



P D T



P D T

P D Technology Ltd

PDT Power Series Instruction Manual

Domestic, Commercial & Industrial

**PLEASE READ THE INSIDE FRONT COVER BEFORE INSTALLING THE
PDT POWER SERIES**



350, 500, 650 and 1000 MODELS

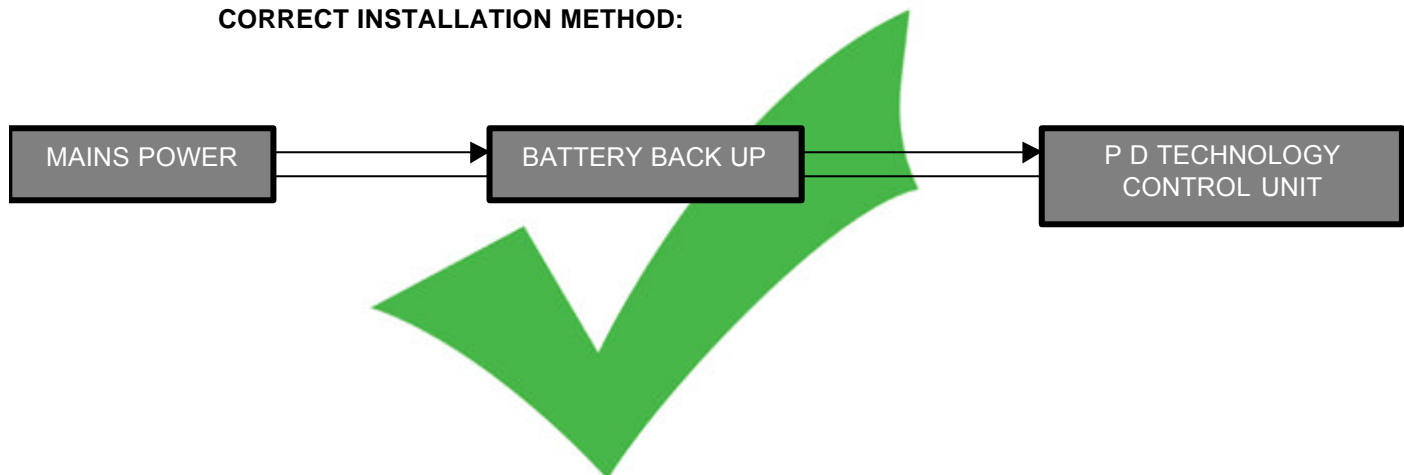
P D Technology Ltd 'Controlling The Future'

IMPORTANT WIRING INFORMATION:

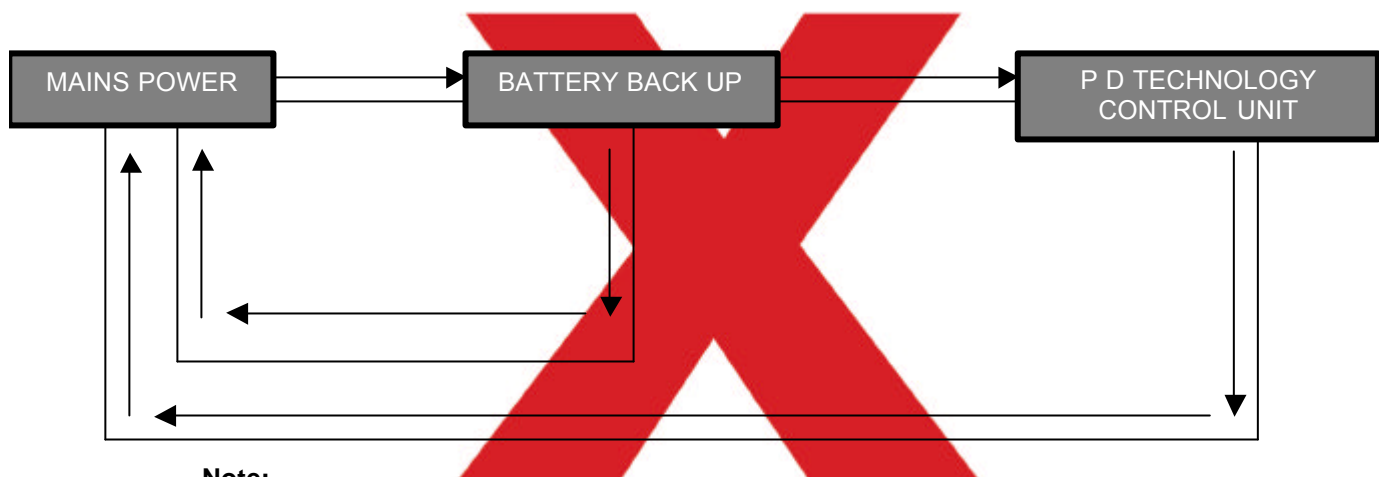
Before installing the Battery Back Up System please pay attention to the information given below.

Incorrect Installation will cause the Battery Back Up System to function incorrectly and may result in damage to the Battery Back Up.

CORRECT INSTALLATION METHOD:



INCORRECT INSTALLATION METHOD:



Note:

- **Never add** an additional loop from the Battery Back Up system into the mains power.
- **Never add** an additional loop from the P D Technology Control Unit into the mains power.

Both of the above will cause serious damage to the Battery Back Up System.

If you are unsure about how to wire the Battery Back Up System contact P D Technology Ltd before beginning your installation.

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions that should be followed during the installation and maintenance of the Uninterruptible Power System (UPS) and its batteries. Please read this manual thoroughly before attempting to install or operate this UPS.

Read all safety, installation, and operating instructions before operating the UPS. Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions.

This equipment can be installed and operated by individuals without previous training.

