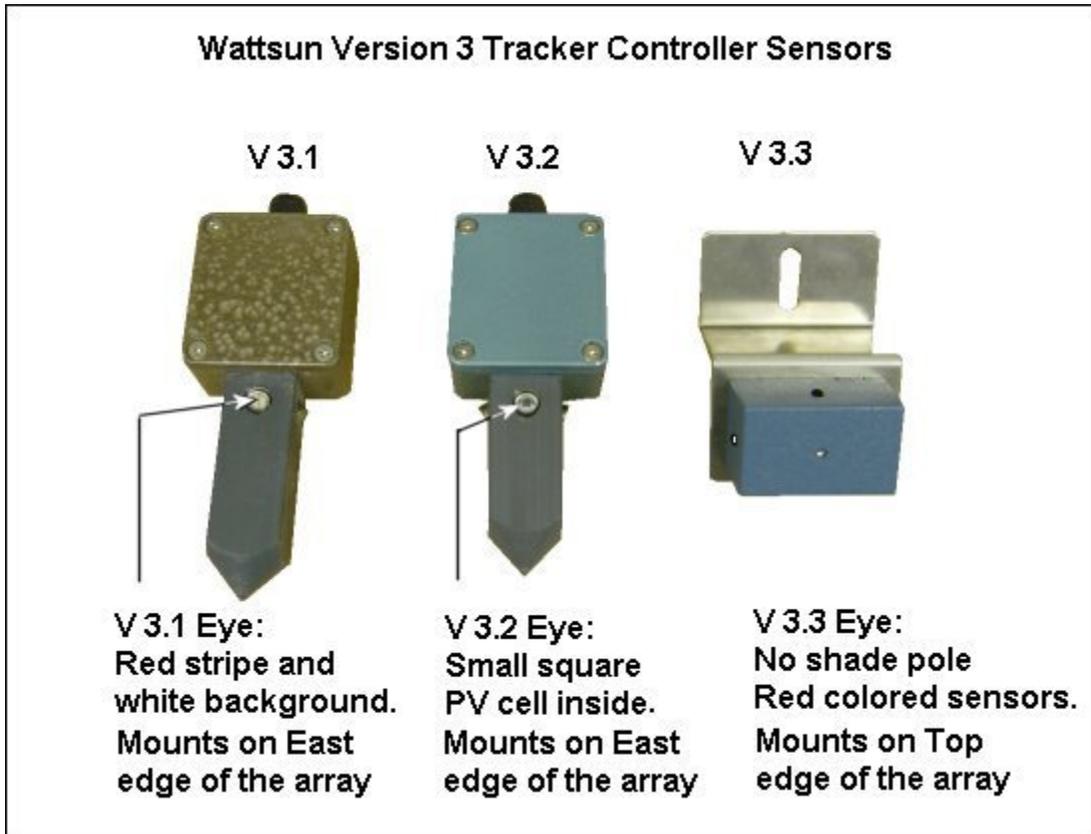




TECHNICAL BULLETIN: 09-16-2003

Instructions for Upgrading to V3.3 Sun Sensors

Sun Sensor Identification:

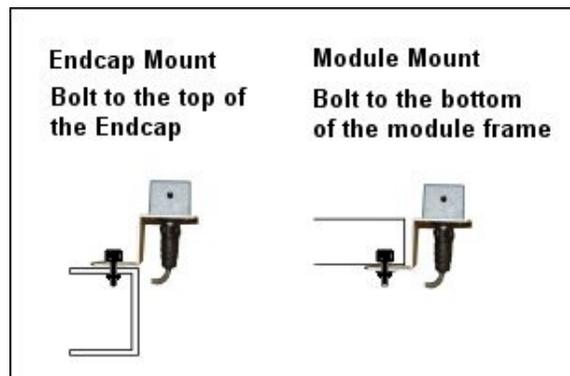


This Upgrade is only applicable to Version III controllers. These controllers use remote sensor assemblies with the control electronics located in a separate chassis mounted on the azimuth gear drive assembly.

Tools Required:

- #2 Philip Head Screwdriver
- Small Flat Head Screwdriver
- Needle Nose Pliers
- 7/16" Wrench

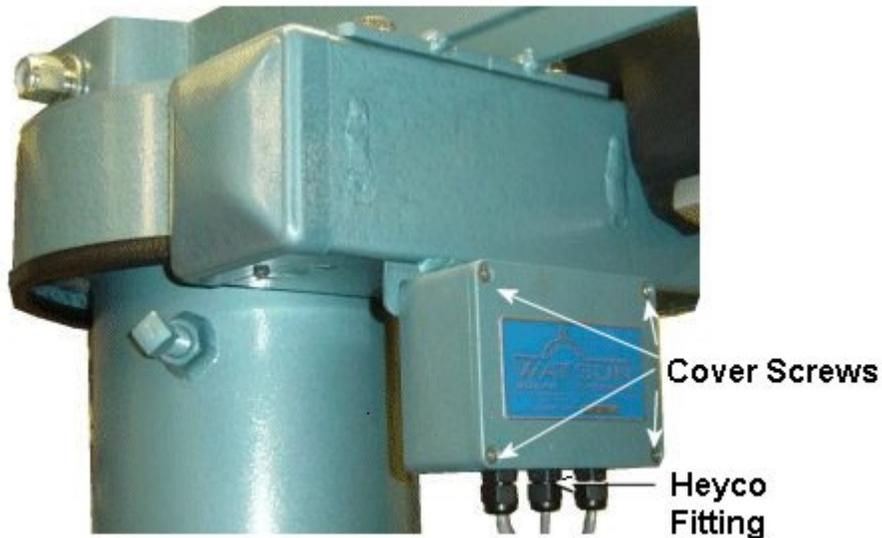
Your mount will be in one of these array (top edge) configurations →





