

Supporting 240V equipment in 277/480V environments

Vertiv™ in-rack step-down transformer for high-density deployments



Challenge

High-performance computing (HPC) workloads are pushing power demands beyond what conventional rack distribution can deliver. In response, operators are routing 277/480V AC already available onsite directly to the rack. High-density nodes with 277V power supply units (PSUs) can reduce wiring costs and transformer losses from 480V-to-415V step-down.

Top-of-rack switches, console servers, and networking gear still run on 240V AC, and that won't change on a short timeline. Serving that equipment in a 277/480V rack means a dedicated 240V circuit, adding cost most deployments didn't anticipate.

Solution

The Vertiv™ XFM-277V240VC1 is a 2U 4-kW dual-feed rackmount step-down transformer. It converts 277V to 240V inside the rack, reducing the need for a separate 240V circuit (see Figure 1). Dedicated 2-kW transformers per outlet group provide feed-level redundancy within a single unit.

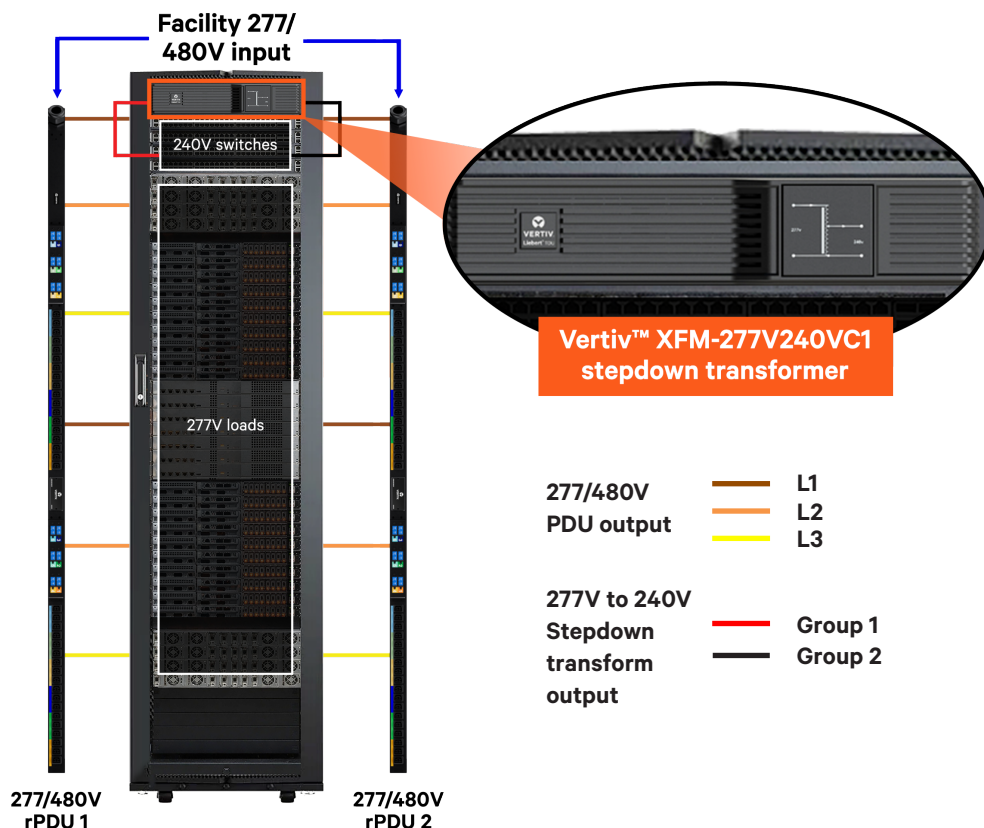


Figure 1. Typical rack application of the Vertiv™ XFM-277V240VC1 transformer distribution unit (TDU) in a 277/480V high-density environment. Two redundant 277/480V rack power distribution units (rPDUs) distribute power throughout the rack via L1, L2, and L3 output lines. The TDU at the top of the rack receives 277V power from the rPDUs, steps it down to 240V, and provides two redundant output groups (Group 1 and Group 2) to the four 240V switches mounted directly below it. Equipment operating at 277V draws power directly from the rPDUs.

