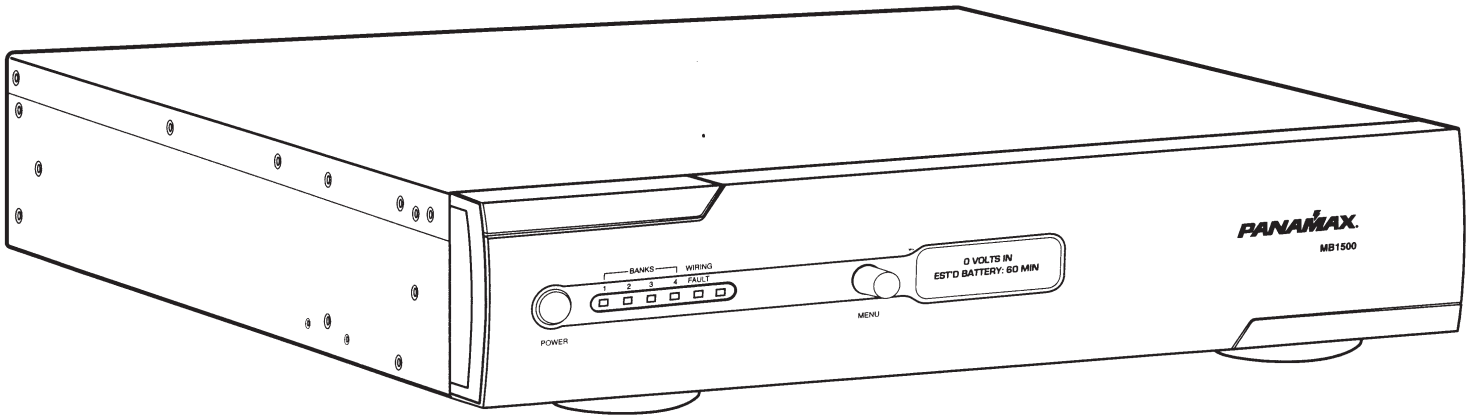
MB1500 Instructions

A Fully Programmable, Uninterruptible Power Supply, Voltage Regulator & Power Conditioner



Features:

- 1500 VA Rated Battery Backup
- True Sine Wave Output
- AVM Automatic Voltage Monitoring
- LiFT Linear Noise Filtration Technology
- Protect or Disconnect Voltage Protection
- Voltage Regulation
- Dual Learning IR Output Controls

BlueBOLT™ COMPATIBLE

- BlueBOLT™ Compatible (with BlueBOLT-CV1 interface card, sold separately) or Fully Programmable RS-232 with Open Source Protocol (Included)
- Fully Programmable
- USB Interface
- 2 Programmable Critical Load Management AC Outlet Banks
- 2 Non Critical Load AC Outlet Banks
- Battery Extension Pack Available To Extend Runtime of Unit (Sold Separately)

PANAMAX®

Introduction

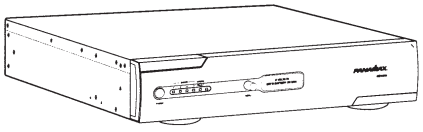
Thank you for purchasing a Panamax MB1500 Uninterruptible Power Supply, and congratulations on your choice. The MB1500 Uninterruptible Power Supply features Panamax's revolutionary AVM (Automatic Voltage Monitoring) circuit, and our exclusive Linear Filtering Technology (LiFT). Together, these technologies comprise precisely what our customers have come to expect from Panamax - uncompromised AC protection and purification.

Table of Contents

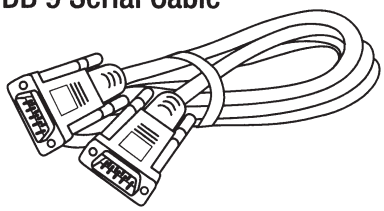
Before You Begin UNPACKING Inspect the UPS upon receipt.

In addition to this manual the box should contain the following:

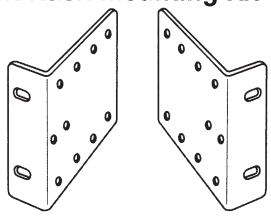
1. UPS Unit



2. DB 9 Serial Cable

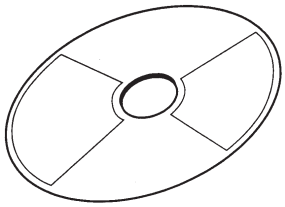


3. Front Rack Mounting Kit

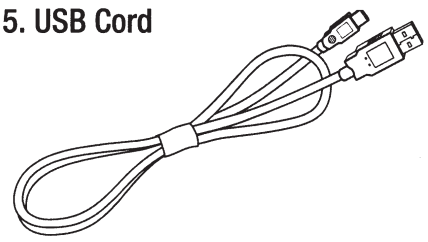


Rear Rack Mounting Kit Available (sold separately)

4. Software CD



5. USB Cord



PANAMAX®

Features Descriptions

AVM Automatic Over & Under Voltage Protection
Panamax's power monitoring circuitry constantly monitors the AC line voltage for unsafe voltage conditions such as momentary spikes or prolonged over-voltages and under-voltages (brownouts). These unsafe conditions pose a very dangerous threat to all electronic equipment within the home. If the MB1500 senses an unsafe power condition, it will automatically disconnect your equipment from the power to protect equipment from damage. When MB1500 disconnects from the power, the Battery Backup Outlets are switched to battery power.

When subjected to a 6,000V (open circuit voltage) / 3,000A (short circuit current) surge, the MB1500 limits its voltage output to less than 330V peak, UL's lowest rating. The MB1500 will withstand, without damage, 10,000A surges, far exceeding the UL requirement of only 3000 Ampere surges.

PROTECT OR DISCONNECT
If the magnitude of the surge is greater than the capacity of the surge protection components, the MB1500's Protect or Disconnect Circuitry will disconnect your equipment in order to protect it. The MB1500 will need to be repaired or replaced by Panamax if this occurs within the 3 yr. product warranty.

LIFT (LINEAR FILTERING TECHNOLOGY)
Unfortunately, traditional AC power conditioners have been designed for unrealistic laboratory conditions. Prior technologies, whether multiple-pole or conventional series-mode filters, could actually harm audio and video performance more than they help, due to the resonant peaking of their antiquated, non-linear designs. Under certain conditions, these designs can actually add more than 10 dB of noise to the incoming AC line! Worse still, lost digital data, the need to reboot digital presets, or destruction of sensitive digital converters are frequently caused by excessive voltage spikes and AC noise contaminating the equipment ground. Panamax's LiFT takes a different approach, ensuring optimal performance through linear AC noise filtering with no ground contamination.

Important Safety Instructions

(Please read prior to installation)
This manual contains important instructions that should be followed during installation and maintenance of the MB1500 and batteries.

Please read and follow all instructions carefully during installation and operation of the unit. Read this manual thoroughly before attempting to unpack, install, or operate.

CAUTION! The MB1500 must be connected to an AC power outlet with fuse or circuit breaker protection.

DO NOT plug the machine into an outlet that is not grounded, or; without GFCI protection if it is plugged into an isolation transformer. If you need to de-energize this equipment, turn off and unplug the MB1500.

CAUTION! DO NOT USE FOR MEDICAL OR LIFE SUPPORT EQUIPMENT! Panamax does not sell products for life support or medical applications. DO NOT use in any circumstance that would affect operation or safety of any life support equipment, with any medical applications, or patient care.

CAUTION! The battery can energize hazardous live parts inside even when the AC input power is disconnected.

CAUTION! To prevent the risk of fire or electric shock install in a temperature and humidity controlled indoor area, free of conductive contaminants. (Please see specifications for acceptable temperature and humidity range).

CAUTION! To reduce the risk of electric shock, do not remove the cover. No user serviceable parts inside. (only qualified service professionals should replace the battery pack).

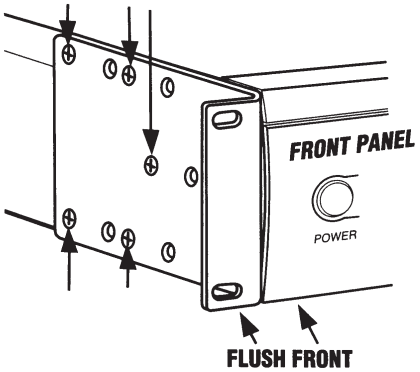
CAUTION! To avoid electrical shock, turn off the unit and unplug it from the AC power source before installing a component.

CAUTION! DO NOT USE WITH OR NEAR AQUARIUMS! To reduce the risk of fire, do not use with or near aquariums. Condensation from the aquarium can come in contact with metal current contacts and cause the machine to short out.

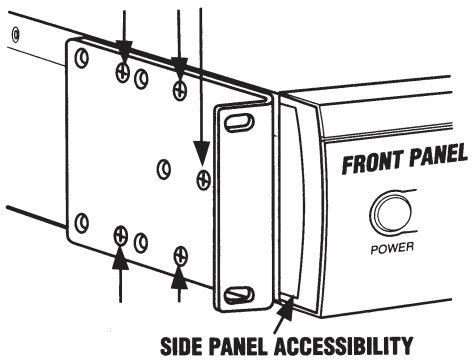
NOTE: AC Power management devices, such as a UPS, have certain limitations with regard to reactive loads and wattage. The MB1500 has a handling capacity of 1500VA or approximately 7.5 amps. Excessive power consumption beyond these specifications can affect battery life and performance.

BEFORE MOUNTING INTO RACK PLEASE READ - Important Rack Mounting Options

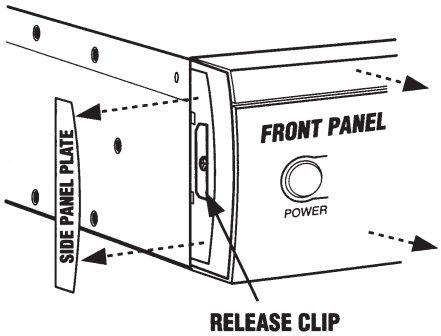
OPTION 1 - FOR FLUSH MOUNT
TO MOUNT PRODUCT IN A FLUSH POSITION IN RELATIONSHIP WITH THE RACK, USE THE HOLES AS INDICATED BELOW.
IMPORTANT NOTE! PRODUCT MUST BE REMOVED FROM THE RACK TO GET ACCESS TO RELEASE CLIPS.



OPTION 2 - TO MOUNT FOR EASY FRONT PANEL REMOVAL
FOR ACCESS TO RELEASE CLIPS USE THE HOLES AS INDICATED BELOW.



