# Vertiv<sup>™</sup> PowerDirect 7100 Energy

4th Generation of -48 VDC Hybrid Solutions





#### **Benefits**

At Vertiv, we're committed to sustainable, efficient, and reliable power systems that adapt to your network and energy needs. The Vertiv™ PowerDirect 7100 Energy delivers:

- Hybrid-Ready Design

  Supports solar, grid, generator, and battery inputs to reduce reliance on fossil fuels.
- High-Efficiency- Rectifiers and solar converters.
- Load Shifting
   – Energy Logic helps shift usage to off-peak hours and reduce demand charges.
- Split Charging enabling excess solar energy to goto battery for later use.
- Renewable Integration Solar and with the Open DC port, support for wind, fuel cells and more is possible.

#### **Operational Benefits**

- Available in peak power configurations of 26kw (500A), 39kW (750A) & 52kW (1000A).
- Flexible Rack Options Available in 19" and 23" racks.
- Modular & Interchangeable -Rectifiers and converters adapt easily across on-grid and off-grid sites.
- Smart Controls-Remote monitoring, LVD prioritization, and battery management.
- Built for Harsh Sites Rugged design supports extreme environments.
- Expert Support Backed by Vertiv services for training, startup, and long-term support.

# Ideal for on-grid, bad-grid and no-grid sites, the Vertiv<sup>™</sup> PowerDirect 7100 Energy system manages multiple energy sources with ease.

The Vertiv<sup>™</sup> PowerDirect 7100 Energy is an integrated -48VDC hybrid power solution designed for on-grid, bad-grid, and off-grid sites. Built around the high-efficiency 4300W Vertiv<sup>™</sup> rectifiers and solar converters, PowerDirect 7100 Energy enables seamless energy source switching and control. With the Vertiv<sup>™</sup> NetSure<sup>™</sup> Control Unit, users can manage fuel tank levels, configure TOU (Time of Use) schedules, support solar integrate with lithium battery systems for optimal performance and much more.

The system includes a flexible distribution panel with support for 2 to 400A circuit breakers, providing protection for both loads and batteries. Its modular design supports up to three load LVDs, allowing prioritization of critical loads without requiring oversized battery banks. Available in multiple rack and cabinet formats, Vertiv PowerDirect 7100 Energy adapts to a wide range of site needs and business objectives.

#### **Application**

Designed for hybrid applications, the Vertiv PowerDirect 7100 Energy streamlines management of solar, grid, and generator energy sources—delivering reliable and cost-effective power across challenging environments. Key site benefits include:

- Reducing the cost of expensive electrical utility bills with on-grid solar
- Extending battery life for bad-grid locations
- Managing generator-fuel and battery life in off-grid locations
- Utilizing solar energy when the use of generators is prohibitive



Vertiv<sup>™</sup> PowerDirect 7100 Energy 500A - 23" Rack

#### **Available Configurations**

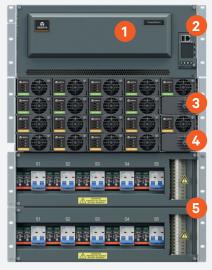
The Vertiv<sup>™</sup> PowerDirect 7100 Energy is available in multiple rack sizes and system capacities to meet diverse deployment requirements.

## Vertiv™ PowerDirect 7100 Energy

### **Technical Specifications**

| Electrical                |  | 500 A System  | 750A System   | 1000A System  |  |  |
|---------------------------|--|---|---|---|--|--|
| AC Input                  | Voltage, Nominal   | Single Phase: 220   | to 240 VAC / 3-Phase: 380   | to 415 VAC (3W+N+PE)  |  |  |
|                           | Voltage Range  | Single Phase: 85 to 305 VAC / 3-Phase: 147 to 527 VAC (A/C input values based on rectifier installed)  45 to 65 Hz  |   |   |  |  |
|                           | Frequency  |   |   |   |  |  |
|                           | Maximum Current  | 27 A per rectifier, to a low line voltage of 176 VAC  |   | ge of 176 VAC   |  |  |
|                           | Cable Entry  | Top Entry, with rear 10mm <sup>2</sup> terminal blocks  |   | inal blocks   |  |  |
| DC Solar Input            | Voltage Range  | 70 to 420 VDC   |   |   |  |  |
|                           | Maximum Input Current  | 24 A per solar converter  |   |   |  |  |
|                           | Cable Entry  | Top Entry, with rear 10mm <sup>2</sup> terminal blocks  |   |   |  |  |
| Solar Input<br>Protection | CB and SPD   | Optional, 2P CB with IEC 61643 Class II, Type 2 SPD with front 10mm2 terminal blocks  |   |   |  |  |
| DC Output                 | Voltage, Nominal   | -48 VDC   |   |   |  |  |
|                           | Voltage Range  | -20 to -58.5 VDC for solar / -20 to -58.5 VDC for rectifier   |   |   |  |  |
|                           | Maximum Power  | 4320 W per solar converter / 4320 W per rectifier  100% up to 55°C , derate from 55 to 80°C (solar) /  100% up to 45°C , derate from 45°C to 75°C (rectifier) |   | W per rectifier   |  |  |
|                           | Temperature<br>Performance                                     |   |   |   |  |  |
| Independent<br>DC Port    | Voltage  | -42 to -58 VDC (Optional)   |   |   |  |  |
|                           | Current  | 160A Maximum at 55°C,<br>140A Maximum at 65°C,<br>Shunt with 80 or<br>200 ADC CB available  | 240A Maximum at 55°C,<br>210A Maximum at 65°C,<br>Shunt with 200 or<br>300 ADC CB available | 320A Maximum at 55°C,<br>280A Maximum at 65°C,<br>Shunt with 300 or<br>400 ADC CB available |  |  |
| Distribution              |  |   |   |   |  |  |
| Space                     | Primary MFU Space  |   | 468 mm for 23", 378 mm fo   | or 19"  |  |  |
|                           | Optional XDU Space   |   | 468 mm for 23", 378 mm fo   | or 19"  |  |  |
|                           | Cable Entry  | Top, with front service access  |   |   |  |  |
| Circuit Breaker           | 18 mm (per pole)<br>Thermal Magnetic                           | 1 pole: 3 to 125 ADC, 2 pole: 200 ADC 1 pole: 2-63 ADC, 2 pole: 80-125 ADC , 3 pole: 150 ADC, 4 pole: 200 ADC   |   |   |  |  |
|                           | 13 mm (per pole)<br>Hydraulic Magnetic                         |   |   |   |  |  |
|                           | Maximum Battery<br>Breaker Count                               | 6   |   |   |  |  |
|                           | Optional High Current<br>300A Battery Breaker                  | 2   | 3   | 4   |  |  |
| DC Load<br>Options        | LVD Options Bi -Stable<br>with Third Mono-Stable<br>LVD Option | 400A, 400:200A<br>400:200:200A,<br>200:200:200A   | 400:400A<br>400:400:200A  | 400:400A<br>400:400A  |  |  |
|                           | 200A Load Shunt  | (optional)  |   | N/A   |  |  |
| Control & Monitor         | ring   |   |   |   |  |  |
| Control Module            | Module Name  | NCU - M830B   |   |   |  |  |
|                           | Local Display  | Yes   |   |   |  |  |
|                           | Protocols  | HTTPS, SNMP   | HTTPS, SNMP V2/V3, NTP, Modbus TCP/IP RTU-485 and EEM                                       |   |  |  |
| Interface Board           | Modbus RTU-485   | Standard  |   |   |  |  |
|                           | CAN Bus  | Standard Standard (Fuel sensor not included) Optional   |   |   |  |  |
|                           | Fuel Sensor, 4-20mA  |   |   |   |  |  |
|                           | IB2  |   |   |   |  |  |
|                           | EIB  | Optional  |   |   |  |  |
|                           | IB4  | Optional  |   |   |  |  |