Redundant 277/480V rPDUs distribute power to the equipment in the rack, including the Vertiv™ XFM-277V240VC1 stepdown transformer.

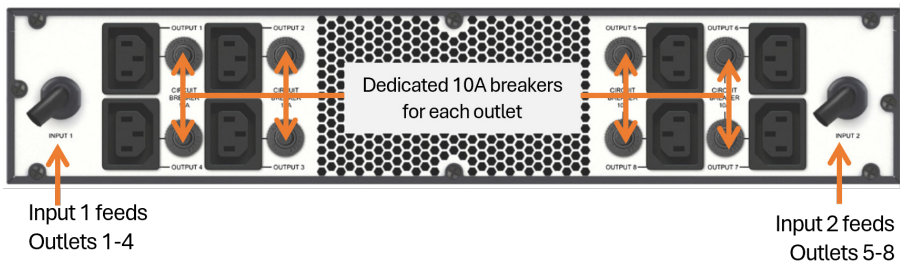
The Vertiv™ XFM-277V240VC1 then provides redundant 240V feeds to top-of-rack switches or other legacy hardware.

Separate feeds and dedicated 2-kW transformers for each outlet group are designed to support feed-level redundancy within a single step-down transformer.

Note: Dual-corded downstream equipment is required to take advantage of feed redundancy.



Vertiv™ Liebert® XFM-277V240VC1



Model	XFM-277V240VC1
Total rating	4000VA / 4000W
Output max Group 1, Group 2	2000VA / 2000W, 2000VA / 2000W
Input	
Nominal input voltage	277VAC
Input connections	2 Anderson Saf-D-Grid 2031KZ2, 6 ft length cord
Input current: RMS continuous	7.44A for each group
Output	
Nominal output voltage	240VAC
Output current: RMS continuous	8.3A for each group
Output connections	4 IEC320 C13 per group
Frequency range	Same as input line
Mechanical	
Unit dimensions D x W x H (mm)	10.3" x 17.2" x 3.4" / 261 x 438 x 86.2
Shipping dimensions	21.7" x 19.3" x 9.4" / 550 x 490 x 240
Rack height	2 U
Unit weight	50.3 lbs / 22.3 kg
Shipping weight	55.6 lbs / 25.2 kg
Environmental	
Operating temperature	0 to 60°C
Storage temperature	-15 to 60°C
Operating elevation, storage elevation	3,000m, 15,000m
Operating/storage humidity	0 to 95% non-condensing
Audible noise @ 1m	<45dBA
Agency	
Safety	UL, cUL
RFI/EMI	FCC Part 15, Class B
Environmental	Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH)/ Restriction of Hazardous Substances Directive (RoHS) compliant
Transportation	International Safe Transit Association (ISTA) 2A

Vertiv™ PowerIT® 277/480V rack power distribution units (rPDUs)

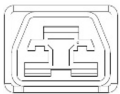
60 AMP

VP1N60AJ



Plug

Receptacle



Saf-D-Grid
(QTY 36)

- Vertical rPDU
- Basic, no monitoring, Upgradeable with interchangeable monitoring device (IMD) module
- 60A, 277/480V WYE
- 39.8 kW of 277V load capacity
- Input: 10 ft power cord with 3P+N+E (IP67)
- Output: 36 Anderson 2005N4 Keyed SAF-D-Grid connectors

VP4N62A3

Plug

Receptacle



3P+N+E
(IP67)

Saf-D-Grid
(QTY 24)



Front

- Horizontal rPDU
- Unit level monitoring
- 60A, 277/480V WYE
- 39.8 kW of 277V load capacity



Back

- 2 U rackmount 3.48 in x 17 in x 12 in / 89 mm x 432 mm x 305 mm
- Input: 10 ft power cord with 3P+N+E IP67
- Output: 24 Anderson 2005N4 Keyed Saf-D-Grid connectors

100 AMP

VP4NC0A0



Plug

Receptacle



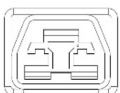
Saf-D-Grid
(QTY 30)