TO REMOVE FRONT PANEL
REMOVE SIDE PANEL PLATES FROM BOTH ENDS, AND PUSH UP THE TWO VERTICAL RELEASE CLIPS AND PULL OUT TO REMOVE FRONT PANEL.



MB1500 FRONT PANEL INSTALLATION

The MB1500 is shipped with the front panel unattached to ensure that no damage is caused during shipping. Before the MB1500 can be used, the front panel must be installed.

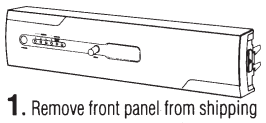
A. CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE."

B. CAUTION: When replacing batteries, replace with the same type of the original batteries

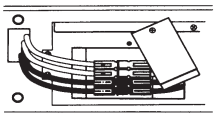
C. CAUTION: Before replacing batteries, remove conductive jewelry such as chains, wrist watches, and rings. High energy through conductive materials could cause severe burns;

D. CAUTION: Do not dispose of batteries in a fire. The batteries may explode.

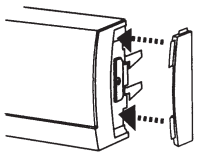
E. CAUTION: Do not open or mutilate batteries. Released material is harmful to the skin and eyes. It may be toxic.



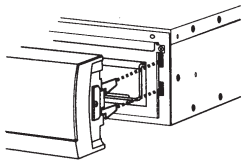
1. Remove front panel from shipping inserts (pic, CP to provide)



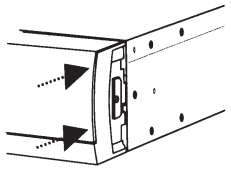
2. Verify that the battery connectors are connected, red-to-red, black-to-black. If not connected, perform steps 2 and 6 in the BATTERY REPLACEMENT section.



3. (Optional) Install the supplied rubber end-caps to the sides of the front panel. Push the curved edge of the end-cap into the mating slots of the front panel.

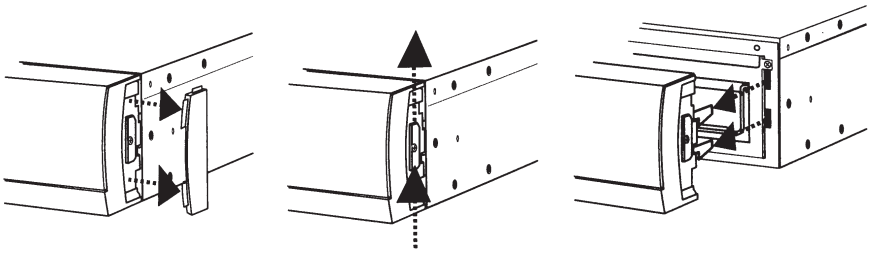


4. Carefully align the front panel connector and latches with the MB1500.

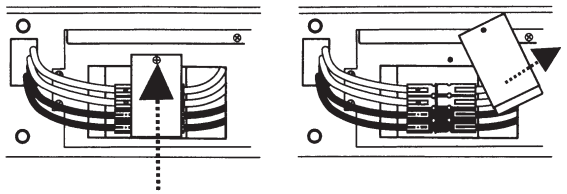


5. Gradually apply pressure to the left and right ends of the front panel until you hear the latches 'click'.

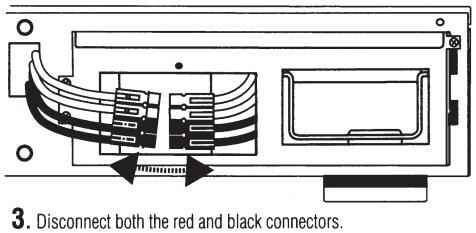
MB1500 BATTERY REPLACEMENT (Part #BC-1500, Contact Panamax to order replacement battery)



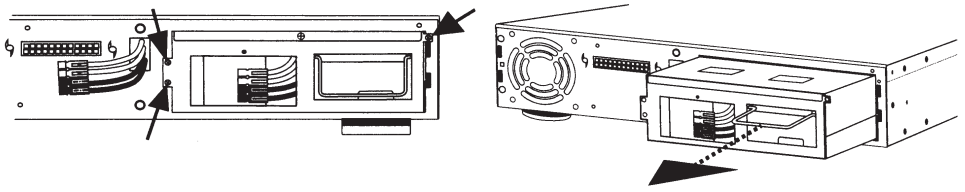
1. Remove the front panel. Remove the rubber end caps and pull up on the latch mechanism. Once the latch mechanism stops, gradually pull the front panel off of the MB1500.



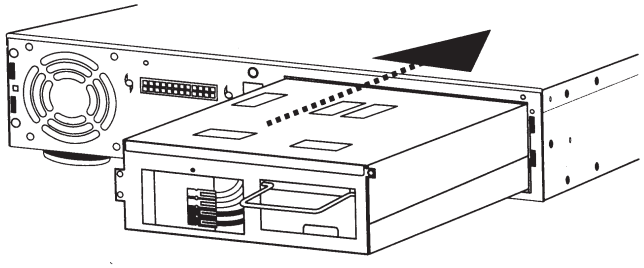
2. Remove the screw from the battery connector security plate to release the battery connector.



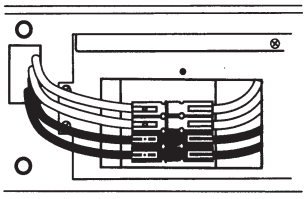
3. Disconnect both the red and black connectors.



4. Remove the screws from the battery pack (part number BC-1500) and pull the battery pack out of the unit using the integrated handle.

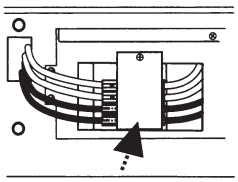


5. Install the new battery pack into the unit. **DO NOT ATTEMPT TO REPLACE THE BATTERIES IN THE ORIGINAL BATTERY PACK. IMPROPER INSTALLATION CAN RESULT IN FIRE OR BATTERY LEAKAGE.**

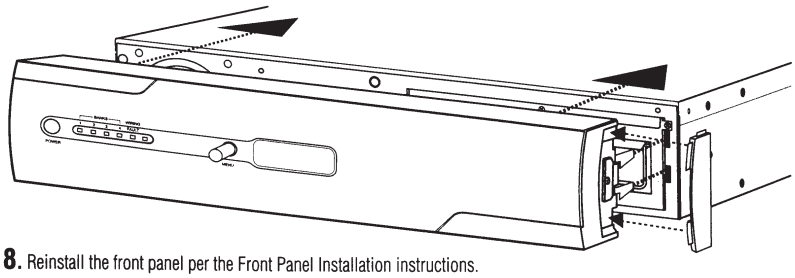


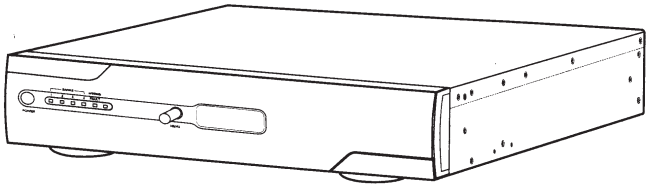
6. Reconnect the battery cable connectors.

WARNING! **ALWAYS CONNECT RED** to **RED** and **BLACK** to **BLACK.** If the cable connectors do not snap together easily as RED to RED and BLACK to BLACK, ***NEVER*** attempt to force them together or flip connectors over resulting in a ***RED*** to ***BLACK*** combination which will cause electrical sparking, shock, fire or explosion! Call customer service for help.



7. Reinstall the battery connector security plate.





8. Reinstall the front panel per the Front Panel Installation instructions.

Installation

Your new MB1500 may be used immediately upon receipt. However, recharging the battery for at least six to eight hours is recommended to insure that the battery's maximum charge capacity is achieved. Charge loss may occur during shipping and storage. To recharge the battery, simply leave the unit plugged into an AC outlet. The unit will charge in both the ON as well as the OFF position. If you wish to use the software, connect the enclosed USB cable to the USB port on the MB1500 and an open USB port on the computer or server.

DO NOT plug a space heater, vacuum cleaner, paper shredder or other large electrical device into the MB1500. The power demands of these devices will overload and possibly damage the unit.

Plug the MB1500 into a 2 pole, 3 wire grounded receptacle. Make sure the wall branch outlet is protected by a fuse or circuit breaker and does not service equipment with large electrical demands (e. g. refrigerator, copier, etc.) Avoid using extension cords. If used, the extension cord must be UL or CSA Listed, minimum 14 AWG, 3-wire grounded, and rated for 15 Amps. Press the power switch on the front panel to turn the MB1500 on. The display will say "Initializing", followed by the normal operation screen.

The rear panel circuit breakers will open and power to the connected equipment will be turned OFF if an overload is detected. To correct this, turn the MB1500 off, unplug at least one piece of equipment, wait 10 seconds, check to make sure that the circuit breakers are reset, and turn the unit on.

The MB1500 will automatically charge the battery whenever it is plugged into an AC outlet.

To maintain optimal battery charge, leave the MB1500 plugged into an AC outlet at all times.

NOTE: To store your MB1500 for an extended period, cover it and store with the battery fully charged. Recharge the battery every three months to ensure battery life.

Communication Interface

The RS-232 communication card provided with the MB1500 allows connection and communication between the MB1500 and an automation, media server, or computer system. This allows the installer to program a number of variables including the Critical Load Battery Threshold. See the software documentation for more information.

BlueBOLT™ Compatible (with BlueBOLT-CV1 interface card, sold separately): provides remote access to reboot components, power equipment on or off, and monitor power quality from anywhere in the world. Contact Panamax for price and availability.

External Battery Connectors

Panamax's BATT1500-EXT external battery pack (sold separately) offers extended battery runtime when used in conjunction with the Panamax MB1500. Contact Panamax for price and availability.

