VERTIV™

Vertiv™ PowerUPS 9000

Vertiv fact sheet

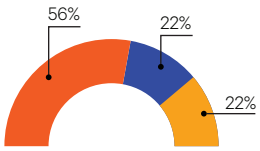
The world depends on data we power and cool.

Vertiv at-a-glance

Vertiv is a global leader in critical digital infrastructure for applications in data centers, communication networks, and commercial and industrial environments.

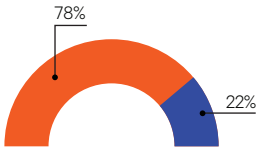
As businesses, industries, and communities become more connected, we pioneer and deliver end-to-end power and cooling technologies to help our customers stay resilient, optimized, and future-ready.

With our industry-leading innovative technologies and global services network, we are fueling the revolution of the digital world – keeping technology ecosystems running efficiently and without interruption.



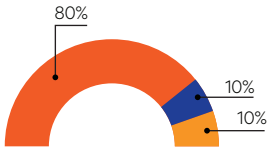
Geography [1]

- Americas
- APAC
- EMEA



Portfolio [1]

- Critical Infrastructure & Solutions
- Services & Spares



Market Segment [1,2]

- Data Centers
- Communications Networks
- Commercial & Industrial

Note: [1] Based on FY 2024 revenue; [2] Market segment rounded to 5%; [3] Dell'Oro Data Center Physical Infrastructure reporting 2024. [4] Omdia UPS Hardware Market Tracker 2024, >250kva. [5] Omdia Data Center Power Distribution Tracker 2024. All else, company information as of December 31, 2024.

Key facts

- ~$8.0B USD revenue [1]
- ~31,000 employees globally
- 24 manufacturing locations
- 60+ years in the industry
- ~4,000 field service engineers
- 310+ service centers
- 130+ countries served
- Westerville, Ohio, USA global headquarters
- #1 in 3-phase large UPS [4] and power switching & distribution [5]
- #1 in thermal management [3]

Global presence, local expertise

Headquartered in Westerville, Ohio, USA, Vertiv does business in more than 130 countries.

Worldwide

Manufacturing locations: **24**
Service centers: **310+**
Service field engineers: **~4,000**
Technical support/response: **~300**
Customer experience centers/labs: **27**

Americas

Manufacturing locations: **9**
Service centers: **170+**
Service field engineers: **~1,750**
Technical support/response: **~120**
Customer experience centers/labs: **4**

Europe, Middle East, and Africa

Manufacturing locations: **9**
Service centers: **60+**
Service field engineers: **~650**
Technical support/response: **~130**
Customer experience centers/labs: **12**

Asia Pacific

Manufacturing locations: **6**
Service centers: **80+**
Service field engineers: **~1,600**
Technical support/response: **~50**
Customer experience centers/labs: **11**

Solving the power and cooling complexities of the AI revolution.

Vertiv is supercharging data's potential; accelerating the pace of technology, raising the bar for high performance compute and redefining the limits of densification.

A leading innovator with most complete critical digital infrastructure portfolio.

Power management
Thermal management
IT systems
Infrastructure solutions
Services

Company information as of December 31, 2024.

VRT LISTED NYSE

Vertiv™ PowerUPS 9000 Overview and Benefits At a Glance

High performance, modularity, resilience, reliability and efficiency for your power needs.

- **Vertiv's most efficient UPS in its product class**
- **Up to 32% space savings**, compared to our offering
- **AI ready to support fast dynamic power loads**
- **High-power solution** designed for global standards and easy installation
- **Skid-mount and containerized power solutions** for an easy deployment
- **Modular system** for maximum flexibility from room to pre-fabricated deployment
- **Ready to integrate different back up power sources**, including lithium-ion and nickel-zinc
- Designed, tested and available **across the globe**
- **Hot and easy serviceability** for no interruption, even during maintenance or power upgrades
- **Rich digital experience,** Service empowered by data across entire lifecycle with Vertiv™ Life™ Advanced Incident Management and Condition Based Maintenance

1250kW, PowerUPS 9000

1250kW, PowerUPS 9000, Compact version

Vertiv™ PowerUPS 9000 paired with AI Load Simulator for advanced power testing

Vertiv AI load simulator to test variable AI loads profiles on UPS systems at our Global Power Customer Experience Center.

It supports both design and validation testing and demos, including on-site validation at customer locations.

Reliable, resilient and efficient UPS

Data centers face mounting pressures to secure unfailing uptime and reliability. Responding to these exigencies, Vertiv™ PowerUPS 9000 is designed to meet the contemporary resilience benchmarks. This is not just a response to market trends and needs but is deeply rooted in the lessons learnt and end user necessities, reflecting a commitment to address and integrate user feedback into tangible enhancements.

Design Reliability

- **Dedicated Segregated Controls for Each Power Module:** This design choice enhances the system's overall reliability, allowing each power module to operate independently with its control logic.
- **Self-Isolating Power Module Through Relays:** In the event of a fault, affected power module can isolate themselves to prevent the spread of issues, ensuring the continuity of power supply from the remaining operational cores.
- **Continuous-Duty Solid State Static Bypass Switch:** For the maximum performances on the bypass line.
- **Hot Service and Hot Swap Static Bypass and Power modules:** Facilitates maintenance and upgrades without necessitating system downtime, directly contributing to enhanced operational availability and reducing the risk of unplanned outages.
- **Enhanced Diagnostic Tools (Waveform Capture, History Log):** Enable preemptive identification and resolution of potential issues before they impact system performance, offering a deep insight into system health and preempting failures.

Read our white paper: **Enabling Uninterrupted Power: Design for Reliability in UPS System**

Each of these features is designed to satisfy the needs of customers for resilience and availability.

