

OWNER'S OPERATING & MAINTENANCE MANUAL

CONTINUOUS POWER SYSTEM

DIGITAL TECHNOLOGY SP-MPL SERIES

Models: SP1250U-MPL

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INTRODUCTION

The following text is a complete product description, operating guide and basic maintenance summary of the CLARY **SP-MPL Series** Rackmount, digital, uninterruptible power system (UPS). This UPS provides a fully on-line sinewave, completely regenerated for typical non-linear loads.

The SP-MPL series has an output rating of 1250VA. The output power factor rating is 0.7, which means this unit can deliver up to 875 watts.

This instruction manual is provided with this unit to enhance your understanding of the product and its applications. Read this handbook carefully in the order it is presented prior to operating or servicing to avoid harm or damage to you or the unit. The UPS may be referred to in the text as the **SP-MPL Series**, Rackmount, etc.

IMPORTANT SAFETY INSTRUCTIONS, SAVE THESE INSTRUCTIONS

This manual contains important safety instructions that should be followed during installation and maintenance of the UPS and batteries.

Always operate the unit within the guidelines and specifications presented to maximize this system's efficiency and lifetime.

PRELIMINARY

THE SP-MPL SERIES RACKMOUNT

A digital on-line, sinewave UPS is the only total solution to virtually any power problem. It effectively provides *CONTINUOUS* POWER, by regenerating the incoming AC to DC and then back to a highly regulated AC generator. A battery can be provided at the input of the AC generator to support the load in case of utility interruption. The *CONTINUOUS* power concept is a step above the typical power conditioner, in that, power protection is maintained under any circumstance for the most complete and reliable service to the critical load. This *CONTINUOUS* power UPR is designed for the critical, *must-not-fail* applications.

The **Digital Technology (DT) Series** rackmount is engineered with the latest Insulated Gate Bipolar Transistor/Pulse Width Modulation (IGBT/PWM) technology for high efficiency and reliability. The uninterruptible power system (UPS) is the *ruggedized* version of the **DT** family of products. The electronics are completely governed by an on-board microprocessor. This allows for not only a digitally processed precision output waveform, but also provides for full interactive access and control for the user through an RS232 computer port.

Refer to the simplified block diagram, Figure 1, for system description. An AC source is fed through a double pole breaker for both Hot and Neutral protection. This breaker then feeds the power circuits and all internal microelectronics. Input voltage is monitored to allow for operation over a -25% to +35% range of nominal voltage for all load conditions. An input voltage variation outside this preset window will discontinue power to the critical load.

The input AC, when it is within this specified window is power factor corrected and then sent to the rectification stage. The DC rectifier stage provides both positive and negative voltages to a DC rail stage, which then feeds the digitally controlled inverter AC generator. The AC inverter generator in turn supplies the load. Normally the output inverter generator is at 60Hz independent of the input line frequency.

The **DT Series** on-line topology is unique to other on-line systems in that it is designed to meet the needs of all non-linear type loads while providing input power factor correction. Computers and telecommunications equipment, with their switching power supplies are considered a non-linear load, which can be very abusive to most power protection equipment and could decrease life expectancy. The **DT Series** is specially designed with a power factor corrected input to eliminate harmonics back into the power source as well as accept non-linear loads and protect them efficiently without any output waveform degradation common to other UPR designs.

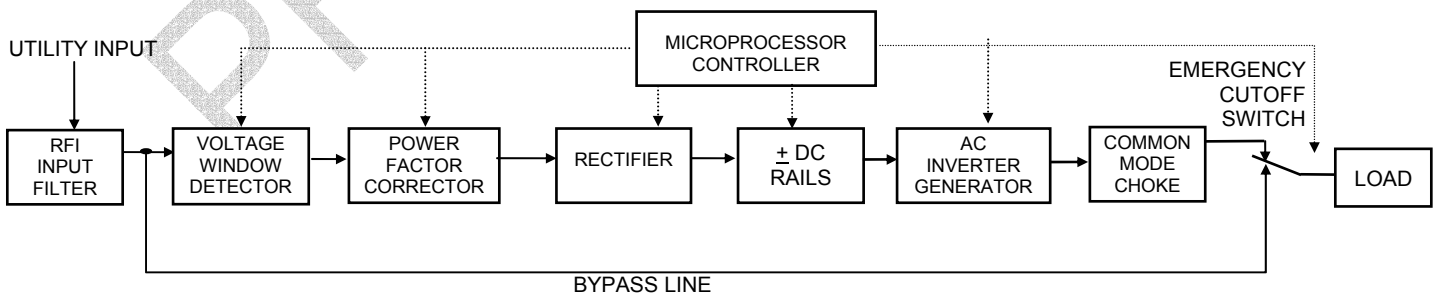


FIGURE 1: SP-MPL SERIES BLOCK DIAGRAM

UNPACKING THE UNIT

Your UPS has been carefully packaged to withstand most abuse sustained during shipment. If there is significant damage to the carton, or if there is any physical damage to this unit, report this to your carrier.

It is recommended to save the shipping container and packaging materials for future transporting, if necessary. Transporting the unit in other than supplied shipping materials can result in unit damage not covered by the manufacturer's warranty.

