UPS

SMART UPS 900 VA, 1250 VA, 2000 VA BACKUP UNITS

INPUT CHARACTERISTICS

B

	100 Vac Version	120 Vac Version	220/230/240 Vac Version
Input voltage	100 Vac	120 Vac	220/230/240 Vac
Line frequency	50 or 60 Hz single phase		
Input protection on breaker switch for model 900VA	14 A	14 A	12 A
Input protection on breaker switch for model 1250VA	15 A	14 A	12 A
Input protection on breaker switch for model 2000VA	15 A	14 A	15 A

POWER SUPPLY LINE TO BATTERY SWITCHING CHARACTERISTICS

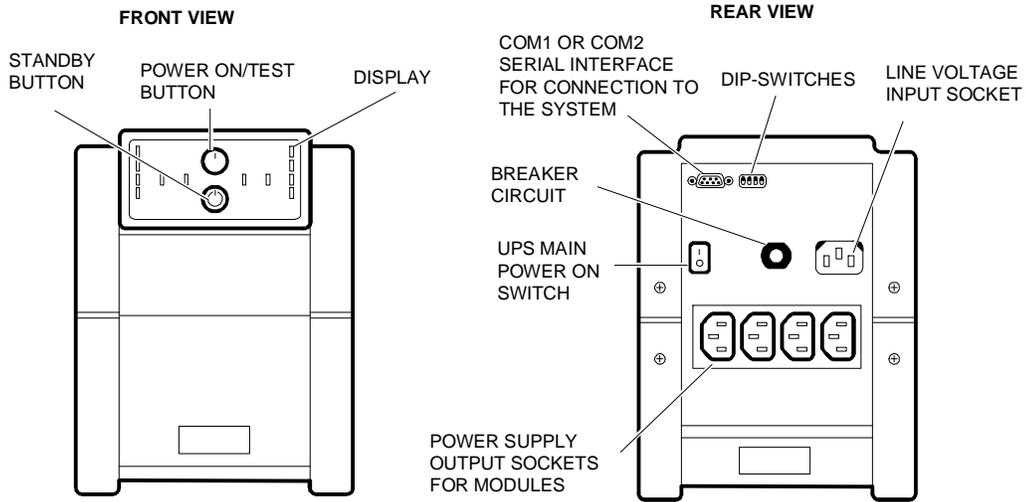|	100 Vac Version	120 Vac Version	220/230/240 Vac Version
Frequency limit before battery back-up	50 or 60 Hz +/- 5%		
Low input voltage limit before battery back-up	75 Vac	90 Vac	173 Vac (180 for voltage set to 240 Vac)
High input voltage limit before battery back-up	110 Vac	132 Vac	253 Vac (264 for voltage set to 240 Vac)
Input voltage range for Smart Boost circuit activation (Fall + Rise)	75 to 93 Vac	90 to 111 Vac	173 to 214 Vac (180 to 222.5 Vac for voltage set to 240 Vac)
Switching time	2 msec typical, 4 msec maximum		

OUTPUT CHARACTERISTICS

	100 Vac Version	120 Vac Version	220/230/240 Vac Version
Output voltage with battery power supply	100 Vac +/- 5%	115 Vac +/- 5%	225 Vac +/- 5% (240 for voltage set at 240 Vac)
Max. power (mod. 900 VA)	900 VA or 630 W (power factor 0.70)		
Max. power (mod. 1250 VA)	1250 VA or 900 W (power factor 0.72)		
Max. power (mod. 2000 VA)	2000 VA or 1500 W (power factor 0.75)		
Output waveform with battery power supply	Sinusoidal singlephase wave with low distortion		
Output frequency with battery power supply	50 or 60 Hz +/- 0.1 Hz		
Protections	Overcurrents and short circuit		

BATTERY CHARACTERISTICS

Battery type	Maintenance-free, lead-calcium batteries: four 6 V 10 AH (model 900VA), two 12 V 17 AH (model 1250VA), four 12 V 17 AH (model 2000VA).
Typical life span	From 3 to 6 years depending on the number of recharge cycles and on the evironmental temperature conditions.
Tpical recharge time	4 to 10 hours for completely discharged batteries.

Note: *The batteries cannot be replaced at the customer's site so if they need changing the entire UPS needs to be replaced.*
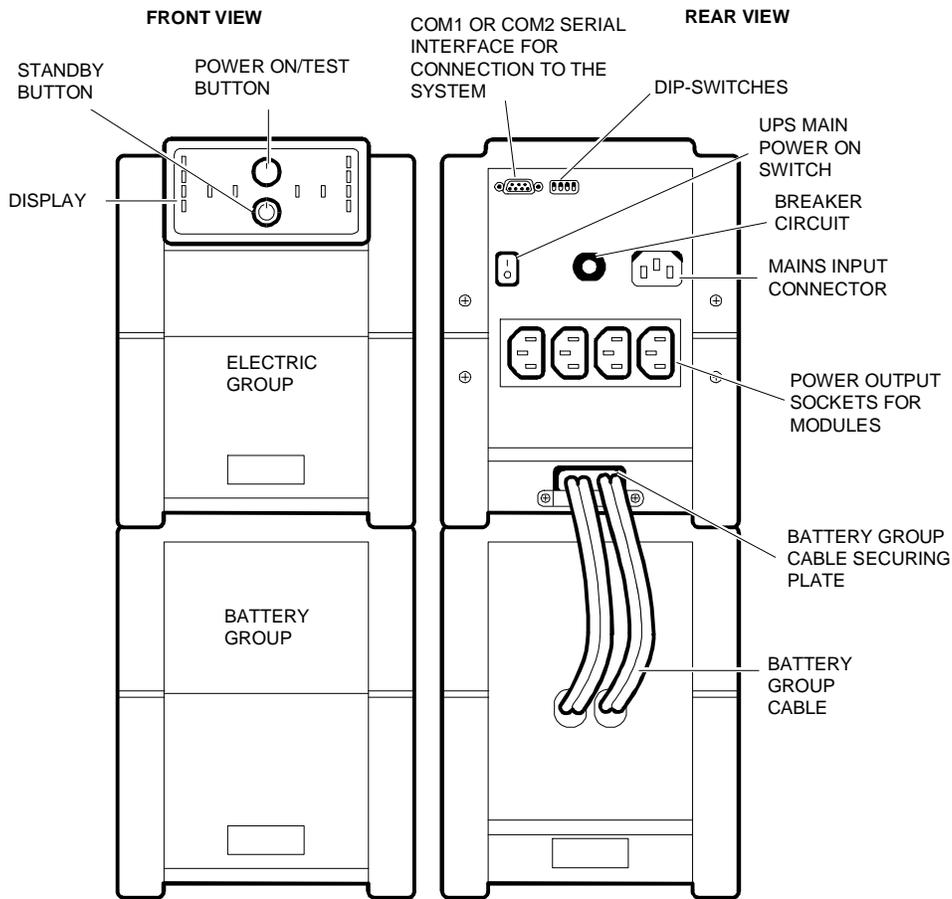
SMART UPS 900 VA AND SMART UPS 1250 VA

FRONT VIEW

STANDBY BUTTON

POWER ON/TEST BUTTON

DISPLAY

REAR VIEW

COM1 OR COM2 SERIAL INTERFACE FOR CONNECTION TO THE SYSTEM

DIP-SWITCHES

LINE VOLTAGE INPUT SOCKET

B

BREAKER CIRCUIT

UPS MAIN POWER ON SWITCH

POWER SUPPLY OUTPUT SOCKETS FOR MODULES

Note: *The above figure shows the 220/230/240 Vac versions. The 100/120 Vac versions differ only for the power output sockets for modules and for the presence of a Fault LED on the rear panel. This LED comes on when the UPS is connected to an unappropriate power outlet: in this case a qualified electrician must check the building's electrical system.*

SMART UPS 2000 VA

FRONT VIEW

STANDBY BUTTON

POWER ON/TEST BUTTON

DISPLAY

ELECTRIC GROUP

BATTERY GROUP

COM1 OR COM2 SERIAL INTERFACE FOR CONNECTION TO THE SYSTEM

DIP-SWITCHES

REAR VIEW

UPS MAIN POWER ON SWITCH

BREAKER CIRCUIT

MAINS INPUT CONNECTOR

POWER OUTPUT SOCKETS FOR MODULES

BATTERY GROUP CABLE SECURING PLATE

BATTERY GROUP CABLE

Note: *The above figure shows the 220/230/240 Vac versions. The 100/120 Vac versions differ only for the power output sockets for modules and for the presence of a Fault LED on the rear panel. This LED comes on when the UPS is connected to an unappropriate power outlet: in this case a qualified electrician must check the building's electrical system.*

INSTALLATION NOTES

- Use the specific serial cable provided in the packaging to connect the UPS RS232 serial port to one of the two COM1 or COM2 system serial ports. Do not use a standard serial cable for this connection.

- The serial port used must be configured as Local Control Port 1 or 2; it must not be configured as Modem Control.

- Before using the UPS check the battery charge indicator on the system console to make sure that the batteries are at their maximum charge. If they are not, the UPS must remain in charge for at least 8 hours before it can be used. The batteries are already fully charged at the factory, but this charge may be affected during transport and storage. The UPS can, however, be immediately used without being recharge with the consequent reduction of back-up performance until the batteries are fully charged.

- There should be no module connected to the UPS during the recharge. This is because during a power failure the batteries will only back-up the modules for a brief period of time, not being at maximum charge.

- Never connect a laser printer to a modules power supply output connector since the high absorption involved will considerably reduce the UPS back-up time and, in some cases, cause an overload condition to be signalled.