## Overview



Vertiv<sup>™</sup> PowerDirect 7100 Energy 750A SP - 19" Rack

- 1. Distribution unit
- 2. NCU
- 3. Rectifiers
- 4. Solar MPPT
- 5. Solar Input Protection



| Environmental                   |  | 500 A System  | 750A System   | 1000A System  |  |  |
|---------------------------------|--|---|---|---|--|--|
| System                          | Current Capacity   | 500 A at 55°C, 21 kW at 42 VDC  <br>400 A at 65°C, 16.8 kW at 42 VDC                  | 750 A at 55°C, 31.5 kW at 42 VDC  <br>600 A at 65°C, 25.2 kW at 42 VDC                | 1000 A at 55°C, 42 kW at 42 VDC  <br>800 A at 65°C, 33.6 kW at 42 VDC |  |  |
|                                 | Maximum Load,<br>Standby                                     | 400 A, ~20 kW   | 600A, ~30kW   | 700A, ~35kW   |  |  |
|                                 | Suggested Maximum<br>Load, CDC +Solar                        | 208A, ~10kW   | 312A, ~15kW   | 416A,~ 20kW   |  |  |
|                                 | Suggested Maximum<br>Load, Solar Only                        | 80 A, ~3.2 kW   | 120A, ~ 5.76kW  | 160A, ~7.68 kW  |  |  |
| System Operating<br>Temperature |  |   |   |   |  |  |
| Circuit Breakers                | Thermal Magnetic   |   | -40°C to 55°C/ -40°F to 131°F   |   |  |  |
|                                 | Hydraulic Magnetic   |   | -40°C to 65°C/ -40°F to 149°F   |   |  |  |
| Storage<br>Temperature          |  | -40°C to 75°C / -40°F to 167°F  |   |   |  |  |
| Relative Humidity               |  | 0% to 95%   |   |   |  |  |
| Altitude                        |  | 3000 m / 9842 ft at full power  |   |   |  |  |
| Physical<br>Characteristics     |  |   |   |   |  |  |
| Mounting Standard               | Width  | 19" rack mounting   | 23" rack mounting   |   |  |  |
|                                 | Depth  |   |   |   |  |  |
|                                 | Hight MFU +<br>R/S shelves                                   | MFU 3U +1U for Cabling<br>+ 19" R/S shelves 1U /2U/ 3U or<br>+ 23" R/S shelves 1U /2U | MFU 4U +1U for Cabling<br>+ 19" R/S shelves 2U /3U/ 4U or<br>+ 23" R/S shelves 2U /3U | MFU 4U +1U for Cabling<br>+ 23" R/S shelves 2U /4U                    |  |  |
|                                 | Hight Optional XDU   | 4U  |   |   |  |  |
|                                 | Hight Optional Solar<br>input Protection shelf<br>(max 2pcs) | 3U (supporting 5 S48 in 19" & 6 in 23") / 6U (supporting 10 S48 in 19" & 12 in 23")   |   |   |  |  |
| Standards Com                   | pliance  |   |   |   |  |  |
| Safety                          |  | EN62368-1, CE   |   |   |  |  |
| ЕМС                             |  | ETSI EN300 386  |   |   |  |  |
| Materials                       |  | ROHS, REACH   |   |   |  |  |
| Ingress Protection              |  | IP20  |   |   |  |  |

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