



P4320 Kill A Watt™ PS Operating Manual

Thank you for purchasing the P4320 Kill A Watt™ **PS** Relocatable Power Tap / Transient Voltage Surge Suppressor. This operating manual will provide an overview of the product, safety instructions, a quick guide to operation, and complete instructions for correct usage. Take the time to completely review these instructions as well as all safety warnings to ensure your best use of the product.

Now you can protect your valuable electronics and find out what they are actually costing you. Simply connect these appliances to the Kill A Watt™ **PS** and it will assess how efficient they are while the built-in surge protection keeps them safe. Advanced features such as over current, over voltage, and no load detection provide clean safe power to your expensive equipment. Check the quality of your power by monitoring Voltage, Line Frequency, Amperage, KWH, Current Leakage and more. Now you'll know how much power your entire computer or home theater system is using. With the innovative Kill A Watt™ **PS** you'll have peace of mind in more ways than one.

Safety Instructions

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.		

Read Instructions – All the safety and operating instructions should be read before the product is operated.

Retain Instructions – The safety and operating instructions should be retained for future reference.

Heed Warnings – All warnings on the product and in the operating instructions should be adhered to.

Follow Instructions – All operating and use instructions should be followed.

Cleaning – Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.

Attachments – Do not use attachments not recommended by the product manufacturer as they may cause hazards.

Water and Moisture – Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.

Accessories – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Any mounting of the product should follow the manufacturer's instructions.

Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings (if any) must not be blocked or covered. The openings (if any) should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

Power Sources – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

Grounding or Polarization – This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other).

This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

Lightning – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

Object and Liquid Entry – Never push objects of any kind into this product through openings (if any) as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

Servicing – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance – this indicates a need for service.

Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

Heat – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

Safety Instructions:

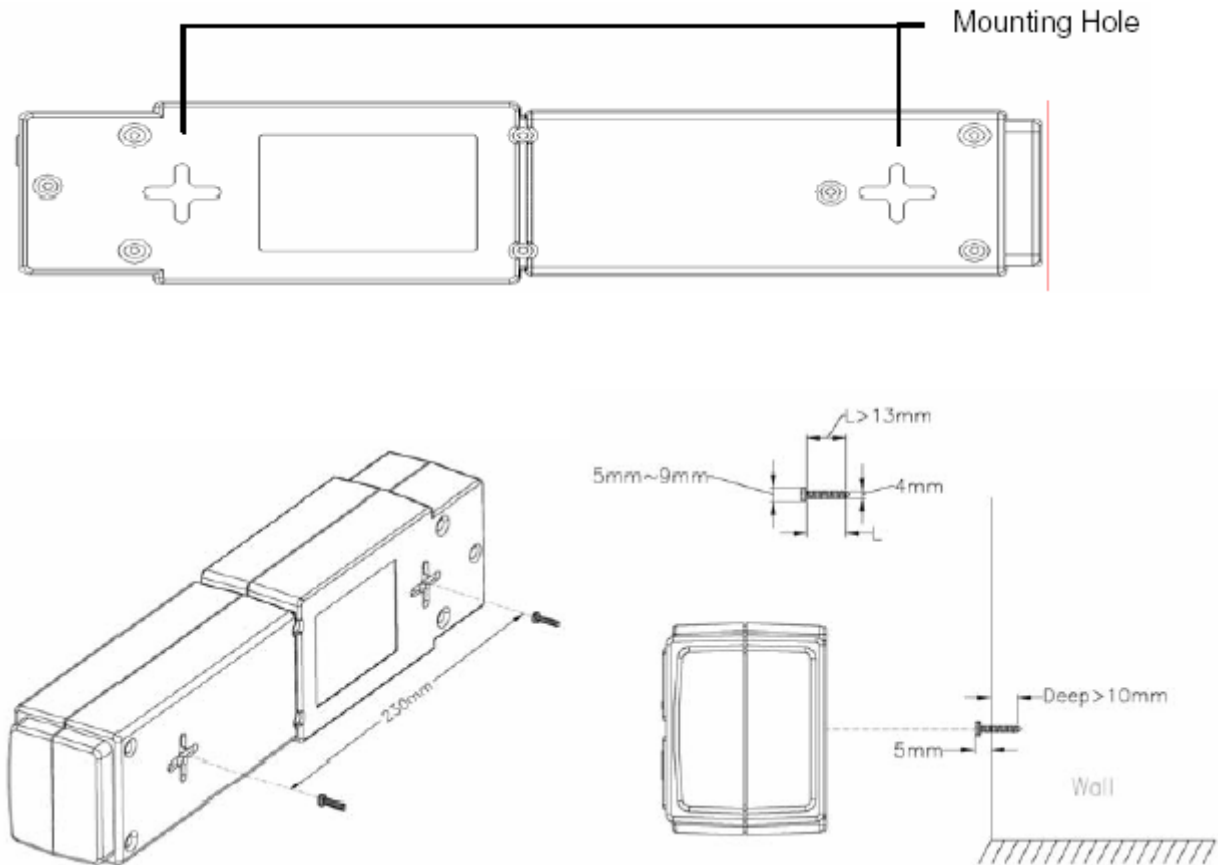
1. The operating voltage is limited. Maximum operating voltage is 120Vac. Do not use the unit with other operating voltages.
2. The maximum output current is 15A.
3. To reduce the risk of electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

