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Vertiv™ 360AI

Solution Design Specifications

Model Number: 1X50RE



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1. Executive summary

Vertiv™ 360AI Solutions uniquely combine deep domain expertise in power architectures, thermal management, IT systems, and remote management, to enable rapid deployment of infrastructure for AI applications and high-performance computing.

Your goals for high-density, floorspace optimization, sustainability and efficiency became our teams' key design criteria. We focused our efforts on designing solutions that will exceed your goals and expectations with seamlessly integration into your white space. Our engineering team delivered world class solutions on this promise, and our services team can fully support it on request with their unmatched expertise and global footprint.

2. General technical description

This high-density solution is sized for IT load of 50 KW across 1 rack, assuming 100% air-cooling via rear door heat exchangers.

The cooling capacity of the rear door heat exchanger (50 kW) has been calculated assuming the temperature of the chilled water in the primary fluid network is 12.0°C (53.6°F) at 90 lpm or 23.78 GPM, 23°C (73.4°F) room temperature, and 55% relative humidity. This equates to a water delta T of 8.0°C (14.4°F) or 20.0°C (68°F) return.

Included products are a rack that houses rack PDUs, rear door heat exchanger, and top-of-rack management appliance, as well as other accessories necessary for integration and normal data center operation.

The solution requires comprehensive deployment services for installation, fluid-fill, recurring a warranty service such as warranty inspection, start-up, and acceptance testing which are not included in the present scope of work. Optional services, available on demand, include workforce training on thermal management operation and servicing.

2.1 System capacity

01	Rack(s)	**50 kW**	Total solution capacity	**50 kW**	Load per rack

2.2 Technologies used

Cooling Method	Rear-Door Heat Exchanger
Heat Rejection Type	Water

3. Material list

Qty.	SKU	Description
1	VR3357	Rack: Vertiv VR3357, 48U 800 mm x 1200 mm
1	DCD50	Rear Door Heat Exchanger: Vertiv Liebert DCD Water-Cooled Active Rack Door, 50 kW
2	VP7UA0A0	Rack PDU: Vertiv Power IT, Switched Outlet Level Monitoring, 80 A, 240/415 V WYE, 57.6 kW, Vertical, (36) Combi C13/C19, Hardwired
1	RDU501	Monitoring Unit: Vertiv Liebert RDU501 Intelligent Infrastructure Management Appliance, 1U

Material list only includes major components, other supporting peripheral components such as the hoses, valves, cable, adapter kits, etc. would be part of final quote document.

4. Solution pictures

4.1 Front quarter view

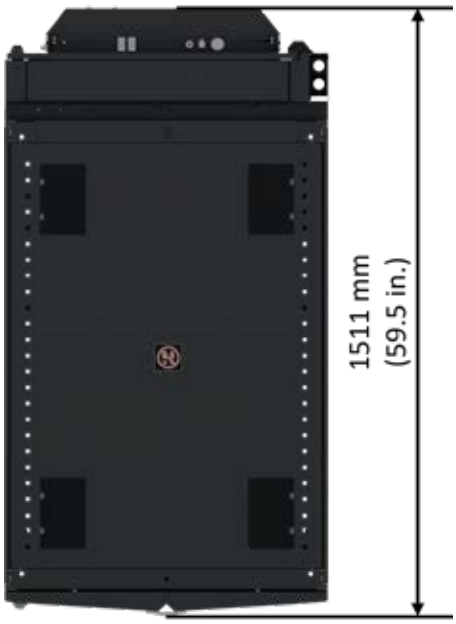


4.2 Back quarter view



The images shown are for representation and may not be an exact representation of the product.

