

IT Infrastructure Solutions

Enabling the Vital Applications of the Digital World



Integrated Solutions

FOR NETWORK EDGE & CONVERGED SYSTEM DEPLOYMENTS

Rapidly deploy and manage IT infrastructure in just weeks without building new data center space. Our Smart Solutions products help you meet your IT needs with significant savings. With simplified, standardized designs, you can start small and expand over time.





Smart Mini 12RU

Smart Midi 24RU

SmartSolutions™ Passive Range

The SmartSolutions[™] Passive range provides simple configuration and standardised design that allows installation within hours upon delivery to the site. All components of this micro data centre can be managed centrally from the main site via a remote monitoring system, eliminating the need to deploy on-site IT staff. The plug-and-play approach makes it easy to relocate and re-install the system to another location with minimal effort.

Features:

- Plug-and-play self-contained data centre in a box
- Easy installation and can be operational on day one
- Centralised monitoring system
- Scalable to meet additional capacity requirements
- Standardised design for ease of deployment
- Optimised and factory-tested facility infrastructure components



SmartRow[™] Plus

SmartRow™ Plus is a fully-integrated data center infrastructure solution equipped with power, thermal management and infrastructure management and monitoring solution from Vertiv.

Features

- All-in-one design and easy to use
- Suitable for high or low density cooling requirement
- Low PUE, thanks to the high efficiency ITA2 UPS and CRV+ with digital scroll compressor
- Integrated power management
- Local touch panel LCD and remote IP-based monitoring
- Mobile App monitoring
- No raised-floor or room required







600mm width with external condenser wi

800mm width with external condenser

600mm width with internal condenser

SmartCabinet™

Self-contained, pre-configured, pre-engineered and factory tested infrastructure solutions for data centers and telecom networks.

Features:

- All-in-one design and easy to use
- No dedicated IT room required
- Dust protection and noise insulation
- Built-in high efficiency UPS, air-conditioning, power distribution, and security control
- Integrated power management
- Large 7-inch LCD touch panel for local monitoring (9-inch for integrated)
- Suitable for network closet and small office



New SmartAisle™

Liebert[®] SmartAisle[™] the most advanced fully integrated data center infrastructure solution with the futuristic capabilities embedded with sophisticated technology to make the data center operations efficient, quickly deployable, and provide monitoring and control of the entire operations.

Features:

- Lowest Total Cost of Ownership Increase of 30+% cooling efficiency utilize SmartAisle[™] logic ensures the most accurate cooling environment.
- An integrated design facilitates quick deployment in less than 2 weeks
- Simple Architecture, an integrated stand-alone build-to-install approach for the entire DC set-up in one go
- A 15-inch large HMI control panel enables administrators and facility managers to visualize the entire system operation in real time
- Uptime Tier IV Ready



Line-Interactive UPS

Uninterruptible Power Supplies

We take a holistic approach to power efficiency and availability across the power spectrum. Using our solutions, companies can overcome challenges to developing, deploying and managing power regardless of industry.

Liebert[®] PSA itON

(600VA, 850VA, 1kVA)

Features and Benefits Boost and buck AVR to stabilize

- the input voltage
- AC overload protection
- Auto restart with AC recover
- Off mode charging
- 0.6 Power factor
- USB communication port and shutdown software . (UX models only)
- 2 years warranty

Applications

- Desktop PCs Small Routers, Bridges, and Hubs
- Point-of-Sale Terminals
- Other Sensitive Electronics

Runtime Chart (minutes)

50% 6 3	00VA
	5
100% <1 <1	<1

Liebert® PSA (500, 650, 1000, 1500VA)

Line-Interactive UPS

Features and Benefits

- Boost and buck AVR to stabilize the input voltage
- Three to six battery-backed UPS outlets, depending on model size
- One to two surge-only outlets, differentiated by color
- USB communications / shutdown software and cable included
- Up to five minutes of battery backup time of full load
- RJ-45 port for data line surge protection
- 2 vears warrantv

Runtime Chart (minutes)



Line-Interactive UPS

Liebert[®] PSI

(750, 1000, 1500, 2200, 3000VA)

Features and Benefits

- More than three (3) mins of internal battery backup time at 100% load
- Buck / boost automatic voltage regulation
- High 0.9 power factor
- Liebert® Multilink software
- 8 to 9 battery-backed outlets •
- Rack / tower convertible with rotatable display panel
- 2 years warranty

Runtime Chart (minutes)

Load (%)	750VA	1000VA	1500VA	2200VA	3000VA
10	84	93	76	82	76
20	45	47	32	44	32
30	25	26	17	19	17
40	15	15	12	14	12
50	11	12	9	11	9
60	9	9	7	9	7
70	7	7	5	7	5
80	5	6	4	5	4
90	4	5	3	4	3
100	4	4	3	3	3

