# Kohler PW 1000/LT

(800–2200 VA)

## Document Control

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## Useful Contacts

| | |
|---|---|
| www.kohler-ups.sg | Kohler Uninterruptible Power web site |
| serviceups.sg@kohler.com | Service department – booking service, fault reporting etc. |
| salesups.sg@kohler.com | Hardware sales |

# 1 Safety

This manual contains important safety instructions. Please read it thoroughly before you unpack, install or operate this UPS and keep it close to hand for future reference. Ensure you follow carefully the installation and set-up instructions when you install the product.

**WARNING:** Risk of electric shock:

- The UPS power outlets can be electrically live even when the UPS is disconnected from the AC mains.
- DO NOT remove the UPS cover. The unit does not contain any user-serviceable components and if you remove the cover you will be exposed to potentially hazardous voltages.
- DO NOT insert any object into ventilation holes or other openings.
- The battery circuit is not isolated from the AC input and a hazardous voltage might exist between the battery terminals and ground (earth). When replacing the batteries always use insulated tools and check the terminal voltage.

**WARNING:** Battery safety:

- The UPS batteries contain lead and pose a hazard to the environment and human health if not disposed of properly. If you replace the batteries you must dispose of the used batteries in accordance with local environmental laws and regulations.
- Do not dispose of batteries in a fire as they might explode.
- Do not open or mutilate the batteries. They contain an electrolyte which is toxic and harmful to the skin and eyes.
- If electrolyte comes into contact with the skin, the affected area should be washed immediately with clean flowing water.

**WARNING:** General safety:

- To reduce the risk of fire, this equipment should be installed only in a temperature and humidity controlled indoor area free of conductive contaminants.
- In case of fire only use a dry power fire extinguisher. If you use a liquid fire extinguisher it may lead to an electric shock.
- All servicing must be performed by a qualified engineer approved by the manufacturer or its agent. Do not attempt to service the UPS yourself.
- Kohler Uninterruptible Power will assume no responsibility or liability for accidents or injuries due to the incorrect operation or manipulation of the UPS or peripheral equipment.

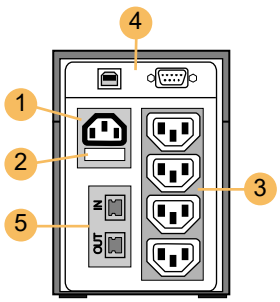
# 2 Introduction

Congratulations on your purchase of the Kohler PW 1000/LT UPS.

This line-interactive UPS system prevents your sensitive load equipment, such as a computer or other IT devices, from being affected by power transients, dips and surges that regularly appear on the utility AC mains supply. It will even maintain the supply to your load in the event of a complete AC mains supply failure (black-out) by operating on its internal battery. The UPS will produce its nominal 220/230/240 VAC output voltage ±10% over an AC mains voltage range of 160~290 VAC. If the input supply should fall outside this range the UPS will switch to battery operation automatically and the UPS output will be regulated at its nominal voltage.

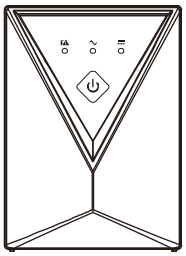
The UPS is connected between your AC mains supply and load equipment and is simple to install and operate.

Kohler Uninterruptible Power specialises in the installation and maintenance of Uninterruptible Power Systems; and this UPS is just one example of our wide range of state-of-the-art power protection devices that will provide your critical equipment with a steady and reliable power supply for many years.