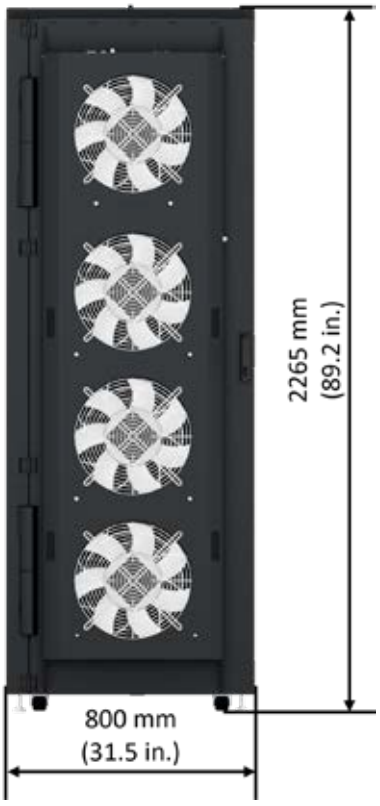
4.3 Top view



4.4 Front view

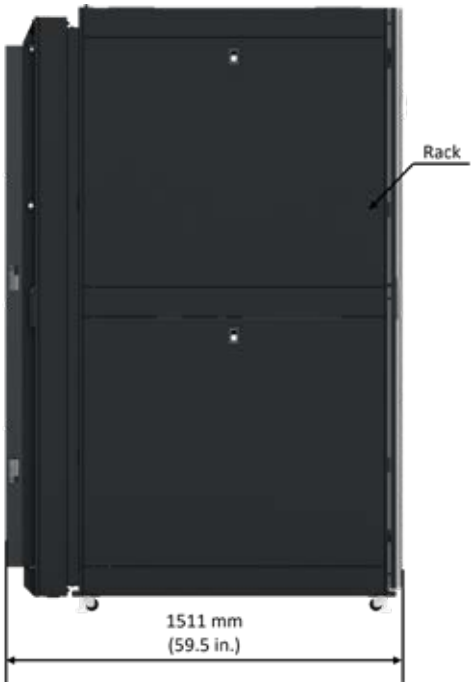


4.5 Rear view

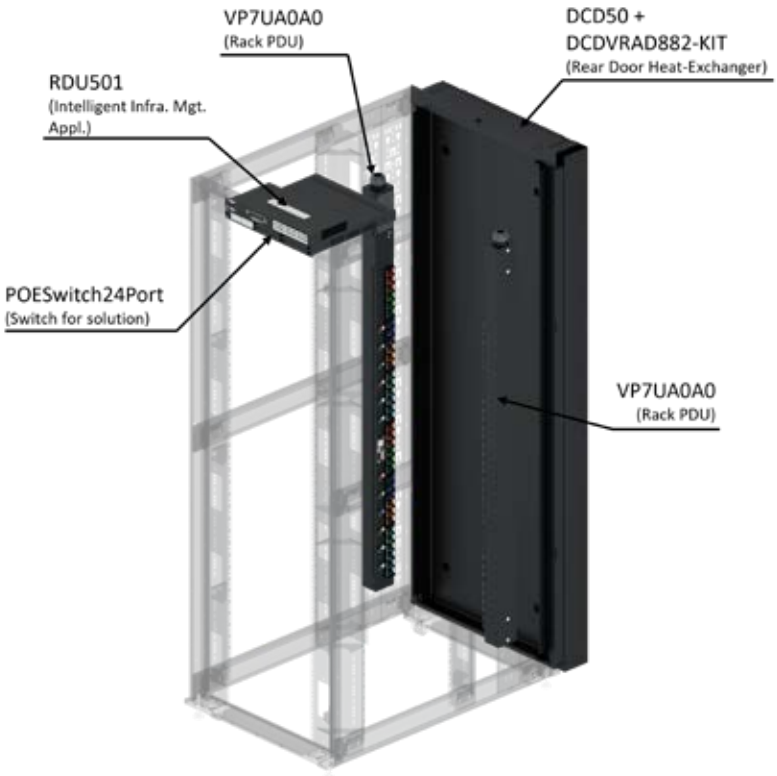


The images shown are for representation and may not be an exact representation of the product.