CONSOLE
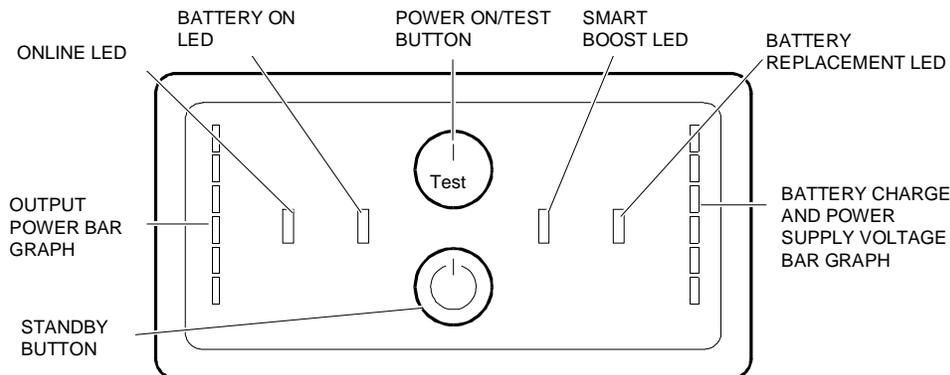
Power On/Test Button

The on/test pushbutton is used to control the activation of the UPS and to supply energy to the load. To enable the UPS to supply the load energy, press the pushbutton for one second. With the UPS powered, the battery test also starts when this pushbutton is pressed. This test briefly forces the UPS to supply power to the load through the batteries to test their efficiency. When the UPS feeds the load through the batteries, this pushbutton must be pressed to disable the relevant buzzer alarm.

Standby Button

Pressing this pushbutton for one second forces the UPS to the standby condition, suspending the power supply to all the modules connected to it. The battery charger circuit continues to work in the standby condition.

Online LED

This LED lights up to indicate that the modules connected to the UPS are supplied by the line voltage. The LED blinks during the battery test.

Battery ON LED

If this LED lights up, the modules connected to the UPS are being supplied by the batteries and therefore the line voltage has dropped below the tolerance level.

Smart Boost LED

This LED lights up when the Smart Boost stabilizer circuit is activated to compensate a drop in the line voltage. The UPS can work continuously under these conditions without interfering with the battery charging.

Battery Replacement LED

This LED lights up to indicate that the automatic battery test has detected an inefficiency and therefore the batteries must be replaced. The LED switches off when a subsequent test on the batteries gives a positive result.

Battery Charge Bar Graph
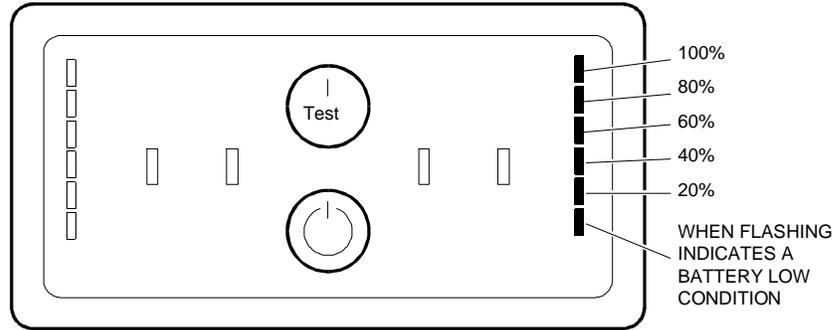
The battery charge bar graph constantly displays the condition of the batteries. The example shown in the figure indicates the batteries are 100% charged. The UPS always tries to hold the battery level at 100%, even when the line voltage quality is not at its best. If the line voltage remains low for a long period of time, the battery level indicated on the bar graph decreases at a rate which depends on the load that has to be supported by the UPS; the higher the load to be supported, the faster the batteries run low.
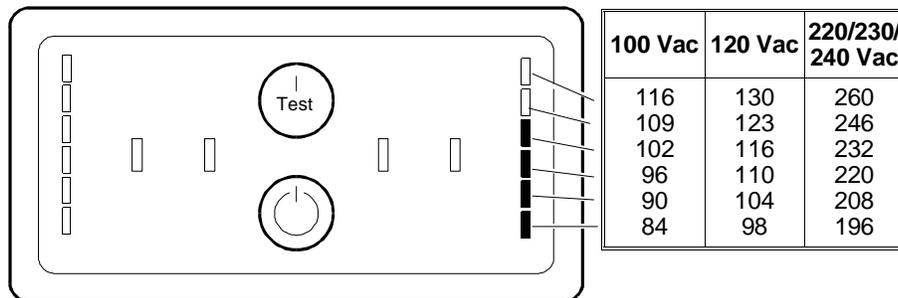
When the batteries reach the minimum level allowed, the bottom LED on the bar graph starts to flash. When the line voltage returns within the tolerance range, the UPS recharges the batteries and the level reached is displayed by the relevant LEDs lighting up on the bar graph.

Output Power Bar Graph
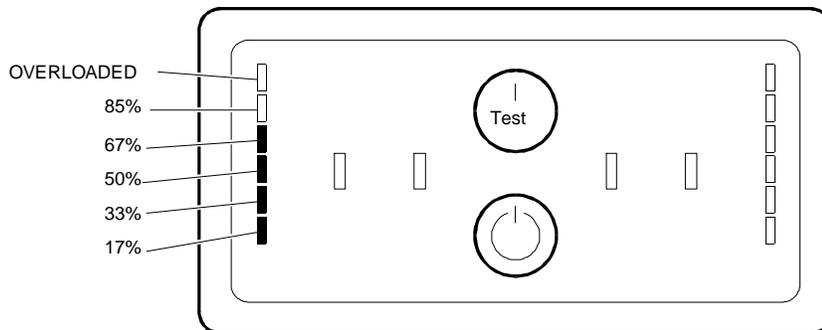
This bar graph displays the output power supplied by the UPS to the modules connected to it. It is shown as a percentage of the maximum power the UPS is able to supply. In the example in the figure, where a typical value is shown, this indicates that the load requires energy from the UPS ranging between 67% and 85% of the maximum capacity available. If the UPS is the 1250 VA model, this means that the UPS supplies the load with a power between 590 W and 740 W. When the LED for 85% lights up on the bar graph, run the test on the entire system to ensure that the UPS does not become overloaded. The tests include the backup for the tape unit, hard disk etc. If the UPS becomes overloaded, the relevant LED on the bar graph lights up and an acoustic warning is sounded.

Mains Voltage Bar Graph

100 Vac	120 Vac	220/230/240 Vac
116	130	260
109	123	246
102	116	232
96	110	220
90	104	208
84	98	196

This bar graph displays the input value from the line voltage to the UPS. It is only displayed when the on/test button is held down. The example in the figure shows that the input voltage is in the range between 232 and 246 VAC (UPS 220/230/240 VAC version, for the other versions see the table). If no LED lights up, and the UPS is connected to the line socket, this means that the line voltage is very very low (the line is overloaded for instance). In this case the UPS activates the Smart Boost circuit to compensate the lack of voltage balance. If all six LEDs light up the line voltage is too high and a skilled technician must be called.

ACOUSTIC ALARMS

The UPS has a buzzer that generates acoustic alarms when the following conditions occur:

Back up from battery: Following a drop in the line voltage, the UPS emits 4 short tones every 30 seconds. The alarm is disabled by pressing the on/reset pushbutton.

Battery low: After a long line failure, continuous acoustic warnings sound to indicate that in less than 2 minutes (or 5 minutes, see DIP-Switch section) the UPS will no longer be aboe to supply power to the system since the batteries have reached their minimum charge. This type of alarm cannot be disabled.

Battery Replacement: If the UPS fails the battery test, an acoustic warning sounds for one minute. If the UPS remains in this condition, the buzzer will repeat the warning every 5 hours until the battery test has a positive result.

Overload: If an overload occurs while power is being supplied from the line, the buzzer will continue to sound until the overload is removed. If an overload occurs while power is being supplied from the batteries, the alarm will continue to sound until the UPS enable key on the rear is turned to OFF.

DIP-SWITCHES
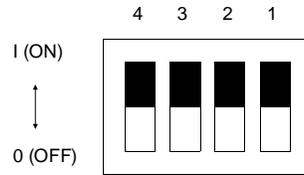
On the rear of the UPS there are 4 switches to set the following conditions:

- **Switch 1:** Input voltage detection circuit, inside the UPS. It is very sensitive to line voltage variations, including peaks and defects even if very short. In the factory the UPS is set with 1 = OFF, to react to such variation by immedaitely transferring the power to the modules from the line to the batteries. This gives maximum protection on all types of load.
  If on the installation site the line voltage quality is poor, due to high loads that periodically influence the line for instance, or due to the use of economic voltage generators, the UPS will very often supply the energy to the load through the batteries. In this case, if it is known that the devices connected to the line can operate normally just the same, there would be a wasteful energy consumption of the UPS batteries. However, to make the UPS less sensitive to the rapid voltage width fluctuation, set switch 1 = ON.
  This will keep the batteries charged as high as possible so as to be able to have the complete value should there be a prolonged black-out on the line.

- **Switch 2:** This switch may have different functions according to the UPS version. It has no function on the 100 VAC version.

  – 120 VAC version: Switch 2 establishes the input voltage value from the line which is used to calculate the oscillation bandwidth, over which the Smart Boost circuit starts to make the compensation (see the Characteristics section). In the factory the switch is set to OFF establishing that the input voltage should be around 120 VAC.
    With switch 2 = ON, the input voltage oscillation is reduced by 4% and centred on a voltage of 115 VAC. This option is useful when the input voltage has a bandwidth between 110 and 115 VAC.

