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La Marche Manufacturing Company
www.lamarchemfg.com

LTP V.2

Hybrid AC/DC Power System
for Telecom Applications



*Unit shown with optional Communications Board

Installation and Operation Manual

Important Safety Instructions

Before using this equipment, read all manuals and other documents related to this unit and other equipment connected to this unit. Always have a copy of a unit's manual on file nearby, in a safe place. 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 rectifiers 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 unit may still be energized even when the unit 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 unit.
- Always disconnect the unit from the supply, batteries and loads before performing maintenance or cleaning.
- If the unit is hot-swappable, simply remove it from the shelf for any maintenance 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 come in contact with any internal components.
- Do not operate this unit outside the input and output ratings listed on the unit nameplate.
- Do not use this unit for any purpose not described in the operation manual.

Mechanical Safety

- This unit or parts of the unit 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 unit. 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.

- To reduce risk of arc, connect and disconnect the battery only when the unit is off.
- If it is necessary to remove the 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 metal on a battery. A spark or short-circuit could occur and could cause an explosion.

Unit 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 unit in a closed-in area or restrict ventilation in any way.
- Do not set any battery on top of this unit.
- Never allow battery electrolyte to drip on this unit when reading the specific gravity or filling the battery.
- Never place this unit 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. Unpack the product and inspect the exterior of product for damage. If any damage is observed, contact the carrier immediately. Continue the inspection for any internal damage. In the unlikely event of internal damage, please inform the carrier and contact La Marche for advice on the risk due to any damage before installing the product. Verify that you have all the necessary parts per your order for proper assembly.



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.*

Inspection Checklist

- Enclosure exterior and interior is not marred or dented.
- There is no visible damage components.
- All internal components are secure.
- Printed circuit boards are firmly seated.
- All hardware and connections are tight.
- All wire terminations are secure.
- All items on packing list have been included.

Handling

Equipment can be very heavy and/or top heavy. Use adequate manpower or equipment for handling. Until the equipment is securely mounted, care must be used to prevent the equipment from being accidentally tipped over.

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LTP General Description

The LTP system provides DC voltage to a load while charging external batteries. This flexible system can accommodate 24VDC or 48VDC rectifiers and 500W inverters. If the AC mains supply fails, the batteries will supply power to the load. The LTP system is suitable for charging SMF batteries. The DC output current is limited to provide complete protection. The current limiting feature allows for the unit to carry overloads and limits the output to a maximum of less than 105% of the rated output. It can also be used as a direct power supply without batteries. The modular and scalable design with hot-pluggable rectifier and inverter modules assures low Mean Time to repair and future expansion. The all solid-state control circuit provides excellent line-load voltage regulation and current limiting.

The LTP system consists of some of the following equipment, depending on system size and options:



Set of four 12V Batteries



LTP Battery Enclosure



Three Rectifier Modules



One Inverter Module



AC and Battery Cables

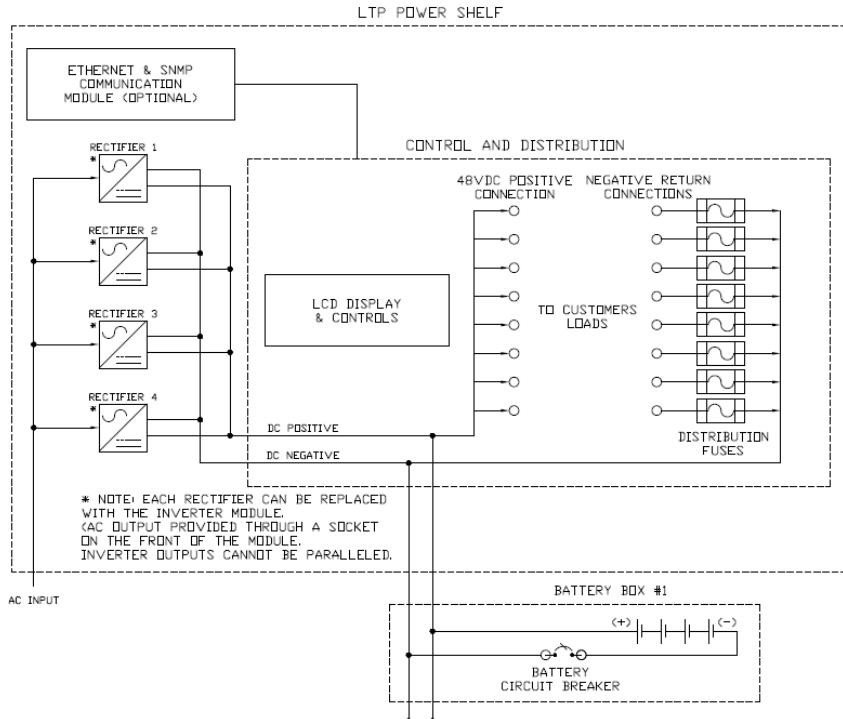


LTP System Enclosure



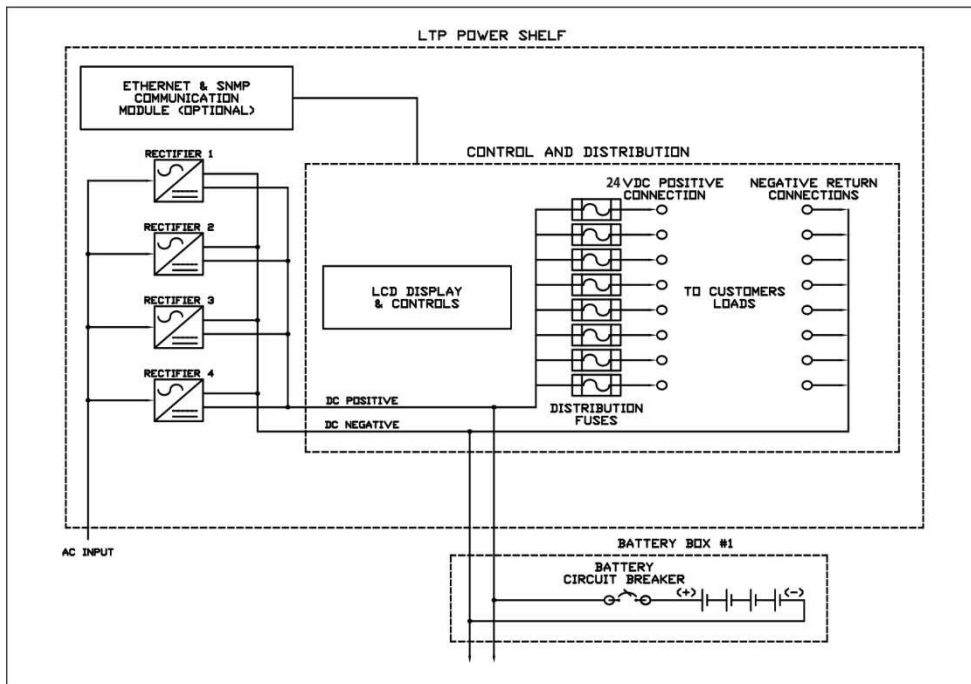
19" and 23" Rack Mount Brackets
(23" shown)

48VDC Positive Ground - LTP System Block Diagram



NOTE: For more information on Form 'C' alarm contacts, refer to the table on page 3.

