



PowerDirect 7100 Energy 500A/750A/1000A DC Power System

Online Manual Reference

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<https://www.vertiv.com/en-emea/products-catalog/critical-power/dc-power-systems/vertivpowerdirect7100-energy--48v-dc-energy-management-solutions/>

Important Safety Instructions

General Safety



DANGER! YOU MUST FOLLOW APPROVED SAFETY PROCEDURES.

Performing the following procedures may expose you to hazards. These procedures should be performed by qualified technicians familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:

- a) The tasks should be performed in the order indicated.
- b) Remove watches, rings, and other metal objects.
- c) Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present. Check for voltage with both AC and DC voltmeters prior to making contact.



NOTE! Always verify that your voltmeter is in good condition by testing it towards a recognized supply.

- d) Wear eye protection.
- e) Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed.
- f) This equipment is not suitable for use in locations where children are likely to be present.
- g) This product is intended only for installation in a Restricted Access Location.
- h) Only authorized and properly trained personnel (Skilled person) should be allowed to install, inspect, operate, or maintain the equipment.
- i) Do not work on LIVE parts. If required to work or operate live parts, obtain appropriate Energized Work Permits as required by the local authority or by other national building codes and local regulations.

Voltages

Hazardous Voltage



DANGER! HAZARD OF ELECTRICAL SHOCK.

More than one disconnect may be required to de-energize the system before servicing.

DC Voltage (Solar)



DANGER! System supplied by high DC-voltage (70 VDC to 420 VDC). Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an input terminal or exposed wire connected to the terminal.

DC Voltage (Independent DC Input)



DANGER! Correct polarity must be observed when connecting external supply to DC input. A DC input of low voltage can present a risk of high short circuit current. Installing/servicing should be performed or supervised only by properly trained and qualified personnel knowledgeable about low voltage DC precautions.



DANGER! Follow local lockout/tagout procedures to ensure DC branch circuit protection devices remain de-energized during installation at loads, as required.

AC Input Voltages



DANGER! This system operates from AC input voltage capable of producing fatal electrical shock. AC input power must be completely disconnected from the branch circuits wiring used to provide power to the system before any AC electrical connections are made. Follow local lockout/tagout procedures to ensure upstream branch circuit breakers remain de-energized during installation. DO NOT apply AC input power to the system until all electrical connections have been completed and checked.

DC Output (Load and Battery) Voltage



DANGER! This system produces DC power. Although the DC Output (Load & Battery) voltage is not hazardously high, the converters can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an output terminal or exposed wire-copper. NEVER allow a metal object, such as a tool, to contact more than one termination at a time, or to simultaneously contact a termination and a grounded object. Even a momentary short circuit can cause sparking, explosion, and injury.



DANGER! Follow local lockout/tagout procedures to ensure DC branch circuit protection devices remain de-energized during installation at loads, as required.

Battery



WARNING! Correct polarity must be observed when connecting battery leads.



WARNING! Special safety precautions are required for procedures involving handling, installing, and servicing batteries. Observe all battery safety precautions in this manual and in the battery instruction manual. These precautions should be followed implicitly at all times.



WARNING! A battery can present a risk of electrical shock and high short circuit current. Servicing of batteries should be performed or supervised only by properly trained and qualified personnel knowledgeable about batteries and the required precautions.

Personal Protective Equipment (PPE)



DANGER! ARC FLASH AND SHOCK HAZARD.

Appropriate PPE and tools required when working on this equipment. An appropriate flash protection boundary analysis should be done determine the “hazard/risk” category, and to select proper PPE.



Handling Equipment Containing Static Sensitive Components



ALERT! Installation or removal of equipment containing static sensitive components requires careful handling. Before handling any equipment containing static sensitive components, read and follow the instructions contained on the Static Warning Page.

Maintenance and Replacement Procedures



CAUTION! When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



NOTE! When performing any step in procedures that requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise directed.

Static Warning



This equipment contains static sensitive components. The warnings listed below must be observed to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

1. Strictly adhere to the procedures provided in this document.
2. Before touching any equipment containing static sensitive components, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megaohm resistor. Some wrist straps have a built-in one megaohm resistor; no external resistor is necessary. Read and follow wrist strap manufacturer's instructions outlining use of a specific wrist strap.
3. Do not touch traces or components on equipment containing static sensitive components. Handle equipment containing static sensitive components only by the edges that do not have connector pads.
4. After removing equipment containing static sensitive components, place the equipment only on conductive or anti-static material such as conductive foam, conductive plastic, or aluminum foil. Do not use ordinary Styrofoam™ or ordinary plastic.
5. Store and ship equipment containing static sensitive components only in static shielding containers.
6. If necessary to repair equipment containing static sensitive components, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

1 System Description

The PowerDirect 7100 Energy DC Power System is a fully integrated and flexible energy management system supporting rectifiers and solar converters, providing intelligent control, metering, monitoring, and distribution. A fundamental principle is that all energy sources are always connected and available to recharge the battery; as such, there is no battery disconnect, and the controller is always on. With the exception of the NCU, discharging the battery is effectively halted by opening all load disconnects.

