MORNINGSTAR
PROFESSIONAL SERIES
World's Leading Solar Controllers & Inverters

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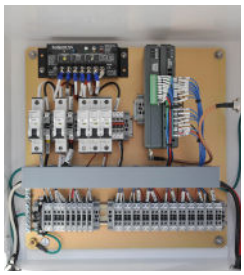
SUNSAVER™ SOLAR CONTROLLER

OVER 1.5 MILLION SOLD IN OVER 90 COUNTRIES

- Full Electronic Protections
- Four Stage Battery Charging
- Self-Diagnostics to Detect Critical Faults
- Multi-Color Status LED
- Approved for use in hazardous locations around the globe

Since the introduction in 1996, more than 1.5 million SunSaver Controllers have set the standard for reliability and performance in demanding oilfield and mining installations in nearly 90 countries around the globe. Today, SunSaver is the world's leading small solar controller for industrial and consumer markets, proven in mission-critical applications where failure is simply not an option.

This third generation SunSaver brings over two decades of advances in software and electronics to the same rugged, hardened design that made the original famous. Own both a legend and the latest in a single product.



KEY FEATURES AND BENEFITS

Extremely High Reliability

- Failure rate of less than 1 per 1,000 shipped (<0.1%)
- 100% solid state. Power MOSFET design
- Manufactured in an ISO 9001 factory
- 100% pre-shipment functional testing

Longer Battery Life

- Series design (not shunt) for cool operation
- Longer battery life through PWM 4-stage charging and temperature compensation
- Sealed or flooded battery select
- Low voltage load disconnect on several versions

Designed for Harsh Environments and Hazardous Locations Around the Globe

- Temperature rating of -40°C to +60°C
- Ideal for Oil/Gas applications. Approved for use in hazardous locations: UL/CSA Class 1, Division 2, Groups A-D; ATEX/IECEx Zone 2, Gas Group IIC
- Tropicalization—hardened for field use with anodized aluminum enclosure, epoxy encapsulation and marine-rated terminals

Easy to Install and Use

- Factory pre-sets result in no required install settings
- Electronic protections prevent damage from wiring mistakes
- Fully automatic operation and fault recovery
- Additional features include full electronic protections, 3-state battery LED indicators, terminal cover, dead battery recovery, high voltage load protection for sensitive loads
- Wire terminal cover included with every SunSaver

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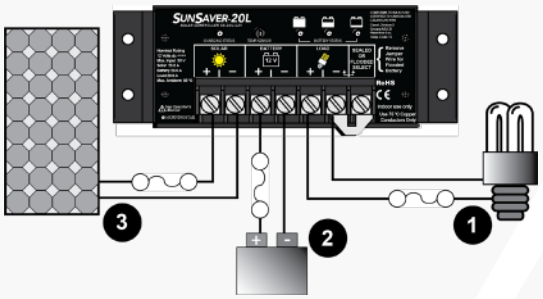
Technical Specifications

Versions	SS-10L-24V, SS-10L-12V, SS-6-12V, SS-6L-12V, SS-20L-12V, SS-10-12V, SS-20L-24V	
Electrical		
Max. PV and load ratings	Shown to the right	
System voltage	12V or 24V	
Min. battery voltage	6V*	
Regulation voltage	12 volt	24 volt
Sealed battery	14.1 V	28.2 V
Flooded battery	14.6 V	29.2 V
Load disconnect	11.5 V	23.0 V
LVD reconnect	12.6 V	25.2 V
Max. solar voltage		
12V battery	30 volts	
24V battery	60 volts	
Load in-rush capability		
SunSaver-6	45 amps	
SunSaver-10	65 amps	
SunSaver-20	140 amps	
Self-consumption	< 8 mA	
Voltage accuracy	12V: +/– 25 mV (typical) 24V: +/– 48 mV (typical)	
Transient surge protection	1500W per connection	
Mechanical		
Wire size	5 mm² / #10 AWG	
Weight (unpacked)	0.23kg / 8 oz.	
Dimensions	15.2 x 5.5 x 3.2 cm 6.0 x 2.2 x 1.3 inch	
Environmental		
Ambient temperature	-40°C to +60°C	
Storage temperature	-55°C to +80°C	
Humidity	100% non-condensing	
Tropicalization	Epoxy encapsulation Marine rated terminals Anodized aluminum case	

WARRANTY: Five year warranty period.
Contact Morningstar or your authorized distributor for complete terms.

*In periods following excessive battery drain, provided the controller is not power cycled, the controller can self-recover from a battery voltage of 1V and provide intermittent charging operation up to 6V at which normal operation will resume.



SunSaver shown with included wire terminal cover.

Specification Summary

Ratings	SS-6/6L	SS-10/10L	SS-20L
System voltage	12V	12V or 24V	12V or 24V
Min. battery voltage	6V*	6V*	6V*
Max. solar voltage	30V	30V or 60V	30V or 60V
Max. solar current	6.5A	10A	20A
Max. load current	6A	10A	20A

Battery Charging

- Charging method — 4 stage series PWM
- Charging stages — Bulk, absorption, float, equalize
- Temperature compensation
  - » Coefficient — 12V: -30mV/°C; 24V: -60mV/°C
  - » Range — -30°C to +60°C
  - » Set points — Absorption, float, equalize

LED Indications

- Status LED (1) — Charging or not charging; Solar error conditions
- Battery LED's (3) — Battery level; Charging stage

Certifications

- Hazardous Locations:
  - » UL121201/CSA C22.2 #213 Class I, Div. 2 Groups A-D T5
  - » ATEX II 3G Ex ec IIC T4...T5 Gc
  - » IECEx Ex ec IIC T4...T5 Gc
- CE, RoHS and REACH Compliant
- IEC/EN 62109-1 Ed.1 2010
- UL 1604/ANSI/ISA 12.12.01-2000 (USA) and CSA C22.2 No. 213-M1987 (Reaffirmed 2004) (CANADA) Listed
- ETL Listed: UL 1741 (terminal cover required for compliance)
- FCC Title 47 (CFR), Part 15 Subpart B for Class B Device
- Manufactured in a Certified ISO 9001 Facility

Electronic Protections

- Solar: Overload, short-circuit, high voltage
- Load: Overload, short-circuit, high voltage
- Battery: High voltage
- All: Reverse polarity, high temperature, lightning and transient surges
- Reverse current at night

Due to Morningstar's policy of continuous improvement, product availability, features and specifications are subject to change without notice. Information in this publication has been checked for accuracy; however, no responsibility is assumed for typos or errors. ©2022 Morningstar Corporation