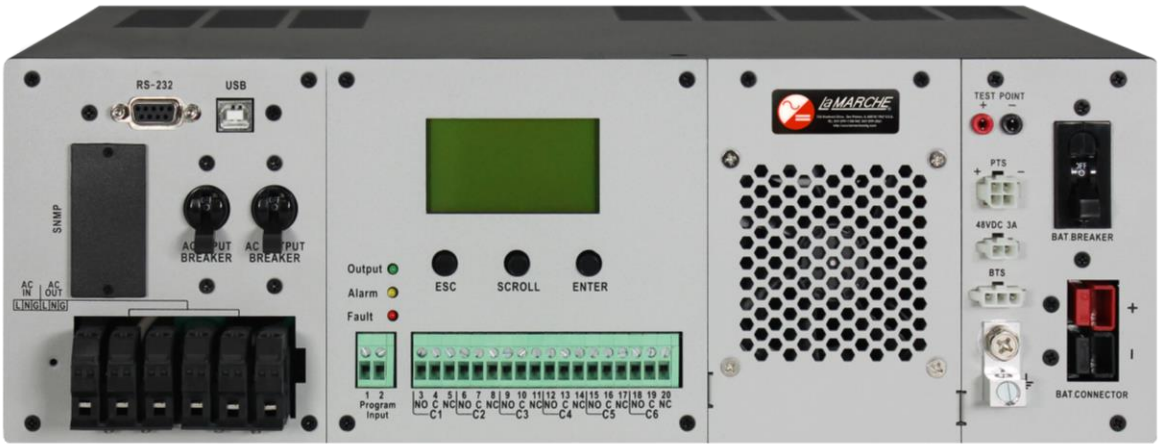
La Marche Manufacturing Company
www.lamarchemfg.com

ODUPS

Outdoor UPS



Installation and Operation Manual

This manual is subject to change without notice. You may obtain the newest version of the manual at www.lamarchemfg.com

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CPN 146400

Instruction Drawing Number: P25-LAODUPS-1
Revision A01 Rev. Date: 01/22 ECN:23096

Important Safety Instructions

Before using this equipment read all manuals and other documents related to this UPS and other equipment connected to this UPS. SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions for the CUPS. If a replacement copy of a manual is needed, it can be found at www.lamarchemfg.com.

Electrical Safety

WARNING: Hazardous Voltages are present at the input of power systems. The output from UPS and from batteries may be low in voltage, but can have a very high current capacity that may cause severe or even fatal injury.

When working with any live battery or power system, follow these precautions:

- Never work alone on any live power system; someone should always be close enough to come to your aid.
- Remove personal metal items such as rings, bracelets, necklaces, and watches.
- Wear complete eye protection (with side shields) and clothing protection.
- Always wear gloves and use insulated hand tools.

WARNING: Lethal Voltages are present within the power system. Parts inside the UPS may still be energized even when the UPS has been disconnected from the AC input power. Check with a meter before proceeding. Do not touch any uninsulated parts.

- A licensed electrician should be used in the installation of any UPS.
- Always disconnect the UPS from the supply, batteries, and loads before performing maintenance, replacing parts, or cleaning.
- Always assume that an electrical connection is live and check the connection relative to ground.
- Be sure that neither liquids nor any wet material comes in contact with any internal components.
- Do not operate this UPS outside the input and output ratings listed on the UPS nameplate.
- Do not use this UPS for any purpose not described in the operation manual.

Mechanical Safety

- This UPS or parts of the UPS may get very hot during normal operation, use care when working nearby.
- Do not expose equipment to rain or snow. Always install in a clean, dry location.
- Do not operate equipment if it has received a sharp blow, been dropped, or otherwise damaged in any way.
- Do not disassemble this UPS. Incorrect re-assembly may result in a risk of electric shock or fire.

Battery Safety

WARNING: Follow all of the battery manufacturer's safety recommendations when working with or around battery systems. DO NOT smoke or introduce a spark or open flame in the vicinity of a battery. Some batteries generate explosive gases during normal battery operation.

- When charging Lithium-Ion batteries, a B.M.S. must be utilized.
- To reduce risk of arc, connect and disconnect the battery only when the UPS is off.
- If it is necessary to remove battery connections, always remove the grounded terminal from the battery first.
- Remove personal metal items such as rings, bracelets, necklaces, and watches.
- Always wear rubber gloves, safety glasses, and a rubber lined vest/apron when working near a battery.
- Have plenty of fresh water and soap nearby in case the battery electrolyte contacts skin, clothing, or eyes.
- If the battery electrolyte contacts skin or clothing, wash immediately with soap and water.
- If the electrolyte enters the eye, immediately flood the eye with running cold water for at least ten (10) minutes and seek medical attention immediately.
- Do not drop or place any materials on a battery. A spark or short-circuit could cause an explosion.

UPS Location

- Allow at least 6 inches of free air on all vented surfaces for proper cooling
- Allow sufficient clearance to open the front panel for servicing.
- Do not operate this UPS in a closed-in area or restrict ventilation in any way.
- Do not place UPS below battery.
- Never allow battery electrolyte to drip on this UPS when reading the specific gravity or filling the battery.
- Never place this UPS directly above a standard flooded battery. Gases from the battery will corrode and damage equipment.
- A sealed maintenance free or valve regulated lead acid (VRLA) battery may be placed below this equipment.