Energy (hybrid) solutions are often deployed where managing energy is important, including:

- On-Grid, where solar can be used to reduce the cost of operation.
- Bad Grid, where solar can be used to maintain the load and battery when power is out during the day.
- Off-Grid, cycling batteries with generators, often referred to as CDC (Charge Discharge Charge).
- Off-Grid, CDC with Solar, where solar is used to minimize the demand on the generator.
- Off-Grid, Solar only, where the load and battery are maintained using the energy from the sun.

With the Independent DC Port, the solution can also support other well-behaved DC sources, such as DC Generators, Hydrogen Fuels Cells and Wind Turbines.

Figure 1.1 Vertiv™ PowerDirect 7100 Energy 500 A 19" and 23" Subrack examples

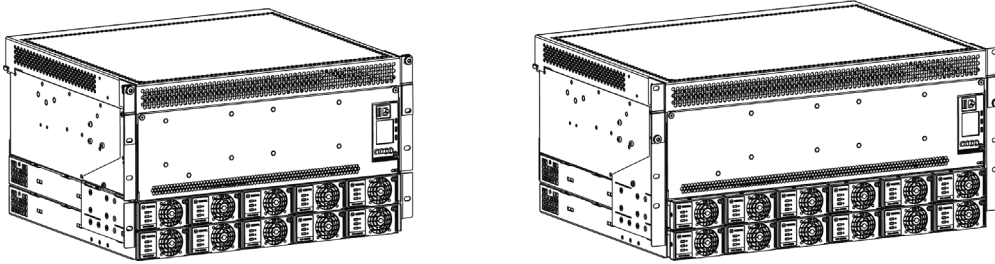


Figure 1.2 Vertiv™ PowerDirect 7100 Energy 750 A 19" and 23" Subrack examples

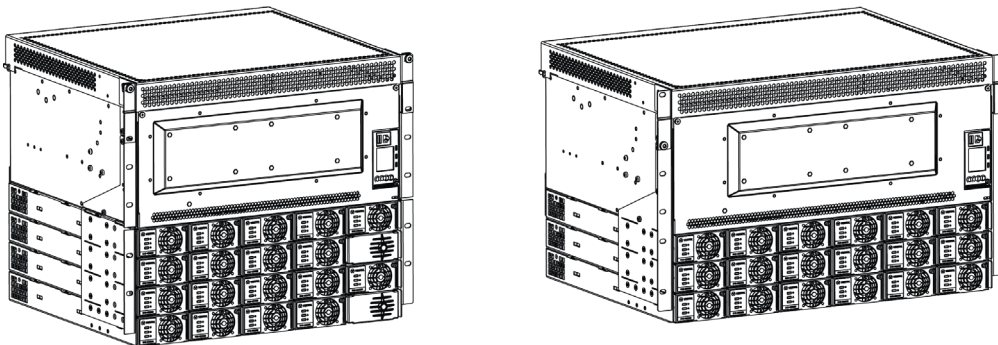
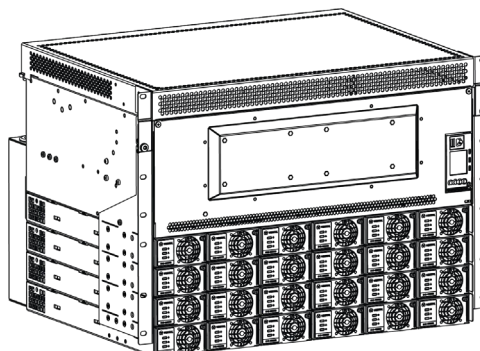


Figure 1.3 Vertiv™ PowerDirect 7100 Energy 1000 A 23" Subrack example



2 NetPerform™ Optimization Services

At VERTIV, we understand the importance of reliable equipment – it's critical to both your business and your bottom line. That is why we offer a wide array of services to meet all of your network infrastructure needs.

TECHNICAL SUPPORT		
Freedom Care	Vertiv.com	Provides quotes and bid responses, order placement and scheduling for design and deployment and optimization services. Download service & maintenance reports online.
EMEA CUSTOMER SUPPORT CENTER		
Email	ServiceWarranty.emea@Vertiv.com	Dealing with customer problems related to: • Product field performance • Product quality defects • Product deal on arrival • Incomplete or incorrect deliveries • Quality and product support
Phone	00800 11 55 44 99	
DC POWER & OSP ORDER, ORDER STATUS		
Email	EMEA.Order.Management.Group@vertivco.com	Creates and processes orders, provides order shipping information and status of orders.
REQUEST DC POWER REPAIR SERVICE RMA		
Email	EMEA.HWServices@Vertiv.com	Creates and processes RMAs, determines lead times and pricing based on warranties/contractual agreements. Provides repair shipping information and status.
Phone	+421.32.7700.733	
SPARE PARTS		
Email	EMEA.HWServices@Vertiv.com	Pricing and purchase orders processing for spare parts, including but not limited to breakers, cables, fuses, rectifier fans, misc. breaker and fuse panels, enclosure fans, doors and switches, etc.
Phone	+421.32.7700.733	
DC POWER PRODUCT TRAINING		
Email	EMEA.Academy@Vertiv.com	Requests for quotes, order placement and scheduling.

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