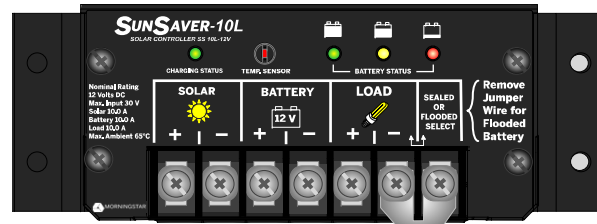


Specifications:

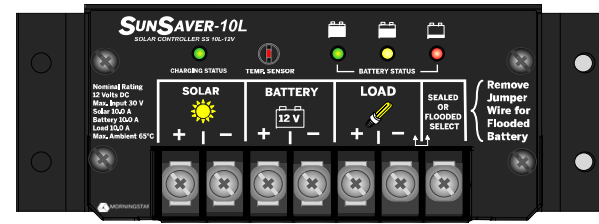
	SS-6/6L		SS-10/10L		SS-20L	
Nominal System Voltage	12 V	12 V	24 V	12 V	24 V	
Maximum Solar Input Voltage	30 V	30 V	60 V	30 V	60 V	
Maximum Solar Current	6.5 A	10 A		20 A		
Battery Voltage Range	6 V to 15 V	6 V to 15 V	6 V to 30 V	6 V to 15 V	6 V to 30 V	
Maximum Load Current	6 A	10 A		20 A		

Battery Type Selection:



For Sealed Batteries:

Battery Select Jumper
INSERTED



For Flooded Batteries:

Battery
Select
Jumper
REMOVED

Set Point	Sealed		Flooded	
	12-volt	24-volt	12-volt	24-volt
Absorption Voltage	14.1 V	28.2 V	14.6 V	29.2 V
Absorption Duration	3 hours			
Float Voltage	13.7 V	27.4 V	13.7 V	27.4 V
Time until Float	3 hours			
Equalize Voltage	N/A		14.9 V	29.8 V
Equalize Duration (hours)	N/A		3 hours	
Equalize Calendar (days)	N/A		28 days	
Maximum Regulation Voltage*	15.0 V	30.0 V	15.0 V	30.0 V
Low Voltage Disconnect (LVD)	11.5 V	23.0 V	11.5 V	23.0 V
Low Voltage Reconnect (LVR)	12.6 V	25.2 V	12.6 V	25.2 V
High Voltage Disconnect (HVD)	15.3 V	30.6 V	15.3 V	30.6 V
High Voltage Reconnect (HVR)	14 V	28 V	14 V	28 V
Startup LVD	11.7 V	23.4 V	11.7 V	23.4 V
Instant LVD	10.0 V	20.0 V	10.0 V	20.0 V

*Not temperature compensated. 15 V @ 12 V nominal, 30 V @ 24 V nominal.



IMPORTANT:

The SunSaver charging algorithm is compatible with lead-acid or NiCd batteries. *NiMH, Li-ion, and other battery chemistries are not compatible with the SunSaver charging algorithm.*



IMPORTANT:

Pulse Width Modulation (PWM) Charging versus Slow Switching Charging

See the SunSaver Installation Manual for directions for changing the regulation from Pulse Width Modulation (PWM) charging to Slow Switching charging.

Slow Switching regulation limits the switching frequency to 10 hz. (maximum), which can eliminate noise issues in some systems.

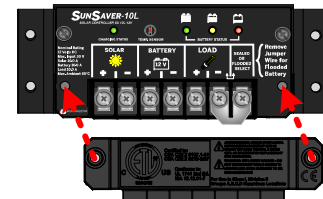
PWM charging is selected by default.

To Install the Terminal Cover (required by UL/ETL listed systems):

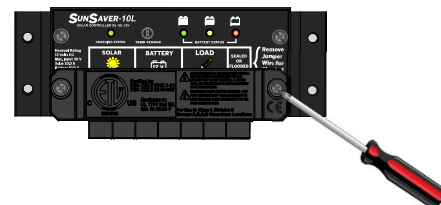
1. Remove the two lower screws from the faceplate.