4.6 Side view



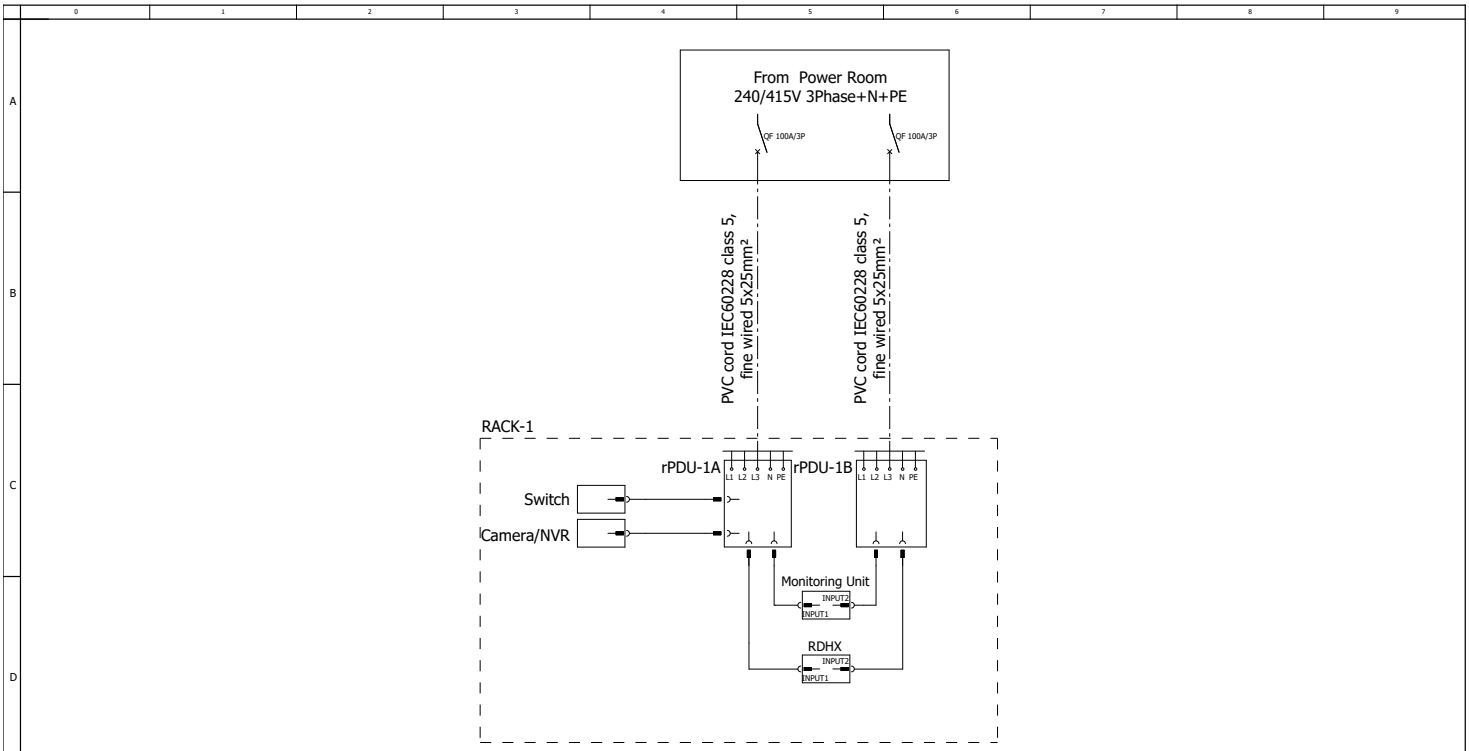
4.7 Vertiv™ Rack ISO view



The images shown are for representation and may not be an exact representation of the product.