Liebert[®] GXT MT+ (1kVA, 2kVA, 3kVA)

Features and Benefits

- Power factor 0.8
- Mini tower compact design Large LCD display for easy
- monitoring and operation Programmable outlets maximize battery runtime for critical load
- ECO mode for energy saving Double conversion on-line
- technology
- Long backup models suited for up to 8hrs of battery runtime
- Optional 8A external charger
- 2 years warranty

Runtime Chart (minutes)

Load (%)	1kVA	2kVA	3kVA
25	38	39	31
50	17	16	12
75	10	10	7
100	6	6	4

Liebert[®] GXT MT+ CX (1kVA, 2kVA, 3kVA)

Features and Benefits

- True Online Double Conversion with DSP Control Technology
- 0.9 Power factor for Standard models, 0.8 for Long Backup
- Smaller Footprint
- Micro-processor controlled
- Standard and Long Backup models .
- Tower adaptability
- Very high (0.99) power factor at input
- Can handle extremely low and high input voltage
- Can handle extreme fluctuations of generator frequency
- Standard, user friendly UPS monitoring software and auto shut down software
- Optional SNMP (support 200,000 logs*) and AS400 Card (Dry Contact Signals)

Runtime Chart (minutes)

Load (%)	1kVA	2kVA	3kVA
25	24	26	31
50	11	12	13
75	6	6	7
100	4	4	4

True On-line



(700VA to 3kVA; 5kVA to 10kVA) **Features and Benefits**

Intuitive Multi-Color LCD Screen

• Programmable outlets •

Liebert[®] GXT4

- Active Eco-Mode •
- Energy Star Certified •
- Up to 6 external battery packs •
- External battery packs
- Bundled rack rail kit (all models)



On-line UPS

Runtime Chart (minutes)

Load (%)	700VA	1KVA	1.5KVA	2KVA	3KVA	5KVA	6KVA	10KVA
10	105	91	112	81	91	105	97	98
20	62	38	51	37	39	52	47	42
30	37	31	34	23	23	40	33	25
40	32	23	23	16	16	27	22	17
50	27	17	18	12	12	21	17	12
60	22	14	14	9	9	17	14	9
70	18	11	11	7	7	14	11	7
80	15	9	9	5	5	12	9	6
90	13	8	7	4	4	10	8	5
100	11	6	6	3	3	9	6	4

External batteries available





True On-line

IT Infrastructure Solutions

On-line UPS

Liebert® ITA2 (5KVA - 20KVA)

Features and Benefits

- Eco-Mode provides a superlative efficiency of up to 99%
- Programmable output outlets/ terminals with cascade protection to protect key devices during heavy load
- Integrated Ethernet port with HTTP protocol compatibility & streamlined remote monitoring
- Robust structure with cutting edge channelized airflow design
- Dust and moisture resistant



Liebert[®] EXS (10kVA-40kVA)

Features and Benefits

- Top-level double conversion UPS for mission critical applications
- VFI efficiency up to 96.2% VFD efficiency up to 99%
- Unity output power factor
- Compact dimensions
- Parallel capability up to 3+1 units
- Standard and extended versions for optimized runtime
- Vertiv[™] Power Insight
- CPSS ready: EN 50171 compliant
- 0.99 power factor at input

Runtime Chart (minutes)

Battery Configuration (10-20kVA UPS)	10kVA	15kVA	20kVA
1 x 32 x 9AH	7	5	n/a
		-	
2 x 32 x 9AH	21	13	7
3 x 32 x 9AH	36	21	15
4 x 32 x 9AH	53	30	21
Battery Configuration (30kVA UPS)	30kW	24kW	15kW
Battery Configuration (30kVA UPS)	30kW	24kW	15kW
Battery Configuration (30kVA UPS) 3x32x7 AH	30kW	24kW 8.6	15kW 17
3x32x7 AH 4x32x7 AH	5 9	8.6 12.5	17 25
3x32x7 AH	5	8.6	17
3x32x7 AH 4x32x7 AH	5 9	8.6 12.5	17 25
3x32x7 AH 4x32x7 AH Battery Configuration (40kVA UPS)	5 9 40kW	8.6 12.5 32kW	17 25 20kW

True On-line

Liebert[®] APS (5-20kVA)

Features and Benefits



- Transformer-free and
- transformer-based models User installable, hot-
- swappable capacity and battery modules Internal redundancy capability (N+2/20kVA)

Liebert[®] APM (18-90kVA)

