

The two MC-4 Connectors provided in the optional "MC4-2" Kit are connected to the bare ends of the two wires of one of the two Connecting Wires Kit "SCW-20-2" as follows:

1. Cut the two SWC-20-2 wires to the desired lengths depending upon the distance between the solar panels.
2. Strip 0.25" of the insulation at the ends.
3. Establish the correct polarity by tracing the wires back to the solar panel, if necessary.
4. Crimp the male and female contact inserts (2 and 5 of Fig. 2) to the bare ends of the wire with the help of special purpose crimping tool meant for the MC4 connectors.
5. Install the contact inserts inside the housing of the MC4 connectors and tighten the strain relief / seal (7 of Fig. 2) fully to ensure a watertight seal.

## 2 YEAR LIMITED WARRANTY

SCW-20-2 manufactured by Samlex America Inc. (the "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service. The warranty period is 2 years for the United States and Canada, and is in effect from the date of purchase by the user (the "Purchaser").

Warranty outside of the United States and Canada is limited to 6 months. For a warranty claim, the Purchaser should contact the place of purchase to obtain a Return Authorization Number.

The defective part or unit should be returned at the Purchaser's expense to the authorized location. A written statement describing the nature of the defect, the date of purchase, the place of purchase, and the Purchaser's name, address and telephone number should also be included.

If upon the Warrantor's examination, the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense. (Contiguous US and Canada only)

No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Warranty service shall be performed only by the Warrantor. Any attempt to remedy the defect by anyone other than the Warrantor shall render this warranty void. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion.

No other express warranty is hereby given and there are no warranties which extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.

There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any persons, or damage to person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof. The Warrantor assumes no liability for incidental or consequential damages of any kind.

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Solar Panel  
Connecting  
Wires

SCW-20-2

Owner's  
Manual

Please read this  
manual before  
installing

## INTRODUCTION

The SCW-20-2 Solar Panel Connecting Wire Kit (Fig. 1) contains (2) 20 ft wires pre-assembled with a male and female MC4 connector on one end of each; the other end is blunt. These wires are used to connect the output of the solar panel to the various components of a solar installation. The wire used has the following specifications:

- Size AWG #12, insulation rating 600V
- Sunlight resistant, photovoltaic wire, UL listed

**Note.** This kit can be used only if the output wires of the solar panel are terminated with MC4 Series of Male and Female Connectors described below (like in Samlex branded Solar Panels).

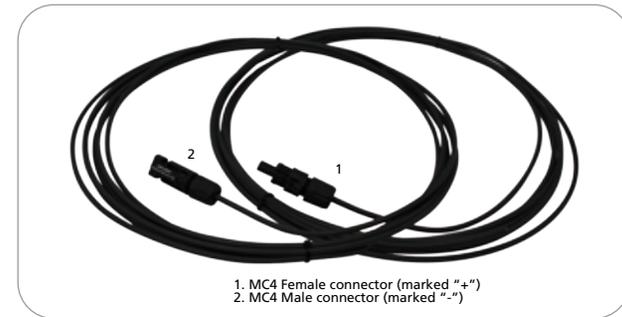


Fig. 1. SCW-20-2 Solar Panel Connecting Wires

## GENERAL INFORMATION ON MC4 CONNECTOR SYSTEM

An MC4 Connector System consists of male and female connectors. This type of connector system is easy to install and uses "snap-in" type of safety locking clips to lock the two mating connectors, thereby, avoiding unintentional disconnection. Also, the mating contacts are sealed against ingress of dust and water. Specifications are as follows:

- Contact diameter Ø 4 mm
- Maximum rated current - 30 A
- Maximum system voltage - 1000 V
- Degree of ingress protection when connected and properly locked - IP67
- Temperature range 40°C to +90°C
- TÜV Rheinland – type approved

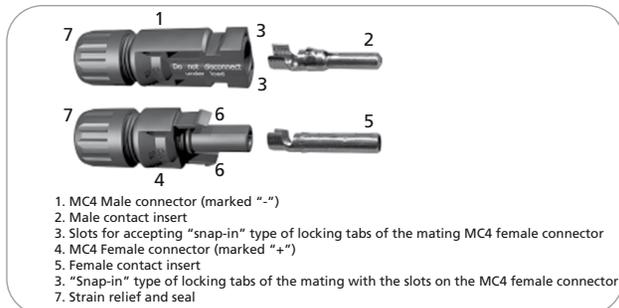
### MC4 Connectors (Fig. 2)

The MC4 Connectors mentioned in this manual have been designated "Male" and "Female" based on the characteristics of the mating contact inserts inside the terminals.