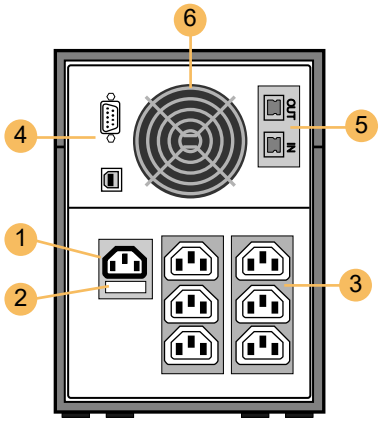



**PW1000LT 650 / 1000VA Models**

| Key | Description |
|---|---|
| 1 | AC Input power connector (IEC) |
| 2 | Input fuse |
| 3 | UPS Power outlets (4 x IEC) |
| 4 | USB interface (standard) + RS232 interface (option) |
| 5 | Modem/network surge protection (option) |

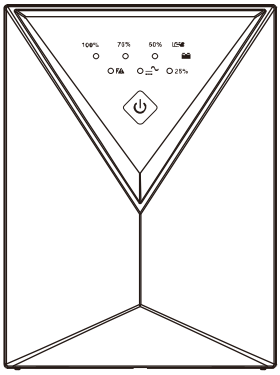


| Symbol | Led | Description |
|---|---|---|
| FAULT | Red | ON: System malfunction |
| ~ | Green | ON: Line mode<br>DIM: Abnormal input (V/Hz) |
| ⎓ | Yellow | ON: Battery mode<br>Flashing: Battery Low |
| ⏻ | - | UPS ON/OFF Switch |



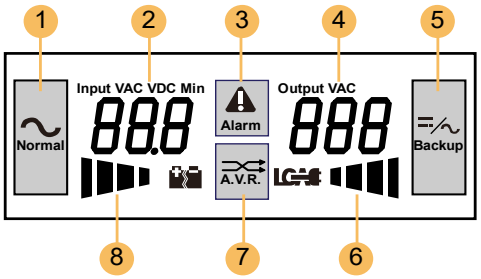

**PW1000LT 1200 / 1600 / 2000VA Models**

| Key | Description |
|---|---|
| 1 | AC Input power connector (IEC) |
| 2 | Input fuse |
| 3 | UPS Power outlets (4 x IEC) |
| 4 | USB interface (standard) + RS232 interface (option) |
| 5 | Modem/network surge protection (option) |
| 6 | Fan |



| Symbol | Led | Description |
|---|---|---|
| FAULT | Red | ON: System malfunction |
| ~ ⎓ | Green | ON: Line mode<br>Flashing: Battery mode |
| 25%<br>50%<br>75%<br>100% | Green | Load % or Battery capacity % indicators (Indicate the percentage load when the UPS is operating on Line mode, and percentage battery capacity when operating on Battery mode) |
| ⏻ | | UPS ON/OFF Switch |

**Figure 2.1 PW1000LT Standard assemblies**




| Key | Description |
|---|---|
| 1 | Line mode |
| 2 | Input / battery voltage metering |
| 3 | Fault: UPS abnormal condition |
| 4 | Output voltage metering |
| 5 | Battery mode |
| 6 | Load level (in 25% blocks) |
| 5 | Automatic Voltage Regulation (AVR) mode |
| 6 | Battery capacity (in 25% blocks) |

**Figure 2.2 PW1000LT LCD Display Panel (option)**

# 3 Installation and set-up

## 3.1 Unpacking the UPS equipment

The manufacturer has designed robust packaging for your product to help ensure it reaches you in good order. However, accidents and damage can sometimes occur during shipment so you should inspect the UPS carefully upon receipt and inform the carrier and dealer immediately if there are signs of damage.

**WARNING:** Under no circumstances should you connect electrical power to a damaged unit or attempt to start it using its internal batteries.

Save any recyclable packaging for re-use or dispose of it following local environmental practices.

1. Remove the UPS from the packing carton.
2. Check the package contents. The standard unit includes:
   - 1x UPS Power Unit
   - 1x IEC input power cable fitted with a suitable AC Mains plug
   - 1x User Manual
3. Check the data plate on the rear of the UPS and verify that the unit's voltage and power ratings comply with the equipment order details. Contact the dealer immediately if this is incorrect.

