

Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

19h

THUNDERBOLT solar MAGNUM™

60449

foldable solar panel charger



Cell phone and cord not included

Visit our website at: <http://www.harborfreight.com>
Email our technical support at: productsupport@harborfreight.com






When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

Copyright© 2012 by Harbor Freight Tools®. All rights reserved.
No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

⚠WARNING

Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.

WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

Important Safety Information



WARNING Read all safety warnings and instructions. *Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.* **Save all warnings and instructions for future reference.** The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Installation Precautions

- 1. Install all sensitive electrical components (including wiring connections, regulator, and battery) inside a weatherproof enclosure to prevent electric shock.**
- 2. Do not wire multiple panels in series.** If you need to connect two or more solar panels together, this work must be done by a qualified electrician unless they are connected through a regulator.
- 3. This solar panel kit is not designed for tie-in to a grid.** Only a licensed electrician and a licensed building contractor can safely design and implement a grid tie-in system. Any grid tie-in system must meet all applicable building and electrical codes, and must meet standards established by the area power company. Improper grid tie-in can result in electrocution, fire, and other serious personal injury and property damage. An incorrectly installed grid tie-in system can cause feedback voltage, resulting in electrocution of electrical utility workers.
- 4. Do not apply pressure or press down on the Solar Charger when it is folded.**
- 5. Do not focus light on panel.**
- 6. This product may occasionally produce more current and/or voltage than its rated output. Increase output ratings by 25% when determining component required voltage and amperage ratings.**

Refer to Section 690-8 of the National Electrical Code for an additional multiplying factor of 125 percent (80 percent derating) which may apply.

7. Do not attach to battery or power grid without proper regulator, inverter, and/or charge controller.
8. Install and use according to applicable National Electrical Code (NEC) standards.
9. Verify that installation surface has no hidden utility lines before drilling or driving screws.
10. Install only according to these instructions. Improper installation can create hazards.
11. Wear ANSI-approved safety goggles and heavy-duty work gloves during installation. Do not wear jewelry or metal watches when working near solar panels, wiring or batteries.
12. Keep installation area clean and well lit.
13. Keep out of reach of children.
14. Keep bystanders out of the area during installation.
15. Do not install when tired or when under the influence of drugs or medication.

Service Precautions

1. **Disconnect items being charged before cleaning.**
2. Do not allow children to play with or near this item or electrical components.
3. Inspect before each use; do not use if damaged, parts are loose, water is found inside the housing, electrical insulation is cracked or damaged, or connections are loose.
4. Maintain product labels and nameplates. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.



SAVE THESE INSTRUCTIONS.

Specifications

Peak Output	5V / 5W
-------------	---------

Note: Output will decrease as the panel gets hotter than room temperature (~70° F). Angle, solar intensity, cloud cover and other factors will effect output.

Installation



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Note: For additional information regarding the parts listed in the following pages, refer to *Parts List and Diagram* on page 7.

Setup

1. Select a location for the Solar Charger where the Solar Panels face the sun and are not blocked by shadows. Choose a location that protects the Panels from accidental damage.
2. To hang the Solar Charger, if desired, thread rope (not included) through the Grommets. **CAUTION!** When hanging unit, secure so that it cannot move and hit anything in windy conditions.
4. Before charging, remove protective PE covering from each Solar Panel.
5. Angle face of Solar Charger toward true south according to chart that follows:

Latitude	Solar Panel Angle
0-4°	10°
5-20°	Latitude + 5°
21-45°	Latitude + 10°
46-64°	Latitude + 15°
65° or more	80°

WARNING! Verify that whatever rope is hung from can support weight of the Foldable Solar Charger.

3. The Grommets may also be used to hang the Foldable Solar Charger from nails fastened to a wall.

Note: Angle towards true north if installed in southern hemisphere.

6. Once proper location and angle have been reached, the Solar Panels will begin generating electricity.

Operation

The Foldable Solar Charger may be used to charge Cell Phones, MP3 Players, Handheld GPS devices, and portable game consoles. It can also power some 'AA' battery chargers.

