IMPORTANT SAFETY INSTRUCTIONS - IMPORTANT: READ AND SAVE THIS SAFETY INSTRUCTION MANUAL. KEEP IT WITH OR NEAR CHARGER AT ALL TIMES.

For technical assistance, call your Dealer with the model and Serial Number listed on the Product(s).

Manual P/N: MNL051 REV 3 © 10/10/07

1. WARNING - RISK OF EXPLOSIVE GASES.

WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. EXPLOSIVE GASES DEVELOP DURING NORMAL BATTERY OPERATION. IT IS IMPORTANT THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND MAKE CERTAIN YOU FULLY UNDERSTAND IT AND FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS EXACTLY.

1.1. To reduce risk of battery explosion, follow all safety instructions below and those published by the battery manufacturer and review cautionary markings on equipment containing the battery.

1.2. **CAUTION:** To reduce the risk of injury, charge only rechargeable **LEAD-ACID** batteries. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst causing personal injury and damage. If uncertain about battery type or charging procedure contact the battery manufacturer. The charger is not intended to supply power to low-voltage electrical systems other than applications using rechargeable lead-acid type batteries.

1.3. Use of attachments or accessories, not originally supplied in your kit, may result in a risk of fire, electric shock, or injury to persons.

1.4. Do not operate or disassemble charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.

1.5. Charger contains no serviceable parts. If it fails during its warranty period, contact your Dealer for a warranty replacement.

1.6. To reduce risk of electric shock, unplug charger/controller from Power Supply Power In Jack before attempting any maintenance or cleaning.

1.7. Do not expose charger to rain, snow, liquid or moisture.

2. PERSONAL PRECAUTIONS

2.1. Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

2.2. Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes. Wear eye and clothing protection and avoid touching eyes while working near battery.

2.3. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flush eye with running cold water for at least 10 minutes. Get medical attention immediately.

2.4. **NEVER** smoke or allow a spark or flame in vicinity of battery.

2.5. Be extra cautious not to drop a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause an explosion and remove personal metal items such as rings, bracelets, necklaces, watches, etc. to prevent arcing/burning.

3. PREPARING TO CHARGE

3.1. Clean battery terminals. Be careful to keep corrosion from coming into contact with eyes.

3.2. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For battery without caps, carefully follow manufacturer's recharging instructions.

3.3. Determine voltage of battery by contacting battery manufacturer and make sure it matches output rating of battery charger.

4. WARRANTY

Diversified Power International LLC (DPI) offers this NON- TRANSFERABLE, ONE YEAR LIMITED WARRANTY to the original purchaser. DPI warrants exclusively to the original purchaser that this charger will be replaced or repaired, at DPI's option, if it fails during the first year after date of purchase due to defect in material or workmanship. It is the responsibility of the purchaser to contact DPI Customer Service for warranty consideration.

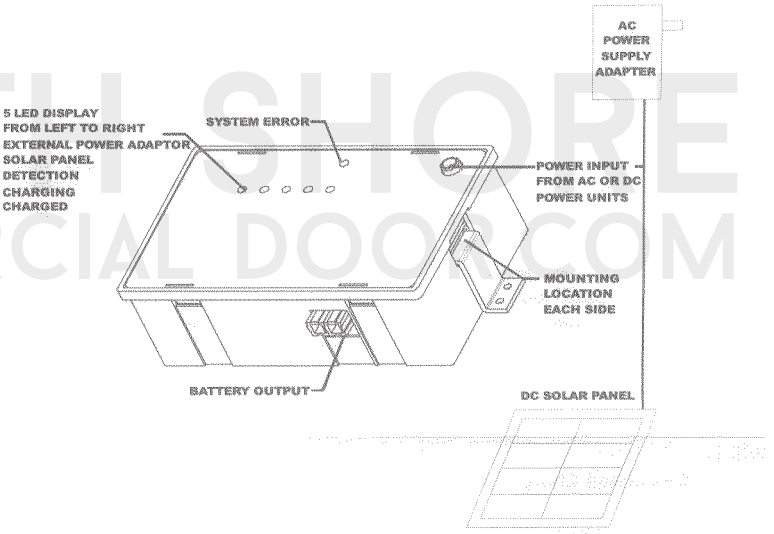
DIVERSIFIED POWER INTERNATIONAL LLC
(423) 538-9002
www.DPIpower.com