Verification & Validation Tests

For the verification and validation of Vertiv™ PowerUPS 9000 30 MW of Power Module prototypes have been built.

This approach enables the development of certain product features that enhance the operational integrity and also offer substantial benefits to customers.

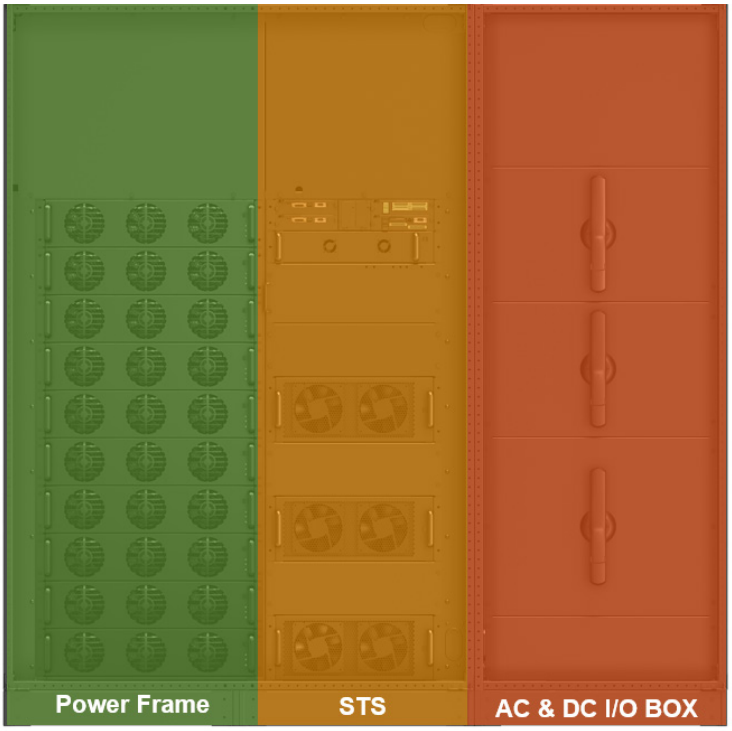
Verification and Validation Tests are critical in securing that UPS systems adhere to stringent performance standards. Engineering Validation Tests (EVT) and Design Validation Tests (DVT) rigorously assessed and confirmed the product specifications.

Through this process, Vertiv™ PowerUPS 9000 has been validated against a spectrum of operational conditions to establish its capability to perform reliably in real-world scenarios. Additional tests have been performed to simulate critical conditions that a Vertiv™ PowerUPS 9000 might encounter. Some of the additional tests performed are:

- **Structural Tests** to verify seismic resilience and general durability
- **Debris Protection Testing** for environmental robustness
- **Voltage Surge & Sag Tests** to ascertain electrical resilience

Modular Design to Meet the Needs of Each Application

Vertiv™ PowerUPS 9000 scales the concept of modularity up to all levels of the UPS architecture.



125kW Power Modules

Each Power Module is independent and includes the components of an online UPS: inverter, rectifier and booster/ charger.

It features one global design with options for 400V and 480V, compliant with both CE and UL standards.

Static Switch Cabinet

The bypass static switch is housed in a dedicated cabinet, power terminals for close-coupled applications.
It follows a global design for 400V and 480V.

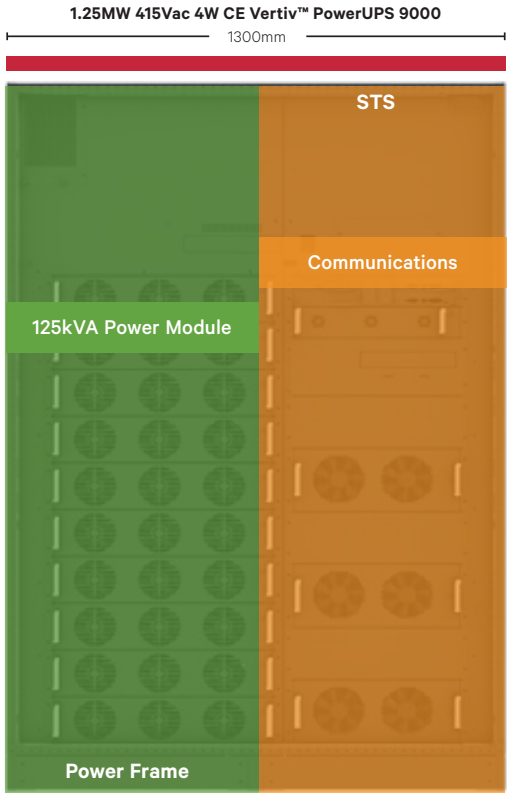
AC I/O Cabinet

AC power connections are routed through a dedicated cabinet:

- **Top** and **bottom** power connection
- **Standard configuration includes** cable connection, with optional flange connections available upon request

Versatile System & Compact Design (380/400/415Vac 4W)

Experience customization to meet your unique needs.



250-1250kW UPS Frame 125kW Power Modules

Each power module is **independent** and consists of the building blocks of a true **online UPS**:

- Inverter
- Rectifier
- Charger/Booster

One **global** design:

- 400V & 480V
- CE & UL

Static Switch & Communication Control Cabinet

The bypass static switch is hosted inside a dedicated cabinet with control comunication logic boards

One **global** design:

- 400V & 480V, CE & UL

AC & DC Connections

AC power connections are routed through the top side of the UPS:

- Top **power cable** connection
- **Single** input / **Dual** input
- Available with **No switches only**

Capacity & Installation Flexibility from 250 KW up to 5 MW*

Vertiv™ PowerUPS 9000 features a **transformer-free design with full IGBT three-level double conversion technology**, providing extraordinary savings on installation and running costs, while at the same time delivering first class load protection.