1. Unfold the Foldable Solar Charger, allowing the Solar Panels to have full, unobstructed sunlight.
4. After use, untie the Foldable Solar Charger (if it is hanging). Then fold the Solar Charger, keeping it closed with the hook and loop tab.

Note: The Foldable Solar Charger must have at least four hours of direct sunlight to fully charge a small electronic device.

2. Insert the device's charging cord into the Foldable Solar Charger's USB Output.
3. Once the device is recharged, remove the charging cord.
5. Keep the Foldable Solar Charger closed when not in use.

WARNING! Do not apply pressure or press down on the folded Solar Charger.

THUNDERBOLT
MAGNUM™ solar

Servicing



Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠ CAUTION

TO PREVENT INJURY FROM ELECTRIC SHOCK:

Before service, maintenance or cleaning:

Disconnect solar panel.



TO PREVENT INJURY FROM ELECTRIC SHOCK OR CUTS:

Do not use damaged solar panel. If wiring insulation is damaged or weathered, glass is cracked, or housing is opened, have the problem corrected before further use.

Note: It is normal to see up to 20% degradation in amorphous silicon solar panel performance within the first 6 months before the amorphous coating stabilizes.

Cleaning

Clean and inspect the Foldable Solar Charger **MONTHLY**, or more frequently to maintain peak efficiency.

1. **Wear electrically insulated gloves and ANSI-approved safety goggles.** Dry solar panels and outdoor wiring thoroughly.
2. **Disconnect batteries and any items being charged before cleaning.**

3. Clean solar panels one at a time with mild, non-abrasive cleanser and soft cloth and paper towels. Do not clean with brushes or abrasive cleaners.
4. Inspect the general condition of the Foldable Solar Charger. Check for wiring insulation damage or weathering, cracked glass, cracked or broken parts, loose or corroded contacts, and any other condition that may affect its safe operation.

Adjustment

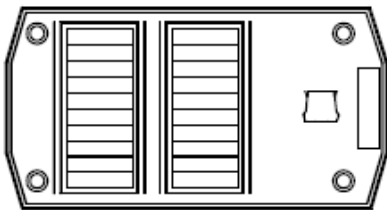
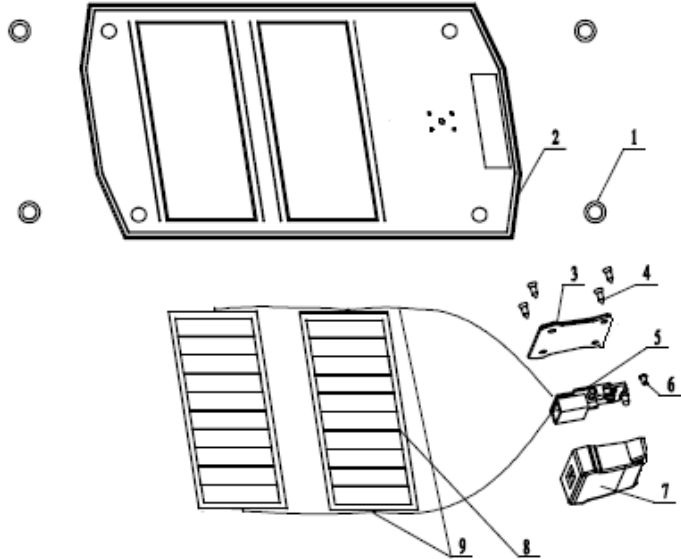
To increase efficiency:

1. **In the Winter**, increase the panels' angle by 10°.
2. **In the Summer**, decrease the angle by up to 10°.
3. **In the Spring and Fall**, keep the panels at the angle recommended on page 4.

Parts List and Diagram

Part	Description	Qty.
1	Grommet	4
2	Fabric	1
3	USB Output Base	1
4	Screw	4
5	USB Output	1

Part	Description	Qty.
6	Screw	1
7	USB Output Cover	1
8	Solar Panel 2.5W, 5V	2
9	Connecting Wire	1



Record Serial Number Here:

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.



26541 Agoura Road • Calabasas, CA 91302 • 1-888-866-5797