

DC Controller Installation Guide

Baseline's DC irrigation controller is a solar powered controller that operates without the need for a new power feed.

When you purchase a DC controller from Baseline, the voltage doubler board and the charge controller are installed and wired at the factory.

The customer is responsible for installing and wiring the following components according to the instructions found in the manufacturers' installation guides that are included with the components:

- The battery and required fuse
- Battery enclosure (if required)
- The solar panel, the mounting bracket, and the mounting pole

Because every DC controller installation is different, this document is simply an overview.

Required Materials

- Solar lead cables: One length with a male Mc4 connector on one end and bare wire on the other end. Another length with a female Mc4 connector on one end and bare wire on the other end.
- Proper length and gauge of intermediate wire to connect the solar lead cables to the charge controller. See the wire chart in the SunSaver Installation and Operation Manual for specifications. Use 75° C copper wire.
- Proper length and gauge of wire to connect the battery to the charge controller.

Note: The terminals on SunSaver charge controller accept a maximum wire gauge of 10 AWG. If you are running a larger gauge of wire from the solar panels or the battery, you either need to splice a length of 10 AWG wire to connect to the SunSaver charge controller or you need to attach a spade connector to the wires.

- Wire connectors
- Battery terminal connectors
- Inline fuse holders
- Properly sized DC-rated fuses. See the fuse chart in the SunSaver Installation and Operation Manual for specifications.

Required Tools

- Screwdrivers, both flat head and Philips
- Wire cutter
- Wire stripper
- Tool for measuring angles such as a speed square or a smart phone app



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Installation Notes

The number of solar panels and batteries you will need to power your system depends on a number of factors including the following:

- The Baseline controller you are using
- The type and number of communication modules
- The quantity of two-wire devices on the system
- The average solar irradiance for your location during the months when the DC controller is powered

When you are ready to install the DC controller system, we expect that the system designer has used our Solar Calculator Worksheet to calculate the number of solar panels and batteries necessary to power the system. We recommend that you install the system with the required equipment rather than trying to retrofit additional equipment at a later time.

When you order a DC irrigation controller system, the SunSaver charge controller is mounted inside the irrigation controller at the factory. The load terminals are prewired to the voltage doubler board, which, in turn, is wired to the irrigation controller's control board. When using the SunSaver Installation and Operation Manual, you can skip the instructions for mounting the charge controller and wiring the load.

When using the SunSaver Installation and Operation Manual, you can skip the instructions for Selecting a Battery Type. Baseline has preconfigured the Battery Select jumper on the SunSaver for the flooded battery type. The jumper has been removed from the circuit, but it is still attached to one of the terminals on the SunSaver. While Baseline recommends that you use a flooded battery and leave the Battery Select jumper in its factory-installed location, you can reposition the jumper if you need to use a different type of battery.

The SunSaver Installation and Operation Manual provides instructions for converting the charge controller from Pulse Width Modulation (PWM) charging to Slow Switching charging. Baseline recommends that you leave the charge controller in the PWM charging mode.

If multiple solar panels are required, they must be wired in parallel.

If multiple batteries are required, they must be wired in parallel.

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Refer to the SunSaver Installation and Operation Manual for complete wiring instructions and safety precautions.

Installation Overview

1. Install all irrigation system components such as two-wire, DC latching solenoids, biCoders, and soil moisture sensors according to the instructions included with the products.
2. Install the Baseline irrigation controller enclosure according to the instructions included with the product. Make sure the enclosure is properly grounded.
3. Remove the 6 amp fuse from the voltage doubler board. Do not confuse this fuse with the other fuses on the Baseline irrigation controller boards. Set this fuse aside while you are working on the wiring.
4. Install the solar panel on its mounting pole and bracket according to the instructions included with the products.
5. Position the tilt angle of the panel according to the recommendation in the NASA report or on the Installer's Reference Sheet.
6. Connect the wiring to the leads on the back of the solar panel.
7. Make sure the battery is fully charged, and then install it in the irrigation pedestal enclosure (if using), or in a separate battery enclosure.
8. Install an inline fuse on the wire that will be used to connect the positive battery terminal to the charge controller. Do not install the fuse at this time.
9. Install an inline fuse on the wire that will be used to connect the solar panel positive to the charge controller. Do not install the fuse at this time.
10. Connect the negative wire from the battery to the charge controller.
11. Connect the positive wire from the battery to the charge controller.
12. Connect the negative wire from the solar panel to the charge controller.
13. Connect the positive wire from the solar panel to the charge controller.
14. Recheck the wiring, and then install the fuses in the following order:
 - First: Voltage doubler board
 - Second: Battery circuit
 - Third: Solar circuit