Specifications

Input	
Voltage	90 – 140 Vac
Frequency	57 – 63 Hz

AC Power	
Surge Protection:	AVM (Automatic Voltage Monitoring)
Current Rating	12 A maximum (7.5 A maximum battery load recommended)
Overvoltage Shutoff, fast rise:	150 ± 5 V
Overvoltage Shutoff, slow rise:	140 ± 5 V
Undervoltage Shutoff:	90 ± 5 V
Noise Attenuation:	10 dB @ 10kHz, 40 dB @ 100 kHz, 50 dB @ 500kHz
Linear Attenuation Curve:	From 0.05 - 100 Ohms line impedance
Automatic Voltage Regulation, Sensitive Mode Capture Range:	98 – 135 V
Automatic Voltage Regulation, Sensitive Mode Output Range:	120 ± 5%
Automatic Voltage Regulation, Standard Mode Capture Range:	93 – 140 V
Automatic Voltage Regulation, Standard Mode Output Range:	120 ± 10%

UPS Output	
Voltage	120 ± 5 V True Sine Wave
Frequency	60 Hz ± 1%
UPS Output Capacity	1500VA 900W @ 0.6pf
UPS Backup Time. (full load)	12 minutes
UPS Backup Time. (half load)	32 minutes
Transfer Time	< 4ms

Temperature Rating-Units are considered acceptable for use in a max ambient Of 40 ° (or "0 - 40 ° C for ambient Operation

Front and Back Panel Descriptions

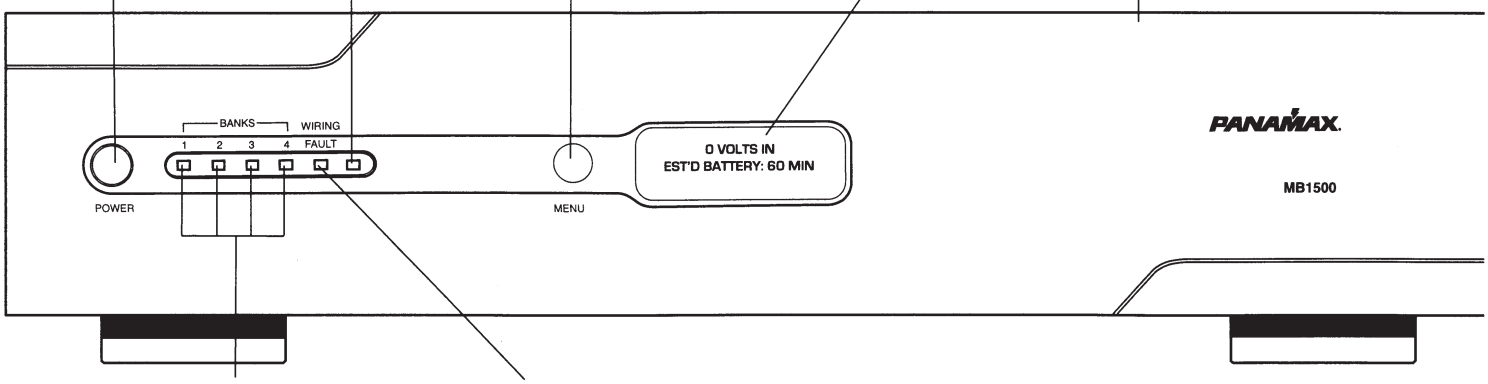
Power Switch
Press to turn the MB1500 ON or OFF.

IR Detector
IR Detector, for sampling IR remote control signals.

Menu Navigation Knob
Rotate clockwise to navigate to the next screen, counter-clockwise to return to the previous screen, push to select menu item.

Status Display
LCD displays status and menu navigation items.

Removable Battery Access Panel
Easy to remove for battery access and replacement.



Outlet Banks 1, 2, 3, and 4 Indicators
Illuminated blue when outlet bank is switched on.

Line Fault Indicator
This LED will illuminate in red to warn the user that a wiring problem such as a bad/missing ground or reversed wiring exists within the AC receptacle. If illuminated, disconnect all equipment and contact an electrician to insure outlet is properly wired.

Outlet Bank 2 - Critical-Load Outlets
Two battery powered, AVM protected outlets for critical-load equipment ensures temporary uninterrupted operation of connected equipment during a power failure.

Outlet Bank 1 - Critical-Load Outlets
Two battery powered, AVM protected outlets for critical-load equipment ensures temporary uninterrupted operation of connected equipment during a power failure.

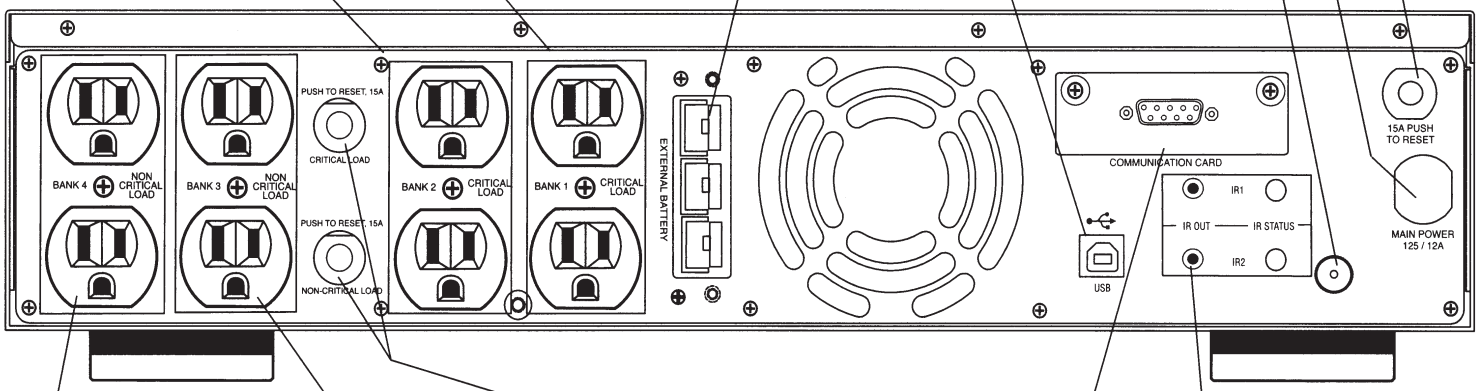
External Battery Connectors
Allows for optional external battery addition.

USB to Computer
USB port allows communication between MB1500 and computer.

AC Power Cord
Captive, heavy-duty shielded power cord.

Unit Circuit Breaker

Ground Lug



Outlet Bank 4 - Non-Critical-Load Outlets
Two battery powered, AVM protected outlets for connected equipment ensures temporary uninterrupted operation of connected equipment during a power failure. These outlets will shut off when the batteries drain to a designated level to reserve remaining battery charge for the critical load outlets.

Outlet Bank 3 - Non-Critical-Load Outlets
Two battery powered, AVM protected outlets for connected equipment ensures temporary uninterrupted operation of connected equipment during a power failure. These outlets will shut off when the batteries drain to a designated level to reserve remaining battery charge for the critical load outlets.

Circuit Breakers for Overload Protection
Resettable circuit breakers provide optimal overload protection.

RS-232 Serial Communication Port
The serial port allows connection and communication between the MB1500 and an automation, media server, or computer system. This allows the installer to program a number of variables including the Critical Load Battery Threshold. See the software documentation for more information.

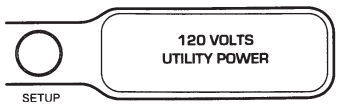
BlueBOLT-CV1 Card (sold separately) allows for additional functions, such as remote diagnostics, control of individual outlet banks, and configuration of email alerts. Contact Panamax for price and availability.

IR Control Section
Indicator LED's – Indicates status IR Output Jacks – Standard 1/8" (3.5mm) mono jack for connection to an IR flasher (IR flashers not included)

Operating Modes

Normal Operation (Utility Power) Mode
When connected to a live power source, the MB1500 provides power and is ready to provide protection from under- and overvoltages.
Rotate the navigation dial to scroll through the screens.

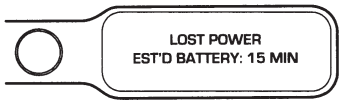
Normal Operation Screen



Automatic Voltage Regulation (AVR) Mode
Sensitive AVR setting: when receiving input voltages of 98 VAC – 140 VAC, the MB1500 supplies a regulated voltage of 120 VAC ± 5%. Standard AVR setting: when receiving input voltages of 93 VAC – 145 VAC, the MB1500 supplies a regulated voltage of 120 VAC ± 10%. AVR OFF setting: AVR is disabled, no voltage correction.

UPS Mode
In the event of a loss of power to the unit, over-voltage, or under-voltage, the MB1500 will function as a battery back-up. An audible alarm will sound and the display will indicate the fault as well as the number of minutes of battery life remaining.

UPS Mode Screen



Setup Mode
The setup menu allows the user to adjust several of the operating parameters of the unit.

Setup Menu Navigation
Clockwise (CW) rotation of the navigation dial advances the menu to the next item. If the menu is at the last item, SYSTEM INFO, return to Normal Operation Mode. Counter clockwise (CCW) rotation of the navigation dial sends the menu to the previous item. If the menu is at the first item, DISPLAY BRIGHTNESS, it will return to Normal Operation Mode. Pressing the navigation dial selects the current menu item. If there is no activity of the navigation dial for 60 seconds, the menu will automatically return to Normal Operation Mode.

Parameter Selection and Adjustment
CW rotation of the navigation dial INCREASES the selected parameter, or advances to the NEXT available value. CCW rotation of the navigation dial DECREASES the selected parameter, or goes back to the PREVIOUS value. Pressing the navigation dial selects the current parameter value. If there is no activity of the navigation dial for 60 seconds, it will return to Normal Operation Mode. If the BACK parameter is selected, it will return to the menu item selection.

Display Brightness
Display Brightness adjusts the brightness of the display backlight.

Display Scroll Mode
If enabled, the display will automatically advance to the next screen after the designated interval {5 SEC, 10 SEC}.

Display Sleep Mode
With Display Sleep Mode enabled, the Display will go to the lowest brightness setting (25%) after the designated time of inactivity of the Navigation Dial {30 SEC, 60 SEC}.
The display will return to the set brightness level upon entering Setup Mode, or UPS Mode.

Automatic Regulation Setup
Setup for Automatic Voltage Regulation parameters: Off, Standard Mode, Sensitive Mode.

Outlet Bank 3 Setup
Adjusts the battery charge threshold in which Outlet Bank 3 is shut off to conserve power for the critical loads connected to Outlet Bank 1 & 2. If set to OFF, Outlet Bank 3 will shut off immediately when the unit goes into UPS Mode.

Outlet Bank 4 Setup
Adjusts the battery charge threshold in which Outlet Bank 4 is shut off to conserve power for the critical loads connected to Outlet Bank 1 & 2. If set to OFF, Outlet Bank 4 will shut off immediately when the unit goes into UPS Mode.

External Battery
If using the external battery, BATT1500-EXT, set to YES.

IR1 and IR2 Control Setup
IR1 Control Setup is a two-step process in which the IR remote control signal is sampled, and tested by outputting the learned signal on the output jack.

IR Output Delay
IR Output Delay is the time delay before outputting the IR signals on the IR output jacks after the unit goes into UPS mode.
IR Output Delay time starts at 0 sec, incremented in 5 sec intervals, with a maximum value of 60 sec.

Setup Buzzer Mode
Change the UPS BUZZER MODE to set it to on or off.

