

Dell UPS Site Preparation Guide, EMEA.

Applies Dell Rackmount UPS Models, 3750W, 4200W, 5600W & 10kW

Note: This document is for guidance only. Actual installation instructions and safety cautions are included within the UPS User's Guide. Quick link to User's Guides: http://dellups.com/support_download.asp > User Manuals and Publications.

Site Preparation Checklist

- Installation site meets minimum environmental requirements.
- Ensured all required accessories have been ordered with the UPS.

Electrical Preparation

- Required electrical supply is available.
- Scheduled an electrician to install the Dell UPS.
- Provided a copy of this preparation guide to the electrician.
- Made electrician aware of **Hardwiring the UPS** electrician's checklist in the User's Guide.

Site Preparation:

Physical Requirements for the Dell UPS

UPS Model	UPS Technology	Dimensions (mm, W x D x H)	Weight (installed, no battery)
3750W Rack	Online	4U, 438 x 790 x 171.5	65kg, 23kg
4200W Rack	Online	4U, 438 x 790 x 171.5	65kg, 23kg
5600W Rack	Line Interactive	4U, 438 x 790 x 171.5	72kg, 24kg
5600W Rack	Online	4U, 438 x 790 x 171.5	64kg, 24kg
10kW Rack	Online	5U, 438 x 823 x 214	110kg, 46kg
EBM* for 3750W/4200W UPS	n/a	3U, 438 x 735 x 127	61kg, n/a
EBM* for all 5600W UPS	n/a	4U, 438 x 735 x 171.5	66kg, n/a
EBM* for 10kW	n/a	3U, 438 x 737 x 127	80kg, n/a

* EBM is an optional 'external battery module'.

Environmental Requirements for the Dell UPS

Environmental Condition	Suitable Range
Temperature (Operation)	0 - 40C (32 - 104F)
Temperature (Storage, 24hr)	-15 - 60C (5 - 140F)
Temperature (Long-term Storage)	- 15 - 45C (5 - 113F)
Relative Humidity	0 - 95% (non-condensing)
Elevation (Operation)	0 - 3048m (0 - 10,000ft)
Elevation (Storage)	0 - 15,340m (0 - 50,000ft)

Heat Output for the Dell UPS

UPS Model	UPS Technology	Heat Loss, Watts / BTU (normal mode)	Heat Loss, Watts / BTU (battery mode)
3750W Rack	Online	188 / 640	375 / 1281

4200W Rack	Online	210 / 717	420 / 1434
5600W Rack	Line Interactive	280 / 956	560 / 1921
5600W Rack	Online	390 / 989	420 / 1433
10kW Rack	Online	412 / 1420	754 / 2600

Optional accessories for Dell UPS

Optional Accessory	Importance	Purpose & Use
External Battery Module (EBM)	Optional	Increases the battery runtime (autonomy) by approximately 3 times
Network Management Card (NMC)	Recommended	Improves communication with >1 server and is mandatory for virtualization
Environmental Monitoring Probe (EMP)	Recommended	Measures rack temperature and humidity (plus 2 x relay contacts). Requires network management card. Data rolls up into UPS Management software.
32 Amp, 3m (non-locking) Electrical Input Cord ¹	Highly Recommended	UPS input cable pack providing a 3m cord with IEC309 32A (IEC60309 332P6S, non-locking, IP44 type) Commando plug. Also includes plastic stuffing gland (strain relief).

Rack Preparation:

Rack Requirements for the Dell UPS

Dell Rack UPS are suitable for installation into 19" 4-post racks. Reserve space for UPS and EBM at bottom of rack.

Rack types supported are: EIA/ECA-310-E (includes Dell and other common rack suppliers); and, support 4-post square or round (non-threaded) type holes. If round hole, use rack with 7.0mm diameter (unthreaded). The Dell rack UPS and rack EBM include ReadyRails with a minimum retraction of 517 mm (20.35") and maximum extension of 783 mm (30.8").