Check for Damages

Prior to unpacking the product, note any damage to the shipping container and take pictures. Unpack the product and inspect the exterior and interior of product for damage. If any damage is observed, take pictures and contact the carrier immediately to file a damage claim. Contact La Marche for a Return Material Authorization number to have the UPS sent back for evaluation and repair.

CAUTION: Failure to properly file a claim for shipping damages, or provide a copy of the claim to La Marche, may void warranty service for any physical damages reported for repair.

Returns for Service

Save the original shipping container. If the product needs to be returned for service, it should be packaged in its original shipping container. If the original container is damaged/unavailable, make sure the product is packed with at least three inches of shock-absorbing material to prevent shipping damage. *La Marche is not responsible for damage caused by improper packaging of returned products.*

Handling

Equipment can be very heavy with uneven distribution of weight. Use adequate manpower or equipment for handling. Until the equipment is securely mounted, care must be used to prevent equipment from being accidently tipped over or dropped.

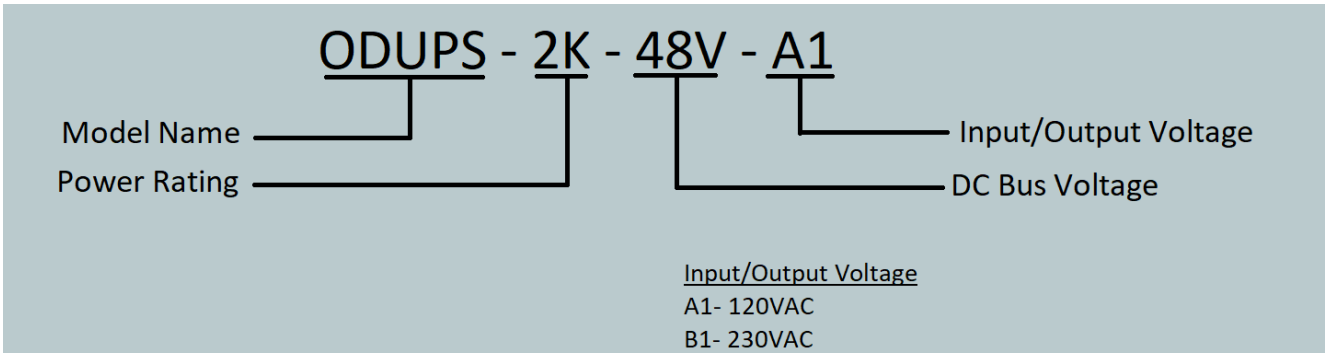
Table Content

Model Scope/General Description

The La Marche model Outdoor UPS (ODUPS) is high frequency switching UPS. These models are designed with an LCD Digital Display. The La Marche model ODUPS is configured with an external battery connection to achieve more backup time. It has ± 5% regulation from no load to full load over the specified input voltage, frequency, and ambient temperature range. An optional Power Transfer Switch (PTS) is provider for backup power when the UPS is under maintenance. These components should be mounted inside an enclosure to provide protection from most weather conditions.

Understanding the Model Number

The ODUPS model number is coded to describe the options that are included. Find the model number on the nomenclature nameplate of the UPS. Follow the chart to determine the configuration of your UPS.



1.0 Installation and Setup

NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.

1.1 UPS Model

The UPS module provides utility power to load when a line is qualified. And an automatic voltage regulator (AVR) is embedded to provide stable power to the load. It will instantly switch to emergency backup power during utility power failure or interruption. The front panel view is shown below.

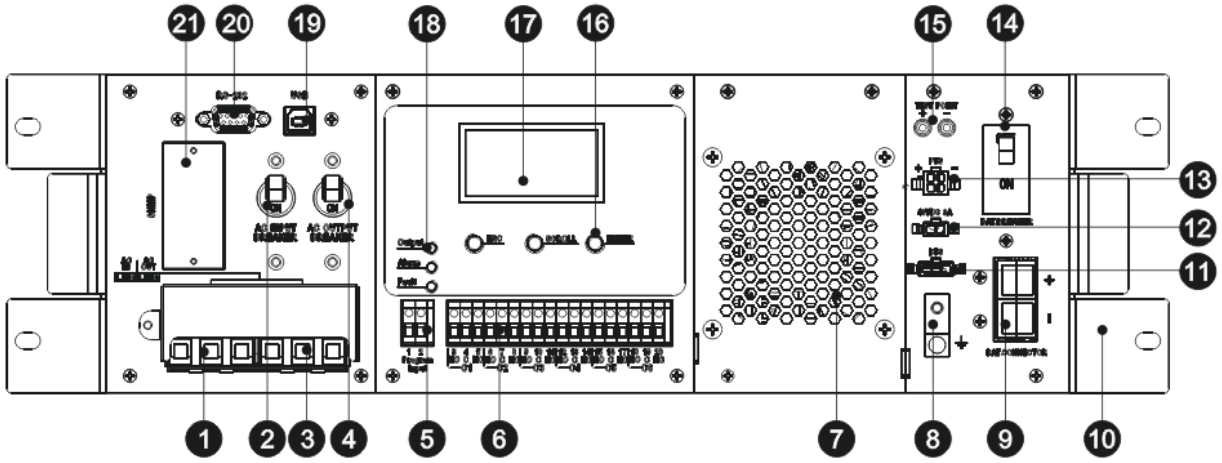


Figure 1: Front Panel of UPS

1. **AC Input Terminal Block**
   This terminal block is the UPS AC line power input.

