VERTIV.

Product brochure

Vertiv™ PowerSwitch 7000

Static Transfer Switch; 160-630A

The Cornerstone of High-Availability Power Systems

Elevate your critical operations with the compact Vertiv™ PowerSwitch 7000

Vertiv™ PowerSwitch 7000 stands at the forefront of dual-bus power systems, renowned for creating the most reliable UPS and Static Transfer Switch products globally. The Vertiv™ PowerSwitch 7000 epitomizes this legacy, offering a resilient and innovative solution for maximum availability applications. Designed to provide seamless, automatic transfers between your critical load and two independent UPS systems, the PowerSwitch 7000 enables uninterrupted power even if the primary UPS fails. This space-saving switch offers single-corded loads the reliability of dual-corded loads and adds extra redundancy to dual-corded loads.

Vertiv™ PowerSwitch 7000

Superior performance and reliability

Optimized for space efficiency

Innovative design for easy serviceability- true front access design

High availability with waveform capture

Improved operator safety

Flexibility

With capacities ranging from 160A to 630A, the Vertiv™ PowerSwitch 7000 family sets a new standard in market leadership, delivering design benefits that outshine competitive products. Trust in the Vertiv™ PowerSwitch 7000 to safeguard your operations with unparalleled reliability and efficiency.

Highlights

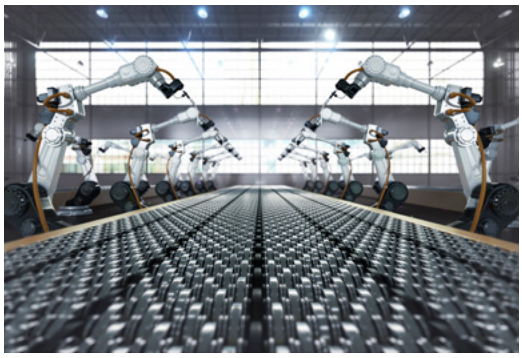
Hyperscale and colocation customers need continuous, tailored power solutions. The Vertiv™ PowerSwitch 7000 delivers resilient, dependable power distribution, providing uninterrupted and optimized power delivery on a global platform.

- Designed for maximum power reliability, the Vertiv PowerSwitch 7000 eliminates single points of failure with dual redundant power supplies, integrated SCRs, cooling redundancy and segregated main functions to prevent internal fault propagation.
- Available in 160/250/400 and 630A ratings. Also supports both 3P and 4P switching poles. 380/400/415V.
- Vertiv™ PowerSwitch 7000 can easily operate with load power factor from 0-1.
- Optimized, space-saving footprint of 915mm W x 830mm D x 2000mm H , this unit supports ratings from 160A-630A facilitating easier transportation and installation.
- Front access compartmentalized design for easy serviceability and for operator safety.
- Variable speed fans reduce noise, enhance efficiency, and potentially extend fan life.
- Top and Bottom cable entry/exit allowing for installation flexibility on raised/non-raised floor applications.
- Best-in-class advanced power monitoring and waveform capture through the HMI platform with intuitive 9" color touchscreen display.
- Utilizes a communications protocol incorporating a Vertiv RDU-120.

Vertiv™ PowerSwitch 7000 is ideal for maintaining continuous power delivery in various application areas:

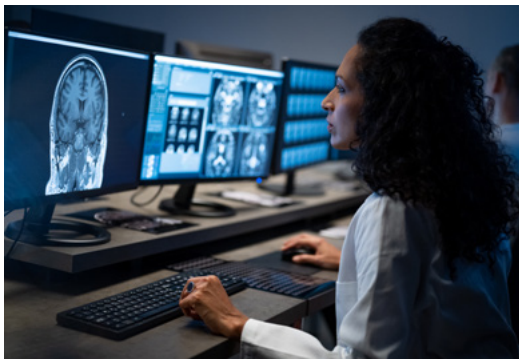
Data centers

Manufacturing technology



Government

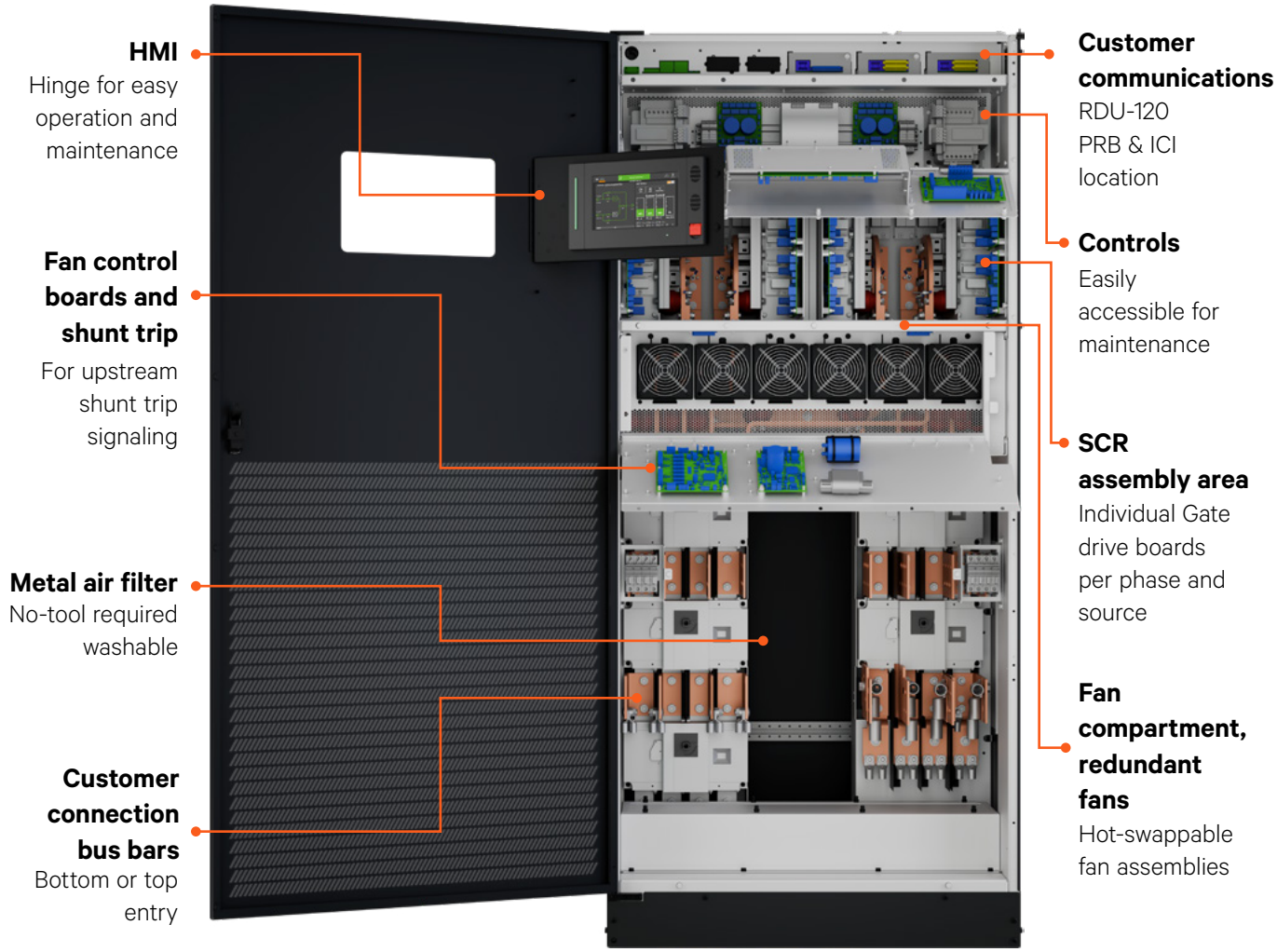
Healthcare



Distribution warehousing

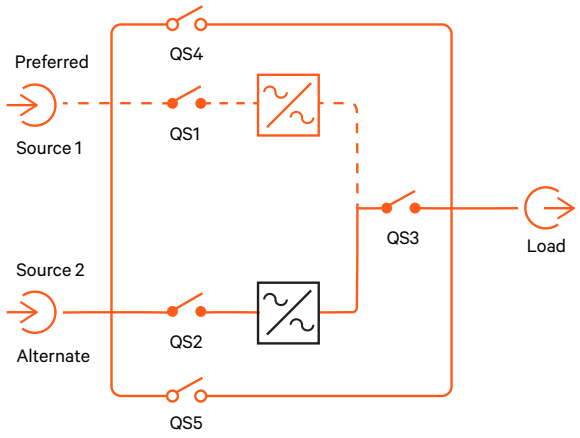
Finance

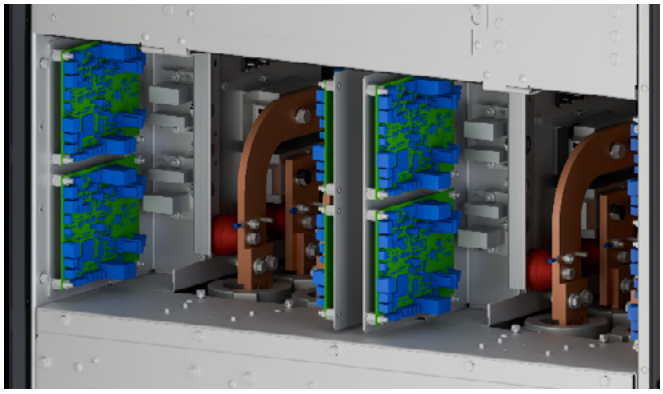
Vertiv™ PowerSwitch 7000 features display



Superior performance and reliability

- Employing a Vertiv™ PowerSwitch 7000 static switch adds another layer of security for mission critical loads.
- Provides a truly redundant power supply by enabling controlled switching between two independent AC Power supply sources.
- Switching occurs whenever the power supply line to the load goes out of tolerance, as shown by real-time waveform captured on the 9" intuitive colored LED HMI screen.
- Enables seamless, no-break transfers between two independent AC power sources, with fast, break-before-make switching in 1/4 cycle or less, providing minimal disruption.
- Downstream distribution is safeguarded not only from power source failures but also from upstream line issues, delivering unmatched reliability and protection.





Dedicated controls per source and phase

True internal redundancy

Redundant systems provide that if one component fails, another can take over, maintaining continuous operation. This is crucial for critical applications like data centers, hospitals, and industrial processes. The Vertiv™ PowerSwitch 7000 designed with components that exhibit true redundancy:

- **Redundant control power supplies** to prevent any single-point failure of either the power supply or power bus that can cause the entire system to go offline. Redundant power supplies eliminate this risk and keep the controls systems operational.
- **Redundant Fan power supplies** prevent any single point power supply failure mode from reducing the unit load rating. If the fans are not working properly, the unit might overheat or not function efficiently, reducing its load rating. Redundant power supplies enable that the fans continue to be operational maintaining the unit's load rating and preventing overheating or reduced efficiency.
- **Independent gate driver boards** for each source in a static transfer switch cabinet provides significant benefits in terms of redundancy, isolation, fault tolerance, and maintenance. This design enables that the failure of one component does not compromise the entire system, thereby enhancing the reliability and availability of the power supply.
- **Control board reliability** in Vertiv PowerSwitch 7000 is a critical design feature, making the boards operate independently that enhances reliability, safety and continuous operation through real-time monitoring including Waveform Capture, decision-making and making it an essential to prevent single-point failure from disrupting the entire power system.

