Introduction

Reasonable care and safe methods should be practiced. Check local codes and requirements before installation. This manual contains important information for the safe use of this product. Read this manual completely before using this product and refer to it often for continued safe product use.

Note: This manual covers the installation of the inverter, regardless of what pump, switch or controller combination is included in the system you purchased. For more detailed installation information and troubleshooting regarding the pump, switch or controller, please refer to their individual manuals.

DO NOT THROW AWAY OR LOSE THIS MANUAL. Keep it in a safe place so that you may refer to it when needed.

Warning

WARNING: Always disconnect the Unit from the receptacle power source and battery before handling or making any adjustments to the system.

Battery Backup Warning:

1. Risk of electrical shock this Unit has not been investigated for use in outdoor areas.
2. Risk of electrical shock. Connect only to a properly grounded, three pronged grounding type receptacle. Under any circumstances, do not remove the grounding prong from the power cord.
3. Do not smoke, use sparkable electrical devices or open flame when working on this unit!
4. Do not install Unit in locations classified as hazardous per N.E.C., ANSI/NFPA 70 - 2014.

FAILURE TO HEED ABOVE CAUTIONS COULD RESULT IN INJURY OR DEATH.

The Sumpro® is designed to operate a load up to 12 Amps. If operating more than one pump, the combined FLA cannot exceed 12 Amps.

Important Safety Instructions

Before proceeding further, please review the safety instructions carefully.

General Precautions:

- Before using the inverter read all instructions and caution markings on the inverter, the batteries & all appropriate sections of this instruction manual.
- Do not expose the inverter to any type of chemicals. The inverter is designed for interior use only.
- Do not disassemble the inverter; contact Metropolitan Industries Wholesale Customer Support at (800) 323-1665 when service or repair is required. Opening by unqualified personnel can lead to electrical shock or fire hazard and void the warranty.
- To reduce risk of electric shock, disconnect all wiring before cleaning.

WARNING: Avoid exposing the inverter or batteries to any type of explosive gases, as batteries generate explosive gases during normal operation. Install the batteries in a well ventilated area.

To reduce the risk of battery explosion, follow all the instructions of the battery supplier or any equipment you intend to use in the vicinity of batteries.

- Use the correct insulated tools to make AC/DC wiring connections.
- Do not install this inverter on or near flammable materials (plywood, chemicals, gas line etc.)

CAUTION:

Personal Precautions:

- Someone should be within the range of your voice to come to your aid when you work near batteries.
- Have plenty of fresh water and soap nearby in the event that battery acid contacts skin, clothing or eyes.
- Wear complete eye, skin and clothing protection.
- Avoid touching eyes while working near batteries. Wash your hands when done.
- If battery acid comes in contact with skin or clothing, wash immediately with soap and water.

Knowing Your Inverter

In its most basic form, an Inverter transforms Direct Current (DC) to Alternating Current (AC). The battery pack acts as reserve power to ensure continuous supply of power whenever electrical supply from utility power is not available. The inverter is used to charge the batteries when normal utility power is available and converts the battery's DC to AC voltage to run the pump when utility power is lost.

Battery Safety

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

CAUTION: A battery can present a risk of severe burn and injury from high short circuit current. The following precautions should be observed when working on batteries.

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

CAUTION: The electrolyte is a dilute sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following procedures should be observed:

a. If electrolyte contacts the skin, wash it off immediately.

b. If electrolyte contacts the eyes, flush thoroughly and immediately with water. Seek medical attention.

c. Spilled electrolyte should be washed down with a suitable acid neutralizing agent. A common practice is to use a solution of approximately one pound (500 grams) bicarbonate of soda to approximately one gallon (4 liters) of water. The bicarbonate of soda solution should be added until the evidence of reaction (foaming) has ceased. The resulting liquid should be flushed with water and the area dried.

CAUTION: Do not reverse the battery connections, as it will blow the battery fuse. A power cord has been provided to connect the inverter to incoming AC wall outlet.

Battery Requirements

Your Unit operates on 24 volt DC battery power when in the power fail mode. Two UL recognized deep cycle marine batteries should be used. There are two principal types of batteries: starting and deep cycle. There are several different types of battery constitutions including liquid lead acid, nickel iron, nickel cadmium, alkaline and maintenance free. Batteries are sealed or vented.