24VDC Negative Ground - LTP System Block Diagram



Features

- AC Input (102-264 VAC)
- Modular, Hot-Pluggable Design
- 4 Rectifier/Inverter Module Positions
- Form 'C' Alarm Contacts
- Operating Temperature: -15°C to 50°C (5°F to 122°F)
- Automated/Scheduled Battery Testing
- Audible Battery Test Fail Alarm
- Battery Eliminator
- Battery Breaker Tripped Alarm
- Storage Temperature: -40°C to 85°C (-40°F to 185°F)
- VLAN
- SNMP
- Two Line LCD Display
- Remote Monitor
- Two-Year Warranty

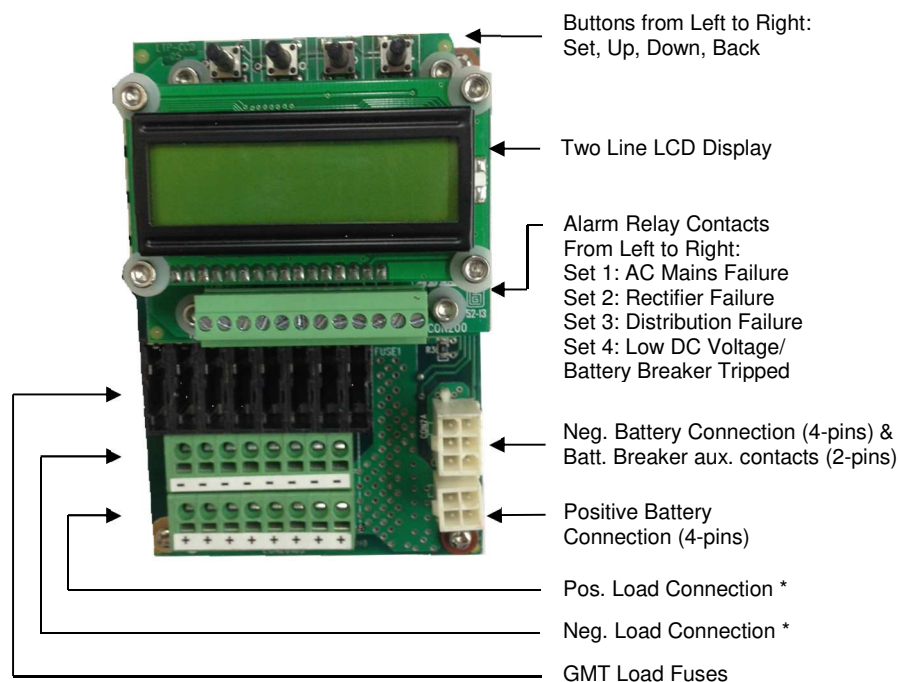
Controller Overview



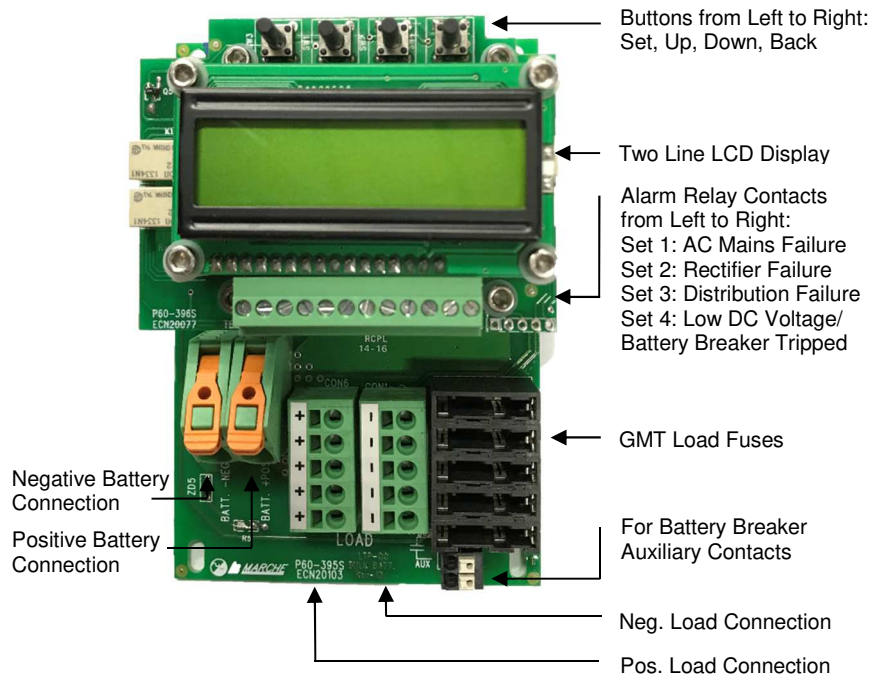
Alarm Relay Contacts Information		
Relay Function	Logic	Form 'C' Alarm Contacts (Left-to-right, shown at de-energized state)
AC Mains Failure	Energize on Failure	NC – C – NO
Rectifier Failure	De-Energize on Failure	NC – C – NO
Distribution Failure	Energize on Failure	NC – C – NO
Low DC Voltage / Battery Breaker Tripped	Energize on Failure	NC – C – NO

NOTE: To verify operation of alarm contacts using a multimeter, it is recommended to unplug the connector for accurate readings.

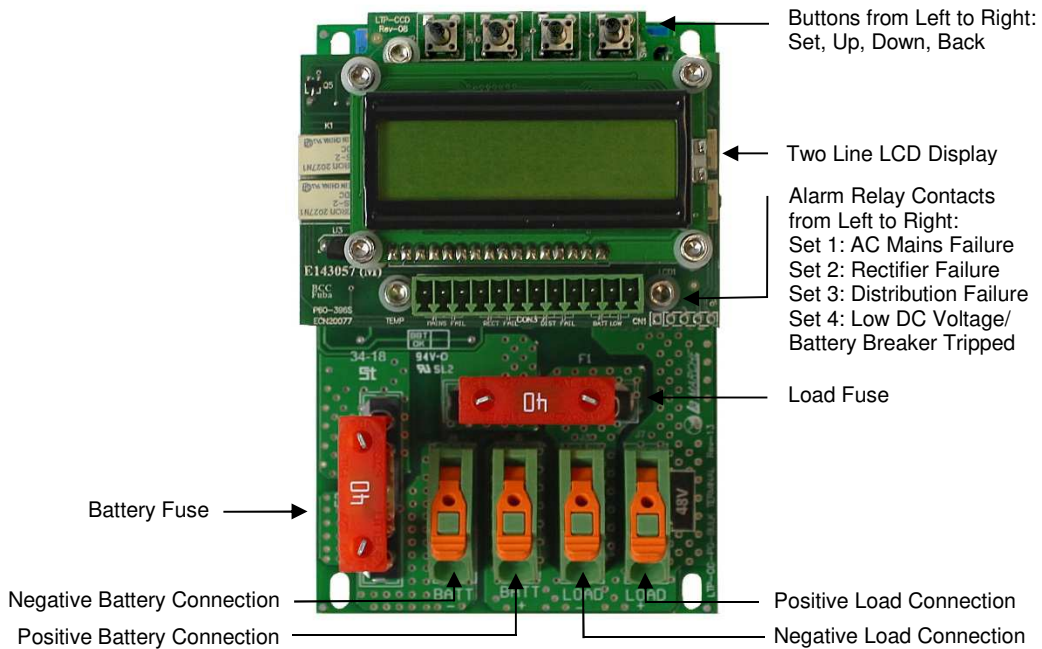
Controller Front View with Cover



Standard LTP System Controller



LTP System Controller with Option 57W



LTP System Controller with Option 57V

The LTP controller is simple and easy to use. It has a two-line LCD that displays the output voltage, load current and battery current. There are four alarm relays and four buttons located underneath the controller cover. In addition, there is also an audible alarm for battery test failure.

La Marche also offers an optional communications package (option 21X). When properly configured, the communications package allows for the LTP to be monitored and controlled remotely via a single Ethernet connection.

Rectifier Overview



The LTP rectifier is lightweight and powerful. The rectifier weighs only 4 lbs. and is offered in two models; 7.5Amp/48 Volt DC or 10 Amp/24 Volt DC output. The rectifier contains 3 LED indicators on the front panel (DC On, AC On, Rectifier Failure Alarm). Each rectifier has a protection fuse, as well a blocking diode which isolates the module from the rest of the shelf should it fail.

Rectifier Front Panel Overview

<i>Condition</i>	<i>Symbol</i>	<i>Color</i>	<i>Description</i>
DC On		Green (solid)	Indicates the rectifier is supplying a DC output.
AC On		Green (solid)	Indicates that correct AC input voltage is present in the rectifier. Operational range is 102-264 VAC.
AC Out of Range		Green (flashing)	Indicates that the AC input voltage is out of range for the rectifier.
Rectifier Failure		Red (solid)	Indicates a rectifier failure alarm.

Inverter Overview



The LTI inverter has a 120VAC output at 500W maximum with a 45-55VDC input range. The input current is approximately 7 DC amps at full load.



The inverter includes an On/Off button, three LED indicators (Low DC Voltage, AC On, Overload) and a voltage adjustment. The output of the inverter is connected via a NEMA L5-20P plug located on the front of the module. None of the inverter alarms interconnect with the systems distribution.







