



Vertiv™ NetSure™
IPE Series, R48-2000C2
Ordering Guide



BENEFITS

- Rapidly deploy your 5G network with outdoor rectifiers that easily mount directly to a pole or wall using quick connectors for battery, loads and alarms
- Power your critical infrastructure in hard to reach spaces with IP65-rated high-density modules that operate up to +75 °C
- Keep network operating costs to a minimum by using highly available DC power that operates at 96% efficiency and requires no energy for cooling
- Eliminate voltage drops and running heavy cables to remote radio heads (RRHs) by placing these compact rectifiers directly on top of the tower
- Quietly support your network with silent, convection-cooled DC power

Lightweight and maintenance-free, Vertiv™ NetSure™ IPE outdoor power systems with optional lithium-ion batteries power your 5G network in harsh environments.

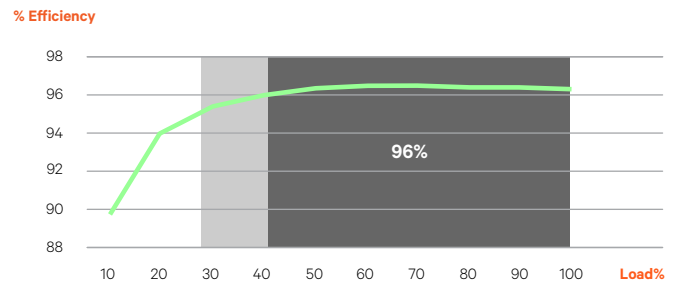
Description

The NetSure™ IPE series high-efficiency R48-2000C2 rectifier is designed to support 5G radio applications with low power requirements, such as small cells and remote radio heads (RRHs). Fanless cooling eliminates maintenance and results in silent operation. Ideal for rapid deployment in urban, rural, or protected public areas.

The rectifier meets IP65 rating for use in harsh outdoor environments. Flexible installation options include pole or wall mounting in flag or flat position. Quick connectors and a cable-strain relief plate ensure the time to install both rectifiers and batteries is kept to a minimum.

The 96% high-efficiency rectifier includes an integrated controller that offers Bluetooth communication for initial system set-up. It can then be turned-off or left on for on-going monitoring and control depending on the operator's preference. All rectifiers are also equipped with relay alarm outputs and compatible with optional lithium batteries.

The space-saving NetSure IPE Series is ideal for use in network edge applications including 5G small cells, RAN and Distributed Antenna Systems (DAS). Rapid deployment outdoors is easy since the unit is hardened and does not require a separate housing for protection against the elements.



R48-2000C2 Efficiency Curve at 230 VAC Nominal

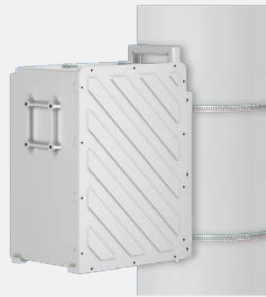
Versatile Mounting Options



Rectifier, flag position



Rectifier, flat position



Battery, flag position



Rectifier & battery side by side, flag position

Technical Specifications

AC Input

Voltage, Nominal	85 VAC to 300 VAC
Voltage Range	100-120 VAC and 200-240 VAC
Single or Three-Phase	Single
Frequency	45 to 65 Hz
Maximum Current	12A
Power Factor	>0.90 for 25% to 50% load, >0.98 for 50% to 100%
Total Harmonic Distortion	≤5% from 50% to 100% of rated output current at 220 VAC to 240 VAC

DC Output

Voltage, Nominal	-48 VDC
Voltage Range	-42 to -58 VDC
Maximum Power	2000 W (see figure 1)
Maximum Current	41.6 A @ -48 VDC (see figure 2)
Peak Efficiency	>93% at ≥ 100 VAC input, >96.3% at ≥ 230 VAC input
Load Outputs	1x2kW and 2x1kW fuse protected outputs

Battery Distribution

Fuse Type	High Speed
Fuse Positions	1
Fuse Rating	70A
LVD	Internal to battery - see battery datasheet

DC Load Distribution

Fuse Type	High Speed
Fuse Positions	3
Fuse Rating	2x 30A; 1x 70A

Monitoring

Local Display	3x Status LEDs
Communication	Ethernet, Bluetooth & RS485 (for battery only)
Protocols	SNMPv2

Environmental

Operating Temperature	-40 to 75°C / -40 to +167°F (see figure 3)*
Storage Temperature	-40 to +70°C / -40 to +158°F
Relative Humidity	5 to 100%
Altitude	-61 to 3048 (m): up to 3000 m at full power / -200 to 10000 (feet): up to 9842 feet at full POWER

Physical

Body Color: Color	Off White
Height: Height	15.7"/400 mm
Width: Width	11.8"/300 mm
Depth: Depth	2.4"/62 mm
Maximum Weight: Weight (Approximate)	21 lbs / 9.5 kg
Access	Bottom of rectifier
Cable Entry	Quick connectors

Standards Compliance

Safety	IEC62368-1, UL62368-1
EMC	EN55022, ETSI EN300 386, FCC CFR 47 Part 15 (Class B), GR-1089-CORE Issue 7:2017
Environment	IEC 60529, REACH, RoHS, WEEE
Ingress Protection	IP65
Seismic	Zone 4