Flexibility and Compatibility

Vertiv™ PowerUPS 9000 can be fully adapted to meet diverse system requirements in terms of power capacity and redundancy allowing for different system designs, thus enabling maximum flexibility:

- Output Power Factor up to 1
- No power derating from 0.6 lagging to 0.7 leading
- Optimum space/power ratio

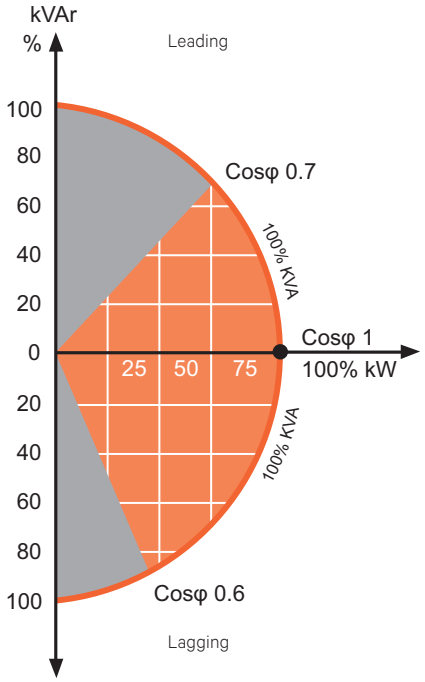


Figure 8: Power Factor Output Diagram

Maximized active power, high efficiency and complete compatibility for modern, mission critical IT loads.

Features and Performance

- Transformer-free design
- Full IGBT three-level topology
- Excellent input performances:
  - PF ≤0.99
  - THDi ≤3%
- Hybrid SiC Power Module Converters
- Seismic compliance
- Bypass sharing inductor-free design

Customer Monitoring Interfaces

LCD Touch Screen Features

- High security access with separate password levels for users and service engineers
- User-friendly graphical interface
- Single-line mimic diagram showing system status
- Dedicated warning/fault and event log page used to monitor UPS status and important events
- Dedicated measurements page for all UPS internal functional blocks

Hardware Connectivity

Vertiv™ PowerUPS 9000 allows for the monitoring and control of networked UPS, through different protocol options:

- The integration of UPS with Building Monitoring and Automation Systems via MODBUS RTU, MODBUS/TCP or JBUS protocols
- The integration of UPS in Network Management Systems through SNMP protocol
- Two slots for additional connectivity cards are available for specific protocol requirements

Software Connectivity

Vertiv connects and protects your network with core-to-edge solutions and remarkable expertise. For maximum visibility and effective monitoring in one view, pair your Vertiv™ UPS with a software solution.

Vertiv™ Environet™ Alert

Vertiv™ Environet™ Alert provides industry companies with critical facility monitoring software that is affordable and easy to use. This solution delivers superior monitoring, alerting, trending and data organization. Get monitoring, alerting and trending at a price that's right for your business.

*250kW minimum power capacity of a single 1250kW frame. Up to 5MW in parallel configuration.

Improved Efficiency

Vertiv™ PowerUPS 9000 delivers an outstanding **double conversion efficiency of up to 97.5%**, which further increases **up to 99% with the dynamic online mode**, consequently reducing operating costs and energy dissipation (kW) to a minimum. This significantly minimizes the consumption of the cooling system, providing an overall TCO reduction and rapid payback time.

Furthermore, through its intelligent **ECO mode** efficiency and the intelligent paralleling feature Vertiv PowerUPS 9000 can optimize efficiency even at partial load achieving additional superior cost savings.

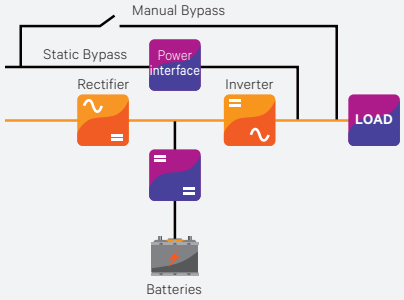
Vertiv PowerUPS 9000 levels of efficiency and consequent electricity cost savings can be attributed to:

- Hybrid SiC power module design
- Adoption of a three-level topology for inverter
- DC controlled fan speed
- Intelligent paralleling mode
- Advanced digital technology and fast transfer

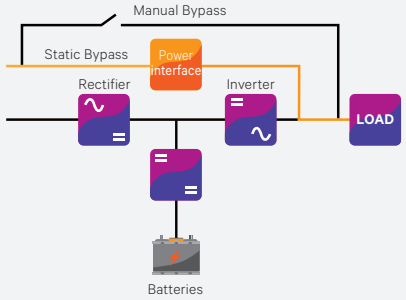
The seamless activation of Vertiv PowerUPS 9000 functioning modes offers the highest level of efficiency without compromising power quality and availability.

The dynamic online mode ensures Class 1* output performance under most stringent conditions such as network faults (voltage variation, high/low impedance mains failures).

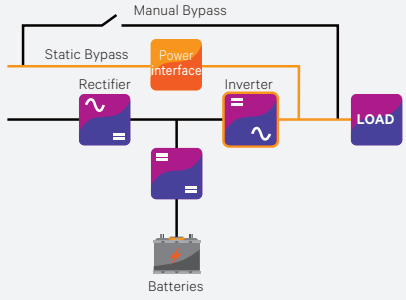
The unit is able to discriminate between various types of interferences and rapidly respond, while at the same time providing compatibility with downstream equipment such as servers, transformers, STS or mechanical loads.



Maximum Power Control (VFI)
Provides the highest level of power conditioning and protects the load from all electrical network disturbances.



Maximum Energy Saving (VFD)
Detects when conditioning is not required and allows the energy flow to passthrough he bypass line.