## 3.2 Selecting a suitable installation location

To ensure optimum UPS operation and long service life, always install the UPS in a location that meets the following environmental standards:

- The ambient temperature is between 0°C and +40°C. A temperature of 20°C is ideal for optimum battery lifespan
- The ambient humidity does not exceed 90% (non condensing)
- The installed location is clean, dry and free of excessive dust
- The UPS must not be installed in direct sunlight
- The UPS must not be installed near water or any other source of liquid
- The UPS must not be installed in a corrosive environment or in the vicinity of flammable items
- A minimum clearance of 2.5 cm (1 inch) must be provide around the UPS case to allow adequate heat dissipation
- The UPS must be installed within 2m of a utility AC mains power socket

### 3.3 Connecting the UPS

1. Connect the UPS AC Input power socket (1) to the utility mains supply using the supplied power cable (ensure the mains supply is switched OFF).

**WARNING:** Do not disconnect the mains power cable while the UPS is operating as it provides the UPS protective earth connection.

2. Connect the load equipment (e.g. PC, monitor, data storage devices) to the UPS power outlets (3).

***CAUTION:*** *The UPS is designed to be used with computer loads only. DO NOT connect a laser printer to the UPS as it draws significantly more power than other types of equipment and may overload the UPS.*

3. If required, connect the Modem/ Phone/ Network cables to the surge protection sockets (5) on the back of the UPS. Connect the telephone line to the IN socket then connect the protected telephone/modem equipment to the OUT socket, using suitable RJ11/RJ45 adapters where necessary.
4. If required, connect the optional UPS communication ports to a local PC using a standard USB or 9-pin RS232 cable.

   *Note: Appropriate communications software can be obtained from Kohler Uninterruptible Power.*

This concludes the installation. You can now turn ON the UPS as described in the Operating Instructions below.

***CAUTION:*** *We recommend that when starting the UPS for the first time you should leave it operating for at least 8 hours to fully charge the battery before connecting any* ***critical*** *load. This is to ensure that the UPS can perform to its full specification in the event of a mains power failure.*

## 4 Operating instructions

### 4.1 Turning ON the UPS

1. Press the UPS ON/OFF button for approximately 3 seconds.
   a) The buzzer will sound twice.
   b) The UPS will start, and deliver power to the connected load.

### 4.2 Turning OFF the UPS

1. Press the UPS ON/OFF button for approximately 3 seconds.
   a) The buzzer will sound twice.
   b) The UPS will turn OFF, and disconnect the power to the load.

### 4.3 'Cold Start' function

If the utility mains is not available you can start the UPS from its internal battery.

1. Press the UPS ON/OFF button until the buzzer beeps.
   a) The UPS will start, and deliver power to the connected load.

   *Note: The UPS battery will begin to discharge and the utility mains supply must be restored before the battery reaches its fully-discharged voltage, whereupon the UPS will shut down and disconnect the load power.*

## 5 Maintenance

The UPS does not contain any user-serviceable parts, so it is essentially maintenance-free other than to ensure that the UPS operating environment is kept cool and dust free. A clean, controlled operating environment will help maximise the useful working life and reliability of both the UPS and its battery.

## 5.1 Battery replacement

Depending on usage, the battery capacity will reduce over time and may need replacing in order to maintain the specified UPS backup performance.

**WARNING:** If you remove a cover from the UPS case you will be exposed to potentially lethal voltages.

- The battery replacement procedure must be carried out by an electrically trained technician.
- If a battery is faulty ALWAYS seek assistance from Kohler Uninterruptible Power or one of its local service agents.