2. **AC Input Breaker**
   This circuit breaker is an ON/OFF switch for the line power into the UPS that also provides input protection. It must be switched ON for proper UPS operation.

3. **AC Output Terminal Block**
   This terminal block is the UPS AC power output.

4. **AC Output Breaker**
   This circuit breaker is a resettable protective thermal circuit breaker to protect UPS output from overload and short circuits.

5. **Input Contact**
   To activate a programmable alarm by shorting this input contact.

6. **Dry Contact**
   Six sets of dry contacts will energize when a programmable event occurs.

7. **Internal Fan**
   It's to cool down the internal temperature of the UPS. The fan is easily accessible for maintenance.

8. **GND**
   This connector is a permanent ground for the UPS.
9. **Battery Connector**
   The battery connector is to connect external batteries.

10. Mounting Bracket & Handle

This part is for unit mounting in a of 19" cabinet and for carrying the unit conveniently.

11. Battery Temperature Connector

This is used to monitor battery temperature. The temperature probe connector must be plugged in UPS for normal operation. The other end should be firmly attached to the terminal of the battery.

12. External FAN Connector

To provide DC Power (48Vdc, 3 Amp Max) to an optional 48Vdc fan.

13. PTS Control Connector

This connector provides power to control the Power Transfer Switch unit.

14. Battery Breaker

This over-current protection is used as an on/off switch for the battery power. It must be switched on for proper UPS operation.

15. Battery Voltage Test Points

The test points allow you to measure battery voltage. They accept 2 mm diameter test probe tips. The battery circuit breaker must be turned on before measuring voltage.

CAUTION: The battery voltage test points are **NEVER** be used as a power outlet.

16. Function Keys

These buttons are used to operate and control the LCD panel.

17. LCD Display Panel

It shows the UPS information in a four-line text screen.

18. Indicator LEDs

Three LEDs show the information of output status, alarm and fault.

19. USB Connector

This is used to connect the UPS to the computer for remote control and monitoring.

20. RS232 Connector

A straight-through DB-9 to DB-9 connector cable can be used to connect the UPS to the computer for remote control and monitoring.

21. Intelligent Slot

This optional slot is for an SNMP card insert to communicate with the UPS. The UPS can be monitored and controlled via a web browser or with SNMP protocols.

1.2 PTS Module (Optional)

The Power Transfer Switch (PTS) shown below allows the UPS to be removed for service, replacement or maintenance without interrupting power to the external loads.

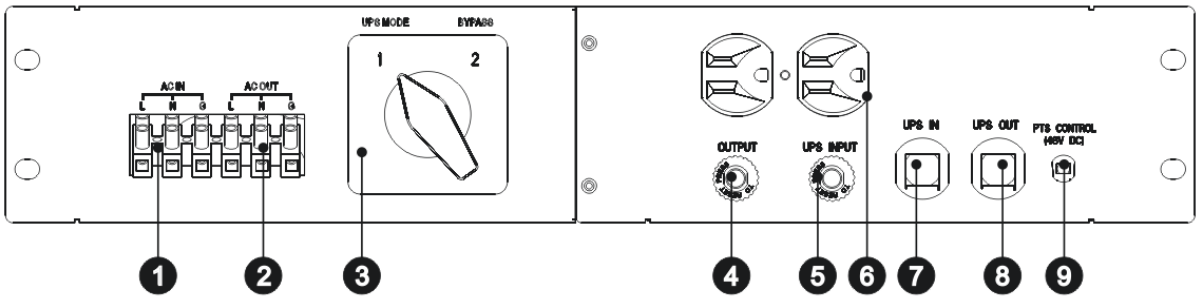


Figure 2: Front Panel of PTS with terminal block

1. **AC Input Terminal Block**
   The line input power is connected to the terminal block marked with "AC IN".

2. **AC Output Terminal Block**
   The output power is connected to the terminal block marked with "AC OUT".

3. **Switch**
   UPS or bypass output can be selected by this switch.

4. **AC Output Breaker**
   This circuit breaker marked with "OUTPUT" is a resettable protective thermal circuit breaker to protect the output from overloads and short circuits.

5. **AC Input Breaker**
   This circuit breaker marked with "UPS INPUT" provides input power protection for the UPS.

6. **AC Output Receptacles**
   These receptacles are ready to use for optional battery heating pads or a PC for maintenance.

7. **UPS Input Connector**
   This "UPS IN" power cord is connected to AC input connector or terminal blocks on UPS.

8. **UPS Output Connector**
   This "UPS OUT" power cord is connected to the AC output connector or terminal blocks on UPS.

9. **PTS Control Wiring**
   The Black and Red PTS control wires are used to connect to the PTS control connector on the UPS.

1.3 Installation of the ODUPS

The UPS unit can be placed on a shelf with no other parts needed. It can be rack mounted or secured to a shelf such as in an outdoor cabinet with the mounting brackets shown in the following figure below. The brackets and the screws to attach them to the UPS case are available as part of the standard packaging.

