

Solar Panel Power System Documentation

Components:

Solar Panel Power System

1. 2 Solar Panels
2. 1 SunSaver MPPT
3. 2 DC to AC inverters
4. 1 Dry-Cell 12V battery
5. 1 Yellow Electrical Wire
6. 2 Solar Panel Connectors with an open wire end
7. 2 Red Disconnecting Tools
8. 2 Paired Loop End Battery Cables

Wireless System

1. 2 Tripod towers
2. 1 airMax BaseStation (90 degree antenna)
3. 1 AirGrid M5 (receiver)
4. 2 Power supplies with POE and LAN connections
5. 2 4PAIR CAT5e cables

Other Components

1 Stanley FATMax cart
1 Stanley chest
2 Four wheel adjustable hand-trucks
1 Folding table
Tools (needle-nose pliers, screwdriver, pliers, wire cutters, wire strippers, , wrench, wire clamps, standard and metric wrenches)
Electrical tape (Black, red, green, yellow, white, blue)
Ethernet cables
2 Flashlights
Magnifying glass
Scissors
Cable clamps
2 D-Link Gigabyte 5-port Desktop Switches
1 D-Link Wireless G Access Point
Bungee cords
2 Stanley Power Strips
1 Digital Multimeter
1 Bi Sheng Interchangeable Manual Tool Set
1 Stanley Mini-Screwdriver Set
Sharpie Pens
1 D-Clamp Bungee chord
1 Sanyo Battery Recharger
1 SOLAR Battery Tester
3 3 AMP Circuit Breakers
1 30 ft. Measuring Tape

- 1 AC (cigarette lighter) to battery connector
- 1 Kill A WATT Watt Meter with plug-in
- 1 Shop Light
- 1 Pack of mini-Notebooks
- 1 Box of Pens

Installation of the Solar Panel Power System

BEFORE connecting the Solar Panel Power System, MARK the POSITIVE (+) BATTERY TERMINAL with RED TAPE.

A. Single Solar Panel Power System Installation

1. Place 1 Solar Panel onto 1 of the 4-wheeled hand-trucks.



Illustration 1: 2 Solar Panels are shown.

2. Locate the NEGATIVE (-) and the POSITIVE (+) cable connectors on the back of the Solar Panel.



*Illustration 2:
(NEGATIVE (-) is on the LEFT. POSITIVE (+) is on the RIGHT)*



*Illustration 3:
NEGATIVE (-) is on the LEFT. POSITIVE (+) is on the RIGHT.*

3. Locate the 2 Solar Panel connectors that have a Solar Panel connector on one side and an open wire on the other. There are 2 of these in the FATMax.

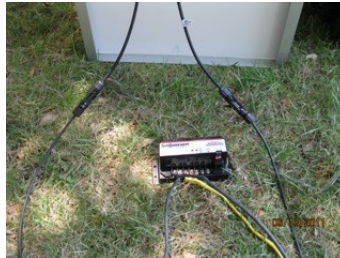


Illustration 3: Solar panel connector and open wire.



Illustration 5: Stanley FatMax

4. Connect the MALE open wire Solar Panel connector to the NEGATIVE (-) cable on the Solar Panel. This connection is the NEGATIVE (-).



*Illustration 6: NEGATIVE (-) is on the LEFT.
POSITIVE (+) is on the RIGHT.*

5. Connect the FEMALE open wire Solar Panel connector to the POSITIVE (+) cable on the Solar Panel. This connection is the POSITIVE (+). (See illustration above)
6. Connect the NEGATIVE (-) open wire Solar Panel connector to the SunSaver Solar NEGATIVE (-) post using a screwdriver.



Illustration 4: BOTH NEGATIVE (-) and POSITIVE (+) are shown connected.



*Illustration 8: Solar panel connection is on the left.
The battery post connections are also shown.*

7. Connect the POSITIVE (+) open wire Solar Panel connector to the SunSaver Solar POSITIVE (+) post using a screwdriver. (See illustrations above)
8. Locate the YELLOW electrical wire in the FATMax. Strip the wire on both ends as needed. After removing the YELLOW sheath from the internal wires there are 3 wires. The WHITE wire is the POSITIVE (+). The BLACK wire is the NEGATIVE (-). The GROUND wire (surrounded by paper) should be folded out of the way. Use needle-nose pliers to loop the ends of the YELLOW electrical cable.