NOTE: All batteries must be the same make, model, and age for the inverter to function properly.

Starting Batteries (NOT RECOMMENDED)

Starting batteries are designed for high cranking power but not deep cycling. **DO NOT** use them with your inverter. They do not affect the inverter, but they will simply not last long in a deep cycle application. They use a lot of thin plates to maximize the surface area of the battery. This allows very high starting current but less run time when the battery is cycled.

Deep Cycle Batteries (RECOMMENDED)

Deep Cycle batteries, also known as marine batteries, are best suited for use with the inverter. They are designed to have the majority of their capacity used before recharge. Available in many sizes and types, be sure to use at least a 100 AH battery.

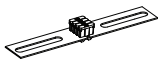
BATTERIES NOT INCLUDED

Tools Needed

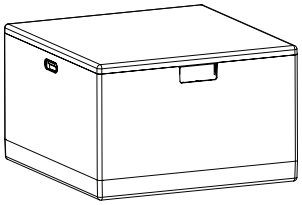
An insulated adjustable wrench will be needed.

Installation

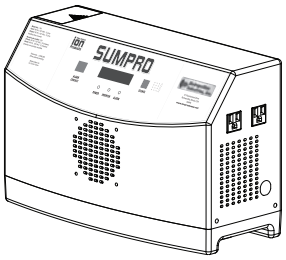
The Sumpro® unit is packaged in two separate cartons containing one complete unit and a fuse link. Below are the contents.



Fuse Link
PN: A0000702i7



Sumpro® Battery Box
PN: iB20386



Sumpro® Head Unit
PN: iS20281

See accompanying unit assembly drawings.

1. Unpack The Sumpro®
Your Sumpro® auxiliary power supply should be in two separate containers. Remove the contents from the containers. They should include the head unit, the battery box and the fuse link (located inside the battery box).

Open the lid on the battery enclosure and remove the fuse link from inside.

2. Location
Find a suitable place to set the unit (when it is assembled). Keep in mind that the unit should be placed in an area where water and moisture will not splash or drip on the unit, the fan inlet on the front of the head unit will not be obstructed, and where a properly grounded three prong receptacle is within reach of the power cord. When fully assembled, the head unit with batteries weighs appoximately 200 lbs. It is recommended to use the optional Sumpro® stand to keep the unit off the floor. A dedicated 15A receptacle circuit is recommended.

3. Assembly
Set the battery box in place, making sure that the openings will be facing the back of the head unit. Once in place, place the head unit in front of the battery box feeding the battery leads through the large holes in the front of the battery box.

4. Battery Installation
Now that the unit has been properly assembled and in its permanent location the batteries can be installed.

Note: If the battery post configuration differs from that shown on **Page 4**, **Figure A**, additional post adapters may be required.