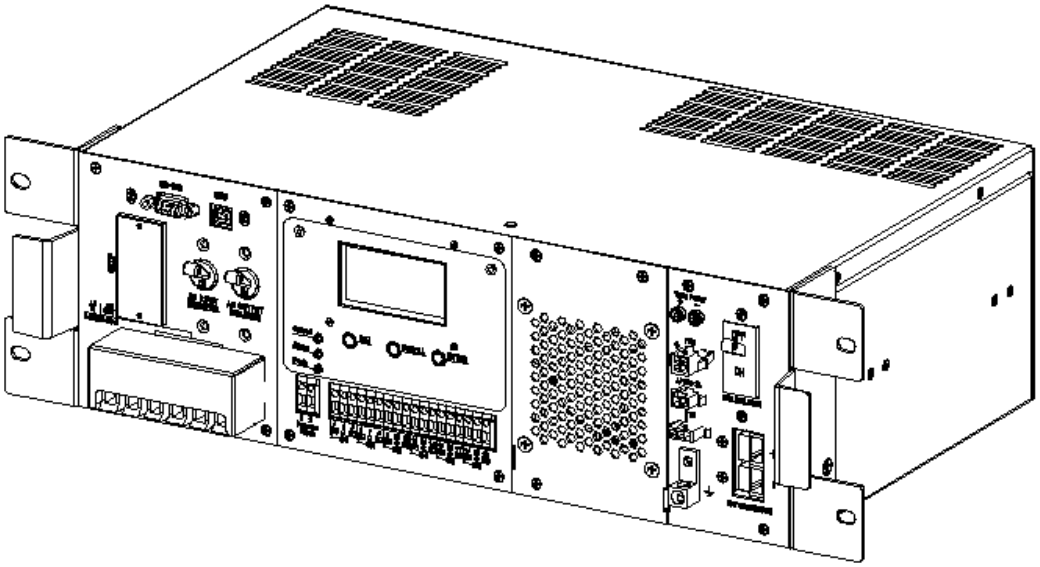


Figure 3: UPS with Bracket for rack mounting

1.4 Mounting the PTS (Optional)

The power transfer switch (PTS) is designed and factory-installed with a 19" rack mounting bracket. It can be rack mounted or placed on a shelf. The fixing screws and washers are part of the standard packaging.

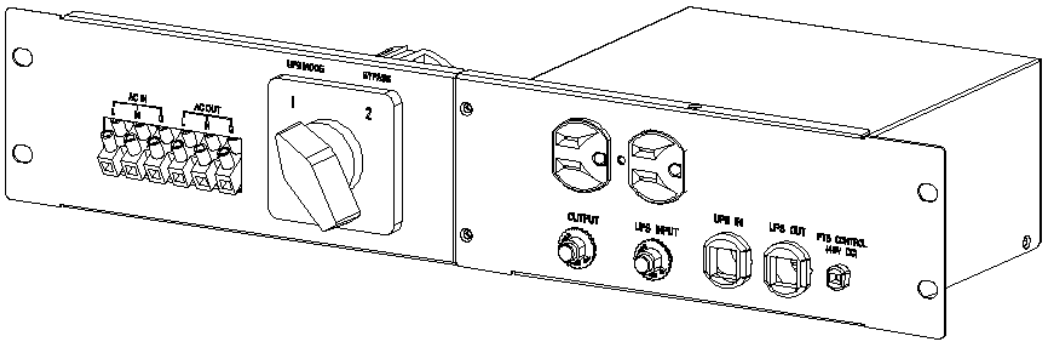


Figure 4: PTS with the bracket for rack mounting

1.5 Wiring the UPS

WARNING: All electrical wiring must be performed by a qualified electrician or trained personnel. Make sure the line power is off. Switch off all input and output circuit breakers on the UPS unit before making any electrical connections.

1.5.1 Wiring of the UPS

Wire the UPS according to the information below.

1. Connect the AC input wires to the AC input terminal blocks on the UPS. Ensure proper polarity (Line, Neutral and Ground to the respective terminal).

2. Connect AC output wires to the AC output terminal blocks on the UPS. Ensure proper polarity (Line, Neutral and Ground to the respective terminal).

1.5.2 Sensor cable wiring to the UPS

1. Connect the temperature sensor to the UPS unit (Battery Temperature connector ⓫). The other end is connected to the batteries later in the procedure.
2. Refer to Figure 1 & 2, connect the following ports if used.

- USB Connector ⓳.
- RS-232 Connector ⓴.
- Dry contacts ❻.
- Program input ❺.
- External FAN Connector ⓬.

1.5.3 Wiring External Batteries

Unit supports a 48Vdc battery. Connect all battery packs as shown below. It's suggested to connect to at least a 100Ah capacity battery.

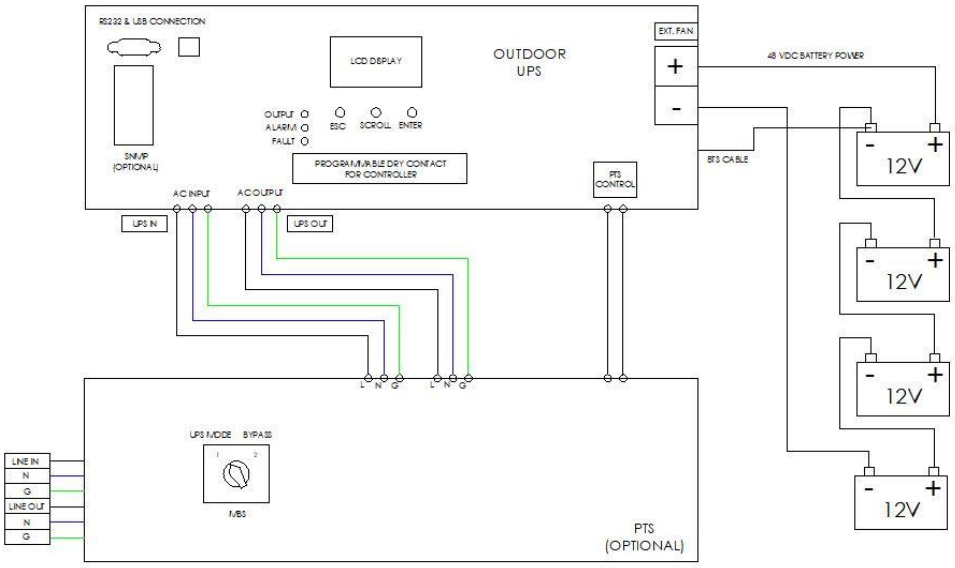


Figure 7: Battery Connection Chart

2.0 Operation

To power up the UPS, make sure the batteries are fully charged and line power is verified.