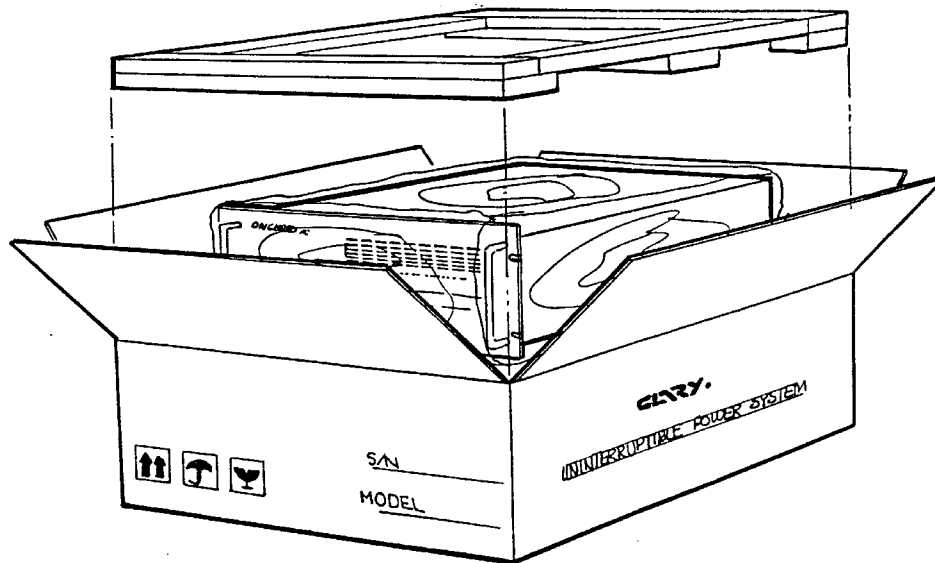
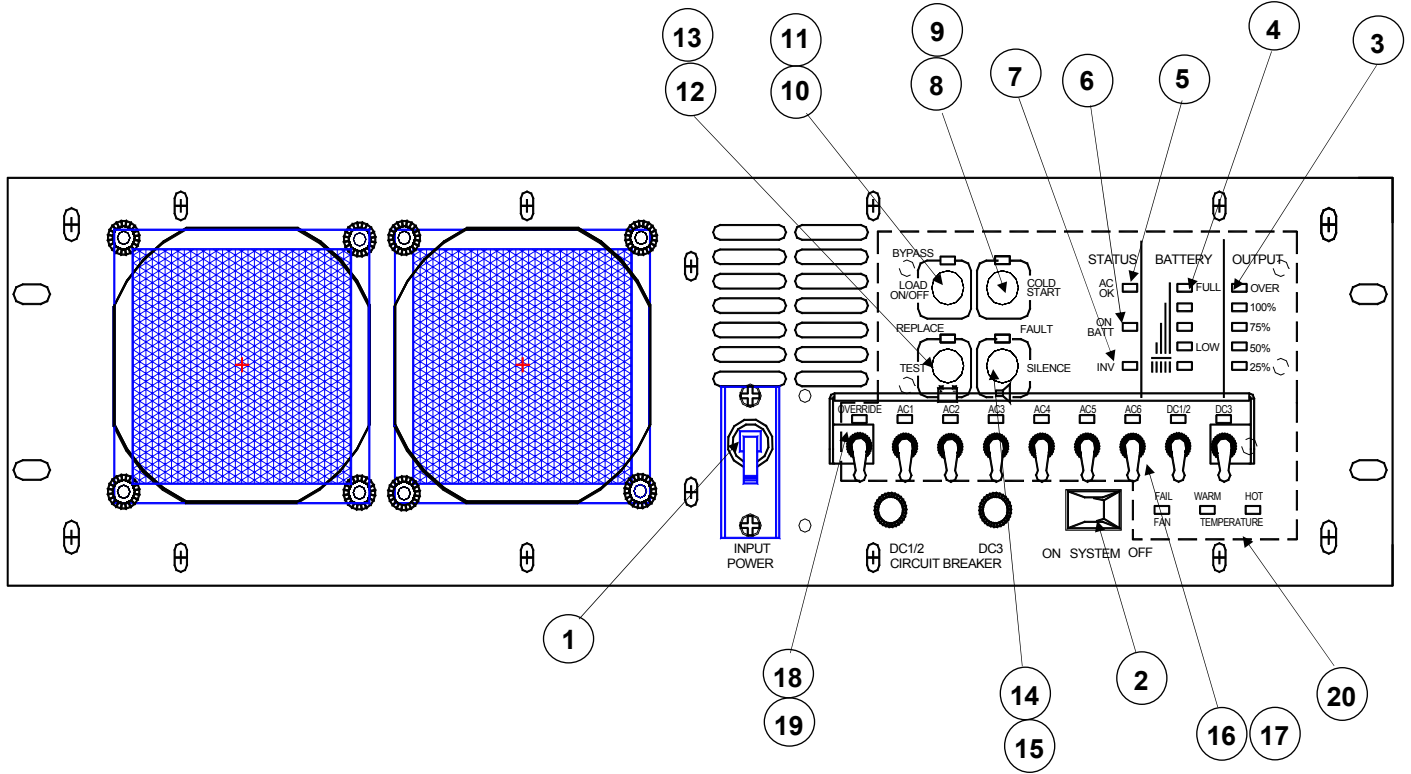


FIGURE 2: UNPACKING THE UNIT

PHYSICAL DESCRIPTION

The following illustrations depict the basic Rackmount **SP-MPL Series** unit. Reference the SUMMARY OF INDICATORS AND CONTROLS Section for a further description of the call-outs.

