

Installation Guide

110W Solar Flex Panel

Model Number: 781-0110

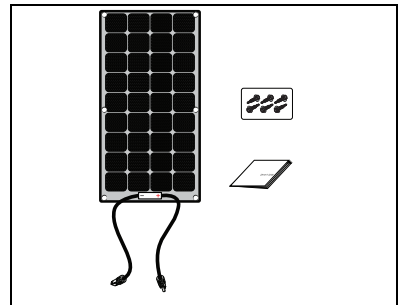
NOTE: Actual product may be different from what is shown.

Thank you for purchasing the Xantrex Solar Flex Panel. The Xantrex Solar Flex 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 Flex Panel base package includes the following items:

- one Xantrex Solar Flex Panel
- one Installation Guide
- six #12 size, 1" length, hex drive screws

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 flex panel, read all instructions and cautionary markings on the solar flex 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 flex 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 flex panel with damaged or substandard wiring.
- ⚠ Do not operate the solar flex panel if it has been damaged in any way.
- ⚠ This solar flex panel does not have any user-serviceable parts. Do not disassemble the solar flex panel except where noted for connecting wiring and cabling. See your warranty for instructions on obtaining service. Attempting to service the solar flex panel yourself may result in a risk of electrical shock or fire.
- ⚠ To reduce the risk of electrical shock, disconnect the solar flex panel from all devices and or components before attempting any maintenance or cleaning on the solar flex 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

Telephone: +1-800-670-0707 / +1-408-987-6030

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

Email: customerservice@xantrex.com,

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

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

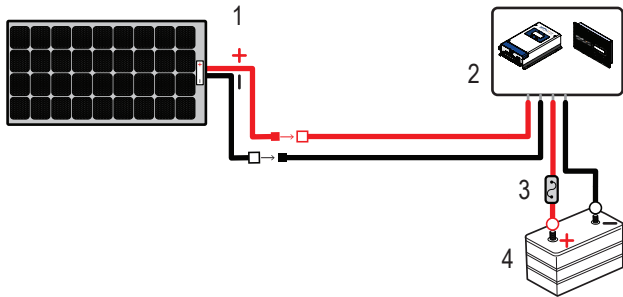
You may need the following tools to install the Xantrex Solar Flex Panel:

- Drill with hex drill bit set
- Wrench set
- Torque driver

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

- a. 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 (orbatterydisconnect)
2	Charge controller(PWM or MPPT) See section on SolarPanelWiring for more information.	4	Battery(12Vor24V)

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 7*.

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.

TIP 1: Once applied to a surface, any industrial grade outdoor UV-rated adhesive sealant cannot be easily removed without damaging the solar panel.

- Unpack the solar panels and prepare all installation tools and materials.
- Prepare the roof mounting surface by removing dust, dirt, and debris. Clean and degrease the roof surface with isopropyl alcohol and dry completely.

Figure 2 Precautions



NOTICE

GENERAL PRECAUTIONS

- Do not bend more than 30° when handling and mounting the solar panel.
- Do not step on the solar panel's cells with hard footwear.

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

- For permanent mounting, apply an adhesive sealant (see **TIP 1**) to the solar panel's backside and place the panel on the exact and intended location. Alternatively, install the solar panel on the roof using appropriate screws and washers to fasten the panel.

TIP 2: If using screws to mount the standard flex panel, apply a silicon outdoor UV-rated, waterproof sealant around the screw holes and on the screw head after fastening to prevent water ingress into the roof. Contact the vehicle/vessel manufacturer for recommendations on roof sealant.

NOTICE

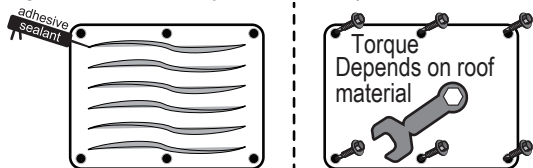
ADDITIONAL PRECAUTIONS

- Do not mount the solar panel near other roof fixtures that can obstruct direct exposure to sunlight.
- Select the mounting area carefully and mark the exact and intended location of the solar panel.

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

- Apply an RV roof sealant (see **TIP 2**) to the screw heads.