5. Technical description

5.1 Single line diagram



Notes:
1. PLEASE REFER TO PRODUCT MANUALS FOR DETAILS.
2. AC CABLE SHALL BE 600V RATED, 4WIRE+GROUND.
3. MAIN INPUT MUST BE 415Y/240VAC, 3PHASE+NEUTRAL+GROUND. IF NOT, PLEASE CONTACT WITH VERTIV TO CONFIRM.
4. DRAWING DEPICTS POWER SYSTEM CONNECTION AND IS NOT REPRESENTATIVE OF PHYSICAL LAYOUT, PLEASE REFER TO MECHANICAL DRAWINGS FOR PHYSICAL LAYOUT.

LEGEND:
- CABLE OR COPPER BAR PROVIDED BY VERTIV
- CABLE PROVIDED BY OTHER
- EQUIPMENT OR ASSEMBLY UNIT
- SUBSYSTEM

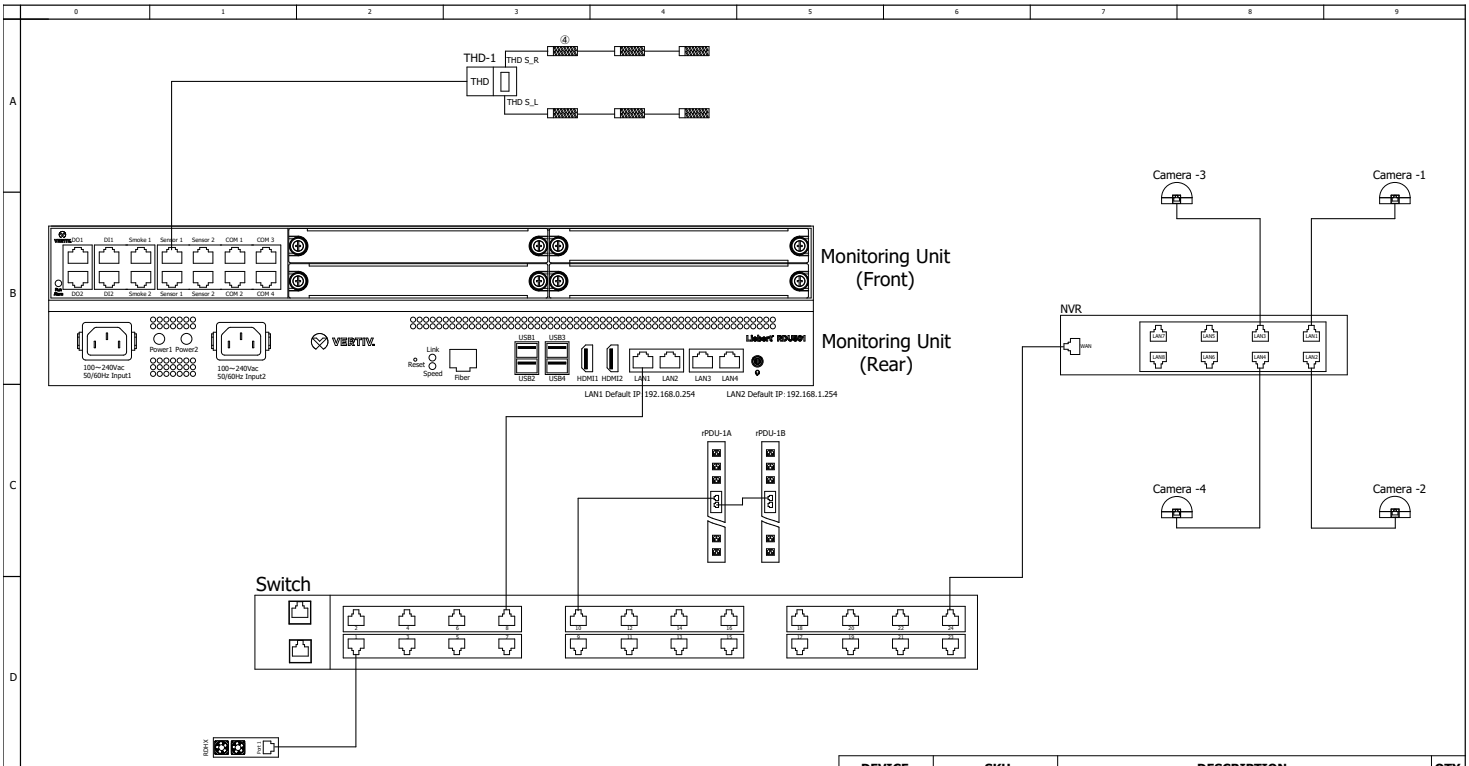
DEVICE	SKU	DESCRIPTION	QTY
rPDU1A-1B	VP7UA0A0	Rack PDU: Vertiv Power IT, Switched Outlet Level Monitoring, 80 A, 240/415 V WYE, 57.6 kW, Vertical, (36) Combi C13/C19, Hardwired	2
Monitoring Unit	RDU501	Monitoring Unit: Liebert RDU501 Intelligent Infrastructure Management Appliance, 1U	1
Switch	POE Switch24Port	Switch: POE Switch 24 ports, 1U	1
Camera/NVR	SmartCamBulletKit4	Camera: 4 pcs 4MP IR Bullet IP Camera, Network Video Recorder: 8 channels 4K PoE 4TB HDD Standalone Unit	1
RDHX	DCD50	Rear Door Heat Exchanger: Liebert DCD Water-Cooled Active Rack Door, 50 kW	1