Switch on UPS in Line mode

1. Switch on battery circuit breaker. All LEDs will be on and LCD will display Startup page, and fan will be on.
2. Switch on AC input breaker. After line power is verified, the LCD will display **normal**, **buck** or **boost** according to line voltage range and line threshold setting.

Note: AVR function default setting is disabled. You may activate it via LCD panel or USB/RS232/SNMP communication.

Switch the UPS from line mode to battery mode

UPS will operate in battery mode if the input circuit breaker is OFF. The LCD will display "Battery" and output LED will flash to show the UPS is running on backup battery power.
To switch from battery mode to line mode, turn ON the input circuit breaker.

After switching on the input circuit breaker, if line input is verified, UPS will transfer to line mode with output LED on solid to show UPS is running from utility power.

Note: If UPS keeps switching between inverter and line mode because of a noisy line, the setting of "UPS Sense type" should be changed from Normal to Generator.

Switch off procedure

For any reason you need to switch off UPS, please follow below procedure.

1. Switch off output circuit breaker.
2. Switch off input circuit breaker.
3. Switch off battery circuit breaker. The output LED will turn off and LCD display will shut off.

Operation the Control panel

The control panel includes a four-line LCD display, three indicators, three function keys, input contacts and six sets of dry contacts.

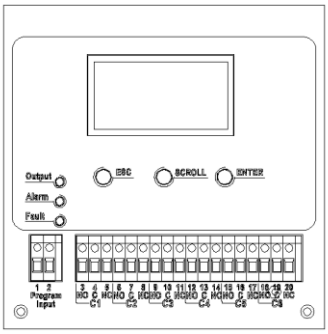


Figure 8: Control Panel

LED Indicator

LED Indicator			Messages
Output	Green	Solid On	Output is available in line mode
		Flashing	Output is available in battery mode
		Off	Output is not available
Alarm	Yellow	Solid On	Alarms occur in the system, indicating a condition not serious enough to stop it from providing output power.
Fault	Red	Solid On	Faults occur in the system, indicating a condition where backup power is not available.

Function Keys

Function Key	Description
ESC	Back to previous menu/page
SCROLL	Jump to next page or next selection
ENTER	Enter submenu or confirm selection

Default page

After power on, Startup page will display. It will automatically switch to default page after 6 seconds.

Default page	Explanation
yy-mm-dd hh:mm Mode: xxxxx OP-V: xxx.xV Load : xxx%	Date and time
	UPS current operation mode
	UPS output voltage
	UPS load percent

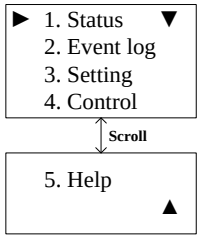
Operation mode

The LCD automatically displays the following texts when the UPS changes status.

LCD Display	UPS status and Explanation
Normal	The normal operating mode. Input line is verified and bypasses to power the loads. At the same time, batteries are charging.
Boost	The unit automatically transfers to Boost mode to raise the lower input line voltage when output voltage drops to the user programmable preset limit.
Buck	The unit automatically transfers to Buck mode to reduce the higher input line voltage when output voltage achieves the user programmable preset limit.
Battery	The unit automatically transfers to battery mode when input line power is unqualified or not present. Batteries provide power to the loads.
Self-Test	When "Self-Test" is executed, the unit will enter "Battery Mode" automatically to test output voltage and waveform. After testing, the unit will return back to "Line Mode". Users may program Test Timer in Setting menu to configure a longer time for self-test. Default testing time is 1 minute.
Standby	No output power from UPS to the loads.

3.0 Menu Page

After pressing ENTER button in default page, it will enter menu page.



Menu Page

Figure 11: Menu Page

Press SCROLL button to browse all 5 submenus below.

Menu Screen	Explanation
Status	Indicates input and output information, and other values monitored in UPS.
Event log	Indicates the active event log and the history event log which users can inquiry or clear.
Setting	Indicates the parameters of UPS can be adjusted.
Control	Indicates the operational conditions of UPS can be controlled.
Help	Indicates the Model name

Status menu

Status menu shows the basic measured information of UPS. Users can select displayed parameters by pressing ENTER key. Press ESC button in any page will return to default page.

