



# SUNKEEPER™

## JUNCTION BOX MOUNTED SOLAR CONTROLLER



Morningstar's **SunKeeper** solar controller provides a low cost regulated output directly from the solar module to maximize battery life in small solar power applications. The SunKeeper is epoxy encapsulated and rated for outdoor use. By mounting directly to the module junction box and wiring through the junction box knockout, the connection is weather-proof. This eliminates the need for an additional housing for the controller.

The SunKeeper is available in a 6 amp or 12 amp version (both at 12 volts DC). To withstand the high temperatures at the solar module, the controller has been designed using extremely efficient power electronics and is rated to 70°C. The SunKeeper is also certified for use in Class 1, Division 2 hazardous locations, making it an ideal controller for solar powered oil/gas applications.



### Key Features and Benefits:

#### ■ High Reliability

Rated to 70°C to operate in high temperatures at the solar module. More reliable than controllers mounted inside the junction box. Uses very low on-resistance power MOSFET's. No need to re-rate.

#### ■ Outdoor Rated

ETL approved for outdoor use without an additional enclosure. Rugged IP65, UV resistant case. Epoxy encapsulated printed circuit board and watertight connection to the module junction box.

#### ■ Extensive Electronic Protections

Fully protected against reverse polarity, short circuit, overcurrent, lightning and transient surges, high temperature and reverse current at night.

#### ■ Longer Battery Life

Series PWM with 3 stage charging: bulk, PWM regulation and float. Includes temperature compensation at the controller or alternatively at the battery when using optional remote temperature sensor. Able to charge a zero voltage battery.

#### ■ Rated for Hazardous Locations

Specifically designed for solar power systems in the oil/gas industry. Approved for use in Class 1, Division 2, Groups A,B,C,D.

#### ■ More Information

Bi-color LED is easy to read from the ground when the solar module is pole-mounted. Indicates solar charging, regulation, normal nighttime operation and any controller or system faults.

#### ■ Easy to Install

Fits standard half inch conduit knockout (PG 13.5, M20) in module junction box. Quickly fastens with included locknut. Wires have fork connectors for easy connection to solar module terminals.

# SUNKEEPER™ SOLAR CONTROLLER

## TECHNICAL SPECIFICATIONS

### Electrical Specifications

- **Rated Solar Input:** SK-6 6 amps  
SK-12 12 amps
- **Nominal System Voltage** 12 Volts
- **Min. Battery Voltage** 0 Volts
- **Max. Solar Voltage** 30 Volts
- **Self-Consumption** Charging...7 mA  
Night .....2 mA
- **Voltage Accuracy** ± 150 mV

### Battery Charging

- **Regulation Voltage** 14.1 Volts (at 25°C)
- **Float Voltage** 13.7 Volts (at 25°C)
- **Type of Charging** Series PWM  
3 stage: bulk, PWM and float
- **Temperature Compensation** (3 choices)  
Reading temp at controller -30 mV / °C  
Attaching remote temp sensor -30 mV / °C  
Disable temp comp Defaults to 25°C
- **Ability to Charge a Zero Voltage Battery**

### Electronic Protections

- Reverse Polarity
- Lightning and Transient Surges
- Short Circuit
- High Temperature
- Overcurrent
- Reverse Current at Night

### Environmental Specifications

- **Operating Temperatures** -40°C to +70°C
- **Humidity** 100%
- **Tropicalization** Encapsulated in epoxy  
UV resistant plastic enclosure  
Conduit connection with rubber gasket seal

### Mechanical Specifications

- **Dimensions** 99 x 51 x 13 mm  
(3.9 x 2.0 x 0.5 inches)
- **Weight** 0.11 kg / 0.25 lbs
- **Enclosure** IP65
- **Fitting to Module J-box** PG 13.5, M20, 1/2 inch conduit
- **Wire Size** 2.0 mm<sup>2</sup> (#14 AWG)
- **Wire Terminations** #8 fork connectors

### Bi-color LED

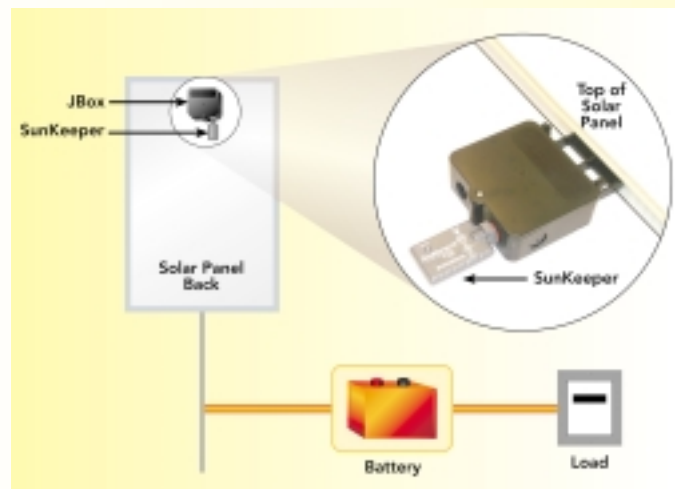
- **Green Blink 3 Times** Successful installation
- **Green On** Solar charging battery
- **Green Blink Fast** In regulation
- **Green Blink Slow** Normal nighttime operation
- **Red On** Controller damaged
- **Red Blink** System problem
- **LED Off** No power

### Options

- **Remote Temperature Sensor (RTS)**

### Certifications

- **CE Compliant**
- **Hazardous Locations:** Class 1, Division 2, Groups A-D,  
UL 1604  
CSA 22.2 No. 213-M1987
- **Complies with U.S. National Electric Code**
- **Manufactured in a Certified ISO 9001 Facility**



Typical System Configuration

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

**AUTHORIZED MORNINGSTAR DISTRIBUTOR:**

**MORNINGSTAR**  
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