  – 220/230/240 VAC versions: Switch 2 is set in the factory to OFF and it is ideal for a line voltage oscillation bandwidth having values between 220 and 230 VAC. When switch 2 is set to ON the input voltage bandwidth increases by 4% and is centred on a voltage of 240 VAC , moreover the output voltage of the batteries is increased to 240 VAC.

- **Switch 3:** When switch 3 is set to ON, the buzzer indicating the line failure is disabled for the first 30 seconds. This option is useful when there are short, frequent breaks in the power from the line. At the factory the switch is set to OFF.

- **Switch 4:** When switch 4 set to ON, the time interval between the buzzer alarm and the system shutdown due to the batteries discharge is increased by 2 minutes (set at the factory, switch 4 = OFF) to 5 minutes. This option is useful when the system shutdown procedure requires more than 2 minutes.

Note: *For the UNIX operating system it is recommended to set switch 4 to ON.*

POWERCHUTE PLUS SOFTWARE PROGRAM

This software program comes on diskette and is specifically prepared for each operating system. PowerChute Plus makes it possible to run a complete UPS hardware configuration. The program has a Windows type interface, with scroll menus that are easy to understand.

The operations and functions supported by the program are listed in the following pages.

Status Report

- **General -** Upon request, the UPS Serial Number is displayed with the version number, the date of manufacture and the date when the batteries were last replaced.

- **Operating -** Upon request the current operating condition is displayed: power supply from line, power supply through batteries, Smart Boost circuit activation, output overload, low batteries, shutdown and internal faults.

- **Test results -** Upon request the report of the last automatic or manual batteries test is displayed.

Display

- **Run Time -** When the UPS supplies the system by batteries the avialable back-up time is displayed continuously as a graph.

- **Power Supply Voltage and Frequency -** The line voltage and frequency are continuously displayed on a graph. Variations lasting less than 0.5 seconds are not shown. This data can be stored to determine quality of line voltage in time.

- **Power Supply Voltage Maximum and Minimum -** The line maximum and minimum voltage values are stored to determine the line voltage quality for a time specified by the user. Voltage values for a time less than 0.5 seconds are not shown.

- **Output Power -** The power value provided by the UPS to the load is displayed in continuation. This value is the percentage of the maximum real power that the UPS can supply to the load. The data can be stored to determine in time the load power consumption.

- **Output Voltage, Internal Temperature, Battery Voltage and Charge -** The output voltage, the internal temperature in degrees Celsius, the battery voltage and the remaining battery capacity with the value as a percentage of the maximum capacity are constantly displayed. This information can be useful for troubleshooting.

Power Management

- **Shutdown -** With the UPS supplying the load by batteries, the shutdown procedure can be activated with a delay set by the user. The controlled shutdown saves the battery capacity and lengthens the life since the UPS is not permitted to continue to back up the load by batteries until these become completely discharged.

- **Shutdown with Delayed Regeneration -** The user can set a delay for the shutdown activation or to restore the power supply from the line. This feature can be useful to slow down the supply to several line servers protected by several UPS.

- **Power Supply Voltage Failure Simulation -** The UPS can be set up to simulate a line voltage failure so that for a short time the supply comes from the batteries. This function is useful for test purposes.

- **Switch Off -** The UPS can be set to switch off immediately or after a delay set by the user.

POWERCHUTE PLUS EVOLUTION

DATE	For: SCOUnix 4.2, SCO Open S. 3.0.0 UnixWare 2.0.1	For: NT 3.5, Unix 4.0 2.4.1	For: NetWare 3.12, NetWare 4.1	REASON FOR CHANGE	APPLIC.
9/94	Rel. 3.1.3	Rel. 4.2	Rel 4.2.T	Driver introduced.	Factory
5/95	Rel. 4.2.1	Rel 4.2.1	Rel 4.2.1	New united driver version	Factory

B

CUSTOMIZED FUNCTIONS

Several UPS operations can be altered to carry out specific functions. To use these personalized functions, the DIP-Switches on the rear of the UPS must be set to ON. The switch functionalities are not lost as the same functions can also be set by software using PowerChute Plus. When any one of the switches is brought to OFF, the functionality for all 4 switches is restored.

- **Battery Test -** The battery test can be preset for activation after power-on, after power-on and once every 7 days, after power-on and once every 14 days, or never. The default setting is for testing after power-on and once every 14 days.

- **Limits of Energy Transfer Voltage to Load -** Selecting from a wide range, it is possible to set the high and low limits for the energy transfer voltage to the load.

- **Output Voltage During Battery Operation (only 220/230/240 Vac versions) -** The output voltage during battery operation can be set at 220, 225, 230 or 240 Vac. The default value is 225 Vac.

- **Sensitivity to Power Supply Voltage Variations -** The sensitivity to the line voltage variations can be set in order to use the UPS also in environments where the line voltage is not very stable. It is possible to select a high, mean or low sensitivity. With a high sensitivity set there is a better protection over all the voltage variations. Mean sensitivity can be set in environments where there are fast fluctuations with a small width but frequent as in the case of air conditioners, lifts etc. Low sensitivity is set when the UPS has to work in environments with economic voltage generators. The default setting is high sensitivity.

- **Low Battery Warning Interval -** The low battery alarm can be set every 2, 5, 7 or 10 minutes before running the shutdown. The default setting is 2 minutes.

- **Buzzer Activation -** In the case of a line voltage failure, the default setting is for the alarm to sound 4 times every 30 seconds and to sound continuously in case of a low battery condition. A 30 second delay can be set on the voltage line failure, the buzzer can be deactivated until the battery low condition is reached or the alarm can be disabled in either line failure or battery low condition.

- **Minimum Battery Charge to Restore UPS Operation -** The UPS can be set so that it does not supply energy to the load until the internal battery reaches 0%, 10%, 25% or 90% of its maximum charge. The default value is 0%.

- **Switch Off Delay -** The UPS switch off delay can be set at 20, 180, 300 or 600 seconds. The default value is 20 seconds. The extension of the delay is useful where the time between the start of the shutdown command from the UPS and the completion of the operating system shutdown routine takes more than 20 seconds.

- **Power-On Delay -** The UPS power-on delay can be set at 0, 60, 180 or 300 seconds. The default value is 0 seconds.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
UPS does not power on.	1. The main switch is set to OFF or the enable button on the console has not been pressed.	Set the main switch on the back of the UPS to ON and press the enable button on the console to supply energy to the load.
	2. The main switch, breaker type, has triggered (the key has released).	Reduce the load to the UPS by disconnecting some modules and restore the breaker switch (press the key).
	3. The line voltage is very low or the power outlet is faulty.	Check the line socket with a tester. If the voltage is very low it is necessary to have the electrical system checked by a skilled technician.
UPS supplies energy to the load from the batteries even if there is line voltage.	1. The main switch,,breaker type, has triggered (the key has released).	Reduce the load to the UPS disconnecting some modules and restore the breaker switch (press the key).
	2. The line voltage is very high, very low or with frequent distorsions.	Check the voltage input value on the console bargraph or with the PowerChute Plus. Economical current generators can cause strong line voltage distortions. Set switch 1 on the rear of the UPS to ON (see DIP-Switch section).
UPS emits occasional acoustic alarms.	This is normal.	The UPS is protecting the system from momentary line voltage fluctuations
UPS emits more than one single sound warning, or it emits double in an hour.	The line voltage is constantly high or very distorted.	Set the input voltage range through switches 1 and 2 on the rear of the UPS. Or set switch 3 to ON (see DIP Switch section)
UPS does not give the backup time.	1. The UPS batteries are low owing to a recent back up.	The UPS batteries must be re charged after a long line failure. The batteries discharge quickly when they are used often and when they work at high temperatures.
	2. UPS is overloaded.	Check the UPS load through the bargraph on the console or with PowerChute Plus. Disconnect the modules that are not strictly necessary from the UPS, such as printers.
The console LEDs flash intermittently.	The UPS has received the shutdown procedure completed command from the computer operating system.	The UPS will power on again when the line voltage returns.
All the LEDs are lit up and the UPS emits a constant tone.	UPS internal error.	Shut down the UPS and replace it.
The fault LED on the rear of the UPS (100,120 Vac versions) is lit; the UPS is working normally.	The electrical wiring in the building is not correct, for example there is no ground.	A skilled electrician should be called to correct the wiring.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The battery low LED is lit and the on-line LED is switching off.	The UPS no longer supplies energy to the load and the batteries have discharged after a long period without line voltage.	The UPS starts working normally when the line voltage returns and after the batteries are sufficiently recharged.
The battery replacement LED is lit.	The batteries are low.	Let the batteries recharge for at least 8 hours. If even after recharging, the problem persists, the batteries must be replaced.