UPS Test Mode
UPS Test Mode places the unit in UPS Mode temporarily to verify that the UPS inverter can adequately supply the connected load.

System Info
Displays Panamax MB1500-UPS, firmware revision, and IP address (with optional TCP/IP card installed).

Advanced Operation

A connection to a UPS can benefit projector bulbs, server based products, and units with volatile electronic memories found in but not limited to High-End Home Theater equipment. The MB1500 takes this to the next level with a number of features designed specifically for AC Power back up applications.

Critical Load Function
One of the user programmable settings in the MB1500 software is the Low Battery Non-Critical Load (NCL) Shutoff threshold. This sets the battery capacity level at the point where the NCL outlets are turned off and all remaining battery power is reserved for equipment plugged into the 4 critical load outlets. This value is stored internally by the UPS and is not dependent on having the software running on a computer.

Patent-pending Learning IR Control
The learning IR function lets you program the MB1500 to send standby or shut-down commands to components such as DLP ceiling projectors. If the power fails, the projector's lamps are turned off while the MB1500 continues providing battery power to the projector's cooling fan. Proper shutdown is ensured and expensive lamps are protected from damage.

NOTE: This function should only be used with discrete IR codes.
Programming an On/Off toggle command could result in the equipment being turned ON during a power failure!

IR Power Failure Operation
The MB1500 can learn two IR commands. The learned commands will be transmitted on both output jacks so you have the ability to control 2 different pieces of equipment or use a 2-step macro for one component.

1. After a power failure and the selected delay, the IR codes will be sent to both outputs. The IR LED's will flash once per second during the delay time and will stop flashing after the IR code is sent.

2. If the delay settings are the same for both IR1 and IR2, the IR2 code will be sent to both outputs 2 seconds after IR1.

3. The IR commands will also be transmitted immediately after the battery charge falls below the critical load battery threshold. This ensures that equipment will be shutdown properly if the MB1500's load level is extremely high and the backup time would be less than the selected IR output delay.

4. There is no IR output after the power is restored to the system.

To program IR output:
1. From the setup menu, turn the Menu Navigation Knob until IR1 Setup is displayed. Push the Menu Navigation Knob to select.

2. Turn the Menu Navigation Knob until IR1 Program is displayed.

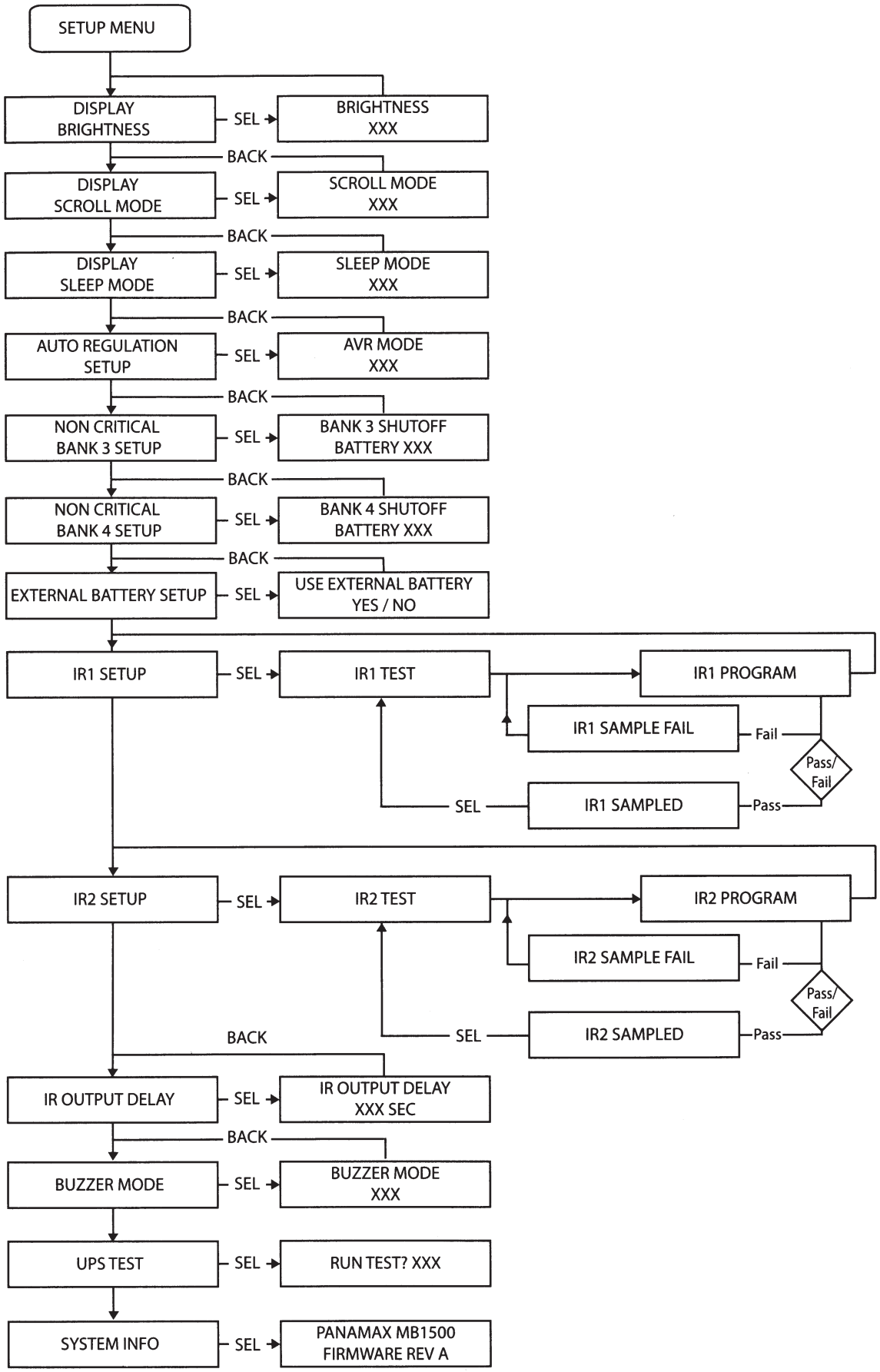
3. The screen will display the message "READY TO SAMPLE REMOTE". Press the button on the remote.

4. If the signal was learned, then the screen will display the message "IR1 SAMPLED" and advance to the "TEST IR" screen. Press the navigation knob to test.

5. If the signal was not learned, the screen will display the message "IR1 SAMPLE FAIL", then it will return to the IR1 Program screen. Repeat steps 3 and 4.

6. To program another IR device, from the Setup menu, turn the Menu Navigation Knob until IR2 Setup is displayed. Follow steps 3-5.

Setup Mode Flowchart



Communications Protocol

RS-232 Communications Protocol & Command Set

The RS-232 serial interface can be used in the following ways:

1. Initial system setup. An installer can use a notebook computer to set the variables within the Power Control software. Once the setup is completed, the notebook computer can be disconnected. All settings are stored in the MB1500.

2. Connection to a PC or Network: Functionality is very similar to a standard UPS with a PC. The MB1500 can provide continued power to maintain recording capabilities of any number of devices in the event of a black out or brown out. It is also capable of saving open documents and shutting down the PC during extended power failures. This requires a permanent RS-232 connection to the PC and having the Power Control software running in the background on the PC. (Windows based OS only; Mac Energy Saver software compatible)

3. Integration with sophisticated automation systems like AMX® and Crestron®: The serial communications command set and protocol is open and is published later in this manual. This information can be used by the automation system programmer for both MB1500 control by the automation system and reporting of power events by the MB1500 to the automation system.

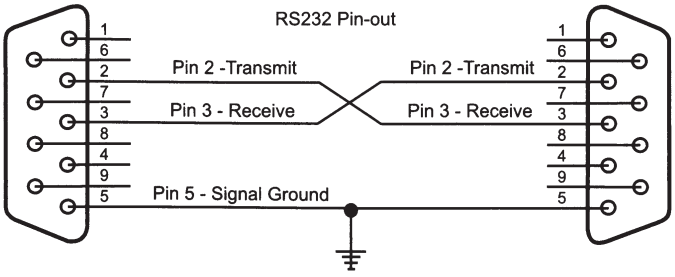
Command Set/Status Messaging

The following commands are applicable when communicating with your MB1500 using the included RS-232 interface. These commands can also be used when directly connecting to the device via Telnet protocol with the BlueBOLT-CV1 interface card (sold separately).

Connector Pin-out:

Pin 2, Transmit. The MB1500 transmits data on this pin.
Pin 3, Receive. The MB1500 receives data on this pin.
Pin 5, SG (signal ground).
Baud Rate: 9600 bps

Start Bits:	1
Data Bits:	8
Stop Bits:	1
Parity:	None
Flow Control:	None



Controller Commands

Commands and responses are in the form of ASCII character strings terminated with a carriage return (<CR>,0Ch, 13d). If the state variable LINEFEED MODE = ON, a linefeed character (<LF>, 0Ah, 10d) will follow the carriage return.

Incoming messages (to the MB1500) shall be terminated with one of the following characters: NUL (00h, 00d), carriage return, or line feed.

The MB1500 shall discard the incoming message under the following conditions: The message overruns the receiver buffer (32 characters). No terminating character (NUL, <CR>, <LF>) is received within 500ms of receipt of the last character. The following are commands sent by the controlling equipment to the MB1500.

NOTE: Responses are only transmitted automatically if unsolicited feedback is enabled (!SET_FEEDBACK)

ALL ON

Turns on all outlets. Turn on is immediate with no delay.

Send to UPS: !ALL_ON<CR>

If power is not switched off due to low battery conditions:

Action: Turn on Outlet Bank 1 & 2
Response from UPS: $BANK 1 = ON<CR>
$BANK 2 = ON<CR>

If UPS battery level > Shutoff Threshold

Action: Turn on Outlet Bank 3 & 4
Response from UPS: $BANK 3 = ON<CR>
$BANK 4 = ON<CR>

If UPS battery level < Shutoff Threshold

Action: Turn off Outlet Bank 3 & 4
Response from UPS: $BANK 3 = OFF<CR>
$BANK 4 = OFF<CR>
$BATTERY = charge%<CR>

Action: Activate Power Button
Response from UPS: $BUTTON = ON<CR>

ALL OFF

Turns off all outlets. Turn off is immediate with no delay.

Send to UPS: !ALL_OFF,
Action: All outlets will turn off
$BANK 1 = OFF<CR>
$BANK 2 = OFF<CR>
$BANK 3 = OFF<CR>
$BANK 4 = OFF<CR>
Response from UPS: $BUTTON = OFF<CR>

SWITCH OUTLET BANK
Turns a specific outlet bank on or off. Switching is immediate with no delay.