Electrical Preparation:

Electrical Requirements for the Dell UPS

UPS Model	UPS Technology	Input Voltage (VAC)	Power Draw (standby)	Overcurrent Protection	Minimum Wire Size (Live Neutral/Ground)
3750W Rack	Online	208, 220, 230, 240	186W	25 Amp 1-phase	5.26 / 5.26 mm ²
4200W Rack	Online	208, 220, 230, 240	210W	30 Amp 1-phase	5.26 / 5.26 mm ²
5600W Rack	Line Interactive	208, 220, 230, 240	224W	32 Amp 1-phase	8.36 / 5.26 mm ²
5600W Rack	Online	208, 220, 230, 240	143W	32 Amp 1-phase	8.36 / 5.26 mm ²
10kW Rack	Online	208, 220, 230, 240	60W	63 Amp 1-phase	21.14 / 8.36 mm ²

Note: Overcurrent protection should be 'slow-break', suitable for devices with a high inrush current. Normally this should be a fuse or circuit breaker with a Type-C or Type-3 rating.

Electrical Requirements for the REPO Switch (Remote Emergency Power Off)

REPO is used to shut down the UPS from a distance. For example, this feature can be used for shutting down the load and the UPS by thermal relay, in the event of room over-temperature. When REPO is activated, the UPS shuts down the output and all its power converters immediately. The UPS logic power remains on to issue an alarm.

¹Supported UPS are 3750W, 4200W (Online) and 5600W (Line Interactive) models. 5600W Online and 10kW Online UPSs do not have an input cord option.

The REPO feature shuts down the protected equipment immediately and does not follow the orderly shutdown procedure initiated by any power management software. Any devices that are operating on battery power are also shut down immediately. When the REPO switch is reset, the equipment will not return to utility or battery power until the UPS is manually restarted.

There are two REPO ports on each UPS in order to support cascaded REPO functionality. This allows a single cable to be cascaded between multiple Dell UPS, eliminating the need for a dedicated REPO cable for each UPS & simplifying installation. The REPO contacts are normally open.

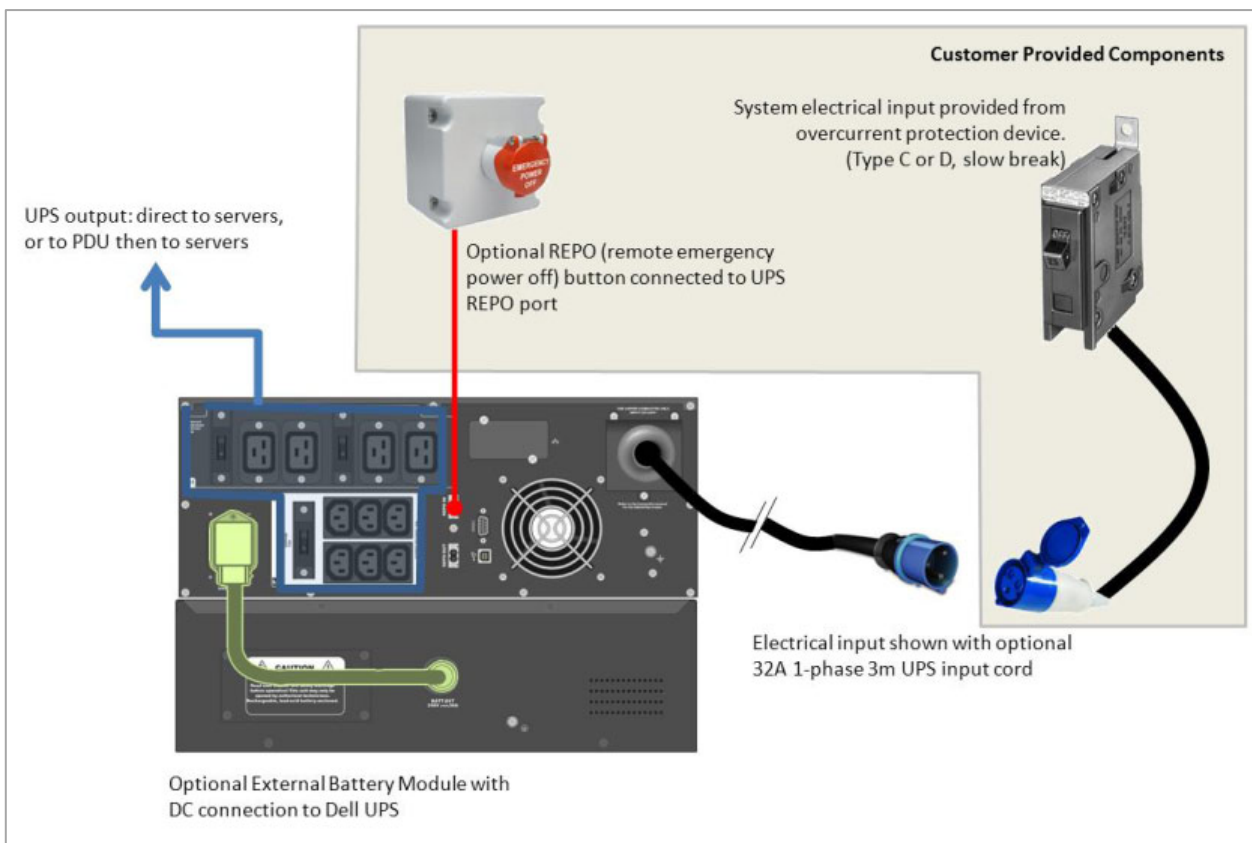
Wire Function	Terminal Wire Size Rating	Suggested Wire Size
Remote Emergency Power Off (REPO)	4-0.32mm ² (12-22 AWG)	0.82mm ² (18 AWG)