WARNING: PROTECT AGAINST UNEXPECTED OPERATION



ISOLATE FROM MAINS AND DISCONNECT ALL CONNECTOR INPUTS AND OUTPUTS BEFORE CARRYING OUT ANY MAINTENANCE

The unit can automatically power up the output sockets without warning even if the mains is disconnected following key fob radio transmissions, key switch input or mains check. Disconnect the internal battery prior to removing the front cover to connect a key switch or change the dip switch settings.



WARNING

SAFETY PRECAUTIONS

- There are no user-serviceable parts inside this UPS except the internal battery pack. Refer all UPS service to qualified service personnel. Do not attempt to service this product yourself.
- Output receptacles on the UPS are electrically live if the UPS is switched on, even if the UPS is not plugged into a Mains supply. The ON/OFF button on the UPS does not electrically isolate the internal parts. Some components are live even when Mains power is disconnected. To isolate the UPS, switch off the UPS first, then unplug the mains input and output connectors to the load.
- Opening or removing the cover may expose you to lethal voltages within this unit even when it is apparently not operating and the input wiring is disconnected from the electrical source.
- Observe all CAUTION and WARNING statements in this manual and on the unit. Failure to do so may result in serious injury or death.
- Never work alone.



CAUTION

Although your UPS has been designed and manufactured to assure personal safety, improper use may result in electrical shock or fire. To ensure safety, please observe the following rules:

- Turn off and unplug your UPS before cleaning. Do not use liquid or aerosol cleaners. A dry cloth is recommended to remove dust from the surface of your UPS.
- Do not install or operate your UPS in or near water.
- Do not place your UPS on an unstable cart, stand or table.
- Do not place your UPS in direct sunlight or near heat emitting sources.
- Never block or insert any objects into the ventilation holes or other openings of the UPS. Keep all vents free of dust accumulation that could restrict airflow.
- Do not place the UPS power cord in any area where it may be damaged by heavy objects.
- Placing magnetic storage on the top of the UPS may result in data corruption.

**CAUTION**
BATTERY HANDLING PRECAUTIONS

Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from the batteries.

A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:

- Remove watches, rings, and other metal objects.
- Use tools with insulated handles.
- Do not dispose of battery or batteries in a fire. The battery may explode.
- Do not open or mutilate the battery or batteries. Released electrolyte is harmful to skin and eyes. It may be toxic.
- When replacing the battery, use same number and type of battery as the suitable recommended type of battery listed in specification table in back of this manual.
- Handle, transport and recycle batteries in accordance with local regulations.

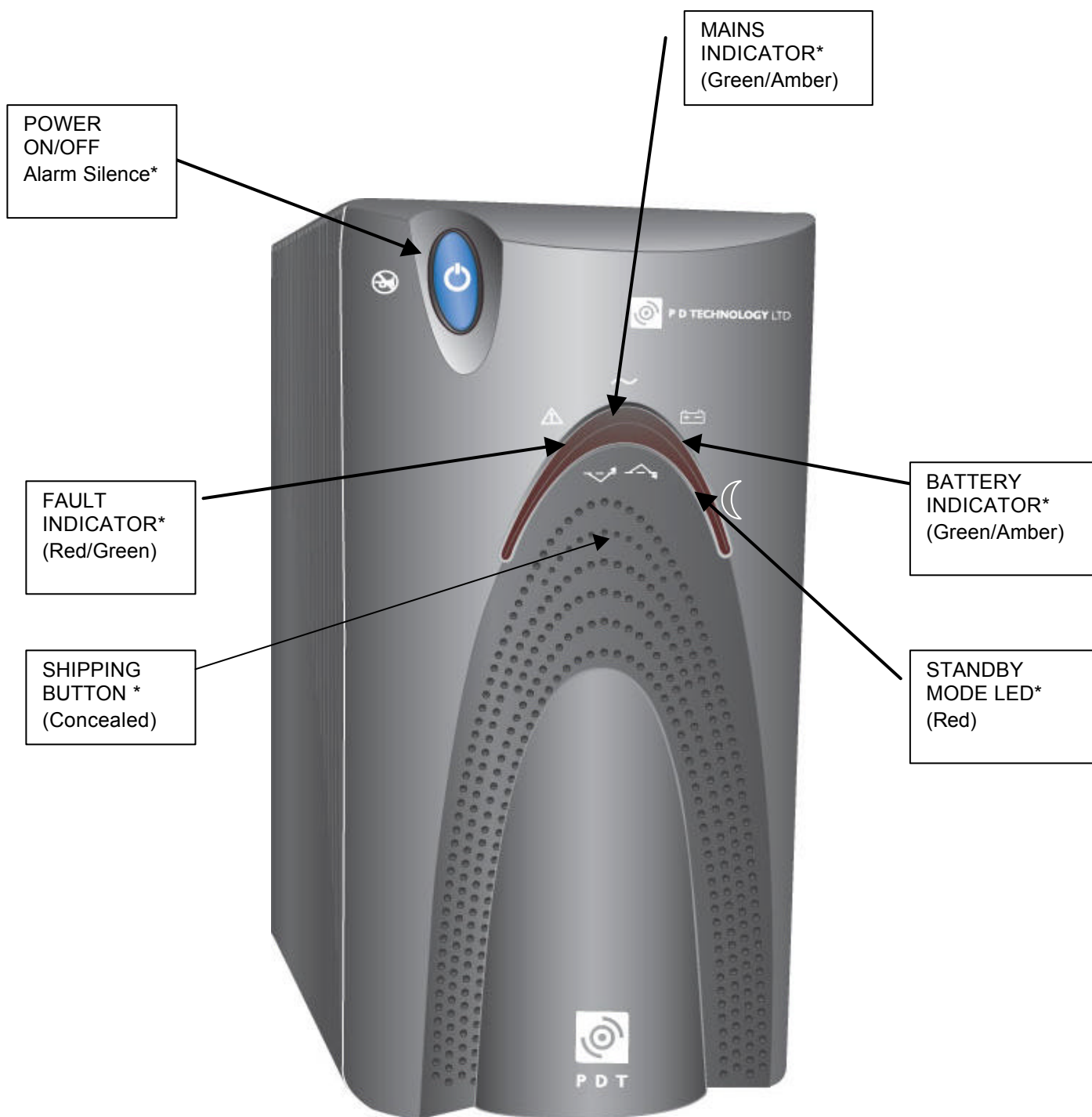
**WARNING**

If your unit demonstrates any of the following conditions, turn off and unplug your unit from the outlet and contact P D Technology Ltd

- The power cord is damaged.
- Liquid has been spilled on the unit.
- The circuit breaker or fuse opens frequently.
- The unit does not operate in accordance with the user manual.