B

SMART UPS 1000 VA, 1400 VA, 2200 VA AND 3000 VA BACKUP UNITS (Standard and Rack Versions)

MODULES LISTED IN THE PDG

PDG	DESCRIPTION	CABINET
ASU10IC	APC - SMART UPS 1000 VA, international version with four external IEC320 sockets, manuals, PowerChute Plus software, serial cable, two intermodular IEC320 power cords	Standard
ASU10RMIC		Rack
ASU10C	APC - SMART UPS 1000 VA, USA version with six external NEMA sockets, manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU10RMC		Rack
ASU10JC	APC - SMART UPS 1000 VA, Japan version with manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU14IC	APC - SMART UPS 1400 VA, international version with four external IEC320 sockets, manuals, PowerChute Plus software, serial cable, two intermodular IEC320 power cords	Standard
ASU14RMIC		Rack
ASU14C	APC - SMART UPS 1400 VA, USA version with six external NEMA sockets, manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU14RMC		Rack
ASU14JC	APC - SMART UPS 1400 VA, Japan version with manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU14RMJC		Rack
ASU22IC	APC - SMART UPS 2200 VA, international version with eight external IEC320 sockets, manuals, PowerChute Plus software, serial cable, two intermodular IEC320 power cords, 1.5 m long UPS power cord	Standard
ASU22RMIC		Rack
ASU22C	APC - SMART UPS 2200 VA, USA version with eight external NEMA sockets, manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU22RMC		Rack
ASU22JC	APC - SMART UPS 2200 VA, Japan version with manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU30IC	APC - SMART UPS 3000 VA, international version with eight external IEC320 sockets, manuals, PowerChute Plus software, serial cable, two intermodular IEC320 power cords, 1.5 m long UPS power cord	Standard
ASU30RMIC		Rack
ASU30C	APC - SMART UPS 3000 VA, USA version with eight external NEMA sockets, manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU30RMC		Rack
ASU30JC	APC - SMART UPS 3000 VA, Japan version with manuals, PowerChute Plus software, serial cable, 1.5 m long UPS power cord	Standard
ASU30RMJC		Rack
AP9605	Ethernet 10BT PowerNet SNMP LAN board	-
AAP9004	PowerChute Plus software for the Unix System V, UnixWare, SCO operating systems; serial cable, manuals	-
AAP9007	PowerChute Plus for Windows software; serial cable, manuals	-

Note: *The software distributed with the UPS supports the following operating systems: NetWare, SCO UNIX, Windows NT, OS/2. The systems provided with the Orchestra CD-ROM also include UnixWare support.*

Note: *The UPS 1000 VA and 1400 VA, international versions, require cable CBL2307-005 so that the UPS can be plugged into an electrical wall outlet.*

Note: *If the international UPS versions require more than two intermodular power cords, use cable CBL2307-125 (IEC320).*

Note: *For the USA and Japan versions, the intermodular power cables CBL2307-050 are not included with the UPS.*

INPUT/OUTPUT CHARACTERISTICS DURING ONLINE OPERATION

	100/120 Vac Version	220/230/240 Vac Version
Acceptable input voltage	0 - 160 Vac	0 - 325 Vac
Input voltage *	92 - 146 Vac	176 - 282Vac
Output voltage (online operation) *	103 - 132 Vac	196 - 253 Vac
Line frequency	50 or 60 Hz single phase	
Input protection	Resettable breaker switch	

* = Adjustable via software.

OUTPUT CHARACTERISTICS WITH BATTERY BACKUP

	100 Vac Version	220/230/240 Vac Version
Output voltage with battery supply	115 Vac	230 Vac
Max. power (1000 VA model)	1000 VA or 670 W (power factor of 0.67)	
Max. power (1400 VA model)	1400 VA or 950 W (power factor of 0.67)	
Max. power (2200 VA model)	2200 VA or 1600 W (power factor of 0.72)	
Max. power (3000 VA model)	3000 VA or 2250 W (power factor of 0.75)	
Output waveform with battery supply	Low distortion single phase sine wave	
Output frequency with battery supply	50 or 60 Hz +/- 0.1 Hz	
Protections	Overcurrent and short circuit, immediate shutdown when an overload occurs	

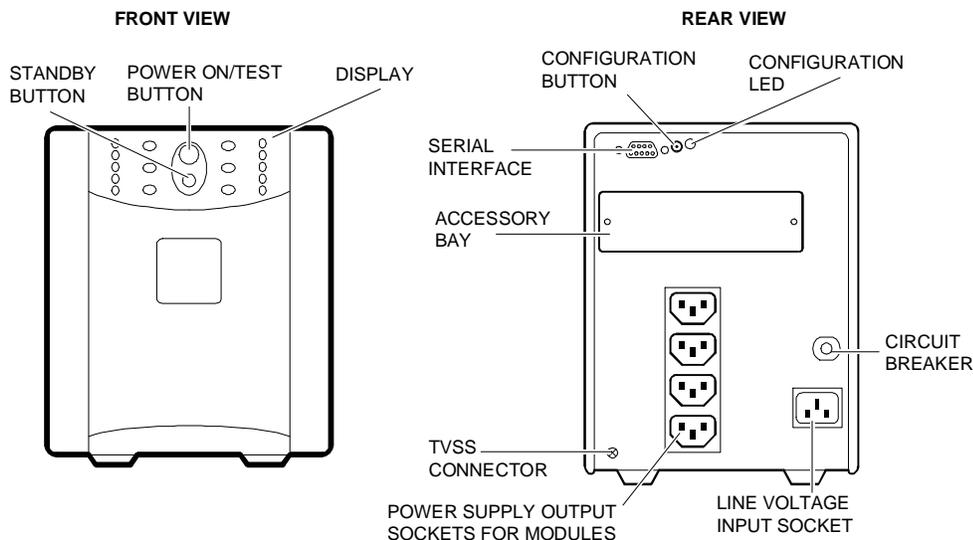### LINE VOLTAGE SUPPLY TO BATTERY SUPPLY SWITCHING CHARACTERISTICS

	100/120 Vac Version	220/230/240 Vac Version
Limit frequency before battery backup	50 or 60 Hz +/- 5%	
Input voltage lower limit before battery backup	92 Vac	176 Vac
Input voltage upper limit before battery backup	146 Vac	282 Vac
Switching time	2 msec typical, 4 msec maximum	

BATTERY CHARACTERISTICS

Battery type	Maintenance-free, spill proof, sealed, acid-lead
Typical life span	3 to 6 years. Depends on the number of charge cycles and on the environmental temperature
Recharge time	2 to 5 hours when the battery is completely discharged

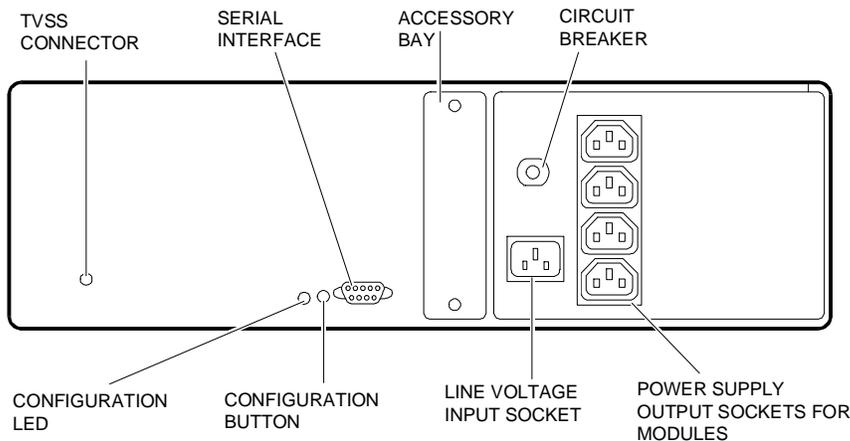Note: *The batteries can be replaced directly by the operator without removing power supply from the load.*

SMART UPS 1000 VA AND 1400 VA (STANDARD VERSION)

FRONT VIEW

STANDBY BUTTON

POWER ON/TEST BUTTON

DISPLAY

REAR VIEW

CONFIGURATION BUTTON

CONFIGURATION LED

SERIAL INTERFACE

ACCESSORY BAY

CIRCUIT BREAKER

TVSS CONNECTOR

POWER SUPPLY OUTPUT SOCKETS FOR MODULES
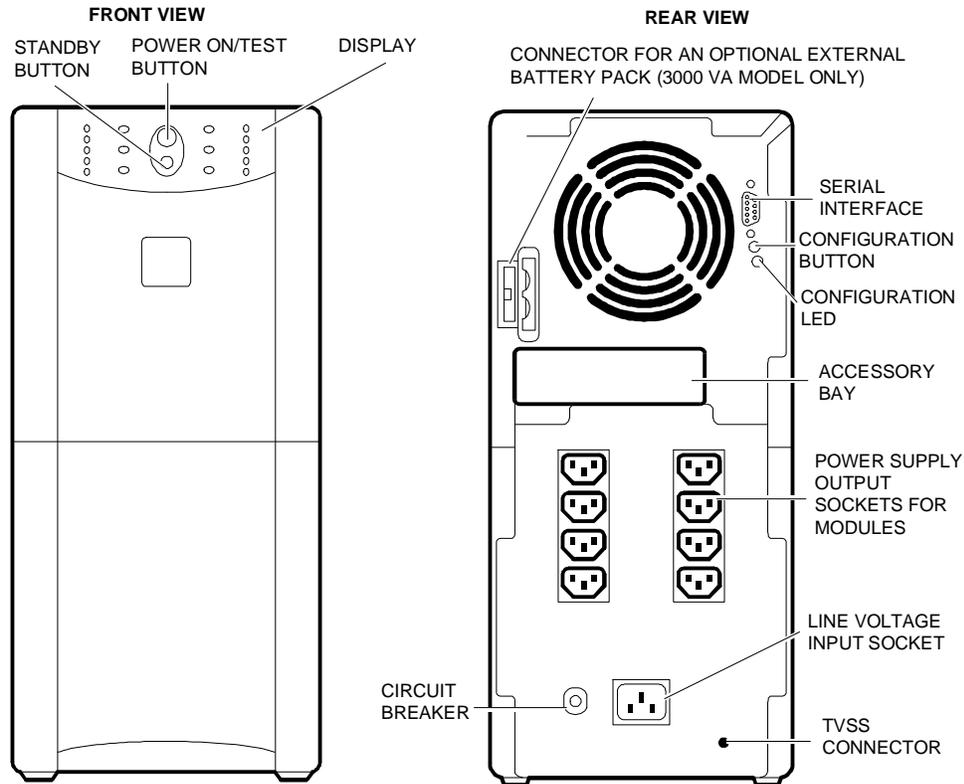
LINE VOLTAGE INPUT SOCKET

Note : *The figure shows the 220/230/240 Vac versions, the 100/120 Vac versions differ for the module power supply output connectors and for the presence of the Fault LED on the rear of the unit. This LED comes on when the UPS is plugged into a non-suitable power outlet; in this case a qualified electrician will have to check the building's electrical system.*

