

## Installation Guide

### 100W Solar Panel

Model Number: 780-0100

### 160W Solar Panel

Model Number: 780-0160

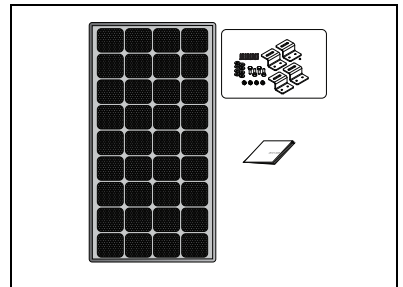
**NOTE:** Actual product may be different from what is shown.

Thank you for purchasing the Xantrex Solar Panel. The Xantrex Solar Panel is a high quality, carbon emissions-free, and sustainable power source for your vehicle such as, recreational vehicle (RV), truck, or boat. It is designed to take solar energy and quietly produce power for your vehicle's DC appliances and store energy to a battery during daylight hours.

The Xantrex Solar Panel base package includes the following items:

- one 100W or 160W Xantrex Solar Panel
- one Installation Guide
- one set of mounting z-brackets

**NOTE:** If any of the accessories, materials, and other items are missing, contact Xantrex or any authorized Xantrex dealer for replacement. See *Contact Information* on the back cover.



The following Xantrex accessories are available to complete your solar system and are sold separately:

- Solar and Battery Cables Starter Kit (PN: 708-0150)
- PWM 30A Charger (PN: 709-3024-01)
- MPPT 30A Charger (PN: 710-3024-01)
- MPPT Remote Display (PN: 710-0010)

# Safety Information

## Important Information

READ AND SAVE THIS INSTALLATION GUIDE FOR FUTURE REFERENCE.

Read these instructions carefully and look at the equipment to become familiar with the device before installing, operating, configuring, maintaining, and troubleshooting it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



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.

## Product Safety Information

- ⚠ Before using the solar panel, read all instructions and cautionary markings on the solar panel's components, the batteries, and all appropriate sections of this guide.
- ⚠ Use of accessories not recommended or sold by the manufacturer may result in injury to persons, a risk of electric shock, or a risk of fire.
- ⚠ The solar panel is designed to be connected to your DC electrical systems. The manufacturer recommends that all wiring be done by a certified PV technician or electrician to ensure adherence to the local and national electrical codes applicable in your jurisdiction.
- ⚠ To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and that wire is not undersized. Do not operate the solar panel with damaged or substandard wiring.
- ⚠ Do not operate the solar panel if it has been damaged in any way.
- ⚠ This solar panel does not have any user-serviceable parts. Do not disassemble the solar panel except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the solar panel yourself may result in a risk of electrical shock or fire.
- ⚠ To reduce the risk of electrical shock, disconnect the solar panel from all devices and/or components before attempting any maintenance or cleaning on the solar panel.
- ⚠ To reduce the chance of short-circuits, always use insulated tools when installing or working with this equipment.
- ⚠ Remove personal metal items such as rings, bracelets, necklaces, and watches when working with electrical equipment.
- ⚠ Do not ground any PV conductors.
- ⚠ Do not install the solar panel on top of a residential structure.

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### Exclusion for Documentation

UNLESS SPECIFICALLY AGREED TO IN WRITING, SELLER

(A) MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN ITS MANUALS OR OTHER DOCUMENTATION;

(B) ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS OR EXPENSES, WHETHER SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION. THE USE OF ANY SUCH INFORMATION WILL BE ENTIRELY AT THE USER'S RISK; AND

(C) REMINDS YOU THAT IF THIS MANUAL IS IN ANY LANGUAGE OTHER THAN ENGLISH, ALTHOUGH STEPS HAVE BEEN TAKEN TO MAINTAIN THE ACCURACY OF THE TRANSLATION, THE ACCURACY CANNOT BE GUARANTEED. APPROVED CONTENT IS CONTAINED WITH THE ENGLISH LANGUAGE VERSION WHICH IS POSTED AT <http://www.xantrex.com>.