Warranty

Standard Warranty	1 Year
-------------------	--------

Figures

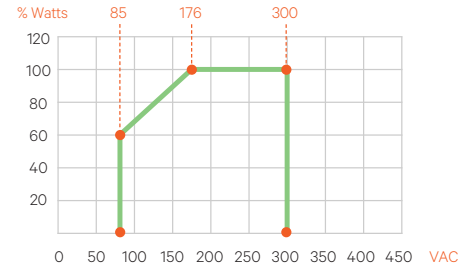


Figure 1: Output Power vs. Input Voltage and $V_o > 48$ VDC at $T_{amb} < 55^\circ\text{C}$

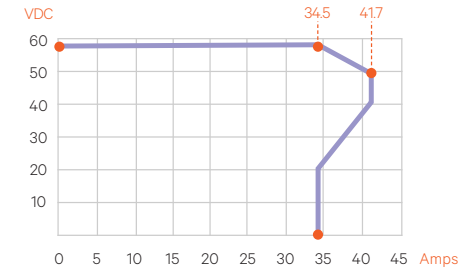


Figure 2: Output Voltage vs. Output Current at Maximum Output Power 2000 W

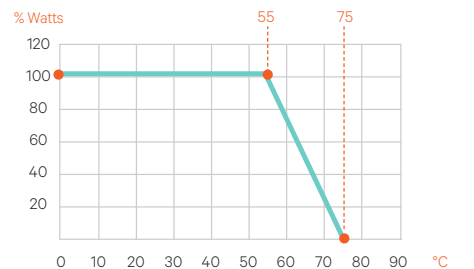


Figure 3: Output Power vs. Temperature at 290 VAC $\geq V_{in} \geq 200$ VAC

Vertiv™ NetSure™ IPE Series, R48-2000C2

Ordering Information

Part Number	Description
2000 Watt Rectifier	
1R482000C-6	Vertiv™ NetSure™ IPE, -48 VDC, 2000 W, with controller, quick connections. Standard mounting kit included with cable-strain relief plate.
2000 Watt Rectifier Kits (see matrix below for details - cables and mounting brackets can be ordered individually on following page)	
Kit 1 - 10032448	1R482000C2-6 rectifier with input, communication and (1) 2kW output cables
Kit 2 - 10032449	1R482000C2-6 rectifier with input, communication and (2) 1kW output cables
Kit 3 - 10032450	1R482000C2-6 rectifier with input, communication, (2) 1kW output and Narada power & communication cables + Narada/rectifier flag mounting kit
Kit 4 - 10032451	1R482000C2-6 rectifier with input, communication, (2) 2kW output, (2) 1kW output cables
Kit 5 - 10032452	1R482000C2-6 rectifier with input, communication, (2) 1kW output and Narada power & communication cables + battery mounting kit

Category	Description	Length	Part Number	Rectifier 1R482000C2-6	Kit 1 10032448	Kit 2 10032449	Kit 3 10032450	Kit 4 10032451	Kit 5 10032452
	2kW Rectifier	-	1R482000C2-6	1	1	1	1	1	1
Power Cables	AC Input	16.4 ft	10024814						
	AC Input	32.8 ft	10023461		1	1	1	1	1
	1kW Load	30.0 ft	10023471			2	2	2	2
	2kW Load	30.0 ft	10023420		1			2 ***	
	Narada Battery	31.5 in	10023549				1		
	Narada Battery	49.25 in	10023604						1
Communication Cables	Alarm/Ethernet	32.8 ft	10039061		1	1	1	1	1
	Narada Battery	31.5 in	10023684				1		
	Narada Battery	49.25 in	10023685						1
Mounting Brackets	Narada Battery	-	10025107				1		1
	Rectifier Add to Narada *	-	10025108				1		
	Rectifier (included w/ rectifier)	-	10024600 **	1	1	1	1	1	1

* For flag side by side mounting, must be used with rectifier (10024600) and battery (10025107) mounting brackets

** Use part number 10025106 if ordering a spare or replacement rectifier bracket

*** Second 2kW load cable connects to battery port in battery-less applications

2000 Watt Rectifier Cables

10024814	AC input power cable, IP65 quick connector/unterminated - 16.4 ft
10023461	AC input power cable, IP65 quick connector/unterminated - 32.8 ft
10023471	1 kW output power cable, IP65 quick connector/unterminated - 30 ft
10023420	2 kW output power cable, IP65 quick connector/unterminated - 30 ft
10023561	Alarm/Ethernet communication cable, DB-15 connector/unterminated - 32.8 ft
10023549	Narada battery power cable, IP65 quick connector/battery connector - 31.5 in
10023604	Narada battery power cable, IP65 quick connector/battery connector - 49.25 in
10023684	Narada battery communication cable, DB9 connector/battery connector - 31.5 in
10023685	Narada battery communication cable, DB9 connector/battery connector - 49.25 in

2000 Watt Rectifier Mounting Bracket

10025107	Narada battery mounting bracket - flag and flat orientation
10025108	Rectifier and Narada battery side by side mounting kit - flag orientation *
	* Must be used with rectifier (10024600) and battery (10025107) mounting brackets

2000 Watt Rectifier Accessories

10026784	Fuse, 160 VDC, 30 A - for 1kW outputs
10026786	Fuse, 300 VAC, 70 A - for 2kW output and battery input/output
10025106	Rectifier replacement bracket (one set included with each rectifier) - flag and flat orientation **
	** Listed as part number 10024600 when shipped with rectifier

Lithium-ion Batteries

48-BKB01030050-2UA	Narada FEN4850-NA-VR01 - 50Ah LFP lithium-ion battery
--------------------	---