Send to UPS: !SWITCH bank state<CR>
bank = {1, 2, 3, 4,} state = {ON, OFF}
Example: !SWITCH 2 ON<CR> (turns on outlet bank 2)

If power to bank 1 or 2 is switched:

Action: Switch power to Outlet Bank 1 or 2
Response from UPS: $BANK 1 = state<CR>
or $BANK 2 = state<CR>

If power to bank 3 or 4 is switched AND battery level > Shutoff Threshold:

Action: Switch power to Outlet Bank 3 or 4
Response from UPS: $BANK 3 = state<CR>
$BANK 4 = state<CR>

If UPS battery level > Shutoff Threshold

Action: Turn on Outlet Bank 3 or 4
Response from UPS: $BANK 3 = ON<CR>
$BANK 4 = ON<CR>

If UPS battery level < Shutoff Threshold

Action: Turn off Outlet Bank 3 or 4
Response from UPS: $BANK 3 = OFF<CR>
$BANK 4 = ON<CR>
$BATTERY = charge%<CR>

If power button is OFF and state is changed to ON

Action: Activate Power Button
Response from UPS: $BUTTON = ON<CR>

If entered bank or state are invalid

Response from UPS: $INVALID_PARAMETER<CR>

SET BANK 3 & 4 THRESHOLD
Sets the battery level threshold in which Outlet bank 3 or 4 shuts off.

Send to UPS: !SET_BATTHRESH bank level<CR>
level is a number between 20 and 100 represents the battery charge level where Outlet Banks 3 and 4 are shut off to the reserve remaining battery charge for the equipment connected to Outlet Bank 1. level shall be rounded up to the nearest interval of 10.
bank is the outlet bank number (3 or 4) to set.

If level is >19 AND level <101

Action: SHUTOFF THRESHOLD will be set to a value between 20 and 100.
Response from UPS: $BTHRESH = level<CR>

If specified level is invalid

Action: No action will be taken
Response from UPS: $INVALID_PARAMETER<CR>

SET BUZZER MODE
With Buzzer Mode ON, the buzzer will sound during UPS Mode.

Send to UPS: !SET_BUZZER mode<CR>
mode = {ON, OFF}

If specified mode is invalid

Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$BUZZER = mode<CR>

SET AVR MODE
Sets AVR (Automatic Voltage Regulation) MODE.

Send to UPS: !SET_AVR mode<CR>
mode = {OFF, STANDARD, SENSITIVE}

If specified mode is invalid
Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$AVR = mode<CR>

SET FEEDBACK MODE
Sets the feedback mode to ON (unsolicited) or OFF (polled). When ON, a message will be sent to the controller every time the status of an input (i.e. button), output (i.e. outlet) or power state (i.e. overvoltage) changes. If feedback is OFF, the controller must request status with a query (see Queries section for more details).

Send to UPS: !SET_FEEDBACK mode<CR>
mode = {ON, OFF}

If specified mode is invalid

Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$FEEDBACK = mode<CR>

SET LINEFEED MODE
With LINEFEED MODE set, a linefeed character (<LF>, 10d, 0Ah) is appended to each response.

Send to UPS: !SET_LINEFEED mode<CR> mode = {ON, OFF}

If specified mode is invalid

Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$LINEFEED = mode<CR>

SET METER BRIGHTNESS
Sets the LCD display and outlet bank indicator brightness.

Send to UPS: !SET_BRIGHT xxx<CR>
xxx = {100, 075, 050, 025}

If specified brightness setting is invalid

Action: No action will be taken, UPS will request a valid brightness setting
Response from UPS: $INVALID_PARAMETER<CR>
$BRIGHTNESS = xxx<CR>

SET DISPLAY SCROLL MODE
Sets the LCD display SCROLL mode

Send to UPS: !SET_SCROLLMODE xxx<CR>
xxx = {5SEC, 10SEC, OFF}

If specified display scroll mode is invalid

Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$SCROLL_MODE = xxx<CR>

SET DISPLAY SLEEP MODE
Set the LCD display SLEEP mode

Send to UPS: !SET_SLEEPMODE xxx<CR>
xxx = {30SEC, 60SEC, OFF}

If specified display sleep mode is invalid

Action: No action will be taken, UPS will request a valid mode setting
Response from UPS: $INVALID_PARAMETER<CR>
$SLEEP_MODE = xxx<CR>

RESET FACTORY SETTINGS
Resets all of the custom configuration settings

Send to UPS: !RESET_ALL<CR>

Action: Sets all state variables to the default values
Response from UPS: $FACTORY SETTINGS RESTORED<CR>

POWER CYCLE COMMAND USING TELNET PROTOCOL WITH BlueBOLT-CV1
#CYCLE Turns an outlet off, then delays before turning it back on.

(NOTE - THIS COMMAND IS ONLY AVAILABLE WHEN USING THE TELNET PROTOCOL WITH THE BlueBOLT-CV1 INTERFACE. IT IS NOT SUPPORTED OVER SERIAL (RS-232) CONNECTION).

Send to UPS (CV-1 card): #CYCLE ***bank:delay***<CR>
bank = {1, 2, 3, 4}, delay = {1-65536}

Action: Turns off specified outlet bank them waits for ***delay*** seconds
and finally turns the outlet bank back on.

Response: There are no direct responses from this command, but the outlet status change messages will be sent as the outlet changes state:
$OUTLETn = status Where n = {1-8} Status = {ON, OFF}

SEND QUERIES IDENTIFY
Request that the unit identify itself.

Send Query to UPS: ?ID<CR>

Action: Model number and firmware revision will be provided.
Response: $PANAMAX<CR>
$MB1500<CR>
$FIRMWARE revision<CR>

OUTLET STATUS
Requests the on/off status of the outlet banks

Send Query to UPS: ?OUTLETSTAT<CR>
status = {ON, OFF}

Action: On/off status for outlets will be provided.

Response: $BANK1 = status<CR>
$BANK2 = status<CR>
$BANK3 = status<CR>
$BANK4 = status<CR>

POWER STATUS
Requests the status of the input voltage. The responses are the same as Power Fault Status Change.

Send Query to UPS: ?POWERSTAT<CR>

Action: Power status messages will be returned
Response:
Normal operation = $PWR = NORMAL<CR>
Overvoltage $PWR = OVERVOLTAGE<CR>
Undervoltage $PWR = UNDERVOLTAGE<CR>
Lost Power $PWR = LOST POWER<CR>
Test Mode $PWR = TEST<CR>

POWER
Requests the input and output voltages

Send Query to UPS: ?POWER<CR>

Action: Voltage status messages will be displayed
Response: $VOLTS_IN = vvv<CR>
$VOLTS_OUT = vvv<CR>
$WATTS = xxxx<CR>
$VA = xxxx<CR>

xxx is expressed in decimal format. If the value is less than 100, the hundreds digit is represented with a 0. For example a line voltage of 92VAC would be expressed as: $VOLTAGE = 092<CR>

LOAD LEVEL STATUS
Requests the load level, expressed as percentage of maximum.

Send Query to UPS: ?LOADSTAT<CR>

Action: Load level will be displayed
Response: $LOAD = xxx<CR>

xxx is the load level (percentage of maximum load) expressed in decimal format. If the value is less than 100, the hundreds digit is represented with a 0.

BATTERY LEVEL STATUS
Requests the battery level, expressed as a percentage of maximum (full charge).

Send Query to UPS: ?BATTERYSTAT<CR>

Action: Load level will be displayed
Response: $BATTERY = xxx<CR>

xxx is the battery charge level (percentage of maximum charge) expressed in decimal format. If the value is less than 100, the hundreds digit is represented with a 0.

LIST CONFIGURATION
Requests a list of all configurable parameters and current settings.

Send Query to UPS: ?LIST_CONFIG<CR>

Action: List of configurable parameters and current settings will be displayed.
Response: $BTHRESH = level<CR>
$BUZZER = mode<CR>
$AVR = mode<CR>
$FEEDBACK = mode<CR>
$LINEFEED = mode<CR>
$BRIGHTNESS = xxx<CR>
$SCROLL_MODE = xxx<CR>
$SLEEP_MODE = xxx<CR>

VOLTAGE
Requests the input voltage level.

Send Query to UPS: ? VOLTAGE <CR>

Response: $ VOLTS-IN = v v v <CR>
v v v is the input voltage.

CURRENT
Requests the output current.

Send Query to UPS: ? CURRENT <CR>

Action: send Query to UPS: ? CURRENT <CR>
Response: $ CURRENT = c c c <CR>
c c c is the output current in amps.

LIST OF ALL COMMANDS AND QUERIES

Send Query to UPS: ?HELP<CR>

Action: List of all commands and queries will be displayed

Response:

!ALL_ON<CR>
!ALL_OFF<CR>
!SWITCH<CR>
!SET_BATTHRESH<CR>
!SET_BUZZER<CR>
!SET_AVR<CR>
!SET_FEEDBACK<CR>
!SET_LINEFEED<CR>
!RESET_ALL<CR>
!SET_BRIGHT<CR>
!SET_SCROLLMODE<CR>
!SET_SLEEPMODE<CR>
?ID<CR>
?OUTLETSTAT<CR>
?POWERSTAT<CR>
?VOLTAGE<CR>
?LOADSTAT<CR>
?BATTERYSTAT<CR>
?LIST_CONFIG<CR>
?HELP<CR>

RESPONSES & MESSAGES OUTLET STATUS CHANGE CONDITION RESPONSE
Outlet Bank 1 changes state $BANK1 = status<CR>
Outlet Bank 2 changes state $BANK2 = status<CR>
Outlet Bank 3 changes state $BANK3 = status<CR>
Outlet Bank 4 changes state $BANK4 = status<CR>
status = {ON, OFF}

POWER BUTTON STATUS CHANGE CONDITION RESPONSE
Power Button changes ON/OFF status $BUTTON = status<CR>
status = {ON, OFF}

POWER FAULT STATUS CHANGE CONDITION RESPONSE

Overvoltage State	$PWR = OVERVOLTAGE<CR>
Undervoltage State	$PWR = UNDERVOLTAGE<CR>
Lost Power State	$PWR = LOST POWER<CR>
Test Mode	$PWR = TEST<CR>
Recovery Mode	$PWR = RECOVERY<CR>
Normal Operation Mode	$PWR = NORMAL<CR>
Low Battery	$LOWBAT<CR>
AVR Stage	$AVRSTATE = state<CR>
	state = {BOOST, BUCK}
Remaining Backup Time	$TIME = xxx<CR>
	xxx = backup time
Battery State	$BATTSTATE = xxx<CR>
	xxx = {CHARGE, DISCHARGE, FULL}

Power Control Software
Complete Instructions are available by clicking on Help on the Power Control Software welcome screen

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

(1) Reorient or relocate the receiving antenna.