Figure 3 Two ways to mount the panel



4. Connect the DC cables.

NOTICE

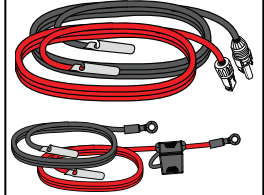
REVERSE POLARITY

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 9 for best practices.

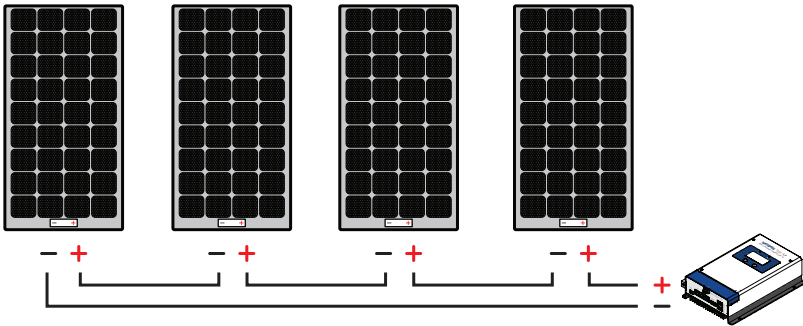
Solar Panel Wiring

- 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

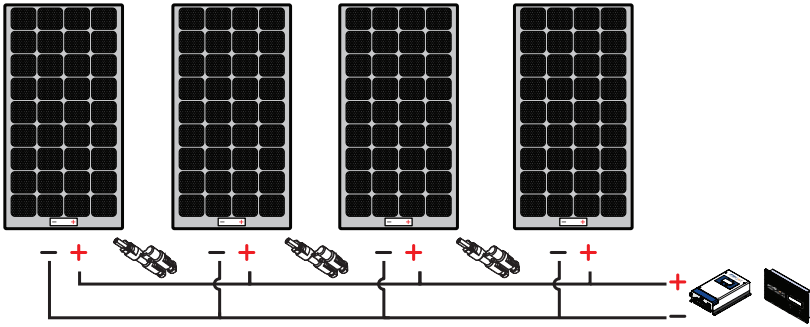
- b. Solar panels can be configured in series, parallel, or a combination of both series and parallel.

Figure 4 Cable schematic for series



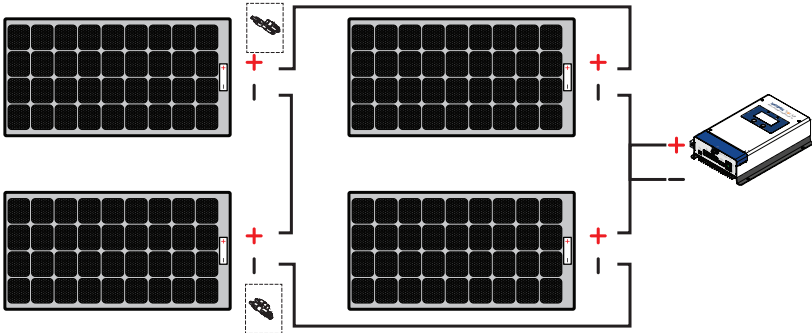
Pos (+) of first panel connects to Neg (-) of next panel and so on and terminating with the Pos (+) of the solar charge controller.
Neg (-) of first panel extends to Neg (-) terminal of the solar charge controller.
Optimized for MPPT solar charger.

Figure 5 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 6 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 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 plastic material 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.*

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.


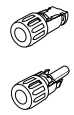
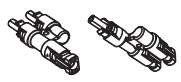

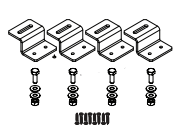




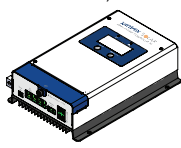

Specifications

NOTE: Specifications are subject to change without prior notice.

110W Solar Flex Panel	
Part number	781-0110
Dimensions	39.6 × 26.9 × 0.12 inches (1005 × 683 × 3 mm)
Unit weight	5.5 lbs.(2.5 kg)
Cell Type	Monocrystalline PERC
Maximum power at STC*	110 W
Maximum power voltage	18.9 V
Maximum power current	5.83 A
Open circuit voltage	19.49 V
Short circuit current	5.95 A
Maximum system voltage	600 VDC
Safety	Class III PV Module

* Standard Test Conditions (STC): Irradiance: 1000W/m², 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>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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