Electromagnetic Compatibility – The PDT Battery Back Up complies with the requirements of the EMC Directive 89/336/EEC and the published technical standards. Continued compliance requires installation in accordance with these instructions and use of PDT approved accessories only.

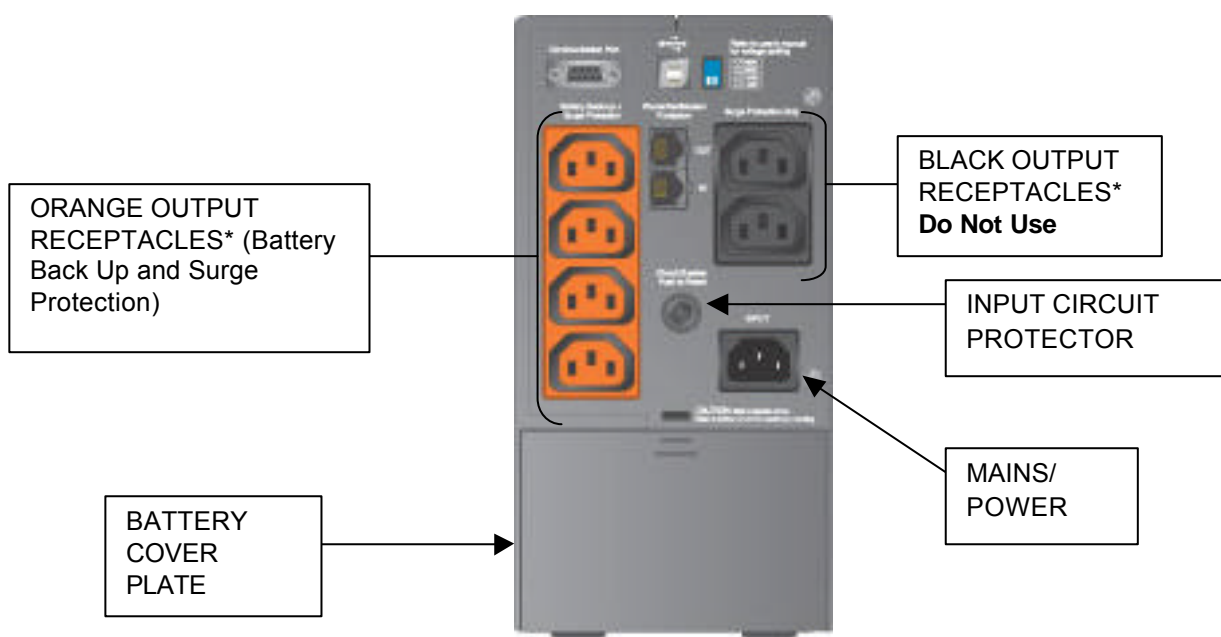
Environmental – Operate the unit in an indoor environment only. Install in a clean environment, free from conductive contaminants, moisture, flammable liquids, gases, or corrosive substances.

FRONT VIEW OF BATTERY BACK UP

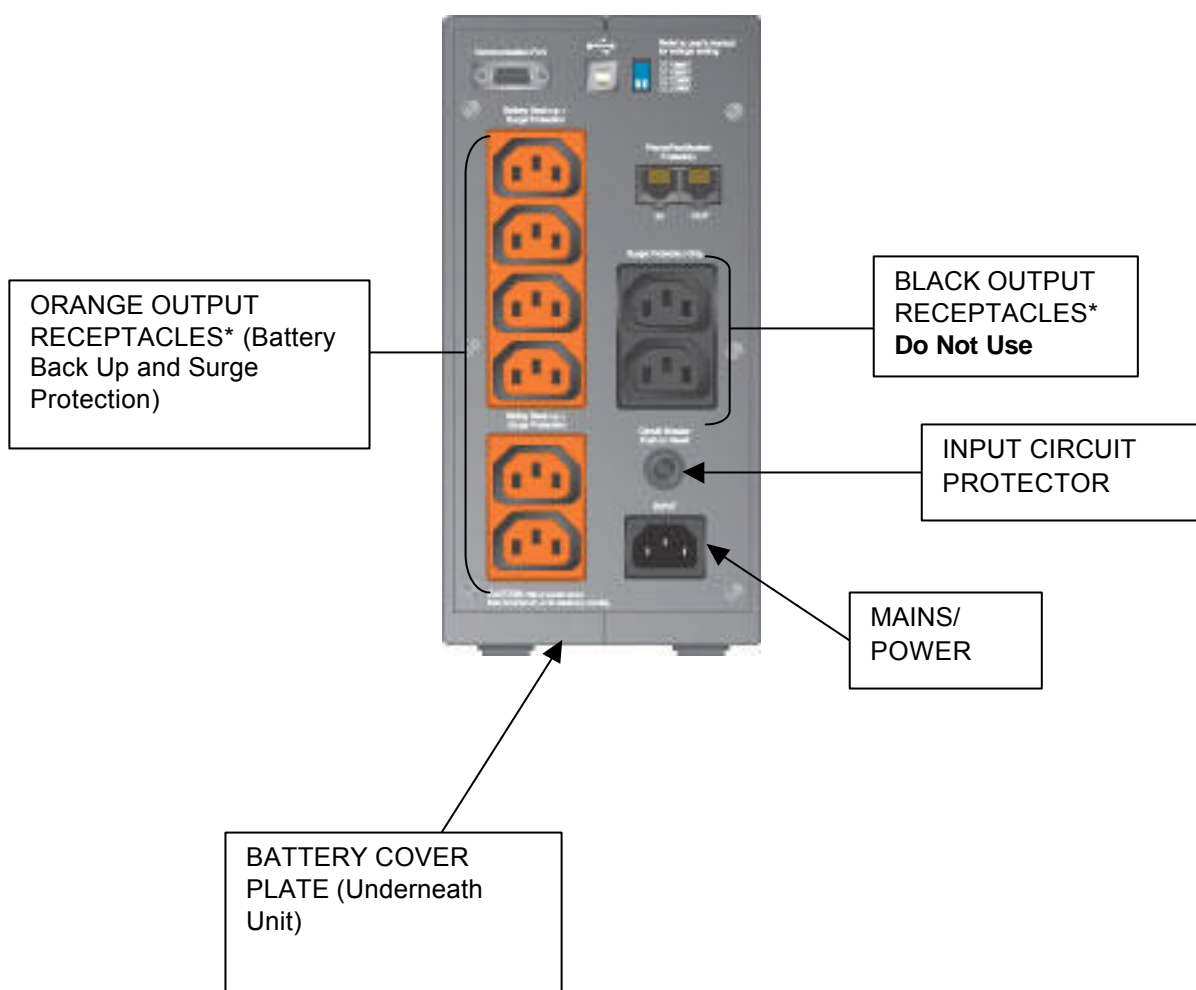
* For details see controls and indicators section