SMART UPS 1000 VA AND 1400 VA (19" RACK VERSION)

TVSS CONNECTOR

SERIAL INTERFACE

ACCESSORY BAY

CIRCUIT BREAKER

CONFIGURATION LED

CONFIGURATION BUTTON

LINE VOLTAGE INPUT SOCKET

POWER SUPPLY OUTPUT SOCKETS FOR MODULES

Note : *The figure shows the 220/230/240 Vac versions, the 100/120 Vac versions differ for the module power supply output connectors and for the presence of the Fault LED on the rear of the unit. This LED comes on when the UPS is plugged into a non-suitable power outlet; in this case a qualified electrician will have to check the building's electrical system.*
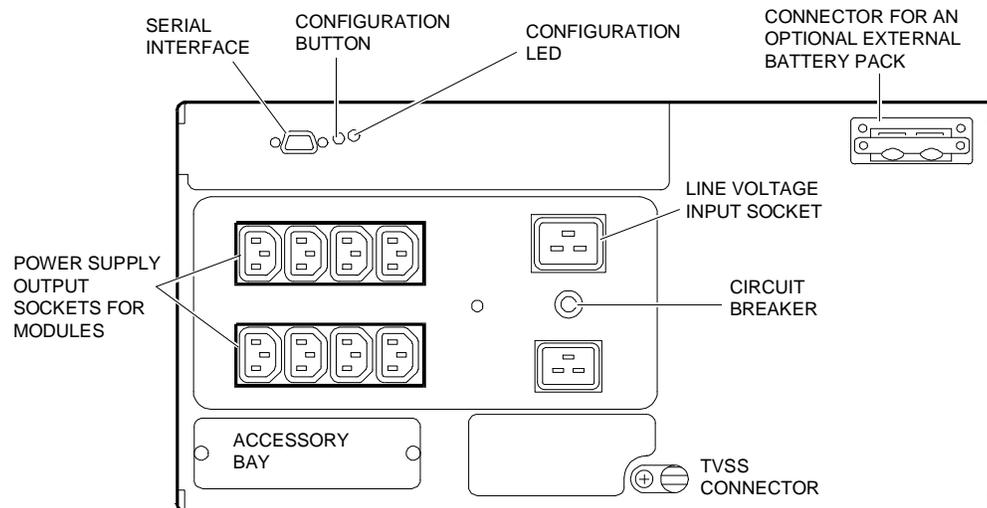
SMART UPS 2200 VA AND 3000 VA (STANDARD VERSION)

FRONT VIEW

STANDBY BUTTON

POWER ON/TEST BUTTON

DISPLAY

REAR VIEW

CONNECTOR FOR AN OPTIONAL EXTERNAL BATTERY PACK (3000 VA MODEL ONLY)

B

SERIAL INTERFACE

CONFIGURATION BUTTON

CONFIGURATION LED

ACCESSORY BAY

POWER SUPPLY OUTPUT SOCKETS FOR MODULES

LINE VOLTAGE INPUT SOCKET

CIRCUIT BREAKER

TVSS CONNECTOR

Note: *The figure shows the 220/230/240 Vac versions, the 100/120 Vac versions differ for the module power supply output connectors and for the presence of the Fault LED on the rear of the unit. This LED comes on when the UPS is plugged into a non-suitable power outlet; in this case a qualified electrician will have to check the building's electrical system.*

SMART UPS 2200 VA AND 3000 VA (19" RACK VERSION)

SERIAL INTERFACE

CONFIGURATION BUTTON

CONFIGURATION LED

CONNECTOR FOR AN OPTIONAL EXTERNAL BATTERY PACK

LINE VOLTAGE INPUT SOCKET

POWER SUPPLY OUTPUT SOCKETS FOR MODULES

CIRCUIT BREAKER

ACCESSORY BAY

TVSS CONNECTOR

Note: *The figure shows the 220/230/240 Vac versions, the 100/120 Vac versions differ for the module power supply output connectors and for the presence of the Fault LED on the rear of the unit. This LED comes on when the UPS is plugged into a non-suitable power outlet; in this case a qualified electrician will have to check the building's electrical system.*

INSTALLATION NOTES

- For the connection between the UPS RS232 serial port and one of the system two COM1 or COM2 serial ports, use the specific serial cable provided in the packaging and not a standard serial cable.

- The serial port used must be configured as Local Control Port 1 or 2; it must not be configured as Modem Control.

- Before using the UPS check the charge indicator on the console to make sure that the batteries are fully charged. If they are not, the UPS will have to be charged for at least 2.5 hours before it can be used. The batteries are fully charged at the factory, but this charge may be reduced during transportation and storage. An uncharged UPS can be used immediately, however with reduced backup times until the batteries are fully charged.

- There should be no unit connected to the UPS during recharge since, in the case of a power failure, the batteries would begin to backup the connected unit only to discharge very quickly being not fully charged.

- Do not connect a laser printer to the module power output connectors since the high absorption rates would considerably reduce the UPS backup time and, in some cases, cause the signalling of an overload condition.

- On the rear of the UPS there is a screw (TVSS connector) which is used to connect to ground (to the UPS frame) the noise suppression circuits (TVSS) of devices such as telephones or modems. Connection is made securing the ground cable terminal to the screw on the rear of the UPS. Do not use the TVSS connector if the Fault LED on the rear of the 100/120 VAC UPS comes on.

- Do not use the power on/test button on the UPS console as the main power switch. Power on the modules connected to the UPS one at a time.

CONSOLE
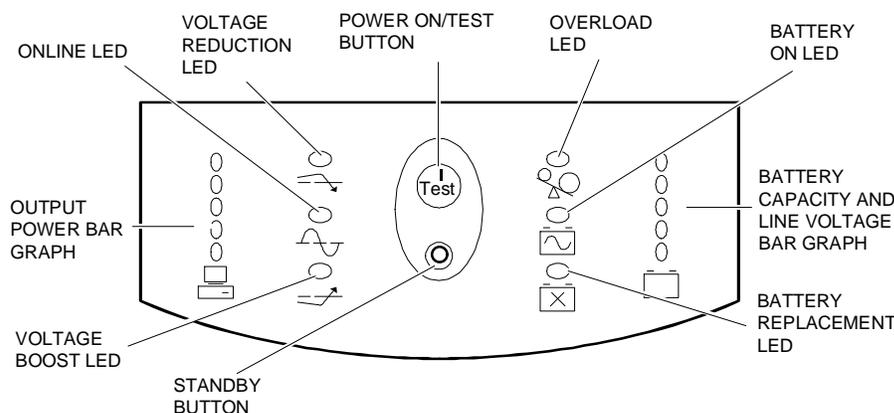
Power on/Test Button

This button controls the activation of the UPS and provides energy to the load. By pressing this key when the UPS is connected to the electrical power outlet, the UPS will immediately provide energy to the load and sound a beep tone to indicate the beginning of the self-test.
The self-test runs a check on the operations of the UPS and on the status of the batteries. If the UPS is already activated and you wish to run a self-test, press the Power on/Test button until the UPS beeps and the on-line LED begins to flash.
By default the UPS will run a self-test at power on and once every two weeks.

During this testing phase the UPS will check battery efficiency by providing energy to the load for a short period of time from the batteries (the on-battery LED will come on). If the UPS passes this test, it will switch back online, the on-battery LED will go off and the online LED will stay on steady. If, instead, the UPS fails the self-test it will immediately switch back online and the Replace Battery LED will come on. In this case the load is not effected. Recharge the battery overnight and run the self-test again. If the Replace Battery LED comes on again, replace the batteries (as explained in the relative section). The "cold start" feature, by which the power is provided from the batteries of the UPS, can be carried out when the UPS is powered off and unplugged from the electrical power socket. Press the Power On/Test button until a beep is sounded from the UPS. Release this button as soon as the beep is heard and after four seconds the power is supplied. **The cold start feature is not a normal operating condition.**

Standby Button

Pressing this button forces the UPS into the standby condition **where the power supply to all the modules connected to the UPS is interrupted.** During standby the internal microprocessor is operational, the battery charge circuit continues to work and the UPS responds to any command sent through the serial port or via LAN.

Online LED

This LED comes on to indicate that all the modules connected to the UPS are powered by line voltage. The Online LED flashes during the battery testing phase.

Voltage Boost LED

This LED comes on the indicate that the Smart AVR stabilizer circuit is activated to compensate for a drop in the line voltage. The UPS can work continuously under these conditions without interfering with battery charging.

Voltage Reduction LED

This LED comes on to indicate that the Smart AVR stabilizer circuit is activated to compensate for line voltage surges. The UPS can work under these conditions without interfering with battery charging.

ON-Battery LED

This LED comes on to indicate that the module connected to the UPS are being powered by the batteries and therefore the line voltage has dropped under the accepted tolerance rating.

Battery Replacement LED

This LED comes on to indicate that the automatic battery test has detected an inefficiency and therefore the batteries must be replaced. The LED switches off when a subsequent test on the batteries gives a positive result.

Overload LED

This LED comes on to indicate that the UPS is in a overload condition, meaning that the connected load exceeds the capabilities of the UPS. An audible signal is also sounded with the lighting of this LED.

Output Power Bar Graph

This bar graph displays the output power supplied by the UPS to the modules connected to it. It is shown as a percentage of the maximum power the UPS is able to supply. The lighting of three LEDs, for example, means that the load requires energy from the UPS ranging between 50% and 67% of the maximum capacity available. When the LED corresponding to 85% lights up on the bar graph, run the test on the entire system to ensure that the UPS does not become overloaded. If the UPS becomes overloaded, the relevant LED on the bar graph lights up and an acoustic warning is sounded.