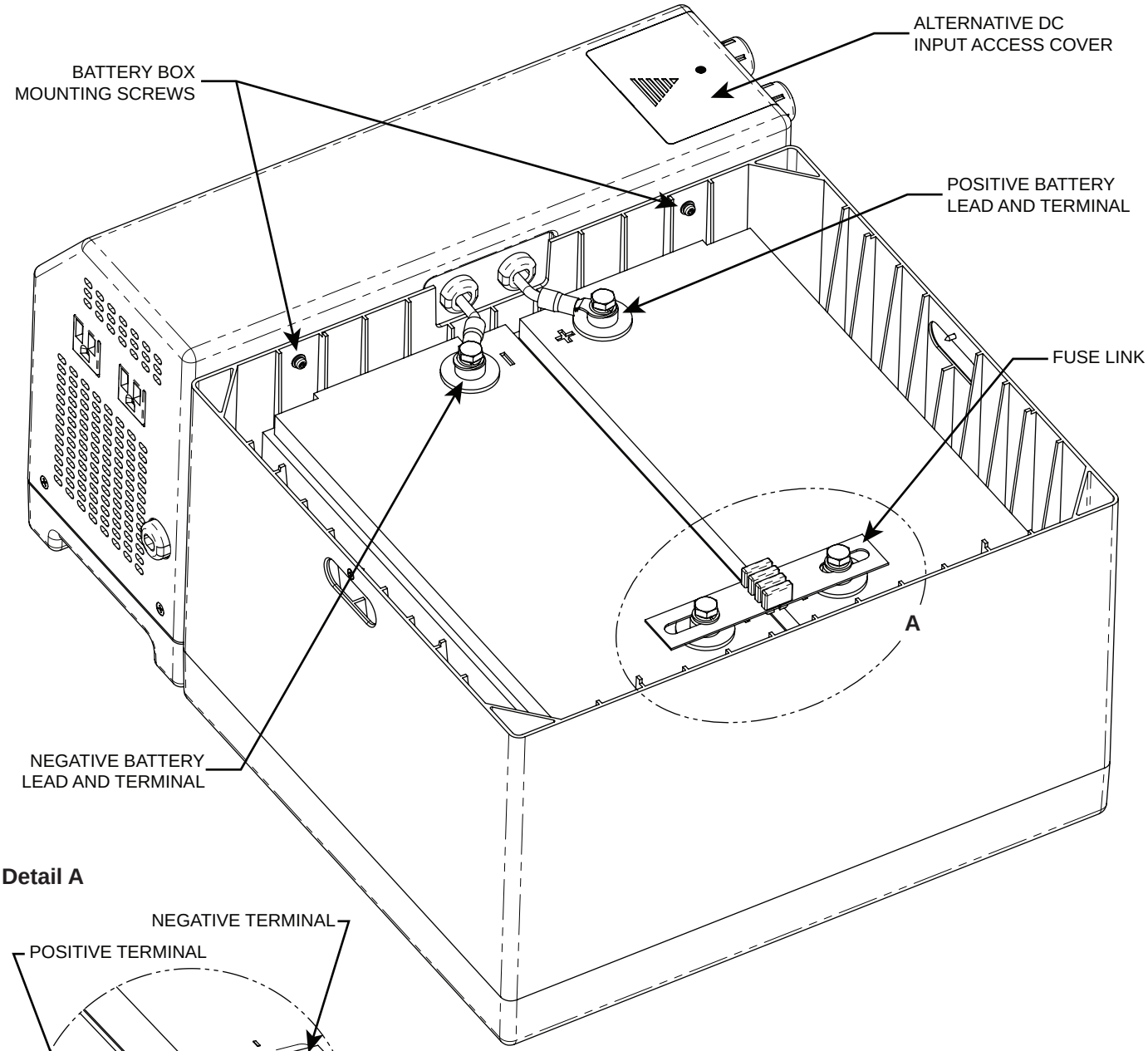
CAUTION: Important Safety Instructions
A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries.

1. Remove watches, rings, or other metal objects.
2. Use tools with insulated handles.
3. Do not lay tools or metal objects on top of batteries.
4. Wear safety goggles and a face shield.

After taking the above precautions, secure the battery box to the head unit using the screws provided. Lower the two 12V batteries into the battery box with the terminals facing each other. At this time check the polarity of your batteries. Facing the front of the Sumpro® unit, the left battery terminal should be positive, and the right negative **(See Page 4, Figure A)**. If this is not the case, **DO NOT** continue until the proper batteries can be obtained.

5. CONNECTING BATTERIES
Now that the batteries have been installed, and the polarity conforms to the Sumpro®, connect the fuse link across the back battery terminals **(See Page 4, Detail A)**. Remove the protective cover from the negative (-) battery lead (black) then connect it to the negative (-) post of the battery. Screw down bolt tightly.