FIGURE 3: FRONT VIEW



- | | | | |
|----|----------------------|----|---|
| 1 | INPUT POWER SWITCH | 13 | REPLACE BATTERY LED |
| 2 | SYSTEM ON/OFF SWITCH | 14 | ALARM RESET SWITCH |
| 3 | LOAD LEDs | 15 | FAULT LED |
| 4 | BATTERY LEDs | 16 | LOAD SWITCHES AC1 – AC8 |
| 5 | AC IN OK LED | 17 | LOAD LEDs AC1 – AC8 |
| 6 | ON BATTERY LED | 18 | OVERRIDE SWITCH |
| 7 | INVERTER LED | 19 | OVERRIDE LED |
| 8 | COLD START SWITCH | 20 | FAN FAIL, TEMP WARM & HOT
NOT USED IN THIS MODEL |
| 9 | COLD START LED | | |
| 10 | LOAD ON/OFF SWITCH | | |
| 11 | BYPASS LED | | |
| 12 | BATTERY TEST SWITCH | | |

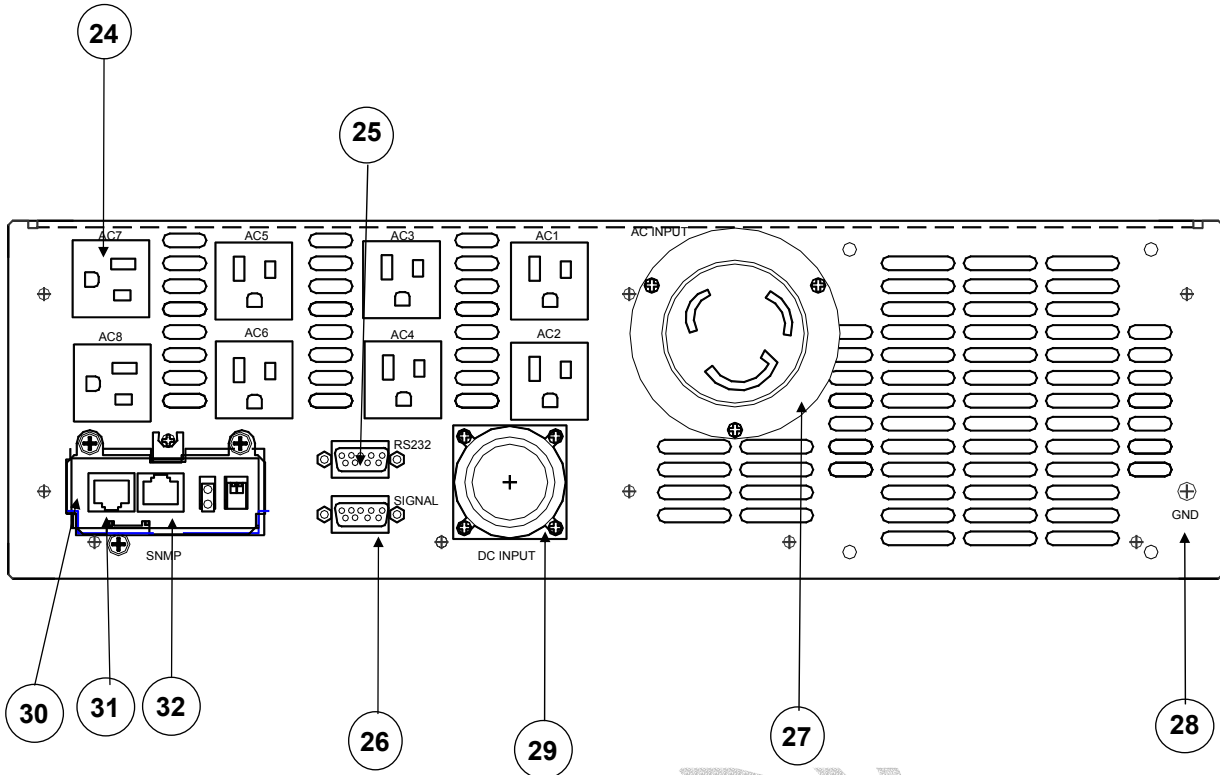


FIGURE 4: RACKMOUNT REAR VIEW

- | | | | |
|----|------------------|----|------------|
| 24 | OUTPUT- AC1-8 | 29 | DC INPUT |
| 25 | RS232 CONNECTOR | 30 | SNMP CARD |
| 26 | SIGNAL CONNECTOR | 31 | SNMP - LAN |
| 27 | AC INPUT | 32 | SNMP - COM |
| 28 | GROUND STUD | | |

SUMMARY OF INDICATORS AND CONTROLS

UPS FRONT PANEL

INPUT POWER SWITCH - This is system input AC power protection and interruption for both hot and neutral lines. This circuit breaker is rated at 20A.

SYSTEM ON/OFF SWITCH - This is system input enable switch. This switch is used to power down the system. This switch must be in the ON position in order to start the UPR.

LOAD LEDs - Four green L.E.D.s and one red OVERLOAD L.E.D. that illuminate to update status of the amount of load the INVERTER is powering at the UPS system output. Each green L.E.D. represents approximately 25% of full load. As more load is added to the UPS, the L.E.D.s will sequentially turn "ON" until the red L.E.D. comes "ON". This indicates an OVERLOAD situation and the system will discontinue operation shortly.

BATTERY LEDs - Four green L.E.D.s and one green LOW BATTERY L.E.D. that illuminate to update status of the battery energy available during a power outage. Each green L.E.D. represents approximately 20% of battery reserve power available. As battery discharge continues, the L.E.D.s will sequentially turn "OFF" until the last L.E.D. starts to flash. This indicates a LOW BATTERY situation and the system will discontinue operation shortly. Once utility power is returned to the system, this bar graph will show an approximate battery state as it reaches full charge. The top L.E.D. indicates charger on/off when unit running on AC. L.E.D. ON Charger OFF, L.E.D. OFF Charger ON.

AC IN OK LED - A green L.E.D. that is illuminated when the AC input is within operating limits.