Innovative design for easy serviceability – True Front-access design

All mechanical and electronic components of the Vertiv™ PowerSwitch 7000 are accessible from the front of the unit for installation and service—no side or rear access required. This design offers several immediate benefits:

- **Greater freedom in system design:** The Vertiv™ PowerSwitch 7000 can be placed adjacent to or in the back of other equipment. It can also be placed against a wall or partition.
- **Simplified installation:** Ample space for cable connections through top and bottom access plates.
- **Less floor space required for maintenance access:** Designed for maintainability, with all key components visible and accessible from the front of the unit, without shutting down the connected load.

- **Serviceable SCRs and hot-swappable fans:** These modular easily withdrawable components can be maintained on internal maintenance bypass, providing continuous operation. Fans are designed for easy serviceability and are easily replaceable.
- **Convection cooling:** For ratings below 400A, the units will be convection cooled and do not require fans.
(Fans come standard with 630A units).
- **Tool-free air filter replacement:** Air filters are very easy to replace or clean, are reusable, and require no tools for replacement.
- **Isolated control board compartment:** Customer communication points are easily accessible at the top of the unit, which includes RDU-120 card and RS-485 Modbus connections.
- **Flexible HMI design:** The Human-Machine Interface (HMI) is designed with flexibility to view the guided servicing walkthrough on the screen during the bypass operation.

This comprehensive design enables that the Vertiv™ PowerSwitch 7000 not only provides reliable power protection but also simplifies maintenance and serviceability, enhancing overall operational efficiency.

Safety first-operate with confidence

Providing superior protection and reliability

The Vertiv™ PowerSwitch 7000 is engineered with a front-access, compartmentalized design, allowing for faster deployment, increased operator safety, and more efficient serviceability or proactive maintenance while maintaining continuous power delivery to critical loads. Isolating consumable components enhances operator safety by allowing for easier replacement without the need to de-energize the equipment.

Optimizing space efficiency and flexibility

Vertiv™ PowerSwitch 7000 can accept both Copper or Aluminum cables

- **The new Vertiv™ PowerSwitch 7000** static transfer switch cabinet is engineered to optimize floorspace in data centers, creating more space for revenue-generating equipment.
- Its design includes top and bottom cable entry, eliminating the need for an external cabinet adding extra footprint and allowing for flexibility for installations in either raised/non-raised floor spaces.
- With ratings from 160A to 630A in a compact 915mm W x 830mm D x 2000mm H unit, the Vertiv PowerSwitch 7000 is power-dense and space-efficient, making it ideal for maximizing efficiency and capacity in your data center.

Vertiv™ PowerSwitch 7000

Operating specifications

- **Voltage:** 380, 400, 415 VAC (field selectable), +/-10%
- **Frequency:** 50 or 60Hz (field selectable), +/- 5Hz
- **Overload capacity:** 125% for 10 minutes, 150% for 1 minutes, 200% for 10 seconds
- **Operating temperature:** 0 to 40°C
- Ultra fast switching under **one-fourth** of a cycle

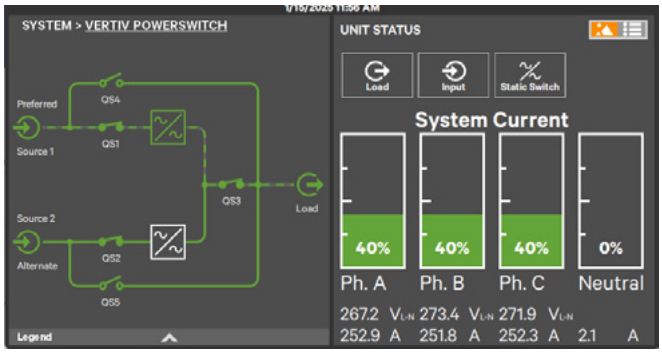
Standard features

- Front accessible for easy installation and serviceability
- 9" Color touch-screen LCD interface eliminates mechanical push buttons
- Intuitive user interface with drop-down menus and dialog boxes
- Dual-redundant power supplies
- 100% rated neutral
- Hot-swappable redundant fans
- Flash memory enables firmware updates while supporting critical load
- CANBUS internal control wiring
- Top and bottom cable entry
- Dual-lug installation bus
- IEC 62310 Compliant