(2) Increase the separation between the equipment and receiver.

(3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

(4) Consult the dealer or an experienced radio/TV technician for help. Any special accessories needed for compliance must be specified in the instruction.

CAUTION: A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used. Use only shielded cables to connect I/O devices to this equipment.

CAUTION: Any changes or modifications not expressly approved by the guarantee of this device could void the user's authority to operate the equipment.

Contacting Customer Service

Please contact Panamax Customer Service for information regarding battery replacement.

If you require technical support or equipment service, please contact the Panamax Service Department at 800-472-5555. You may also email info@Panamax.com.

All equipment being returned for repair must have a Return Authorization (RA) number. To get an RA number, please call the Panamax Service Department.

Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.

Warranty Information

LIMITED PRODUCT WARRANTY
Panamax warrants to the purchaser of this Panamax audio/video component style uninterruptible power supply, for a period of three (3) years from the date of purchase, that the unit shall be free of defects in design, material, or workmanship, and Panamax will repair or replace any defective unit.

You must notify Panamax within ten days of any event precipitating request for product replacement. A return authorization (RA) number must first be obtained from the Panamax Customer Relations Department at www.panamax.com before returning the protector to Panamax. Once you obtain an RA number, please mark the number on the bottom of the unit and pack it in a shipping carton/box with enough packing material to protect it during transit. The RA number must also be clearly marked on the outside of the carton. Ship the unit to Panamax. Please note that you are responsible for any and all charges related to shipping the unit to Panamax. Original purchase receipts must accompany any product return.

Upgrade Policy
Valid only in the United states and Canada
If your Panamax UPS sacrifices itself while protecting your connected equipment, you have an option to upgrade to the latest technology.
Please go to our web sites www.panamax.com or contact Customer Relations at 800-472-5555 for details.

2 Year Battery Warranty
Panamax warrants to the purchaser of this uninterruptible power supply for a period of two (2) years from the date of purchase, that the batteries shall be free of defects in design, material or workmanship, and Panamax will replace any defective battery.

Warning Notice
WARRANTY LIMITATION FOR INTERNET PURCHASERS
Panamax audio video products purchased through the Internet do not carry a valid Warranty unless purchased from an Authorized Panamax Internet Dealer! Authorized Panamax Audio Video Internet Dealers have sufficient expertise to insure warranty compliant installations. For a list of Authorized Panamax Audio Video Internet Dealers go to www.panamax.com.

CAUTION: Audio/Video, computer and/or telephone system installations can be very complex systems, which consist of many interconnected components. Due to the nature of electricity and surges, a single protector may not be able to completely protect complex installations. In those cases, a systematic approach using multiple protectors must be employed. Systematic protection requires professional design. AC power, satellite cables, CATV cables, A/V signal line cables or telephone/network lines entering the system must pass through a Panamax surge protector. For additional information on how to protect your system, please contact Panamax before connecting your equipment to the surge protector.

THE LIMITED PRODUCT WARRANTY IS THE ONLY WARRANTY PROVIDED WITH THIS PANAMAX PRODUCT AND ANY OTHER IMPLIED OR EXPRESSED WARRANTIES ARE NON-EXISTENT.

This warranty may not be modified except in writing, signed by an officer of the Panamax Corporation.

More detailed information is available at www.panamax.com. If you have any questions regarding these requirements, please contact Customer Relations.

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DIN-00004-A FRN 4/25/11

Power Control
Software User's Manual
Rev. 1.3

Overview

Power Control is easy to use software designed to facilitate the operation of the battery backup. It works with the battery backup to provide a complete power protection solution.

There are three main functions of this software:

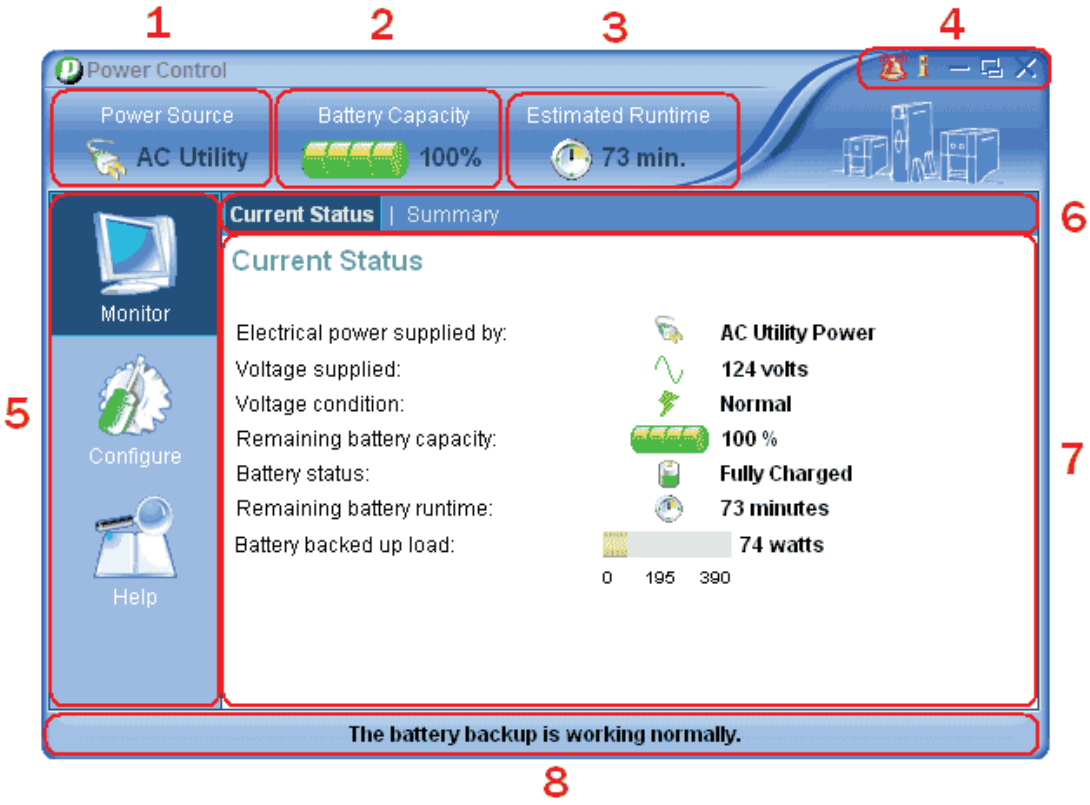
- Monitor the operation of the battery backup and AC utility power at all times.
- Customize your usage of the battery backup.
- Protect your system and prevent data loss when power problems occur.

Interface

Power Control's interface makes operation and configuration of the battery backup easy. The introduction places emphasis on the relationship between the icons and the interface.

Main screen

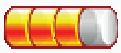
The main screen of Power Control shows the following:



1. **Power source:**
   This icon shows whether the current power source is AC utility power or battery power.

	The current power source is AC utility power.
	The current power source is battery power.
	The battery backup is not supplying power to your equipment*.
	Power Control can't detect the current power source due to a loss of communication*.

2. **Battery Capacity*:**
   This icon shows the remaining battery capacity.

	The battery is charging and shows the current charge as a percentage of its capacity.
	The battery backup is using its battery to supply power and is discharging.

3. **Estimated Runtime (or Time To Shutdown):**
   The remaining runtime the battery backup can supply (The time remaining until shutdown).

	The runtime of the battery backup* when the power source is AC utility power.
	The runtime of the battery backup, or the time until hibernation or shutdown begins, when the power source is battery.

4. **Special buttons:**

	An alarm has occurred due to abnormal events*.
	Displays this help document.
	Minimizes Power Control.
	Expands or reduces the size of the interface.
	Closes Power Control.

5. **Features column:**
   - Monitor: Click for the Monitor screen.
   - Configuration: Click for the Configuration screen.
   - Help: Click for the Help screen.
6. **Functions bar:**
   This bar displays different functions available for the selected feature.
7. **Workspace:**
   This area displays information specific to the selected feature.
8. **Status Bar**

   The battery backup is working normally: The battery backup is ready to supply power if a power problem occurs.

   Power Control Service is not ready: This message will appear when the Power Control service is not running.

   Unable to establish communication with battery backup: Power Control is unable to monitor your battery backup because communication has been lost.

*Note: This is not available for all battery backup models.

System Tray Icon

The system tray icon displays the status of the battery backup and provides a quick way to start the main user interface.

To display the current battery status place the cursor over the system tray icon.

- The system tray icon displays the status of the battery backup:

	The battery backup is working normally.
	The battery backup is in battery mode.
	Power Control is unable to connect your battery backup due to a loss of communication.

- When you move the mouse cursor over the icon, you can view the tip text. Tips show you whether the battery backup is charging, operating on battery power, communicating properly, or if it's fully charged.
  The available tips are as follows:
  - **Power Control**
    The battery backup is in a normal state.
  - **Power Control Service is not running**
    Power Control's service is not running.
  - **Computer unable to communicate with battery backup**
    The Power Control service can not establish communication with the battery backup. Check the communication data cable for connectivity.
  - **Battery backup charging - Power Control**
    The battery backup is charging when battery capacity is less than 100%.
  - **Battery backup is on battery power - runtime remains less than x minute**
    The battery backup has encountered a power problem and is using batteries to supply power The remaining runtime is also indicated.
- To launch the main user interface, double-click or right-click the icon and select Open Application.

Features

Power Control features and descriptions, with illustrations including explanations of the configurations.

This section explains the following:

- What every parameter or field means.
- How to view current information about your battery backup and adjust the configuration.
- How to execute a self-test to verify the battery backup works properly.

Monitor

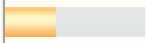
Current Status and **Summary** provide details and a summary of the status of the battery backup and historical events.

- **Current Status**
  Displays details of the battery backup and explains whether the status of the battery backup is normal or abnormal.
- **Summary**
  Displays power events and relevant figures such as the number of times, and length of time of each historical power event. It also displays the total cumulative value of power events.