Step by Step Sun Sensor Upgrade Instructions

- 1) Open main control box by loosening the four cover screws:

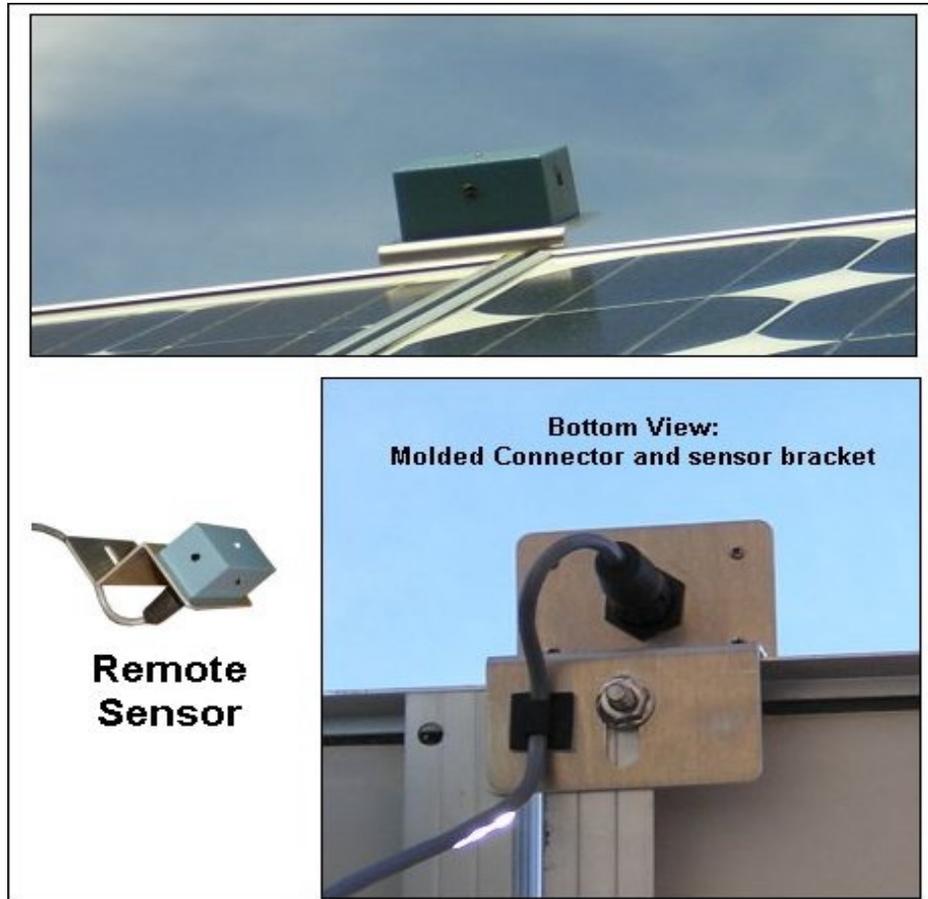


- 2) Remove the fuse from the controller.
- 3) Using a small flat blade screwdriver, depress the buttons above the sensor wires to remove the 5 sensor wires as shown in the picture. Loosen the Heyco nut and remove the sensor cable from the control box.





- 4) **On Dual-Axis models only:** Switch the polarity of the red and black elevation motor output wires.
- 5) Remove the old sensor from the NE corner of the array.
- 6) **Mount the sensor in the center of the North (top) edge of array.** The new sensor mounts on **top** of the endcap channel or on the module if there is no endcap. Center it with the blue box facing skyward. Note that the new sensors do not have the "pyramid-style" shade pole.