Product Functions:

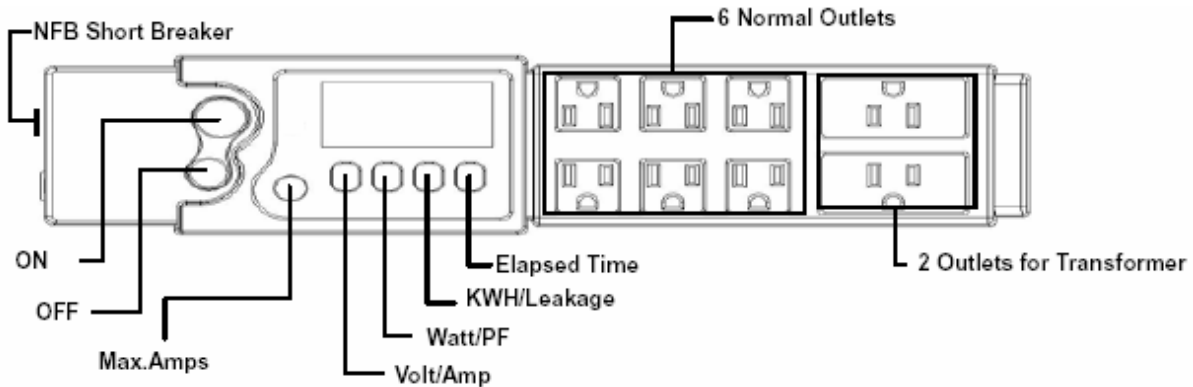
1. **Power Strip:** 8 outlets, Spike-free switch.
2. **Multi-Meters:** Voltage, Current, Active Power, Power Factor, KWH, Leakage Current, Elapsed Time.
3. **Protection:** Abnormal Voltage, Over Current, Over Load, Surge.
4. **Programmable Breaker Current:** User adjustable 2, 5, 10, or 15A breaker.
5. **NFB (No Fuse Breaker):** Over Load protection.

Wall Mount Instructions (Optional)

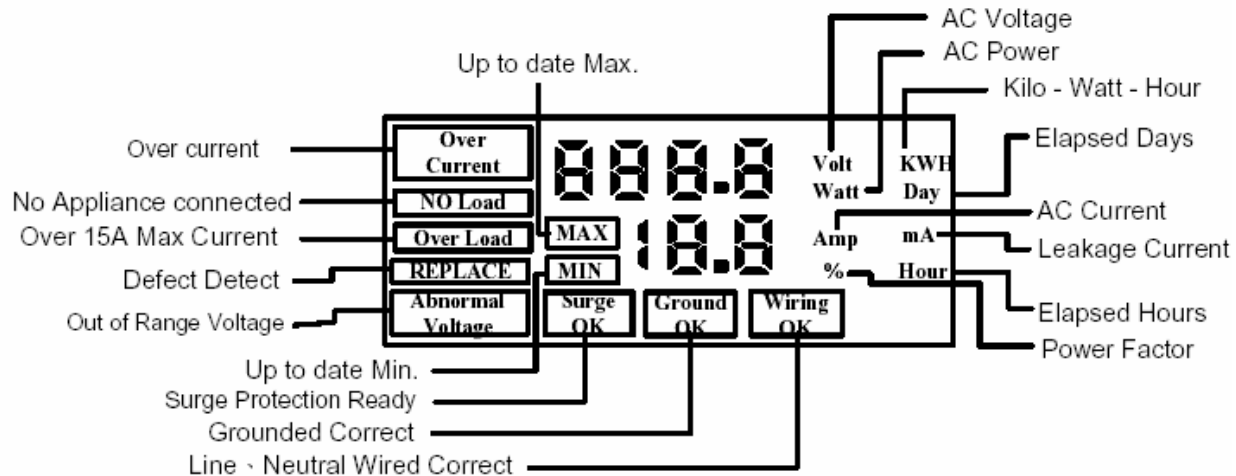
1. Use 3/4 inch no. 8 screws or similar.
2. Space the 2 screws about 9 inches (230mm) apart according to the figure. Leave about 1/4 inch (5mm) of the screw head protruding from the surface.
3. Place the unit against the surface with the screw heads fitting into the mounting holes.
4. Move the unit downwards to secure the mounting holes onto the screw heads.