Features and Benefits

- Ultra high efficiency up to 96% in double conversion mode, flat efficiency curve
- Each 18kVA module deliver 18kW, unity PF
- Wide voltage and frequency range
- Distributed controller: Each module has its own DSF
- Hot swappable power modules
- Optional branch monitoring system with distribution version
- Standard built in LBS function and smart parallel
- Capable to handle 0.9 leading loads
- Modular design architecture

Thermal Management

Intelligent, comprehensive approach to managing and controlling heat across your mission-critical facilities

Rack Cooling

Liebert® CRV+ DX Features

- Precision cooling and humidity control
- Installs within the row of racks
- Features variable speed EC plug fans and highly efficient inverter compressor
- Available with advanced automatic controller

Benefits

- Horizontal airflow cooling design is suitable for non-raised or raised floors
- Air, water and chilled water systems available
- Adjustable airflow baffles maximize cooling to rack equipment, allowing the system to be positioned within the row or at the end of the row
- Up to 16 units can be networked together and up to 10 remote sensors provide a precise and efficient cooling solution
- DC inverter compressor can modulate capacity from 30% to 100%, matching the cooling demand

Applications

- Installs at the ends or within the row of racks on non-raised or raised floor applications
- Ideal for hot/cold aisle configurations
- Optimal performance when used with SmartAisle™ system

Room Cooling

Liebert® DM

Variants

Air Cooled

Features

- **User-Friendly and Maintenance-Free** Large screen display with multilevel password protection and
- expert fault-diagnosis functions Automatic startup on power and
- scheduled startup also available
- Standard RS485 Monitoring Interface Equipped with alarm for irregularities on blast
- reduction, fan failure and filter clogging
- Email and SMS notification (thru the Liebert® RDU) for remote monitoring functions

Highly adaptive

- 24/7 operation capable
- Ultra wide input voltage range; multiple power protection functions
- Environment adaptability: adoption to outdoor temperature while meeting cooling requirements
- Adaptive to heat dissipation of the main equipment

Benefits

- Energy Saving
- Space Saving

Enclosure Cooling

Liebert® HPS

Features



- the displacement cooling concept Energy and space saving due to
- the high efficiency components and the compactness of the innovative freecooling version
- Extremely flexible due to the possibility of selecting among several versions

Benefits

Can be configured depending on the main application drivers (noise level, environmental conditions range etc.) and the desired options (freecooling, emergency freecooling, heating etc.)















Power Distribution Units

Your power distribution system impacts both availability and scalability. Our room, row and rack power distribution units give you the flexibility to adapt to changing environments. They also support monitoring to ensure availability and provide insight into energy use.

Vertiv[™] Geist[®] rPDU Basic

Features and Benefits

- Reliable power distribution to critical IT equipment.
- Fast, inexpensive customization, including non-standard cord lengths
- Standard three-year warranty, upgraded to five years with product registration.
- Available in vertical and horizontal rackmount form factors.
- Flexibility to meet a broad range of requirements, with a variety of electrical and receptacle configurations available.
- Simple and quick installation in all standard racks or cabinets with included mounting brackets.

Vertiv[™] Geist[®] rPDU Monitored

Benefits

- Reliable Reliable power distribution with local and remote power monitoring options offer quick access to critical power usage information to evaluate energy usage trends and maximize uptime.
- Environmental monitoring capabilities ensure users have critical infrastructure data at their fingertips to prevent climaterelated equipment failure and system downtime.
- Upgrade your hot-swappable monitoring device on the fly to leverage new technologies and accommodate changing business needs without having to replace entire power strips.
- Simplify circuit and phase balancing with color-coded receptacles.
- Monitor power consumption at the outletlevel for a detailed view of power distributed to specific equipment with the outlet level option.
- Gather comprehensive power data at the palm of your hand with the use of the Vertiv VLC mobile app.
- Every unit is 100% tested for reliability and functionality to ensure units function as designed.
- Standard three-year warranty, upgraded to five years with product registration.

Vertiv[™] Geist[®] rPDU Switched

Benefits

- Outlet level control to turn on, turn off or reboot individual outlets.
- Bi-Stable latching relays significantly reduce idle power draw.
- Upgradeable and Hot-Swappable monitoring device
- Local and remote power monitoring with accuracy of +/- 1% (ANSI & IEC Standards)
- VLC (Visible Light Communication)
- Environmental monitoring with the addition of optional sensors.
- High Temperature Grade 60 °C for high temperature environments.
- Color-coded U-Lock receptacles by circuit for instant identification.
- Flexibility to meet a broad range of requirements, with a variety of electrical and receptacle configurations available.
- Simple and quick installation in all standard racks or cabinets with included mounting brackets.