In the MC4 Male Connector (1 of Fig. 2), the internal mating contact insert (2, Fig. 2) is a male pin. It has two slots (3 of Fig. 2) for insertion of the two "snap-in" type of locking tabs (6 of Fig. 2) of the MC4 Female Connector (4 of Fig. 2) for firm mating connection. This connector is marked "-".

In MC4 Female Connector (4, of Fig. 2), the internal mating contact insert (5 of Fig. 2) is a female cylindrical socket. It has two "snap-in" type of locking tabs (6 of Fig. 2) that are inserted into the two slots (3 of Fig. 2) in the MC4 Male Connector (1 of Fig. 2) for firm mating connection.

Wire is crimped to the contact inserts (2 and 5 of Fig. 2) using a special purpose crimping tool designed for MC4 connectors. After the wire has been crimped, the contact insert is required to be seated securely inside the housing and the strain relief / seal (7 of Fig. 2) is to be tightened fully to provide a water-tight seal.



1. MC4 Male connector (marked "-")
2. Male contact insert
3. Slots for accepting "snap-in" type of locking tabs of the mating MC4 female connector
4. MC4 Female connector (marked "+")
5. Female contact insert
6. "Snap-in" type of locking tabs of the mating with the slots on the MC4 female connector
7. Strain relief and seal

Fig. 2. MC4 Male and Female Connectors

Note: Additional pairs of male/female MC4 connectors are also sold separately (Model No. "MC4-2 Kit")

## Output wires and connections on the solar panel

Fig. 4 shows the output wires and connections on a solar panel. The output wires from the junction box of the solar panel are terminated with the help of MC4 connectors. The Positive (+) wire is terminated with a MC4 Female Connector (marked "+") and the Negative wire is terminated with a MC4 Male Connector (marked "-").



### Warning!

When the surface of the solar panel / array is exposed to sunlight, a DC voltage appears at the output terminals turning it into a live voltage source. For example, a 24 V nominal solar panel may put out an open circuit voltage of around 45 VDC that may produce electrical shock. Multiple solar panels connected in series (to increase the output voltage) will put out higher lethal voltages. To avoid any electrical shock hazard during installation, make sure that the solar panel / array is covered with an opaque (dark) material to block solar irradiation.

## INSTALLATION PROCEDURE

The SCW-20-2 Connecting Wire Kit can be used to connect your solar panel / array to external solar / photo-voltaic (PV) circuits which may include a Charge Controller, Combiner Box or Grid Connected Inverter.

### Connecting to the output wires of the solar panel (Fig. 4)

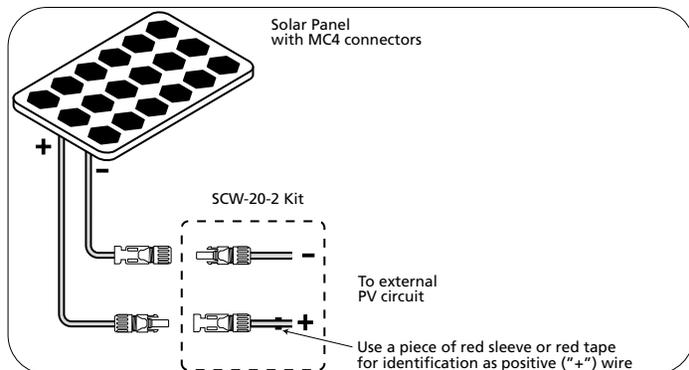


Fig. 4. Connecting SWC-20-2 wires to the output wires of solar panel

1. The Positive (+) wire of the solar panel is terminated with a MC4 Female Connector (marked +). Connect this to the MC4 Male Connector (marked -) of the SWC-20-2 wire. Make sure that the locking tabs "snap in" for a firm connection. *The bare end of the SWC-20-2 wire will now be of Positive polarity. Use a piece of red sleeve or red tape near the bare end for identification as the Positive(+) wire.*