During initial power up of the inverter, after a 10 second delay, the inverter will automatically start. If the DC voltage is below 49V or above 55V, the inverter will not start. When the inverter is switched off, it takes about 20 seconds for the "AC On" LED indicator to turn off. It takes about 20 seconds for the inverter to completely turn off. The inverter cannot be started again until the "AC On" LED indicator is completely off.

Low DC voltage alarm is set at 45V which triggers a buzzer sound and Low DC voltage LED indicator. If the DC voltage falls below 44V, after a short delay, the inverter will automatically shut off and the Low DC Voltage LED indicator will stay on. If voltage rises above 49V, the inverter will automatically start. High DC voltage alarm is set at 55V which triggers buzzer sound and Overload LED indicator. If the DC voltage rises above 56V, after a short delay, the inverter will automatically shut off and Overload LED indicator will flash. If voltage falls below 55V, the inverter will automatically start.

If applied load is higher than 500W, after a short delay, the inverter will automatically shut off and Overload LED indicator will be on. In order to start the inverter again, reduce the load to 500W or less and press the On/Off button.

Inverter Front Panel Overview

<i>Function</i>	<i>Symbol</i>	<i>Description</i>
On/Off		On/Off button. Hold for one second to turn the inverter off or on.
Output Adjustment		Increase or decrease the inverter output voltage.

<i>Condition</i>	<i>Symbol</i>	<i>Color</i>	<i>Description</i>
Low DCV Alarm		Red (solid) Green (solid)	Indicates that the DC voltage is below 45 VDC. Indicates that the inverter is producing AC output.
Low DCV Cutoff		Red (solid)	Indicates that the DC voltage is below 44 VDC. The inverter is OFF.
High DCV Alarm		Red (solid) Green (solid)	Indicates that the DC voltage is above 55 VDC. Indicates that the inverter is producing AC output.
High DCV Cutoff		Red (flashing)	Indicates that the DC voltage is above 56 VDC. The inverter is OFF.
Overload		Red (solid)	Indicates that the Inverter load is larger than 500 Watts. The inverter is OFF.
Short		Red (flashing) Red (flashing)	Indicates the inverter has a short circuit. The inverter is OFF.

1 Installation

1.1 Rack Mounting and Wiring

The LTP is designed with simple installation in mind. The system can be rack mounted on a standard 19 or 23" relay rack. Wall mounting is also available using the keyholes at the back of the enclosure. The instructions below detail mounting on a relay rack.

NOTE: LTP battery enclosures are included on standard LTP systems. LTP systems with options 57W and/or 57V do not include an LTP battery enclosure.



When attaching mounting brackets to the LTP system and LTP battery enclosure, La Marche supplied hardware must be used (PANHEAD SCREW #12-24 0.375" LONG). Longer screws may cause damage to the circuit board located inside the LTP system.



Attach the rack brackets to both the LTP enclosure and the LTP battery enclosure. First mount the LTP battery enclosure to the relay rack. Leave a sufficient amount of space above the battery enclosure to allow for installation of the LTP enclosure.



Turn off the battery breaker before making any connections within the battery enclosure. Plug each battery cable into the plug at the top of the enclosure. Install each battery using the red (+) and black (-) wires from each battery cable. Batteries may have to be slid in from the left in order to properly fit.



With all batteries wired in, slide them to the rear of the enclosure. Once again, ensure that the battery breaker is still off.



Mount the LTP System enclosure above the LTP battery enclosure.

Using the supplied battery cables, connect the LTP battery enclosure to the LTP controller as shown to the left. The black (-) wire plugs in using a 6-pin connector, the red (+) wire plugs in using a 4-pin connector. The battery box includes a second pair of connectors to enable an additional battery box.

After the LTP is mounted, the DC load connections can be made. The LTP has DC output connection(s) available. Push-lock connectors are used for all of the load connections for ease of wiring on standard LTP controllers and controllers with option 57W. Controllers with options 57W and 57V have a set of bulk terminals. Refer to Controller Overview section on pages 3-4 for connection locations.

For Controllers with Push-Lock Connectors:

Simply depress the spring with a small flat-head screwdriver (about 0.1-inch diameter) and plug the DC output wires into the corresponding push-lock connectors. Remove the screwdriver and assure the wires are securely connected.

For Controllers with Bulk Terminals:

Lift the lever and insert the wires from the load into the terminal. Once inserted, push down the lever and assure the wires are securely connected.



After all connections are made, turn on the battery breaker to ensure the connections are correct. The display should light and display the battery voltage. Turn off the battery breaker.

At this point, the rectifiers and inverter can be installed. The modules simply slide in to the LTP system enclosure and are held in place with a thumb screw.



There are no specific slots for rectifiers and inverters. The inverter/rectifiers can be installed in any order. If less than four modules are installed, a blank plate must be used to allow proper airflow.

If the battery connections are correct, the battery enclosure cover may be installed.

Install the AC power cable on the rear right side of the LTP system enclosure.



CAUTION:

To ensure proper airflow, modules must be installed from the right to the left. If less than four modules are installed, blank plates must be used.

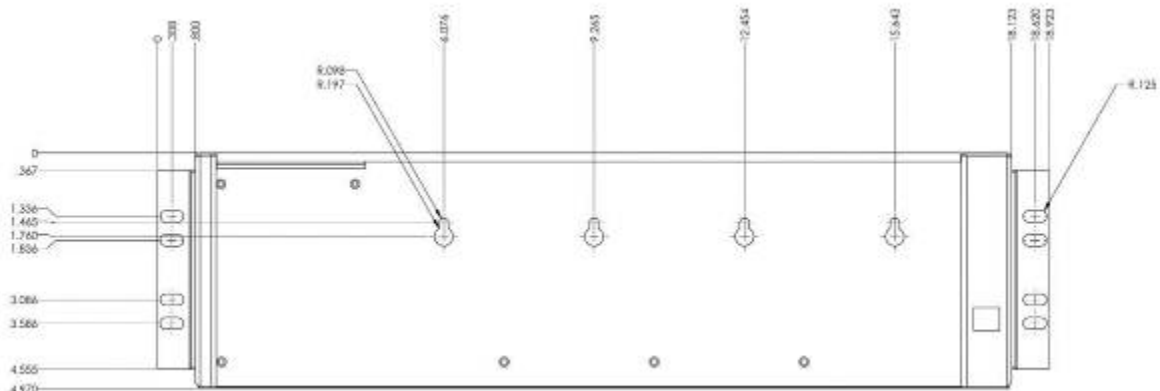
1.2 Wall Mounting

Wall mounting is available using the keyholes at the back of the enclosure. The instructions below detail mounting on a wall. Using the full-size dimension drawings provided (shown below), drill four holes each for the keyholes and four holes for the side brackets, both for the LTP System enclosure and the battery enclosure. To make this easy, the drawings can be taped to the wall and the holes drilled straight through the paper.

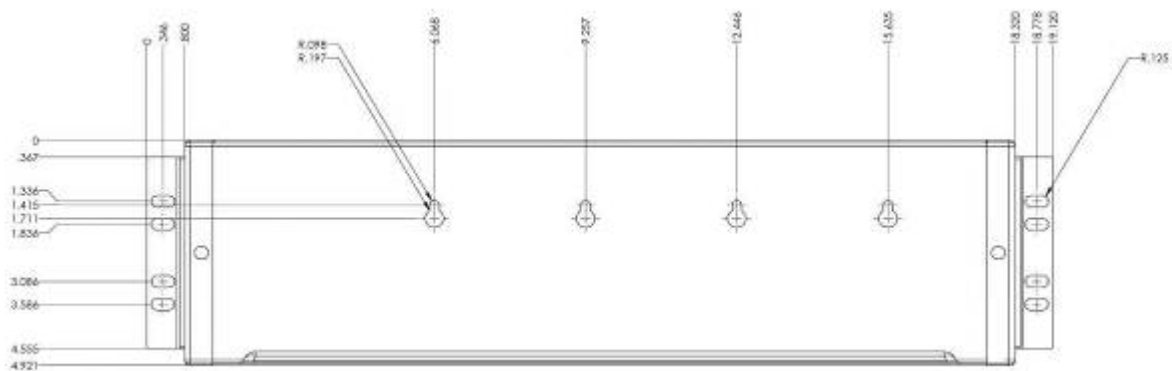
NOTE: LTP battery enclosures are included on standard LTP systems. LTP systems with options 57W and/or 57V do not include an LTP battery enclosure.