- Vertical rPDU
- Monitored
- 100A, 277/480V WYE
- 66.4 kW of 277V load capacity
- Input: 10 ft power cord with 3P+N+E IP67
- Output: 30 Anderson 2005N4 Keyed SAF-D Grid connectors

VP1NC2A0

Plug

Receptacle



3P+N+E
(IP67)

Saf-D-Grid
(QTY 15)



Front

- Horizontal rPDU
- Basic (no monitoring – upgradeable with IMD module)
- 100A, 277/480V WYE
- 66.4 kW of 277V load capacity



Back

- 2 U rackmount 3.48 in x 17 in x 12 in / 89 mm x 432 mm x 305 mm
- Input: 10 ft power cord with 3P+N+E IP67
- Output: 15 Anderson 2005N4 Keyed Saf-D-Grid Connectors



Vertiv offers over 20 configurations of 277/480V rPDUs in both basic and monitored versions. Paired with the Vertiv™ XFM-277V240VC1 TDU, these rPDUs power a rack of mixed 277V and 240V equipment from a single 277/480V drop.

Part number	Amps	Form factor	Input type	Input cord	Receptacle (QTY)	Local meter	Upgradeable
Monitored (Unit level)							
VP4NC2A0	100 A	2 U Rackmount	IEC Watertight	10 ft / 3 m	SAF-D GRID (15)	✓	✓
VP4NC0A1	100 A	Vertical – 72 in / 1829 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (18)	✓	✓
VP4NC0A0	100 A	Vertical – 72 in / 1829 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (30)	✓	✓
VP4NA2A0	80 A	2 U Rackmount	Hardwired	None	SAF-D GRID (15)	✓	✓
VP4NA0A4	80 A	Vertical – 72 in / 1829 mm	Hardwired	None	SAF-D GRID (18)	✓	✓
VP4NA0A3	80 A	Vertical – 72 in / 1829 mm	Hardwired	None	SAF-D GRID (30)	✓	✓
VP4N62A3	60 A	2 U Rackmount	IEC Watertight	10 ft / 3 m	SAF-D GRID (24)	✓	✓
VP4N60AK	60 A	Vertical – 70 in / 1778 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (24)	✓	✓
VP4N60AJ	60 A	Vertical – 82 in / 2083 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (36)	✓	✓
VP4N31A6	30 A	2 U Rackmount	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (12)	✓	✓
VP4N30AU	30 A	Vertical – 66 in / 1683 mm	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (24)	✓	✓
VP4N30AT	30 A	Vertical – 70 in / 1778 mm	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (36)	✓	✓
Basic (Upgradeable)							
VP1NC2A0	100 A	2 U Rackmount	IEC Watertight	10 ft / 3 m	SAF-D GRID (15)		✓
VP1NC0A1	100 A	Vertical – 72 in / 1829 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (18)		✓
VP1NC0A0	100 A	Vertical – 72 in / 1829 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (30)		✓
VP1NA2A0	80 A	2 U Rackmount	Hardwired	None	SAF-D GRID (15)		✓
VP1NA0A4	80 A	Vertical – 72 in / 1829 mm	Hardwired	None	SAF-D GRID (18)		✓
VP1NA0A3	80 A	Vertical – 72 in / 1829 mm	Hardwired	None	SAF-D GRID (30)		✓
VP1N62A3	60 A	2 U Rackmount	IEC Watertight	10 ft / 3 m	SAF-D GRID (24)		✓
VP1N60AK	60 A	Vertical – 70 in / 1778 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (24)		✓
VP1N60AJ	60 A	Vertical – 82 in / 2083 mm	IEC Watertight	10 ft / 3 m	SAF-D GRID (36)		✓
VP1N31A6	30 A	2 U Rackmount	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (12)		✓
VP1N30AU	30 A	Vertical – 66 in / 1683 mm	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (24)		✓
VP1N30AT	30 A	Vertical – 70 in / 1778 mm	NEMA Twist Lock	10 ft / 3 m	SAF-D GRID (36)		✓



For detailed technical specifications and more information on the complete line of Vertiv™ PowerIT rPDUs, visit the [Vertiv™ rPDU Finder](#).