Figure A



Detail A

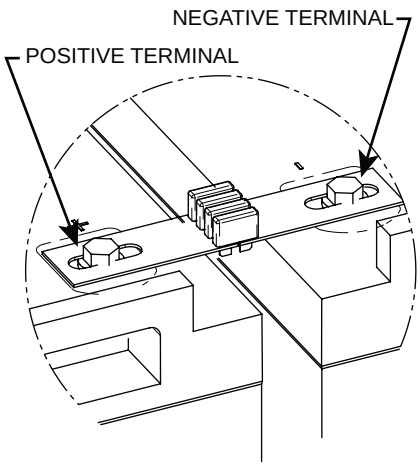


Figure B

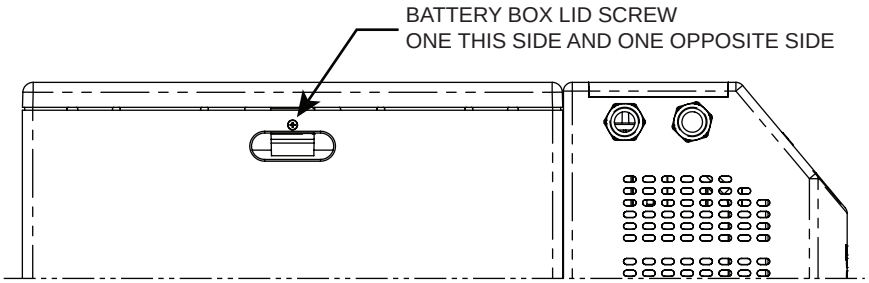
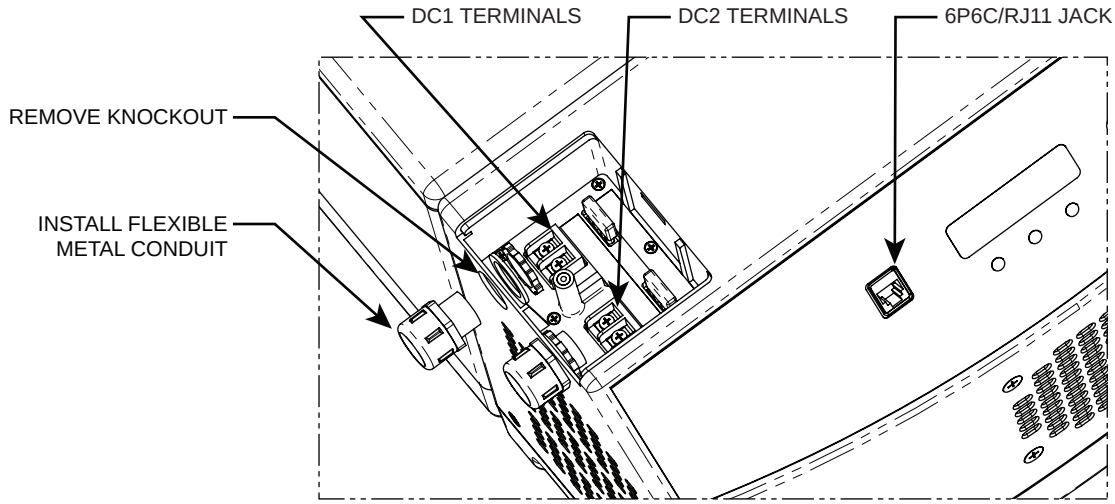


Figure C



Plug the Sumpro® unit into the designated 115V AC outlet.

6. Within 30 seconds, remove the protective cover from the positive (+) red battery lead then connect it to the positive (+) post.

Note: Make sure all battery connections are properly tightened to 75 pound inches.

7. Close Unit

Close and secure the battery enclosure lid using the screws provided, so that children cannot tamper with the unit **(See Page 5, Figure B).**

8. Plug In The Pump
At this time you may plug your 115V pump into your Sumpro® unit, not exceeding the load limit of 12 amps or 1440 watts at any one time.

Note: If connecting a pump controller, such as the Ion Genesis or Ion Endeavor, follow the installation instructions in the controller manual. The controller will be plugged into the Sumpro® instead of the wall outlet.

If connecting a home alarm system to the Sumpro®, make the connection to the 6P6C/RJ11 jack labeled "ALARM CONTACT". The center most pins (#3 and 4) are used for this circuit, and are normally closed (N/C) under normal conditions. These pins electrically open in a Sumpro® alarm condition.

ALTERNATIVE DC INPUT CONNECTIONS

The alternative DC inputs provide an alternate means of charging the batteries via power source(s), not included. When an alternative DC source is connected to the Sumpro, it will charge the batteries if the generated power is greater than the battery voltage, whether or not AC power is available. If two alternative DC power sources are connected at the same time, the Sumpro utilizes the one generating the most power.

Please read the following instructions carefully before attempting to connect an alternative DC source.

1. There are two sets of alternative DC input terminals located on the top left side of the Sumpro, DC1 and DC2. Open access cover and remove the conduit knockout that corresponds to the terminals you are going to connect to (**See Page 5, Figure C).**
2. Connect conduit to the head unit (**See Page 5, Figure C).** Check local codes for conduit requirements.
3. Run the wires from the alternative DC source and connect the positive (+) wire to the positive (+) DC terminal and the negative (-) wire to the negative (-) DC terminal.

