Understanding your Solar Array

⚠ WARNING: ELECTRICAL HAZARD

Please be aware that solar panels are a live power source and can seriously hurt or kill if the system is not handled correctly. Whenever you're working with solar panel wiring or connections, make sure:

1. Solar Pump Control Box is turned off
2. Solar panels are covered
3. The MC4 connections are secure, and no wires are exposed

IMPORTANT:

The way panels are connected is critical to the safe and efficient operation of your solar pump system. Incorrect wiring can damage your control box. Below, we explain the two main types of connection — **series** and **parallel** — and provide recommended wiring diagrams for panel arrays from 400W to 1600W. If in doubt, use a multimeter to check your voltage before proceeding, or contact our staff at 02 8005 2823 for assistance.

Note: *This guide does not cover our AC/DC (hybrid) solar panel setups. Please contact our staff if you need assistance with our AC/DC panel configurations.*

Types of Solar Connections: Series vs. Parallel

Series Connection

In a series connection, the positive terminal of one panel is connected to the negative terminal of the next panel, and so on.

1. The **voltage adds up** across all panels.
2. The **current stays the same** as one panel.
3. The **wattage adds up** across all panels.

Parallel Connection

In a parallel connection, all positive terminals between each string are connected together, and all the negative terminals between each string are connected together.

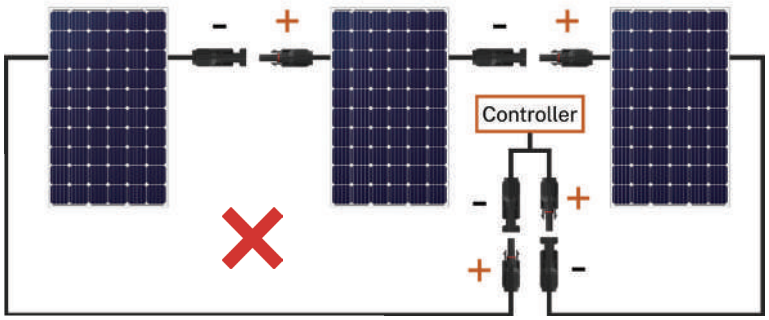
1. The **current adds up** across all panels.
2. The **voltage remains the same** as one string.
3. The **wattage adds up** across all panels.

Solar panel wiring diagram – 36-48V Control Box

36-48V Pump Control Box = Maximum Voc of 100VDC

⚠ **WARNING:**
Do not connect more than **2** x 200W solar panels **IN SERIES**

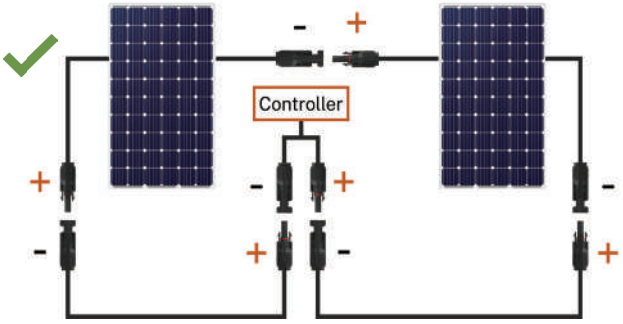
EXPECTED VOLTAGE = GREATER THAN 100VDC (BAD)



Incorrect panel connection for 48V control box

400W solar array (2x200W)

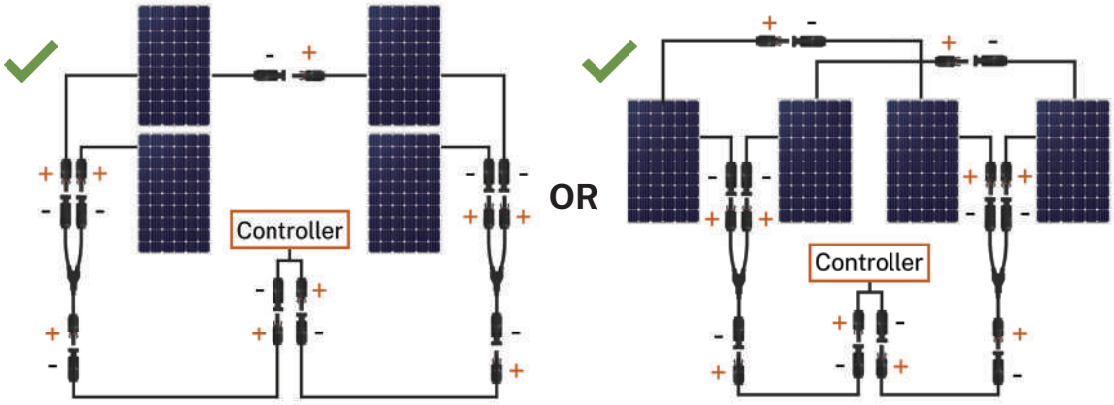
1 string of 2 panels in **Series Connection**
EXPECTED VOLTAGE = **80-92VDC** (disclaimer: only at full sunlight)



