



POWERWARE[®] 5140

User's Guide

6000 VA/6000W

Requesting a Declaration of Conformity

The EC Declaration of Conformity is available upon request for products with a CE mark. For copies of the EC Declaration of Conformity, contact:

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EMC Statement

Some configurations are classified under EN50091-2 as “Class-A UPS for Unrestricted Sales Distribution.” For these configurations, the following applies:

WARNING This is a Class-A UPS Product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take additional measures.

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FCC Statement

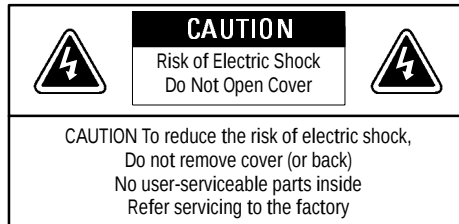
The UPS configurations vary. Some configurations may or may not be classified by the Federal Communications Commission (FCC). If your unit is classified by these standards, the corresponding information applies:

Class A

NOTE This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

Special Symbols

The following are examples of symbols used on the UPS to alert you to important information:



RISK OF ELECTRIC SHOCK - Indicates that a risk of electric shock is present and the associated warning should be observed.



CAUTION: REFER TO OPERATOR'S MANUAL - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.



RJ-45 RECEPTACLE - This receptacle provides network interface connections. Do not plug telephone or telecommunications equipment into this receptacle.



HEAT PRESENT - Indicates the presence of a hot surface or hot component. Do not touch; allow the surface to cool before touching.



This symbol indicates that you should not discard the UPS or the UPS batteries in the trash. The UPS may contain sealed, lead-acid batteries. Batteries must be recycled.



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CHAPTER 1

POWERWARE 5140 – ONE OF THE BEST!

The Powerware® 5140 uninterruptible power system (UPS) protects your sensitive electronic equipment from basic power problems such as power failures, power sags, power surges, brownouts, and line noise.

Power outages can occur when you least expect it and power quality can be erratic. These power problems have the potential to corrupt critical data, destroy unsaved work sessions, and damage hardware — causing hours of lost productivity and expensive repairs.

With the Powerware 5140, you can safely eliminate the effects of power disturbances and guard the integrity of your equipment. The Powerware 5140 is flexible and powerful enough to handle expanding rack-based applications.

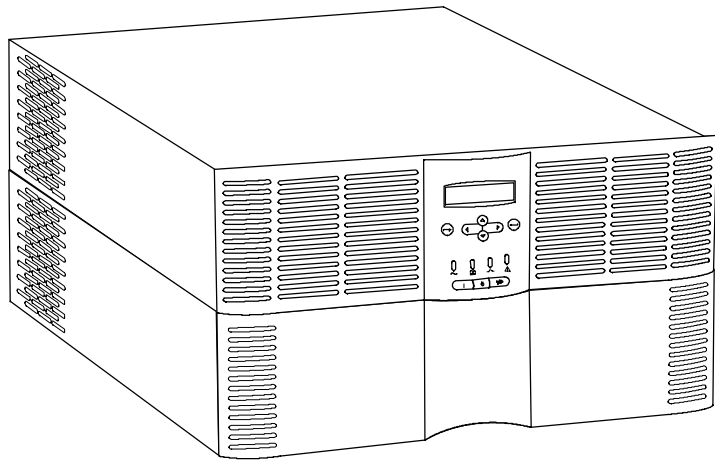


Figure 1. The Powerware 5140

Because an integral part of power protection is power management software, the Powerware 5140 comes fully equipped with two communication ports, two serial cables, and a CD containing both LanSafe III for networked systems and FailSafe III for standalone systems.

Providing outstanding performance and reliability, the Powerware 5140's unique benefits include the following:

- Power-factor corrected (PFC) design allows you to protect more equipment by using a unity power rating of 6000 VA/6000W.
- 6U rack height conserves valuable rack space.
- Easy UPS configuration and monitoring through the LCD front panel.
- Advanced Battery Management (ABM™) doubles battery service life, optimizes recharge time, and provides a warning up to 60 days before the end of useful battery life.
- Extended runtimes with Extended Battery Modules (EBM).
- Hot-swappable batteries simplify maintenance by allowing you to replace batteries safely without powering down the critical load.
- Start-on-battery compatibility allows you to power up the UPS even if utility power is not available.
- Sequential shutdown and load management through segmented output receptacles.
- Emergency shutdown control through the Remote Emergency Power-Off (REPO) port.
- Maintenance Bypass mode allows you to switch the UPS to utility power for easy maintenance or upgrades.
- Option modules provide enhanced communication capabilities for increased power protection and longer battery backup times.
- Compatibility with the Powerware ConnectUPS® Adapter provides flexible network control.
- The Powerware 5140 is backed by worldwide agency approvals.



CHAPTER 2

SAFETY WARNINGS

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

DANGER



This UPS contains **LETHAL VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER SERVICEABLE PARTS** inside the UPS.

WARNING



Only qualified service personnel (such as a licensed electrician) should perform the UPS and option modules installation and initial startup. Risk of electrical shock.

The only user operations permitted are:

- Starting up and shutting down the UPS
- Operating the user interface
- Connecting data interface cables
- Monitoring the UPS with power management software



CAUTION

- Input overcurrent protection and disconnect switch must be provided by others.
 - To reduce the risk of fire, connect only to a circuit provided with 40 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70 and Canadian Electrical Code, C22.1.
 - Batteries can present a risk of electrical shock or burn from high short circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.
 - Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
 - This UPS contains its own energy source (batteries). The UPS output may carry live voltage even when the UPS is not connected to an AC supply.
 - Never dispose of batteries in a fire. Batteries may explode when exposed to flame.
 - To reduce the risk of fire or electric shock, install this UPS in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 40°C (104°F). Do not operate near water or excessive humidity (95% max).
-

Sikkerhedsanvisninger

FARE



Denne UPS (ubrudt strømforsyning) indeholder LIVSFARLIG SPÆNDING. Al reparation og service bør KUN foretages af AUTORISERET SERVICEPERSONALE. Der er INGEN DELE i UPS'en, hvorpå en BRUGER BØR FORETAGE SERVICE.

ADVARSEL



- Batterier kan give risiko til elektrisk stød eller forbrænding fra stærk kortslutningsstrøm. Observer korrekte forholdsregler.
 - Korrekt afkastning af batterier kræves. Henvend Dem til deres lokale love m.h.t. affaldsreguleringer.
 - Denne UPS indeholder en selvforsynende energikilde (batterier). Udgangskontakterne kan overføre strømførende spænding, når UPS'en ikke er forbundet med en vekselstrømsforsyning.
 - Brænd aldrig batterierne. Batterierne kan eksplodere, når de udsættes for flammer.
 - Installer UPS'en i et temperatur- og fugtighedskontrolleret miljø frit for konduktiverende materiale for, at reducere risikoen for brand og elektrisk stød. Omgivelsestemperaturen må ikke overskride 40°C. Betjen ikke udstyrer i nærheden af vand eller urimelig fugtighed (95% maksimum).
-

Belangrijke Veiligheidsinstructies

GEVAAR



Deze UPS bevat LEVENSGEVAARLIJKE ELEKTRISCHE SPANNING. Alle reparaties en onderhoud dienen UITSLUITEND DOOR ERKEND SERVICEPERSONEEL te worden uitgevoerd. Er bevinden zich GEEN ONDERDELEN in de UPS die DOOR DE GEBRUIKER kunnen worden GEREPAREERD.

OPGELET



- Batterijen kunnen gevaar voor elektrische schok of brandwonden veroorzaken als gevolg van hoge kortsluitstroom. Volg de desbetreffende aanwijzingen op.
 - De batterijen moeten op de juiste wijze worden opgeruimd. Raadpleeg hiervoor uw plaatselijke voorschriften.
 - Deze UPS bevat zijn eigen energiebron (batterijen). De uitvoercontactdozen kunnen onder spanning staan wanneer de UPS niet op een wisselstroom voeding is aangesloten.
 - Nooit batterijen in het vuur gooien. De batterijen kunnen ontploffen.
 - Teneinde de kans op brand of elektrische schok te verminderen dient deze UPS in een gebouw met temperatuur- en vochtigheidsregeling te worden geïnstalleerd, waar geen geleidende verontreinigingen aanwezig zijn. De omgevingstemperatuur mag 40°C niet overschrijden. Niet gebruiken in de buurt van water of bij zeer hoge vochtigheid (max. 95%).
-

Tärkeitä turvaohjeita

VAARA



Tämä UPS sisältää HENGENVAARALLISIA JÄNNITTEITÄ. Kaikki korjaukset ja huollot on jätettävä VAIN VALTUUTETUN HUOLTOHENKILÖSTÖN TOIMEKSI. Tämä UPS ei sisällä MITÄÄN KÄYTTÄJÄN HUOLLETTAVIA OSIA.

VARO



- Akusto saattaa aiheuttaa sähköiskun vaaran tai syttyä tuleen mikäli akusto kytketään oikosulkuun. Noudata asianmukaisia ohjeita.
- Akusto täytyy hävittää säädösten mukaisella tavalla. Noudata paikallisia määräyksiä.
- Tämä UPS sisältää oman energialähteen (akuston). Ulostulorasioissa voi olla jännite, kun UPS ei ole liitettynä verkkojännitteeseen.
- Älä koskaan heitä akkuja tuleen. Ne voivat räjähtää.
- Vähentääksesi tulipalon ja sähköiskun vaaraa asenna tämä UPS sisätiloihin, joissa lämpötila ja kosteus on säädettävissä ja joissa ei ole sähköä johtavia epäpuhtauksia. Ympäristön lämpötila ei saa ylittää 40°C. Älä käytä lähellä vettä tai liian kosteissa oloissa (95 % maksimi).

Consignes de Sécurité

Consignes Importantes De Sécurité - Conserver Ces Instructions Cette Notice Contient Des Consignes Importantes De Sécurité

DANGER!



Cet UPS contient des tensions mortelles. Toute opération d'entretien et de réparation doit être effectuée UNIQUEMENT PAR UN PERSONNEL QUALIFIÉ AGRÉÉ. L'UPS n'a AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR.

ATTENTION!