When attaching mounting brackets to LTP system and battery enclosure, La Marche supplied hardware must be used (PANHEAD SCREW #12-24 0.375" LONG). Longer screws may cause damage to the circuit board located inside the system.



LTP System Enclosure Dimensions (NOT FULL SIZE)



Battery Enclosure Dimensions (NOT FULL SIZE)



After the holes are drilled, install four bolts (with appropriate hardware) in the keyhole positions on the wall. Place the LTP System enclosure on the bolts and tighten. Add four bolts to side brackets and tighten. Repeat this procedure for the battery enclosure.



After the enclosures are mounted, the LTP can be wired. Use the instructions provided in section 1.1 (Rack Mounting and Wiring) for wiring the LTP.

1.3 Electrical Connections

The LTP has a universal AC input (102-264 VAC). To connect the AC input, simply connect the provided power cable to the AC receptacle.

Select proper size for the DC wiring from the wire size table. If the distance between the unit's DC output and the DC load exceeds 10 feet, use the Power Cable Guide below to minimize the voltage drop across the wire distance.

Breaker Size (Amps)	AWG Minimum Wire Size Requirement for Customer Connection	AWG Minimum Wire Size for Equipment Grounding
5	#14	#14
10	#14	#14
15	#12	#12
20	#12	#12
25	#10	#12
30	#10	#10
35	# 8	#10
40	# 8	#10
45	# 8	#10
50	# 8	#10
60	# 6	#10

NOTE: These are recommended sizes. All National and Local Wiring Codes must be followed.

1.3.1 Power Cabling Guide

Use the following formulas and table to determine proper wire size for minimal voltage drop.

Table of Conventions

- CMA = Cross section of wire in circular MIL area
- A = Ultimate drain in amperes
- LF = Conductor loop feet
- MaxAmp= Maximum allowable amperes for given voltage drop
- AVD = Allowable voltage drop
- K = 11.1 for commercial (TW) copper wire (KS5482-01)
= 7.4 for aluminum (KS20189)

SIZE (AWG)	AREA CIR.MILS	SIZE (AWG)	AREA CIR.MILS
18	1620	6	26240
16	2580	4	41740
14	4110	3	52620
12	6530	2	66360
10	10380	1	83690
8	16510	0	105600

Calculating Wire Size Requirements

$$CMA = \frac{A \times LF \times K}{AVD}$$

Calculating Current Carrying Capacity of Wire

$$MaxAmp = \frac{CMA \times AVD}{LF \times K}$$



CAUTION: When connecting the DC cables to the battery/load, be certain the positive terminal of the controller is connected to the positive battery/load terminal and the negative terminal of the controller is connected to the negative battery/load terminal.

2 Operation

2.1 Initial Setup

Once all connections have been made and the input cable is plugged into the AC source, the unit will automatically power up. At the initial startup, the LTP will run at the default settings (52 Volt output). In order to change these settings, the controller's front cover must be removed by loosening the thumb screw at the bottom of the cover.

2.2 Alarms

The LTP system is equipped with four alarm relays. The relays contacts are located directly beneath the LTP display. When any alarm occurs, the corresponding relay contacts will trigger and the alarm condition will be scrolled on the bottom line of the LCD.

The **AC Mains Failure Alarm** is triggered when the AC mains voltage is outside of the AC input range of 102-264 VAC. The AC Mains Failure relay energizes upon failure. Under the AC mains failure condition, the rectifier's AC ON LED will flash (if the AC mains is completely lost, the AC on LED will turn off). The AC Mains Failure alarm will also cause the Rectifier Failure alarm to indicate.

The **Rectifier Failure Alarm** is triggered when the rectifier output voltage falls to less than 20% of the voltage set point, or if the output current falls to less than 10% of the rated output with an output voltage of less than 95% of the set point. Upon rectifier failure, the corresponding LED of the failed rectifier will light.

Example 1: For a set point of 52VDC, the alarm triggers if the voltage falls below 10.4VDC.

Example 2: For a set point of 52VDC, the alarm triggers if voltage falls below 49.4VDC and current falls below 0.75A.

NOTE: *When a rectifier is plugged in hot, the Rectifier Failure alarm will temporarily trigger as the rectifier ramps up to the system voltage. This alarm should clear within 30 seconds. An AC Mains failure will also cause the Rectifier Failure alarm to indicate.*

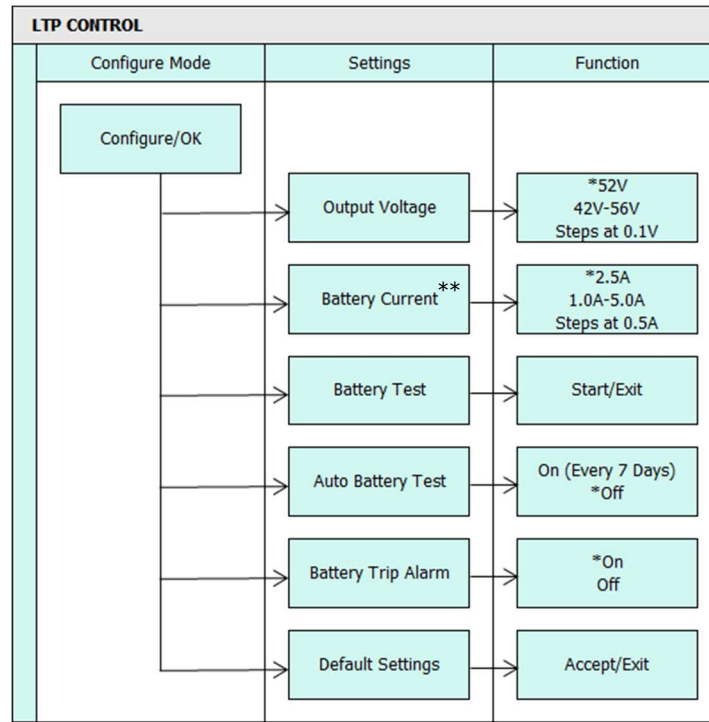
The **Distribution Failure Alarm** is triggered when any of the distribution fuses have blown.

The **Low DC Voltage Alarm** triggers when the DC output voltage falls below 47.5VDC (1.98 volts/cell). The Low DC Voltage alarm shares relay contacts with the Battery Breaker Tripped alarm. The Low DC Voltage alarm also triggers a buzzer sound.

The **Battery Breaker Tripped Alarm** is triggered when the battery breaker is turned off. The auxiliary contacts of the battery breaker need to be wired to the 2-pin spring lug connector located on the controller, if available. This alarm will not operate if auxiliary contacts are not wired to the connector. The Battery Breaker Tripped alarm can be disabled in the Configure Mode. The Battery Breaker Tripped alarm shares relay contacts with the Low DC Voltage alarm.

2.3 Configure Mode

With the controller's front cover removed, locate the four buttons located beneath the display (SET, UP, DOWN, BACK). Enter Configure Mode by pressing the SET button. Use the UP and DOWN buttons to cycle through the available options and the SET button to choose the highlighted option. The BACK button is used to return to the previous menu, or to exit calibration. See the chart below for the adjustable settings in Configure Mode. The controller settings will remain stored, even in the event of total power failure.



*Indicates Default Value

**Submenu is only available on standard LTP systems

LTP Configure Mode Flowchart

2.3.1 Setting Output Voltage

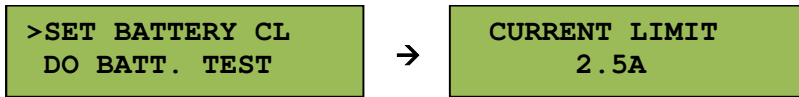
Press the SET button with "SET O/P VOLTAGE" selected in order to change the output voltage setting.



Pressing the UP or DOWN button will increment or decrement the output voltage by 0.1V respectively. The output voltage range is 42 – 56V through the Configure Mode. The default value is 52V. Pressing the BACK button will store the value in memory and return to the previous menu.