REAR VIEW OF BATTERY BACK UP SYSTEM

350, 500 & 650 MODELS



1000 MODEL



WHATS INCLUDED

The P D Technology Power Series Unit is shipped with the following items.

- P D Technology User Manual
- Two 10A power cords, 2.0m (1 Output & Input and 1Mains Plug & Input)



P D Technology Power
Series



Two 10Amp power cords
(2.0 meters)

(1 Output & Input and 1
13Amp Mains Plug & Input)

INSTALLATION

This PDT Power Series is designed for all types of Roller Shutters. Maximum load must not exceed that shown on the Power Series rating label. Do not connect equipment that could overload the unit or draw half-wave current from it. Your total load earth leakage current must not exceed 3.5 mA.

1. Visually inspect the unit for freight damage. Report damage immediately.
2. Decide where to place the PDT Power Series. Find a location that is near an easily accessible mains outlet. Install the unit indoors in a controlled environment. Place it in an area of unrestricted airflow around the unit, away from water, flammable liquids, gases, corrosives, and conductive contaminants. Maintain a minimum clearance of 100 mm (4 inches) on each side of the unit.

IMPORTANT: UNIT MUST BE INSTALLED IN AN UPRIGHT POSITION, NEVER PLACE THE UNIT ON ITS SIDE.

3. **NOTE**
UPS operation in temperatures above 25°C (77°F) reduces battery life.
4. Set the dipswitches (Inside front cover of unit) to the required positions to suit the installation. **Do not touch** the voltage dip switches on the back of the unit (See Dip Switch Modes)
5. If using a key switch or connecting an external switch follow instructions given in the Key Switch Input Section.
6. PDT Battery Back Up 230 VAC models are supplied with an input power lead for connection to the mains supply and a connecting lead to wire into our control products. The input power cord must have a minimal cross-sectional area of 1 mm².
7. Plug one end of the power input lead into the back of the battery back up unit. Plug the other end into a 13-amp socket or connect into a fused spur unit. Connect the supplied IEC-320-C14 output power cable to the input terminals on the control unit you are using. Plug the other end into the orange sockets on the rear of the UPS.
8. Press and release the ON/OFF/Alarm Silence button to turn on the unit. The unit will beep and the Mains Indicator will illuminate (green).
9. Turn on connected equipment.

CONTROLS AND INDICATORS

ON/OFF/Alarm Silence Button

This button controls output power to the connected load and has three functions:

- ON
- OFF
- Alarm Silence



ON/OFF/ALARM Silence

ON When the unit is off, pressing and releasing the main ON/OFF button will start the unit, and an audible alarm sounds briefly. The unit is capable of starting on battery (*battery start*).

OFF When the unit is on (in either Normal or Battery mode), pressing the main ON/OFF button for **more than two (2) seconds** will shut down the unit. An audible alarm sounds briefly.

Alarm Silence When a unit alarm is active, pressing and releasing the main ON/OFF button will silence the active audible alarm, whether mains power is present or not. Once the alarm silence function has been activated, all active audible alarms – except for low battery, overload, or over-temperature conditions – will remain silenced until a new alarm condition is detected.

NOTE

Do not hold ON/OFF button down for more than 2 seconds or the unit will shut down.

Auto Shut Down

Unit goes into standby mode after the power goes off. The Standby LED will remain on constantly for the first 24 hours. Depending on the operational setting selected the standby LED will then either remain on constantly or flash every 5 seconds.

Auto Remote Re-Start

To operate the unit from standby mode it requires waking up. This is done via a remote key fob or through the double pole key switch controlling the application. The normal operating mode LED will illuminate.

Shipping Mode

The unit can be completely shut down for shipping. This is done when the unit is turned on (with mains power available). Press and hold in the concealed shipping mode button with a paper clip (or alternative). Then at the same time press the blue On/Off switch until the red standby LED goes off.

Release the On/Off switch then release the paper clip (or alternative) from its position.

Status Indicators: Mains, Battery, Fault, Standby

There are four status indicators on the front of the unit (Mains, Battery, Fault and Standby), as shown in the diagram below. Each indicator illuminates to specify the status of the unit (see **Troubleshooting** section for details).

Mains Indicator (Green/Amber)

The Mains Indicator illuminates when the unit is operating and supplying power to connected loads; green indicates Normal mode, amber denotes Buck/Boost mode.