- Une batterie peut présenter un risque de choc électrique ou de brûlure par un transfert d'énergie ou un court-circuit. Prendre les précautions nécessaires.
 - Une mise au rebut réglementaire des batteries est obligatoire. Consulter les règlements en vigueur dans votre localité concernant la mise au rebut de batteries.
 - Cet UPS contient sa propre source d'énergie (batteries). Les prises de sortie peuvent être sous tension même lorsque l'UPS n'est pas branché sur le secteur.
 - Ne jamais se débarrasser de batteries en les incinérant. Elles risquent d'exploser lorsqu'elles sont exposées à une flamme.
 - Afin de réduire les risques d'incendie et de choc électrique, installer l'UPS uniquement dans un espace intérieur à température et humidité contrôlées et sans matériel conducteur. La température ambiante ne doit pas dépasser 40°C. Ne pas utiliser à proximité d'eau ou dans une atmosphère excessivement humide (95 % max).
-

Wichtige Sicherheitsanweisungen



WARNUNG

Lebensgefahr! Diese USV enthält TÖDLICHE SPANNUNGEN! Alle Reparatur- und Wartungsarbeiten sollten NUR VON AUTORISIERTEM WARTUNGSPERSONAL durchgeführt werden. In dieser USV befinden sich KEINE VOM BENUTZER ZU WARTENDEN TEILE.



VORSICHT!

- Batterien können aufgrund von Kurzschlußhochstrom Elektroschocks oder Verbrennungen verursachen. Entsprechende Anleitungen befolgen.
 - Die Batterien müssen ordnungsgemäß weggeworfen werden. Entsorgungsanweisungen sind den örtlichen Vorschriften zu entnehmen.
 - Diese USV enthält ihre eigene Stromquelle (Batterien). An den Ausgangssteckdosen kann Spannung anliegen, selbst wenn die USV nicht an eine Wechselspannungsquelle angeschlossen ist.
 - Batterien niemals verbrennen, da sie explodieren können.
 - Um die Brand- oder Elektroschockgefahr zu verringern, diese USV nur in Gebäuden mit kontrollierter Temperatur und Luftfeuchtigkeit installieren, in denen keine leitenden Schmutzstoffen vorhanden sind. Die Umgebungstemperatur darf 40°C nicht übersteigen. Die USV nicht in der Nähe von Wasser oder in extrem hoher Luftfeuchtigkeit (max. 95 %) betreiben.
-

Importanti istruzioni di sicurezza



PERICOLO

La TENSIONE contenuta in questo gruppo statico di continuità è LETALE. Tutte le operazioni di riparazione e di manutenzione devono essere effettuate ESCLUSIVAMENTE DA PERSONALE TECNICO AUTORIZZATO. All'interno del gruppo statico di continuità NON vi sono PARTI RIPARABILI DALL'UTENTE.



ATTENZIONE

- Le batterie possono presentare rischio di scossa elettrica o di ustioni provocate da alta corrente dovuta a corto circuito. Osservare le apposite istruzioni.
 - Le batterie devono essere smaltite in modo corretto. Per i requisiti di smaltimento fare riferimento alle disposizioni locali.
 - Questo gruppo statico di continuità contiene una fonte di energia autonoma (le batterie). Le prese di uscita possono condurre tensione energizzata quando il gruppo statico di continuità non è collegato con una fonte di alimentazione a corrente alternata.
 - Non gettare mai le batterie nel fuoco poichè potrebbero esplodere se esposte alle fiamme.
 - Per ridurre il rischio di incendio o di scossa elettrica, installare il gruppo statico di continuità in un ambiente interno a temperatura ed umidità controllata, privo di agenti contaminanti conduttivi. La temperatura ambiente non deve superare i 40°C. Non utilizzare l'unità in prossimità di acqua o in presenza di umidità eccessiva (95% max).
-

Viktig Sikkerhetsinformasjon

FARLIG



Denne UPS'en inneholder LIVSFARLIGE SPENNINGER. All reparasjon og service må kun utføres av AUTORISERT SERVICEPERSONALE. BRUKERE KAN IKKE UTFØRE SERVICE PÅ NOEN AV DELENE i UPS'en.

FORSIKTIG



- Batterier kan forårsake elektriske støt eller forbrenning på grunn av høy kortslutningsstrøm. Følg instruksene.
 - Batterier må fjernes på korrekt måte. Se lokale forskrifter vedrørende krav om fjerning av batterier.
 - Denne UPS'en har en egen energikilde (batterier). Stikkontaktene kan være strømførende selv om UPS'en ikke er tilsluttet en vekselstrømforsyning.
 - Kast aldri batterier i flammer, da de kan eksplodere, hvis de utsettes for åpen ild.
 - For å redusere fare for brann eller elektriske støt, bør denne UPS'en installeres i et innendørs miljø med kontrollert temperatur og luftfuktighet som er fritt for ledende, forurensende stoffer. Romtemperaturen må ikke overskride 40°C. Den må ikke brukes i nærheten av vann eller ved meget høy luftfuktighet (95% maks.).
-

Regulamentos de Segurança

CUIDADO



O UPS contém VOLTAGEM MORTAL. Todos os reparos e assistência técnica devem ser executados SOMENTE POR PESSOAL DA ASSISTÊNCIA TÉCNICA AUTORIZADO. Não há nenhuma PEÇA QUE POSSA SER REPARADA PELO USUÁRIO dentro do UPS.

PERIGO



- As baterias podem apresentar o risco de choque elétrico, ou queimaduras provenientes de alta corrente de curto-circuito. Observe as instruções adequadas.
 - Siga os devidos regulamentos ao desfazer-se das baterias. Consulte os códigos do local para maiores informações sobre os regulamentos de descarte de produtos.
 - Este UPS contém sua própria fonte de energia (baterias). Os receptáculos de saída podem conter voltagem ativa quando o UPS não se encontra conectado a uma fonte de alimentação de corrente alternada.
 - Nunca se desfaça das baterias jogando-as no fogo. Há risco de explosão quando expostas à chamas.
 - Para reduzir o risco de incêndios ou choques elétricos, instale o UPS em ambiente interno com temperatura e umidade controladas e livres de contaminadores condutíveis. A temperatura ambiente não deve exceder 40°C. Não opere-o próximo a água ou em umidade excessiva (máx: 95%).
-

Requisitos de seguridad



PELIGRO

Este UPS (suministro de alimentación permanente) contiene VOLTAJES LETALES. Todas las reparaciones y el servicio técnico deberán ser realizados por PERSONAL DE SERVICIO TECNICO AUTORIZADO SOLAMENTE. Este UPS NO CONTIENE PARTES QUE PUEDAN SER REPARADAS POR EL USUARIO.



PRECAUCIÓN

- Las baterías pueden presentar un riesgo de descargas eléctricas o de quemaduras debido a la alta corriente de cortocircuito. Preste atención a las instrucciones correspondientes.
 - Es necesario deshacerse de las baterías adecuadamente. Consulte las disposiciones locales para conocer cuáles son los requisitos pertinentes.
 - Este UPS contiene su propia fuente de energía (baterías). Es posible que los receptáculos de salida tengan tensión cuando el UPS no está conectado a un suministro de corriente alterna (CA).
 - Nunca arroje las baterías al fuego ya que pueden explotar cuando son expuestas a las llamas.
 - Para disminuir el riesgo de incendio o descargas eléctricas, instale este UPS en un ambiente interior a temperatura y humedad controladas, y sin contaminantes conductores. La temperatura ambiente no debe superar los 40°C. No lo haga funcionar cerca del agua o de condiciones de humedad excesivas (95% como máximo).
-

Viktig säkerhetsinformation

FARA



Denna UPS-enhet innehåller LIVSFARLIG SPÄNNING. ENDAST AUKTORISERAD SERVICEPERSONAL får utföra reparationer eller service. Det finns inga delar som ANVÄNDAREN KAN UTFÖRA SERVICE PÅ inuti UPS-enheten.

VIKTIGT



- Batterierna kan ge elektriska stötar eller brännskador från hög kortslutningsström. Följ tillämpliga anvisningar.
 - Batterierna måste kasseras enligt anvisningarna i lokal lagstiftning.
 - Denna UPS-enhet har en egen energikälla (batterier). De utgående kontakterna kan vara spänningsförande när UPS-enheten inte är ansluten till en växelströmsenhet.
 - Använda batterier får aldrig brännas upp. De kan explodera.
 - Minska risken för elektriska stötar genom att installera denna UPS-enhet inomhus, där temperatur och luftfuktighet är kontrollerade och där inga ledande föroreningar förekommer. Omgivande temperatur får ej överstiga 40° Celcius. Använd inte utrustningen nära vatten eller vid hög luftfuktighet (max 95%).
-



CHAPTER 3

INSTALLATION

This section explains:

- Equipment inspection
- Assembling the UPS into the rack
- Electrical installation
- Installing optional equipment
- Starting up the 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.

Unpacking the UPS

The shipping pallet contains several separately-packaged subassemblies:

- The UPS chassis
- The UPS front panel (has an LCD panel)
- Two battery trays
- The battery front panel
- A rail kit
- An accessory kit

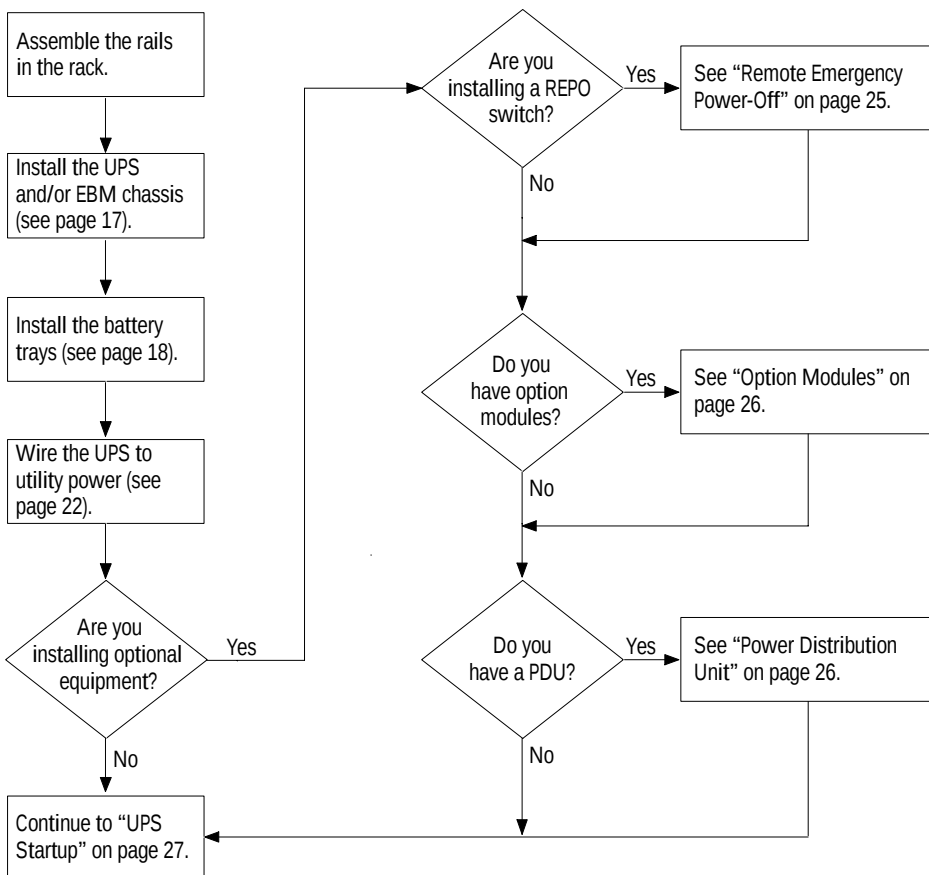


CAUTION

Use the cardboard lift-out tray for unloading only. Do not use the lift-out tray to transport or carry the UPS.