*Illustration 9:
Wirestrippers*



*Illustration 10: Needle-
nose pliers*



*Illustration 11: Stripped
electrical wire with
looped ends. Note that
the ground wire is folded
out of the way.*

9. Connect the NEGATIVE (-) BLACK electrical wire to the SunSaver BATTERY post using a screwdriver.



*Illustration 12:
POSITIVE (+) is on the
LEFT. NEGATIVE (-) is
on the RIGHT.*

10. Connect the POSITIVE (+) WHITE electrical wire to the SunSaver BATTERY post using a screwdriver. (See illustration above).

11. Locate 1 pair of LOOP END BATTERY CABLES. RED is POSTIVE. BLACK is NEGATIVE (-).



Illustration 13: Looped-end battery cables. Note that the POSITIVE (+) and the NEGATIVE (-) are not connected to each other.

12. Using a pair of needle nose pliers, loop the free end of the YELLOW electrical wire around 1 side of the connected BATTERY CABLES.
1. The WHITE POSITIVE (+) wire should be looped around the RED POSITIVE (+) BATTERY CABLE.
 2. The BLACK NEGATIVE (-) wire should be looped around the BLACK NEGATIVE (-) BATTERY CABLE.
13. Use electrical tape to wrap the POSITIVE (+) and NEGATIVE (-) connections separately.
14. Use electrical tape to wrap both POSITIVE (+) and NEGATIVE (-) connections together.



Illustration 14: Steps 12-14.

15. Place the free end of the connected BATTERY CABLES onto the battery.
1. The BLACK BATTERY CABLE is placed on the NEGATIVE (-) BATTERY POST.
 2. The POSITIVE (+) BATTERY CABLE is placed on the POSITIVE (+) BATTERY POST.
 3. This connects the SunSaver to the BATTERY.



Illustration 15: Note that the POSITIVE (+) BATTERY POST is clearly marked with RED TAPE.

16. Locate the DC to AC inverter and the 1 PAIRED LOOP END BATTERY CABLES.
1. Place the NEGATIVE (-) inverter cable on the NEGATIVE (-) BATTERY POST.
 2. Place the POSITIVE (+) inverter cable on the POSITIVE (+) BATTERY POST.
 3. Place the NEGATIVE (-) loop end on the NEGATIVE (-) INVERTER POST.
 4. Place the POSITIVE (+) loop end on the POSITIVE (+) INVERTER POST.



Illustration 16: Note: The PAIRED LOOP END BATTERY CABLES from the SunSaver AND the INVERTER are connected onto the same BATTERY POSTS.



Illustration 17: Inverter prior to installation of the looped-end battery cables.



Illustration 18: Looped-end battery cables connected from the battery to the inverter.

17. The Solar Panel Power System is now ready to turn on.

18. Flip the power switch on the DC to AC inverter to on.



Illustration 19: Power switch and LED indicator are shown. Note that there is also a USB connector.

B. Dual Solar Panel Power System Installation

1. Place 1 Solar Panel onto each of the 4-wheeled hand-trucks and place them side-by-side.



Illustration 1: Solar panels on hand trucks.

2. Locate the NEGATIVE (-) and the POSITIVE (+) cable connections on the back of each Solar Panel.



*Illustration 2: NEGATIVE (-) is on the LEFT.
POSITIVE (+) is on the RIGHT.*

3. Connect the POSITIVE (+) Solar Panel connector of the LEFT Solar Panel to the NEGATIVE (-) Solar Panel Connector of the RIGHT Solar Panel. This will bridge both Solar Panels.



*Illustration 3: (POSITIVE (+) is on the RIGHT.
NEGATIVE (-) is on the LEFT).*

4. Locate the 2 Solar Panel connectors that have a Solar Panel connector on one side and an open wire on the other. There are 2 of these in the FATMax.



Illustration 4: Solar panel connectors with open wire ends.



Illustration 5: Stanley FATMax.

5. Connect the MALE open wire Solar Panel connector to the NEGATIVE (-) cable on the Solar Panel. This connection is the NEGATIVE (-).



Illustration 6: Bridged panels with an open NEGATIVE (-) connector.



Illustration 7: Note that the POSITIVE (+) connector of the LEFT panel is BRIDGED with the NEGATIVE (-) connector of the RIGHT panel.