ON BATTERY LED - A red L.E.D. that is illuminated when the AC input is interrupted to the power electronics either externally or internally from the microprocessor due to an out-of-range situation. The output load is then supported entirely by battery energy through INVERTER operation.

INVERTER LED - A green L.E.D. that illuminates when the INVERTER generator is operating.

COLD START SWITCH - This is a momentary, two position push button switch. If no AC utility voltage is available, it may still be a requirement to initialize some equipment. When this switch is pressed in for at least two seconds, the system will start up on battery power. The SYSTEM ON/OFF Switch must be in the ON position for this function to operate. The green L.E.D. above this switch will light only while the switch is held in.

COLD START LED - A green L.E.D. that illuminates when the cold start switch is pressed.

LOAD ON/OFF SWITCH - Push button switch that enables output circuits when turned ON, disables output circuits when turned OFF.

BYPASS LED - A red L.E.D. above the LOAD ON/OFF SWITCH will light to indicate when the system output is operating in the filtered, emergency BYPASS mode.

BATTERY TEST SWITCH - This is a momentary, two position push button switch. Battery condition is vital to the UPS performance, particularly during a power outage. During normal operation with inverter ON, load applied to the unit and the Battery Bar Graph showing the battery at a full charge, this function switch may be used. By pressing this switch in for at least two seconds, a battery acceptance diagnostic will be run by the internal microprocessor.

REPLACE BATTERY LED - After the battery acceptance diagnostic test has discovered that the batteries are excessively fatigued, the red L.E.D. above this switch will light advising the user that the Batteries are bad and should be replaced or battery module is not connected to the UPS. During battery test this LED will flash red for approx. 30 seconds.

ALARM RESET SWITCH - This is a momentary, two position push button switch. During a system *FAULT* or power failure, an audible alarm will be present. Once this switch is pressed in for at least two seconds, the audible alarm will be silenced. The L.E.D. above the switch will remain unchanged.

FAULT LED - If a *FAULT* condition occurs, this red L.E.D. will illuminate.

LOAD SWITCHES AC1 - AC8 – Locking switches that turn on and off corresponding AC outputs.

LOAD LEDS AC1 - AC8 – Green illumination indicates load is available at corresponding outputs.

OVERRIDE SWITCH – When this locking switch is turned on, load switches (Loads 1-8) can only be activated manually. You will not be allowed to control the load switches through the SNMP with this switch activated.

OVERRIDE LED – Red illumination indicates override switch is turned on.

UPS REAR PANEL

AC OUTPUTS – Eight(8) NEMA 5-15R connectors provided for 120VAC output. Continuous power is provided here and is monitored by the LOAD L.E.D.s as long as the INVERTER is functioning. The Loads ON/OFF Switch and the corresponding Load Switches on the Front panel must be enabled for power to be present at AC1-AC8.

RS232 CONNECTOR - DB-9 subminiature female connector provided for intelligent computer monitoring systems. See SIGNALS AND INTERFACING Section for specific pin-outs.

SIGNAL CONNECTOR - DB-9 subminiature female connector provided for open collector alarms. See SIGNALS AND INTERFACING Section for specific pin-outs.

INPUT – One L5-20P inlet connector for AC input.

GROUND - A 10-32 x 3/4 threaded stud for system rack grounding.

SNMP INTERFACE - An add-on card that provides Simple Network Management Protocol (SNMP) access to the UPR controller via a RJ45 connector (LAN). The second RJ45 connector (RS232) provides a second RS232 port to the controller.

DC INPUT – A circular locking connector provided for battery power to the UPS. This UPS uses a 96V System.



NOTE – For safety purposes, the DC INPUT connector is tied into an interlock system which ensures that if the connector is disconnected, the unit will discontinue operation.

SPECIFICATIONS (Preliminary)

ELECTRICAL	
Input	
Voltage	120VAC +35%, -20%
Frequency	60Hz or 50Hz
Current	20A Max @ 120VAC
AC Output	
Voltage(AC)	120VAC \pm 3%
Current, Watts	1250VA(875W) @ 0.7pf
Frequency	60Hz or 50Hz \pm .25% (software selectable)
Crest Factor Ratio (Non-linear load and less than 5% THD) Typical	@50% Load Up to 4.8:1 @75% Load Up to 3.2:1 @100% Load Up to 2.4:1
Harmonic Distortion	5% Max. THD
Dynamic Response	\pm 4% for 100% Step Load Change, 0.5 Millisecond Recovery Time
Overload	110% for 10 Minutes; 200% for 50 milliseconds
Efficiency (UPS)	85%
Load Power Factor	0.7
UPS Protection	Input and Output Short Circuit; Input and Output Overload;
CONTROLS AND INDICATORS	
Visual Indicators	Battery Level, Load Level, AC Input, Inverter, Battery On, Bypass On, Cold Start, Fault, Replace Battery
Audible Alarms	Utility Interrupt, Inverter Failure, Overload, Low Battery, fan fail, warm and overtemp.
Intelligent Computer Interface (DB-25F)	Full Interactive, Remote Computer Monitoring and Control of UPS Functions (RS232 Interface); Open-collector Alarm Signals interface to control panel
DESIGN	
Standard Features	Regenerative™ On-Line, Sinewave Inverter Powers Load Continuously Extended Brownout Protection, High Frequency, Digitally Controlled IGBT PWM, Power Factor Corrected on Input, Designed for Non-linear Loads, Continuous Operation on +35% Line
ENVIRONMENTAL	
Operating Temperature	32°F to 122°F (0°C to 60°C)
Humidity	0% to 95% non-condensing
Altitude	Sea Level to 10,000 Feet
MECHANICAL	
Input	L5-30P Inlet connector
AC Output (AC1-AC8)	(8) NEMA 5-15R connectors
Overall Dimensions L x H x W	18.5 in x 5.25 in x 19 in.
Weight	40lb. (18.2 kg)
Cooling	Low Velocity, Forced Air