1. Using two people, remove the chassis from the package with the lift-out tray.
2. Cut the band that holds the chassis in the lift-out tray.

Installation Overview



Installing the Chassis



CAUTION

The UPS chassis and battery trays are heavy (see page 54). A minimum of two people are required to lift the UPS into the rack. Use caution when lifting the modules.



NOTE The UPS and Extended Battery Modules **MUST** be installed at the bottom of the rack. If placed in a rack with existing equipment, the rack must be reconfigured to allow the UPS installation at the bottom of the rack.

After the rails are installed in the rack (refer to the instructions included with the rail kit), use the following procedure to assemble the UPS.

1. If you are installing an optional EBM, position the chassis in the bottom of the rack and slide into place.
2. Attach the EBM chassis to the rack using the screws supplied with the rack (see Figure 2).

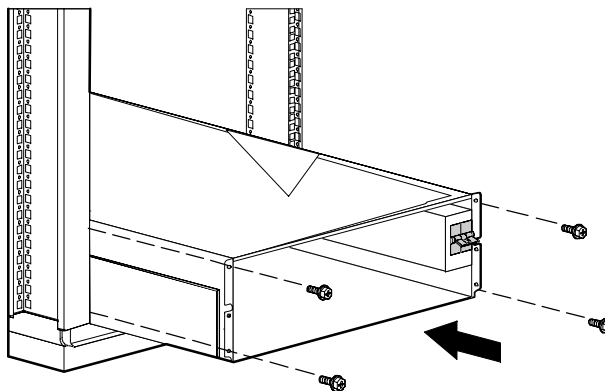


Figure 2. Installing the EBM Chassis

3. Using two people, position the UPS chassis in the bottom of the rack (or above the optional EBMs) and slide into place.
4. Attach the chassis to the rack using the screws supplied with the rack (see Figure 3).

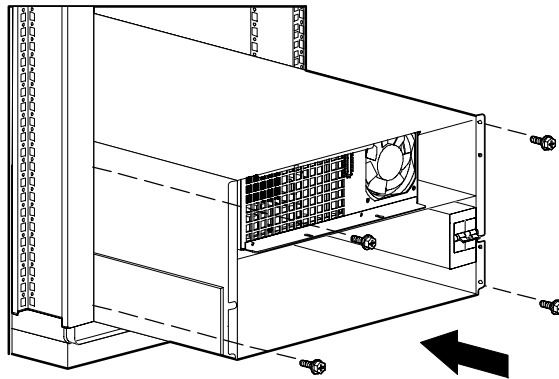


Figure 3. Installing the UPS Chassis

Installing the Batteries

WARNING



Only qualified service personnel (such as a licensed electrician) should perform the battery installation. Risk of electrical shock.

To install the battery trays into the UPS and EBM chassis:

1. Verify that the battery breaker on the UPS and all EBMs is in the OFF position (see Figure 4).

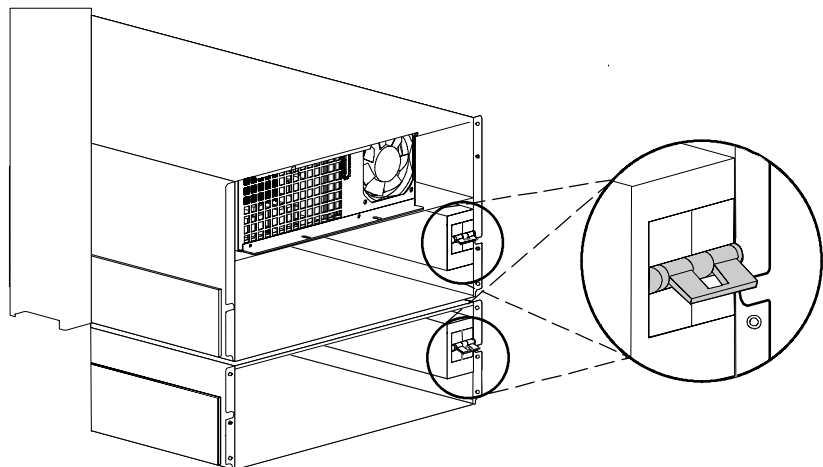


Figure 4. Battery Breakers



NOTE Steps 2 through 4 are for EBM installation only. If you do not have optional EBMs, skip to Step 5 on page 21.

2. Remove the EBM connector cover on the UPS. If a second EBM is to be used, remove the EBM connector cover on the first EBM (see Figure 5).

For each EBM connector cover, remove and retain the cover screw. Discard the cover.

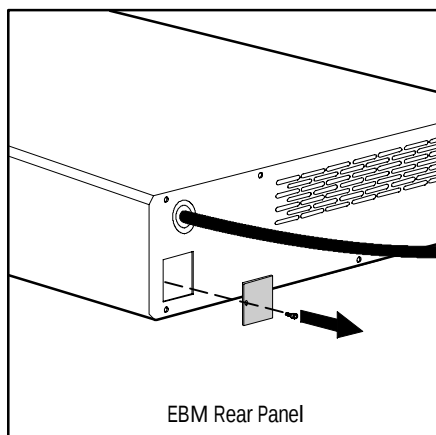
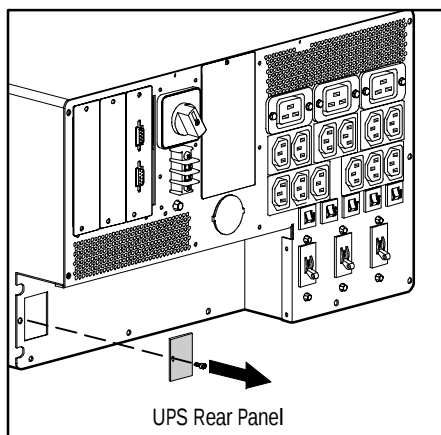


Figure 5. Removing the EBM Connector Covers

3. Connect the EBM cable to the UPS (see Figure 6). If installing a second EBM, connect the EBM cable to the first EBM.

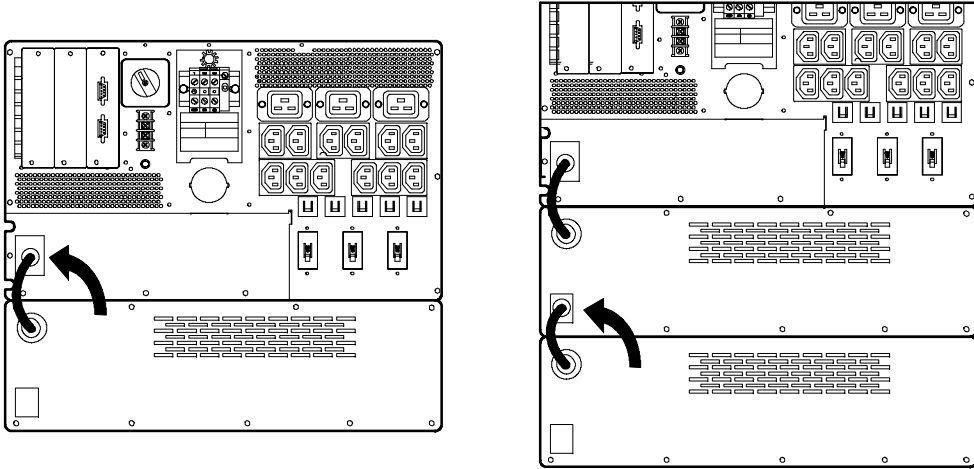


Figure 6. Connecting the EBM Cables

4. Use the screw removed in Step 2 to secure the EBM cable by attaching the retaining bracket provided in the kit (see Figure 7).

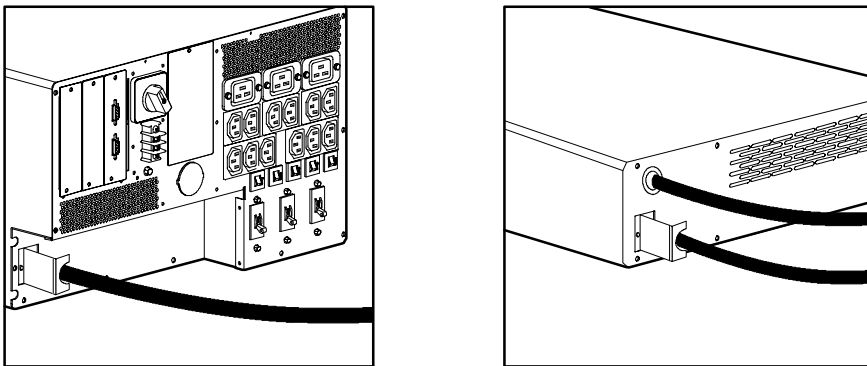


Figure 7. Securing the EBM Cables

5. Slide the left battery tray into the chassis. Repeat for the right battery tray.
6. For each battery tray, remove the battery connector cover. Remove the cover screw and discard the cover. Reinstall the screw to secure the sheet metal (see Figure 8).

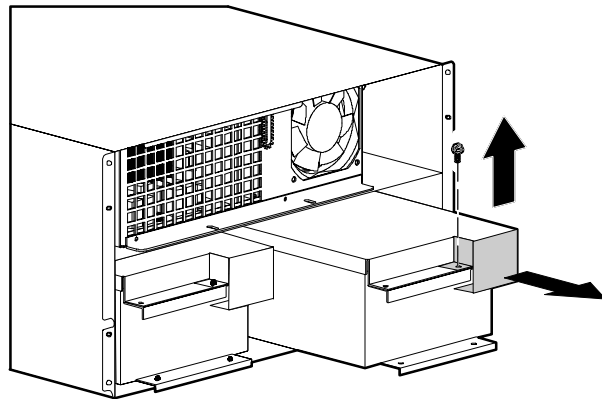


Figure 8. Removing the Battery Connector Covers

7. Secure the battery trays to the chassis with the screws provided in the kit (see Figure 9).

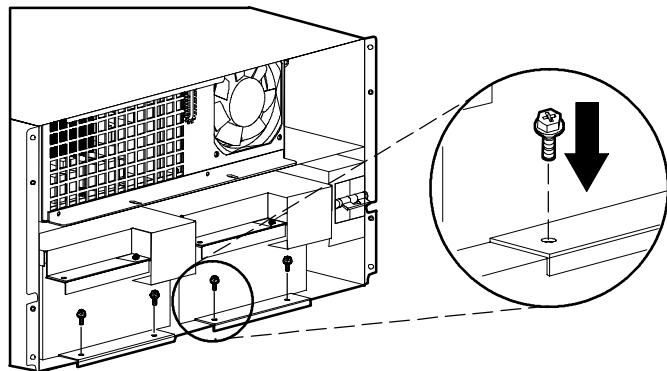


Figure 9. Securing the Battery Trays

8. Connect the battery cable to the battery connector on the left battery tray. Repeat for the right battery tray (see Figure 10).