Menu item	LCD display	Explanation
Page 1	1. Serial No. ▼ xxxxxxxxxxxxxx 2. I/P-V:xxx.xV 3. I/P-F: xx.xHz	The Serial number of UPS
		The input line (utility) voltage
		The input line (utility) frequency
Page 2	4. BAT V: xx.x V ▼ 5. BAT T: xx°C 6. O/P-V: xxx.x V 7. O/P-F: xx.xHz	The average battery voltage
		The temperature of battery terminal
		The output voltage (true RMS)
		The output frequency
Page 3	8. O/P-P: xxxxVA▼ 9. O/P-P: xxxxWatt 10. Load: xxx% 11. Mode: xxxxx	The output power in VA
		The output power in watt
		The percentage of connected load
		The operation mode of UPS
Page 4	12. InvEV: xxxxx▼ 13. InvTM: xxxx.xH 14. BukEV: xxxxx 15. BukTM: xxxx.xH	The number of times the unit has been in battery mode
		The total time duration the unit has been in battery mode since the latest reset.
		The number of times the unit has been in buck mode
		The total time duration the unit has been in buck mode since the latest reset.
Page 5		The number of times the unit has been in boost mode

	16. BstEV: xxxxx ▼ 17. BstTM: xxxx.xH 18. C1:Off C2:Off 19. C3:Off C4:Off	The total time duration the unit has been in boost mode since the latest reset. The status of the dry contact C1 and C2. The status of the dry contact C3 and C4.
Page 6	20. C5:On C6:On 21. MainFW: xx.xx 22. LCDFW: xx.xx 23. HW : xx.xx ▲	The status of the dry contact C5 and C6. The firmware version of Main CPU in UPS. The firmware version of LCD panel in UPS. The hardware version of UPS.

Event menu

User can view the active event log and history event log via this menu. After pressing ESC button in Event page, it will return to default page.

Event Log Page	Explanation
► 1. Active Log 2. History Log	Active event log enquiry. History event log enquiry and clear. Maximum log number is 200.

Active Log Page	Explanation
yy-mm-dd hh:mm Over Load In xxxxxx Mode xx/xx ▼	Date and time when this event occur Event type UPS operation mode when this event occurs Viewing event index/Total active event number

Setting menu

User can set various critical parameters in this menu. Choose the desired function on the screen by pressing ENTER button. Press ESC button to return to default page. (To enter in Setting menu use default password: 1111)

Setting page	Explanation
► Dry Contact ▼ Input Contact AVR Feature Line Qualify	**Dry Contact:** It indicates programmed values of C1-C6 contacts. Factory default settings: C1, C2=On battery; C3, C4=battery low; C5, C6=Timer. Illustrations for each programmed value as below. – On battery: Energized when Unit in INV mode. – Battery low: Energized when the battery voltage is lower than the configurable battery low voltage. The default value is 46VDC. – Timer: Energized after the unit has been in INV mode for the setting backup time. The factory default value is 2 hours. – Alarm: Energized when any alarm occurs in UPS. – Fault: Energized when any fault occurs in UPS. – Off: Energized while the UPS is off. – Disable: The dry contacts become invalid.
	Input Contact: It indicates selectable options for input contacts. Factory default setting is "Ext Fan Failed". Selectable options are listed as below. – User program – Ext Alarm – Ext Battery Alarm – Ext Fan Failed

	– Door Unlocked
	AVR Feature: Enable or disable Buck and Boost function. Factory default setting is "disable".
	Line Qualify: Set AC recovery time after the line is qualified. It's to make sure the line is stable. The selectable options are: 3 seconds, 10 seconds or 30 seconds. Default value is "30 seconds".
Line Detect ▼ Sense Type Bat Temp Comp Ext. Fan	**Line Detect:** It allows users to set up detection levels for AC input voltages, setting points to go in and out from battery mode, boost or buck modes. – Line High: When input voltage exceeds this level, unit will transfer from Line Mode to Battery Mode. – Line Low: When input voltage is lower than this level, unit will transfer from Line Mode to Battery Mode. – High Gap: The voltage gap between Line High and High Back, Buck High and Buck Back. – Low Gap: The voltage gap between Line Low and Low back, Boost Low and Boost Back. – Boost Low: When AVR function is enabled and input voltage drops between Boost Back point and this level, unit will transfer to Boost Mode. – Buck High: When AVR function is enabled and input voltage increase between Buck Back point and this level, unit will transfer to Buck Mode.
	Sense Type: Users can change the Sense Type according to operation condition. Two types for selection: – Normal mode: The UPS can operate successfully with general line conditions. The maximum transfer time is 12ms. – Generator mode: This setting allows UPS to work with the fluctuations caused by a generator or noisy line. The maximum transfer time is 25ms.
	Bat. Temp Comp: It adjusts the battery temperature compensated voltage to 2.5, 3.0, 3.5 or 4.0 mV/°C/Cell. The factory default setting is 3.0 mV/°C /Cell.
	Ext. Fan: It indicates ambient temperature setting to switch on the external fan. The default value is 25°C.
Bat Low Volt ▼ Charger I Backup Timer Default UPS	**Bat. Low Volt:** It's allowed to set the low battery warning voltage. The default value is 46V.
	Charger I: It's to configure the charger current. There are 2, 4, 6, 8 or 10Amp for selection. The default value is 10A.
	Backup Timer: It's to configure the warning time for backup time. This function is available only when timer is set in dry contact. The adjustable range is 0 to 480 minutes. The default value is 120 minutes.
	Default UPS: Restore factory settings of UPS.
Default SNMP Test Timer Set Date/Time Password ▲	**Default SNMP:** Restore factory settings of SNMP.
	Test Timer: It's to define the time of Self-Test. The adjustable range is 1 to 255 minutes.
	Set Date/Time: It indicates setting for date and time.
	Password: The Password to access Setting and Control Menu can be changed here. Use the SCROLL key with ENTER keys to enter a correct Password. Re-entry is required if an error occurs when entering the password.

