



**Solar Panel  
Branch  
Connectors**

**SBC-2**

**Owner's  
Manual**

Please read this manual before installing your connectors

**GENERAL INFORMATION ON AN MC4 CONNECTOR SYSTEM**

MC4 Connector Systems used to connect Samlex Solar Panels consist of male and female MC4 connectors and branch connectors. This type of connector system is easy to install and uses “snap-in” safety locking tabs to lock two mating connectors, thereby avoiding unintentional disconnection. Also, the mating contacts are sealed against an 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

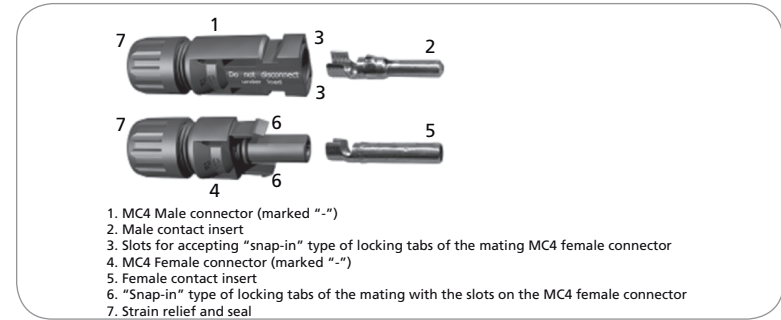
**MC4 Connectors (Fig. 1)**

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

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

Wire is crimped to the contact inserts (2 and 5 of Fig. 1) 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. 1) 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. 1 . MC4 Male and Female Connectors

**Note:** Pairs of male/female MC4 connectors are sold separately. Samlex Model: MC4-2

## Branch Connectors (Fig. 2A and 2B)

Branch Connectors are used to connect two MC4 Connectors in parallel.

Each Branch Connector has 3 branches - two on the one side & one on the other. The branches could be "male" or "female". The construction of the branches is similar to the construction of the MC4 connectors shown in Fig. 1. In a branch connector, all the 3 branches are internally connected in parallel.

A Male Branch Connector (marked "+") is shown in Fig 2A. This consists of two MC4 Male Connectors that are connected in parallel with a MC4 Female Connector (marked "+"). This is used to connect two MC4 Female Connectors in parallel.

A Female Branch Connector (marked "-") is shown in Fig 2B. This consists of two MC4 Female Connectors that are connected in parallel with a MC4 Male Connector (marked "-"). This is used to connect two MC4 Male Connectors in parallel.



Fig. 2A. Male Branch Connector (marked "+")



Fig. 2B. Female Branch Connector (marked "-")

## Wire Connections on Solar Panels (See Fig. 3)

Most solar panels come with approximately 3 ft of Positive (+) and Negative (-) wire. One end of each wire is connected to the junction box of the panel. The other end of each wire is terminated with an MC4 connector (all Samlex Solar Panel wires are configured this way). The Positive (+) wire has a Female MC4 Connector and the Negative (-) wire has a Male MC-4 Connector. To extend the length of these wires for connection to a charge controller, combiner box or grid-connected inverter, the extension wire is required to be terminated with corresponding Male and Female MC4 Connectors.

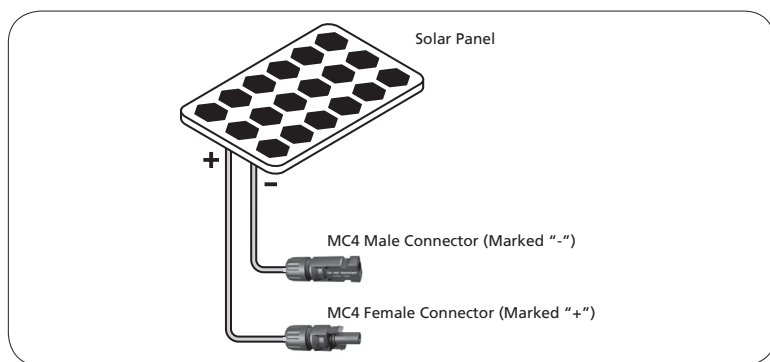


Fig 3. Solar panel connecting wires with MC4 Connectors



## 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

### Connecting two adjacent solar panels in parallel (Fig. 4)

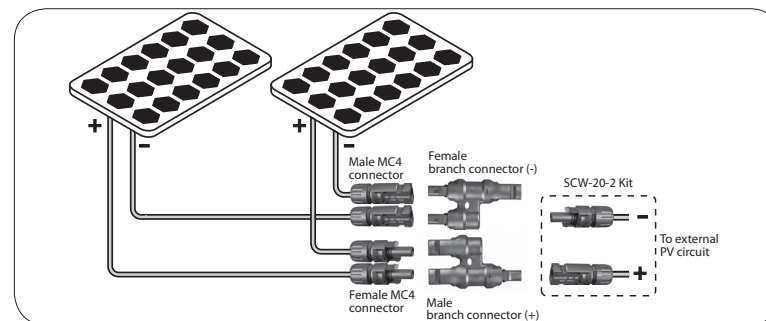


Fig. 4. Connecting two adjacent solar panels in parallel

Two or more solar panels are connected in parallel to increase the current output at the same voltage. Fig. 4 above shows the arrangement for connecting two solar panels in parallel using the SCW-20-2 Connecting Wire Kit (sold separately) and the Branch Connectors. This arrangement is possible if the two solar panels will be mounted adjacent to each other.

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

### Connecting two solar panels in parallel when separated by a distance (Fig. 5)

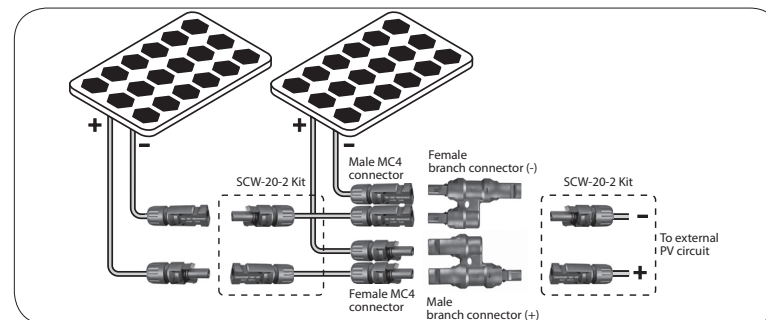


Fig. 5. Connecting two solar panels in parallel that are separated by an extended distance

Fig. 5 above shows an arrangement for connecting two solar panels in parallel when they are separated by an extended distance. In this case, the following will be required:

- SCW-20-2 Connecting Wires - 2 sets (sold separately)
- One Male Branch Connector and one Female Branch Connector
- One MC4 Male Connector and one MC4 Female Connector (sold separately) Model: MC4-2

Use one pair of the connecting wires and the MC4 male/female connectors to bridge the extended distance between the panels. The Branch Connectors are then used to parallel the two solar panels. Use the second pair of connecting wires to connect to the external PV circuit.

Connect the MC4 connectors to the bare ends of each of the Connecting Wires 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. 1) 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. 1) fully to ensure a watertight seal.