NOTE: Visit <http://www.xantrex.com>, click Products, select a Product category, select a Product, and search the Product Documents panel for a translation of the English guide, if available.

### Contact Information

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Web: <http://www.xantrex.com>

Email: [customerservice@xantrex.com](mailto:customerservice@xantrex.com),

<http://www.xantrex.com/power-products-support>

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# Basic Installation Steps

## Safety Instructions

Before beginning your installation:

- Read this entire Installation section so you can plan the installation from beginning to end.
- Assemble all the tools and materials you require for the installation.
- Be aware of all safety and electrical codes which must be met.

## ⚠ WARNING

### ELECTRICAL SHOCK AND FIRE HAZARD

- The power system must be designed by a certified vehicle solar system designer and installed by a certified solar system technician.
- All wiring should be done by qualified personnel to ensure compliance with all applicable installation codes and regulations.
- Disconnect all power sources.
- Disable and secure disconnect devices.

**Failure to follow these instructions can result in death, serious injury, or equipment damage**

## Tools and Materials

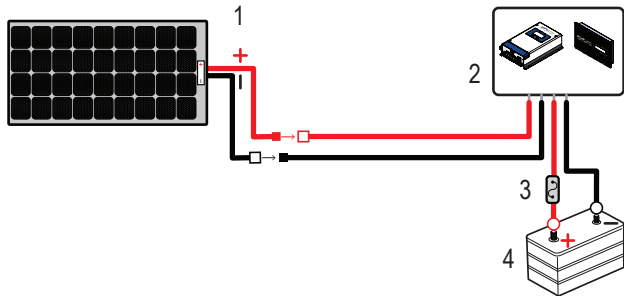
You may need the following tools to install the Xantrex Solar Panel:

- #2 Phillips screwdriver
- Drill with drill bit set
- Wrench set
- Torque driver

### 1. Plan the power system and where to mount the solar panel.

- a. The Xantrex Solar Panel comes in the following power levels: 100 W and 160 W
- b. Draw your power system on paper similar to *Figure 1*.

*Figure 1 Cable Schematic*



1	Solarpanel See section on SolarPanelWiring for more information.	3	DC fuse (or battery disconnect)
2	Charge controller (PWM or MPPT) See section on SolarPanelWiring for more information.	4	Battery (12V or 24V)

## 2. Plan where to mount the charge controller, fuses, and cable locations.

- a. Identify and gather information about your vehicle.
  - Some vehicles are factory-installed with roof cable entry points.
  - If a cable entry point is absent, factory-installed vents can be used to route cables through.
- b. Locate a suitable location for the charge controller inside the vehicle. Select an area that is readily accessible, viewable, and free from exposure to moisture.
- c. Plan the route and measure the lengths of cables needed to reach their connection points factoring in bends and slack.
- d. You may add additional solar panels. For more information, see *Solar Panel Wiring* on page 9.

### **WARNING**

#### **ELECTRIC SHOCK AND FIRE HAZARD**

Do not ground any PV conductors.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

PWM 30A Charge Controller (PN: 709-3024-01)

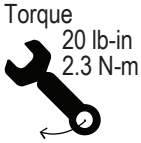


MPPT 30A Charge Controller (PN: 710-3024-01)



### 3. Mount the solar panel.

#### T1:



#### T2:



**TIP:** Contact the vehicle/vessel manufacturer for recommendations on roof sealant.

- a. Unpack the solar panels and prepare all installation tools and materials.
- b. Prepare the mounting surface by removing dust, dirt, and debris.

## NOTICE

### GENERAL PRECAUTIONS

- Select a mounting surface on the roof of your vehicle that is firm, thick, rigid, and able to support the solar panel and mounting hardware.
- Do not select a roof location within 1 m (3 ft) of the front of the vehicle to reduce wind lift forces during motion.
- Do not mount the solar panel near other roof fixtures that can obstruct direct exposure to sunlight.