NOTE: It doesn't matter which DC input is utilized, but insure that the positive (+) and negative (-) wires from the alternative DC source are connected to the same set of DC terminals, i.e., if using DC2 terminals, the positive and negative wires from the alternative DC source must be connected to the positive and negative terminals of DC2.

4. Put access cover back on the head unit.

Light and Relay Functions

After you have your Sumpro® unit in operation, you can check its status by looking at the system lights. They should tell you everything you need to know about the status of the unit.

1. Power – Green LED
    a. Solid when AC Line In Voltage is deemed present.
    b. Off when AC Line In fault occurs.
2. Inverter – Red LED
    a. Blinks when unit is running off inverter and silence has NOT been pressed.
    b. Solid when unit is running off inverter and silence has been pressed.
    c. Off when unit is operating off of AC Line
3. Alarm – Red LED
    a. Blinks when alarm condition occurs and silence has NOT been pressed
    b. Solid when alarm condition occurs and silence has been pressed
    c. Off when no alarm condition is present
    d. Alarm Contact – NC dry contact
        i. Opens when either the Inverter LED or Alarm LED are blinking
4. LCD Display - Displays all info that pertains to current operating condition of the unit

Testing the System

To test the Sumpro®, simply unplug it from the 115V AC power to run your pump on battery power for a short time. You can repeat this if you wish, but it is not necessary. If your Sumpro® unit works the first time it is sure to work time and time again. **Be sure that you remember to plug the unit back into the receptacle after you have completed the test.**

Note: New batteries are rarely fully charged. Depending on the charge condition of the batteries and the voltage from the utility company, it may take up to 7 days for the batteries to be fully charged.

Sumpro® Maintenance

Your Sumpro® unit has been designed to be virtually maintenance free. Just make sure it is kept clean and dry and that the unit is periodically tested in the auxiliary mode.

Battery Maintenance

If you are using AGM maintenance free batteries, you should visually inspect the batteries every six months for swelling or leakage. For all other batteries, refer to the manufacturer recommended battery maintenance section of the battery being used.

Maintenance or replacement of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions.

Replacing Batteries

Wear full eye protection and protective clothing.

When replacing the batteries, use the same type and size batteries. See battery requirements (Page 2).

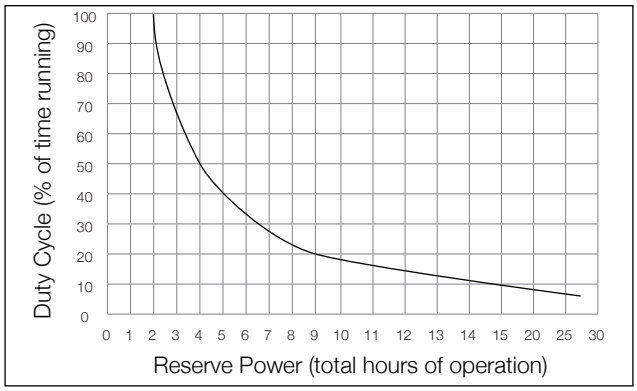
CAUTION: The electrolyte is a dilute sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following procedures should be observed:

- Do not lay tools or metal objects on top of the batteries
- Use tools with insulated handles

1. Unplug the unit from the wall.
2. Follow the Installation Instructions found on page 3 of this manual, starting with step 8 and working back to step 1.
3. Remove and safely dispose of old batteries.
4. Install new batteries per the installation instructions on page 3.

Technical Specifications

Model	100
A.C. Lower Voltage Limit	98 VAC ± 5V
Output Voltage with Full Load	85-135V ± 10V
Maximum Output Current	12 FLA
Battery Lower Voltage Limit	18.5V ± 0.3V
Main Output Frequency	60 Hz
Overload	125 ± 3% (With Auto Reset Function)
Alarm Contact	RJ11 Connection, Normally Closed Dry Contact
Alternative DC Inputs	24VDC, 20A max



Performance curve results using a 3/4 HP pump with a 7.5 FLA and (2) Metropolitan Power Plus model 31P-36 batteries.

Warranty Is Void If...