OVERLOAD LED

85%
67%
50%
33%
17%
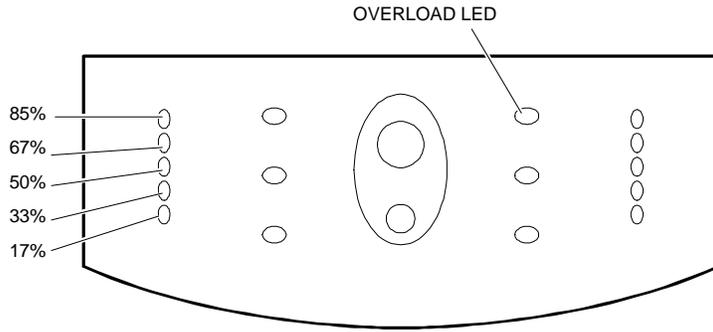
Battery Capacity Bar Graph

The battery capacity bar graph continuously displays the condition of the batteries. When all five LEDs are on the batteries are fully charged. When the lower LED begins to flash the batteries can support the load for at least two minutes.

100%
80%
60%
40%
20%
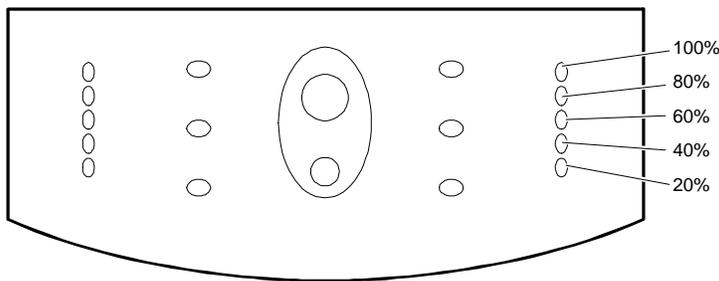
Line Voltage Bar Graph

This bar graph displays the line voltage input rating to the UPS. It is only displayed when the Power on/Test button is pressed. The LEDs on the bar graph come on to indicate that the line voltage input rating is between the value displayed and the one immediately above. For example, when three LEDs are on, the input voltage for a UPS version 220/230/240 Vac is in the range between 230 and 247 Vac. If no LED lights up and the UPS is connected to the line socket, this means that the line voltage is extremely low (the line is overloaded for instance). In this case the UPS activates the Smart AVR circuit to compensate the lack of voltage balance. If all five LEDs light up, the line voltage is too high and a qualified technician must be called.

100/120 Vac	220/230/240 Vac
132	264
123	247
115	230
107	213
98	196
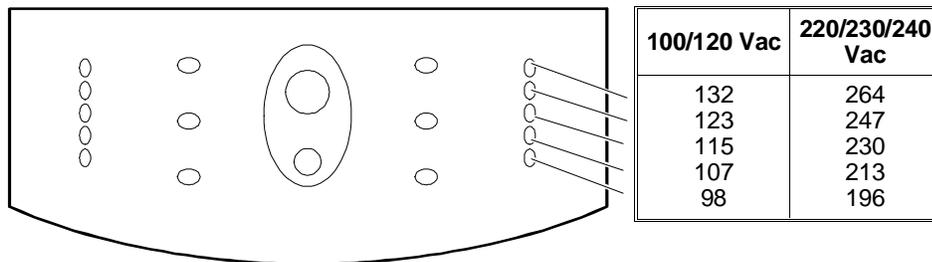
ACOUSTIC ALARMS

The buzzer inside the UPS generates acoustic alarms under the following conditions:

Back up from battery: following a line voltage drop the UPS emits four short sounds every 30 seconds. This alarm stops sounding when the line voltage is restored, but can be disabled by pressing the Power on/Test button. Interrupting this audible alarm does not, however, interrupt the condition reporting towards the serial port or LAN.

B

Battery low: after a prolonged line voltage failure, continuous acoustic signals are sounded to indicate that in less than 2 minutes (or 5 or 7, see the section Configuration Button), the UPS will no longer supply power to the system since the batteries have reached their minimum value. The alarm will stop sounding when the UPS returns online or is shutdown. This type of alarm cannot be disabled.

Battery replacement: if the UPS fails the battery test, an acoustic warning sounds for one minute. If the UPS remains in this condition, this acoustic warning is repeated every five hours until the battery test has a positive result.

Overload: in the event of an overload the UPS will emit a continuous acoustic alarm until this condition is removed. Disconnect all unnecessary modules from the UPS to remove the overload.

CONFIGURATION BUTTON

On the rear of the UPS there is a configuration button that allows the following conditions to be set if the PowerChute Plus software is not being used:

*   **Adjusting Voltage Sensitivity:** the input voltage detection circuit inside the UPS is extremely sensitive to line voltage fluctuations, including brief line voltage peaks and drops. The UPS is factory set to correct these voltage fluctuations by immediately providing power to the modules connected, from line voltage supply to battery voltage supply. This ensures maximum protection of all types of load.

    In case of bad line voltage quality at the site of installation, due for example to periodic surges on the line or to the use of low-cost voltage generators, the UPS will frequently supply energy to the load from its own batteries. In this case, if it is known that the modules connected to the UPS are capable of working normally regardless of these conditions undoubtedly there will be a considerable, and useless, consumption of UPS battery charge. It is therefore useful to render the UPS less sensitive to rapid fluctuations in line voltage amplitude. Press the Configuration Button on the rear of the UPS using a pointed object, such as a pen. Pressing this button only once reduces sensitivity, pressing it a second time sets the UPS at a low level of sensitivity while pressing it again returns the UPS to its normal sensitivity. With the UPS in the normal mode, the configuration LED is very bright, in reduced sensitivity this LED is shadowed while in low sensitivity the configuration LED is off.
   By means of these adjustments the batteries are kept as charged as possible so that they can therefore be totally used during prolonged power failures.

Note: *It is suggested to set a reduced sensitivity since a normal sensitivity causes high battery consumptions and a low sensitivity activates the UPS only in the event of a 20 msec voltage drop thus representing the limit that the system power supply is capable of supporting.*

The Rack version UPSes are factory set to a reduced voltage sensitivity and this setting must not be changed. In fact, a normal sensitivity causes high battery consumption while a low sensitivity could cause Switch-box board failures since the UPS would only be activated following a 20 msec voltage drop which is not supported by the Switch-box power supply.
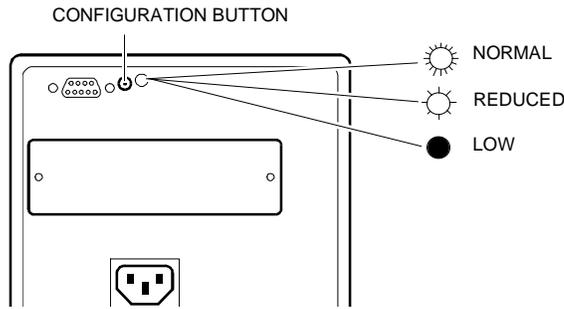
- **Adjusting the Time Interval between Acoustic Alarm and Power Off:** by default the time interval between the activation of an acoustic alarm and system power off caused by the discharging of the UPS batteries is factory set at two minutes. In case the system shutdown procedure lasts more than two minutes, this interval can be extended to 5 or 7 minutes.
  Press the Configuration button on the rear of the UPS while holding down the Power on/Test button on the console. Pressing the Configuration button only once sets an interval of approximately 5 minutes, pressing this button a second time sets a time interval of approximately 7 minutes while pressing it a third time sets the original 2 minute interval again. With the UPS set at a 2 minute interval, the configuration LED is bright, at a 5 minute interval this LED is shadowed while at a 7 minute interval the configuration LED is off.
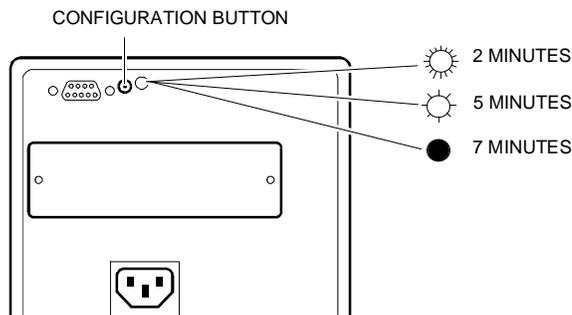

POWERCHUTE PLUS SOFTWARE PROGRAM

This program is identical to the one already described for the earlier UPS 900VA, 1250 VA and 2000VA models; refer to the related section for information.
Some of the personalized functions which were set via DIP-switches on the earlier UPS models are now set by means of the configuration button on the rear of the new UPS models.

POWERNET SNMP AP9605 LAN BOARD

This board is installed in the UPS and allows this backup module to be connected to a local area network so that commands can be sent and information received on the status of the UPS from a remote terminal. Physical connection is made through Ethernet 10BASE-T, and an SNMP-standard data exchange protocol is used. Connection to a network can be useful to view the status of the UPSes connected to systems that have already undergone the shutdown procedure and that are therefore powered off, or of UPSes that are not connected to modules capable of loading the PowerChute Plus software (such as printers, modems, etc.). Systems in dual host configurations must be connected to a network.

The firmware resident on the board allows data exchange with the UPS through the SNMP protocol. The network must therefore have a dedicated SNMP station (SNMP Management Station) on which the APC PowerNet MIB agents can be installed. These agents are contained on diskettes provided with the LAN board and recognize the agents in the LAN board firmware. Since the APC PowerNet MIB agents are also contained in the Olivetti Server View kit, the disks provided with the AP9605 board are not used in configurations which already have an SNMP Management Station with Server View software configured for the diagnostic management of network devices. The diskettes are not even used for Dual Host configurations. The following diagram shows a typical configuration in which the UPS is connected to a network.