Battery Indicator (Green/Amber)

The Battery Indicator illuminates to indicate the unit is operating on battery (green) or to signify a battery warning (amber).

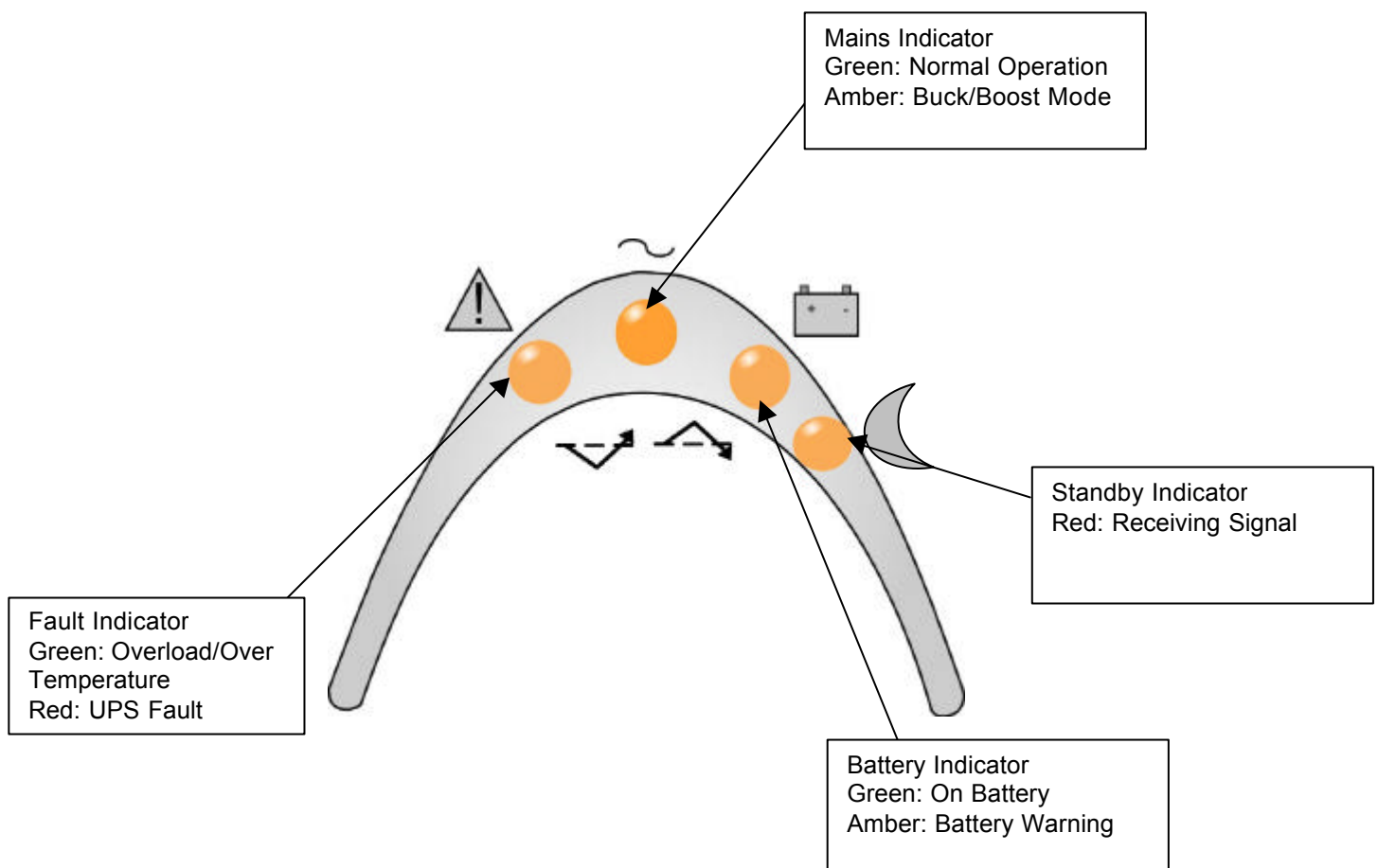
Fault Indicator (Red/Green)

The Fault Indicator illuminates when the unit detects a problem: red for an internal unit fault, green for overload and over-temperature conditions.

Standby Indicator (Red)

The Standby Indicator illuminates constantly or approximately every 5 seconds for ½ second (dependent on operating mode selected), to indicate that the power series is still working even when it is in sleep mode.

Location and Status of Indicators

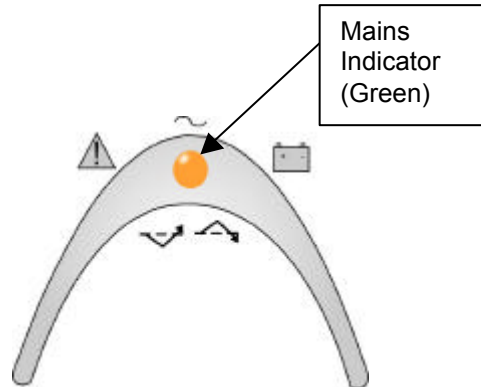


MODES OF OPERATION

Normal Mode

During normal mode operation, the PDT Power Series supplies conditioned power, to the connected equipment: mains power passes through the TVSS circuitry and the EMI/RFI filters and then through the Bi-Directional Converter to connected equipment.

When the unit is in Normal mode, the Mains Indicator illuminates green.

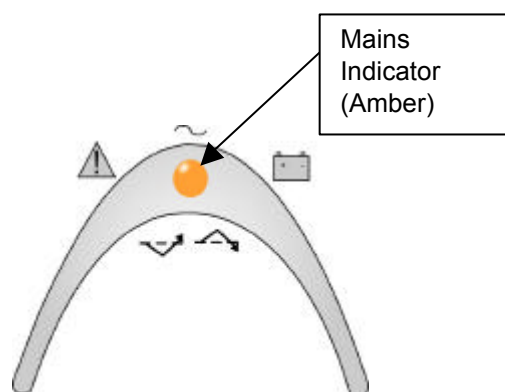


The PDT Power Series continuously monitors the batteries to maintain them in a fully charged state. The battery charger operates whenever AC power is present, even if the unit is switched off. By default, the unit is set to perform an automatic battery test after it has been operating continuously for two weeks.