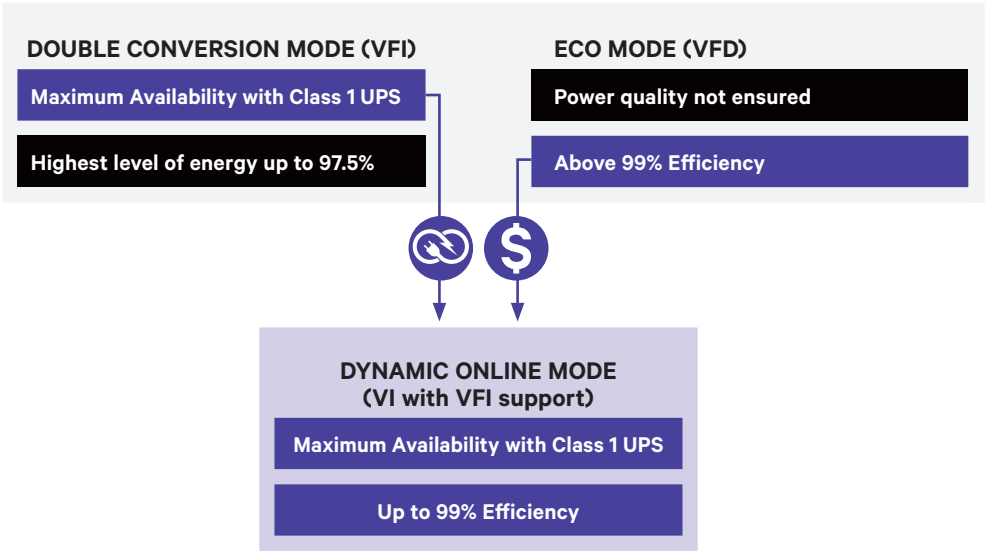


Dynamic Online, High Efficiency & Power Conditioning (VI)
Compensates the load THDi, PF and main sags and swells, ensuring fast transfer output performance.

Dynamic Online mode: No more availability tradeoff with efficiency

Dynamic Online mode is developed for those that do not want to trade off any level of availability for incremental gains in efficiency. Dynamic Online mode enables **operating efficiency up to 99% without sacrificing availability.** While in this mode, the inverter can instantaneously assume the load and maintain the output voltage within the IEC 62040 Class 1* specification in most operating conditions, offering the same level of availability typically achieved in a double conversion operating mode.

Dynamic Online mode is therefore able to combine the **superior availability of a double conversion operating mode with the excellent energy cost savings of a high efficiency mode for a reduced total cost of ownership.**



*Conditions apply

Continuous battery mode and continuous-duty static bypass switch

Vertiv™ PowerUPS 9000 Power Center stands out in the market for its **continuous battery mode**, a feature that secures uninterrupted power supply even at full load indefinitely.

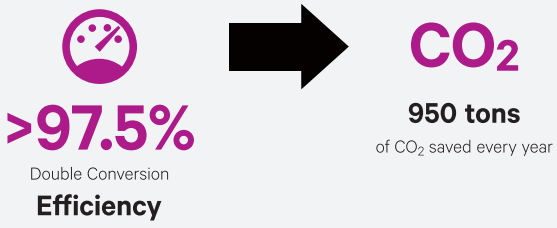
Complementing its continous battery mode is Vertiv PowerUPS 9000's solid-state static bypass switch, enabling seamless power transitions. Vertiv PowerUPS 9000's continuous-duty performance opens doors to different applications beyond traditional UPS systems such as long duration batteries integration.

Reduced TCO

Neutral Carbon Footprint

Vertiv™ PowerUPS 9000's new generation architecture has been designed to reduce energy and heat dissipation, consequently minimizing the demand and consumption of air conditioning systems.

The combination of these factors, coupled with a double conversion efficiency of up to 97.5%, reduces CO_2 emissions to a minimum. This contributes to your customers' data centers being a step closer to the industry's environmental and efficiency compliance standards.



Advanced control diagnostic, excellent operating efficiency, intelligent paralleling feature, minimum footprint and high energy density make Vertiv PowerUPS 9000 the perfect UPS to deliver secure power to all mission critical applications, maximum energy saving and rapid return on investment.

Vertiv PowerUPS 9000 provides system capacity up to 1250kW in a single frame and up to 5MW in parallel configuration.

Furthermore, its **high power density** in a minimum space allows customers to maximize the number of racks and servers housed in their data center, thus granting more space for IT equipment.

The Vertiv PowerUPS 9000 technology, has brought extraordinary benefits in terms of:

- Compatibility with modern mission critical loads
- Enhanced performances for maximum energy saving
- CO_2 emission reduction
- System flexibility for all installations
- Reduced TCO

User Interface and Advanced Diagnostic

Vertiv™ PowerUPS 9000 makes your mission critical space a peaceful place through its advanced diagnostic capability, measuring and logging, enhanced event analysis as well as an intelligent colored multi-language touch screen display.

Vertiv PowerUPS 9000 advanced logic control platform together with the Vector Control technology enables increased performance of three-level power converters and real time control of output power quality, providing continuous operation and premium protection for your customer's business.

Bypass Input

Voltage and frequency measurements.

Mains Input

Current, voltage and frequency values of the three input phases.