Current Status

Field	Description	Icon	Status
Electrical power is being supplied by	The current power source is AC utility power.		AC Utility
	The current power source is battery power.		Battery
	The battery backup is not supplying power to your equipment.		None*

Voltage is being supplied*	The output voltage of the battery backup is supplied by either AC utility power or battery.		The output voltage of the battery backup in line mode.
			The output voltage of the battery backup in battery mode.
Voltage condition is*	This icon indicates loss of AC utility power such as a blackout.		Power Lost
	This icon indicates the input voltage is below normal.		Under Voltage
	This icon indicates the input voltage is above normal.		Over Voltage
	This icon indicates the voltage will be increased, while input voltage is low..		Voltage Boost*
	This icon indicates the voltage will be decreased, while input voltage is high.		Voltage Buck*
	The graph means the battery backup is working normally.		Normal
Remaining battery capacity is*	Shows the current percentage of remaining battery power.		The battery is charging and shows the current charge as a percentage of its capacity.
			The battery backup is using its battery to supply power and is discharging.

Battery is currently*	The battery is charged to 100% capacity.		Fully Charged
	The battery is charging to full capacity. This icon often appears after a power problem.		Charging
	The battery is discharging and the battery backup is supplying power to your computer.		Discharging
Remaining battery runtime*	How long the battery backup can last when it switches to battery mode due to power events.		The estimated minutes of battery runtime.
			The minutes of runtime remaining until shutdown in battery mode.
Battery backup load*	The output power of the battery backup.		The watts of battery backup output in line mode.
			The watts of battery backup output in battery mode.

*Note: This is not available for all battery backup models.

Summary

This screen lists major power events. A configurable duration option allows you to trace these events back 1 week, 4 weeks, 12 weeks or 24 weeks. These summary figures can help you analyze and review your power events. This screen displays the following:

- **Last Power Event**
  The time and type of the most recent event.
- **Power Condition Summary displays all of the different types of power events that caused the battery backup to stabilize voltage, or provide battery power to connected equipment.**

1. Power Outage: Blackout, indicates outage of AC utility power.

2. Under Voltage*: The AC utility power voltage is below the minimum** value of your configuration.

3. Over Voltage*: The AC utility power voltage is above the maximum** value of your configuration.

4. Buck*: The functionality that reduces the voltage close to normal voltage.

5. Boost*: The functionality that increases the voltage close to normal voltage.

*note: This is not available for all battery backup models.
**note: The maximum and minimum value can be found in Voltage

- **Display period**
  This option provides choices of time periods displayed by the summary.

Configuration

Power Control provides an interface to configure the settings and customize the usage of your backup battery.

Configuration has six screens:

- **Schedule***
  Configure schedules for automatic computer shutdown and restarts.
- **Notification**
  Configure notifications to inform you when power problems occur.
- **Runtime**
  Configure your preferred runtime.
- **Voltage***
  Display the voltage range and current voltage of the AC utility power.
- **Self-Test***
  Tests your battery backup and displays the latest test results.
- **Advanced**
  Configure NCL outlet shutoff when low battery capacity.

*Note: This is not available for all battery backup models.

Schedule

Power Control can be configured to automatically start up and shut down a connected computer and equipment. The setting is for a weekly schedule. A shut down must be scheduled prior to a restart.

- Column "**ON**" shows the Battery Backup turn on time.
- Column "**OFF**" shows the Battery Backup turn off time.
- You can choose the Battery Backup turn on time in the "**ON**" column.
- You can choose the Battery Backup turn off time in the "**OFF**" column.
- After selecting the time, you must check on the **(Act.)** option to activate the setting.
- Once you have selected the **(N.R)** option, the Battery Backup will not auto restart even if you have set a restart time.

Note: **(N.R)** stands for Never Restart.
Note: You have to manually restart the Battery Backup if the **(N.R)** button is selected.
Note: When you select a start up time you must also select a shut down time.

The space under the Schedule column is a description area that will show the schedule settings.

Note: This is not available for all battery backup models.

Notification

When a power event occurs, Power Control provides two ways to warn users:

1. **Software Sounds:**
   If Enable Power Control notification sounds is selected Power Control will generate audible sounds to warn users when a power event occurs.
2. **Battery Backup Alarms*:**
   The battery backup will provide an audible alarm.

   ・Enable alarms at all times.
   When a power event occurs the battery backup will beep.

   ・Disable alarms at all times.
   When a power event occurs the battery backup will not beep.

*Note: This is not available for all battery backup models.

Runtime

You can choose one of two battery runtime settings to fit your needs:

- **Keep Computer Running*:**
  This option is designed to keep your system running as long as possible on battery power.
- **Preserve Battery Power:**
  This option is designed to keep your system running on battery for the length of time you specify.

During a power failure, the system will shutdown or go into hibernation mode after a warning message signals your specified runtime is up.

Shutdown or hibernation will be invoked under this option if the battery backup runtime falls below 2 minutes.

Note: If hibernation is disabled or not available a shutdown will begin after the warning.

See also Low Runtime Remaining and Battery Backup Overloaded for more information.

*Note: This is not available for all battery backup models.

Voltage

This feature shows current AC power voltage and the normal voltage rating of your battery backup. There have AVR Mode and High/Low Voltage Transfer options to setup high/low input voltage of the battery backup. You can choose the options as below:

- **AVR Mode*:**
  Determines the AVR Mode which have Off、Standard and Sensitive three modes to adjust the battery backup high/low input voltage transfer. These modes have different range of high/low input voltage transfer respectively.
- **High/Low Voltage Transfer*:**
  Sets the high/low input voltage threshold. The battery backup will attempt to improve the utility voltage when this threshold is exceeded.

If AC utility voltage fluctuates beyond the acceptable range your battery backup will switch to battery mode to ensure your equipment receives safe voltage.

Note: Wider voltage range exposes your equipment to a greater risk of damage. We recommend caution while configuring the maximum and minimum value. Narrower voltage ranges will result in more frequent use of battery power.

*Note: This is not available for all battery backup models.

Self-Test

You can test to verify your battery backup will operate normally using the self-test process. At the Self-Test screen you can start the self-test. When you click on the

"Initiate Self-test" button the battery backup will switch to battery mode to supply power to your equipment which tests the functionality of the battery. When a self-test ends the result will be displayed on the screen.

If the self-test fails there may be some problems such as:

- The battery backup does not have enough power.
- The battery backup has less runtime than recommended settings.

Note: It is strongly recommended to run a self-test with some equipment plugged into the battery backup. This will improve the measurement of battery power and runtime. Therefore, after self-test, you can expect more precise figures of these two parameters.

Note: This is not available for all battery backup models.

Advanced

This feature show the Non-Critical Load(NCL) battery threshold of your battery backup. If the battery capacity goes below the setting range(NCL battery threshold) your battery backup will turn off NCL bank to preserve battery power.

Note: This is not available for all battery backup models.

Note: The amount of NCL bank depends on battery backup models.

Conditions

Some special conditions are explained here:

- **Battery Backup overloaded.**
- **Hibernation.**
- **Low runtime remaining.**
- **Standby mode.**
- **Glossary.**

Battery backup overloaded

Your battery backup can be overloaded when too much equipment is plugged into its outlets. An overloaded battery backup will not be able to supply enough power to

support your equipment if power is interrupted and may trip the circuit breaker. To ensure your battery backup has enough power to support your equipment, keep the load within the unit's rated capability.

Hibernation

When hibernation mode begins, your computer will save data and enter hibernation. When you "wake" it from this mode, all open files and running programs are restored.

- **Description:**
  Your computer will hibernate after a warning message appears for 10 seconds, based on your settings. If you cancel it you can continue using the computer until the next warning message appears. The next message will appear for 3 seconds and will recommend you immediately shutdown. If you abort this command your computer will be in danger of an immediate shutdown when battery power is critically low.
- **Special conditions**
  ・Hibernation or a shutdown will start in 5 seconds when communication is lost under battery mode.
  ・A shutdown will begin if hibernation is not available or enabled.

Note: Hibernation is not available on all computers.

Low Runtime Remaining

- In line mode, The Power Control will signal a warning of low runtime remaining when the battery backup can only supply 5 minutes or less of battery power. In order to eliminate this warning you can move some equipment from battery backed up outlets to surge protected outlets.
- In battery mode, when battery power remains less 2 minutes, the computer will warn to initiate a shutdown or hibernate. Your computer may shut down unexpectedly after 2 minutes if you ignore this warning.

*Note: power problem means a condition which causes the battery backup to use battery power, such as power outage, over voltage or under voltage.

Note: This is not available for all battery backup models.

Standby Mode

- **Standby Mode**
  When your computer is in standby mode your monitor and hard disk are turned off to save energy. In standby mode all unsaved data or files will be lost when an extended power problem occurs. We recommend that you save all open files to avoid data loss.

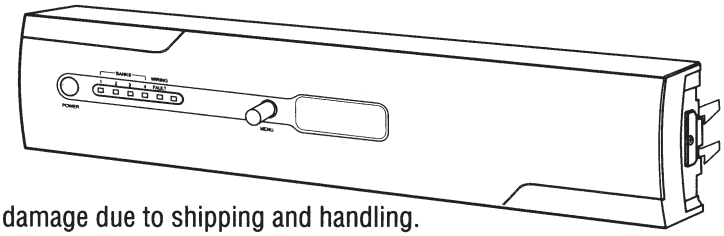
Glossary

- **AC Utility Power**
  The power supplied from a standard wall outlet.
- **Boost**
  The internal regulator of the battery backup raises the voltage when the AC utility power drops below a defined point.
- **Buck**
  The internal regulator of the battery backup lowers the voltage when the AC utility power rises above a defined point.
- **Capacity**
  The current level of battery charge.
- **Hibernation**
  The computer will save data and turn off your monitor and hard disk. When you "wake" it from this mode, all open files and running programs are restored.
- **Lost communication, Loss of communication**
  Power Control is unable to monitor the battery backup.
- **Notification**
  A message informing the user power event has occurred.
- **On line**
  Electricity is being supplied by the standard wall outlet.
- **Overload**
  Exceeding the rated capability of the battery backup by plugging in too many devices or too large of equipment. See also Battery Backup Overloaded.
- **Power failure, Power lost**
  AC utility power interruption such as a blackout.
- **Runtime**
  The length of time the battery backup supplies battery power for.
- **Standby mode**
  When your computer is in standby mode, your monitor and hard disk are turned off to save energy. In standby mode all unsaved data or files will be lost if an extended power problem occurs.

- **Schedule**
  Power Control can automatically start up and shut down a connected computer and equipment.
- **N.R., Never Restart**
  The Battery Backup will not auto restart if the N.R option is selected.
- **NCL., Non-Critical Load**
  The battery backup will turn off NCL outlet to preserve battery power when the battery capacity drops below a defined value.
- **AVR., Automatic Voltage Regulation**
  The battery backup will accord defined voltage range to transfer input voltage to adaptive voltage for output when input voltage out of defined range.

DO NOT DISCARD!