2.3.2 Setting Battery Current Limit

Press the SET button with "SET BATTERY CL" selected in order to change the maximum charging current of the battery. Take into consideration this submenu is **only** available for standard LTP systems.



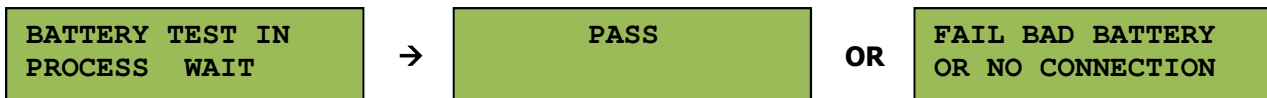
Pressing the UP or DOWN button will increment or decrement the current limit by 0.5A respectively. The range for the battery current limit is 1 – 5 Amps. The default value is 2.5A. Please consult the battery manufacturer for the maximum charging current of the connected batteries. Pressing the BACK button will store the value in memory and return to the previous menu.

2.3.3 Manual Battery Test

Press the SET button with "DO BATT. TEST" selected in order to manually run a Battery Test. The control will ask for verification of the manual test. Press SET to start the battery test or BACK to exit and cancel the battery test.



Pressing the SET button will start the battery test. The battery test runs for 30 seconds. During that time, the case fans will slow to half speed and the display will show "BATTERY TEST IN PROCESS WAIT."



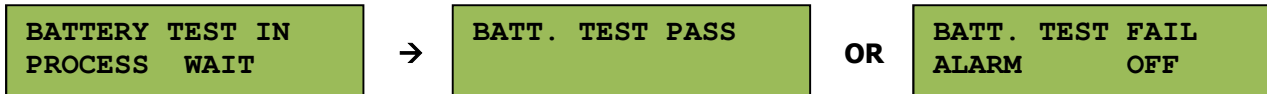
If after 30 seconds the output voltage of the battery has remained above 45V, the message "PASS" will be displayed for 5 seconds and the control will then return to normal operation. If output voltage drops below 45V, the message "FAIL BAD BATTERY OR LOOSE CONNECTION" will be displayed for 10 seconds and the control will then return to normal operation.

2.3.4 Auto Battery Test

Press the SET button with "AUTO BATT. TEST" selected in order to set the Battery Test to run automatically. The asterisk (*) on the display indicates the current setting. When enabled, the automatic battery test option will perform a battery test every 7 days.



To turn on automatic testing, move the arrow in front of the "ON" selection and press SET. To turn off automatic testing, move the arrow in front of the "OFF" selection and press SET. After 7 days, the battery test will automatically start and run for 30 seconds. During that time, the case fans will slow to half speed and the display will show "BATTERY TEST IN PROCESS WAIT."



If after 30 seconds the output voltage of the battery has remained above 45V, the message "BATT. TEST PASS" will be displayed for 5 seconds and the control will then return to normal operation. If output voltage drops below 45V, the message "BATT. TEST FAIL ALARM OFF" will be displayed and an alarm will start beeping. The alarm must be turned off manually by pressing BACK. With the alarm disabled, the control will return to normal operation.

2.3.5 Battery Breaker Trip Alarm

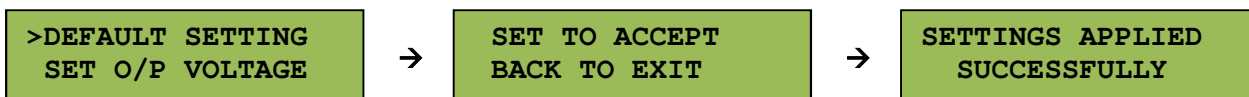
Press the SET button with "BATT TRIP ALARM" selected in order to set the operation of Battery Breaker Tripped Alarm. The asterisk (*) on the display indicates the current setting. When enabled, the AC Mains Failure alarm contacts will also change state if the Battery Breaker is tripped.



To turn on the Battery Breaker Tripped alarm, move the arrow in front of the "ON" selection and press SET. To turn it off, move the arrow in front of the "OFF" selection and press SET.

2.3.6 Default Settings

Press the SET button with "DEFAULT SETTING" selected in order to reset the controller settings to default. The control will ask to verify the reset settings. Press SET to reset the settings or BACK to exit and cancel the change.



2.4 Normal Operation

The LTP is designed to be set only once and require no additional attention. If a rectifier or inverter were to fail, the system isolates these failed modules and continues normal operation without them. Under normal operation, the two case fans will run at full speed. Only under a battery test will the fans slow in speed. The LTP modules are completely hot-swappable. A rectifier or inverter can be removed or replaced at any time without removing power from the system. If a rectifier or inverter is to be removed, a blank panel (LTP-BLKPNL) must be inserted in its place in order to maintain proper airflow and cooling.

WARNING:



It is important to note that the LTI inverter draws input power from the LTP rectifiers and/or batteries. The inverter draws approximately 5 amps and can draw up to 7 amps depending on conditions. The customer must factor this current draw in with the total DC load when using an inverter.

2.5 Battery Test

Certain facilities require that the system batteries be tested at a specified interval. When a battery test is started, the LCD will display "Battery Test in Progress Please Wait" and the unit fans will slow to about half speed. If the battery test fails, the alarm LED will light and "Battery Test Fail" will display. The battery testing can be started in one of three ways.

2.5.1 Manual

The first method of running a battery test is to run the test manually through the LTP Configure Mode. Remove the front cover of the controller and press either the SET button to enter the LTP Configure Mode. Continue pressing UP or DOWN until "Battery Test" is displayed. Press the SET button to manually run the battery test. Typically, it takes 30 seconds to finish the test. It will pass the test if voltage is above 45V and display "PASS" for 5 seconds. Otherwise, it will display "FAIL BAD BATTERY OR NO CONNECTION" for 10 seconds and return to normal operation. For more information, refer to the Configure Mode section 2.3.3.

2.5.2 Automatic

The second method is to allow the LTP to test the battery automatically. When automatic testing is turned on, the LTP will test the battery automatically every 7 days.

Remove the front cover of the controller and press the SET button to enter the LTP Configure Mode. Continue pressing UP or DOWN until "Auto Battery Test" is displayed. Press the SET button to enter the submenu.

An asterisk (*) symbol is used to mark which option is currently selected. In order to turn the automatic testing on, move the arrow to on and press SET. For more information, refer to the Configure Mode section 2.3.4.

2.5.3 Local Area Network

The third method is to run the battery test remotely over a Local Area Network (LAN). Using this method requires the LTP communications option 21X. Follow the directions in section 2.6 to set up the LTP on a LAN. Continue to the next page for instructions to run a battery test over a LAN.

With the LTP configured for LAN access, open an internet browser and type "192.168.1.100" (or the defined host name for the LTP). On the right side of the Welcome page is the current status of the LTP. At the bottom of the status box is a circle labeled "Battery Test Switch". Simply click on this circle to perform a remote battery test.

The screenshot shows a web browser window with the address bar displaying "192.168.1.100/index.htm". The page features a red header with the LaMARCHE logo and the text "The Powerful Advantage Since 1945" and "ISO 9001:2008 CERTIFIED". Below the header is a red navigation bar with the text "LTP SMPS Monitoring & Control Application". The main content area is divided into three columns. The left column contains a navigation menu with three items: "Overview", "Network Configuration", and "SNMP Configuration". The middle column has a "Welcome!" heading followed by three paragraphs of text explaining the application's purpose and how to perform a battery test. The right column displays a status box with a list of indicators: "LTP CONNECTIVITY" (green dot), "AUTO BATTERY TEST" (grey dot), "MAINS FAIL" (grey dot), "RECTIFIER FAIL" (grey dot), "DISTRIBUTION FAIL" (grey dot), "LOW DC VOLTAGE" (grey dot), and "BATTERY BREAKER TRIP" (grey dot). Below the list are three lines of data: "Battery Voltage: 52.0V", "Chg. Current: 0.2A", and "Load Current: 0.0A". A button labeled "BATTERY TEST DONE" is positioned below the data. At the bottom of the status box, the text "Battery Test Switch:" is followed by a red dot.