B
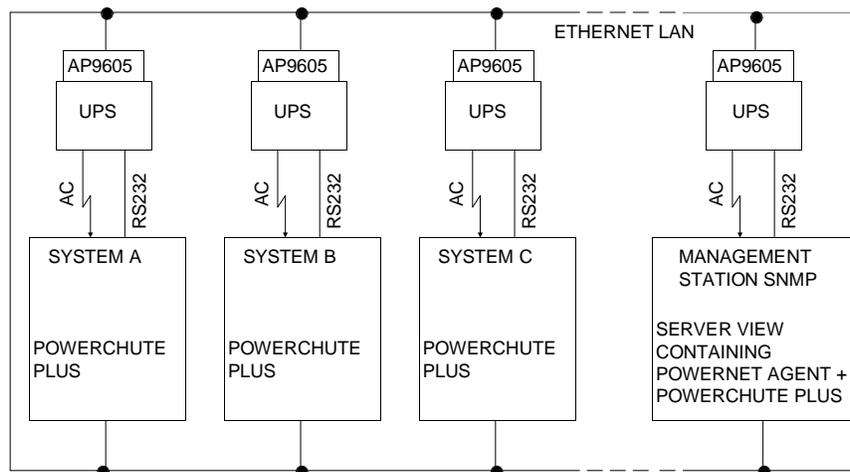
Note: *PowerChute Plus may even not be present in the systems. It must, however, be present in dual host configurations.*

The AP9605 board has the following external components:

- Ethernet 10BASE-T connector

- STATUS LED with the following meanings:

    – **Green light on steady:** the agent of the board firmware is active.

    – **Continuously flashing green light:** software problem. The AP9605 board has not yet been configured or its network address has not yet been specified.

    – **Flashing red light (10 seconds), flashing green light (5 seconds) etc.:** problem connecting to the network during the board bootstrapping phase. The board will remain in this state until a valid connection to the network is established.

    – **Continuously flashing red light:** there is no communication with the network. The board is not connected to the concentrator with the Ethernet 10Base-T cable or is connected incorrectly. Check the LED LINK for a valid connection.

    – **Red light on steady:** board hardware failure.

    – **LED off:** the board is not powered on.

- LED LINK - RX/TX with the following meanings:

    – **LED off:** devices such as a hub or concentrator that connect the AP9605 board to the network are off or do not work.

    – **Green light on steady:** the board is correctly connected to the network.

    – **Continuously flashing green light:** the board is receiving data from another network device.

- Reset button, used to reset the board.
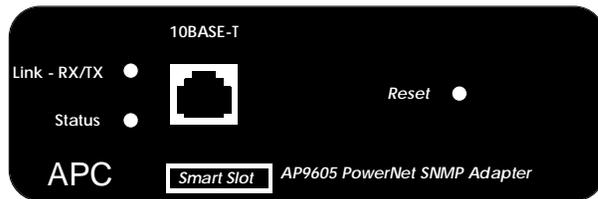
INSTALLING THE AP9605 BOARD

The prerequisites are the following:

- TCP/IP networking environment

- Connection to a 10Base-T network for AP9605 board connection

- A Management Station based on the SNMP protocol (such as an SNMP station configuring the Server View software)

- An APC UPS equipped with accessory slots for the installation of the AP9605 board

- A terminal, or a system in terminal emulation, to use for the configuration of the AP9605 board. The connection between the system and board is made through a serial cable, provided with the board.

The installation procedure consists of the following main steps:

  - Physically installing the AP9605 in the UPS

  - Configuring the AP9605 by using the serial connection between the UPS and system

  - Configuring the Management Station

  - Checking to make sure that installation was performed correctly.

The different steps of the AP9605 board installation procedure are given below:

Note: *If the UPS is using the PowerChute Plus software, to communicate with the system turn to the section entitled "Using PowerChute Plus".*

- Power off the UPS and physically plug the AP9605 LAN board into the expansion slot.

- Connect the AP9605 to the system, if the system is equipped with a package by which it can be configured as a terminal emulator (for example the Terminal package provided with Windows, Windows for Workgroups or Windows NT). Otherwise, connect the AP9605 board to a dumb terminal. The serial cable to be used for this connection is the Smart 940-0024B/C signals cable provided in the kit and which is attached to the serial connector on the rear of the UPS and to one of the system two serial ports COM1 or COM2 or to the modem terminal port. This connection makes it possible to configure the AP9605 board.

Note: *Do not use a standard cable but only the specific one contained in the packaging.*

- Power on the UPS: plug the power cord into the rear of the UPS and press the Power on/Test button on the console. This will also power the AP9605 board.

- Configure the system in terminal emulation and configure the system serial port or the terminal as follows:

Data bits	8
Stop bits	1
Parity	None
Handshaking	None
Terminal Type	ANSI (VT100)
Local echo	OFF
Baud rate	19200 (or less)

- Press the rest button on the AP9605 using a pointed object. The AP9605 will try to determine the baud rate defined, and after a few seconds the following screen is displayed:

```
***********************************
      Initialization:
 Default baud rate for the
 Adapter's SERIAL PORT 2
 is 19200. To change it,
 press CR. The Adapter will
 adjust to the baud rate of
 your console.
***********************************

Time out for baud rate auto detection

Your terminal baud rate is >19200<
American Power Conversion PowerNet SNMP Agent v2.2, Agent Loader v1.0
(c) Copyright 1992-1994 by American Power Conversion Corporation
All Rights Reserved

Power-on EEPROM checksum test:  PASSED.
Power-on EEPROM sanity check:    PASSED.
Power-on self test on ROM/RAM:   PASSED.
```

If the message is not displayed during the reset phase, press the Enter key a few times. If the message is illegible, press the reset button again. If the message continues to be illegible, define a lower baud rate and reset the system again.

- The following screen is displayed when communication is established:

```
         APC PowerNet Adapter Configuration

                    Main Menu

Current working parameters for IP:

               BOOTP is:  DISABLED

          IP Address:
     Number of Subnet Mask Bits: 00  (subnet mask: 255.255.255.0)
          Router/Gateway IP Address:

          0.   Enable/disable BOOTP
          1.   Set IP Address
          2.   Set Number of Subnet Mask Bits
          3.   Set Router/Gateway IP Address
          4.   Additional Setup Screen
          5.   Complete setup and start PowerNet agent

 Enter Choice >>
```

- As long as the agent on the board is capable of communicating with the network, specify some data relating to the IP network address. Select option "1" from the main menu. This option specifies the IP address, for instance:

```
 Enter Choice >>  1
 Enter my internet address >>   192.171.207.245
```

Select option "2" which specifies the number of subnet bits corresponding to the subnet field:

```
 Enter Choice >>  2
 Enter the number of bits in the subnet field >>   0
```

Note: *The subnet field is automatically updated when these data are entered.*

- Select option "3" which specifies the network concentrator gateway IP address, if present. For example:

```
 Enter Choice >>  3
 Enter the default gateway's internet address >>   192.171.207.1
```

- If requested, define an SNMP password to control access to the UPS. Select option "4" from the Main Menu and the following menu is displayed:

```
        APC PowerNet SNMP Agent Configuration
              Additional Setup Menu

          1.   SNMP Access Control
          2.   SNMP Trap Receivers
          3.   MIB-II System Group
          4.   Miscellaneous Setup
          5.   Display all configuration data saved in EEPROM
          6.   Reset EEPROM
        <ESC>  Return to Main Menu

 Enter Choice >>
```

Select option"1"; the following three fields need to be defined:

- Community Name or password: maximum 8 characters.

- IP Address: specifies the IP addresses of the remote sites for which the password is valid. If 0.0.0.0 is defined, access is granted to each user of each address after the appropriate password is entered. If IP address 192.171.207.0 is defined, the field is reduced, in other words only the users at addresses 192.171.207.xxx can access the UPS after entering the appropriate password.

- Access Privileges: specifies the type of access granted. The settings "Read", for read only, or "Write" for both read and write can be made.

- Specify the Trap Receivers. Up to four Trap Receivers can be specified, in other words the management stations that are enabled to receive alarms from the AP9605. Select option "2" from the Additional Setup Menu and specify the following three fields for each Trap Receiver:

  - Trap Receiver IP Address: indicate the address of the remote management station to which the alarms are to be issued.

  - Trap Type: enter "1"; the board will issue APC PowerNet MIB alarms.

  - Trap Community Name: define a string of 8 characters (password).

- Other options can be specified, but there is no need to. The default settings are usually left in the majority of installations.

- Before ending configuration, display all the parameters that have been set in EEPROM and make sure they are correct. Select option "5" from the Additional Setup Menu.

```
Current working parameters for IP:

                BOOTP is:  DISABLED

        IP Address:              192.1.1.55
        Number of Subnet Mask Bits:  00  (subnet mask: 255.255.255.0)
        Router/Gateway IP Address:  192.1.1.1

Current configuration for SNMP communities:

    Community/Password      NMS IP address        Access Type
    ==================      =============        ==========
1.      public              0.0.0.0                  read
2.      public2             0.0.0.0                  read
3.      private             0.0.0.0                  write
4.      private2            0.0.0.0                  write

Press any key to continue
Current configuration for SNMP Trap receivers:

    Receiver (NMS) IP Addr    Trap Type        Trap Community Name
    ==================      =============        ==========
1.      0.0.0.0              1 Both                public
2.      159.215.11.115      1 Both                public
3.      0.0.0.0             1 Both                public
4.      0.0.0.0             1 Both                public

Current values for the following MIB-II OID's
        sysName:  Mini Adapter (New Agent)
        sysContact: Tridib
        sysLocation:  Located on top of SM600

Current configuration for miscellaneous parameters:

    snmpEnableAuthTraps is ENABLED
        ifOperStatus is NOT SELECTED to monitor UPS status
    TFTP server IP address is 192.1.1.135

Press any key to continue
The following parameters can be altered only by APC manufacturing facility:

        software version:  2.2
        hardware version:  2.0B
        manufacture date:  05/26/94
        product serial number:  A94052685457
        MAC address: 00  C0  B7  12  E0  98
        Product model number: AP9605

Press any key to continue
```

If the values are incorrect, return to the different menus and make the corrections. The default values can be set by selecting option "6" from the Additional Setup Menu.