PROJECT NAME: HD-1X50RE

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SHEET NO. 1 / 1		APPROVED BY:	Michael Klatt

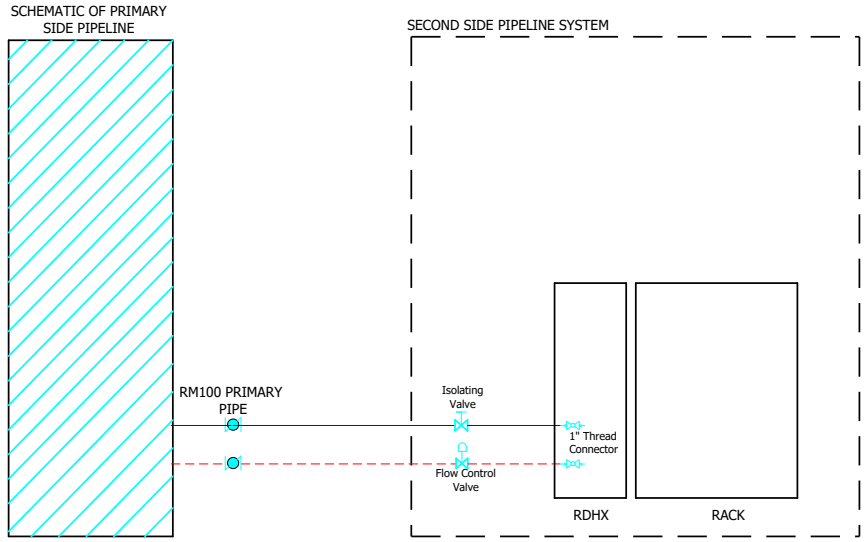
5.2 Monitoring diagram



DEVICE	SKU	DESCRIPTION	QTY
THD1	RDU-THD	Remote Temperature and Humidity Sensors: Package For Use With RDU501	1
rPDU1A-1B	VP7UA0A0	Rack PDU: Vertiv Power IT, Switched Outlet Level Monitoring, 80 A, 240/415 V WYE, 57.6 kW, Vertical, (36) Combi C13/C19, Hardwired	2
Monitoring Unit	RDU501	Monitoring Unit: Liebert RDU501 Intelligent Infrastructure Management Appliance, 1U	1
Switch	POESwitch24Port	Switch: POE Switch 24 ports, 1U	1
RDHX	DCD50	Rear Door Heat Exchanger: Liebert DCD Water-Cooled Active Rack Door, 50 kW	1
NVR	SmartCamBulletKit4	Network Video Recorder: 8 channels 4K PoE 4TB HDD Standalone Unit	1
Camera1-4		Camera: 4 pcs 4MP IR Bullet IP Camera	1