Warning/fault

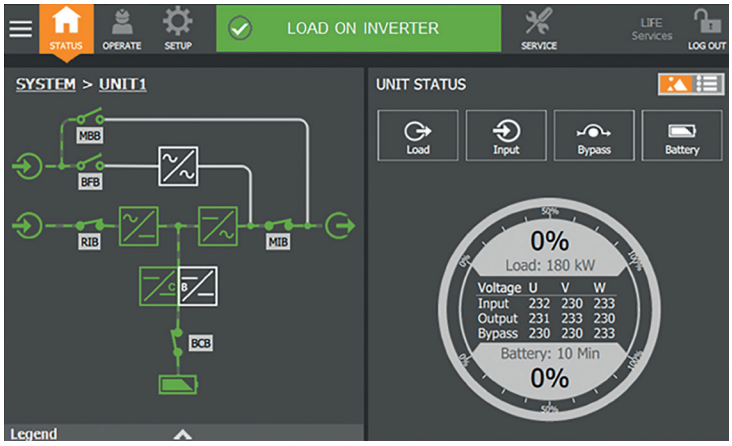
Alerts of anomalies on bypass, rectifier, inverter, booster/charger, battery and load.

Events log

Date and time of important UPS events, alarms and other warnings.

Measurements

Voltage, current and frequency values of each internal functional block.



PowerUPS 9000 HMI main page

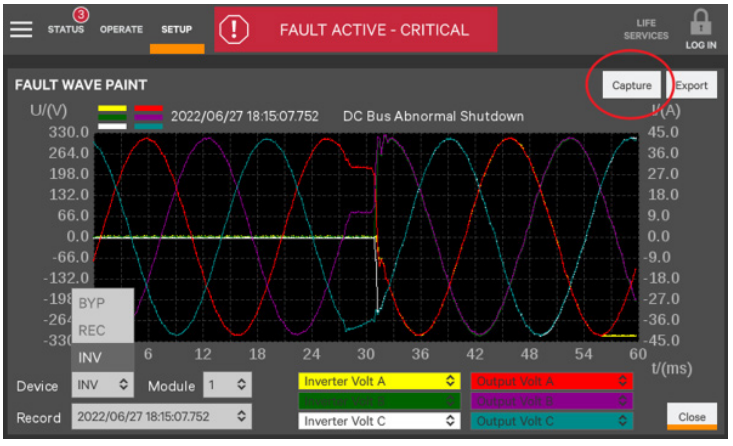
Waveform Capture: Enhancing Power Quality Analysis and System Reliability

Waveform Capture is a diagnostic tool that records the electrical waveforms of voltage and current. This capability is needed to understand and analyze power quality issues at critical moments (such as during power disturbances or faults) and to mintain the reliability of the power supply system.

The main advantages of Waveform Capture in Vertiv PowerUPS 9000 are:

- **Precise Event Analysis:** By capturing the waveforms of both voltage and current during irregularities, the exact nature and cause of the disturbance can be understood. This includes recording events during and after an anomaly occurs.
- **Preventive Maintenance:** Regular monitoring of the waveform data can help in predicting potential UPS problems before they lead to system failures, thereby supporting preventive maintenance efforts.
- **Troubleshooting Support:** In the event of a failure, the stored waveform data provides valuable insight that can be used to troubleshoot issues, reducing the time required to restore normal operations.
- **Historical Data Logging:** Capturing and storing waveform data over time allows for the analysis of trends and the detection of gradual changes in the power system that may indicate emerging problems.
- **Customizable Data Capture:** Users can tailor the feature to their needs by selecting specific time frames and choosing the channels relevant to their power monitoring requirements.
  This allows for the capture and review of only relevant data.

The Waveform Capture feature in the Vertiv PowerUPS 9000 enhances uptime and reliability through detailed electrical waveform analysis, offering a robust tool for maintaining critical infrastructure.



Fault wave recorder feature on PowerUPS 9000 HMI

Rely on Integrated Project and Lifecycle UPS Services for Superior Critical Infrastructure Protection

Offer continuity to your business activities with a service partner who stands by you throughout your critical equipment lifecycle. From the project phase with start-up and testing, to lifecycle maintenance contracts and operational support, Vertiv secures your solution performs optimally.

Global Presence & Local Resources

With the broadest, most comprehensive service presence in the industry and more than **3,500** engineers dedicated to servicing the entire world, Vertiv secures that your business is always protected, and that service is available whenever needed 24 hours a day.

Project Services

From project planning and design, through to equipment procurement, installation, and commissioning, our project team offers comprehensive capabilities, providing speed of deployment and execution according to pre-defined and repeatable procedures.

Commissioning Phase	Technical Activities	Project Management	
Pre-Project activity	• Commissioning Spec & Plan • Engineering • Design Review • Schedule Integration • Submittal Review • Commissioning Procedure • Commissioning Kick-off	• Project Charter / Project Initiation Docs • Identify Stakeholder	• Manage Issues, Changes & Risks • Report Project Status • Contract, Financial & Quality Review • Health & Safety Review
Level 0 **Program and Design**		• Work Breakdown Structure (WBS) • Supply Chain & Procurement Management Plan • Project Team Creation • Create Risk Management Plan • Create Communication Management Plan • Create Change Management Plan • Create Project Schedule • Health & Safety Assessment • Kick-Off meeting with Customer	
Level 1 **Factory Witness Test**	• Factory Witness Test		
Level 2 **Delivery, QA/QC, Installation Assembly, Field Supervision**	• Site Acceptance Inspection • Delivery & Assembly • Equipment Installation	• Supply Chain & Procurement Management • Execute Project Plan • Schedule On-Site Resource Management • Facilitate Team Meetings & Distributes Minutes • Health & Safety Management	
Level 3 **Start-Up and Site Acceptance Test**	• Installation & Startup • Pre-Functional Equipment Verification • Site Acceptance Test		
Level 4 **Functional Performance Testing**	• Functional Performance Test		
Level 5 **Integrated System Test Support**	• Integrated System Test • Training & O&M Verification		
Level 6 **Close Out & Turn-over**	• System Manual • Seasonal Testing • Warranty Review & Supplemental Report • Commissioning Report	• Customer Acceptance • Handover to Operation & Maintenance • Lessons Learned • Financial Closure • Project Closure	

Expertise & Training

All service engineers are regularly certified according to country-specific regulations as well as wider international regulations and standards.

