

# Sol-Go Safety and Installation Manual

*This document applies to all Sol-Go modules listed in Table 1.*

*Contents are subject to change without notice. Please see the most up to date manual and data sheets at [www.sol-go.com](http://www.sol-go.com)*

**READ THIS MANUAL BEFORE INSTALLING OR USING. FAILURE TO READ THIS MANUAL IN ITS ENTIRETY AND FAILURE TO FOLLOW THE MANUAL INSTRUCTIONS WILL INVALIDATE THE SOL-GO LIMITED PRODUCT AND POWER WARRANTY.**

## 1. Introduction

This manual provides instructions for Sol-Go flexible solar modules. Specifically, it provides guidance for installation and safety when installing and using the modules. Owners of these panels should also take guidance from their local electrical code for electrical installations of solar modules.

## 2. Liability Disclaimer

Sol-Go assumes no liability for loss, damage or expense due to improper installation, handling or use.

## 3. Warranty Limitations

The Sol-Go warranties do not apply to Sol-Go modules which are subjected to:

- a) Misuse, abuse, neglect or accident.
- b) Alteration or improper installation. (Improper installation includes installation of modules or arrays of modules that do not comply with all Sol-Go installation and wiring instructions, Sol-Go operations and maintenance instructions, and all national, state, and local laws, codes, ordinances, and regulations. As noted above, Sol-Go installation, wiring instructions, operations and maintenance instructions may be updated from time to time at Sol-Go's sole discretion).
- c) Repair or modification by anyone.
- d) Conditions exceeding the module specifications as listed in the module datasheets or any other operational specifications given by Sol-Go or any national, state and local laws, codes, ordinances, and regulations.
- e) Power failure, power surges, actions of war, lightning, flood, fire, lava, ash, or other natural disasters.
- f) Damage from persons, insects, animals or chemical exposure.
- g) Panel breakage from impact or other events outside Sol-Go's control. Please see Sol-Go's Limited Product and Power Warranty for full terms and conditions.

## 4. Safety Precautions

**PLEASE READ SAFETY INSTRUCTIONS BEFORE INSTALLING THIS PRODUCT AND KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE**

- All installations must comply with international and national electrical codes and any other local codes. In Canada, installations should be in agreement with CSA C22.1, Safety Standard for Electrical Installations.
- DANGER! Modules are electrically active when exposed to light or connected to a battery. Contact with electrical leads while the modules are electrically active may lead to electrical shock, injury or even death.
- The electricity will arc across a gap, possibly resulting in injury or even death. Arcing can occur while connecting or disconnecting the panel electrical leads. DO NOT connect or disconnect modules when they are exposed to light or attached to an external power source (e.g. battery). This may result in personal injury or death and may damage the connectors, voiding the warranty.
- DO NOT install or handle the module when it is wet or during high winds. DO NOT allow water to gather on or near the module. These conditions present a dangerous situation via electrical shock and injury due to impact with the module.
- Use of exposed conductors brings significant risk to the user in terms of electrical shock, injury or even death.
- DO NOT short the leads together. If the panel is accidentally shorted, cover the panel so the solar cells receive no light before disconnecting.
- DANGER! High electrical currents may be present when modules are connected in parallel and high voltages may be present when modules are interconnected in series.
- MODULE CARE: Any actions listed below that are not followed will void the warranty.
  - Do not attempt to repair or modify any part of the module.
  - Cuts in the front or back of the module, broken or cracked jboxes, cables, connectors, and broken or cracked metal ribbons in the panel are electrical hazards. The modules should not be used and should be disposed of properly.
  - DO NOT STAND OR WALK ON THE MODULE. Do not drop the panel. Do not drop objects on the panel. Do not place objects on the panel. These actions may result in damage to the solar cells, which will decrease panel power output and possibly create an electric shock, injury or even death risk.
  - Do not carry the module by the cables. Do not bend the cables into a bend radius of less than 40mm. These actions may result in damage to the cable connection to the panel, voiding the warranty, and may result in electrical shock, injury or even death.
  - Do not scratch the panel. This may lead to exposure of panel parts that are electrically active and could result in electrical shock, injury or even death.