2.6 Communications

2.6.1 Default Settings

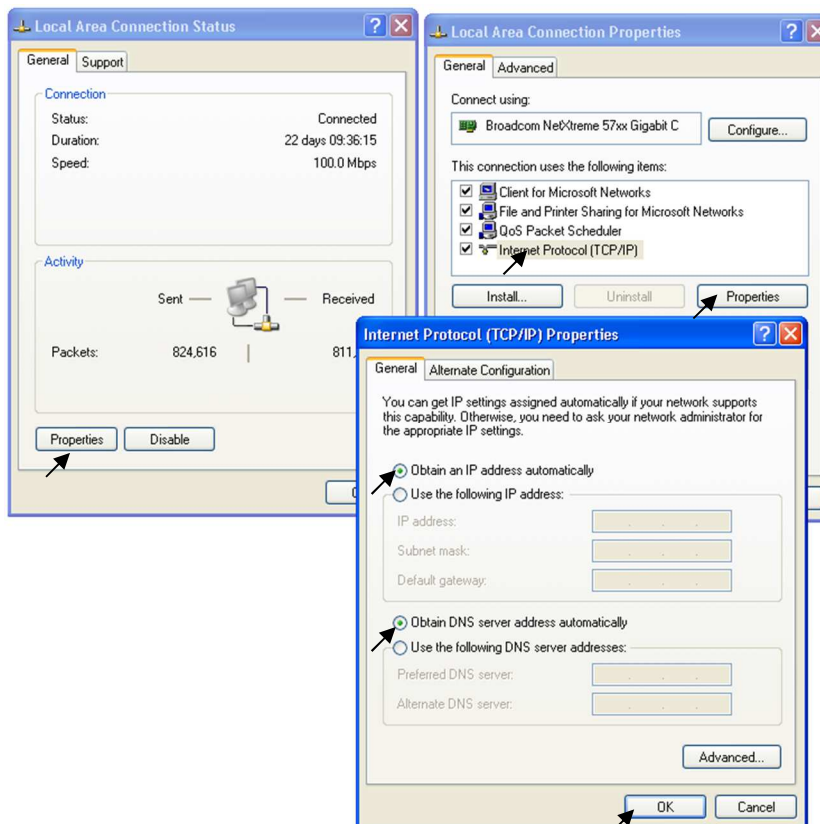
Host Name:	MCHPBOARD	IP Address:	192.168.1.100
Gateway:	192.168.1.1	Subnet Mask:	255.255.255.0
DHCP:	Disabled	VLAN:	Disabled

2.6.2 Setting up a Local Network Connection using DHCP or Static IP

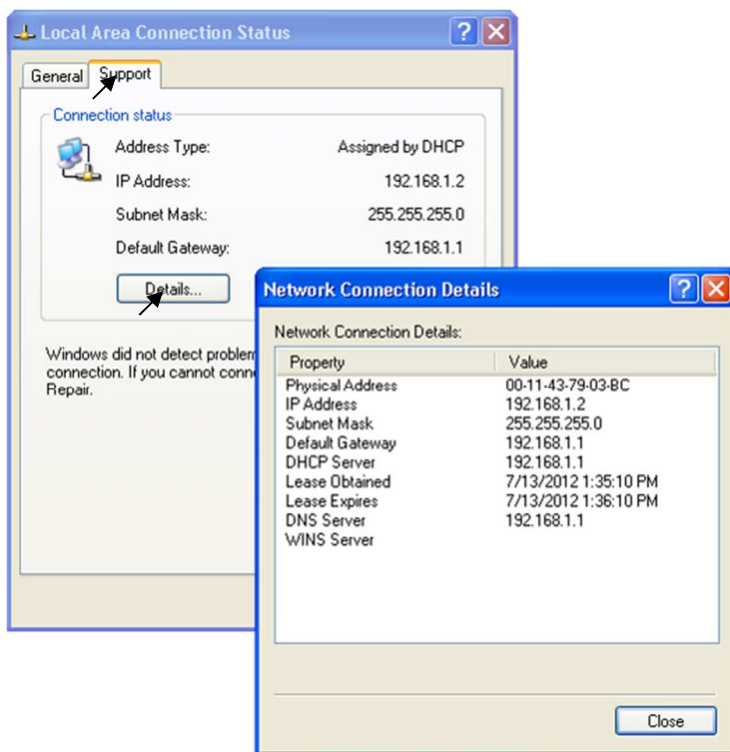
Connect an Ethernet Cable between the PC and the LTP communications board. Open the Control Panel through the Windows start menu. In Control Panel, double click Network Connections. In network connections, right click Local Area Connection and selected status from the drop-down menu.



From Local Area Connection Status window, select properties in the bottom left corner. From the Properties menu, select "Internet Protocol (TCP/IP)" and click Properties. From this new window, make sure that both "Obtain an IP address automatically" and "Obtain DNS server address automatically" are selected. Click "OK" on the two Properties menus.

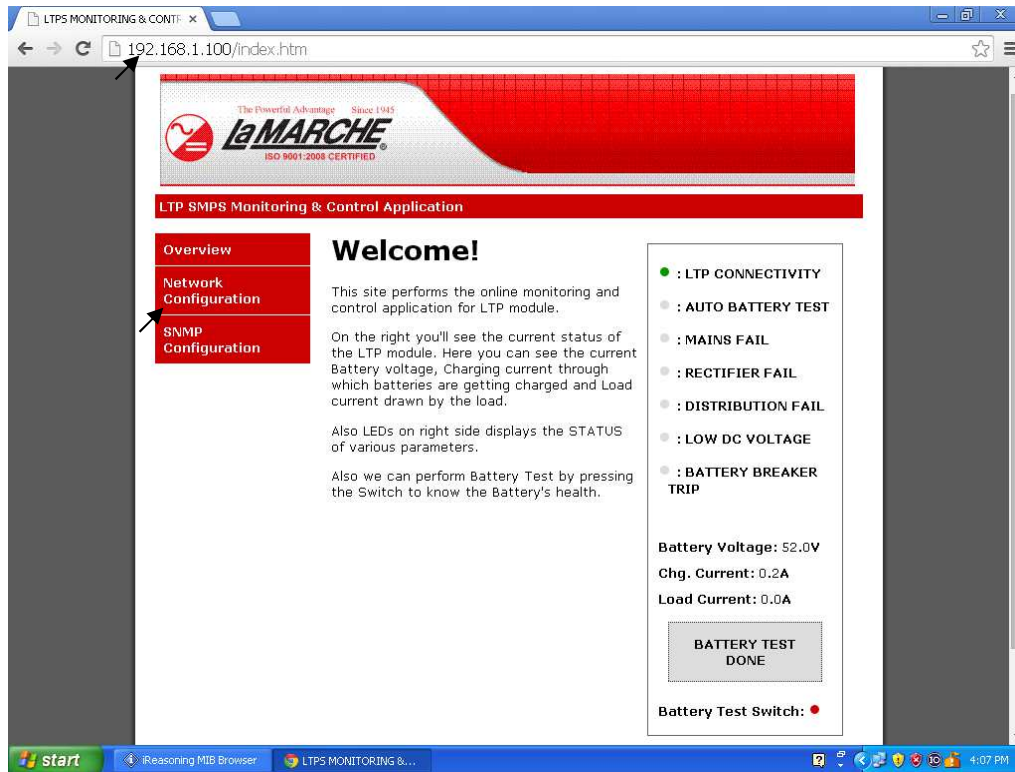


Go back to the Local Area Connection Status window and select the support tab. Once in the support tab, select "Details" near the middle of the window. Under the Details window, find and write down the values listed under IP Address and the DHCP Server.