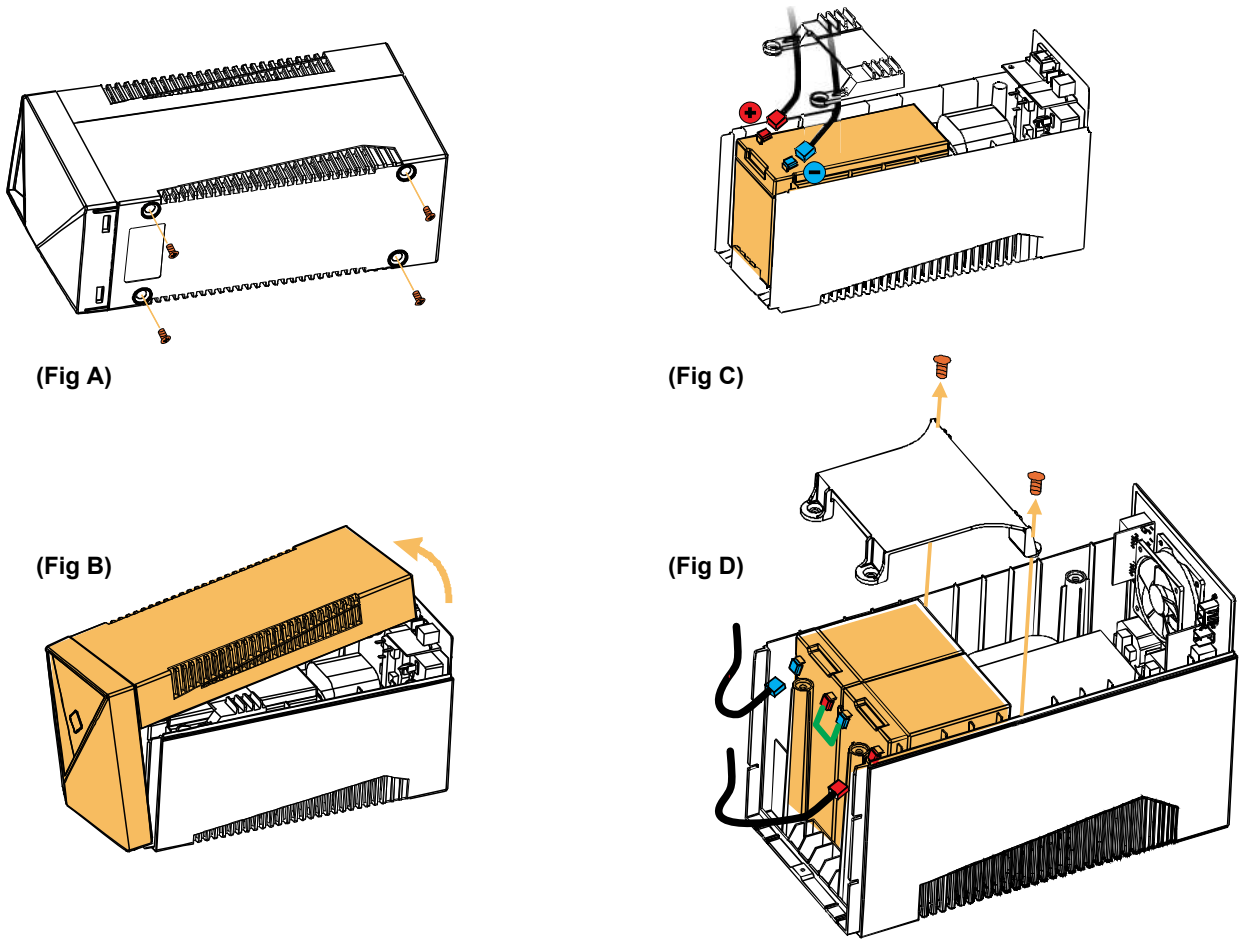



**Figure 5.1 PW1000/LT Battery Replacement**

1. Turn OFF the UPS.
2. Disconnect the mains power cable.
3. Remove the four screws located at the base of the UPS (Fig A).
4. Remove the front panel and top cover by lifting it at the back and pulling forward (Fig B).

**800VA Model only (Fig C)**

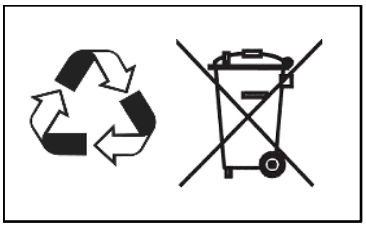
5. Loosen and disconnect the cable from the battery negative terminal followed by the red battery positive terminal.
6. Carefully withdraw the battery from the case, taking care not to short circuit the battery terminals.
7. Fit the replacement battery using the above instructions in reverse order. (Note that it is normal to see a small spark when connecting the new battery.)
8. Refit the front panel and top cover, and secure in place using the four screws located at the base of the UPS.