**5. Electrical Characteristics and Connections**

The electrical characteristics of the SolGo modules are shown in Table 1 below. The most recent data sheets are available on the webpage [www.sol-go.com](http://www.sol-go.com). The electrical characteristics are for specific test conditions. Occasionally the modules may be exposed to even more sunshine than used in these test conditions, resulting in higher voltages and currents. Therefore, Sol-Go recommends the user multiply the voltage and current outputs of the modules by 1.25 when choosing components to connect to the module. Additionally follow any additional multiplication factors as required by relevant national electrical codes and standards.

<b>Table 1: Typical Electrical Data</b> (at STC 25°C, 1000W/m <sup>2</sup> and AM1.5)				
Module Type	SG-100-C	SG-115-S/SX	SX-145-C	SX-160-SX
Nominal Power (Pnom)	100W	115W	145W	160W
Power Tolerance	+/-5%	+/-5%	+/-5%	+/-5%
Max Power Voltage (Vmpp)	18.2V	20.5V	25.2V	27.5V
Max Power Current (Impp)	5.73A			
Open Circuit Voltage (Voc)	22.0V	24.9V	30.6V	33.4V
Short Circuit Current (Isc)	5.97A			
Power Temp Coefficient	-0.30%/°C			
Voltage Temp Coefficient	-54.1 mV/°C	-61 mV/°C	-75.0 mV/°C	-82 mV/°C
Current Temp Coefficient	3.5 mA/°C			
Max System Voltage	Sol-Go flexible panels are designed for use in battery charging applications, e.g. 12V or 24V batteries. Higher systems voltages require professional design and installation support to provide adequate safety arrangements.			
Series Fuse Rating	15A			

The Sol-Go modules can be connected in a series or parallel string to other Sol-Go modules. In order to maximize the string power output, care should be taken by the user with respect to current and voltage matching of panels when stringing modules together in this manner. Stringing modules in series requires careful matching of module currents, while stringing in parallel requires careful matching of module voltages.

To connect modules in series, connect the negative connector of panel #1 to the positive connector of panel #2. This series configuration roughly doubles the voltage output.

To connect modules in parallel, connect the negative connectors of panel #1 and #2 and connect the positive connectors of panel #1 and #2. Cable adapters will be needed since the connectors are designed to connect positive to negative leads only. This parallel configuration roughly doubles the current output.

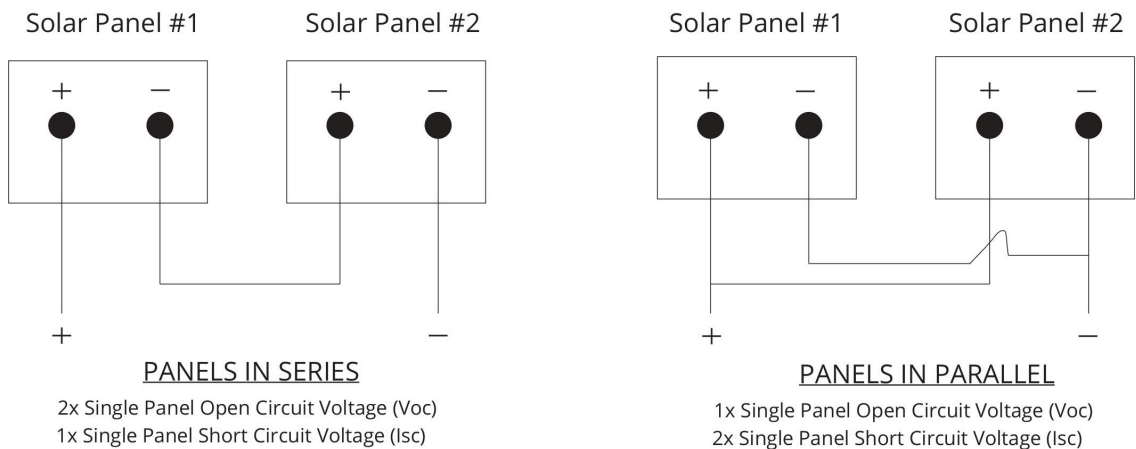


Figure 1: Schematic of two panels in series and parallel.