WARNING: The REPO circuit is an IEC 60950 safety extra low voltage (SELV) circuit. This circuit must be separated from any hazardous voltage circuits by reinforced insulation. **CAUTION:** The REPO must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The REPO switch must have a minimum rating of 24Vdc and 20 mA and be a dedicated latching-type switch not tied into any other circuit. The REPO signal must remain active for at least 250ms for proper operation. **NOTE:** For Europe, the emergency switch requirements are detailed in Harmonized document HD-384-48 S1, “Electrical Installation of the Buildings, Part 4: Protection for Safety, Chapter 46: Isolation and Switching.” **NOTE:** The pins must be open to keep the UPS running. If the UPS shuts down because the REPO connector pins are shorted, restart the UPS by re-opening the REPO connector pins and turning on the UPS manually. Maximum resistance in the shorted loop is 10 ohm. **NOTE:** Always test the REPO function before applying your critical load to avoid accidental load loss.

Electrical Wiring, Basic Installation Schematics

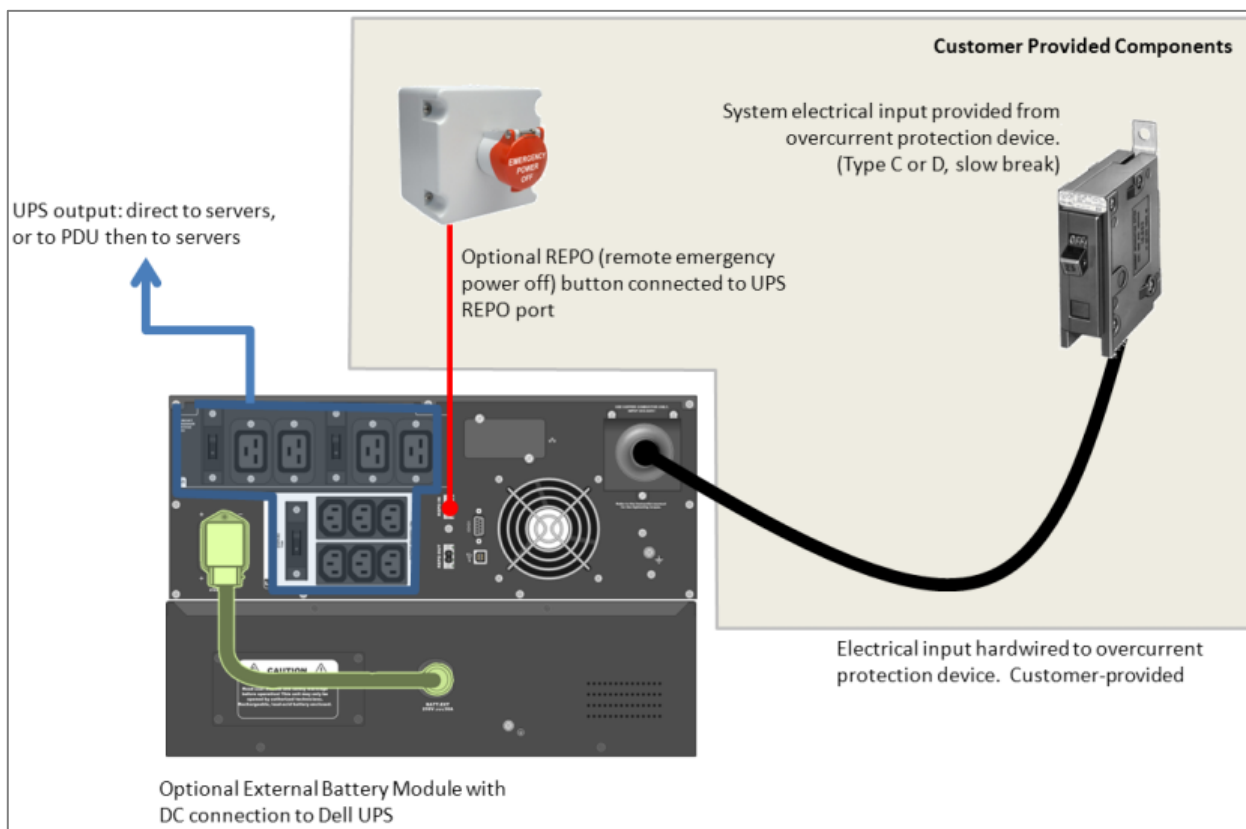
Basic Installation Schematic of Dell UPS using optional 32 Amp, non-locking, power input cord.

Suitable for all models except 5600W Online and 10kW



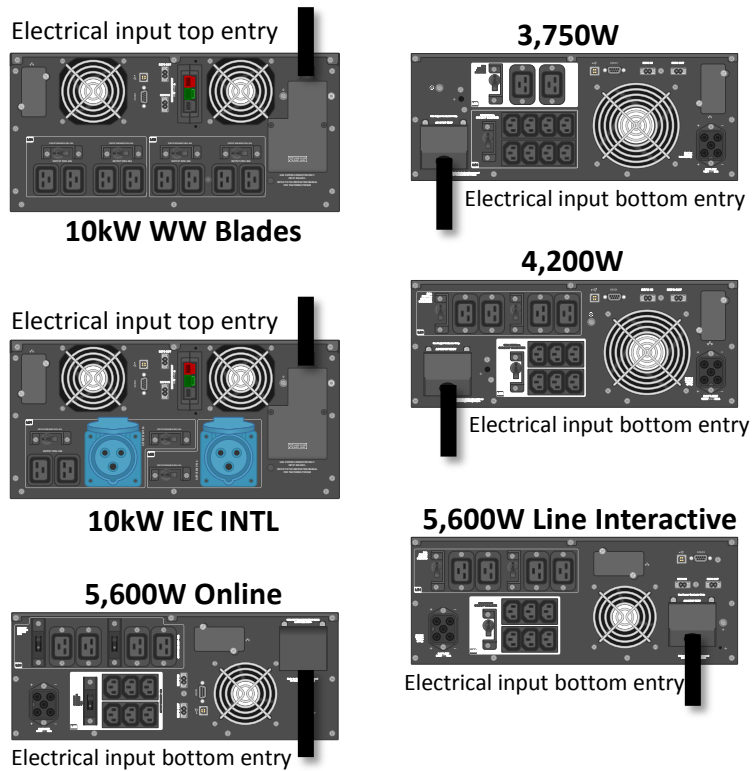
Basic Installation Schematic of Dell UPS, hardwired to overcurrent protection device