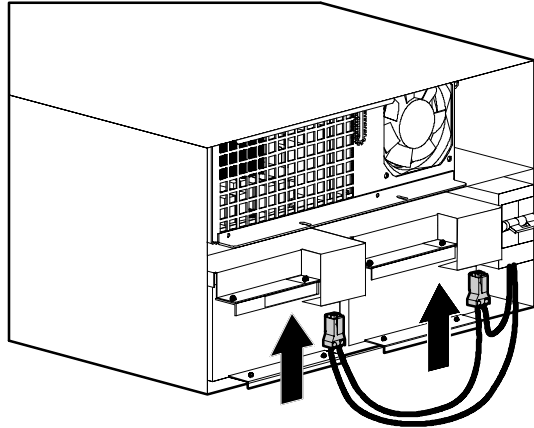


Figure 10. Connecting the Battery Cables

9. Repeat Steps 5 through 8 to install the battery trays in each EBM chassis.
10. Continue to the following section, “Electrical Installation.”

Electrical Installation

WARNING



Only qualified service personnel (such as a licensed electrician) should perform the electrical installation. Risk of electrical shock.

The Powerware 5140 requires a dedicated branch circuit that meets the following requirements:

- 40A circuit with short circuit and overcurrent protection
- 200-240 Vac
- Single-phase
- 50/60 Hz
- Flexible metal conduit is recommended for ease of service and maintenance

To hardwire the UPS:

1. Switch off utility power at the distribution point where the UPS will be connected. Be absolutely sure there is no power.
2. Remove the terminal block cover and either the input wiring knockout or removeable plate (see Figure 11). Retain the terminal block cover.

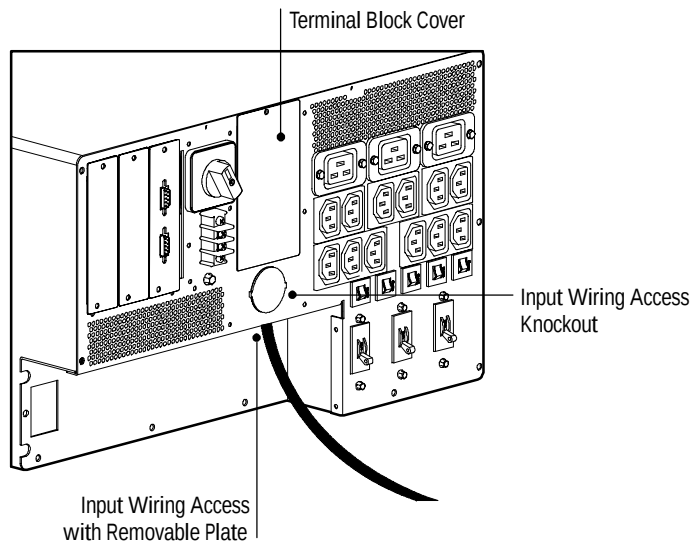


Figure 11. Wiring Access

3. Pull the input wires through the conduit, leaving approximately 2 ft (0.5m) of exposed wire. Attach a flexible metal fitting to the end of the conduit.
4. Insert the conduit through the input wiring entry and attach the conduit fitting to the panel. Strip 0.5" (1.5 cm) of insulation from the end of each incoming wire.

5. Connect the input and ground wires to the input terminal block according to the wiring instructions below the terminal block (see Figure 12).

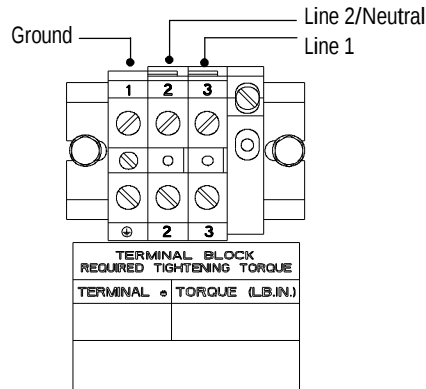


Figure 12. Terminal Block

6. If you have a PW5140 6000 HW model, remove the output wiring knockout and the terminal block cover (see Figure 13). Retain the terminal block cover.

Connect the output and ground wires to the output terminal block according to the wiring instructions below the terminal block (see Figure 12 and Figure 13).

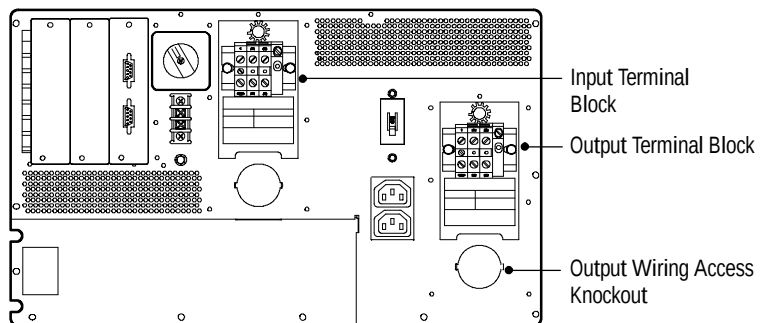


Figure 13. PW5140 6000 HW Model

7. Replace the terminal block cover(s).

8. Continue to the following section, “Installing Optional Equipment,” if you are installing a REPO switch, option modules, or a power distribution unit (PDU).

Otherwise, continue to “UPS Startup” on page 27.

Installing Optional Equipment

This section describes the UPS options that should be installed before starting up the UPS:

- Remote Emergency Power-Off switch
- Option modules
- Power Distribution Unit

Remote Emergency Power-Off

WARNING



Only qualified service personnel (such as a licensed electrician) should perform the REPO installation. Risk of electrical shock.

The Powerware 5140 includes a REPO port that allows power to be switched off at the UPS output receptacles from a customer-supplied switch in a remote location.

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

CAUTION



- The REPO switch must be wired in accordance with NEC (NFPA 70, Article 725) standards or national and local wiring regulations.
- The REPO shutdown circuit must meet the requirements of an NEC Class 2 circuit or IEC-950 Secondary Extra Low Voltage (SELV) circuit and be separated from any hazardous voltage circuits or conductors by reinforced insulation.
- The REPO shutdown circuit must short the REPO terminals and disconnect the AC input source.

Use the following procedure to install the REPO switch:

1. Confirm that the power is off at the main utility breaker.
2. Connect the switch or circuit to the REPO port on the UPS rear panel using insulated 18 - 20 AWG (0.75 mm² - 0.5 mm²) wire.

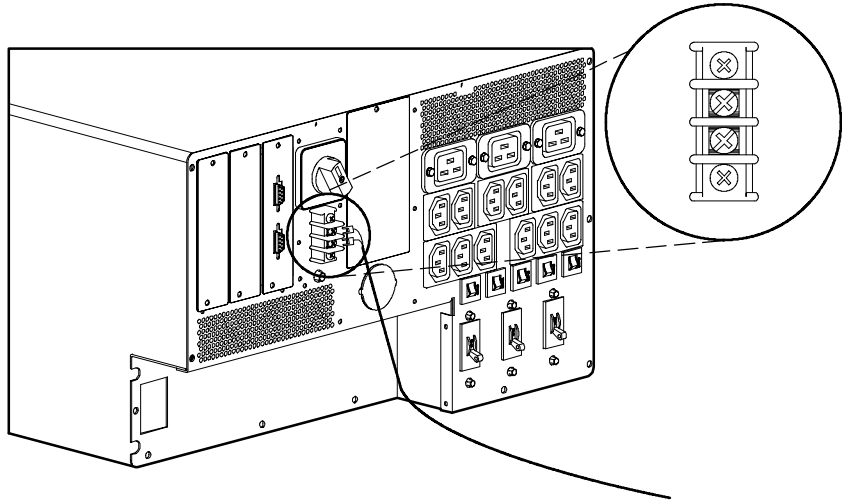


Figure 14. REPO Port

3. Verify that the remote circuit is off.
4. Verify that the REPO switch is in the OFF position to enable power to the output receptacles.

Option Modules

Option modules help your UPS communicate in a variety of networking environments and are installed in the UPS option slot. See the manual that accompanies each module for installation instructions.

Power Distribution Unit

The high-to-low voltage PDU provides 120V output and up to 250 VA with two low-voltage outlets (see Figure 15). Use the IEC jumper cords provided with the PDU kit to connect to an IEC-320-C13 receptacle on the UPS rear panel.

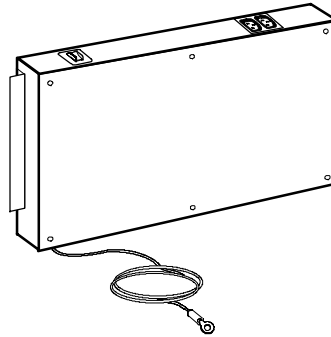


Figure 15. The PDU

UPS Startup

Perform the following steps to start up the UPS:

1. Locate the UPS front panel (shipped in a separate box).
2. Attach the UPS front panel interface connectors to the chassis. Lift the front panel into place and secure to the chassis with the attached screws. See Figure 16 and Figure 17.