A copy of the original bill of sale is required for the limited warranty to be honored. If a copy of the original bill of sale is lost, a $14.99 handling fee must accompany the battery charger for the limited warranty to be honored. This warranty does not cover failures arising out of improper use, maintenance or operation of the product. Repair or replacement as provided under this warranty is the exclusive remedy of the consumer. DPI shall not be liable for any incidental or consequential damages for breach of any expressed or implied warranty on this product. Except to the extent provided by applicable law, any implied warranty of merchantability or fitness for a particular purpose on this product is limited to the duration of this warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

5. SYSTEM WIRING AND SETUP

Refer to this Drawing when reading the following paragraphs:



5.1 Solar Panel input or AC Power Supply input will apply power to unit. Both cannot be used at the same time. An adaptor cable can be purchased from the Dealer so that both units can be plugged to the unit at the same time without damage. Part # IPC030

5.2 Connect Charger/Controller Battery Terminal Positive '+' to Battery Lead Positive '+' and Charger/Controller Battery Terminal Negative '-', to Battery Lead Negative '-'.

5.3 Connect supplied AC Power Supply Adaptor Jack or Solar Panel Jack to the Charge/Controller's Power Input Jack.

6. L.E.D. DISPLAY

First 3 seconds upon Charger/Controller powered from Battery or Supplied Power Supply, the Battery Status Light Emitting Diode (L.E.D.) Flashes.

6.1. L.E.D. Description

EXTERNAL POWER ADAPTOR	Illuminates continuously while power from A.C. Power Supply Adaptor is sensed.
SOLAR PANEL	Illuminates continuously while power from Solar Panel is sensed.
DETECTION	If illuminated for longer than 2 seconds check connection on battery.
CHARGING	Continuous or flashing indicates charging – refer to Charge Algorithm Section, for further details.
CHARGED	On continuously when AC present and battery fully charged. Flashes when battery capacity is low.

SYSTEM ERROR If flashing, the charger has entered Failure Mode. Disconnecting power will reset charger, but if source of failure is not corrected, Failure Mode will occur again.- refer to the following Table to **Decode the Error Type:**

	L.E.D.s (First 4 L.E.D.s from Left)			
	1st	2nd	3rd	4th
Wrong Battery Voltage	Off	Off	Off	Flash
Reverse Battery Connection	Off	Off	Flash	Off
Thermal Runaway Condition	Off	Flash	Off	Off
Charge Time Monitor - 1	Off	Flash	Flash	Off
Charge Time Monitor - 2	Off	Flash	Flash	Flash
Excessive Battery Drain	Flash	Off	Off	Off
Failed Pre-Qualification Test -1	Flash	Off	Off	Flash
Failed Pre-Qualification Test -2	Flash	Off	Flash	Off

7. POSSIBLE REMEDIES TO FIX 'FAILURES'

WRONG BATTERY VOLTAGE
Example: Charger connected to a 24v battery. Reconnect to a battery rated at 12Vdc.

REVERSE BATTERY CONNECTION
Check and correct any reverse battery.

THERMAL RUNAWAY CONDITION
Old Battery - cells, inside battery, age differently. During charging, and over the course of many years of operation, OR, many battery discharges to levels beyond 100% discharged, this error may occur and the battery(s) may have to be replaced.

