

# Owner's Manual & Safety Instructions

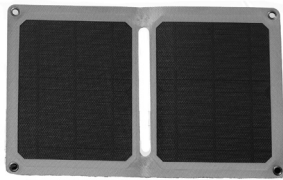
Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual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

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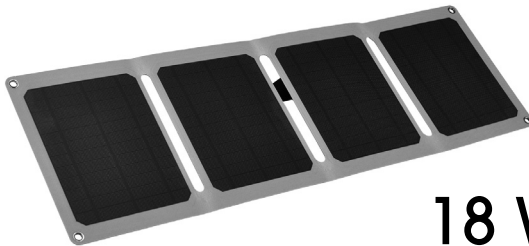
# THUNDERBOLT solar

MAGNUM®

## FOLDABLE SOLAR PANEL



**9 WATT** 57970



**18 WATT** 57968

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


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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**

	<p>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.</p>
<p><b>⚠ DANGER</b></p>	<p>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p>
<p><b>⚠ WARNING</b></p>	<p>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>
<p><b>⚠ CAUTION</b></p>	<p>Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</p>
<p><b>NOTICE</b> <b>CAUTION</b></p>	<p>Addresses practices not related to personal injury.</p>

## 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

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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

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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

Item	57968	57970
Panel Rated Output	2A, 18W	0.8A, 9W
USB Rated Output	5VDC, 2.4A	5VDC, 1.4A
Panel Size (unfolded)	30.4" L x 9.6" W x 0.6" D	15.125" L x 9.666" W x 0.7265" D
Panel Size (folded)	9.6" L x 7.6" W x 1.2" D	7.5" L x 9.666" W x 0.93" D

**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.

## Operation



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 Lists and Diagrams on Page 7.

1. Select a location where the Solar Panel faces the sun and is not blocked by shadows. Choose a location that protects the panels from accidental damage.
2. Connect the device or devices you want to charge and place the panel in the sun.
3. Unfold the Solar Panel allowing the front to have full, unobstructed sunlight. The Solar Panel must have at least four hours of direct sunlight to fully charge a small electronic device.
4. Angle face of Solar Panel toward true south according to chart that follows:
5. To hang the Solar Panel:
  - a. Thread rope (not included) through the Grommets.
  - b. Alternately, the Grommets may used to hang the Solar Panel from nails fastened to a wall.

**CAUTION!** When hanging the Solar Panel, secure it so that it cannot move and hit anything in windy conditions.

**CAUTION!** Verify that whatever rope it is hung from can support weight of the Solar Panel.

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

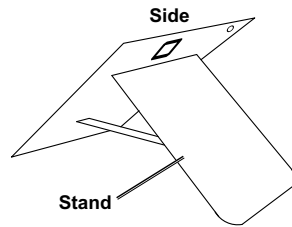
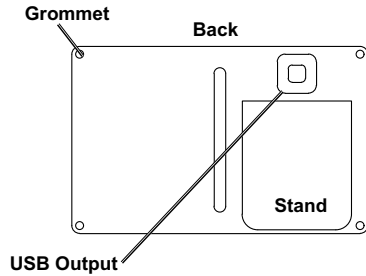
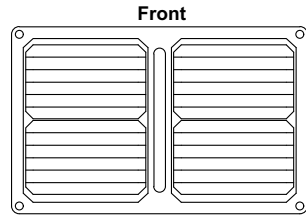
**Note:** Angle towards true north if installed in southern hemisphere.

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6. The Solar Panel may be placed on the ground. The Stand may be pulled out to support the Solar Panel.
7. To charge a device, connect the device to the included USB Cable and connect the USB Cable to the Solar Panel's USB Output.
8. Once the device is recharged, remove the USB cable.
9. After use, untie the Solar Panel (if it is hanging) or fold the Stand back in place (if used).
10. Clean and fold the Solar Panel. Keep it closed when not in use.

**CAUTION!** Do not apply pressure or press down on the folded Solar Panel.

11. Store the Foldable Solar Panel and USB Cable in a dry location out of the reach of children.



57970 Shown

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## Servicing



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

### **⚠️WARNING**

**TO PREVENT SERIOUS INJURY FROM ELECTRIC SHOCK:**

Before service, maintenance or cleaning:

- a. Dry solar panels thoroughly while wearing electrically insulated gloves.
- b. Disconnect USB Cable.



**TO PREVENT SERIOUS INJURY FROM ELECTRIC SHOCK OR CUTS:**

**Do not use damaged solar panel.**

**If cable insulation is damaged or weathered, housing is opened, have the problem corrected before further use.**

## Cleaning

Clean and inspect the Solar Panels MONTHLY, or more frequently to maintain peak efficiency.

1. **Wear electrically insulated gloves and ANSI-approved safety goggles.** Dry solar panels and USB cable thoroughly.
2. **Disconnect any item 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 general condition of Solar Panels. Check for loose hardware, wiring insulation damage or weathering, open housing, 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 Spring and Fall**, keep the angle recommended on Page 4.

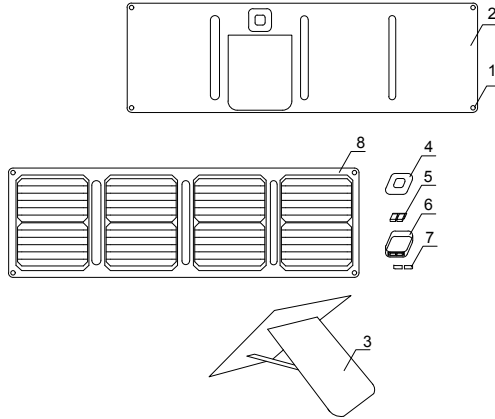
## PLEASE READ THE FOLLOWING CAREFULLY

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.

### 57968 18W Solar Panel

Part	Description	Qty.
1	Grommet	4
2	Fabric	1
3	Stand	1
4	USB Output Cover	1
5	Dual USB Output	1

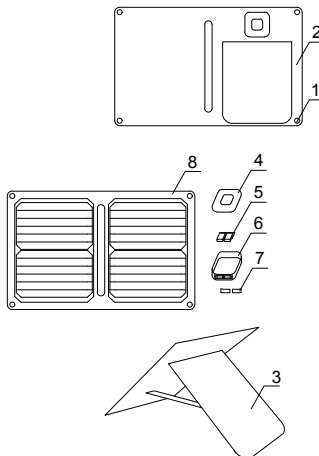
Part	Description	Qty.
6	USB Output Base	1
7	USB Port Cover	2
8	Solar Panel	4
9	USB Cable (not shown)	1



### 57970 9W Solar Panel

Part	Description	Qty.
1	Grommet	4
2	Fabric	1
3	Stand	1
4	USB Output Cover	1
5	Dual USB Output	1

Part	Description	Qty.
6	USB Output Base	1
7	USB Port Cover	2
8	Solar Panel	2
9	USB Cable (not shown)	1



## 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.

**Record Product's 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 purposed only, and are not available individually as replacement parts. Parts may not be interchangeable.

Specify item number when ordering.

Specify UPC 193175428936 when ordering parts for 18W Solar Panel

Specify UPC 193175428950 when ordering parts for 9W Solar Panel.

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