INSTALLATION

This Rackmount system is designed for installation in a protected environment. This system may be installed in a 19" rack system. Some important points to consider when positioning a unit for operation:

- A 20A (preferably dedicated) outlet is accessible for the power connection to the unit. It is not recommended to modify the power cord in any way nor should an extension cord of any kind be used. **Never use a surge protected device on the output of this system.**
- The cord paths in the system installation should remain clear of foot traffic or anything else that may disturb permanent connection.
- The installation site should maintain an ambient air temperature of less than 140°F (60°C). When the environment for the system remains cooler during operation, there is less stress on the batteries and the internal electronics.
- The air inlets, vents and fan should not be obstructed or blocked in any way. The more breathing space the system has, the cooler it operates.
- The air should remain free from excessive dust and chemical fumes.
- The front panel is designed to fit in a standard 19" rack. This panel fills a 5.25 inch (3U) slot. Guide Rails or slides are recommended to support the unit's mainframe. This system can weigh in excess of 40 pounds, therefore front panel mounting is not intended to support the entire unit. The system comes with pre-tapped aluminum slide bars to accept Jonathan QD-145 slides. Separate shims are included for correct slide bar spacing if the unit is installed in a DTC-2 (C3) rack.

Once a location has been selected and the unit is installed, it is ready for operation.

Once the unit is installed into a rack, small adjustments may be required for the front panel to screw mount into the frame. Refer to the following steps and diagram to adjust the panel to the desired position:

- 1) Loosen, but do not remove, all screws holding in the front panel.
- 2) Loosen, but do not remove, the four acorn nuts on the handles.
- 3) The entire front panel should now have limited play for exact positioning.
- 4) Install the four panel mounting screws in front panel slots into the rack enclosure.
- 5) Retighten all screws and nuts that you have loosened.

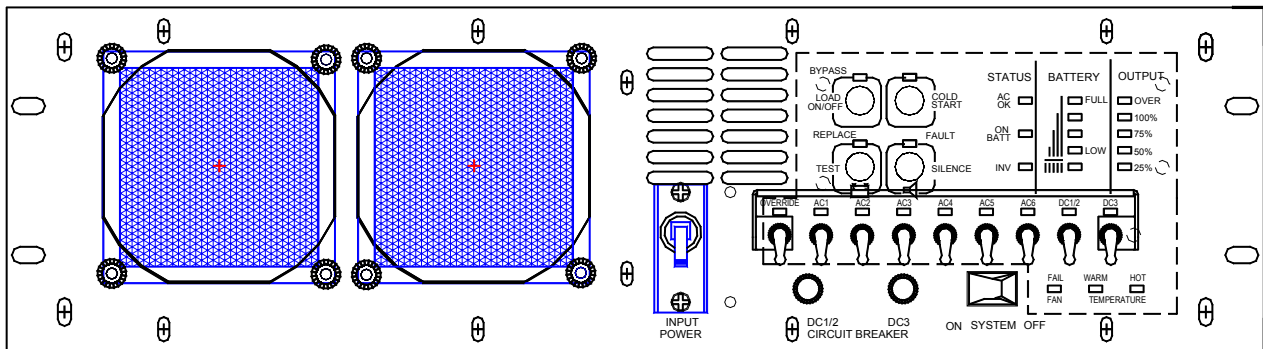


FIGURE 6: FRONT PANEL ADJUSTMENT

OPERATION

- ⇒ Be sure the power cord is plugged into an appropriately rated outlet.
- ⇒ Activate the **INPUT ON/OFF** Circuit Breaker to the “ON” position on the UPS.
- ⇒ Activate the **SYSTEM ON/OFF** Switch to the “ON” position on the UPS.
- ⇒ The system will go through a diagnostic test routine.
- ⇒ The green **AC IN OK** L.E.D. will flash several times before it illuminates solid.
- ⇒ The audible alarm will sound a short burst.
- ⇒ The **AC INV** L.E.D. will illuminate and the loads AC1-8 will illuminate.(if Load switches are in the “ON” position).

Activate the **SYSTEM ON/OFF** Switch to the “OFF” position to discontinue system operation.

Turn off the devices you wish to plug into the UPS. Connect them to the output at the rear of the unit. Do not exceed the output ratings of the system.

- ⇒ Activate the **SYSTEM ON/OFF** Switch to the “ON” position.
- ⇒ The system will go through a diagnostic test routine and test all the L.E.D.s.
- ⇒ Push and hold in the **LOAD ON/OFF** Switch for at least two seconds.
- ⇒ The **AC OUTPUT** L.E.D. will illuminate indicating output power is available at the rear panel outlets.
- ⇒ Turn “ON” the Load Switches on the Control Panel.
- ⇒ Turn “ON” each of your devices.
- ⇒ Some of the four green L.E.D. **LOAD** indicators should illuminate. The amount of load is determined by the actual number of indicators lit.

Each L.E.D. signifies approximately 25% of load capacity. If all four L.E.D.s illuminate, full load has been achieved. If the red light illuminates, an **OVERLOAD** condition is present. If this situation continues beyond three seconds, the unit will automatically shut off, discontinuing all operation including the output to the load. The red **FAULT** L.E.D. will light and a continuous alarm will be heard. The load must be reduced and the **SYSTEM ON/OFF** Switch will have to be reset in order to return to normal operation.

If the system overheats or the **INVERTER** should fail, the unit automatically transfers power to the **BYPASS** line to maintain uninterrupted power to the load. The red **BYPASS** L.E.D., above the **LOAD ON/OFF** Switch, will light. A continuous alarm will sound and the red **FAULT** L.E.D. will illuminate.