Optional features

- Vertiv™ PowerSwitch 7000 has a full range of monitoring and communications options via Vertiv RDU-120
- Programmable output relays for custom customer alarms and connections
- Customizable input relays allow alarms from other devices to be displayed on Vertiv™ PowerSwitch 7000 display
- Key Interlock Switch
- Remote Source Selection
- Remote Transfer Inhibit
- IR Port Scanning
- Waveform Capture

High availability with waveform capture



A back-lit, menu driven, full graphics color 9" touch screen LCD display is used to display system information, status information, indicate power flow, a one-line diagram of the Vertiv™ PowerSwitch 7000 connected to preferred source, alternate source, active alarms, alarm history information, startup and step by step guided bypass instructions.

User Interface and advanced diagnostic

Vertiv™ PowerSwitch 7000 integrated with it's Human-Machine Interface (HMI) enhances the reliability and efficiency of your mission-critical environments. This integration offers:

Advanced diagnostic capabilities: Presenting proactive maintenance and swift issue resolution

Comprehensive measuring and logging: Providing detailed insights into system performance and trends including high accuracy metering, internal component health monitoring and temperature sensing per heat sink etc.

Enhanced event analysis: Facilitating in-depth investigation and understanding of power switching events to prevent future occurrences.

Intelligent colored multi-language 9" touch screen LCD display: Offering an intuitive and user-friendly interface for operators worldwide.

Waveform capture: real-time insights to enhance reliability

Waveform capture is a diagnostic tool that records the electrical waveform 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 maintain the reliability of the power supply system.

The main advantages of Waveform Capture in Vertiv™ PowerSwitch 7000 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 power switching events during and after an anomaly occurs.
- **Preventive maintenance:** Regular monitoring of the waveform data can help in predicting potential power train 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. System captures 3 cycles before the event, 1 cycle for the transfer, and 3 cycles after the event.
- **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 enables that only pertinent data is captured and reviewed.

The Waveform Capture feature in the Vertiv™ PowerSwitch 7000 enhances uptime and reliability through detailed electrical waveform analysis, offering a robust tool for maintaining critical infrastructure. This feature can be installed via configuration by manufacturing or service teams.

Vertiv™ PowerSwitch 7000 communication and product options

Vertiv™ PowerSwitch 7000 has a wide choice of monitoring and communications options to keep you connected to your critical power protection system.

- **File Transfer:** Two USB interfaces available on RDU120 card enhancing its functionality by enabling data transfer (including Waveform Capture), firmware updates, configuration and diagnostics making it an essential component for system management
- **Input contact isolator (ICI) Board:** Customizable input relays allow alarms from other devices to be displayed on Vertiv™ PowerSwitch 7000 display. Provides an interface for up to eight user inputs.
- External messages and alarms can be routed to the unit, via the ICI.
- **Programmable relay board (PRB):** Programmable output relays for custom customer alarms and connections. Up to two PRBs can be installed in the
- Vertiv PowerSwitch 7000 to route system events to external devices.
- **RDU-120 card(160-630A):** The RDU120 communications card in Vertiv PowerSwitch 7000 employs Ethernet networks to monitor and manage a wide range of operating parameters, alarms and notifications

Options and Accessories:

- **Seismic anchors:** To offer stability for the unit in the event of seismic activity, anchors are available for securing the unit to a concrete floor to meet seismic IBC and GR63 Zone 30 requirements.
- **Redundant output breaker:** An output rotary switch provides redundancy in the output power path. The breaker is connected in parallel with the output rotary switch.
- **Remote source selection:** An optional Remote Source Selection board may be installed in your Vertiv PowerSwitch 7000. This option allows you choose the preferred input source from a remote location. Terminal connections enable you to remotely select a preferred source in the
- Same process as the local source transfer selection.
- **Password protected HMI:** The password protected feature in an HMI restricts unauthorized access, prevents unwanted changes, offers role-based security, enables accountability, ensures compliance, and protects sensitive data, enhancing overall security and system integrity.