2. The Negative (-) wire of the solar panel is terminated with a MC4 Male Connector (marked -). Connect this to the MC4 Female Connector of the SWC-20-2 wire. Make sure that the locking tabs "snap in" for a firm connection. *The bare end of the SWC-20-2 wire will now be of Negative polarity.*
3. Connect the two wires to the external PV circuit.



### Warning!

Ensure that the polarity (+ or -) of the wires is identified correctly before connecting to a circuit or a device. Damage due to wrong polarity may not be covered under warranty.

### Connecting two adjacent solar panels in parallel (Fig. 5)

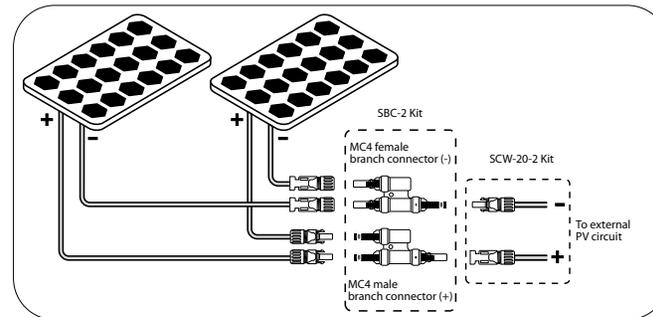


Fig. 5. Connecting two adjacent solar panels in parallel

Two or more solar panels can be connected in parallel to increase the current output at the same output voltage. Fig. 5 above shows the arrangement for connecting two solar panels in parallel using the SCW-20-2 Connecting Wire Kit and the MC4 Branch Connector Kit (SBC-2) sold separately. This arrangement is applicable if the two solar panels are to be mounted adjacent to each other.

The output wires of the two solar panels are first connected in parallel using the MC4 Male and Female Branch Connectors. The outputs of the Branch Connectors are then connected to the SCW-20-2 wires for connecting to the external PV circuit.

### Connecting two solar panels in parallel when separated by a distance (Fig. 6)

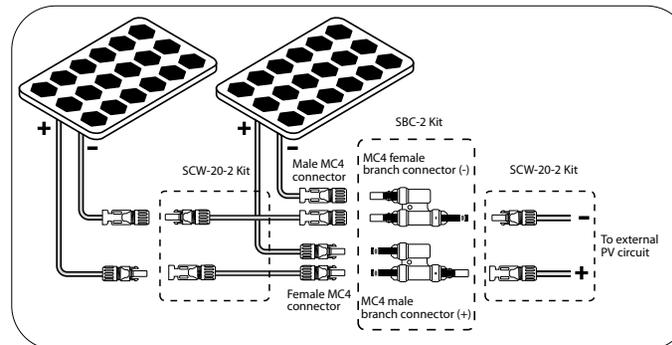


Fig. 6. Connecting two solar panels in parallel that are separated by an extended distance

Fig. 6 above shows an arrangement for connecting two solar panels in parallel that are separated by an extended distance. In this case, the following will be required:

- SCW-20-2 Connecting Wires Kit - 2 sets
- One MC4 Male Branch Connector and one MC4 Female Branch Connector sold separately as an optional kit - Model No. "SBC-2" Kit
- One MC4 Male Connector and one MC4 Female Connector sold separately as an optional kit - Model No. "MC4-2"

In this case, one Connecting Wire Kit "SWC-20-2" and the optional MC-4 Connectors Kit "MC4-2" are first used to bridge the extended distance between the panels. The optional Branch Connector "SBC-2" Kit is used to parallel the two solar panels. The second Connecting Wire Kit "SWC-20-2" is used to connect to the external PV circuit.