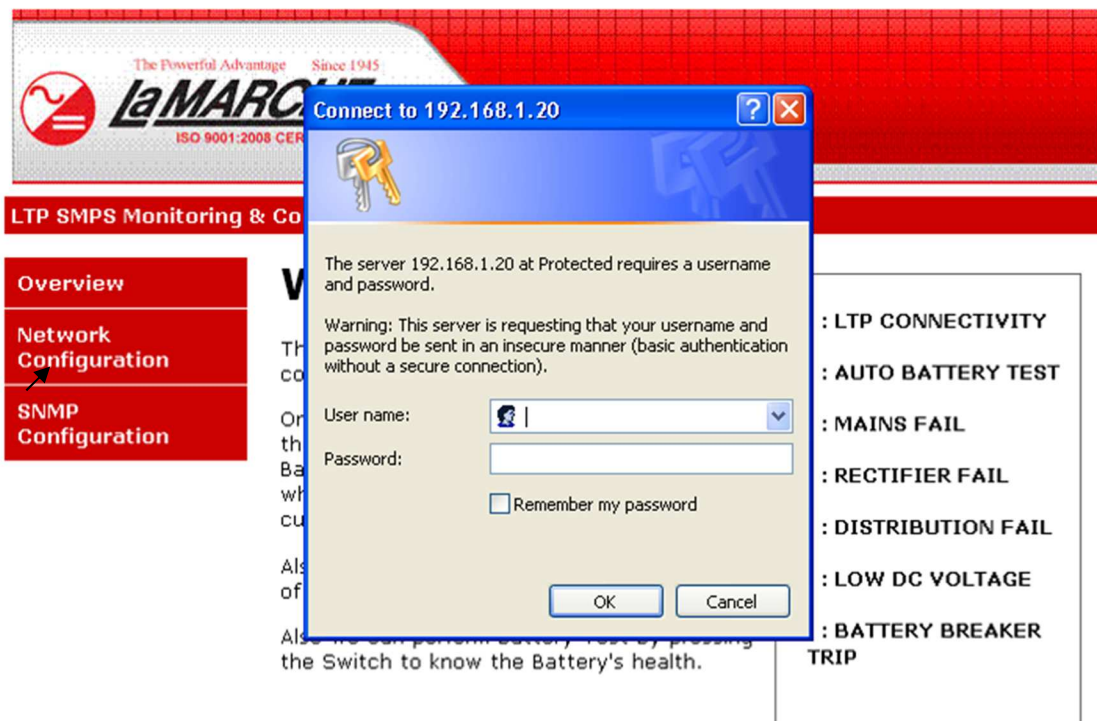


The IP Address is the address of the PC and The Default Gateway and DHCP server address is the IP of the LTP communication card.

Open an internet browser and type the DHCP server value in the address bar. A website will be loaded that will look similar to the one below.



In order to access the LTP communication card's IP address settings, click on Network Configuration. A window will popup asking for the user name as password. By default, the username is *admin* and the password is *Lamarche*.



The LTP Configuration is set up by default to receive the IP from the DHCP server. The custom settings can be entered by unchecking the box "Enable DHCP". The Board Configuration screen includes the MAC Address, the name of the LTP, and all of the IP information. The name can be changed to differentiate the different LTP units connected on the same network.

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LTP SMPS Monitoring & Control Application

Overview

Network Configuration

SNMP Configuration

Board Configuration

This page allows the configuration of the board's network settings.

CAUTION: Incorrect settings may cause the board to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the board below:

MAC Address:	00:04:A3:52:7F:53
Host Name:	MCHPBOARD
	<input checked="" type="checkbox"/> Enable DHCP
IP Address:	192.168.1.1
Gateway:	192.168.1.1
Subnet Mask:	255.255.255.0
Primary DNS:	0.0.0.0
Secondary DNS:	0.0.0.0

Save Config

In this example, we change the "Host Name" to LMC1, the "IP Address" to 192.168.1.10 and the "Subnet" to 255.255.255.0

The Powerful Advantage Since 1945
laMARCHE
ISO 9001:2008 CERTIFIED

LTP SMPS Monitoring & Control Application

Overview

Network Configuration

SNMP Configuration

Board Configuration

This page allows the configuration of the board's network settings.

CAUTION: Incorrect settings may cause the board to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the board below:

MAC Address:	00:04:A3:52:7F:53
Host Name:	LMC1
	<input type="checkbox"/> Enable DHCP
IP Address:	192.168.1.10
Gateway:	
Subnet Mask:	255.255.255.0
Primary DNS:	
Secondary DNS:	

Save Config

As soon as the Save Config button is clicked, the website will show the following message. The connection to the LTP will be lost.

LTP SMPS Monitoring & Control Application

Overview
Network Configuration

Reboot In Progress...

Your settings were successfully saved, and the board is now rebooting to configure itself with the new settings.

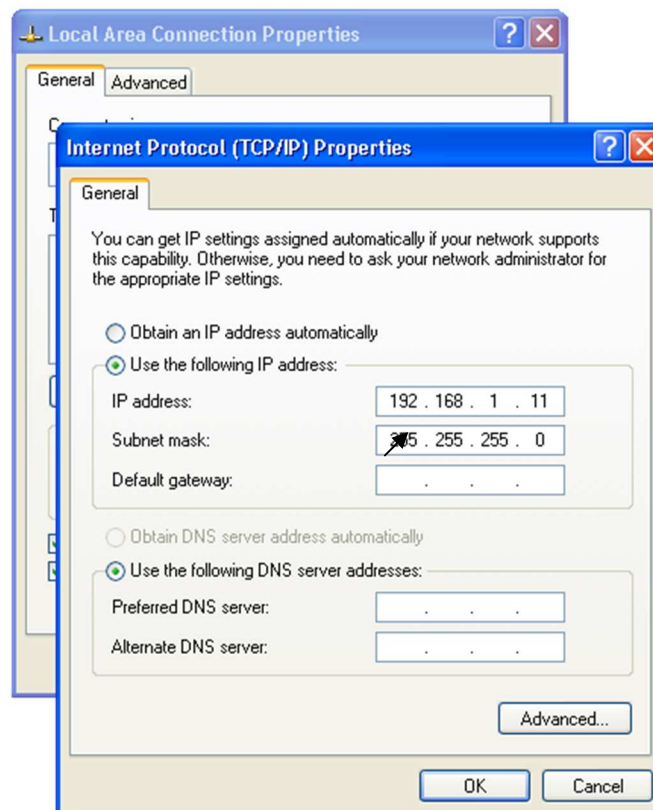
Your board is now located at: <http://LMC1/>

Reconnection Instructions

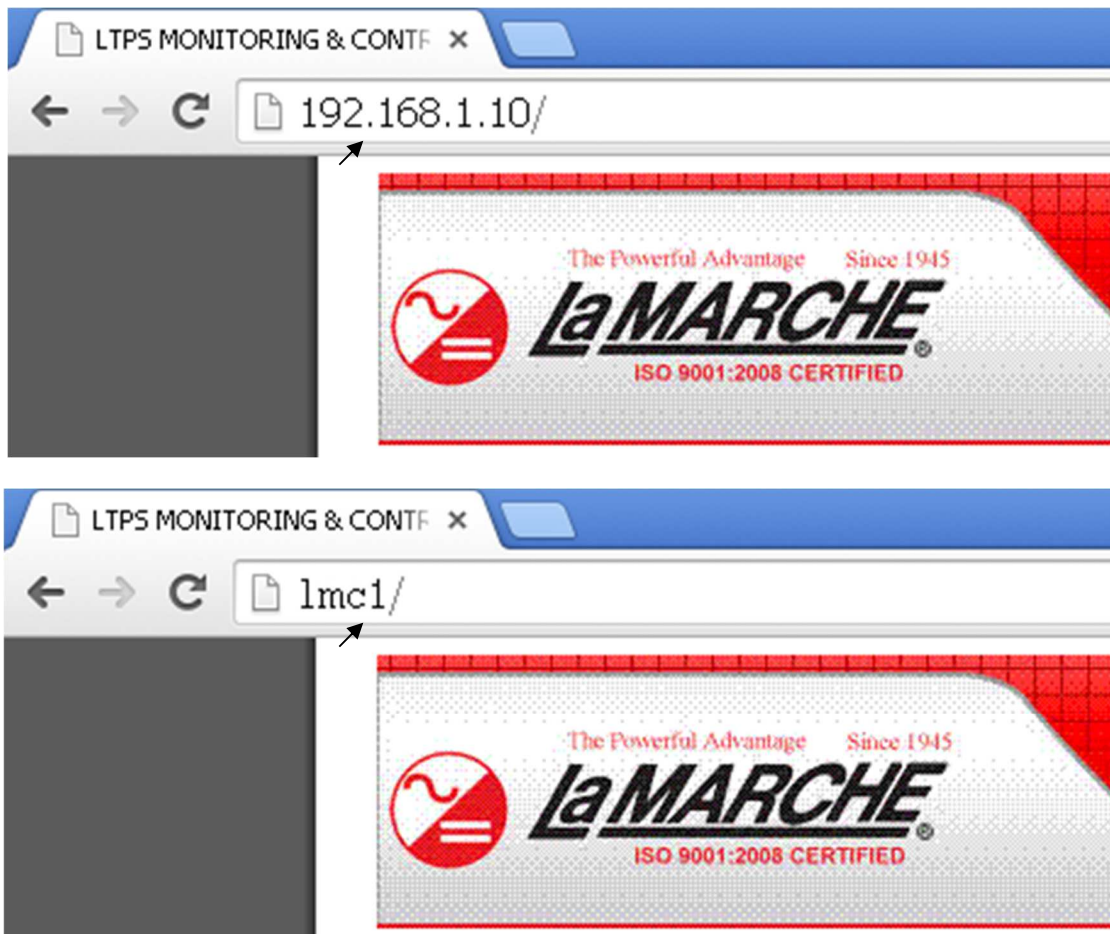
1. **Did you change the hostname, IP or MAC address?**
It is necessary to clear the address caches in your web browser and OS. From the command prompt in Windows, enter "nbtstat -R" to clear the hostname cache, close your current web browser, open a new web browser, and then try to access the web address above.
2. **Did you try the IP address?**
Try accessing the board directly at the IP address shown on Network Connections > Local Area Connection Status > Support window. (ex: enter "http://192.168.5.23/" into your browser). If this fails, then the IP address you set is not reachable. Try the step below.
3. **Still not working?**
You can restore compile-time settings by clearing the Configuration Area into the Microcontroller FLASH. Hold BTN1(SW2) and press MCLR (or reset power). Continue holding BTN1(SW2) until the LEDs flash. Release BTN1 and press MCLR (or reset power) again. This procedure restores the configuration settings in TCPIPConfig.h. You'll be able to access the board as you did when first connecting.