Illustration 8: (NEGATIVE (-) is on the LEFT. POSITIVE (+) is on the RIGHT)

6. Connect the FEMALE open wire Solar Panel connector to the POSITIVE (+) cable on the Solar Panel. This connection is the POSITIVE (+). (See illustrations above)

7. Connect the NEGATIVE (-) open wire Solar Panel connector to the SunSaver Solar NEGATIVE (-) post using a screwdriver.



Illustration 9: BOTH NEGATIVE (-) and POSITIVE (+) are shown connected.



Illustration 10: Solar panel connection is on the left. The battery post connections are also shown.

8. Connect the POSITIVE (+) open wire Solar Panel connector to the SunSaver Solar POSITIVE (+) post using a screwdriver. (See illustrations above)
9. Locate the YELLOW electrical wire in the FATMax. Strip the wire on both ends as needed. After removing the YELLOW sheath from the internal wires there are 3 wires. The WHITE wire is the POSITIVE (+). The BLACK wire is the NEGATIVE (-). The GROUND wire (surrounded by paper) should be folded out of the way. Use needle-nose pliers to loop the ends of the YELLOW electrical cable.

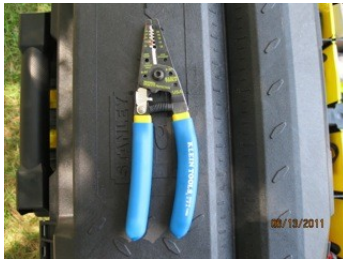


Illustration 11: Wirestrippers



Illustration 12: Needle-nose pliers



Illustration 13: Stripped electrical wire with looped ends. Note that the ground wire is folded out of the way.

10. Connect the NEGATIVE (-) BLACK electrical wire to the SunSaver BATTERY post using a screwdriver.



*Illustration 14:
POSITIVE (+) is on the
LEFT. NEGATIVE (-) is
on the RIGHT.*

11. Connect the POSITIVE (+) WHITE electrical wire to the SunSaver BATTERY post using a screwdriver. (See illustration above).
12. Locate 1 pair of LOOP END BATTERY CABLES. RED is POSTIVE. BLACK is NEGATIVE (-).



*Illustration 15: Looped-
end battery cables. Note
that the POSITIVE (+)
and the NEGATIVE (-)
are not connected to each
other.*

13. Using a pair of needle nose pliers, loop the free end of the YELLOW electrical wire around 1 side of the connected BATTERY CABLES.
 1. The WHITE POSITIVE (+) wire should be looped around the RED POSITIVE (+) BATTERY CABLE.
 2. The BLACK NEGATIVE (-) wire should be looped around the BLACK NEGATIVE (-) BATTERY CABLE.
14. Use electrical tape to wrap the POSITIVE (+) and NEGATIVE (-) connections separately.
15. Use electrical tape to wrap both POSITIVE (+) and NEGATIVE (-) connections together.



Illustration 16: Steps 13-15.

16. Place the free end of the connected BATTERY CABLES onto the battery.
 1. The BLACK BATTERY CABLE is placed on the NEGATIVE (-) BATTERY POST.
 2. The POSITIVE (+) BATTERY CABLE is placed on the POSITIVE (+) BATTERY POST.
 3. This connects the SunSaver to the BATTERY.



Illustration 17: Note that the POSITIVE (+) BATTERY POST is clearly marked with RED TAPE.

17. Locate the DC to AC inverter and the 1 PAIRED LOOP END BATTERY CABLES.
1. Place the NEGATIVE (-) inverter cable on the NEGATIVE (-) BATTERY POST.
 2. Place the POSITIVE (+) inverter cable on the POSITIVE (+) BATTERY POST.
 3. Place the NEGATIVE (-) loop end on the NEGATIVE (-) INVERTER POST.
 4. Place the POSITIVE (+) loop end on the POSITIVE (+) INVERTER POST.



Illustration 18: Note: The PAIRED LOOP END BATTERY CABLES from the SunSaver AND the INVERTER are connected onto the same BATTERY POSTS.



Illustration 19: Inverter prior to installation of the looped-end battery cables.



Illustration 20: Looped-end battery cables connected from the battery to the inverter.

18. The Solar Panel Power System is now ready to turn on.
19. Flip the power switch on the DC to AC inverter to on.



Illustration 21: Power switch and LED indicator are shown. Note that there is also a USB connector.