**Failure to follow these instructions can result in physical damage to vehicles and property.**

- c. Install the mounting brackets on the solar panel. See **T1**.
- d. Place the solar panel assembly on the planned location on the roof, mark the locations of mounting bracket holes on the roof of the vehicle, pre-drill the two holes [one (+), one (-)].
- e. Apply a silicon outdoor-rated, waterproof sealant around the pre-drilled holes.
- f. Install the solar panel assembly on the roof and fasten the brackets using the supplied #10 screws. See **T2**.
- g. Apply a silicon outdoor-rated, waterproof sealant to the screw heads.

#### 4. Connect the DC cables.

## NOTICE

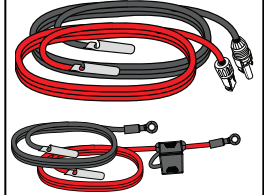
### REVERSE POLARITY

Check polarity at all terminals before making the final DC connection. Pos(+) (red) must connect to charge controller pos(+) (red); Neg(-) (black) must connect to charge controller neg(-) (black).

**Failure to follow these instructions can result in equipment damage.**

- Cover the solar panel with a blanket (or the packaging box) to de-energize it.
- Connect the red pos (+) and black neg (-) PV cables to the solar panel using the MC4-type connectors.

Solar and Battery Cables Starter Kit 10 AWG, 20-ft PV cables, 10-ft battery cables (PN: 708-0150)



### T3:

Torque  
10.6 lb-in  
1.2 N-m



- Route the PV cables through the roof entry point and connect the red pos (+) and black neg (-) PV cables to the charge controller. See **T3**.
- Connect the red pos (+) and black neg (-) battery cables to the charge controller. See **T3**.
- Route the battery cable inside the vehicle and connect the red pos (+) and black neg (-) battery cables to the respective battery terminals.
- Secure all cables with clamps (and/or cable ties) and additional strain-relief as necessary.
- Clear the roof and the cable routes of tools and other debris that may have been left during installation.

#### 5. Operate and maintain the system.

- Remove the blanket (or the packaging box) covering the solar panel to start energizing the solar panel.
- Refer to *Solar Panel Maintenance and Care* on page 11 for best practices.

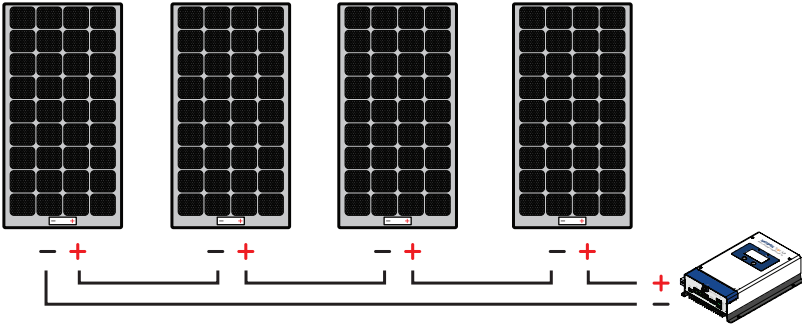
# Solar Panel Wiring

- a. Depending on your power needs and installation type, you have two kinds of solar charge controllers available.