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Following the instructions from before, go back to Internet Protocol (TCP/IP) Properties and change the IP address using the same Subnet mask (255.255.255.0).



Open the internet browser and enter the new IP Address (192.168.1.10 in this example case) or the new device name (LMC1 in this example).



If everything has been done correctly, the LTP is now setup to be operated on the Local Network. Follow this same procedure to setup addition LTP systems. Make sure that the IP address and name for each LTP is different.

2.6.3 Setting up VLAN

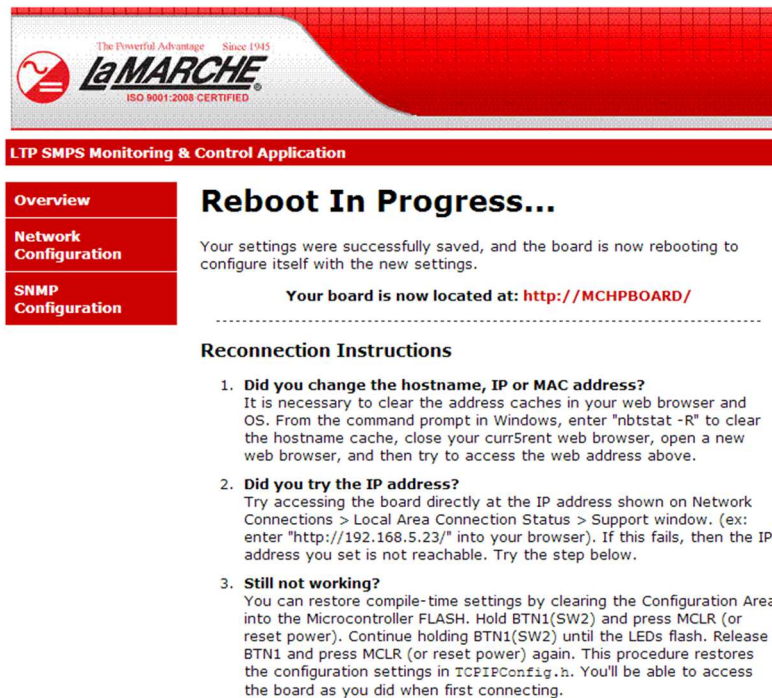
The screenshot shows the 'Board Configuration' page of the LTP SMPS Monitoring & Control Application. The page has a red header with the laMARCHÉ logo and 'ISO 9001:2008 CERTIFIED'. A navigation menu on the left includes 'Overview', 'Network Configuration', and 'SNMP Configuration'. The main content area is titled 'Board Configuration' and contains a 'CAUTION' warning: 'Incorrect settings may cause the board to lose network connectivity. Recovery options will be provided on the next page.' Below the warning, it says 'Enter the new settings for the board below:'. The configuration form includes the following fields: MAC Address (00:1E:C0:B8:8B:0E), Host Name (MCHPBOARD), IP Address (192.168.1.100), Gateway (192.168.1.1), Subnet Mask (255.255.255.0), Primary DNS (0.0.0.0), Secondary DNS (0.0.0.0), and VLAN ID (201). There are checkboxes for 'Enable DHCP' and 'Enable VLAN', both of which are currently unchecked. A 'Save Config' button is located at the bottom of the form.

To enable VLAN, click on the 'enable VLAN' box. Enter appropriate VLAN ID in the 'VLAN ID' field. Enter appropriate 'IP Address' and 'Gateway' in their respective fields.

This screenshot is similar to the previous one, showing the 'Board Configuration' page. The 'Enable VLAN' checkbox is now checked. The 'VLAN ID' field is set to 200. The 'IP Address' field is now 192.168.200.80 and the 'Gateway' field is 192.168.200.1. All other fields remain the same as in the previous screenshot.

In the example above VLAN is enabled, the VLAN ID is set to 201. The IP Address then was changed to 192.168.201.80 and Gateway was changed to 192.168.201.1.

With desired information entered, click on 'Save Config' which is the last option in the settings. The LTP communications board will reboot. If everything was done correctly, the LTP system should be ready to connect to your VLAN.



The screenshot shows the web interface for the LTP SMPS Monitoring & Control Application. At the top, there is a red header with the LaMARCHE logo and the text 'The Powerful Advantage Since 1945' and 'ISO 9001:2008 CERTIFIED'. Below the header, the title 'LTP SMPS Monitoring & Control Application' is displayed. A navigation menu on the left includes 'Overview', 'Network Configuration', and 'SNMP Configuration'. The main content area features a large heading 'Reboot In Progress...' followed by a message: 'Your settings were successfully saved, and the board is now rebooting to configure itself with the new settings.' Below this, it states 'Your board is now located at: <http://MCHPBOARD/>'. A section titled 'Reconnection Instructions' contains three numbered steps: 1. 'Did you change the hostname, IP or MAC address?' with instructions to clear caches; 2. 'Did you try the IP address?' with instructions to access the board directly; 3. 'Still not working?' with instructions to restore compile-time settings by clearing the Configuration Area into the Microcontroller FLASH.

2.6.4 Reset Communications Card to Default Settings

The communications card can be reset to default settings. In order to reset the card, hold SW1 (COMM. LED will turn off) and SW2, release SW1 while continuing to hold SW2 (approximately 3 seconds) until the COMM. LED flashes once.



Appendix A: Manufacturer's 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 under normal use.

If the equipment proves defective within a two-year period, it shall be replaced without charge after examination at our factory, providing such defect in our opinion, is due to faulty material or workmanship and not caused by tampering, abuse, misapplication or improper installation.

Should the equipment require major replacement or repair, the equipment must be returned to the La Marche factory to have the inspections, parts, replacements and testing performed by factory personnel. Should it be necessary to return a piece of equipment to the factory, the customer or Sales representative must first obtain a RMA (Return Material 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 warranty period.

All internal maintenance to be performed by La Marche. **Warranty is void if seal is damaged.**

La Marche reserves the right to honor the warranty with a replacement unit.

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.

All sales are final. Only standard LaMarche units will be considered for return. A 25% restocking fee is charged when return is factory authorized. Special units 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: 125767
Instruction Number: P25-LLTP-1
Issue ECN: 19779 – 12/12

22072 – 01/19	21755 – 03/18		
21510-1 – 07/17	20749-1 – 04/15	20695 – 01/15	20560 – 09/14
20322 – 03/14	20238 – 12/13	20119 – 09/13	20104 – 08/13