- Now that the configuration of the AP9605 board has ended, physically connect this board to the LAN using the Ethernet 10Base-T cable.

- Activate this board's agent by selecting option "5" from the main menu or by pressing the reset button on the board. The next time the board is booted, connection will be established with the network. After approximately 1 minute, time required by the agent to register all MIB variables, the agent itself is enabled to respond to the "Set" and "Get" SNMP operations.
  During the boot phase a message is displayed indicating that connection was successful, the STATUS LED on the board will flash red for approximately 5 seconds and then turn to green and remain on. If the LED does not turn green, check the Ethernet connection.

- The AP9605 will now ask if there is a need to run the PING of other nodes: enter either "Y" or "N". The following final screen is displayed at the end of this procedure:

```
 -------------------------------------------
| APC PowerNet SNMP AGENT |
 -------------------------------------------
(c) Copyright 1992-1994 by American Power Conversion Corp. All
Rights Reserved

Agent starts initialization ...
 -------------------------------------------
| APC PowerNet SNMP AGENT |
 -------------------------------------------
(c) Copyright 1992-1994 by American Power Conversion Corp. All
Rights Reserved

COMM 1: Agent has completed initialization
        for an APC Smart-UPS 900   (v.6QD).

***********************************************
        APC PowerNet AGENT

            Version 2.2

        is running happily on
    APC PowerNet SNMP Mini-ADAPTER

        after COLD START trap
***********************************************
This serial port is now being set to 2400 baud.
```

The AP9605 will now communicate with the UPS and can be accessed from the network. The baud rate of the serial port is automatically set at 2400 baud so as to enable data exchanges with the PowerChute Plus software. Set the baud rate to 2400 also on the system.

- At the end of the AP9605 configuration phase, configure the remote management station that will have to exchange data with the AP9605:

  – Modify the network configuration files to also include the AP9605 IP address.

  – If the Server View software containing the specific MIB files is not loaded on the management station, these files must be loaded. The NMS can only communicate with the AP9605 when the PowerNet MIB files are present. Refer to the documentation on the NMS for instructions on how to load the MIB files on the NMS. The files are contained on DOS and UNIX "tar" diskettes that are provided with the AP9605 board.

  – If during initialization the NMS does not recognize and automatically identify the new node, create a UPS identification icon in the management map. Refer to the NMS documentation for instructions.

- Make sure that installation was performed correctly by carrying out the following tests on the NMS:

  – Check that the green LINK LED lights up on the AP9605.

  – Confirm a network communication by issuing a PING command to the AP9605. This specifies that the agent of the AP9605 is active and accessible; if it is not, check the connection to the network and the IP address of the AP9605.

  – The SNMP "Get" command on each PowerNet MIB ID. This will make sure that the password defined during installation is correct. For example, a "Get" on PowerNet MIB OID "upsBasicIdentModel" will indicate the UPS model that is connected to the AP9605.

– Carry out the SNMP "Set" command on at least one modifiable PowerNet MIB ID. Doing so will make sure that the type of access, read/write, has been set correctly during password installation. For example, a "Set" command with a "flashAndBeep" value on PowerNet MIB OID equivalent to "ups AdvControlFlashAndBeep" triggers the UPS buzzer.

– Create an SNMP "trap" (alarm). Make sure that the trap receiver table, specified during the board configuration phase, includes the appropruate NMS by carrying out a query on PowerNet MIB OID "mconfigTrapReceiverTable" under the "apcmgmt" group. If all the NMS are not listed, add the ones missing to the table by using the "Set" command. Disconnect the UPS from the electrical power outlet and then reconnect it after 10 seconds. The NMS should receive a power fail and power return alarms.

Using PowerChute Plus

The PowerChute Plus software is a background process, active on the system, which exchanges data with the UPS through a serial cable. Since also the AP9605 communicates with the UPS through a serial cable and the UPS has only one serial port, for connection to be valid in both cases the specific serial cable 940-0024B/C provided with both the PowerChute Plus software and with the AP9605 must be used. Proceed as follows if both the AP9605 and the PowerChute Plus software are installed on the same UPS:

• The AP9605 must be removed from the UPS if already installed.

• Install the PowerChute Plus software in the system and use serial cable 940-0024B/C, provided with PowerChute Plus, to connect the UPS to the system.

Install and configure the AP9605 as explained in the previous section. Serial cable 940-0024B/C connecting the UPS to the system is already installed. In any case make sure that the serial port used on the system is the same one already used for the configuration of PowerChute Plus.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
The UPS does not power on.	1. The Power on/Test button was not pressed.	Press the Power on/Test button to enable the UPS to provide energy to the load.
	2. The circuit breaker type main power on switch has tripped (the button is outwards).	Reduce UPS load by disconnecting some of the modules connected to it and then push the circuit breaker switch back in again (press the button).
	3. Line voltage is very low or the electrical power outlet is faulty.	Check the efficiency of the power outlet with a tester. If line voltage is very low, have a qualified technician check the electrical plant.
The UPS does not power on or off.	The interface (serial or LAN) towards the system is faulty.	Disconnect the interface cable towards the system. If the UPS works, check the interface, the connectors and the LAN board plugged into the accessory slot of the UPS.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The UPS provides energy to the load from the batteries even though line voltage is available.	1. The circuit breaker type main power switch has tripped (the button is outwards).	Reduce UPS load by disconnecting some of the modules connected to it and then push the circuit breaker switch back in again (press the button).
	2. Line voltage is veryhigh, very low or frequently distorted.	Check the input voltage values on the console bar graph or through the PowerChute Plus software. Low-cost current sources can cause strong line voltage distorsions. Reduce voltage sensitivity (as explained in the section Configuration Button).
The UPS emits occasional acoustic alarms	This is normal.	The UPS is protecting the system against temporary line voltage fluctuations.
The UPS does not provide backup.	1. The batteries of the UPS are discharged due to a recent backup or are near the end of their life span.	The UPS batteries must be recharged after a prolonged line voltage failure. The batteries loose their charge quickly when often used or when working under high temperatures. If the batteries are near to the end of their life span, consider the possibility of replacing them even though the battery replacement LED is not yet on.
	2. The UPS is overloaded.	Check the UPS load on the console bar graph or using the PowerChute Plus software. Disconnect all unnecessary modules from the UPS, such as printers.
The console LEDs are blinking	The UPS has received the command from the operating system indicating that the shutdown procedure is over.	The UPS will power on again as soon as line voltage is restored.
All the LEDs are on and the UPS is emitting a constant tone.	Internal UPS failure.	Power off and replace the UPS.
The Fault LED on the rear of the UPS is on (only 100,120 Vac versions); the UPS is working mormally.	The building's electrical wiring is faulty, for example the ground is missing.	Call a qualified electrician to correct the building's electrical wiring.
The Battery Low LED is on and the Online LED is going off.	The UPS is no longer providing energy to the load and the batteries are discharged as a result of a prolonged line voltage failure.	The UPS will return to operate normally as soon as line voltage is restored and the batteries are charged sufficiently.
The Battery Replacement LED is on.	The batteries are low.	Allow the batteries to recharge for at least 4 hours. If this problem continues even after the batteries are recharged, replace the batteries (as explained in the section "Replacing the Batteries").
	The newly replaced batteries are not connected correctly.	Check the connections of the batteries (see the section "Replacing the Batteries").

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PROBLEM	POSSIBLE CAUSE	SOLUTION
PROBLEMS WITH THE POWERNET AP9605 LAN CONTROLLER		
The PING of the AP9605 cannot be carried out	1. Incorrect physical connections to the network.	Check.
	2. IP network addresses do not match.	Make sure the IP addresses of the AP9605 and NMS are on the same network or subnetwork. Check the Hub (or Gateway) IP default address if he NMS is connected to a different network or subnetwork than the AP9605. Check the subnet bit number of the corresponding subnet mask.
The SNMP "Get" command cannot be carried out	There are problems with the community name (password)	Make sure the read permissions are correct in the password setting. Make sure the IP address in the AP9605 access control menu is set to 0.0.0.0 or to the NMS IP address.
The SNMP "Set" command cannot be carried out.	There are problems with the community name.	Make sure the read/write permissions are correct in the password setting. Make sure the IP address in the AP9605 access control menu is set to 0.0.0.0 or to the NMS IP address.
The management station cannot receive Traps (alarms).	The NMS ID address is not listed in the Trap Receiver table.	Carry out a "Set" operation on PowerNet MIB OID "mconfigTrapReceiverTable" and add the NMS IP address. The same operation can be carried out by reconfiguring board Setup.
Unidentified traps are received by the NMS.	The traps have not been included in the alarm database or NMS traps.	Check.
Frequent "Comm Lost" messages are displayed from PowerChute Plus when using the Pass-Through Mode.	The timeout factor in the PowerChute Plus INI file is too low.	Insert "TimeoutFactor = 5" under the [UPS] section of the PowerChute's INI file and run PowerChute again. Increase the timeout factor if the "Comm Lost" messages are continued to be displayed.

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