Buck/Boost Mode

The Automatic Voltage Regulator (AVR) circuitry compensates for fluctuations in mains power, such as voltage surges and sags. When the PDT Power Series detects an abnormality, it raises the under voltage (boost) or lowers the over voltage (buck) as needed. The AVR operates automatically and maintains the output voltage to the connected critical equipment, without utilizing the batteries.

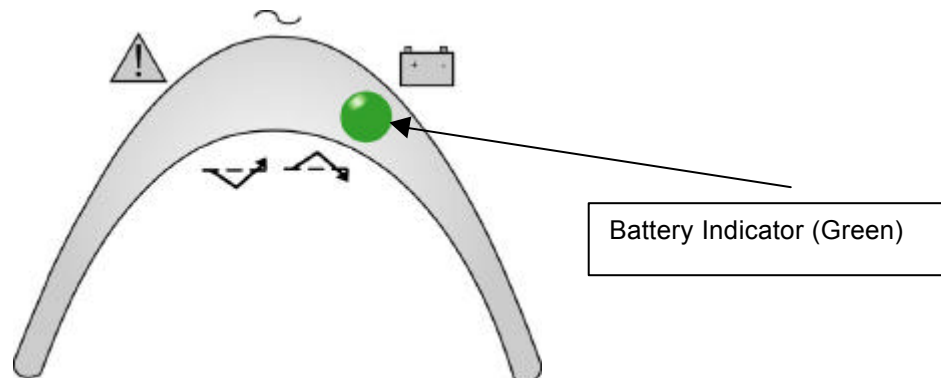
When the unit is in Buck/Boost mode, the Mains Indicator illuminates amber.



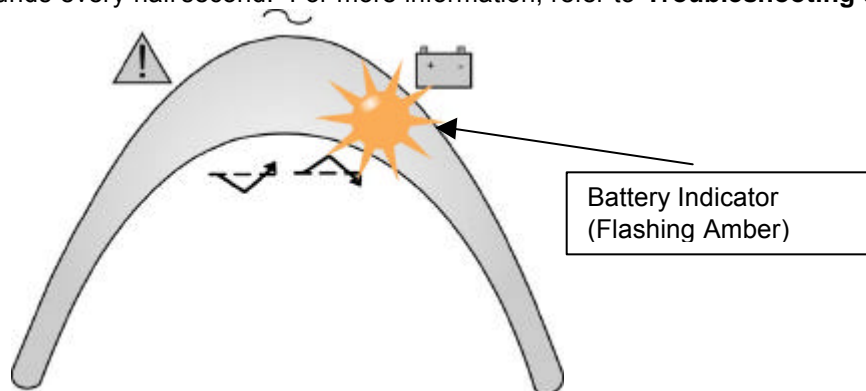
Battery Mode

The unit switches to battery mode in the event of an extreme voltage/frequency condition or complete mains failure. The battery system supplies power through the Bi-Directional Converter to generate power for connected equipment.

When the unit is in Battery mode, the Battery Indicator illuminates green and an alarm sounds every 10 seconds.



When a low battery condition occurs, the Battery Indicator changes to flashing amber and the alarm sounds every half-second. For more information, refer to **Troubleshooting** section.



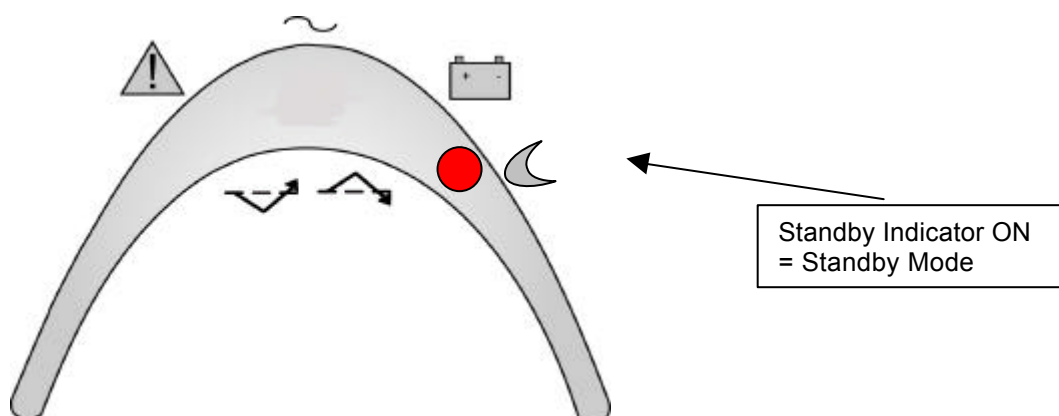
CAUTION

Turning off the unit while in either Normal mode or Battery mode will result in the loss of output power.