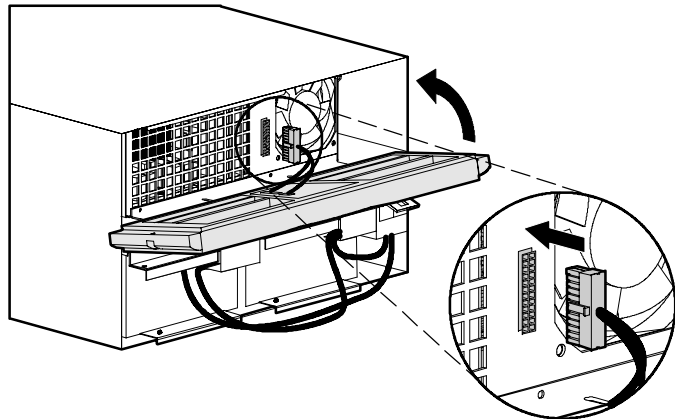


Figure 16. Installing the UPS Front Panel

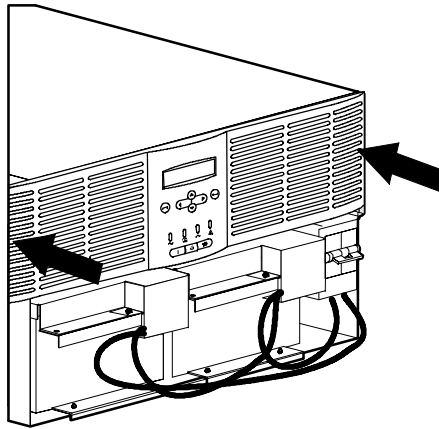


Figure 17. Securing the UPS Front Panel

3. Connect your equipment to the appropriate UPS output receptacles or the PDU receptacles.



NOTE If you are using the Load Segment feature, see page 43 for more information on controlling and assigning the load segments.

4. If you installed optional EBMs, continue to Step 5; otherwise, skip to Step 7.
5. Turn the battery breaker on all EBMs to the ON position.

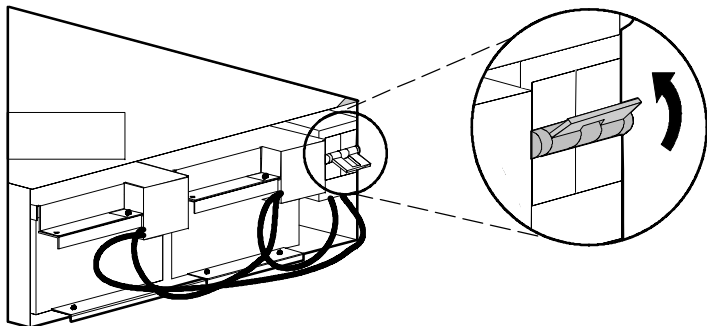


Figure 18. EBM Battery Breaker

6. Attach the front panel to the EBM chassis using the attached screws.

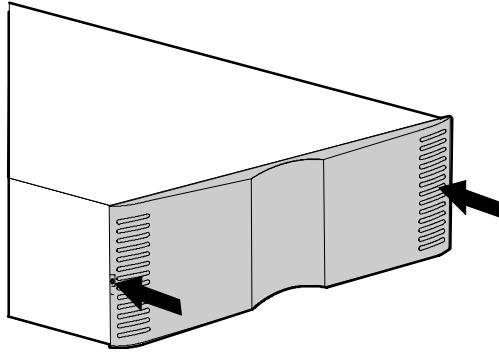


Figure 19. Attaching the EBM Front Panel

7. Turn the battery breaker on the UPS to the ON position.

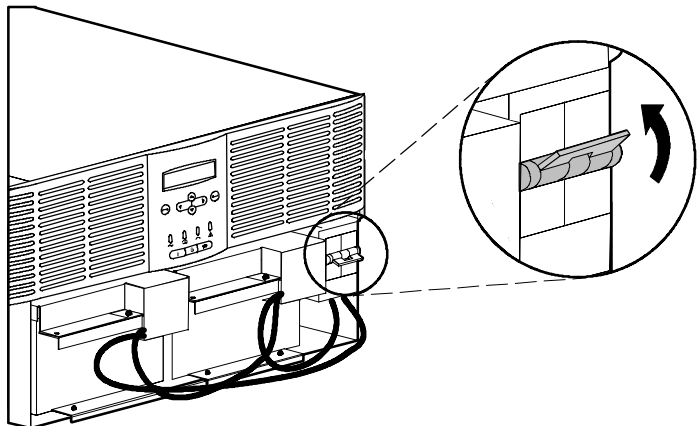


Figure 20. Battery Breaker

8. Attach the battery front panel to the chassis using the attached screws.

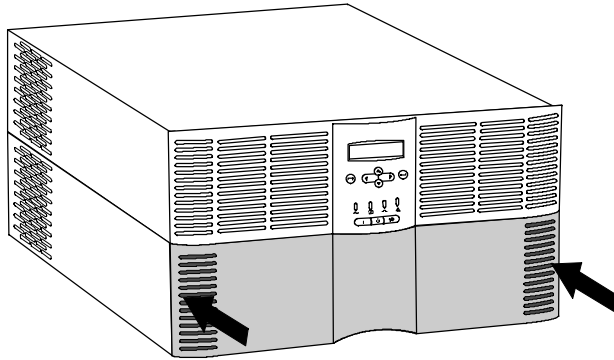


Figure 21. Attaching the Battery Front Panel

9. Switch the main utility breaker on.
The UPS conducts a self-test and enters Standby mode, indicated by the blinking $\sim$ indicator.
10. Press the UPS On | button.
The load segments cycle through a startup sequence and the UPS enters Normal mode.



NOTE The batteries charge to 90% capacity in approximately 4 hours. However, it is recommended that the batteries charge for 24 hours after installation or long storage.

11. If you installed an optional EBM, access the System Setup menu and set the amp/hour rating for each EBM (see “Set Hardware Configuration” on page 40).



CHAPTER 4

OPERATION

This chapter covers the operation of the UPS, including:

- Operating modes
- UPS shutdown
- Starting the UPS on battery
- Maintenance bypass

Operating Modes

The Powerware 5140's front panel indicates the UPS status through the LCD panel and the UPS indicators.

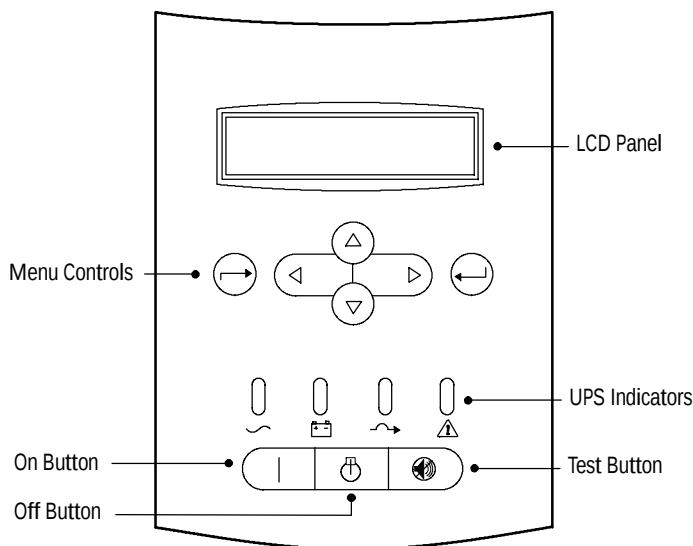


Figure 22. Front Panel Operational Controls

Normal Mode

During Normal mode, the  indicator illuminates and power is available from the rear receptacles. The UPS monitors and charges the battery when necessary.

Battery Mode

When there is a power outage, the  indicator illuminates and the alarm beeps. If the power outage continues, the UPS notifies you of approximate battery time remaining and the shutdown process begins (see “Battery Data” on page 38 for battery time remaining). When the utility power returns, the UPS automatically switches to Normal mode operation and recharges the battery.

Standby Mode

When the UPS is turned off and connected to a power source, the UPS is in Standby mode. The batteries recharge when necessary. The  indicator is flashing, indicating that power is not available from the UPS receptacles.

UPS Shutdown

To perform a UPS shutdown:

1. Press and hold the Off  button for three seconds.
The  indicator flashes, indicating Standby mode.
2. Switch off the main utility breaker.
The UPS shuts down in 30 seconds.

Starting the UPS on Battery



NOTE Before using this feature, the UPS must have been powered by utility power at least once and the batteries must be completely charged.

NOTE The UPS does not auto-detect the input frequency when starting on battery; the default is the last frequency used by the UPS.

This feature allows you to start the UPS without utility power. To turn on the UPS without using utility power, press and hold the On | button for five seconds.

The UPS supplies power to your equipment and goes into Battery mode. When the UPS starts on battery, it does not conduct a self-test to conserve battery power.

Maintenance Bypass

Battery power is not available while on bypass; however, utility power continues to be passively filtered by the UPS.

To switch the UPS to Maintenance Bypass mode:

1. Turn the Bypass switch on the UPS rear panel to the BYPASS position (see Figure 23).

The $\curvearrowright$ indicator illuminates and the UPS beeps every three seconds. The UPS is now powering your equipment directly from utility power.

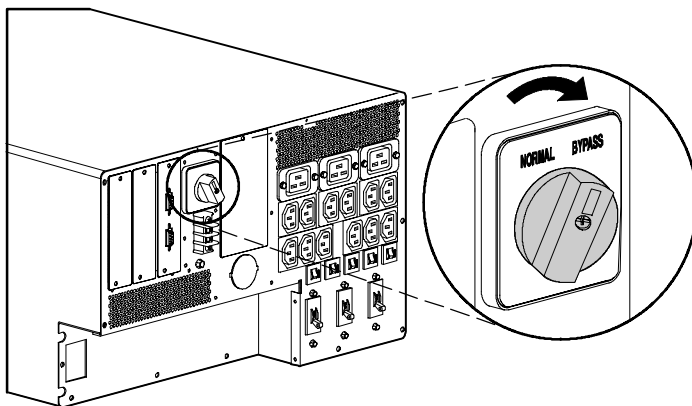


Figure 23. The UPS Bypass Switch



CHAPTER 5

FRONT PANEL MENU

The following chapter describes:

- How to use the front panel display
- Using the Main Menu and System Setup Menu

Control Buttons

Use the following front panel control buttons to navigate through the menus and options.

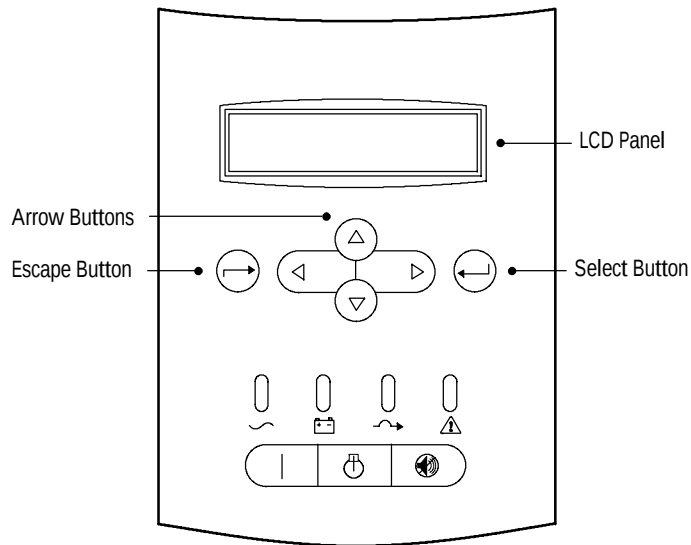


Figure 24. Front Panel Menu Controls

Escape Button

Press  to return to the previous menu level. If you are not sure which menu is currently displayed, press  repeatedly until the Main Menu displays.