Basic PDU

Liebert[®] MPI

- BSingle-phase input that supports strip/ branch -level metering or strip/branch
 level metering and outlet switching
- Measures and monitors voltage, current (branch), frequency, power (kW), energy consumption (kWh) and power factor.
- Threshold/alert capabilities provide preemptive notification of any impending overload issues before they occur
- LED display and a built-in browser interface for local and remote access with real-time data
- Onboard data log for individual PDU with up to 10,000 empirical data and alarm logs
- Highly compatible with multiple management software platform including RDU-AG2 and RDU-M

Managed PDU

Liebert[®] MPH2

- Monitors electrical and environmental parameters with set threshold and alarm tools.
- Controls and manages individual
 receptacles and/or groups of loads and
 devices.
- Allows you to predict failing conditions before they occur and proactively manage connected equipment for maximum uptime.
- Energy and power metering to maximize the data center power and cooling infrastructure.
- Lowest power consumption of all switched rack PDU designs ensures lower operating costs for datacenter.
- Up to four MPH2[™] rack PDUs may be interconnected as a Rack PDU Array[™]

Adaptive PDU

Liebert[®] MPX

- The Liebert[®] MPX is a modular PDU; input and output models can be flexibly configured as required
- Allows user to add individual hotswappable modules for capacity as demand increases
- Controls and manages individual receptacles and or groups of loads and devices; shuts down non essential equipment during power outage
- Expanded branch overload protection, minimizes threat of cascading PDU overload
- Employs energy efficient receptacle control technology
- Output modules can be changed during running operation; no downtime



Monitoring, Control and Management

Our solutions provide comprehensive functionality, scalability and security across the facility. By expanding data access and analysis, we provide unprecedented insight which lowers costs and enables rich remote management while ensuring security.

Vertiv[™] 18.5" Local Rack Access (LRA) Console



- Widescreen: 18.5" LED LCD panel with a 16:9 aspect ratio. Supports resolutions up to 1600x1200 at both full screen and aspect ratio
- Form Factor: Easy access in the 1U space. Detent lock engages when stowed in the rack. Room for KVM installation in the same 1U space
- KVM Compatibility: LRA Consoles are compatible with all Avocent[®] data center KVM switches
- User Interface: On-Screen menu has an intuitive design and can be accessed in 7 languages
- Data Centre Local Access: Complete entry point to local servers when needed
- Ease of use: Full desktop style keyboard with number pad, touch pad and 2 USB 2.0 pass through ports
- Environmentally responsible: Low power usage during operation and standby
- **Global availability:** Certifications and keyboard language support.
- Integrated KVM switch options with 8- or 16-port, local and/or remote access to servers

Vertiv™ AV Series KVM Switch

Features and Benefits

- Local Port: Support for USB and/or PS/2 user keyboards and mice
- Single Solution: Support for USB, PS/2, Sun and serial target devices in a single solution
- Graphical, Multilingual OSD: Advanced, graphical OSD eases system configuration and server selection
- Space-Saving: CAT-5, thin cabling saves space in the rack and allows up to a 100-foot distance between the server and the switch
- Intelligent Cabling: Server interface modules and integrated access cables automatically assign and retain unique server names for each attached server
- Powerful User Access Control: An administrator can grant KVM access to only certain users. The administrator can also limit KVM access to only specific targets on the switch. The AV Series 2030 switch supports smart card/CAC authentication to target devices, enabling the extension of two-factor

Vertiv™ Universal Management Gateway



Features and Benefits

- Comprehensive DCIM platform in a single pane of glass
- Convenient single U chassis reduced rack space and footprint
- Complete connectivity (IPMI, SNMP, OPC, Modbus, BACnet, Velocity)
- Physical sensor aggregation
- Easy installation across various remote access technologies
- Up to 40 simultaneous KVM sessions
- Up to 1024 service processors; wide variety of servers managed
- Up to 40 full auto-sensing ports
- KVM and SPM capability per port (using the UMIQ-V2)
- Data collection up to 10,000 data points per minute
- Real-time information across IT and facilities

Avocent MergePoint Unity[™] KVM over IP Switch

 Advanced Remote Management provides secure and remote, out-of-band connections directly to the physical



KVM, USB and serial ports to complement existing in-band software management tools.

- Meet service level agreements and minimize downtime through a unified approach that provides IT administrators a faster method to diagnose, reconfigure or restore equipment.
- Virtual Media support enables USB media such as CD-ROMs, flash memory and external drives to be virtually attached to a remote server's USB port.
- CAC/Smart Card Support allows remote or local users to map a USB-based smart card reader to the attached servers and authenticate using their smart cards.
- FIPS 140-2 compliance: based on the FIPS 140-2 validated cryptographic modules (certificate number 1051).