1 string of 2 panel in Series Connection

800W solar array (4x200W)

2 Strings of 2 panels in Series **JOINED in Parallel Connection** via Y-adaptor
EXPECTED VOLTAGE = **80-92VDC** (disclaimer: only at full sunlight)

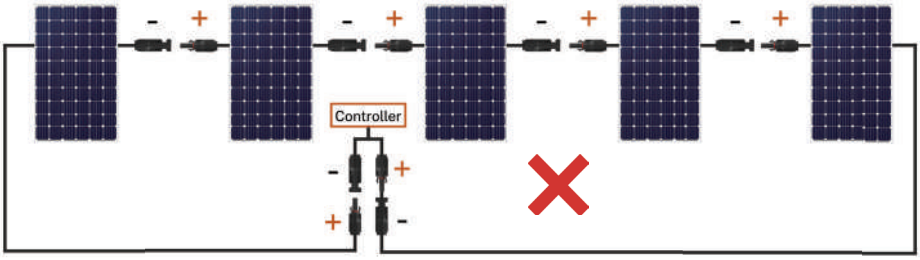


2 strings of 2 panels in Series joined in Parallel to make 800W and under 100VDC (Voc)

Solar panel wiring diagram – 110V Control Box

110V Control Box = Maximum Voc of 200VDC

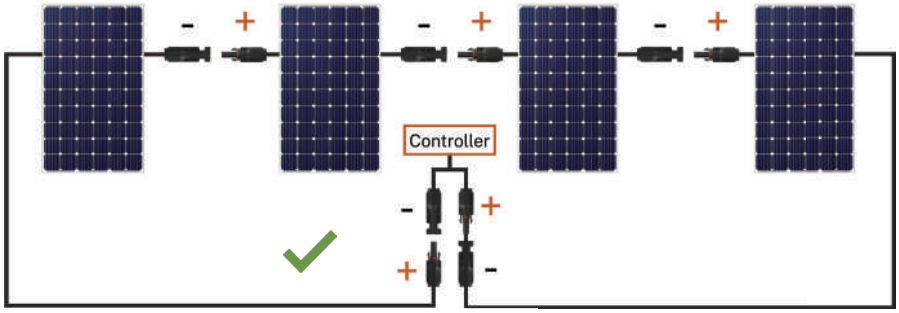
⚠ **WARNING:** Do not connect more than **4** x 200W solar panels **IN SERIES** for the **110V Control Box.**



Incorrect panel connection for 110V Control Box

800W solar panel system (4x200W)

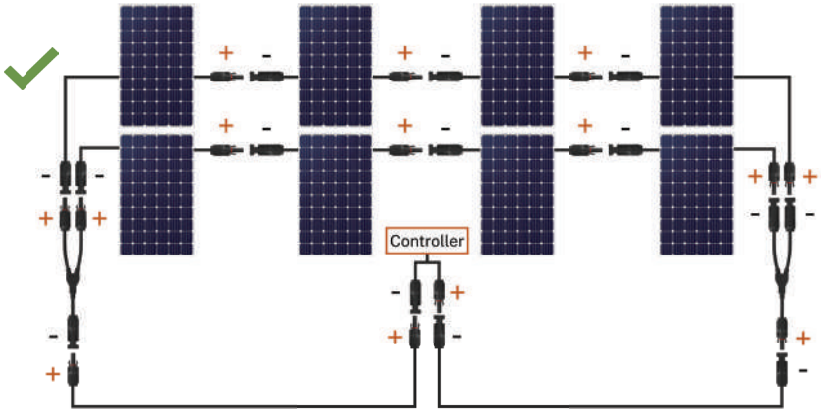
1 string of 4 panels in **Series Connection**
EXPECTED VOLTAGE = **170-190VDC** (disclaimer: only at full sunlight)



1 string of 4 panels in Series Connection

1600W solar panel system (8x200W)

2 Strings of 4 panels in Series **JOINED in Parallel Connection** via Y-adaptor
EXPECTED VOLTAGE = **170-190VDC** (disclaimer: only at full sunlight)



2 strings of 4 panels in Series joined in Parallel to make 1600W and under 200VDC (Voc)