Vertiv™ Liebert® IntelliSlot™ RDU120 Communications Card

- Provides web access to the installed devices via popular web browsers-Microsoft Internet Explorer, Mozilla Firefox, Google Chrome and Safari.
- Provides alarm notifications via email and text messaging.
- Supports environmental monitoring via Vertiv™ Geist™ sensors for temperature, humidity, leak detection, door closures and contact closures.
- 1Gb Ethernet supports modern network environments
- Standard restful API supporting customer-based tools.

Vertiv™ Liebert® IntelliSlot™ RDU120 Communications Card provides connectivity to a TCP/IP-based Ethernet network to allow the device to communicate with network management systems (NMS) via SNMP, Modbus or BACnet. Events can be communicated to the NMS to provide remote status monitoring and alarm detection. The card includes an RJ-45 port for Ethernet connectivity via a Category 5 cable.

Rely on integrated project and lifecycle UPS services for superior critical infrastructure protection

Guarantee 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. Comprehensive capabilities include factory witness testing and site acceptance inspection

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 ensures 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™ PowerSwitch 7000 – Technical specifications

Electrical	
Current Amp Rating	160, 250, 400, and 630A
Input Voltage	380/400/415V
Frequency	50 or 60Hz
Poles	3P or 4P
Neutral	100% Rated
Withstand	Ext. Fused: 35kA
Efficiency	99% @415V
Overloads	125% for 10 mins 150% for 1 min 200% for 10 sec
Safety	IEC 62310-1
EMC	IEC 62310-2
RoHS	Yes
Operating conditions	
Operating Temperature	0 to 40°C
Storage Temperature	30 to 70°C
Audible Noise	Meets ISO 7779 standard
Relative Humidity	0 to 90% non-condensing
Altitude	up to 4000ft. (1219m) Derated 4000-6500 ft.(1981 m)
Monitoring	
Monitoring Configurations	Monitoring at the System level (Input and Output)
Display	9.0” Color touchscreen
Measured Values	Voltage, Current, Power Factor, Energy, Harmonics
Protocols	Modbus TCP, SNMP, BACnet IP or MSTP, Modbus/RTU, SMS, Email, HTTP/HTTPS and Vertiv Protocol
Environmental sensor enabled through same protocols	
Physical	
Dimensions	915mm W x 830mm D x 2000mm H (36”W x32.7”D x 78.7”H in)
Unit Weight, kg (lbs)	477.22 kg (1052 lbs.)
Shipping Weight, lb. (kg)	562.45 kg (1240 lbs.)
Seismic	IBC SDS 1.54 IEC EN-60068-3-3 level II Telcordia Zone 3

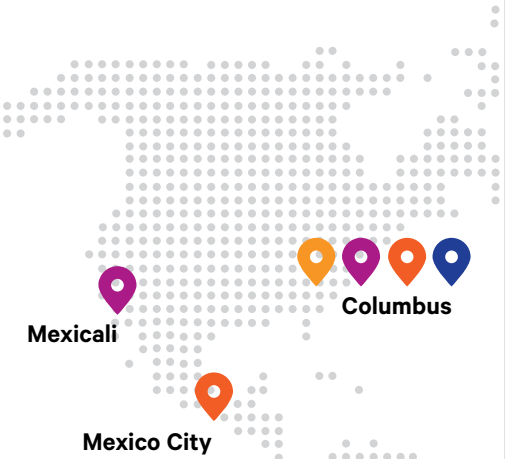
Global presence for a close partnership. Everywhere.

Global AC Power Sites

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

AC 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 Experience Center

- **800+** Customers every year
- From **50+** countries
- **10+** people dedicated
- **1700 m²** Witness Testing
- **650 m²** Showroom
- **650 m²** Academy
- **5** testing stations, each providing up to 3.5 MVA of capacity = total 4 MW

- **140+** witness test every year
- **400+** UPS systems tested each year
- **Up to 4000 A** simultaneous test at full load

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 **AC 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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