Up or Down Arrow Buttons

▲ or ▼ scrolls through the menu options. For example, if the display shows Main Menu on the top line of the LCD panel and Status on the second line, press ▼ to move to the next menu item, Meters.

▲ or ▼ also scrolls through the submenu options. For example, if the LCD panel shows Password on the top line and AAAAAA on the second line, press ▲ or ▼ to scroll through the characters (PAAAAA).

Left or Right Arrow Buttons

◀ or ▶ scrolls through the screen messages or moves the cursor position left or right when entering the password or load segments. For example, if the LCD panel shows Password on the top line and AAAAAA on the second line, press ▶ to move the cursor one position to the right (PAAAAA).

Select Button

Pressing ◀ selects the currently displayed item shown on the second line of the LCD panel. For example, if the display shows Main Menu on the top line and Meters on the second line, pressing ◀ enters the Meters Menu and shows the Input Volts option.

Main Menu

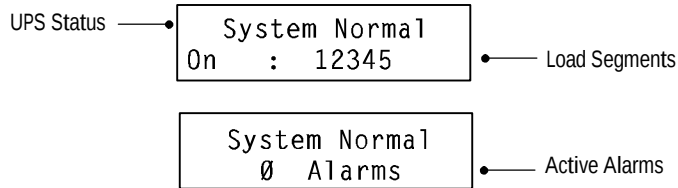
Press ◀ to enter the Main Menu. The following menu options are available from the Main Menu on the UPS LCD panel:

- Status
- Meters
- Active Alarms
- Battery Data
- Firmware Version
- Load Control
- Display Test
- System Setup

Use ▲ and ▼ to display the Main Menu options. Only two menu options appear at one time. Press ◀ to enter one of the submenus.

Status

The Status option displays the current UPS operation mode or condition. Use ▲ and ▼ to toggle between the current load segment configuration and the number of currently active alarms. Press ← to automatically enter the Load Control menu or the Active Alarms menu.



Meters

The Meters option displays information about the UPS voltages. If necessary, use ◀ and ▶ to scroll left or right to read the meter values. Use ▲ and ▼ to view the following metered values:

- Input Volts
- Output Volts
- Input Frequency (Hz)
- Output Frequency (Hz)
- Output Power - Shown as a bar chart with each block representing approximately 10% of the total load. The vertical bar represents the full load point; anything past the vertical bar represents an overload condition.
- Battery Volts

Active Alarms

The Active Alarms option displays a description of each active alarm. The UPS generates the following alarm conditions:

- Input AC Over Voltage
- Input AC Under Voltage
- Input Over or Under Frequency
- Output Overload
- Inverter Fault

- Battery Low
- Utility Not Present
- Battery Totally Discharged
- UPS on Battery
- Load Power Off
- Battery Test Failed
- Site Wiring Fault

Battery Data

The Battery Data option displays information about the battery. If the UPS is operating in Normal mode, the Battery Charge bar chart is displayed. If the UPS is on battery, the Battery Time Remaining bar chart is displayed.

Each block on the Battery Charge/Battery Time Remaining bar chart represents approximately 10% of the total time. This calculation assumes a constant load on the UPS.

Firmware Version

You can view the firmware version for the control board or the communication board.

Load Control

The Load Control option enables you to turn on and off the load segments. The factory-default is On for all load segments. To change a load segment:

1. Use ◀ and ▶ to scroll through the load segment numbers.
2. Press ← to select the load segment.
3. Use ▲ and ▼ to toggle between Y and N.
4. Select Y or N by pressing ←. The display reflects the changes: a dash (–) represents off and the load segment number represents on.
5. Press ← to confirm your selection.

Display Test

This feature allows you to test all pixels in the LCD panel. “Powerware Display Test” scrolls across the panel. Use the  to exit the test mode.

System Setup

Select the System Setup option to enter the System Setup Menu. This menu is password-protected and prompts you for the System Setup password.

Use ▲ and ▼ to scroll through the character values. Use ◀ and ▶ to move to the next character in the password. To enter the complete password, press . The password must be six characters long.

After entering a valid password, the System Setup Menu appears.



NOTE The default password is PRWARE. It is recommended to change the default password to ensure security. Contact your service representative if you have misplaced your password.

The System Setup Menu contains the following options:

- Set HW (Hardware) Configuration
- Set Language
- Set Alarm Horn
- Set Password
- Set Sync Range
- Comm (Communications) Setup
- Set Voltage
- Set Site Fault
- Set Sleep Mode

Use ▲ and ▼ to display the System Setup options. Press  to enter one of the submenus.

Set HW (Hardware) Configuration

If you added an EBM to the UPS, you must select the amp/hour rating through the Battery Setup option. The hardware configuration options are:

- Load Control (reserved for future use)
- Battery Setup - select 5 Ah for each EBM.

Set Language

The front panel is translated into eight languages: Danish, Dutch, English, French, German, Spanish, Italian, and Japanese. An asterisk (*) shows the current language used for the front panel menus.

Set Alarm Horn

Use the Set Alarm Horn option to enable or disable the audible alarm.

Set Password

Use the Set Password option to modify the user password for the System Setup Menu. Use ▲ and ▼ to scroll through the character values. Use ◀ and ▶ to move to the next character in the password. To save the password, press ←↵. The password must be six characters long.

Set Sync Range

This option is for viewing only and displays the frequency tolerance:

- ± 3 Hz for Normal mode
- ± 5 Hz for Extended mode (+5/-3 @ 50 Hz)

Comm (Communications) Setup

Use this option to set up the UPS for serial communication. Select Serial Port 1 or Serial Port 2 and then select values for the following options:

- **Baud rate** - select 1200, 2400, 4800, 9600, or 19200
- **Data bits** - select 7 or 8
- **Stop bits** - select 1 or 2
- **Parity** - select Odd, Even, None, Mark, or Space
- **Assigned Segs** - select the individual load segment to assign or disable that segment for the selected serial port (see Figure 25).

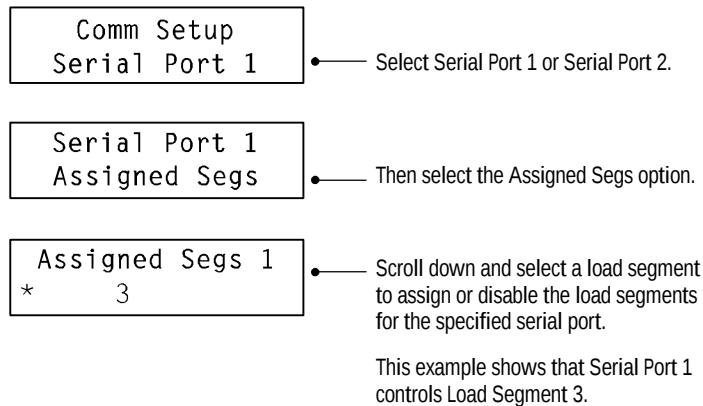


Figure 25. Assigning Load Segments



NOTE All load segments are assigned to both serial ports by factory-default. If you are using the LanSafe III/FailSafe III power management software, the load segments must be carefully assigned to prevent the unintentional shutdown of specific load segments.

Set Voltage

Use the Set Voltage option to configure the UPS utility voltage. Use ▲ and ▼ to scroll through the values. An asterisk (*) shows the current configuration.

Select the appropriate utility voltage range (use Table 1 to help select the appropriate voltage):

- 200V
- 208V
- 220V
- 230V
- 240V
- 208/230V Auto-sensing
- 230V Extended (-35% to +20%)

Table 1. Nominal Input Voltage Ranges

Nominal Input Voltage (Vac)	Normal Input Voltage Range	Extended Input Voltage Range
200V Nominal +20%/–17%	166-240V	
208V Nominal ±20%	166-248V	
220V Nominal ±20%	176-264V	
230V Nominal ±20%	184-276V	166-288V
240V Nominal ±20%	192-288V	

Set Site Fault

Use the Set Site Fault option to enable or disable the site wiring fault alarm. The default is disabled. Enable the alarm for installations where a grounded-neutral electrical system is in place (see “Site Fault Wiring” on page 57 for more information).

Set Sleep Mode

Use the Sleep Mode feature to control loads that use less than 10% of the current when the UPS is on battery. The default is disabled.

Enable this option if you do not want a load less than 10% of the current to be protected by battery power. This feature conserves battery power by shutting down less critical loads.



CHAPTER 6

CONFIGURATION

The following chapter describes:

- Load segment control
- Communication port configuration
- Nominal input voltage options

Load Segments

Each UPS model has load segments that can be controlled by power management software, providing an orderly shutdown and startup of your equipment. The following figures identify the load segments for each UPS rear panel.



NOTE If you are using the LanSafe III/FailSafe III power management software to control the load segments, you **MUST** assign the load segments to either Serial Port 1 or Serial Port 2 using the Comm Setup option in the System Setup Menu (see page 41 for more information).