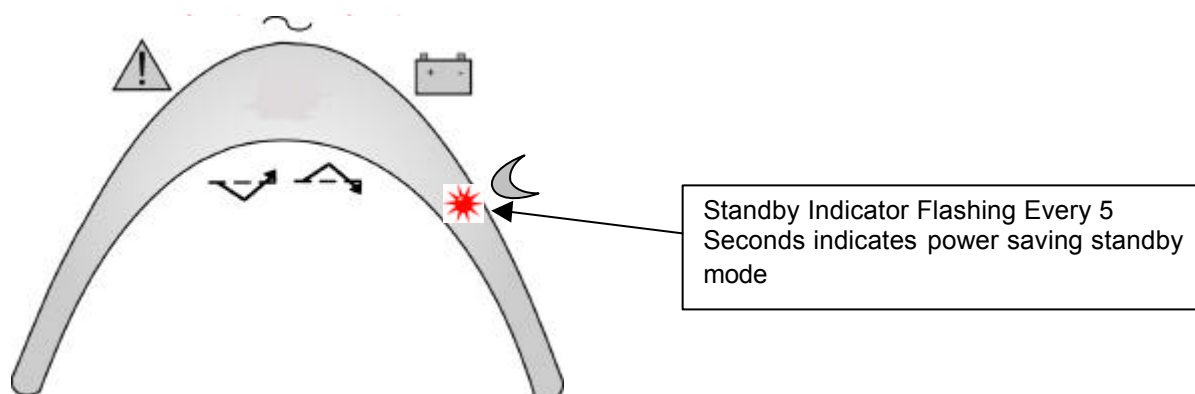
NOTE

Once mains power is restored, the battery charger begins recharging the battery. The unit is capable of OFF-State charging, i.e., with mains power; the unit will charge the batteries as long as it is plugged in.

Standby Mode



When the mains power fails, the battery back up will go in to 24-hour standby mode. Within the first 24 hours of a power failure the unit can be woken up immediately with either a key switch or a key fob input.



After 24 hours in order to preserve battery life the unit goes in to a seven second cycle. This mode will allow the unit to work for 100 days without power and still be able to operate the shutter when required.

Dip Switch Modes

VOLTAGE DIPSWITCHES - LOCATED ON BACK OF UNIT

The unit is shipped out pre-set to 230 volts for operation. Under **NO** circumstances should the dip switches be adjusted whilst the unit is switched on. Please contact PDT before making any adjustment to this setting, as wrong voltage dip switch settings can seriously affect the safety features of the shutter when used with a RollerTec control system.

FUNCTION DIPSWITCHES – LOCATED INSIDE FRONT COVER

Note: Before carrying out any dipswitch adjustments the unit should be isolated from the mains and have its battery disconnected.

The dipswitches are located on the PCB, which is inside the front cover of the unit. The unit will operate differently depending on the operational modes selected.

REMOVING THE COVER:

The front cover slides in the down direction towards the bottom of the unit, once it releases its catches the cover will come away. To replace the cover press against the unit and slide up towards the top of the unit.

Dipswitch 1 allows you to select the operating mode of the unit. By putting the dip switch in the ON position the unit will last for around 30 days. By putting the dipswitch in the OFF position the unit will last for around 100 days.

- | | |
|----------------|--|
| 1 – OFF | Constant for first 24 hours then intermittent 5 - second cycle |
| – ON | Radio Receiver on Constant |

Dip Switch 2 allows you to select how long the unit will stay awake, after any activity that requires power or mains failure before it goes back in to standby mode. By putting the dip switch in the OFF position the unit will stay awake for 25 seconds. By putting the dipswitch in the ON position the unit will stay awake for 45 seconds.

- | | |
|----------------|----------------|
| 2 – OFF | 25 Second Mode |
| – ON | 45 Second Mode |

Dip Switch 3 allows you to select whether or not the unit is required to respond to a radio signal transmitted by a key fob or other wireless control method.

- | | |
|----------------|----------------------------|
| 3 – OFF | Radio Receiver is used |
| 3 – ON | Radio Receiver is disabled |

What Dipswitches Look like



Dip Switch 4 allows you to select whether the unit will periodically check if mains power has been restored or not at intervals of approximately 10 hours. It is recommended that you put the dip switch to the ON position.

- | | |
|----------------|--|
| 4 – OFF | No Mains Check |
| 4 – ON | 10-Hour Interval Checks To See If Mains Power Has Been Restored
(If mains power returns power to the load is automatically restored). |

Key Switch Inputs

Volt free contacts on a key switch or other control device can be wired across terminal J3, which is, situated behind the PDT Power Series front cover. The contacts should be Normally Open, closing when the PDT Power Series is required. The unit will stay active for 25/45 seconds after the contacts are opened, or for as long as the contacts are closed up to a maximum time of 5 mins, at which point an auto shut down will occur. This is to safeguard against a stuck closed key switch from discharging the batteries.

ROUTING YOUR CABLE:

On the bottom of the front cover, you need to notch out a small piece of the plastic in the middle, large enough to fit your wire into and get the front cover to push flush against the unit.

MAINTENANCE

The PDT Power Series requires very little maintenance. Follow these practices to prevent problems.

Cleaning the Unit

The following will help ensure trouble-free operation for years:

- Vacuum dust from the ventilation intake occasionally (Vertical slots on sides).
- Wipe the cover periodically with a dry cloth.

Maintaining Batteries

The batteries are valve-regulated, nonspillable, lead acid and must be kept charged to retain their design life. The unit continuously charges the batteries when connected to the mains supply, even while the unit is switched off.

When storing the unit, it is recommended to plug it in for at least 24 hours every four to six months to ensure full recharge of the batteries.

Battery Replacement



CAUTION

A battery can present a risk of electrical shock and high short circuit current.

The following precautions should be observed before replacing the batteries:

- Remove rings, watches, and other metal objects.
- Do not lay tools or other metal objects on top of the batteries.
- If the battery replacement kit is damaged in any way or shows signs of leakage, contact P D Technology immediately.
- Do not dispose of batteries in a fire. The batteries may explode.
- Dispose of old batteries according to local codes.

This unit is equipped with internal "hot swappable" batteries that the user can replace without shutting the unit down or connected loads.

NOTE

Caution should be exercised when replacing the batteries because the load is unprotected from disturbances and power outages during this procedure.

Battery Replacement Procedure

Replacement requires removing the battery cover plate on the back or bottom of the unit. No tools are needed.