Solar Charge Controller	Amp	Output Voltage	Part Number
Pulse width modulation	30A	12/24VDC	709-3024-01
Maximum power point tracking	30A	12/24VDC	710-3024-01

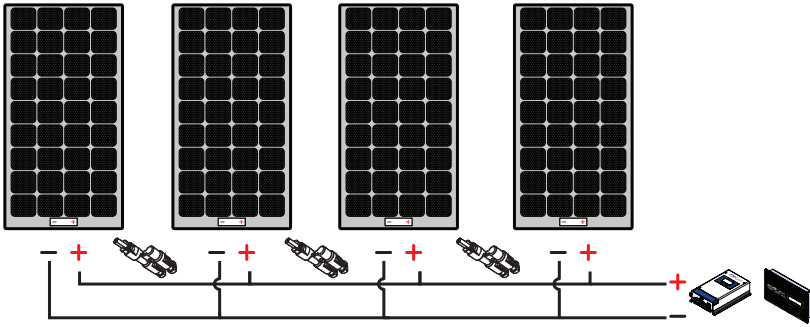
- b. Solar panels can be configured in series, parallel, or a combination of both series and parallel.

Figure 2 Cable schematic for series



Pos (+) of first panel connects to Neg (-) of next panel and so on and terminating with the Pos (+) of the solar charge controller.  
Neg (-) of first panel extends to Neg (-) terminal of the solar charge controller.  
Optimized for MPPT solar charger.

Figure 3 Cable schematic for parallel

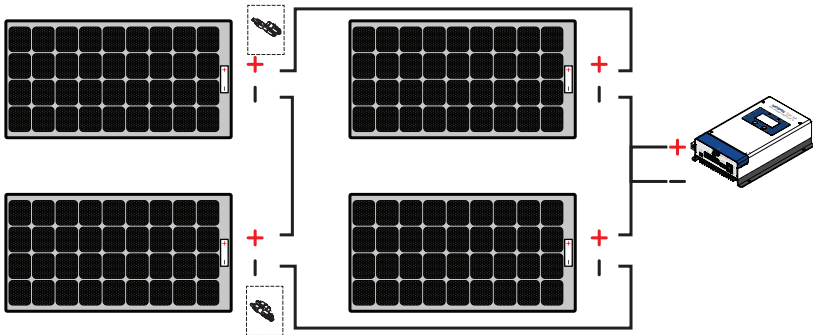


Pos (+) of first panel connects to Pos (+) of next panel using branch connectors and so on and terminating with the Pos (+) of the solar charge controller.

Neg (-) of first panel connects to Neg (-) of next panel using branch connectors and so on and terminating with the Neg (-) of the solar charge controller.

Optimized for MPPT or PWM solar charger.

Figure 4 Cable schematic for combination



One set of panels connect in series to form one string and so on.

Two or more strings connect in parallel.

Optimized for MPPT solar charger.

# Solar Panel Maintenance and Care

Although a well designed vehicle-mounted solar system requires minimal maintenance, it is highly recommended to perform an inspection and cleaning of the solar panels during the warranty period. This helps to ensure optimal system performance and reliability through a few simple steps.

**Visual Inspection** Perform a visual inspection of the solar system on a monthly basis to identify if there are any visual defects or improper connections.

- Check for broken glass.
- Check for any sharp objects on the solar panel surface.
- Check for any signs of corrosion or burnt hotspots around the solar cell and backsheet area.
- Check that the solar panel is clear of any shading by any foreign material or unwanted obstacles. Just a small amount of shade on the solar panel surface can cause significant power output loss.
- Check that all mounting hardware is tightly screwed down per torque recommendations.
- If the solar panel has slight discoloration over a period of usage, this is considered normal for solar panels that use an anti-reflection coating laminate.

**Cleaning Solar Panels** The power output of a solar panel is proportional to the amount of sunlight that reaches the solar cells. Therefore, any build-up of dust or dirt on the surface of the solar panel will result in a loss of power. This is a trade-off between the maximizing the power output of the solar panel versus the cost and time to perform regular cleaning.

⚠ Do not clean solar panels if there is broken glass or exposed wiring because this creates a risk for electric shock.

⚠ Do not step or kneel on the solar panel during cleaning.