Feature Locations



Display Panel



Quick Start Guide:

Use these quick start instructions to get up and running in just a few minutes. Be sure to review all the operating instructions later to ensure full enjoyment of the product.

1. Connect the Kill A Watt™ PS unit to the outlet and the appliance to the unit.
2. The LCD display will flash. Press any of the function keys to stop the flashing.
3. Press the OFF key. The OFF key will illuminate red.
4. Press the ON key. The ON key will illuminate blue and the attached appliance will be powered.
5. If the attached appliance is turned off and is not consuming any power, the unit will detect no load. The ON key will go dark and the "NO Load" icon will flash on the LCD display. THIS IS NORMAL. If the attached appliance is then turned on, the unit will detect a load, the ON key will illuminate and the "NO Load" indicator on the LCD display will disappear.
6. Pressing the Volt/Amp key will cycle through currently measured voltage (Volts), current (Amps) and Maximum/Minimum measured values.
7. Pressing the Watt/PF Key will cycle through currently measured active power (Watts), power factor (%) and Maximum/Minimum measured values.
8. Pressing the KWH/Leakage key will cycle through cumulative kilowatt hours (KWH), currently measured leakage current (mA) and Maximum/Minimum measured values (leakage current only).
9. Pressing the Elapsed Time key will cycle through time in Days:Hours and Hours:Minutes.
10. Review the complete operating instructions to familiarize yourself with all features.

Installation:

1. Remove the protective film (if any) covering the LCD meter display by pulling the tab marked "REMOVE BEFORE USE".
2. Turn off all appliances before connection to the unit and remove their power cords from the outlet. Connect the Kill A Watt™ **PS** unit to the outlet and the appliances to the unit. Use the widely spaced outlets for wall transformers
3. The LCD display will be flashing. This is normal when the unit is first connected to power and when power is restored after an interruption. Press any of the function keys to stop the LCD from flashing.
4. If you want to reset KWH and time measurements, hold the Elapsed Time key down for 3 seconds. Previous measurements will be deleted and the total accumulated KWH and Elapsed Time measurements will be reset to zero

ON/OFF Key Function

1. Pressing the OFF key will turn off power to the 8 outlets at once. The OFF key will illuminate in red. The unit will continue to measure power (e.g. Voltage, Time) and the function keys and LCD display will continue to operate.
2. Pressing the ON key will turn power on to the 8 built-in outlets at once. The unit features a spike-free switch function which activates at zero-crossing and will present clean power to your connected appliances. The ON key will illuminate in blue. The unit will measure power and the function keys and LCD display will operate.
3. While the unit is turned ON, if all loads to the unit are removed then the No Load function will detect this condition and automatically turn off power to the 8 built-in outlets. Both the ON and OFF keys will be dark and a "NO Load" indicator will flash on the display. THIS IS NORMAL and is a safety feature. When the electrical load is reapplied, the unit will automatically turn ON, illuminate the ON key and energize the 8 built-in outlets. While in the No Load mode, you can turn the unit off by pressing the OFF key. The OFF key will illuminate in red and power will not be applied to the outlets.

Understanding the No Load Function

1. No Load means no electrical load placed on the unit. Either there are no appliances connected to the unit or the appliances connected are turned off and are not drawing any stand-by power. If a connected appliance is turned off but is still drawing stand-by power, there is still a load placed on the unit. The unit will not enter the No Load mode.
2. The No Load function provides safety by removing electrical power from all connected cords and appliances when they are turned off. This is important because normally, even when an appliance is turned off, the electrical cord and part of the appliance are still energized by electricity. If the cord or appliance is cut, opened or frayed, electrical shock or damage can occur. When the unit is in No Load mode, these cords are not energized which prevents these problems. It is still important that all damaged equipment and cords are repaired or replaced immediately. The No Load function is not a replacement for proper maintenance.