Vertiv service engineers are trained, experienced professionals who undergo an average of one week of intensive training each quarter, totalling one month of full-time training per year. Training includes both technology and safety, to secure competent and safe field operations, reinforced by established procedures to follow and central technical support in case of need.

Premium Response

With Vertiv you can count on an extensive supply of critical parts plus crash-kits ready for deployment, and on service engineers that can respond to requests in record time. To do so, they can rely on a solid knowledge-base, and established escalation procedures valid across the regions. In addition, they can also benefit from advanced incident management, and widespread presence of Service Centres all enabling them to deliver premium restoration capabilities.

Supporting Your Business Around the Globe

Regular service of critical equipment supports maximum uptime and reduces total cost of ownership. A service programme enables timely and proactive maintenance for avoiding unexpected, costly equipment downtime and enables optimal equipment operation. Vertiv™ service programmes cover all technologies and can be tailored to suit individual business needs.

Vertiv deep infrastructure expertise is amplified by field data and analytics, enabling data-based services such as Advanced Incident Management and Condition Based Maintenance. These services complement our portfolio providing additional insight into operating trends allowing informed decision and minimising operational.

Vertiv's AI Load Management Solutions for Data Centers

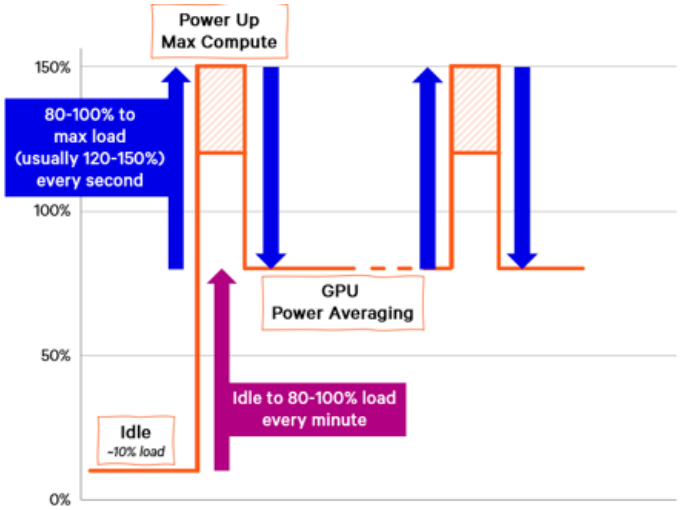
Evolving Critical Power Needs

As artificial intelligence (AI) advances, it imposes new demands on critical power infrastructure. This shift requires innovative solutions to handle higher power density servers, spikey and dynamic AI power loads, and the integration of liquid cooling systems with very low thermal inertia. Traditional power sources are becoming constrained, necessitating the adoption of sustainable alternatives. Vertiv addresses these evolving needs with resilient solutions designed to minimize the impact of single-point failures and support distributed power protection.

Impact of AI applications on critical infrastructure

With the forecast growth in rack densities for AI and high-performance computing (HPC) applications, Vertiv is developing solutions designed to withstand higher voltages, manage spikey AI loads and provide power protection for liquid cooling systems.

This includes increasing power converter block sizes and enhancing power distribution circuits to meet the demands of high-density racks.



Learn more in our technote: Evaluating the performance of Vertiv™ large UPS systems with AI workloads

AI Loads Challenges

1. **Power Fluctuations:**
   - Artificial intelligence (AI) has a unique load profile, characterized by rapidly fluctuating power demand and in turn Spikey/Fast dynamic loads.
   - Power fluctuations may be reflected to the grid or to local generator leading to power quality and grid stability issues.
   - Quick but repeated overloads as may cause voltage sags and equipment to switch to back up power.
2. **Thermal Cycling:**
   - Thermal cycling of UPS components may impact equipment life.
3. **Coolant Distribution Units (CDUs):**
   - Liquid cooling for GPU have very low thermal inertia (1-10 secs).
4. **Power Density Requirements:**
   - Adopting higher voltage distribution to handle increasing power demands.

AI-Ready UPS solutions

Vertiv™ Large UPS systems are designed to manage AI applications efficiently. They handle rapid load changes without any performance degradation, enabling continuous operation. Additionally, they protect the power source from sudden step loads and support increased rack power density by operating at higher voltages. This capability makes Vertiv Large UPS systems ideal for the demanding requirements of AI applications, providing reliable and stable power to maintain optimal performance. Test results available in our technote.

Future-Proofing Data Centers

Vertiv's approach focuses on modular, scalable, and sustainable solutions to meet the growing demands of AI and high-density computing. By integrating advanced power management algorithms and supporting new energy sources, Vertiv enables data centers to handle the dynamic and intensive workloads of the future.

For more detailed information on Vertiv's innovative solutions, visit our AI Hub.

Enhance Your Power Reliability with Distributed Battery Systems in a parallel configuration

Uninterrupted power supply is essential for maintaining the seamless operation of critical applications, especially in large-scale data centers. At Vertiv, we understand the pivotal role that a resilient UPS system plays in protecting your electronic equipment from power disruptions, blackouts, and voltage spikes. When Vertiv PowerUPS 9000 systems are in parallel configuration, our advanced distributed battery systems are designed to enhance the reliability and efficiency of your UPS systems, securing continuous power quality and availability.

Why Choose Distributed Battery Systems?