- Check the solar panel periodically during seasons that the vehicle is in-use. If there is a build-up of dust or dirt on the surface of the solar panel, it is recommended to clean it.
- Clean the solar panel in the early morning or early evening when the solar panel is cooler, especially in hot regions. This will reduce the risk for electrical and thermal shock.
- Clean using a soft cloth together with clean water and mild detergent or soap.
  - Make sure there is no soap residue remaining after cleaning.
  - Avoid using water with high mineral content that may leave deposits on the solar panel surface.
  - Do not use abrasive materials to clean the solar panel.
  - Do not use chemicals to clean the solar panel.
  - Do not pressure wash the solar panel.

# Troubleshooting

## WARNING

### ELECTRICAL SHOCK HAZARD

If the in-line fuse on the 10AWG positive (+) battery cable blows, replace with a 30A/32V green ATC blade fuse.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

**NOTE:** To obtain service go to *Contact Information on page 1.*

## Common Issues

Problem	Possible Cause	Solution
Battery does not get charged even when sunlight is present.	Solar panel is partially shaded or there is insufficient sunlight.	Move the vehicle or vessel so the whole solar panel is exposed to direct sunlight.
	Loose or no DC cable connections.	Connect DC cables to the battery and solar panel and tighten terminal connections.
	Fuse is blown.	Replace the blown fuse with a 30A/32V green ATC blade fuse.

# Specifications

**NOTE:** Specifications are subject to change without prior notice.

## 100W Solar Panel


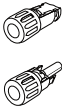


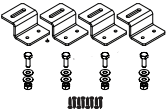

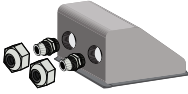
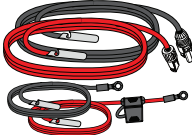



Part number	780-0100
Dimensions	33.1 × 26.4 × 1.2 inches (840 × 670 × 30 mm)
Unit weight	15 lbs.(6.8 kg)
Cell Type	Monocrystalline PERC
Maximum power at STC*	100 W
Maximum power voltage	19.2 V
Maximum power current	5.21 A
Open circuit voltage	23.0 V
Short circuit current	5.51 A
Maximum system voltage	600 VDC
Safety	ETL listed to UL-1703 and CAN/ULC-ORD-C1703 Class III PV Module

## 160W Solar Panel

Part number	780-0160
Dimensions	53.2 × 26.9 × 1.4 inches (1350 × 670 × 35 mm)
Unit weight	23.2 lbs.(10.5 kg)
Cell Type	Monocrystalline PERC
Maximum power at STC*	160 W
Maximum power voltage	19.2 V
Maximum power current	8.34 A
Open circuit voltage	23.0 V
Short circuit current	8.70 A
Maximum system voltage	600 VDC
Safety	ETL listed to UL-1703 and CAN/ULC-ORD-C1703 Class II PV Module

\* Standard Test Conditions(STC); Irradiance: 1000W/m<sup>2</sup>, Cell Temperature: 25°C, Air Mass: 1.5

# Accessory List

Accessories (Sold Separately). Contact a Xantrex authorized dealer to order.			
<p>PV Extension Cables 10AWG, 15-ft (PN: 708-0030)</p> 	<p>30A PV Single Connector (PN: 708-0040)</p> 	<p>30A PV Branch Connector (PN: 708-0050)</p> 	<p>PV Connector Assembly Tool (PN: 708-0060)</p> 
<p>Mounting Hardware (PN: 708-0070)</p> 	<p>Remote Battery Temperature Sensor (PN: 708-0080)</p> 	<p>Roof-Entry Cable Plate (PN: 708-0090)</p> 	<p>Solar and Battery Cables Starter Kit 10 AWG, 20-ft PV cables, 10-ft battery cables (PN: 708-0150)</p> 
<p>PWM 30A Charge Controller (PN: 709-3024-01)</p> 	<p>MPPT 30A Charge Controller (PN: 710-3024-01)</p> 	<p>MPPT Remote Display (PN: 710-0010)</p> 	

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# xantrex™ SOLAR



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