

CONNECTING YOUR CHARGE CONTROLLER AND PANELS

READ THESE NOTES BEFORE INSTALLING YOUR CHARGE CONTROLLER AND/OR PANELS.

Your solar PV will connect to a charge controller, which is also connected to the battery. Charge controllers MPPT 75/10, 75/15, 100/15, 100/30 and 100/30 are suitable for 12/24v systems only. All other charge controllers are suitable for 12/24/48v systems, apart from 450/100 and 450/200 controllers which are suitable for 48v systems only.

Connect the charge controller to the battery **FIRST** before connecting the PV.

Ensure that the polarity is correct to the charge controller. Reverse polarity may destroy the controller and is **NOT** covered by warranty.

It is recommended that a fuse of suitable size be fitted between the charge controller and the battery as per the charge controller manual.

It is recommended that a disconnect switch or suitably sized DC rated MCB (mini circuit breaker) is fitted between the charge controller and the solar panels.



The first number of the charge controller denotes the absolute maximum voltage that can be passed to the charge controller from the solar panels. The second number denotes the maximum current. Exceeding the voltage limit will irreparably damage the controller and is **NOT** covered by warranty.

Example: 100/50 charge controller. You should allow a 10% margin on the input voltage to allow for very cold conditions, so the maximum input voltage would be 90V. In practice this equates to 2 x 400w panels in series as they have an approximate **open circuit voltage of 40v each**. It is possible to connect parallel strings of panels in series to reach the rated output power of the controller.

Model	Max current	Max watts at 12v	Max watts at 24v	Max watts at 48v
Smartsolar 70/15	15A	220	440	
Smartsolar 100/15	15A	220	440	
Smartsolar 100/20	20A	290	580	1160
Smartsolar 100/30	30A	440	880	
Smartsolar 100/50	50A	700	1400	
Smartsolar 150/35	35A	500	1000	2000
Smartsolar 150/45	45A	650	1300	2600
Smartsolar 150/60	60A	860	1720	3440
Smartsolar 150/70	70A	1000	2000	4000
Smartsolar 150/100	100A	1450	2900	5800
Smartsolar 250/60	60A	860	1720	3440
Smartsolar 250/70	70A	1000	2000	4000
Smartsolar 250/85	85A	1200	2400	4900
Smartsolar 250/100	100A	1450	2900	5800

Note: For each model, the first number is the absolute maximum input voltage, and working voltage should be 10% below this. The second is the maximum input current. Higher current may damage the controller. If more PV is connected than the maximum wattage, the controller will limit input wattage.

75 controllers will accept strings of 1 x 400w panels (1 x 40v = 40v) safely
 100 controllers will accept strings of 2 x 400w panels (2 x 40v = 80v) safely
 150 controllers will accept strings of 3 x 400w panels (3 x 40v = 120v) safely
 250 controllers will accept strings of 5 x 400w panels (5 x 40v = 200v) safely.
 450 controllers will accept strings of 10 x 400w panels (10 x 40v = 400v) safely.

Remember - These are hard voltage limits, and exceeding them even momentarily will damage the controller.

Once the charge controller is connected to the battery, it will recognise the system voltage and remember it even if disconnected.

Connect your solar panels together in the correct configuration. If you are connecting two or more strings of panels in parallel you will need MC4 splitters in order to do so.

Run cables from the solar controller to the solar array, via a suitable disconnect switch or DC rated MCB. We strongly recommend that the polarity of the cables is double checked before allowing a live connection to the controller.

Panel connectors are always MALE = POSITIVE and FEMALE = NEGATIVE.

Remember, DC voltages can be fatal, and series strings of PV panels will produce high voltages when exposed to daylight.

Solar controllers should be suitably earthed.