To replace the batteries:

1. Remove the battery cover plate on the back/bottom of the unit (**Figure 1**).
2. Pull the white tabs towards you to remove the battery from the unit (**Figure 2**).
3. Disconnect the insulated connectors from the battery terminals (**Figure 3**).
4. Insert a new battery pack, and push the connectors onto the battery terminals (black to black & red to red) (**Figure 4**).

Figure 1



Figure 2



Figure 3



Figure 4



NOTE: There may be a small spark at the battery terminals when reconnecting the connectors. This is normal and will not harm you or the unit.

5. Push the battery pack into the unit (**Figure 5**).
6. Reattach the battery cover plate (**Figure 6**).

Figure 5

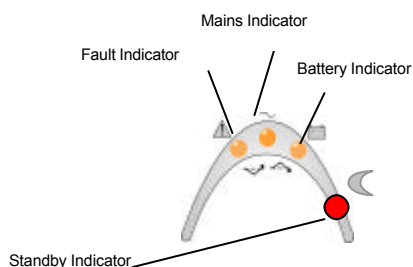


Figure 6



TROUBLESHOOTING

The information below indicates various symptoms a user may encounter in the event the PDT Power Series experiences a problem. Use this information to determine whether external factors caused the problem. See **Troubleshooting Chart** for suggested remedy.



1. The Fault indicator illuminates, indicating the unit detected a problem.
2. An alarm sounds, alerting that the unit requires attention. The alarm can be silenced except for low battery, overload warning and over-temperature warning conditions.
3. Mains and/or Battery indicators may be illuminated as a diagnostic aid to the operator, as shown below:

Guide to Status Indicators

Standby Indicator 	Fault Indicator 	Mains Indicator 	Battery Indicator 	Diagnosis/ Audible Alarm
-	-	Green ON	-	Normal operation with mains power present; no beep
Constant or Flashing Every 5 Secs	-	-	Green ON	Unit is operating on battery; beep every 10 seconds
-	-	-	Green ON	Battery test has been initiated; no beep
-	-	Amber ON	-	Unit is operating in Buck/Boost mode; no beep
-	-	Green ON	Amber Flashing	Battery needs to be replaced; long beep every minute
Constant or Flashing Every 5 Secs	-	-	Amber Flashing	Low battery warning; beep every half-second
-	Green Flashing	Green ON	-	Overload warning, load is >100%; beep every half-second
-	Green Flashing	-	-	Overload shutdown, load exceeds unit capacity (110%); continuous beep
-	Green ON	Green ON	-	Over temperature (overtemp) warning; beep every 5 seconds (Normal mode)
Constant or Flashing Every 5 Secs	Green ON	-	Green ON	Over temperature (overtemp) warning; beep every 5 seconds (Battery mode)
-	Green ON	-	-	Over temperature (overtemp) shutdown; long beep every 5 seconds
-	Red Flashing	Green ON	-	Unit is on, fault warning; continuous beep
Constant or Flashing Every 5 Secs	Red ON	-	-	Unit has failed & shut down; continuous beep
Red On	-	-	-	Unit is sleep mode with constant radio frequency monitoring
Red Flash Every 5 Seconds	-	-	-	Unit in sleep mode with monitoring of radio frequency every 5 seconds

Troubleshooting Chart

If the unit fails to operate properly, turn off the unit and repeat the steps in the Installation section of this manual. If the problem persists, refer to the chart below:

Problem	Cause	Solution
Unit will not start	Overload/ Short circuit	Check the circuit protector on the rear of the unit. If it is tripped, reset it and restart the unit. For further help, contact PDT.
	Battery disconnected or is completely discharged	Check for proper connection of battery or batteries.
Unit starts on battery, but will not switch to AC	Unit not plugged in	Plug in the power cord securely.
	Circuit protector tripped	Reset the circuit protector and restart the unit.
	Power not available at mains receptacle	Have the mains checked by a qualified electrician.
	Input voltage below threshold	Wait until the voltage rises to an appropriate level or have the mains checked by a qualified electrician.
	AC Overvoltage	Wait until voltage lowers to an appropriate level or have the mains checked by a qualified electrician.
Unit shuts down, Fault Indicator Lit	Overload/ Short circuit	Check the circuit protector on the rear of the unit. If it is tripped, reset it and restart the unit. If the problem persists, disconnect some of the equipment from your unit – the total wattage of your equipment must not exceed the capacity of the unit. For further help, contact PDT.
	Internal UPS fault	
	High temp shutdown	Make sure that the unit is operating in a 0°C to 40°C (32°F to 104°F) environment and that it has adequate ventilation.
Unit not providing expected back-up time	Overload	Reduce load.
	Battery not charged due to a recent outage	Recharge battery.
	Battery needs to be replaced	Replace battery.

Technical Specifications:

MODEL	350 VA	500 VA	650 VA	1000 VA
WATTAGE	210	300	390	600
DIMENSIONS (MM)				
WxDxH	116X196X222	116X196X222	116X358X222	116X358X222
WxDxH SHIPPING	196X310X293	196X310X293	242X500X316	242X500X316
WEIGHT (KG)				
UNIT	7	7.4	9.1	13.2
SHIPPING	8.2	8.5	11.2	15.3
VOLTAGE				
NORMAL	220-230-240 VAC			
BATTERY	230 VAC			
OUTPUT CURRENT	1.5A	2.1A	2.8A	4.3A
RECHARGE TIME	6 HOURS TO 90% CAPACITY			

P D TECHNOLOGY Ltd takes great pride in delivering a high standard of service to its customers. The Company believes it is important to be able to offer products that set the standard for quality and reliability throughout the industry.

P D Technology can also offer unique individually made custom products to offer a solution to Garage, Domestic & Commercial roller shutters and blind and gate applications. Please contact the company to discuss your individual requirements.

A full technical support service is also available to any customers who require assistance with the installation or maintenance of the company's products.

PD TECHNOLOGY 'Controlling The Future'

Registered in England & Wales No. 2524619

VAT No. 545 6413 41

ISO 9001: 2000 Certificate No. 866