1. Power cord has been cut or the grounding prong has been removed.
2. Unit has been used in an outdoor application.
3. Batteries not meeting the above specifications have been used.
4. Unit has been submerged in water.
5. Unit has been tampered with in any manner not described in the above instructions.
6. Unit has been disassembled by the customer.
7. Unit has been applied to products exceeding the maximum capacity of the Unit, i.e., a pump other than the one supplied with the unit or more than one pump.
8. Unit has been applied to the wrong voltage.
9. Any labels or cord tags have been removed.

Troubleshooting

Please read the following before calling in for technical support as these are the most common, and easiest to rectify, issues that may occur with your Sumpro® unit.

System says that the batteries are too low

1. Check the age of the batteries.
    a. We recommend that batteries be replaced every 3 years to insure optimum performance
    b. Batteries must be the same age, make and model in order for the Sumpro® to function properly.
2. If using a wet battery, check water levels.
3. Clean all battery connections and leads with a wire brush or sand paper. Even new batteries could have a slight coating on the connections that could cause issues. Ensure that battery terminal screws are tightened to 75 pound inches.
4. Check fuse link for blown fuses.

The system is stuck in a fault that won't clear

1. Reboot the system
    a. While in AC mode, disconnect the positive (+) red wire from the battery terminal
    b. Unplug the Sumpro® from the wall outlet
    c. Wait a few minutes and plug the Sumpro® back into the wall outlet
    d. Within 30 seconds, reconnect the positive (+) red wire to the battery terminal

Normal Operation LCD Displays

	LCD Display	Description	Remedy
1	Sumpro Status NORMAL	The unit is operating off of AC Line power and is functioning normally.	Normal
2	Sumpro Status BATTERY BACKUP	The unit is in DC mode and running off of power provided by attached batteries.	Normal
3	Sumpro Status BATTERY CHARGING	The unit is charging the batteries.	Normal
4	Input Voltage 120V	The input voltage when running off of AC power from the utility.	Normal
5	Battery Current 15.0 A	Current going to the batteries during charging.	Normal
6	Output Current 5.0 A	Current going to the connected load while in DC mode.	Normal

	LCD Display	Description	Remedy
7	Battery Voltage 26.7 V	Battery voltage when batteries are deemed present.	Normal
8	Battery Capacity 91%	Battery capacity when batteries are deemed present. Capacity is calculated based on battery voltage alone. While inverting, the battery capacity can drop 15-20% when load is connected and running.	Normal

Alarm & Fault Code LCD Displays

Below are the most common alarms and faults. For a complete list of LCD display alarms and faults, please refer to the separate Sumpro® Troubleshooting Guide on our web site.

	LCD Display	Description	Remedy
1	Batteries Not Installed	The unit will detect that batteries are connected by installing fully charged batteries or if it draws sufficient current while charging.	Install batteries of the same age, make and model. Once the unit detects that batteries are present, the unit will always assume batteries are connected unless the unit is completely powered off.
2	AC Input Voltage LOST	The unit has detected a loss of AC power from the utility and has switched to DC mode.	The unit must detect good AC voltage before switching back to AC mode.
3	AC Input Voltage UNDERVOLTAGE	The unit has detected an undervoltage condition and has switched to DC mode.	The unit must detect good AC voltage before switching back to AC mode.
4	AC Input Voltage OVERVOLTAGE	The unit has detected an overvoltage condition and has switched to DC mode.	The unit must detect good AC voltage before switching back to AC mode.
5	Invert Lock OFF: 10 S	The unit has suspended DC mode because of a fault condition. The display shows time left before DC mode will resume.	DC mode will resume after the time expires.
6	Charge Lock OFF: 10 S	The unit has suspended battery charging because of a fault condition. The display shows time left before charging start timer can begin.	Battery charging will resume after the timer expires.

	LCD Display	Description	Remedy
7	Cool Lock OFF: 10 S	The unit has suspended battery charging because it needs to cool off for a period of time. The display shows time left before charging start timer can begin.	Battery charging will resume after the timer expires.
8	Fault Lock OFF: 10 S	The unit has entered into a fault condition and has suspended all operations. The display shows time left before operations can begin again.	Normal operation will resume after the timer expires.
9	Sumpro Status INVERT SUSPENDED	The unit has stopped DC mode due to a fault condition. Subsequent screens will state info regarding suspension.	The underlying fault condition must clear and the related lock timer must elapse.
10	Sumpro Status FAULTED	The unit has detected a fault condition and has stopped all operations until condition clears and/or necessary time has elapsed since fault.	The underlying fault condition must clear and the related lock timer must elapse.