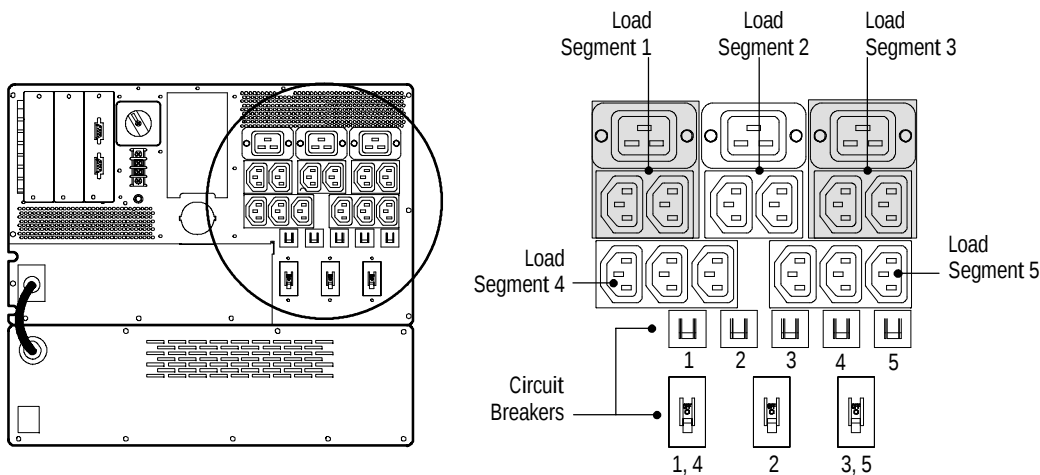


Figure 26. PW5140 6000i UPS Load Segments

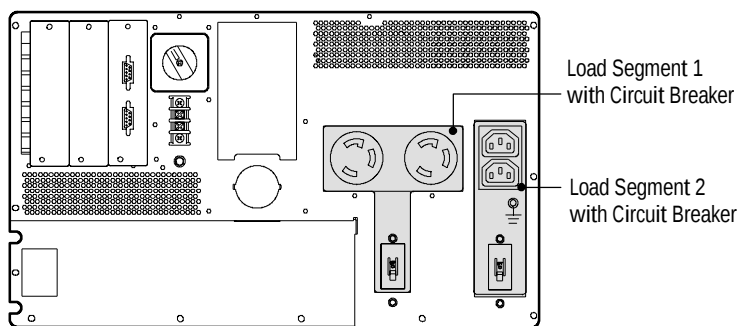


Figure 27. PW5140 6000 UPS Load Segments

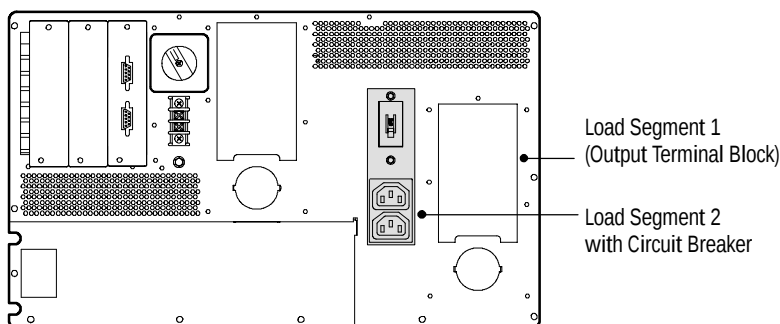


Figure 28. PW5140 6000 HW UPS Load Segments

Communication Port Configuration

To establish communication between the UPS and a computer, connect the communication cable from a UPS communication port to your computer's communication port.

If the computer is running power management software, the communication cable between the UPS and the computer enables a data exchange. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

There are two serial communication ports labeled on the UPS rear panel. See Table 2 and Table 3 for pin assignments. You can configure communication parameters, such as baud rate, through the System Setup Menu (see page 41).

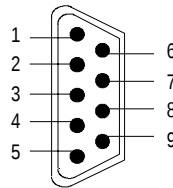


Figure 29. DE-9 Communication Port

Table 2. Communication Port 1 Pin Assignment

Pin Number	Signal Name	Function
1	No Connection	Low Battery relay contact
2	TxD	Transmit to external device
3	RxD	Receive from external device
4	DTR	PnP from external device
5	Signal Ground	Signal ground
6	DSR	To external device
7	RTS	From external device
8	CTS	AC Fail relay contact
9	+V (8 to 24 volts DC)	Power

Table 3. Communication Port 2 Pin Assignment

Pin Number	Signal Name	Function
1	No Connection	No connection
2	TxD	Transmit to external device
3	RxD	Receive from external device
4	DTR	PnP from external device
5	Signal Ground	Signal ground
6	DSR	To external device
7	RTS	From external device
8	CTS	To external device
9	+V (8 to 24 volts DC)	Power

Nominal Input Voltage

If the utility power consistently fluctuates outside of the configured UPS voltage range, the UPS repeatedly corrects the input voltage by switching to battery power.

You can configure the UPS to more closely match the nominal input voltage by selecting a different input voltage or extending the input voltage range. The default is auto-sensing to 208/230V.

1. Have a qualified electrician measure the utility voltage.
2. Use the System Setup Menu to access the Set Voltage parameter (see page 42).
3. Select one of the following options: 200V, 208V, 220V, 230V, 240V, 208/230V auto-sensing, or 230V extended. Use the following table to help select the appropriate voltage.

Nominal Input Voltage (Vac)	Normal Input Voltage Range	Extended Input Voltage Range
200V Nominal +20%/–17%	166-240V	
208V Nominal ±20%	166-248V	
220V Nominal ±20%	176-264V	
230V Nominal ±20%	184-276V	166-288V
240V Nominal ±20%	192-288V	

4. Update the nominal input voltage range and/or the extended utility voltage range parameters as required.



CHAPTER 7

BATTERY MAINTENANCE

This section explains how to:

- Care for the UPS and batteries
- Replace the batteries
- Test new batteries
- Recycle used batteries

UPS and Battery Care

For the best preventive maintenance, keep the area around the UPS clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner.

For full battery life, keep the UPS at an ambient temperature of 25°C (77°F).

Storing the UPS and Batteries

If you store the UPS for a long period, recharge the battery every 12 months by connecting the UPS to utility power. The batteries charge to 90% capacity in approximately 4 hours. However, it is recommended that the batteries charge for 24 hours after long storage.

When to Replace Batteries

The batteries should be replaced within 30 to 60 days if the  indicator flashes and the LCD displays Battery Low.

To verify that the batteries need to be replaced, conduct a self-test by pressing the  button. If the  indicator continues to flash, contact your service representative to order new battery trays.

Replacing Batteries



WARNING

- Only qualified service personnel (such as a licensed electrician) should perform the battery installation. Risk of electrical shock.
- Batteries can present a risk of electrical shock or burn from high short circuit current. The following precautions should be observed: 1) Remove watches, rings, or other metal objects; 2) Use tools with insulated handles; 3) Do not lay tools or metal parts on top of batteries.
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury.



NOTE DO NOT DISCONNECT the batteries while the UPS is in Battery mode.

There are two ways to replace the batteries:

- **With utility power (hot-swapping).** With the UPS in Maintenance Bypass mode, utility power continues to support the connected equipment; however, the equipment is not protected from utility failures.
- **Without utility power.** The UPS shuts down completely, removing power from the connected equipment.

Hot-Swapping the Batteries

The hot-swappable battery feature allows you to replace the UPS batteries easily without turning off the UPS or disconnecting the load.

1. Switch the UPS to Bypass mode by turning the Bypass switch on the UPS rear panel to the BYPASS position.

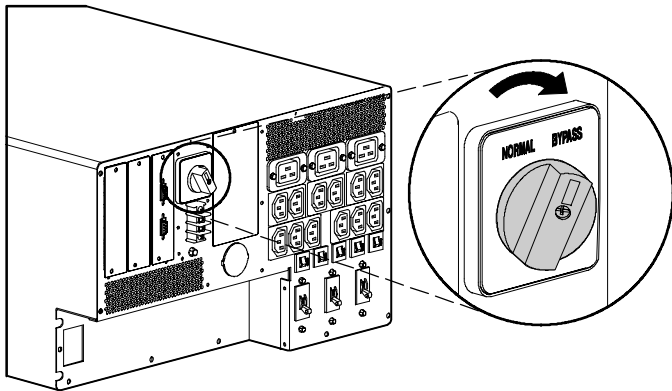


Figure 30. Switching the UPS to Bypass

2. Remove the battery front panel and switch the battery breaker to the OFF position. Disconnect the battery cables.

CAUTION



DO NOT remove the top UPS front panel. The UPS automatically shuts down if the top front panel is removed.

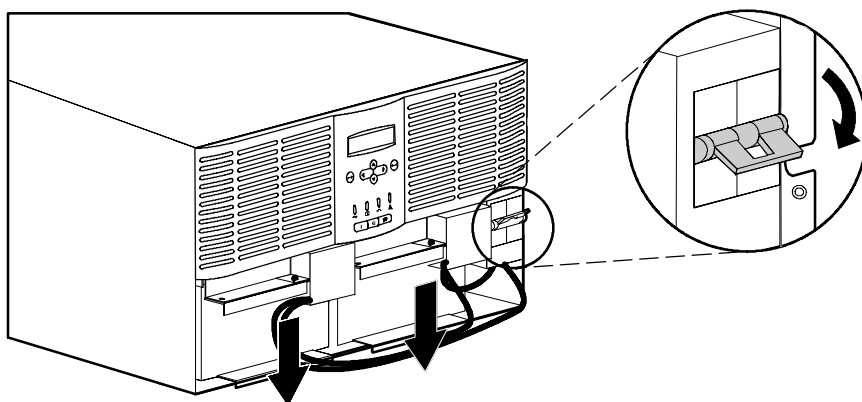


Figure 31. Turning Off the Battery Breaker and Removing Cables

3. If you have optional EBM, remove the EBM front panel and switch the battery breaker to the OFF position. Disconnect the battery cables.
4. Remove the screws from the battery trays. Retain the screws.

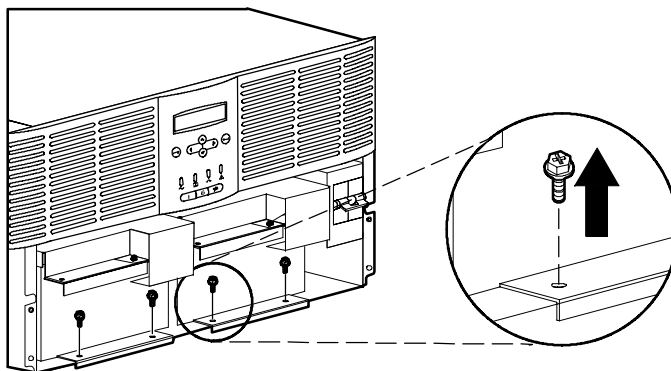


Figure 32. Unscrewing the Battery Trays



CAUTION

The battery trays are heavy (see page 54). Use caution when lifting the battery trays.

5. Using two people, pull out the old battery trays. See “Recycling the Used Batteries” on page 52 for proper disposal.
6. Slide in the new battery trays.

7. Remove the connector covers on the new battery trays and retain the cover screw. Reinstall the screw to secure the sheet metal. Place the covers on the used battery connectors.

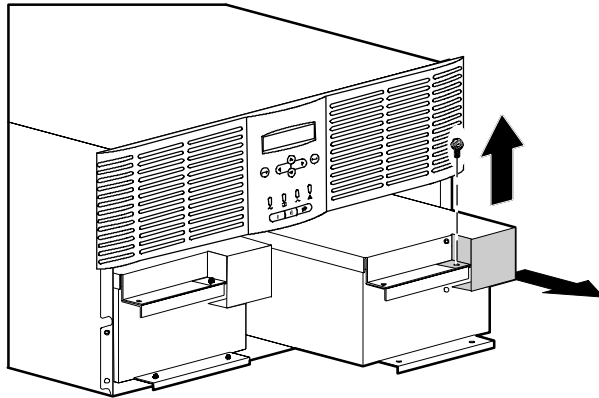


Figure 33. Removing the Battery Covers

8. Reconnect the battery cables.
9. Secure the battery trays to the chassis using the screws removed in Step 4.
10. If you have optional EBMs, switch the battery breaker to the ON position and replace the EBM front panel.
11. Turn the UPS battery breaker to the ON position and replace the battery front panel.
12. Turn the Bypass switch to the NORMAL position.