Avocent ACS 8000 Serial Console

Benefits

- Secure in-band and out-of-band network remote management
- Remotely manage and control IT assets from anywhere in the world
- Maximize productivity while providing scalability and reducing operational costs.
- Ensure compliance with data center access and security policies – customizable, multiple access levels

Features

- Fast, automated configuration with Zero Touch Provisioning
- Access and troubleshoot remote locations using automatic network failover to cellular (and failback)
- No need for adaptors with automatic Cyclades™ and Cisco pin-out conversions
- Expanded support for Rack PDUs from Vertiv, ServerTech, APC, Raritan and Eaton
- Support for Vertiv GXT4 UPS systems
- Integrated support for 1Gb SFP fiber modules
- 8 USB ports to support new IT equipment and external devices

RDU-A G2

Features

The Liebert[®] RDU-A G2 allows data center managers to perform the following operations through a secure web page:

.....

- Monitoring of the health and status of the equipment
- Monitoring of environmental conditions i.e. temperature and humidity, leak and smoke.
- Monitor the improved communication speed in transmitting control or commands to the equipment and parameter setting
- Records Data and Logs of historical information of alarms and notifications

3rd Party Communications:

- SNMP
- Modbus 485
- Dry contacts
- Analog Signals

Other variants

- RDU-M
- RDU-EX

JSB and/or PS/2 user



Avocent[®] DSView[™] Management Software

Features

- Secure, remote, centralized data centre management
- Multi-device support
- Virtual media support
- Integrated solution for KVM and power control
- Simple, fast and reliable user interface
- Access service processor managers
- Notifications
- Schedulina
- Multi-platform support
- Flexible authentication/access control
- System/User logs
- Selectable encryption modes



Trellis™ Power Insight

Features

- Alarm notifications via email. SMS and on-screen icons
- Shutdown protection for individual and virtual servers
- Auto discovery of devices
- Access to each device web interface
- Alarm views with data that can be sorted or filtered
- Summary data of individual devices
- Dashboard views of key data points such as capacity load percentage, output current, battery percentage charge and battery time remaining



Trellis[™] Facility Manager

Features

- Critical infrastructure management and monitoring in real-time
- Dynamic 2D & 3D visualization
- Dynamic single line diagram
- Customizable reporting tool



- Consolidated alarm management
- PUE dashboard

Racks and Containment

You want the optimum benefits of your investments. And you want to be prepared for the unknown and unexpected. Our rack and containment products deliver flexibility, adaptability and cost-effective solutions to your specific data center requirements.



Vertiv[™] S-Series

Features

- Strong and durable solid frame that can hold up to 1,200KG static load
- 75% open high perforated doors for optimal air flow
- Convenient tool-less installation of cable and air flow management
- Seismic solution is available for critical application
- Fast deployment leveling feet
- 3 point swing lock



Vertiv[™] VR Rack

Rapid Deployments Everywhere You Operate

Standardize your deployments around the world and bring them online faster with the Vertiv[™] VR rack. The Vertiv VR supports a wide variety of equipment, including: servers, storage, switches, routers, PDUs, UPSs,console port servers and KVM switches.

The Vertiv VR is delivered ready for high density environments to serve your missioncritical needs even as they evolve and change. This rack gives you the flexibility you need with easy installation.

Service

No two situations are alike. So whether you're looking for engineering, installation, project on-site operations management, preventive maintenance or energy-consumption monitoring, we offer a wide range of programs and services designed to meet your critical infrastructures support needs.

Features

- Available in 8 standard sizes.
- · Full depth adjustability of the 19" rails.
- · Frame design allow for more than 2.5" more usable depth than similar sized racks.
- Doors that have 77% perforation and can be hinged on either side.
- Tool-less removable top panel has four cable entry holes allowing for up to 2000 Cat6 cables, or 60A PDU plugs.
- Two dual purpose full height depth adjustable PDU / cable management brackets mounted in the zero U space with tool-less button mounting of rack PDUs, accessory mounting holes for tool-less cable management accessories, and integrated cable tie off positions.
- 42U frame height that allows for the rack to pass through standard doors on casters.
- · Simple external baying, allows for metric baying or on 24" centers.
- Split side panels with single locking slam latch allows for easy single person removal / installation.

Start up

- On-Site Labor
- Extended Warranty
- Preventive Maintenance Comprehensive Maintenance
- Data Centre Audit
- Battery Monitoring
- Remote Monitoring Service
- Power Assurance



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