

Vertiv™ PowerDirect 3000

33kW, 50 VDC power system for AI Platforms



Benefits

- Save space with 33kW housed in a 1U, 19" shelf for high power density
- Simplify deployment with hot pluggable power shelf, power supply units (PSUs) and power management controller (PMC).
- Achieve over 96.5% energy efficiency at 50 to 100% load
- Enable AI compute with reliable, high-power delivery to meet growing rack demands.

Vertiv™ PowerDirect 3000 50 VDC power systems deliver high efficiency and reliable power. Combined with Vertiv’s complete power and cooling portfolio and end-to-end services, the offering supports a comprehensive approach to data center infrastructure.

Description

Vertiv™ PowerDirect 3000 50 VDC 33kW power systems deliver dense, efficient power for high-performance computing (HPC) and AI workloads. Designed for seamless operation, each 33kW power shelf houses six hot-swappable 5.5kW power supply units (PSUs) and a power management controller (PMC). The system incorporates additional energy storage within each PSU to efficiently manage dynamic GPU pulse loads. With multi-shelf parallel operation, rapid deployment features, and advanced telemetry, Vertiv PowerDirect 3000 systems enable scalable power distribution while optimizing space and efficiency.

Application

- Hyperscale data centers
- AI/ML and HPC workloads



Vertiv™ PowerDirect 3000 (1PSS503319N2)



Vertiv™ PowerDirect 3000 (1PSS503319N3)

Ordering information

Part number	Model number	Description
1PSS503319N2	PSS5033-19N2	50 VDC, 33kW, 19" 1RU, power shelf (left AC input) Power management controller L type bracket (left & right side) 744x43x40.5mm
1PSS503319N2RR	PSS5033-19N2-RR	50 VDC, 33kW, 19" 1RU, power shelf (right AC input) Power Management Controller L type bracket (left & right side) 744x43x40.5mm
1PMC1S2	PMC1S2	Power management controller
1R505500V2	R50-5500V2	Shelf, 50 VDC, 76kW, 3-phase AC input
1PSS503319N3	PSS5033-19N3	50 VDC, 33kW, 19" 1RU, power shelf (left AC input) Power management controller L type bracket (left & right side) 744x43x40.5mm
1PSS503319N3RR	PSS5033-19N3-RR	50 VDC, 33kW, 19" 1RU, power shelf (right AC input) Power management controller L type bracket (left & right side) 744x43x40.5mm
1PMC1S3	PMC1S3	Power management controller
1R505500V3	R50-5500V3	50 VDC, 5.5kW, 19" 1RU, PSU



Technical specifications

Input	PSS503319N2 / PSS503319N2RR	PSS503319N3 / PSS503319N3RR
Voltage, shelf and power supply unit	3P+N+PE (311 to 457VAC) / 3P+PE (180 to 260VAC) / L+N (176 to 305VAC)	3P+N+PE (311 to 457VAC) / 3P+PE (180 to 260VAC) / L+N (176 to 305VAC)
Frequency	45 to 65 Hz	45 to 65 Hz
Efficiency	>96.5% @ 50-100% load (240VAC input)	>96.5% @ 50-100% load (240VAC input)
Power factor	>0.96 @ 20-50% load, >0.99 @ 50-100% load, 240VAC	>0.95 @ 20-50% load, >0.99 @ 50-100% load, 240VAC
iTHD	<8% @ 20-50% load, <5% @ 50-100% load, 240VAC	<8% @ 20-50% load, <5% @ 50-100% load, 240VAC
Output capacity		
Voltage	50 VDC at no load, 49 VDC at 100% load, 48.5 VDC at 150% load	50 VDC at no load, 49 VDC at 100% load, 48.5 VDC at 150% load
Current, shelf	700A	700A
Current, power supply unit	112A at 49.0 VDC (5500 watts maximum)	112A at 49.0 VDC (5500 watts maximum)
Hold up time	20 ms @100% load	20 ms @100% load, 150J energy reserve
Protection capacity		
Over-voltage	Each power supply unit will automatically latch off, should its output voltage exceed 52.5V for 200 ms or instantaneously exceed 54V	Each power supply unit will automatically latch off, should its output voltage exceed 52.5V for 200 ms or instantaneously exceed 54V
Over-current	≤180%, ≤0.5 ms ≤150%, ≤50 ms 100%, continuous	≤180%, ≤0.5 ms ≤150%, ≤50 ms 100%, continuous
Over-temperature	Each power supply unit will automatically shut down if the internal temperature of the module exceeds a predetermined value. Operation will automatically resume after the over-temperature condition is removed.	Each power supply unit will automatically shut down if the internal temperature of the module exceeds a predetermined value. Operation will automatically resume after the over-temperature condition is removed.
Internal fault on output	Each power supply unit contains an output blocking (ORing) circuit which prevents an internal fault in the unit from affecting the bus voltage.	Each power supply unit contains an output blocking (ORing) circuit which prevents an internal fault in the unit from affecting the bus voltage.
Controller		
Communication ports	1xEthernet, 1xCAN, 1XVCOM, 3xI2C	1xEthernet, 1xCAN, 1XVCOM, 3xI2C
Protocol	Northbound IPMI, Redfish, SNMP ; Southbound PMBus, SMBus	Northbound IPMI, Redfish, SNMP ; Southbound PMBus, SMBus
Physical characteristics - Dimensions (H x W x D), Weight		
Power supply unit	40 x 68 x 640 mm, <4kg	40 x 68 x 640 mm, <4kg
Power controller	37.9 x 15.9 x 442.6 mm, <2kg	37.9 x 15.9 x 442.6 mm, <2kg
Product: Power shelf	1RU x 448 x 839.5 +/- 1.5 mm, 5kg (excl PSUs)	1RU x 448 x 839.5 +/- 1.5 mm, 5kg (excl PSUs)
Environmental		
Storage temperature	-40°C to +75°C	-40°C to +75°C
Operating temperature	-5°C to +45°C	-5°C to +45°C
Humidity	5% to 95% relative humidity, non-condensing	5% to 95% relative humidity, non-condensing
Altitude	0 to 3000m with no derating	0 to 3000m with no derating
EMC	FCC Part 15, Subpart B, Class A and EN55032 for radiated and conducted noise	FCC Part 15, Subpart B, Class A and EN55032 for radiated and conducted noise
Safety compliance	UL 62368-1, IEC 62368-1, EN 62368-1, RoHS	UL 62368-1, IEC 62368-1, EN 62368-1, RoHS

Vertiv.com | Vertiv Headquarters, 505 N Cleveland Ave, Westerville, OH 43082, USA

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