To escape this condition, the problem must first be corrected, then the **SYSTEM ON/OFF** Switch must be reset.

The **ALARM RESET** Switch on the front panel of the UPS can be used at any time to silence the audible alarm. This switch must be held in for at least two seconds before the alarm will quiet. The **FAULT** L.E.D. above this switch will remain unchanged while operating this switch.

Battery Operation after AC Start-Up:

Turn Off the Circuit Breaker on the Front Panel of the UPS.

The AC ON light will flash at two to three second intervals. Within 5 seconds, the audible alarm will sound at half-second intervals.

Push and hold in the ALARM SILENT/TEST switch until the audible alarm is inhibited.

If operation were to continue in this mode, the battery level meter would start to turn OFF, one light at a time starting from the top. Once the last light is left and the preprogrammed battery availability time (usually about 2 minutes) is reached, the alarm will sound in a constant tone. Had the alarm been previously silenced, it would still re-enable to alert the user of limited operation. This alarm can also be silenced as before. If the unit is allowed to operate further, it will time out and shut off completely. If power were to return, the unit will automatically restart and return to the condition it was in at the moment it went into Battery Mode.

DC Start Operation (Cold Start)

If no utility power is available at the time backup power is required, the unit may be started to accomplish abbreviated tasks. The limitations of the battery prevent extended operations at full load.

Position the System Power Switch to the ON position.

Push and hold in the cold start switch until the audible alarm beeps.

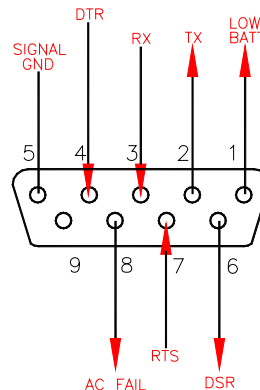
The unit will start up similarly to normal AC start-up except the AC IN LED will continue to flash. The LOAD outputs will come up in the off mode when using the cold start feature.

SIGNALS AND INTERFACING

This system is designed to be compatible with most sophisticated operating systems when they feature a UPS monitoring function. These signals are made available through the DB-9 subminiature female connector at the rear of the UPS. The communications connector at the rear of the UPS is for a RS232 interface connection. The Signal connector features open-collector alarm signals. Closing the points between pins 6 and 8 while running on battery will shutdown the UPS. Below is a diagram of the signal jacks and their pin-outs:

RS232 CONNECTOR

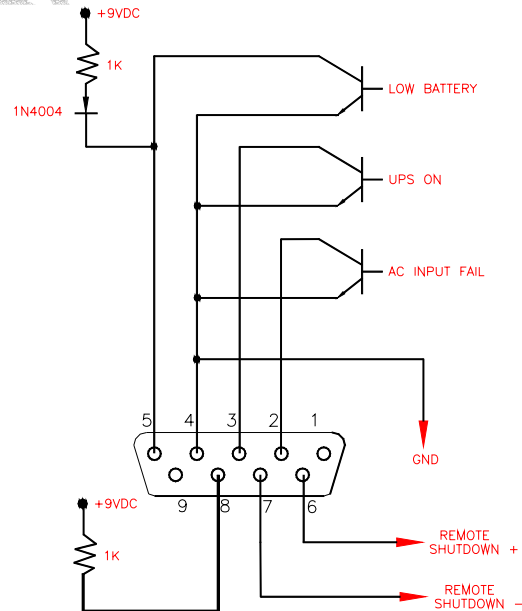
- 1- LOW BATTERY/
- 2- TX
- 3- RX
- 4- DTR
- 5- GROUND
- 6- DSR
- 7- RTS
- 8- AC FAIL/



NOTE: Pins 4 and 7 enable relays on the Interface board that allow communications directly with the UPS from the RS232 Connector. When relays are enabled, SNMP is disabled.

SIGNAL CONNECTOR

- 2- AC FAIL
- 3- UPS ON
- 4- GROUND
- 5- LOW BATTERY
- 6- REMOTE SHUTDOWN+
- 7- REMOTE SHUTDOWN (RETURN)
- 8- +9VDC



Output Control

The SP-MPL series has eight AC outlets (AC1-AC8). The outlets can be controlled individually by the operator either locally via the front panel switches or remotely thru the SNMP card.

To remotely control the eight AC outlets you must first set up and connect to the SNMP card. See instructions on SNMP/WEB Agent disk for setup.

UPS Status	On-Line
Current Utility Line Voltage (Volt)	118.0
Output Voltage (Volt)	120.0
Output Load (%)	0
Battery Capacity Remaining (%)	0
UPS Temperature (°C)	27.0
Input Frequency (Hertz)	60.0
UPS Next Off Time (hh:mm dd/mm/yyyy)	
UPS Next On Time (hh:mm dd/mm/yyyy)	
USHA System Date (dd/mm/yyyy)	14/07/2005
USHA System Time (hh:mm:ss)	00:32:08
USHA Up Time (days hh:mm:ss)	0day 00:40:36

Once connected, Click on the NPM icon.



The NPM Status screen allows you to monitor the status of the eight outlets.