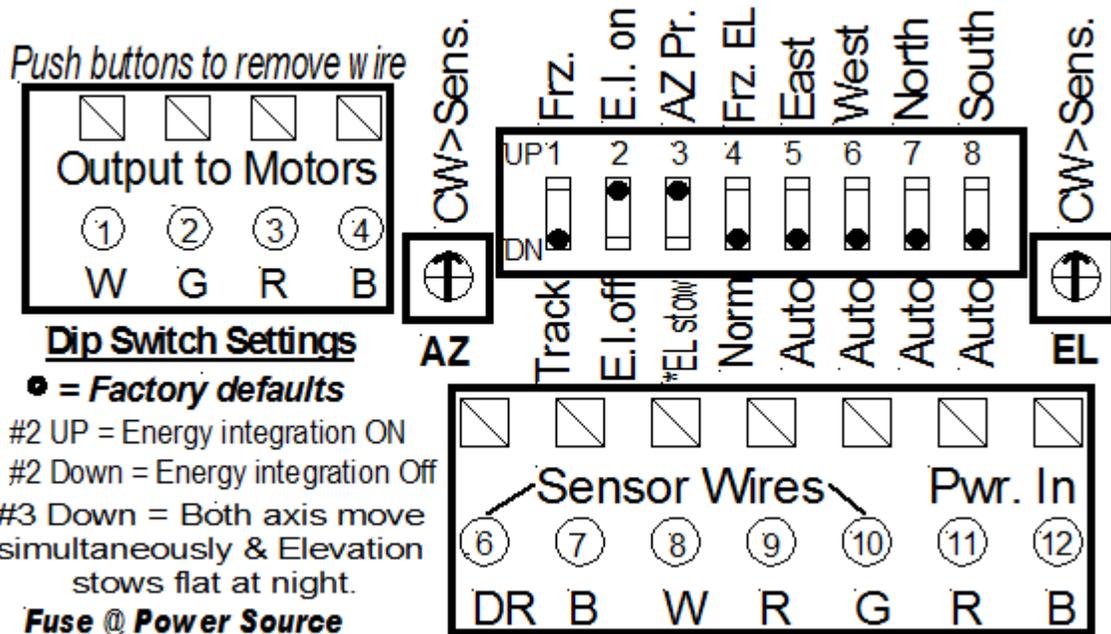
- 7) Route the new sensor cable to the tracker control box using cable ties and making sure that the cable service loop is long enough for tracker movement. Make sure it is routed such that the cable cannot get caught in a pivot joint.
- 8) Insert sensor cable into the center Heyco cable fitting and with a small flat blade screwdriver depress the square button above the connector hole and insert the sensor wires into the connector.
Follow the same color code as the old sensor wires. Tug on each wire to make sure they are secure. Also be sure the wire insulation is not pushed too far into the connector.
- 9) Set the DIP switches according to the positions shown in the diagram. For elevation stow flat at night, DIP switch three must be down. This allows both axis' to run



simultaneously and stows the elevation in a flat position at sunset. The sensitivity adjustment pots should be in the 12 o'clock or middle position.

- 10) Replace fuse (You'll see a small spark, don't get scared, it's normal).
- 11) Replace the cover and secure the four cover screws.

With this upgrade, you should see better tracking behavior and less hunting in cloudy conditions. The new sensors have the ability to look through the clouds to find the infrared light coming from the sun. The V3.3 sun sensor incorporates silicon sensors potted in a powder coated aluminum chassis for long life and corrosion resistance.



DIP SWITCH SETTINGS (Note that Switch 4 has a new function compared to pre -2003 controllers.)

Dip	Default	Up Position	Down Position
#1	Down	Freeze Tracker - Temporary off only	Normal: Auto Track
#2	Up	Normal: Energy Integration ON	Energy Integration OFF: Lowers the voltage input threshold to power from a low state of charge 24 VDC battery.
#3	Up	Normal: Prioritize Azimuth Axis. Move Azimuth 1 st , Elevation 2 nd . Freeze Elevation at night.	Move Azimuth and Elevation at the same time and lay the tracker flat at night. (5 Degree tilt).
#4	Down	Disable Elevation Actuator Auto Track (Winter mode: Maintain a steep tilt to shed snow)	Normal: Dual-Axis Tracking ON
#5	Down	Manually move East.	Normal: Auto Track.
#6	Down	Manually move West.	Normal: Auto Track.
#7	Down	Manually move North.	Normal: Auto Track.
#8	Down	Manually move South.	Normal: Auto Track.



DIP SWITCH

Small rocker switches that affect controller operation. Switches 5,6,7 & 8 move the tracker: allow for a 3 second delay for the motors to engage after "throwing" a switch from Auto Tracking. Return to the Normal position for Auto Tracking!

LIGHT SENSITIVITY TRIM POTS

Inside the controller chassis are two adjustment potentiometers for light sensitivity. They are a single-turn pot: clock-wise rotation equals greater sensitivity, counter clock-wise rotation equals lower sensitivity. This adjustment is factory pre-set and should only be adjusted by qualified personnel. Do not turn more than 1/2 turn in either direction!

INTERIOR FUSE

Replaceable 5-Amp automotive spade type fuse (ATO). Do not replace with a larger amp rated fuse! Gently pull the fuse out of the holder to inspect or replace. It is usual to see a small spark when reconnecting the fuse. A 7.5-Amp fuse is the maximum fuse allowed. A 10-Amp fuse or higher will cause trouble!

NOTE FOR SINGLE AXIS CONTROLLER

- ◆ There is only **one** adjustment potentiometer for Azimuth Tracking.
- ◆ Dip switches **#3, #4, #7 & #8** are not functional. Leave at factory default.
- ◆ Sensor has only one set of "eyes."

General Wiring Diagram for a Wattsun Solar Tracker Controller AZ-125 Drive manufactured after August 21, 2003

