equipment receives clean and stable power, reducing the risk of hardware damage and data corruption.

- **Scalability and Flexibility**

The HM33 Series modular UPS provides the most compact footprint of less than 2m² with a maximum capacity of 900kVA. This scalability allows data centers to expand their power backup capabilities as their needs grow. Additionally, the ability to parallel up to 30 modules offers unparalleled flexibility without compromising on performance or reliability.

- **User-Friendly Operation**

The HM33 Series features a user-friendly LCD touch screen display that provides graphical and text-based information about alarms, status data, instructions, and faults. This makes operation safer and more intuitive for data center staff, ensuring that users can manage the system efficiently.

- **Space Efficiency**

With its compact design, the HM33 Series requires less space compared to traditional UPS systems, allowing data centers to maximize their infrastructure. This space efficiency is particularly beneficial for data centers with limited space, providing a robust power protection solution without taking up much room.

- **Energy Efficiency**

The HM33 Series includes smart sleep functions and energy-efficient technologies that help data centers manage power usage more effectively, reducing operational costs and environmental impact. By optimizing energy consumption, the HM33 Series supports sustainable data center operations.

- **Enhanced Maintenance**

The modular design of the HM33 Series simplifies field maintenance, as individual components can be easily removed and replaced without affecting the entire system. This reduces the risk of faults and enhances the overall reliability of the system. Modular UPS systems also spread the risk by removing single points of failure, ensuring continuous operation even if one part fails.

- **Security and Compliance**

With robust security features, Hitachi's HM33 Series UPS systems help data centers comply with industry standards and regulations. This includes protection against cyberattacks and ensuring that data remains secure even during power disruptions.

By addressing these challenges, Hitachi's HM33 Series UPS Systems provide a robust and efficient solution for data centers, ensuring continuous and reliable power supply while optimizing space and energy usage. This UPS is the next generation of true online, double conversion digital modular UPS, keeping your network protected while saving on cost and data center space.

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BENEFITS OF USING HITACHI itPOWER UPS SYSTEM IN DATA CENTER APPLICATION

The Hitachi HM33 Series itPower UPS System offers several key benefits for data center applications:

- **Enhanced Reliability:** The HM33 itPower UPS ensures uninterrupted power supply, critical for the continuous operation of the data center.
- **High Efficiency:** With advanced technology, these UPS units provide high energy efficiency, reducing operational costs.
- **Scalability:** The HM33 Series UPS units are designed to support future expansion, making them ideal for growing data center needs.
- **Robust Security:** Integrated with advanced security features, these UPS units enhance the overall security of the data center.
- **Compliance:** Our solution meets all regulatory standards, ensuring compliance with government and industry requirements.
- **Expert Support:** Backed by Hitachi Hi-Rel Power Electronics' dedicated support team, ensuring prompt and professional service.

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HM33 Series Modular UPS System

Range: 60 kVA to 500 kVA (3:3)

- User friendly LCD display provides graphical and text-based information
- Modular design of subsystem, convenient for field maintenance
- All components are in module so less fault point and higher reliability
- The hot-swappable power modules take unique structure design
- Less space needed Inherently N+X redundant
- Smart sleep function can intelligently make some power modules go to sleep, when load is relatively low to increase efficiency
- Alarms data store in system (890 alarms)
- Front and rare access for higher ratings UPS
- On site setting supported, easy for factory testing
- Can be paralleled up to 30 modules
- Wide voltage and frequency range for input supply
- Available in 30 kVA and 50 KVA module for multiple available option
- Programmable dry contacts are available in HM series UPS



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ABOUT HITACHI itPOWER UPS URL:

<https://www.hitachi-hirel.com/products/ups/it-power-online-ups-system>

ABOUT HITACHI HI-REL POWER ELECTRONICS PRIVATE LIMITED

Founded & established in 1983 as Hi-Rel Electronics Pvt. Ltd., which later on in year 2015 had become the 100% subsidiary company of Hitachi, Japan which is one of the Global fortune 500 companies with a new name as Hitachi Hi-Rel Power Electronics Private Limited, which is being recognized as one of the pioneers in power electronics domain. Hitachi Hi-Rel, today, is a leading manufacturer of Industrial UPS, IT & Infra UPS, Medium & Low Voltage Variable Frequency Drives, Grid Tied Solar Inverters, Air Compressors and Railway Inverters.

Hitachi Hi-Rel has state-of-the art manufacturing facility at Sanand near Ahmedabad in Gujarat-India. Hitachi Hi-Rel is helping a wide array of industries and organizations to meet the mission critical demands through technologically superior, low polluting and innovative products Solutions and continue to offer world class power electronics products, value added services & customized solutions.

With a vision of “To be recognized as the most trusted Power Electronics Company by supplying superior products and services”, Hitachi Hi-Rel has garnered a significant level of trust in Indian power electronics market segment wherein it serves the entire gamut of Industries, particularly in mission critical applications for Refineries, Petro-Chemicals, Power Generation, Steel & Metals, and Process Industries as well as Critical Data Processing Applications. Besides offering greater energy efficiency & lower carbon footprint, each of the company product streams bears the hallmark of excellence with company accreditations. Hitachi Hi-Rel is an ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & ISO 27001:2022 certified company having export house status. Hitachi Hi-Rel sales network & service infrastructure expands out to the world & with this network, we have made strong inroad in Global markets like South East Asia, Middle East, Africa and Brazil. Also, with a presence of strategically located skilled service engineers in India helps us to score high in terms of customer expectations on service deliverables & uptime of the product.

With expertise, experience and an efficient product line, Hitachi Hi-Rel will always try to be your power electronics partner. When you choose to do business with Hitachi Hi-Rel, you are partnering with a company who cares.

FOR MORE INFORMATION

To know more about Hitachi Hi-Rel Power Electronics Private Limited and its offered products and solutions, please visit www.hitachi-hirel.com

You may also share your requirements at <https://www.hitachi-hirel.com/inquiry> to receive the phone call or Hitachi product information email from our authorized sales representative of your region.

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