The higher voltage and current in these configurations may cause damage to the system charge controller, battery, and other components. Additionally, serious safety risks may occur when components are not properly matched to the module(s). The characteristics of any component attached to the solar module should be checked with the electrical output of the module or string of modules. Furthermore, with modules in a parallel configuration, shading can create damage to the panels and possibly even fire without additional components such as blocking diodes.

## 6. Module Installation, Mounting, Handling and Maintenance

The Sol-Go Limited Warranty is contingent upon the Sol-Go modules being used as described in this section.

### 6.1 Install Site

The Sol-Go modules must be installed such that the module temperature operates within a temperature range of -40C to +85C (-40F to +185F). To maintain these module temperatures in hot environments care must be taken to ensure ventilation for the modules. In environments with temperatures of 0°C (32°F) or less, Sol-Go does not recommend flexing the module or impacting the module as module materials may become brittle and break easily. Sol-Go panels should not be installed and are excluded from the Sol-Go Limited Warranty in the following environments: flooding, immersion in liquids, contact with liquids with a pH greater than 8.5 or less than 6.5, hail, falling rocks or other projectiles, fire, meteorites, lava flow and volcanic eruptions. Sol-Go modules can withstand high wind speeds if properly mounted to a secure supporting structure such that the modules do not significantly vibrate or flap.

### 6.2 Mounting

The Sol-Go module may be mounted to an underlying structure by using the grommets where the panel is bolted or screwed down onto the underlying structure. The module may also be mounted using an adhesive tape or liquid adhesive on the panel backside. Both grommets and a backside adhesive can be used together. The mounting preference is the user's decision based on their use case. The panels should be mounted onto a fire resistant surface properly rated for the use case. The modules can be mounted at any angle but Sol-Go recommends mounting at at least a 5 degree angle in order to allow easy water removal during rain and melting snow, which reduces soiling of the panels. The mounting is best with the junction box mounted at the highest position possible, in order to avoid water ingress.

### 6.3 Handling

Sol-Go recommends to minimize contact with the frontside (sun side) of the module in order to avoid staining and scratching of the surface. Avoid contact with sharp objects or abrasive surfaces since they may cut the frontside or backside of the module, leading to a potential safety issue as noted in the section earlier in this document. If the module does become stained via fingerprints or other markings, clean the panel as noted in the next section of this document.

The module is designed to flex with a 30 degree bend radius from the top to the bottom of the panel. For a 1 metre (~3ft) tall module, this is approximately a 10cm (~4in) deflection at the center of the module. The Sol-Go modules should not be handled in a manner that would twist the module or create a sharp bend in the module. For example, the module should not be handled only at one edge of the module because the weight of the module will sharply bend the module at the point where the module has been gripped.

The jbox, cables and connectors should never be subjected to impact. This could result in cracks or gaps in the electrical insulation, resulting in a potential for electrical shock, injury, or even death. If cracks or gaps were to occur, the module should no longer be used.

### 6.4 Cleaning

Sol-Go recommends cleaning the module using clean water with a soft sponge. If persistent stains remain, Sol-Go recommends using a 1-3% mild detergent/soap solution. Stronger chemicals and more abrasive sponges can result in damage to the module surface and would void the warranty.

## 7. Concluding Remarks

Sol-Go modules are made with superior materials, with exacting production quality standards. Our products are intended to provide many years service based on the guidance and advice in this installation manual. We are always pleased to hear from our customers and have set-up Sol-Go pages on LinkedIn and Facebook for this purpose. In addition our website provides contact details for more direct communication.

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