Retained Output Mode:

1. If the power supply to the Kill A Watt PS unit is interrupted and then restored, the LCD panel will flash to alert the user to an interruption. Press any of the function keys to stop the LCD from flashing. The unit will resume the output mode at time of power interruption. If the unit was ON, when power was removed, the unit will be ON when power is restored.

Meter Functions:

1. **Volt/Amp** key: Pressing the Volt/Amp key repeatedly will cycle through displaying the currently measured AC line voltage (in Volts) with the currently measured load current (in Amps), the maximum measured voltage/current (indicated by the MAX icon) and the minimum measured voltage/current (indicated by the MIN icon). The display will return to the currently measured values after a few seconds. Pressing and holding the Volt/Amp key for a few seconds will delete the memorized MAX/MIN values. The measured load current is the sum of all connected appliances.
2. **Watt/PF** key: Pressing the Watt/PF key repeatedly will cycle through displaying the currently measured

appliance power consumption (in Watts) with the currently measured power factor (in %), the maximum measured watts/PF (indicated by the MAX icon) and the minimum measured watts/PF (indicated by the MIN icon). The display will return to the currently measured values after a few seconds. Pressing and holding the Watt/PF key for a few seconds will delete the memorized MAX/MIN values. The measured power consumption is the sum of all connected appliances.

3. **KWH/Leakge (leakage) key:** Pressing the KWH/Leakge key repeatedly will cycle through displaying the cumulative appliance power consumption (in Kilowatt Hours) since last reset with the currently measured leakage current (in milliamps), the maximum measured leakage current (indicated by the MAX icon) and the minimum measured leakage current (indicated by the MIN icon). The display will return to the currently measured values after a few seconds. Pressing and holding the KWH/Leakge key for a few seconds will delete the memorized MAX/MIN values for leakage current. There are no MAX/MIN values for KWH as it is a cumulative value. **IF YOU NOTE SIGNIFICANT LEAKAGE CURRENT MEASUREMENTS STOP USING THE CONNECTED APPLIANCE(S) IMMEDIATELY AND HAVE IT SERVICED**
4. **Elapsed Time key:** Pressing the Elapsed time key repeatedly will cycle through displaying the elapsed time of energy usage in Days:Hours and Hours:Minutes. Pressing and holding the Elapsed Time key for a few seconds will reset the elapsed time counter to zero and will clear cumulative KWH measurement. Be sure you have taken note of KWH measurements (if desired) before you reset as they cannot be retrieved once reset.

Retained Measurements:

1. When power to the Kill A Watt™ **PS** is interrupted, the display will go blank and the unit will stop measuring consumption and elapsed time. However all accumulated measurements including KWH and Elapsed Time will be retained.
2. This allows the user to take measurements anywhere and relocate the unit to a more convenient location to read the display. When the unit is plugged back in, the display will become active and will flash as an indicator of power interruption. Press any key momentarily to cancel the flashing. The accumulated KWH measurement can be retrieved by using the KWH/Leakge key. The accumulated elapsed time can be retrieved by using the Elapsed Time key. Data should be retrieved immediately as the Elapsed Time counter will restart and potentially skew the data as time with no load elapses.
3. Pressing and holding the Elapsed Time key for a few seconds will reset the elapsed time counter to zero and will clear cumulative KWH measurement. Be sure you have taken note of KWH measurements (if desired) before you reset as they cannot be retrieved once reset.

Protection Functions:

1. **Max. Amps switch:** This switch on the control panel allows the user to optionally select the maximum current (Amps) the unit will deliver to the attached appliances without automatically shutting off. Use a small screwdriver to select 2A, 5A, 10A or 15A (factory default).

Setting Procedure:

- a. Use a small screwdriver to select 15A (factory default setting).
 - b. Connect all appliances to the unit and operate appliances at their highest level.
 - c. Press the Volt/Amp key to observe the current value (Amps) consumed by appliances.
 - d. Turn off the connected appliances and turn the unit off.
 - e. Use the small screwdriver to set Max. Amps to the next highest value. For example if the LCD display indicates your appliances are consuming 6.12 Amps at their highest level, set the Max. Amps switch to 10A. In the future, if the attached appliances begin to draw a higher than normal load and exceed 10A of current, the unit will go into Over Current Mode (see below), shut off power and help protect the connected appliances.
 - f. Resume normal operation.
2. **NFB (No Fuse Breaker)** The NFB will activate when the unit is subject to overload. Press the NFB to reset and restart.

3. **Over Current mode:** When the current load presented by the connected appliances exceeds the setting on the Max. Amps switch, the unit will switch to Over Current mode. The power will be switched off to the 8 outlets. The red LED in the OFF switch will flash. The LCD will display the protected current value. The Over Current icon will flash and the audible alarm will sound. Remove the appliance(s) which is causing the over current power draw or readjust the Max. Amps value to a higher setting. Then press the OFF key and then the ON key to turn the power back on.
4. **Abnormal Voltage mode:** When the voltage presented at the wall outlet is over or under the normal voltage range, the unit will switch to Abnormal Voltage mode. The power will be switched off to the 8 outlets. The red LED in the OFF switch will flash. The LCD will display the protected voltage value. The Abnormal Voltage icon will flash and the audible alarm will sound. When the AC line voltage delivered by the wall outlet returns to a normal range and is stable for at least 3 seconds, the unit will switch back to normal mode and restart power immediately. The unit will enter Abnormal Voltage mode if the AC line voltage is over normal by 13% or under normal by 18%. The unit will switch back to normal mode when the AC line voltage returns to +10% to -15% normal.
5. **Over Load mode:** The unit contains dual redundant over load protection circuits; an electronic control breaker and a traditional NFB (No Fuse breaker).
 - a. **Electronic control breaker:** When the current load presented by the connected appliances exceeds 15 Amps, the unit will switch to Over Load mode. The power will be switched off to the 8 outlets. The red LED in the OFF switch will flash. The Over Load icon will flash and the audible alarm will sound. Remove the appliance(s) which is causing the over load power draw. Then press the OFF key and then the ON key to turn the power back on.
 - b. **NFB (No Fuse breaker):** When the NFB detects an over load condition, it will set and cut off power to the unit. This will cut off power to the 8 outlets as well as the LED's and LCD display panel. The unit will be totally without power. Check and remove the appliance(s) causing the over load, then press the NFB button to reset the breaker.
6. **Ground OK, Wiring OK detection:** When you connect the unit to a wall outlet, the unit will check the structure wiring to determine and wire faults. The unit checks the Line, Neutral and Ground wiring. Under normal conditions, "Ground OK" and "Wire OK" icons will display on the LCD. If Line or Neutral are in the wrong positions, the "Wire OK" icon will disappear. If the Ground wiring is not correct, both "Ground OK" and "Wire OK" icons will disappear.
7. **Surge Protection:** The unit features a self-test function. If the surge protection circuitry is operating properly, the LCD display will indicate with the "Surge OK" icon. If the surge protection has failed, the "Surge OK" icon will disappear.
8. **EMI Filter:** The unit features a built-in EMI (electro-magnetic interference) filter to reject noise from the AC power line.
9. **Internal Switch Self Test:** The LCD will flash the "REPLACE" icon and sound an audible alarm if the unit detects that the internal relay switch has failed.

Troubleshooting:

Item	Symptoms	Action	Description
1	LCD display is flashing	Press any key	1. This is normal operation after you plug the unit into a wall outlet. 2. AC power to the unit has been interrupted.
2	Over Current icon on LCD is flashing and audible alarm is sounded, output is off and the red LED in the OFF key is flashing	Press Reset key (OFF key), check & remove the appliance which is drawing over current or reduce the number of appliances connecting to the unit or set a larger Max. Amps setting. Press ON key to restart	This is the over current protection function indicating the total power consumption is larger than the Max. amps setting value or that an appliance is drawing too much current.
3	Over Load icon on LCD is flashing and audible alarm is sounded, output is off and the red LED in the OFF key is flashing	Press Reset key (OFF key), check & remove the appliance which is drawing an over load of current. Press ON key to restart.	This is the over load protection function. Indicates that attached appliances could have a short circuit.
4	Abnormal Voltage icon on LCD is flashing and audible alarm is sounded, output is off and the red LED in the OFF key is flashing	The unit will restart automatically when the AC power line voltage returns to normal voltage range. If condition persists call a qualified technician.	This is the abnormal voltage (too high or too low) protection function.
5	No Load icon on the LCD display flashes	The unit will power on automatically when the load returns	This is the no load protection function to reduce the chance electrical shock or damage
6	No Load icon continues to flash when appliances are connected and turned on	Increase the number of connected appliances	The minimum current detected by the unit is 1 mA. Some few appliances may have a stand-by mode that consume less than 1mA
7	Replace icon on the LCD flashes	Request technical support	This is a self diagnostic function for the main power relay switch. This indicates the relay is non functional.
8	Ground OK & Wiring OK icon on the LCD are turned off	Ask for a qualified electrical technician to check your house wiring and grounding	These icons turning off indicate a wiring defect
9	Surge OK icon on the LCD is turned off	Request technical support	This is a self diagnostic function for the surge protector MOV indicating the MOV is non functional
10	No display in the LCD, no response from pressing keys	1. Check that the unit connected to an energized AC wall outlet. 2. Check if the NFB (No Fuse breaker) is ejected from the body of the unit. If yes, disconnect any defective appliances from the unit, then press the NFB button again to restart 3. Request technical support	When no AC power is applied or if the NFB is ejected the unit will not function.

Specifications:

ITEM		RANGE		ACCURACY		RESPONSE TIME	
				Typ.	Max.	Action	Recovery
RMS voltage		120Vrms		0.4%	2%	1sec	
RMS current		0.0~15.0Arms		0.6%	2%	1sec	
Active power		0~1800 Watt		1%	4%	1sec	
KWH ¹		0.0~9999 KWH		1%	4%	1sec	
Power Factor		0~100%		PF=W/Vrms*Arms		1sec	
Leakage Current		0~30mA		±1mA		1sec	
Elapsed Time ¹		00Day/00Hour~9999Day/23Hour		30ppm		1Hour	
		00Hour/00Min~23Hour/59Min				1Min	
Abnormal Voltage	Under Voltage Protection	Output Off if Vac<98.4V (Rating-18%) Then On if Vac>102V(Rating-15%)		0.4%	2%	1sec	3sec (Auto)
	Over Voltage Protection	Output Off if Vac>135.6V (Rating+13%) Then On if Vac<132V(Rating+10%)		0.4%	2%		
Over Current Breaker		Programmable	2A,5A,10A,15A	0.4%	2%	2sec	Manual
Short Breaker	Electronic	Active Current	Lpk>100A			<0.1sec	Manual
	NFB		LoadAmp=100%(15A)			----	
No Load Detector		Off:<1mA : On:>1mA				3sec	3sec
Surge Protection		Maximum energy Dissipation (Joules) (L-N,L-G&N-G)		330 J		<1ns	N/A
		Maximum Clamping Voltage		400 V			
		Maximum Surge Current		19500A			
EMI Filter		Up to 20db for 100K to 20MHz					

¹ Display will flash when maximum count is reached for KWH, Elapsed Time

P3 INTERNATIONAL CORPORATION LIMITED WARRANTY

P3 INTERNATIONAL CORPORATION ("P3") warrants to the original retail purchaser only, that its product is free from defects in material or workmanship under the condition of normal use and service for a period of six (6) months from the date of purchase. In the event that a defect, malfunction or failure occurs or is discovered during the warranty period, P3 will repair or replace at its option the product or component part(s) which shall appear in the reasonable judgment of P3 to be defective or not to factory specifications. A product requiring service is to be returned to P3 along with the sales receipt or other proof of purchase acceptable to P3 and a statement describing the defect or malfunction. All transportation costs shall be borne by the owner and the risk of loss shall be upon the party initiating the transportation. All items repaired or replaced thereunder shall be subjected to the same limited warranty for a period of six (6) months from the day P3 ships the repaired or replaced product. The warranty does not apply to any product that has been subject to misuse, tampering, neglect, or accident or as a result of unauthorized alterations or repairs to the product. This warranty is void if the serial number (if any) has been removed, altered, or defaced. This warranty is in lieu of all warranties expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose which are expressly excluded or disclaimed. P3 shall not be responsible for consequential, incidental or other damages, and P3 expressly excludes and disclaims liability for any damages resulting from the use, operation, improper application, malfunction or defeat of any P3 product covered by this limited warranty. P3's obligation is strictly and exclusively limited to the replacement or repair of any defective product or component part(s). Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. P3 does not assume or authorize anyone to assume for it any other obligation whatsoever. Some states do not allow limitation on how long an implied warranty lasts, so the above limitations may not apply to you. It is the owner/user's responsibility to comply with local, state, or federal regulations, if any, that may pertain to P3 products or their use. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.