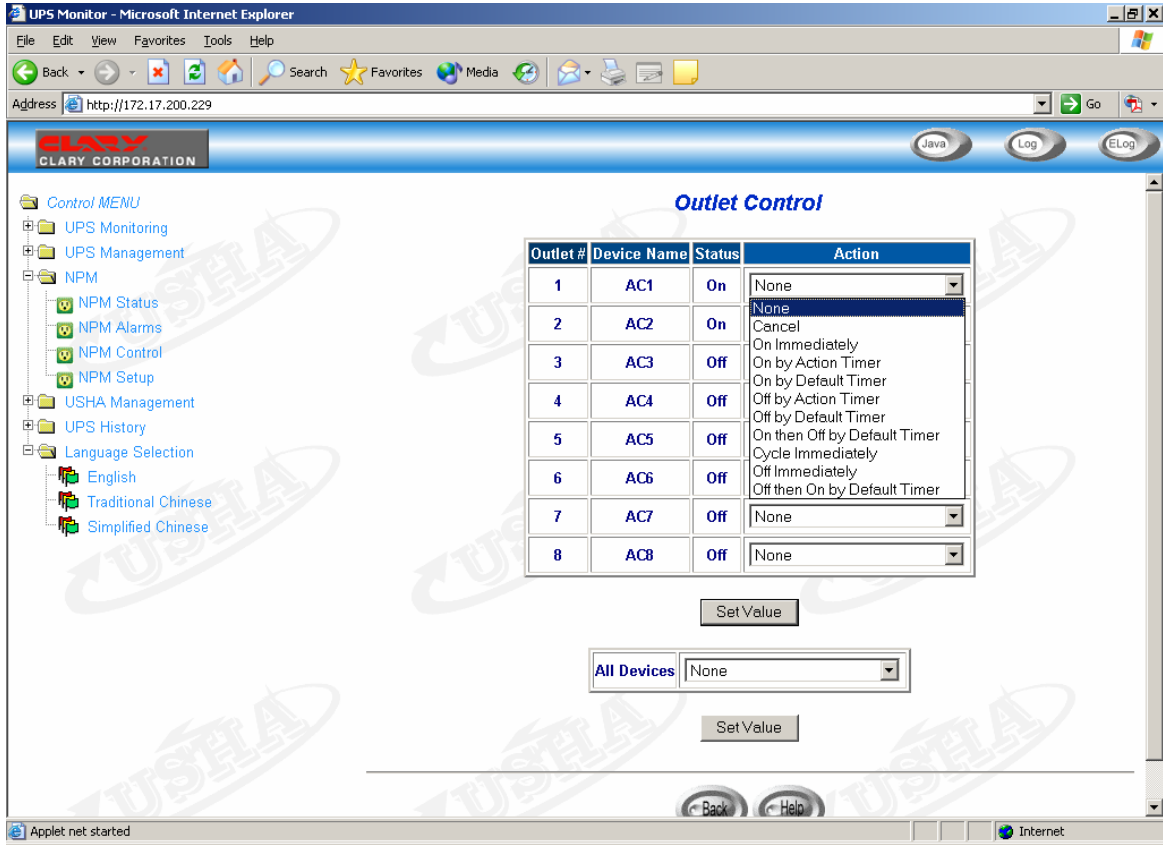
The screenshot shows a web browser window titled "UPS Monitor - Microsoft Internet Explorer" with the address "http://172.17.200.229". The page content includes a navigation menu on the left, a main title "NPM Configuration", and a sub-title "Outlets Setup". A table is displayed with the following data:

Index	Outlet Name	Action Timer (seconds)	Up Timer (seconds)	Down Timer (seconds)	MinDown Timer (seconds)	AC On Timer (seconds)	AC Off Timer (seconds)
1	AC1	0	0	0	0	0	0
2	AC2	0	0	0	0	0	0
3	AC3	0	0	0	0	0	0
4	AC4	0	0	0	0	0	0
5	AC5	0	0	0	0	0	0
6	AC6	0	0	0	0	0	0
7	AC7	0	0	0	0	0	0
8	AC8	0	0	0	0	0	0

Below the table is a "Set Value" button and "Back" and "Help" buttons. The browser status bar at the bottom shows "Applet net started" and "Internet".

The NPM Setup page allows you to setup the various settings for each outlet. From this page you can rename each outlet as you wish.

The configuration page allows the user to set the time for the Action timer and the default timer.



The NPM Control screen allows you to control each individual outlet or all at once. You can turn On or Off the loads from this page. Also available is the feature to cycle each load. The timers are set in the NPM Setup page.

The Battery Module.

The SP1250U and SP1500U batteries are comprised of one or more strings of 6 individual 12V batteries connected in series for a total string voltage of 72V DC nominal. The SP2000U-MPL batteries are comprised of one or more strings of 8 individual 12V batteries connected in series for a total string of 96V DC nominal.

The batteries are extreme temperature, deep cycle, AGM/VRLA (Absorbed Glass Mat/ Valve Regulated Lead Acid) batteries that have been field proven and tested by the U.S. military. The OutPost™ batteries supplied by Clary Corporation are certified to operate at extreme temperatures from -40°C to +74°C.

The batteries are provided with appropriate interconnect wiring harness. Optional battery mounting trays and brackets are available.

The interconnect cable connects to the base module via a quick-release circular connector.

The UPS module includes a charger that replenishes the Battery Pack whenever possible and required. This charger operates with a maximum charging current of 0.6A at 96V. An optional “Fast Charger” module plugs into the UPS module to increase the charging current to over 3.5A.

CLARY OutPost™ BATTERIES*

Clary Part. No.*	Volts/ A-hrs.	Estimated Runtime (Per set @ 77°F / 25°C) (New Batteries, fully charged)				Unit Weight Per Battery	Overall Dimensions Per Battery Inches (cm.)		
		300 Watts	700 Watts	1050 Watts	1400 Watts		Length L	Width W	Height H
OP96C (Set of 8 Batteries)	12 VDC/ 41 AH	8.5 Hrs.**	3.5 Hrs.**	1.5 Hrs.**	1.0 Hrs.**	29 (13.2)	7.68 (19.6)	5.15 (13.1)	7.9 (20.1)

***OP96X battery sets include eight (8) batteries per set. Wired in series, each set provides 96 VDC.**

****Actual times may vary. Runtimes are dependent on many factors.**

Lower/Higher AH capacity batteries, allowing less or more runtime, are available on special order. Call factory for more information.