Replacing the Batteries Without Utility Power

If you prefer to shut down the UPS to change the battery:

1. Press and hold the Off  button for three seconds. The  indicator flashes.
2. Disconnect the UPS from the utility power source by switching off the main utility breaker.
3. Follow Steps 2 through 11 in “Hot-Swapping the Batteries” on page 49.

4. Switch the main utility breaker on.

The UPS conducts a self-test and enters Standby mode, indicated by the blinking $\sim$ indicator.

5. Press the UPS On | button.

The load segments cycle through a startup sequence and the UPS enters Normal mode.

Testing New Batteries

Press and hold the  button for three seconds to initiate a battery test. After the test is finished, the  indicator should turn off. If the  indicator stays on, check the battery connections. See the Active Alarms shown on the front panel. Call your service representative if the problem persists.

Recycling the Used Batteries

Contact your local recycling or hazardous waste center for information on proper disposal of the used batteries.

WARNING



- Do not dispose of battery or batteries in a fire. Batteries may explode. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

CAUTION



Do not discard the UPS or the batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling or hazardous waste center.



CHAPTER 8

SPECIFICATIONS

This section provides the following specifications for the Powerware 5140 models:

- Electrical input and output
- Weights and dimensions
- Environmental and safety
- Battery

Table 4. Electrical Input

Nominal Voltage	Auto-sensing 208/230V default; 200, 208, 220, 230, 240V selectable
Voltage Range	±20% at full load for 208/220/230/240V nominal input voltage +20%/–17% at full load for 200V nominal input voltage 166-288V at full load for 230V optional extended range
Nominal Frequency	50/60 Hz ±3 Hz (+5/-3 Hz for 230V extended)
Connections	Hardwired Terminal Block

Table 5. Electrical Output

Power Levels (rated at nominal inputs)	6000 VA, 6000W
Regulation Online	±10% of nominal voltage +10% to -15% in extended voltage range
Nominal Output Voltage On-Battery	230V for 220, 230, 240V settings 204V for 200, 208V settings
Output Voltage Regulation On-Battery	±5% of nominal on-battery output voltage
Voltage Waveform	Normal mode: same as utility On-Battery: sine wave
Overcurrent Protection	Resettable circuit breakers
Output Connections	PW5140 6000: Two L6-30 and Two IEC-320-C13 PW5140 6000i: Twelve IEC-320-C13 and Three IEC-320-C19 PW5140 6000 HW: Hardwired and Two IEC-320-C13

Table 6. Weights and Dimensions

	UPS	Extended Battery Module	Power Distribution Unit
Dimensions (WxDxH)	17.3" x 24.3" x 10.5" (6U) (43.8 cm x 61.7 cm x 26.7 cm)	17.3" x 22.5" x 5.25" (3U) (43.8 cm x 57.2 cm x 13.3 cm)	19.3" x 9.9" x 2" (49 cm x 25.2 cm x 5 cm)
Weights	Chassis: 110 lb (50 kg) Battery Tray: 70 lb (32 kg) Total: 250 lb (114 kg)	Chassis: 35 lb (16 kg) Battery Tray: 70 lb (32 kg) Total: 175 lb (80 kg)	19 lb (8.6 kg)

Table 7. Environmental and Safety

Operating Temperature	10°C to 40°C (50°F to 104°F) Long term use at ambient greater than 25°C (77°F) reduces battery life.
Transit Temperature	-20°C to 55°C (-4°F to 131°F)
Storage Temperature	0°C to 25°C (32°F to 77°F)
Relative Humidity	Operating: 20-80% noncondensing Non-operating: 5-95% noncondensing
Operating Altitude	Up to 10,000 feet above sea level
Transit Altitude	Up to 30,000 feet above sea level
Audible Noise	Less than 55 dBA typical
Surge Suppression	IEEE 587/ANSI C62.41 Category B
Safety Conformance	UL 1778; CAN/CSA C22.2, No. 107.1, No. 107.2, No. 950 EN 50091-1-1, EN 60950
Safety Markings	PW5140 6000: UL, CSA PW5140 6000i and PW5140 6000 HW: UL, CSA, VDE, CE
EMC	FCC Part 15 Class A; EN 50091-2; CISPR 22, Class A

Table 8. Battery

Voltage, Size	12V, 5 Ah
Type	Sealed, maintenance-free, valve-regulated, lead-acid
Charging	Internal batteries: approximately 3 hours to 80% usable capacity at nominal line voltage Extended Battery Modules: approximately 10 hours to 80% usable capacity at nominal line voltage

Table 9. Battery Run Times (in Minutes)

Load (W)	UPS Internal Batteries	1 EBM	2 EBMs
1000	62	144	236
2000	28	66	107
3000	18	40	66
4000	12	28	47
5000	8	21	36
6000	6	18	28

NOTE Battery times are approximate and vary depending on the load configuration and battery charge.



CHAPTER 9

TROUBLESHOOTING

This section explains:

- Self-test diagnostic
- Site wiring fault
- UPS alarms and conditions
- How to silence an alarm
- Service and support

Initiating the Self-Test

Press and hold the  button for three seconds to initiate the self-test. During the test, the LEDs illuminate as various parts of the UPS are checked. If the UPS finds a problem, the  indicator illuminates and the audible alarm beeps.



NOTE The self-test cannot be performed while the UPS is in Battery mode.

Site Wiring Fault

The Site Wiring Fault alarm is disabled by default and is only needed for installations with a grounded-neutral electrical system. You can enable the alarm through the System Setup menu on the front panel (see page 42).

The Site Wiring Fault alarm detects a ground wire connection that does not exist or reversed line and neutral wires in the line receptacle. If the condition is detected during startup, the UPS does not supply power to your equipment. If the condition is detected during Normal mode, the UPS alarm beeps and the  indicator flashes. Have a qualified electrician correct the wiring fault.

Audible Alarms and UPS Conditions

The UPS has an audible alarm feature to alert you of potential power problems. To determine the cause of an alarm, select Status from the Main Menu, and then select Alarms. The LCD panel displays the alarm condition and the number of alarms. Use ▲ and ▼ to scroll through the Active Alarms Menu. See Table 10 to determine and resolve the UPS alarms and conditions.

Silencing an Audible Alarm

To silence the alarm for an existing fault, press the  button for less than a second. If UPS status changes, the alarm beeps, overriding the previous alarm silencing.

Indicator Legend

 Yellow
  Red
  Flashing

Table 10. Troubleshooting Guide

Alarm or Condition	Possible Cause	Action
UPS will not start.	The main utility breaker is off.	Verify that the main utility breaker is on.
	The UPS is not correctly connected to the power source.	Contact a qualified electrician to check connections to the power source.
	REPO switch is on.	Turn off the REPO switch.
	The front panel was removed and the UPS automatically shut down.	Replace the front panel. Then press and hold the  button for five seconds to restart the UPS.
UPS frequently switches to battery power.	Input voltage in your area differs from the UPS nominal voltage.	Change UPS input voltage to match your local voltage (see page 42).
Accelerated beeping (begins slowly and increases as the UPS approaches shutdown).	An unresolved alarm is causing a UPS shutdown.	The UPS shuts down in 30 seconds after the accelerated beeping begins.
	Programmed shutdown delay.	If a shutdown delay has been programmed, the accelerated alarm begins 30 seconds before the last output segment shutoff.
	Sleep mode shutdown.	If Sleep mode is enabled, the alarm occurs during the last minute of the sleep timer.

Alarm or Condition	Possible Cause	Action
 Continuous Tone.	Overload. Power requirements exceed 105% of UPS capacity.	UPS shuts down in 2 minutes. Reduce the load to clear the alarm. If the overload increases to 120%, the UPS shuts down immediately.
	Battery time is low while in Battery mode (2 beeps per second). UPS shutdown is imminent.	Prepare for UPS shutdown.
	The UPS is on battery and beeps every 5 seconds.	Prepare your equipment for shutdown. (You can also use the front panel to determine the approximate battery time remaining. See "Battery Data" on page 38.)
	The Bypass switch was turned to the BYPASS position.	None. The UPS beeps and Bypass indicator remains illuminated as long as the UPS is in Maintenance Bypass mode. The alarm clears when the Bypass switch is turned back to the NORMAL position.
 2 beeps per second.	The self-test failed.	Allow the batteries to charge for at least 4 hours. Repeat the self-test. If self-test fails again, shut down and restart the UPS. If the condition persists, turn off the UPS and contact your service representative.
	UPS internal temperature is too high. The fan speed increases to cool off the UPS.	Check to ensure the airflow around the UPS is not restricted. Remove any heat sources. If the condition persists, shut down the UPS and restart in approximately 5 minutes. Contact your service representative if alarm does not clear.
 1 beep every 5 seconds.	Load is greater than 100%.	Reduce the load to clear the alarm. (You can also use the front panel menu to view the total load. See "Meters" on page 37.)
	Site wiring fault.	Have a qualified electrician correct the wiring fault.
	Memory error during startup.	Shut down and restart the UPS. If the condition persists, turn off the UPS and contact your service representative.
	UPS unable to charge batteries.	Check battery connections and verify that the battery breaker is in the ON position. Allow the batteries to charge for 24 hours. Contact your service representative if alarm persists.
	Ambient overtemperature or undertemperature.	Check to ensure the airflow around the UPS is not restricted. Verify that the ambient room temperature is within operating specifications. Contact your service representative if alarm does not clear.

Service and Support

If you have any questions or problems with the UPS, call your **Local Distributor** or the **Help Desk** at one of the following telephone numbers and ask for a UPS technical representative.

In the United States	1-800-365-4892
In Canada	1-800-461-9166
All other countries	1-919-870-3149

Please have the following information ready when you call the Help Desk:

- Model number
- Serial number
- Version number (if available)
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

If repair is required, you will be given a Returned Material Authorization (RMA) Number. This number must appear on the outside of the package and on the Bill Of Lading (if applicable). Use the original packaging or request packaging from the Help Desk or distributor. Units damaged in shipment as a result of improper packaging are not covered under warranty. A replacement or repair unit will be shipped, freight prepaid for all warrantied units.



NOTE For critical applications, immediate replacement may be available. Call the **Help Desk** for the dealer or distributor nearest you.