2. Align the Terminal Cover over the holes.



3. Insert the screws removed in Step 1 and hand-tighten using care not to over-tighten.



Contact Information:

Technical Support: Support.morningstarcorp.com
Phone: 1-215-321-4457



Quick Start Guide



SunSaver Models:

SS-6	SS-10	SS-20L*
SS-6L*	SS-10L*	

*Automatic Load Control:

Load Control automatically disconnects and reconnects system loads based upon the Low Voltage Disconnect (LVD) and Low Voltage Reconnect (LVR) voltage thresholds.

The LVD and LVR thresholds are listed on Page 4 of this Quick Start Guide.

This feature is exclusive to models SS-6L, SS-10L, and SS-20L only.

Scan QR Code to go directly to the SunSaver Installation Manual and warranty information online.



Warranty Registration: <https://www.morningstarcorp.com/product-registration/>

In the Box:

SunSaver Solar Charge Controller



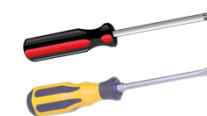
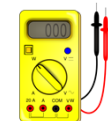
Terminal Cover



Mounting
Screws (x4)

Tools Required:

- #2 Philips Screwdriver
- 3/16 (5 mm) & 3/32" (2.5 mm) Flathead Screwdriver
- Drill with a 3/32" (2.5 mm) bit
- Multimeter



Important Safety Information:



WARNING: Shock Hazard

The SunSaver solar controller must be installed by a **qualified** technician in accordance with the electrical regulations of the country of installation.



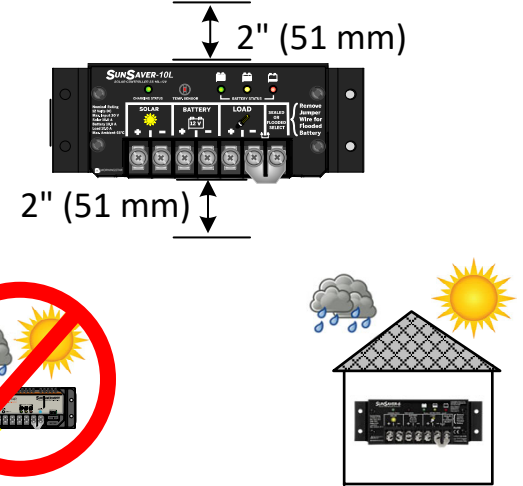
WARNING: Shock Hazard

This unit is not provided with a GFDI device. This charge controller must be used with an external GFDI device as required by the Article 690 of the National Electrical Code for the installation location.



IMPORTANT: READ the SunSaver Installation Manual for safety and regulatory information, instructions on configuration and operation, and warranty information.

Minimum Clearance Requirements:



WARNING: Explosion Hazard

Never install the SunSaver in an enclosure with vented/flooded batteries. Battery fumes are flammable and will corrode and destroy the SunSaver circuits. Ensure sufficient ventilation.

CAUTION: Equipment Damage

Do not expose the SunSaver CC to weather. Locate in a dry, protected area to prevent equipment damage. Ensure the minimum clearance requirements are followed to provide adequate ventilation and prevent the unit from overheating.

Mounting:

Step 1: Choose Mounting Location

Locate the SunSaver on a vertical surface within 10 feet (3 m) of the battery bank that is protected from direct sun, high temperatures, and water.

Step 2: Check for Clearance and Ventilation

Place the SunSaver in the location where it will be mounted. Verify that there is sufficient room to run wires and that there is ample room above and below the controller for air flow.

Step 3: Mark Holes

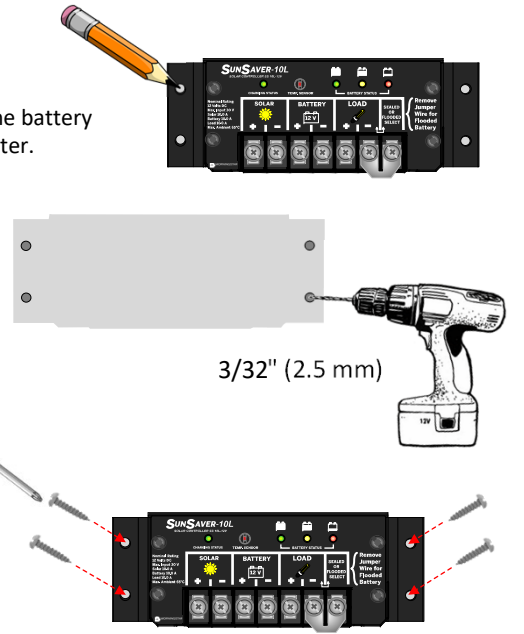
Use a pencil or pen to mark the four (4) mounting hole locations on the mounting surface.