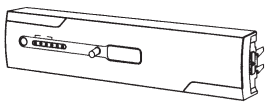
THIS PACK INCLUDES PRODUCT FACEPLATE



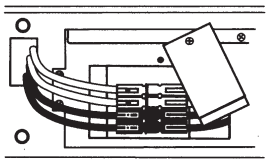
This front panel faceplate has been packed separately to protect it from damage due to shipping and handling.

MB1500/F1500-UPS FRONT PANEL INSTALLATION

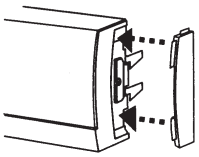
The MB1500/F1500-UPS is shipped with the front panel unattached to ensure that no damage is caused during shipping. Before the MB1500/F1500-UPS can be used, the front panel must be installed.



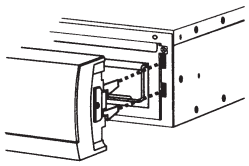
1. Remove front panel from shipping inserts



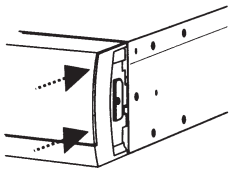
2. Verify that the battery connectors are connected, red-to-red, black-to-black. If not connected, perform steps 2 and 6 in the BATTERY REPLACEMENT section of the user manual.



3. (Optional) Install the supplied rubber end-caps to the sides of the front panel. Push the curved edge of the end-cap into the mating slots of the front panel.



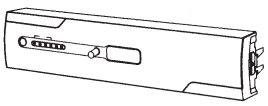
4. Carefully align the front panel connector and latches with the MB1500/F1500-UPS.



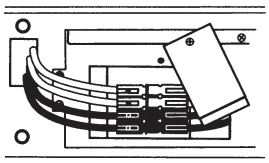
5. Gradually apply pressure to the left and right ends of the front panel until you hear the latches 'click'.

INSTALLATION DU PANNEAU AVANT MB1500/F1500-UPS

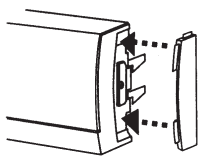
Le MB1500/F1500-UPS est livré avec le panneau avant non fixé pour garantir qu'il n'y ait aucun dommage pendant l'expédition. Avant de pouvoir utiliser le MB1500/F1500-UPS, le panneau avant doit être installé.



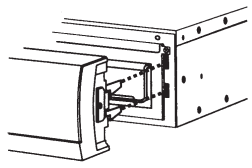
1. Retirer le panneau avant des emballages.



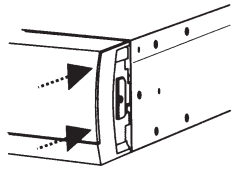
2. Vérifier que les raccords de la batterie sont connectés, rouge au rouge, noir au noir. S'ils ne sont pas connectés, réaliser les étapes 2 à 6 de la section REMPLACEMENT DE LA BATTERIE.



3. (Facultatif) Installer les capuchons en caoutchouc sur les côtés du panneau avant. Pousser le bord arrondi du capuchon dans les fentes d'appui du panneau avant.



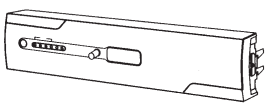
4. Aligner avec précaution le connecteur du panneau avant et les attaches avec le MB1500/F1500-UPS.



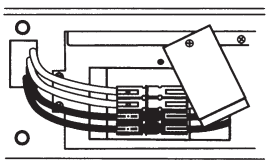
5. Appliquer progressivement une pression sur les extrémités gauche et droite du panneau avant jusqu'à ce que vous écoutiez les attaches émettre un clic .

INSTALACIÓN DEL PANEL FRONTAL DEL MB1500/F1500-UPS

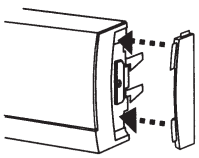
El MB1500/F1500-UPS se transporta con el panel frontal suelto a fin de asegurar que no se produzca daño alguno durante el transporte. Antes de utilizar el MB1500/F1500-UPS, es necesario instalar el panel frontal.



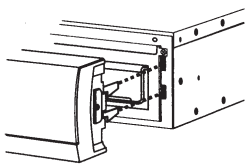
1. Quite el panel frontal de las inserciones del embalaje.



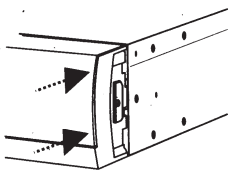
2. Verifique que los conectores de batería se encuentren conectados; los rojos con los rojos y los negros con los negros. Si no se encuentran conectados, realice los pasos 2 y 6 de la sección REEMPLAZO DE BATERÍA



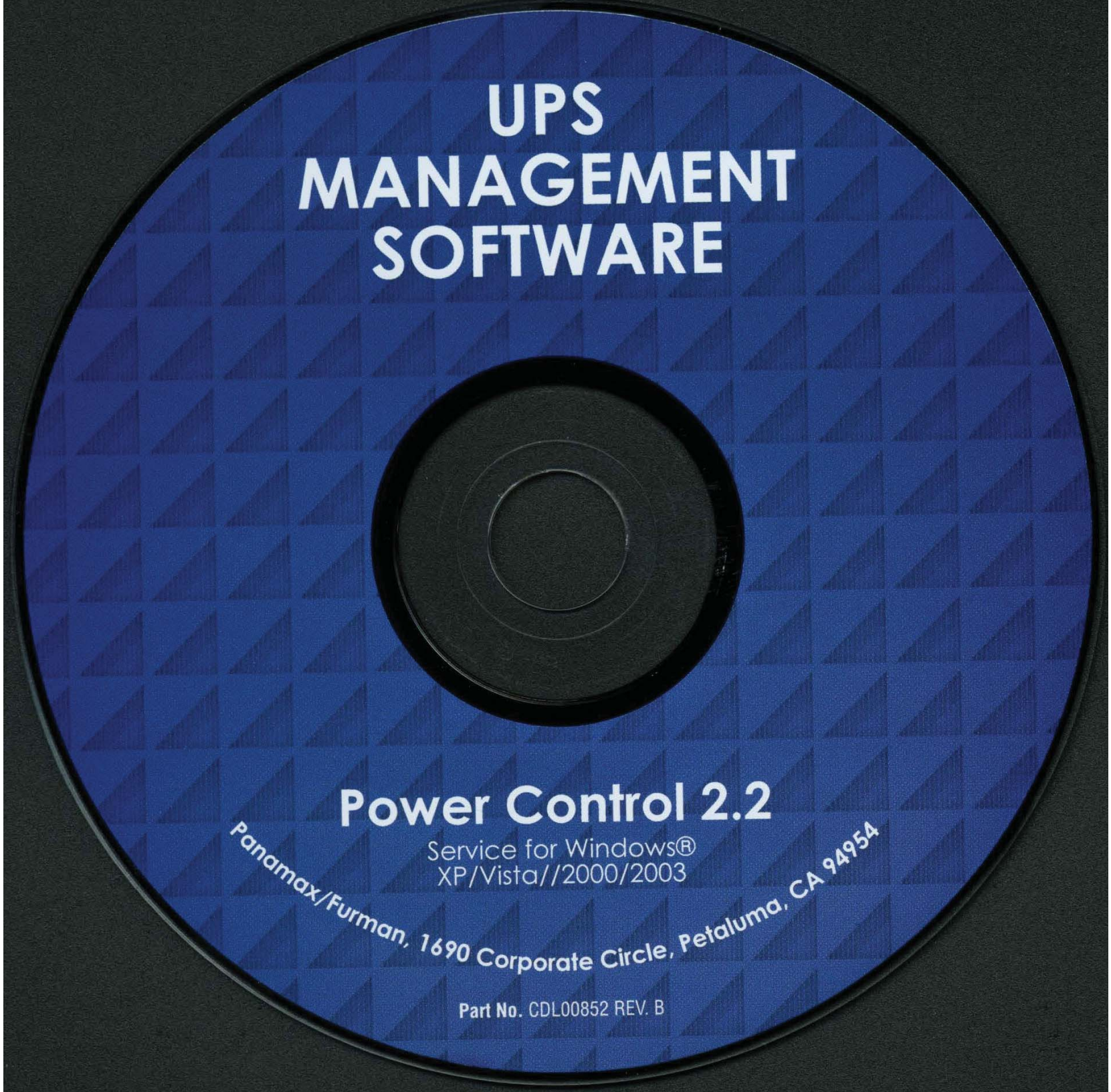
3. (Opcional) Instale las tapas de goma laterales suministradas a los costados del panel frontal. Coloque el borde curvado de la tapa lateral en las ranuras de unión del panel frontal.



4. Alinear cuidadosamente el conector del panel frontal y los pestillos con el MB1500 / F1500-UPS



5. Presione gradualmente en los extremos derecho e izquierdo del panel frontal hasta que oiga el "clic" de los pestillos.


UPS
MANAGEMENT
SOFTWARE
Power Control 2.2
Service for Windows®
XP/Vista//2000/2003
Panamax/Furman, 1690 Corporate Circle, Petaluma, CA 94954
Part No. CDL00852 REV. B

QUALITY ASSURANCE TEST

PCB Test

In Circuit Test ..... ***PASSED***

Automatic Testing Equipment ..... ***PASSED***

Safety Test

Dielectric Withstand Test ..... ***PASSED***

Grounding Test ..... ***PASSED***

Function Test

Communication Test ..... ***PASSED***

Visual Inspection/Cold Boot ..... ***PASSED***

AC Input Voltage ..... ***PASSED***

Open Power Device ..... ***PASSED***

Set Programming Mode ..... ***PASSED***

Verify UPS Model ..... ***PASSED***

Load Calibration ..... ***PASSED***

Overload Test ..... ***PASSED***

Device Outlet Power Test ..... ***PASSED***

Backup Mode Output Voltage Test ..... ***PASSED***

Low Line Transfer Test ..... ***PASSED***

High Line Transfer Test ..... ***PASSED***

AVR Boost Test ..... ***PASSED***

AVR Buck Test ..... ***PASSED***

Input/Output Wave-Form Check ..... ***PASSED***

Charger Test ..... ***PASSED***

Start Burn In Test ..... ***PASSED***

Exit Programming Mode ..... ***PASSED***

LED/Beeper Test ..... ***PASSED***

Inverter Output Frequency ..... ***PASSED***

End Burn In Test ..... ***PASSED***

Close Power Device ..... ***PASSED***

Turn UUT off ..... ***PASSED***

Overall Enclosure Examination ..... ***PASSED***

Product Information

Station ID: ***CP01D***

Operator: ***CP-0606141916***

Model number: ***MB1500***

PCB Serial number: [redacted]

Product Serial number:

Approved By:

QC
PASS