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5.3 Piping diagram



LEGEND:

- WATER SUPPLY HOSE
- WATER RETURN HOSE
- Butterfly Valve
- Thread Connector
- Flow Control Valve
- Isolating Valve

Notes:
1.ALL PIPELINE INSTALLATIONS MUST BE RELIABLY CONNECTED .
2.PIPE CONNECTIONS NEED TO ENSURE THAT THE INSIDE OF THE PIPE IS CLEAN AND NO FOREIGN MATTER IS INTRODUCED.
3.PLEASE REFER TO PRODUCT MANUALS FOR DETAILS.
4.DRAWINGS DEPICT PIPING SYSTEM CONNECTIONS AND DO NOT REPRESENT THE PHYSICAL LAYOUT. PLEASE REFER TO MECHANICAL DRAWINGS FOR PHYSICAL LAYOUT.
5.THE PRIMARY SIDE PIPELINE AND THE SECONDARY SIDE SYSTEM ARE DESIGNED AS INDEPENDENT SYSTEMS. THIS DIAGRAM ONLY PROVIDES A SCHEMATIC. THE PRIMARY SIDE IS ACTUALLY CONNECTED AND FIXED BY THE ON-SITE CONSTRUCTION AS REQUIRED.

DEVICE	SKU	DESCRIPTION	QTY
RDHX	DCD50	Rear Door Heat Exchanger: Liebert DCD Water-Cooled Active Rack Door, 50 kW	1

PROJECT NAME: HD-1X50RE

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CHANGE NO.	REVISION: A	ORDERED BY:	Jakub Brynda
SHEET NO. 1 / 1		APPROVED BY:	Cristina Ludusan

6. Technical specifications

6.1 Product weight

SKU	Quantity	Weight (per SKU)	Total weight
VR3357 (Rack)	1	180 kg (397 lbs)	180 kg (397 lbs)
DCD50 (Rear Door Heat-Exchanger)	1	133 kg (293 lbs)	133 kg (293 lbs)
VP7UA002 (Rack PDU)	2	10 kg (22 lbs)	20 kg (44 lbs)
RDU501 (Monitoring)	1	10 kg (22 lbs)	10 kg (22 lbs)

6.2 Maximum static load capacity of rack

SKU	Maximum static load capacity
VR3357 (Rack)	1363 kg (3000 lbs)

6.3 Operation & storage conditions

Operation conditions	Storage conditions
Operation temperature range: 0°C to 40°C (32°F to 104°F)	Storage temperature range: -20°C to 65°C (-4°F to 149°F)
Operation relative humidity range: 10% to 90% RH (non-condensing)	Storage relative humidity range: 5% to 93% RH (non-condensing)

7. Product specification

7.1 Vertiv™ VR3357 Rack

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 mission critical needs – even as they evolve and change. This rack gives you the flexibility you need with easy installation.



Key Benefits:

- Built-to-last engineering: This 48U rack is designed for rapid deployment even in high density environments with load capacities of 3,000 pounds static and 2,500 pounds dynamic.
- Fully configurable: Tool-less installation and removal of accessories and additional shelves allow you to modify this rack cabinet to suit the ever-changing needs of your network.
- 2.5 Inches more usable depth: The Vertiv VR Rack is designed to provide you around 2.5 inches more useable depth than any standard 19-inch rack cabinet.
- Dimensions: This server enclosure has dimensions of 2265mm x 800mm x 1200mm (height, width, and depth).
- Supports wide variety of equipment: This 48U server rack supports rack-based equipment including: servers, storage, PDUs, UPSs, console servers, and KVM switches.