Control menu

Press SCROLL button to switch desired option in Control menu and press ENTER button to confirm new option. Pressing ESC button will return to default page. (To enter in Setting menu use default password: 1111)

Control page	Explanation
Self Test: ⊙ Start ○ Stop	Starts the Self-Test. **CAUTION:** The unit must be in Normal, Boost or Buck Mode before starting the self-test.
Dry Test: ⊙ On ○ Off ○ Cancel	Starts the dry contact test. – On: All dry contacts are energized. This action will be finished automatically after 1 minute. – Off: All dry contacts are ineffective. This action will be finished automatically after 1 minute. – Cancel: Cancel this test immediately.
Ext Fan Test: ⊙ On ○ Off ○ Cancel	Starts the external fan test. – On: The external fan has power from battery. This action will be finished automatically after 1 minute. – Off: Cut off battery power. This action will be finished automatically after 1 minute. – Cancel: Cancel this test.
UPS Output: ⊙ On ○ Off	UPS output can be turned ON or OFF. This option is available when the UPS is in INV, Boost, Buck or Normal Mode.
Reset Event/TM? ⊙ Yes ○ No	It resets all event numbers and time duration to zero.

Help menu

It shows UPS model name in Help menu.

Help page	Explanation
UPS-2000A	Indicates UPS model name.

4.0 Trouble Shooting

4.1 For PTS Module

Problem	Possible Cause	Remedy
No output available from PTS.	External AC circuit breaker may be OPEN.	Close the external AC input breaker.
	Line AC power is not available.	Check if utility is available with the AC voltmeter and contact Utility Company.
	Wiring error on PTS terminal blocks.	Correct wirings on PTS.
	PTS fault.	If utility power voltage is present at AC IN "L" and "N" on the PTS terminal blocks, replace the PTS.
PTS is not allowed to transfer to battery mode.	UPS output power is not connected to PTS.	Verify if power cord from "UPS OUT" on PTS is properly connected to the AC output terminal blocks on UPS.
	"UPS INPUT" circuit breaker on PTS is open status.	Reset breaker.
	Black and red control wires from PTS are not connected to PTS control connector of UPS.	Connect black and red control wires from PTS-to-PTS control connector of UPS.
	48VDC signal not available at the PTS control connector on the UPS.	Replace UPS.
	PTS fault.	Replace PTS
UPS does not return back to Line mode.	Line power is missing.	Verify if power cord from "UPS IN" on PTS is properly connected to the AC input terminal blocks on UPS.
		Verify if the "UPS INPUT" circuit breaker on PTS is closed status.
		Verify if AC input circuit breaker on UPS is closed status.
		Ensure that Line input is present.

4.2 For UPS Module

Problem	Possible Cause	Remedy
No output.	AC input and output circuit breakers are off.	Turn on input and output circuit breakers.
	No line power input.	Turn on AC input breaker.
	Red LED is lit solid on front panel indicating fault.	Read fault event under Event Log in LCD display. Manually restart UPS. Contact the factory if fault persists.
Output LED is off.	Line power or battery power is not available.	Apply qualified input power and make sure if battery breaker is closed.
	UPS fault.	Return to repair center.
UPS does not transfer to battery mode during a power failure or backup time is shorter than expected.	Battery is not connected.	Connect batteries (48VDC nominal).
	Battery circuit breaker is off.	Turn on battery breaker
	Battery is not fully charged.	Recharge the battery and then test discharge time.
	Dead battery.	Replace with new batteries.
	UPS fault.	Return to repair center.
Alarm LED is lit.	Abnormal conditions are detected.	Solve the problem according to alarm information in Figure 21.
Batteries will NOT charge.	Battery circuit is open.	1. Check if battery cable is connected firmly and make sure battery connection is correct. Any connection error, lose or open connection will cause circuit open. 2. Check if proper battery voltage is detected on battery connector of UPS. 3. Check if battery breaker is closed. 4. If battery is bad, replace it.
	Wrong or bad temperature probe connected.	Only use factory-supplied temperature probe reading approximately 15,000 OHMS @ 25°C (77°F)
LCD text is not readable.	UPS fault.	Return to repair center.
Password access is NOT available.	Password is LOST or forgotten.	Contact repair center for resetting the new password.

5.0 Approximate Back-up Time

Model	Load (VA)	Backup Time @ 48Vdc 100Ah (Minutes)	Backup Time @ 48Vdc 200Ah (Minutes)
2KVA	200	1581	3161
	400	751	1581
	600	491	1054
	800	331	760
	1000	268	615
	1200	221	508
	1400	172	387
	1600	136	335
	1800	120	295
	2000	106	257