Suitable for all models (including 5600W Online and 10kW)



Electrical input location of Dell UPS

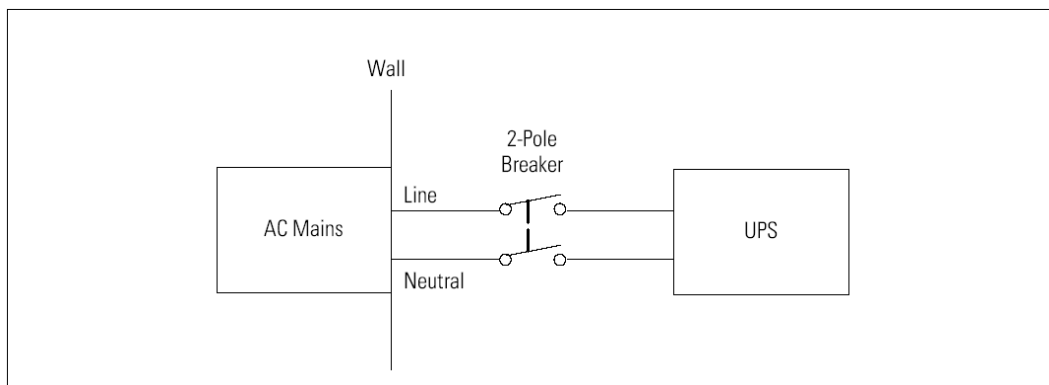
If hardwiring input to UPS, input terminal block locations vary by model. Input connection exits bottom for 3750W, 4200W, 5600W (both models). Input connection exits top for 10kW. Diagrams show back (rear) of each UPS model. Microsoft® Visio stencils for Dell UPS are available at http://dellups.com/support_download.asp > Support FAQ.



Overcurrent Protection Devices:

All Dell UPS Rack Mount Models (except 5600W Online and 10kW):

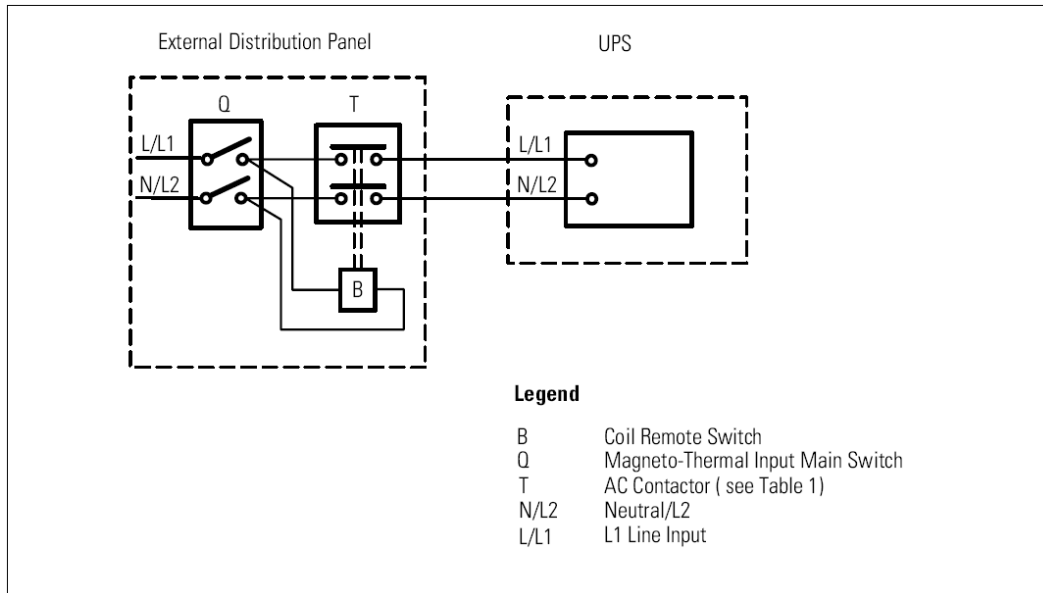
In all cases the installation should include a dedicated electrical branch circuit with a 2-pole overcurrent protection device. The breaker should be wall-mounted and accessible to the operator.



5600W Online and 10kW UPS:

The 5600W online and 10kW UPS does not have an automatic protection device against current backfeed. Dell recommends installing an external isolating device (see illustration below). After the device is installed, you must add a warning label with the following wording or the equivalent on the external AC contactor:

“RISK OF VOLTAGE BACKFEED. Isolate the UPS before operating on this circuit, then check for hazardous voltage between all terminals.”



The following table lists approved AC contactors that can be used as backfeed protection devices for 5600W Online.

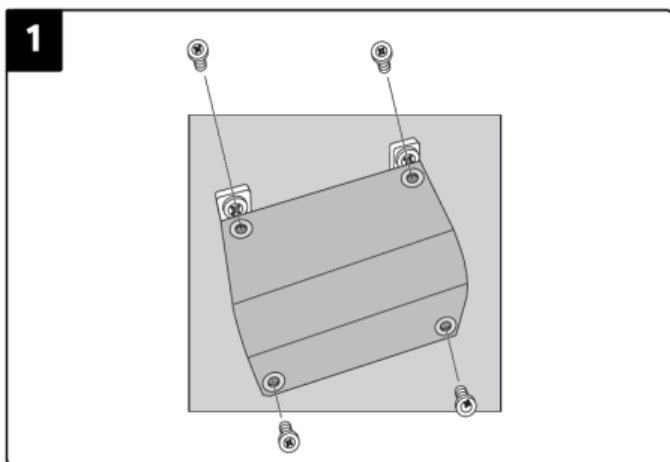
Manufacturer	Type	Rating
Moeller GMBH	DILM(C)32-10	600 V, 40A
Tianshui Electrical Aparatus Co. Ltd (E203071)	GSC1(CJX4-d)-4011	220-240 Vac, 42 FLA
LS Industrial Systems Co., Ltd. (E108780)	GMC(D)-32	600 Vac, 45A

The following table lists approved AC contactors that can be used as backfeed protection devices for 10kW.

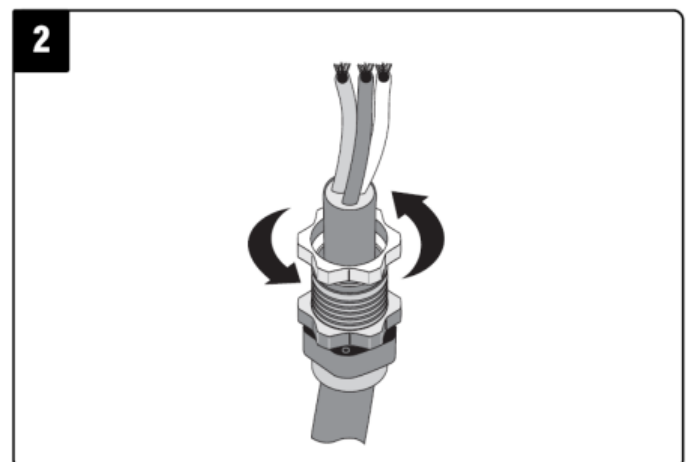
Manufacturer	Type	Rating
ABB France (E12527)	A75-30	220-240V, 105A 25 HP at 208V, 30HP at 240V
Tianshui Electrical Aparatus Co. Ltd (E203071)	GSC1(CJX4-d)-6511	220-240 Vac, 68A 25HP
Tianshui Electrical Aparatus Co. Ltd (E203071)	GSC1(CJX4-d)-8011	220-240 Vac, 80A 30HP

Optional 32 Amp, non-locking, 1phase, 3m, UPS Input Cord Kit

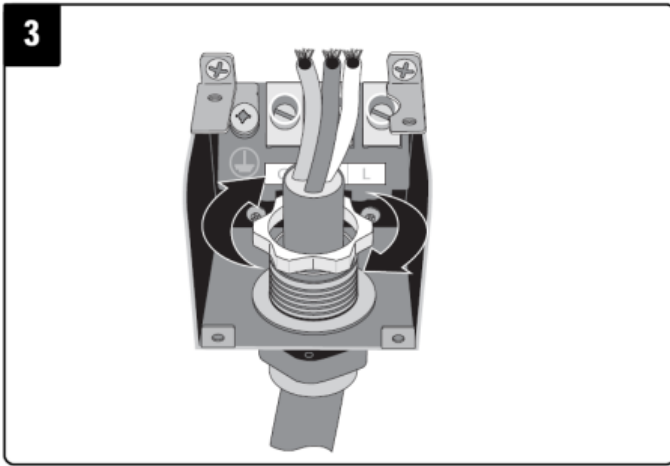
If you ordered the optional 32 Amp, non-locking, input cord kit refer to the below drawings for advice on fitting the cable:



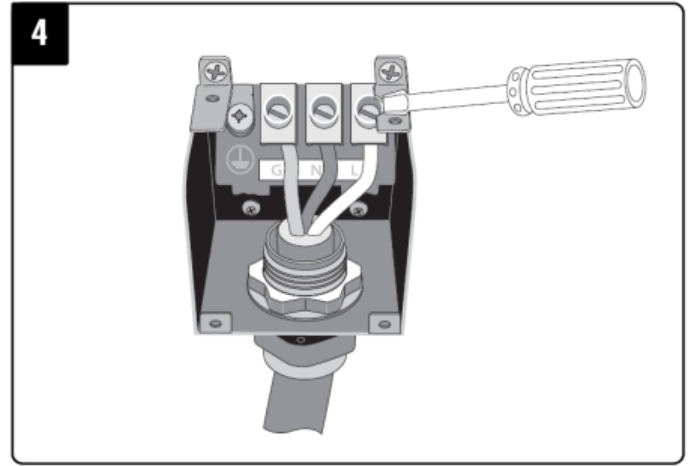
Step 1: Remove the cover-plate from the rear of the UPS to access rear-plate terminals and cable access port



Step 2: Remove the back (side nearest cable bare ends) of the plastic stuffing gland from the input cord kit



Step 3: Thread the input cord through the UPS backplate and secure with the plastic stuffing gland. Ensure you leave enough free cord to connect to the UPS terminals.



Step 4: Secure the bare cable ends to the UPS terminals & replace the cover-plate.

Wire Colour	Terminal Position	UPS Wire Function	Terminal Wire Size Rating	Tightening Torque
Green/Yellow Stripe	G	Input Ground	5.26-16mm ² (10-6AWG)	2.26Nm (20 lb in)
Blue	N	Neutral In		
Brown	L	Line (Live) In		

Receiving the Dell UPS

Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment; 2) Send a copy of the damage claim within 15 days to your service representative.

NOTE: Check the battery recharge date on the shipping carton label. If the date has passed and the batteries were never recharged, do not use the UPS. Contact your service representative.

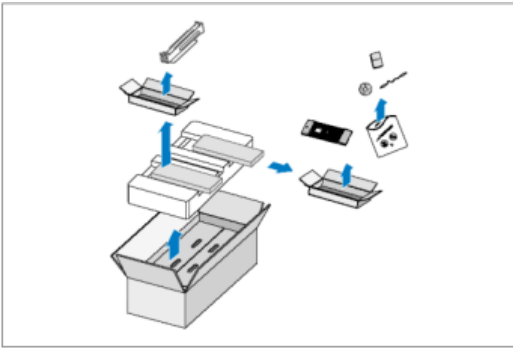
Unpacking the Dell UPS

Remove all parts before beginning the installation. For a complete list of “what’s in the box” either refer to the user guide or visit www.dellups.com -> Configure UPS -> List All UPS -> *Your model*.

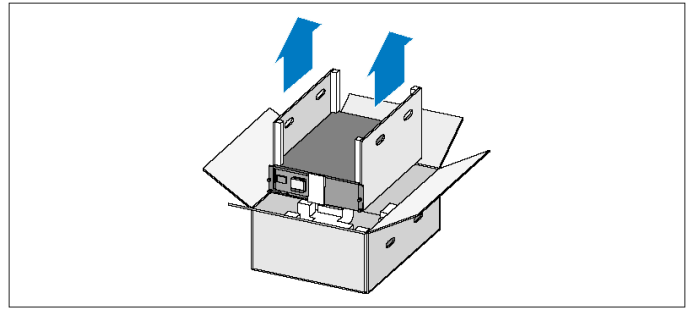
Note that for some Dell UPS models the rack-mount rails may be packed below the UPS in the box.

CAUTION: Refer to the user guide for complete instructions including important Health & Safety advice.

CAUTION: This equipment is heavy; refer to the user guide for advice on unpacking and safe installation.



Actual contents may vary by model



Actual carton may vary by model

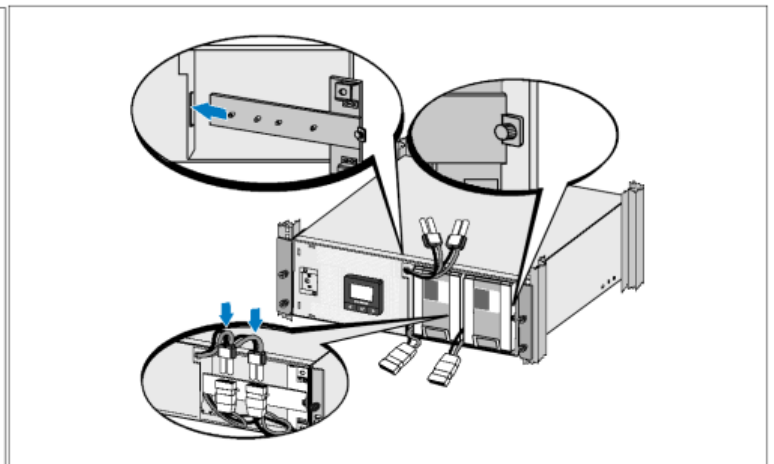
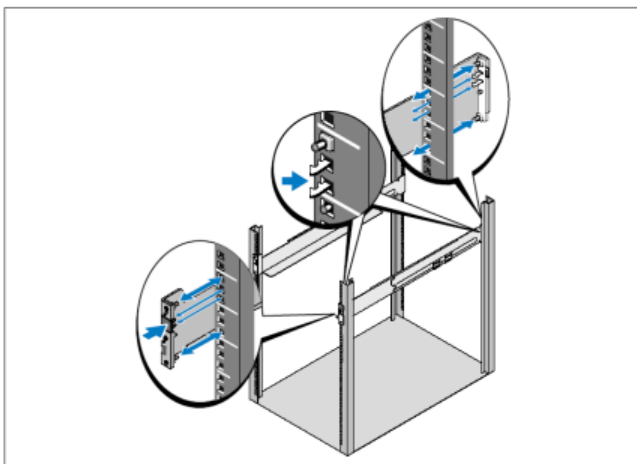
Installing the Dell UPS into the rack:

Install the ReadyRails followed by the UPS chassis. Finally install the battery modules into the UPS chassis & connect the DC leads. Finish by installing the UPS front panel.

Install the optional external battery module (EBM), Network Management Card (NMC), Environmental Monitoring Probe (EMP) and PDU(s)², if ordered.

Note: The Dell UPS equipment is heavy. Refer to the user guide for complete guidance on safety. Some key points are:

- You should typically place the UPS at the bottom of the rack for a lower centre of gravity
- Extend the rack stabilization feed during installation to prevent the rack tipping
- Ensure you follow health & safety recommendations for working with heavy & electrical equipment



² Dell 16 Amp and 32 Amp PDUs can be plugged into Dell UPS. Dell 10kW UPS model with 2 x 32A outlets is tested with Dell 32 Amp PDU types for fit.