Step 4: Drill Holes

Remove the controller and drill 3/32" (2.5 mm) holes in the marked locations.

Step 5: Secure Controller

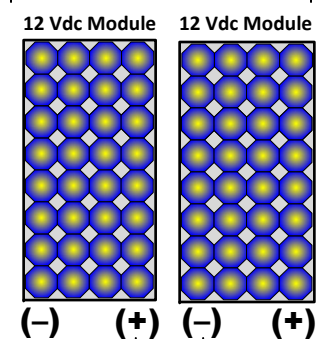
Place the controller on the surface and align the mounting holes with the drilled holes in step 4. Secure the controller in place using the Mounting screws (included).



Photovoltaic (PV) Array

See the Morningstar PV String Calculator at: <http://string-calculator.morningstarcorp.com/>

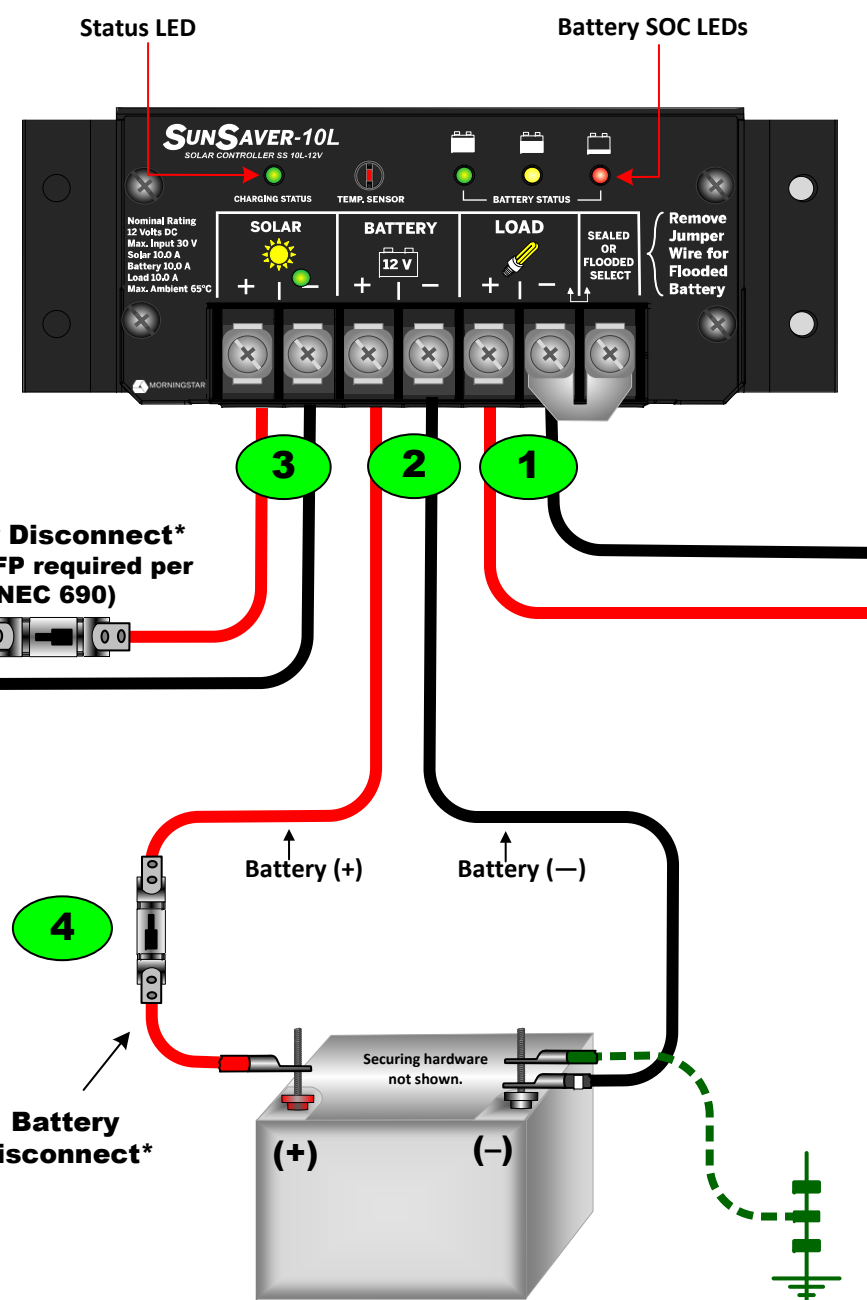
30 Voc Max @ 12 V battery /
60 Voc @ 24 V battery