Warranty Registration Card

Please fill out and send back to: Metropolitan Ind. Warranty Department P.O. Box 7266 Romeoville, IL 60446. Or to register online, go to www.ionproducts.net

Sumpro® Warranty Registration Card

To register your purchase, please fill in the following information:

Name: _____ Date: _____

Address: _____

City _____ State: _____ Zip: _____

Purchased From: _____

Serial Number*: _____

Installed By: _____ Phone: _____

* The serial number is located next to the auxiliary inputs.

3 Year Residential Warranty

1. Coverage and Term. Metropolitan Industries, Inc. ("**Metropolitan**") warrants to the original purchaser (the "Buyer") of each Ion® product (the "product"), that any part thereof which proves to be defective in material or workmanship within three (3) years from date of manufacture, will be replaced at no charge with a new or remanufactured part, F.O.B. factory. Buyer shall be responsible for all freight charges and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof.

2. Exclusions. **THE WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS AND EXCLUSIONS:**

(a) The Warranty excludes products or workmanship which becomes defective as a result of: (i) earthquake, fire, storms, the elements or any other acts of God; (ii) normal wear and tear from use; (iii) accident, misuse, abuse or neglect; (iv) modifications made by Buyer or any third party, other than **Metropolitan**; and (v) Buyer's failure to properly install, maintain, service and/or operate the product under normal conditions and according to manufacturer's instructions.

(b) **Metropolitan** shall not be responsible for, and the Warranty shall not cover, extended damage which occurs because of Buyer's failure to notify **Metropolitan** promptly in writing of apparent defects.

(c) Any part or component designated as manufactured by anyone other than **Metropolitan** shall be covered only by the express warranty of the manufacturer thereof.

(d) The Warranty shall lapse upon Buyer's failure to fully comply with the terms and conditions of its contract with **Metropolitan**, including Buyer's failure to pay the purchase price for the product or any portion thereof. Buyer's subsequent compliance with the terms and conditions of any such contract, will not cause the term of the Warranty to extend beyond the time period set forth above.

(e) No actions taken by **Metropolitan** to correct a defect in a product shall extend the Warranty beyond the period set forth above. **Metropolitan** shall not be obligated to remedy any defect, where otherwise required pursuant to the Warranty unless and until Buyer notifies **Metropolitan** in writing of the defect and then only if such notification is made prior to the expiration of the period set forth above.

3. Process of Claims and Repairs. **Metropolitan** agrees that if the product or any part or component thereof shall fail to conform to the terms of this Warranty, **Metropolitan** shall replace such nonconforming product, part or component at the original point of delivery and furnish instruction for its disposition. Any transportation charges involved in such disposition and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof shall be the responsibility of Buyer.

4. Limitation on Liability. Notwithstanding any provision to the contrary, **Metropolitan's** entire liability under this Warranty shall not in the aggregate exceed, and Buyer's exclusive and sole remedies are, to the extent permitted by law, shall be to secure replacement of the defective product. **UNDER NO CIRCUMSTANCES SHALL METROPOLITAN BE LIABLE UNDER THE WARRANTY FOR ANY INDIRECT, PUNITIVE, SPECIAL, EXEMPLARY, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING LOST PROFITS, REVENUE, USE OR ECONOMIC ADVANTAGE).**

5. Express Waiver of Any Other Warranties. **THE EXPRESS WARRANTY SET FORTH IN THIS WRITTEN WARRANTY IS THE ONLY WARRANTY MADE BY METROPOLITAN, OR ANY OTHER PARTY, IN CONNECTION WITH ANY PRODUCT PURCHASED FROM METROPOLITAN. NEITHER METROPOLITAN, NOR ANY OTHER PARTY, MAKES ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH IS NOT SET FORTH HEREIN, AND METROPOLITAN HEREBY DISCLAIMS AND BUYER HEREBY WAIVES ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

6. Not Transferable. The Warranty may not be transferred and shall be void on the sale or other transfer of the product.

7. Products and Warranty Subject to Change. **Metropolitan** reserves the right to make revisions to its products and their specifications, and to revise this Warranty and related information without notice.