Scan the QR code to get more information

7.2 Vertiv™ Liebert® DCD Water-Cooled Active Rack Door, 50 kW

The Liebert® DCD chilled-water cooling unit is a highly efficient heat exchanger module that mounts on the rear of an IT rack and provides up to 50 kW of room-neutral cooling. The active fan module mounts on the Liebert® DCD passive door and aids the server fans in properly removing the heat load from the high-density application. The Liebert DCD can be supplied by either the existing chilled water system or by a coolant distribution unit, such as the Vertiv™ Liebert® DCP, providing flexibility during installation.



Key Benefits:

- Low energy consumption using variable speed fans to match airflow with demand provides low operational costs and high energy efficiency.
- Mounts on the rear side of the network rack, saving valuable floorspace for additional critical IT equipment.
- Few moving parts enable a much longer product lifespan, providing high cooling availability for years.
- Multiple inlet/outlet water connection options provide flexibility during selection and installation.
- Non-condensing heat exchanger reduces the risk of damage to critical IT equipment, providing peace of mind to IT managers.
- Available with advanced monitoring controls to provide easy remote access through Modbus communication.
- Doors swing open 135°, allowing for easy access to equipment inside the rack.

Scan the QR code to get more information

7.3 Vertiv™ PowerIT rPDU VP7UA0A0

Upgradeable Switched Outlet Level Monitored rPDUs provide reliable power distribution to critical IT equipment while delivering individual outlet level control and a comprehensive view of outlet level power usage via remote network access. Includes environmental monitoring capabilities to obtain real-time environmental metrics.



Product Summary:

- Vertiv™ PowerIT rPDU, Switched Outlet Level Monitoring, 80 A, 240/415 V WYE, 57.6 kW, Vertical, (36) Combination C13/C19, Hardwired, Black Powder Coat.

Key Benefits:

- Remotely reboot outlets to power cycle unresponsive IT equipment or increase runtime of critical equipment upon power failure with outlet-level control.
- Reliable power distribution with local and remote outlet-level power monitoring options offers quick access to critical power usage information down to the device level to evaluate energy usage trends and maximize uptime.
- The monitoring offers redundant power capability providing continuous supervision even during an outage. Receive alert and alarm notifications when user-specified thresholds are breached via email, SMS, and SNMP traps.
- Environmental monitoring capabilities with the addition of optional environmental sensors help users have critical infrastructure data at their fingertips to prevent climate-related equipment failure and system downtime.
- Fault-Tolerant Daisy Chaining with RSTP simplifies intelligent rPDU connectivity and secures data is reported even when a break in the network chain occurs. Supports up to 40 rPDUs.
- Daisy-chain up to 50 devices on a single IP address and reduce deployment time with self-configuration of downstream devices.
- Provide reliable protection with a secure boot and a hardware trust anchor safeguarding critical infrastructure against unauthorized access.

7.4 Vertiv™ Liebert® RDU501

The Liebert® RDU501 is an intelligent infrastructure management solution from Vertiv that allows data center administrators to monitor environmental conditions and infrastructure appliances such as UPS, precision cooling units, generator sets, etc.

The Liebert RDU501 is a premium infrastructure gateway appliance equipped with out-of-band access to service processors as well as serial console management capabilities.



Fast Deployment:

- R 2.5D SmartSolutions Modelling with drag-and-drop interface.

Environmental Monitoring:

- Heat, Power and Assets Monitoring Dashboard.
- Thermal Management (including CRAC teamwork).
- Power Management.
- Security Management.
- Alarm and Data Reports.

IT Management Monitoring:

- Remote and local server management via IPMI 2.0 protocol
- Serial Console Management (Out-of-band access)
- Automated Startup and Shutdown of IT servers.

Scan the QR code to get more information



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