1. **Unmatched High Tolerance:** Distributed battery systems decentralize battery modules, allowing for effective fault isolation and management. This design allows the remaining modules to continue providing uninterrupted power even if one module encounters an issue, significantly reducing the risk of complete system failure.
2. **Scalability and Flexibility:** Our distributed systems are easily scalable, enabling you to add more modules as your power needs grow. This flexibility provides a cost-effective path for scaling your power infrastructure, making it adaptable to evolving requirements.
3. **Maintenance Efficiency:** With distributed battery systems, maintenance can be performed on individual modules without disrupting the overall system. This approach minimizes downtime and enables your critical operations to remain uninterrupted.
4. **Enhanced System Availability:** Distributed battery systems provide continuous power supply, which is crucial for mission-critical applications. By reducing the likelihood of complete system outages, our systems enhance overall availability and reliability.

Tailored for Mission-Critical Environments: At Vertiv, we design our solutions with your most critical power scenarios in mind. Our distributed battery systems integrate seamlessly with modular UPS designs, offering the highest levels of fault tolerance and maintenance efficiency. Secure your power infrastructure is as resilient as your business demands with Vertiv's distributed battery systems.

Overview

Lithium-ion battery, as one of the most influential technical breakthroughs in the last decade, has transformed our lifestyle and reshapes the world by powering from our cell phones and notepads to our new e-cars and renewable power plants. It will be the next generation batteries to power our UPS and datacenters.

Vertiv's innovative mindset and early experience with lithium-ion batteries has helped many organizations achieve their infrastructure goals.

Ideally Suited For

- New data centers
- Cloud, colo, hosting facilities
- Enterprise data centers
- UPS energy storage
- Replacements to lead-acid batteries

Compliant

- UL 1973
- UL 9540A Tested
- UL 9540

Qualified for immediate use with most current and legacy three phase Vertiv™ Liebert® UPS systems.

Vertiv™ EnergyCore Battery Cabinet

The Vertiv™ EnergyCore is the first optimized battery cabinet designed by datacenter experts for data center users. The Vertiv EnergyCore system has successfully completed a UL 9540A fire test. According to NFPA 855's ESS installation standards, when successfully completing a UL9540A test, three feet (92cm) spacing requirements between racks can be waived by the Authorities Having Jurisdiction (AHJ).

The Vertiv EnergyCore is engineered to provide safe, reliable, and cost effective energy that improves critical infrastructure performance over traditional valve-regulated lead-acid systems.

Not only do users enjoy the longer life, more cycles and fewer replacements of this system, they also benefit from its compact, smaller size and lower weight These advantages directly impact an impressive total cost of ownership experience.

Vertiv™ EnergyCore Battery Cabinet

Reduce Battery Replacement Cycles

VRLA	3-5 years
LIB	10-15 years

VRLA = valve regulated lead-acid
LIB= data center lithium-ion

Fewer Facility Disruptions
Lower Total Cost of Ownership

Technical Data Vertiv™ PowerUPS 9000

Primary Input		1250kW 380/400/415Vac	1250kW Compact 380/400/415Vac
Nominal mains input voltage / voltage range	(V)	415V (353-478), 3Ph+N+PE	
Nominal frequency / frequency tolerance	(Hz)	Selectable 50 or 60	
Input Power Factor (above 50% of load)		≤ 0.99	
Input current distortion (At full linear load Calculated at input THDv <2%)	(%)	≤3	
Walk in/soft start	(seconds)	2 (0.5 to 5 selectable)	
Rectifier Hold-Off	(seconds)	4 (1 to 120 selectable)	
Inverter Output			
Nominal apparent power	(kVA)	1250	
Nominal active power	(kW)	1250	
Nominal output current @ nominal voltage 400	(A)	1870	
Maximum output active power @ 40°C	(kW)	1250	
Inverter Overload Capacity[5]		<105% Continuous 105%-125% :10min 125%-150%: 1min 150%-200%: 200ms	
Nominal output voltage	(V)	415V, 3Ph+N+PE	
Nominal output frequency	(Hz)	Selectable 50 or 60	
Output load Power Factor without derating		0,7 leading - 0,6 lagging	
Voltage stability in steady state condition for input (AC & DC) variations and step load (0 to Nominal load)	(%)	±1	
Voltage stability in dynamic condition for input variation (AC & DC) and step load	(%)	Complies with IEC/EN 62040-3, Class 1	
Voltage stability in steady state for 100% load unbalance (0, 0, 100)	(%)	±3	
Frequency slew rate	(Hz/sec)	0.6 default (selectable up to 3Hz for single system, 2Hz for parallel system)	
Output voltage distortion at nominal linear load	(%)	<1	
Output voltage distortion @ reference non linear load as for IEC/EN 62040-3	(%)	≤3	
Phase angle precision with balanced loads	(degrees)	±1	
Phase angle precision with 100% unbalanced loads	(degrees)	±1.5	
DC Source			
Battery types		VRLA, Li-Ion, Ni-Zn	
Permissible battery voltage range	(V)	384 to 681	
Recommended n° of VRLA cells:		240-300	
Float voltage for VRLA @ 20 °C	(V/cell)	2.27	
End cell voltage for VRLA	(V/cell)	1.6	
Float voltage stability in steady state condition	(%)	≤1	

Optimum battery temperature	(°C)	15 to 25	
Battery recharge current setting range for 240cells @ 400V input voltage & maximum output load (PF=1)[4]	(A)	550	

Static Bypass

Nominal bypass input voltage	(V)	400 (380 to 415 selectable), 3Ph+N+PE	
Nominal bypass input voltage range	(%)	±10% (-10% to -15% selectable)	
Nominal output frequency	(Hz)	Selectable 50 or 60	
Frequency range	(%)	±10%	
Maximum static bypass overload capacity[5]:			
For 10 minutes	(%)	110% to 130%	
For 1 minute	(%)	130% to 160%	