**1500/2200VA Model only (Fig D)**

9. Using an insulated screwdriver, remove the two screws from the battery holding plate.
10. Loosen and disconnect the cable from the battery negative terminal followed by the red battery positive terminal.
11. Loosen and remove the link connecting the two batteries together (shown in green in the diagram)
12. Carefully withdraw the batteries from the case, taking care not to short circuit the battery terminals.
13. Fit the replacement batteries using the above instructions in reverse order. (Note that it is normal to see a small spark when connecting the new battery.)
14. Refit the front panel and top cover, and secure in place using the four screws located at the base of the UPS.

## 5.2 Battery disposal

Batteries contain dangerous substances that can harm the environment if they are disposed of carelessly. ALWAYS dispose unwanted batteries in accordance with regulations set by local environmental waste disposal organisations.



# 6 Troubleshooting

If the UPS fails to operate correctly, carry out the following simple checks before you seek trained assistance.

1. Check that the utility mains supply is available and turned ON.
2. Check that the UPS input mains power cable is connected securely.
3. Check that the utility mains supply is within the UPS specified operating range.
4. If the above checks are passed, and the UPS is still not operating, check the mains supply plug-top fuse and the input fuse (2) on the back of the UPS and replace if found to be ruptured.
   Seek trained assistance if the replacement fuse fails immediately the UPS is switched back ON.
5. If all of the above are satisfactory, disconnect the load from the UPS power outlet(s) and check if the unit operates off-load. If so, then the cause of the problem is likely to be load related.
6. Check that the battery is not discharged or defective.

| Symptom | Possible cause | Solution |
|---|---|---|
| No LEDs displayed on front panel | Battery voltage is low | Charge the UPS for at least 6 hours |
| | Battery is defective | Replace battery with one of the same capacity |
| | The UPS is not turned ON | Press the power switch again (3 seconds.) |
| Alarm beeps continuously when the utility mains supply is normal | The UPS is overloaded | Reduce the connected load until it is within the UPS specified load capacity |
| UPS does not provide the expected back-up time | The UPS is overloaded | Reduce the connected load until it is within the UPS specified load capacity |
| | Battery voltage is low | Charge the UPS for at least 6 hours |
| | Battery is defective | Replace battery with one of same capacity |
| Utility mains supply is normal but the input LED is flashing | Mains power cable is loose. | Reconnect the mains power cable correctly |

# 7 Specification

| | PW1000/ 800LT | PW1000/ 1500LT | PW1000/ 2200LT |
|---|---|---|---|
| Capacity | 800VA | 1500VA | 2200VA |
| **Input** | | | |
| Voltage | 220/230/240 VAC | | |
| Voltage range | 160~290 VAC | | |
| **Output** | | | |
| Voltage regulation | ±10% | | |
| Transfer time | Typical 2-6ms, 10ms max. | | |
| Waveform | Simulated sinewave | | |
| **Battery** | | | |
| Type and number | 12V/9Ah x 1 | 12V/9Ah x 2 | |
| Charging time | 4-6 hours recover to 90% capacity | | |
| **Physical** | | | |
| Dimensions (WxHxD, mm) | 100 x 140 x 192 | 148 x 198 x 315 | |
| Net weight (kg) | 5.5 | 11.0 | 12.0 |
| Packing dimensions (WxHxD, mm) | 137 x 226 x 321 | 229 x 302 x 411 | |
| Gross weight (kg) | 6.0 | 12.0 | 13.0 |
| **Environment** | | | |
| Humidity | 0-90% @0-40°C (non-condensing) | | |
| Noise level | Less than 40 dBA at 1 metre from the front of the case. | | |
| **Certification** | | | |
| Safety Standard | EN62040-2 | | |
| EMC/Surge standard | EN61000-3-2, EN61000-3-3 | | |
| Mark | CE, RoHS, TISI | | |