Solar Disconnect*
(PV GFP required per NEC 690)

IMPORTANT: Array Voltage should NEVER exceed the maximum input voltage.

WARNING: Shock Hazard
The solar PV array can produce open-circuit voltages in excess of 40 Vdc when in sunlight. Verify that the solar input breaker or disconnect has been opened (disconnected) before installing the system wires.



Battery / Battery Bank
(12-volt or 24-volt*)
*SunSaver Model Dependent

IMPORTANT: Example only. Actual wiring may vary. READ the SunSaver Installation, Operations, and Maintenance Manual for mandatory safety requirements. All configuration must comply with local and national electric codes. Consult your local electric authority to ensure compliance.

DC Load(s)*



STATUS LED		
Color	Indication	Operating State
None	OFF (with heartbeat ¹)	Night
Green	ON Solid (with heartbeat ²)	Charging
Red	Flashing	Error
Red	ON Solid (with heartbeat ²)	Critical Error

¹ heartbeat indication flickers the Status LED ON briefly every 5 seconds
² heartbeat indication flickers the Status LED OFF briefly every 5 seconds

BATTERY STATE-OF-CHARGE (SOC) LED			
SOC LED	Indication	Battery Status	Load Status
Green	Fast Flashing (2 Flash / sec)	Equalize Charge	Load ON
Green	Medium Flashing (1 Flash / sec)	Absorption Charge	Load ON
Green	Slow Flashing (1 Flash / 2 sec)	Float Charge	Load ON
Green	ON Solid	Nearly Full	Load ON
Yellow	ON Solid	Half Full	Load ON
Red	Flashing (1 Flash / sec)	Battery Low	LVD Warning (Load ON)
Red	ON Solid	Battery Empty	LVD (Load OFF)
None	No LEDs ON	Battery Missing	Load OFF

WARNING: Shock Hazard
Test between all terminals and ground before touching. Power or accessory terminals are NOT electrically isolated from DC input and may be energized with hazardous solar voltage.

WARNING: Shock Hazard
Fuses, circuit breakers, and disconnect switches never open grounded system conductors. Only GFDI devices are permitted to disconnect grounded conductors.

IMPORTANT: Ensure there is only 1 DC Negative-to-Ground Bond in the entire system.

Recommended Order of Installation	WIRING AND TORQUE REQUIREMENTS					
	Component	Wire Size (Solid)	Wire Size (multistrand)	Wire Size (fine strand)	Torque (Maximum)	Tool Required
1	Load Terminals	#10 AWG 5.2 mm ² (Maximum)	#10 AWG 5.2 mm ² (Maximum)	#10 AWG 5.2 mm ² (Maximum)	10.6 in.-lbs. (1.2 Nm)	3/16"(5 mm) Flathead Screwdriver
2	Battery Terminals					
3	Solar Terminals					
4	Fuses or Disconnects	*Fuse or breaker sizing must be based on required wire ampacity. If using a fuse, do NOT insert the fuse in the fuse-holder until after all the other connections have been completed.				

LEGEND	
	Negative (-)
	Positive (+)
	Ground

- Power UP Sequence:**
1. Connect Battery/Battery Bank.
 2. Connect Solar.
- Power DOWN Sequence:**
1. Disconnect Solar.
 2. Disconnect Battery/Battery Bank.