General System Data

AC/AC efficiency VFI without charging current @ nominal input conditions[3][4] with resistive load[6]:		Up to 97.5%	
AC/AC efficiency with dynamic online (VI) without charging current @ nominal input conditions[3][4] with maximum resistive load:		Up to 99%	
AC/AC efficiency in Intelligent ECO mode without charging current @ nominal input conditions[3][4] with maximum resistive load:		Up to 99%	
Prospective short circuit current Icp with bypass fuses	(kAIC)	Up to 150	
Heat dissipation @ nominal input conditions and nominal output load[7]:			
Float Mode VFI	(BTU/h)	123690,15	
	(kW)	36,25	
Float Mode VFD	(BTU/h)	36254,01	
	(kW)	10,625	
Mechanical dimensions:			
Height	(mm)	2000mm	
Width	(mm)	2000mm	1300mm
Depth	(mm)	1000mm	
Net Weight	(kg)	2010kg	1300kg
Noise @ 1 meter[3][4] as per ISO 7779/3746 at full load	(dBA ± 2dBA)	79	
Protection degree with open doors		IP20	
Fame colour (RAL scale)		7021	
Cable entry		Top/Bottom	Top
Service Access		Front and Top	
Access		Front and Top (no rear access required)	
Cooling		Forced Ventilation, front air intake, top air outlet	Forced Ventilation, front air intake, rear air outlet

Environmental

Location		Indoor (free from corrosive gases and conductive dust)	
Operating Temperature	(°C)	0 to 50 with automatic derating from 40°C	
Maximum relative humidity @ 20 °C (non condensing)	(%)	Up to 95% with humidity control and correction	
Max altitude above sea level without derating	(m)	1500 (for higher altitudes complies with IEC/EN 62040-3)	
Immunity to electrical interference		IEC / EN / BS 62040-2	
EMC Class		IEN / EN 62040-2 Class C3	
Environmental Aspects		PEP Eco-passport	
Classification according to IEC/EN 62040-3		VFI-SS-111	
IEC Technical Report 61641 (Class A)		Guidelines for testing low-voltage switchgear ang control gear assemblies under internal arcing faults.	
Extra features		Integrated Backfeed Protection Device	
		DC Ground Fault Detection	
		EPO Push Button	
		Flange connections (late customization)	
		Vertiv™ Life™ Services Remote Diagnostic and Preventive Monitoring	
		Battery Trip Option	
Network Protocols with Monitoring Card		Modbus TCP	
		BACnet/WS	
		BACnet/IP	
		SNMP v.1, v.3, IPv6	

Note:

(1) Short circuit values depend on UPS rating, please contact Vertiv Technical Support for more information

(2) Values specified for single unit. Units in parallel may have different values due to contribution of the parallel connections. Please contact Vertiv Technical Support for more information

(3) For tolerance see IEC/EN 60146-1-1 or DIN VDE 0558. The data refer to 25°C ambient temperature

(4) At nominal voltage, nominal frequency

(5) Value obtained at 25°C

(6) Value obtained at 50% of load, input THDi <1%

(7) Values obtained at 480Vac

Global presence for a close partnership. Everywhere.

Global Power Sites

- **4** Laboratories and R&D
- **5** Manufacturing Sites
- **4** Witness Test Sites
- **10** Main Training Centers
- Global Network of Regional Sales and Service Representatives

Power Highlights

100K+
Square meter of manufacturing space

Up to 12MW
Available for witness tests

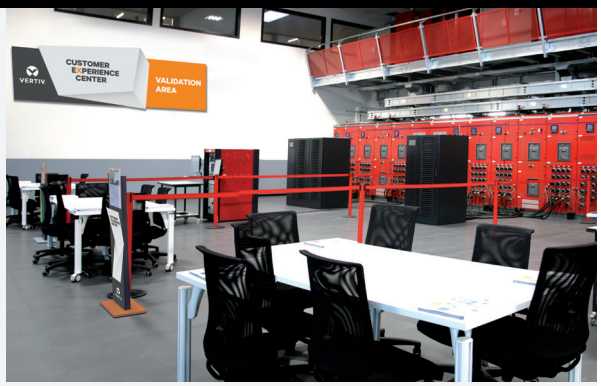
92k
Hours of technical training each year

Main Witness Test and Customer Experience Center sites

Vertiv™ state-of-the-art Customer Experience Centers enable our customers to experience first-hand a wide variety of data center technologies, including **demo, standard, customized and remote virtual FAT experiences**, supported by constant consultation from R&D and engineering specialists.

Bologna, Italy - Customer Power Experience Center

800+ Customers every year
From **50+** countries
10+ people dedicated
1700 m² Witness Testing
650 m² Showroom
650 m² Academy
7 testing stations totaling 12 MW, for 6 MW simultaneous power
150+ witness tests every year
400+ UPS systems tested every year
Up to 7000A simultaneous tests at full load
AI load simulator to test variable AI load profiles on UPS systems.



Delaware, US - Power Test Center

- **4.000+** m², including **280+** m² customer observation suite
- **40** testing bays, each containing multiple distinct test stations - total 12 MW available
- **100+** tour-factory witness test each year

Watch the **Power Customer Experience Center video**

Mianyang, China - Power Test Center

- **100+** Customers every year
- From **25+** countries
- **2** people dedicated
- **180 m²** Witness Testing
- **60 m²** Showroom
- **2** testing stations, each providing up to 1.2 MVA of capacity = total 2.5 MW
- **40+** witness test every year
- **100+** UPS systems tested each year
- **Up to 1.8 A** simultaneous test at full load

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