CHARGE TIME MONITOR – 1 and 2
Battery pack took too long to complete its charge. Possible causes include a load (pump running for long periods of time) that operated during charging or the battery pack is too large (Many batteries connected in a parallel circuit). Apply the following formula to determine if the Timer may run out due to a large battery:

$$\text{Charge Time} = \frac{\text{Battery Capacity (AH)}}{2} \times 1.25$$

Calculated Charge Time must be less than approximately 108hrs.

Output Amps and Battery Capacity (AH - Ampere-hour) are listed on your battery or contact your battery purchasing source.

Example: Charge time to for a fully discharged 36 AH battery: 36AH / 2Amps x 1.25 = 22.5 Hrs - ok to use.

EXCESSIVE BATTERY DRAIN
Possible cause is a Motor running a very long time and discharging the battery beyond point of no return. Stop Motor, and allow battery time to recharge.

PRE-QUALIFICATION TEST - 1 and 2
During Battery testing, if a battery was previously allowed to discharge to a very low voltage, such as 1 or 2Vdc, the charger puts a low current through the battery to try to get the battery to come back to life. The battery may be taking too long to come back.

OTHER POSSIBLE PROBLEMS

No Power on Charger – Check the AC Power Supply Adaptor Plug-in, or the Solar Panel for proper connection. (See Illustration in Section 5 for location)

8. CHARGE ALGORITHM

8.1. PRE-QUALIFICATION TEST STAGE ONE
Charging L.E.D. flashes and applies three battery tests. Further charging is prohibited if a fault is discovered. If a faulty battery is suspect, test with a Load Tester (not supplied). Duration of this stage is dependent on the condition and state of charge of battery and is approximately 10 seconds to 8hrs.

8.2. CONSTANT CURRENT CHARGE STAGE TWO
Charging L.E.D. illuminates constantly indicating that the charger is charging the battery at its full rated output.

8.3. CONSTANT VOLTAGE CHARGE STAGE THREE
Charging L.E.D. illuminates constantly indicating that the charger is charging the battery at a regulated voltage level to top off battery.

8.4. FLOAT CHARGE STAGE FOUR
Charged L.E.D. illuminates constantly. Charger will maintain battery until AC Power is disconnected and can be left connected indefinitely.

8.5. RECYCLE CHARGE STAGE FIVE
While left connected to AC Power and Battery, a new charge cycle is automatically initiated, every 84th day.

9. MAINTENANCE

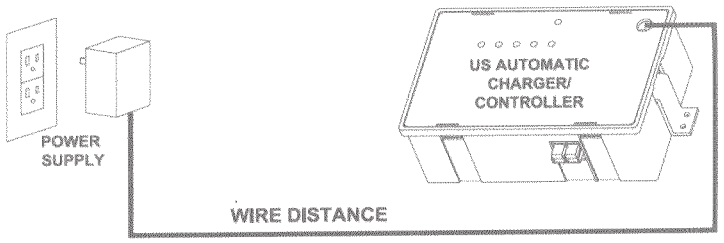
Your new charger requires only a little maintenance. Store in a clean, dry place and occasionally clean the case and cords (while the charger is unplugged) with a slightly damp cloth.

10. SOLAR PANEL INPUT

10.1 The Solar Panel produces a lower powered output than the AC Power Supply Adaptor, which causes the Solar Panel L.E.D. to illuminate when it is connected.

10.2 The Solar Panel needs to be mounted so that it receives full sunlight. Even a small amount of shade or blockage will cause the Solar Panel to Cease charging. Something as tiny as a fingertip shadow will affect the Solar Panel.

11. RECOMMENDED WIRE GAUGE OVER LONG DISTANCE BETWEEN POWER SUPPLY AND CONTROLLER



WIRE DISTANCE AND GAUGE TABLE

250ft	16Ga
500ft	12Ga
750ft	10Ga
1,000ft	10Ga

The wire used must be rated for Direct Burial use, unless in conduit. Wire ran in conduit must be rated for outdoor use. The above Table lists the recommended wire gauge per application length. Using a smaller gauge may impede performance or cause system to malfunction.