CARE & MAINTENANCE

This system is designed to be maintenance-free. It can be cleaned with a damp cloth or non-abrasive cleanser.

Be sure filters and vents are kept free from accumulation of dust, dirt or lint.

If system cooling is not adequate, operation or reliability may be affected. The system is normally assembled with the flow of cool air being pulled in the front panel and exhausting warm air out the rear. If in final installation this air path conflicts with the entire rack, the air flow may be reversed. Reference the following procedure for a step-by-step explanation.

1. Remove all power from the unit.
2. Remove the top cover.
3. Remove the eight knurled nuts and the two fan filters.
4. Remove the handles.
5. Remove the six screws holding in the front panel. You should now be able to reach the screws holding the fans to the front panel.
6. Remove the red and black wires from the board to the fans.
7. Remove the eight screws holding in the fans.
8. Reverse the fans and put screws back into place.
9. Plug in the red and black wires. (FC1 & FC2)
10. Place front panel back into place and check to make sure no other cables are disconnected.
11. Put the 6 screws back into place.
12. Reinstall Handles.
13. Reinstall the two fan filters and the knurled nuts.
14. Before installing the top cover, visually inspect the unit for any loose hardware.

SERVICE AND REPAIR

This **SP-MPL** Rackmount is backed by one of the finest customer service teams assembled. Write or call them at any time to obtain information about your unit.

Clary Corporation
150 E. Huntington Dr.
Monrovia, CA 91016

626-359-4486
800-551-6111
SERVICE@CLARY.COM

If a problem should occur, it is important that you obtain a Return Material Authorization (RMA) number from the Service Department to process any unit returned to the factory. In consulting the factory, always have the unit model number and serial number at hand. This information is located on the identification label on the left side and is essential in retrieving your units performance and history record.

The RMA number issued to you should appear on the outside of the carton, if the unit is returned, or on any correspondence regarding your unit. When shipping a unit back to the factory, try to use the original packing container and shipping materials. Shipping materials are available through the Service Department if the original container is unobtainable. The Service Department cannot take responsibility for any unit damaged in return shipment. All units must be returned prepaid to:

CLARY SERVICE DEPT.
150 E. Huntington Dr.
Monrovia, CA 91016

FCC CONSIDERATIONS

This equipment generates and uses radio frequency energy and if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. The unit in this manual has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and 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:

- Reorient the receiving antenna.
- Relocate the UPS with respect to the receiver.
- Move the UPS away from the receiver.
- Plug the UPS into a different outlet so that the UPS and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How To Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Printing Office,
Washington, DC 20402, Stock No. 004000003454.

WARRANTY

1. TIME AND SCOPE OF WARRANTY:

- 1.1 Clary Corporation hereby warrants all equipment shipped under this Agreement to be free from defective components and workmanship for a period of 2 years following date of shipment. Accidental damage, misuse or normal wear shall not be construed as a defect.
- 1.2 The date of shipment as used herein will be the date on Clary's Bill of Lading. If no Bill of Lading is issued, the date of shipment shall be shown on seller's shipping document.
- 1.3 No provision of this warranty shall cover equipment, which has been altered or modified from the original specifications to which it was manufactured, unless authorized in writing.
- 1.4 No provision of this warranty shall cover batteries. However, battery manufacturer's warranties will be passed through to the customer whenever applicable.

2. LIMITS OF "IN-WARRANTY" SERVICE LIABILITY

- 2.1 Clary is obligated during the in-warranty period to provide service and/or adjustments to equipment returned to the factory at the expense of the buyer. (The term "factory" as used herein shall also include any field service centers, which may be established by Clary.) Clary is to repair or replace any part(s) thereof, which in the opinion of authorized Clary personnel are found to have been defective.
- 2.2 Equipment requiring in-warranty service must be returned to the factory with all transportation charges prepaid. Equipment must be clearly tagged stating the nature of the trouble experienced and the disposition of the equipment after repair. The equipment will be returned freight collect by Clary to the location specified via the best, least expensive carrier available, or via customer's shipping instructions.
- 2.3 The nature of certain equipment installations may be such that it would be impractical or technically infeasible to remove the Clary portion of the equipment from the customer's premises to the Clary factory. In such cases, and at the request of the buyer, Clary will perform such service as can be satisfactorily rendered at buyers location. The buyer will be charged only for travel expenses incidental to the service call, provided that the warranty is applicable.
- 2.4 During the in-warranty period, no service charges shall be payable by the buyer for service performed other than for service necessitated by accident, misuse, theft, abnormal line or source voltage fluctuations, abnormal conditions of operation, damage by the elements or damage resulting from adjustments, repairs, modifications made by other than Clary Authorized personnel, or the buyer's failure to reasonably maintain the equipment

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES OF BUYER SHALL BE LIMITED TO THOSE PROVIDED HEREIN. IN NO EVENT WILL SELLER BE LIABLE FOR COLLATERAL OR CONSEQUENTIAL DAMAGES. No person is authorized to assume in behalf of Clary any obligation or liability in connection with the sale, warranty or service policy of any products manufactured and/or marketed by Clary Corporation beyond the warranty description on the face hereof.

- 3.1 Clary Corporation reserves the right to make changes, additions, and/or improvements in its products without incurring any obligation to install them on its products previously sold.