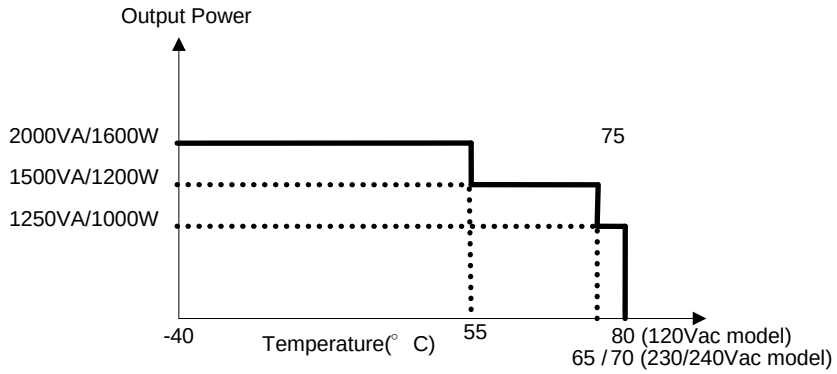
6.0 Specifications

6.1 Line Mode Specifications

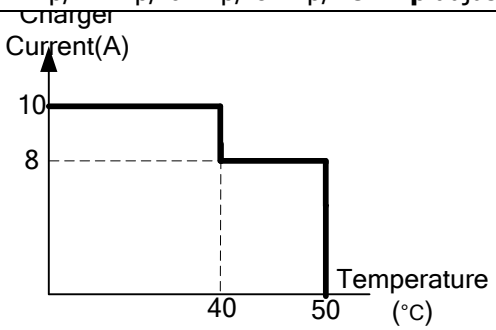
Rated Power	2000VA/1600W		
Power factor	0.8		
Nominal battery voltage	48Vdc		
Utility Voltage Waveform	Sinewave (utility or generator)		
Nominal Input Voltage	120Vac or 230VAC		
AVR function	Enable/ Disable		
Utility voltage range	88 - 152 VAC or 176 - 300VAC user programmable. Defaults set @ 100 - 130VAC or 200 - 260VAC		
Nominal Input Frequency	50Hz / 60Hz		
Default frequency	Last utility frequency		
Utility frequency range	47 - 53 Hz (50Hz mode) / 57 - 63Hz (60Hz mode)		
Transfer Time	UPS without PTS	Normal mode	12ms maximum
		Generator mode	25ms maximum
Overload Protection	5seconds ≥125 - 150% load; 60seconds >110 - 125% load		
Output short circuit	Input/Output Breaker		
Site fault detection	Yes		
Efficiency (Line mode)	95%		
Efficiency (AVR mode)	90%		
External PTS power capacity	30A		

6.2 Battery Mode Specifications

Output Waveform	Pure sine wave
Output Voltage Regulation	120 or 230VAC ± 5%
Output Frequency	50/60Hz ± 0.1%
DC voltage range	42.5 ~ 60Vdc(48V)
Low DC warning voltage	42 ~ 55Vdc adjustable
Peak Efficiency	>90%
THD (Bat. mode)	<3% (Full resistive load)
Load crest factor	3:1 @ rated load
Output short circuit protection	Output breaker/ Electronic current limit
Surge Capacity	200% * rated power for 5 seconds
Back feed protection	Yes

Power limitation	

6.3 Charger Mode Specifications

Appropriate battery type	AGM
Charging Current	2Amp/ 4Amp/ 6Amp/ 8Amp/**10Amp** adjustable
Max charger current limitation	
Charging Algorithm	3-Step
Charger Operating Temperature Range	- 20 °C to 50 °C

6.4 General Specification

Dimension, W*D*H (in)	15.74 x 9.44 x 5.23
Net Weight (lbs)	28.66
Operation Temperature Range	-40°C - 80°C for 120VAC model; -40°C - 70°C for 230VAC model
Storage Temperature Range	-50°C to 80°C
Relative humidity	5% - 95% non-condensing
Audible Noise	< 48dB
Cooling	Forced Air
EMI	Class A FCC/CISPR [EN50091-2: 1995]
Surge protection	IEEE/ANSI C.62.41 & 2KV, L-N

Appendix A: Manufacture Warranty

All La Marche Manufacturing Co. equipment has been thoroughly tested and found to be in proper operating condition upon shipment from the factory and is warranted to be free from any defect in workmanship and material that may develop within two (2) years from date of purchase.

Any part or parts of the equipment (except fuses, DC connectors, and other wear-related items) that prove defective within a two (2) years period shall be replaced without charge providing such defect, in our opinion, is due to faulty material or workmanship and not caused by tampering, abuse, misapplication or improper installation.

Should a piece of equipment require repair during the warranty period, the equipment can be returned to the La Marche factory to have the inspection, parts replacements and testing performed by factory personnel. Should it be necessary to return a piece of equipment or parts to the factory, the customer or sales representative must obtain authorization from the factory. If upon inspection at the factory, the defect was due to faulty material or workmanship, all repairs will be made at no cost to the customer during the first three years. Transportation charges or duties shall be borne by purchaser.

In accepting delivery of the equipment, the purchaser assumes full responsibility for proper installation, installation adjustments and service arrangements. Should minor adjustments be required, the local La Marche sales representative should be contacted to provide this service only.

All sales are final. Only standard La Marche chargers will be considered for return. A 25% restocking fee is charged when return is factory authorized. Special chargers are not returnable.

In no event shall La Marche Manufacturing Co. have any liability for consequential damages, or loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause. In addition, any alterations of equipment made by anyone other than La Marche Manufacturing Co. renders this warranty null and void.

La Marche Manufacturing Co. reserves the right to make revisions in current production of equipment, and assumes no obligation to incorporate these revisions in earlier models.

The failure of La Marche Manufacturing Co. to object to provisions contained in customers' purchase orders or other communications shall not be deemed a waiver of the terms or conditions hereof, nor acceptance of such provisions.

The above warranty is exclusive, supersedes and is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness. No person, agent or dealer is authorized to give any warranties on behalf of the Manufacturer, nor to assume for the Manufacturer any other liability in connection with any of its products unless made in writing and signed by an official of the manufacturer.

Appendix B: Document Control and Revision History

Part Number:
Instruction Number: Issue ECN:
