Others survive harsh conditions. We THRIVE in them

With 25 years of experience and well over three million products in over 100 countries—most of them still in operation—Morningstar has truly earned its reputation for building the “world’s leading solar controllers.” At Morningstar, the word “reliability” means a lot more than a marketing adjective. It means a hardware failure rate of less than 0.4%—which is why we’re the one manufacturer who even dares share this kind of specification.

That’s why system designers of the most mission-critical solar energy installations around the world insist on Morningstar components, and why you should too on your next project. From mineral mines in South America to telecom repeater stations in Canada, from gas wells in the Middle East to mountain peaks in Nepal, Morningstar technology and legendary quality make the difference between success and failure—and make renewable energy a practical, cost-effective, and long-term solution.

Morningstar achieved its reputation by starting with faster, “smarter” signal processing optimized through superior engineering. Next, because heat reduces efficiency and product life, we add state-of-the-art thermal design to ensure that there are no fans to fail—unlike other higher-powered solar controller and inverter brands.

To raise the bar further, we use oversized, higher-spec components to achieve unprecedented performance levels. The result: products that literally stand by themselves and set new standards for the rest of the industry.

The reason Morningstar has such dedication to excellence is that we’re an employee-owned company. We not only can afford to be perfectionists, we have to be, since our brand’s reputation is synonymous with our own. Our determination and spirit of innovation is what gave Morningstar charge controllers their legendary staying power. Now with inverter-chargers to match the excellence of our controllers, we’re proud to offer a Morningstar solution perfect for your application.

Morningstar Professional Series

For decades, Morningstar’s Professional Series™ has been the first choice of leading system designers and installers. Legendary reliability and performance make Professional Series components the first choice for mission-critical remote solar power projects ranging from off-grid telecommunications, oil & gas operations, and traffic control systems to lighting, surveillance monitoring, and agricultural installations.

With well over 3 million Professional Series products in the field and a 25-year track record of unparalleled dependability, the industry’s leading solar installers know they can bet their reputations on Morningstar.

A series proven by the professionals who depend on it to power their projects

“Having distributed solar products in Africa for more than 15 years, I know which manufacturers tend to last and which ones fail. Morningstar being very much in the lasting category.”
Lincoln Dahl, African Energy

“My SunSaver-10 has been running my 90 watt solar panel non-stop since September 1, 1998. It still works perfectly. That is now more than 17 years! Well past the listed 15 year expected life span noted in the Operator's Manual.”
Peter Caffall-Davis


“Morningstar components were an obvious choice being readily available and dependable in remote bush applications at reasonable cost”
Operations Manager
### TABLE OF CONTENTS - PROFESSIONAL SERIES

#### INVERTERS
- MultiWave 4kW Inverter/Charger
  - 48V Battery
  - 120 or 230 Vac input/output

- SureSine Inverter
  - 300 W; 12 Vdc input, 115 or 220 Vac output

#### MPPT CONTROLLERS
- TriStar MPPT 600V Controller
  - 60A at up to 600Voc

- TriStar MPPT Controller
  - 30A, 45A or 60A at up to 150Voc

- ProStar MPPT Controller
  - 25A or 40A at up to 120 Voc

- SunSaver MPPT Controller
  - 15A at up to 75Voc

#### PWM CONTROLLERS
- TriStar Controller
  - 45A or 60A at 12-48V

- ProStar Controller
  - 15A or 30A at 12/24V

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- SunSaver Duo Controller
  - 25A at 12V

- SunKeeper Controller
  - 6A or 12A at 12V

- SunLight Controller
  - 10A or 20A at 12V or 24V

- SunGuard Controller
  - 4.5A at 12V

### SYSTEM MONITORING
- Envision
  - A cloud-based site manager

### TABLE OF CONTENTS - ESSENTIAL SERIES

#### CONTROLLERS
- EcoBoost MPPT Controller
  - 20A, 30A or 40A at 12/24V at up to 120 Voc

- EcoPulse Controller
  - 10A, 20A or 30A at 12/24V

- SHS and SHS Night Light Controller
  - 6A or 10A at 12V
MultiWave™ 4kW Inverter/Charger
48V Battery • 120 or 230 Vac input/output

The MultiWave™ inverter/charger will establish a new benchmark for battery-based inverters. Combining the surge and power capabilities of a low frequency inverter with the agility and compactness of a high-frequency design, MultiWave will deliver more power with less weight, and achieve peak efficiency in excess of 95% across a wide load range. The new 4 kW Inverter/Charger is part of a line that will include 120, 120/240 and 230V AC versions and is designed for the global marketplace. Flexible and easy to install, MultiWave has a high-resolution display for programming and data access. Optional DIN rail-mounted “BOS block” I/O expansion devices allow adding-on sophisticated generator control, automated load shedding, and system monitoring alert capabilities.

Available late 2018

Quality:
• Passively cooled, full power to 40 °C
• Sine wave smoothing and power factor correction helps clean up dirty AC power

Ease of Installation:
• New weight class allows one person mounting
• Easy commission with built-in meter, SD card or web based MS Live View config
• Pre-wired B.O.S. options for NEC compliant installation

Generator Features
• Advanced bi-directional charger rated at full inverter power
• Two AC inputs allow separate configuration for grid and generator charging, transfer and voltage windows of operation

Expandability
• Ethernet enabled for future communications with Morningstar inverters and charge controllers
• All products are designed to allow the combination of multiple charge controllers, additional inverters, and all necessary breakers, fuses and switch gear

Data
• Full featured standard meter
• Morningstar EnVision compatible for cloud enablement
• Open MODBUS communications to communicate with third party devices

MultiWave

<table>
<thead>
<tr>
<th>MW-4048-120</th>
<th>MW-4048-230</th>
<th>MW-4048-SP</th>
<th>MW-4048-120-B</th>
<th>MW-4048-SP-B</th>
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<td>AC input Frequency Range</td>
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<td>AC Output Frequency (selectable)</td>
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<td>AC Transfer Time</td>
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</table>

Warranty
5 years

Certifications
• UL1741 CSA 22.2 #107.1-01
• CE, IEC 62109-2, FCC Class B

Ambient Operating Temperature
-40 °C to +60 °C

Battery Terminals:
1/0 AWG - 4/0 AWG
6 AWG - 10 AWG

Weight
MW-4048-120: 25 kg / 55 lbs
MW-4048-230: 25 kg / 55 lbs
MW-4048-SP: 22 kg / 48 lbs
MW-4048-120-B: 26 kg / 58 lbs
MW-4048-SP-B: 28 kg / 62 lbs

Dimensions
Standard Version
46.8 x 47.9 x 23.8 cm 18.43 x 18.86 x 9.37 in
BOS ‘B’ Version
46.8 x 78.7 x 23.8 cm 18.43 x 31 x 9.37 in

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SureSine™ Inverter
300 W; 12 Vdc input, 115 or 220 Vac output

SureSine is a pure sine wave inverter delivering AC power in off-grid solar applications, including rural electrification, telecom, remote homes, RVs, caravans and boats. A cast, anodized aluminum enclosure with no internal cooling fan needed ensures long-term reliability in the harshest conditions.

- **Improved load operation** - Pure sine wave provides quality AC equivalent to grid power. Toroidal transformer design generates good wave form throughout the range of input voltages. Handles 200% surge up to 600W.
- **High reliability** - No internal cooling fan or other moving parts. Uses epoxy encapsulation, conformal coating, stainless steel hardware and an anodized aluminum enclosure to protect against harsh tropical and marine environments.
- **More power available** - High efficiency and low self consumption maximizes power to the loads. Automatic stand-by reduces consumption during no load conditions.

### Certifications
- CE, RoHS and REACH Compliant
- ETL Listed (UL 458) - 115V version ONLY
- FCC Title 47 (CFR), Part 15 Subpart B for Class B Device
- EN 60950-1+A11:2001, rev. 4/4/04
- Manufactured in a Certified ISO 9001 Facility

### Options
- Remote Meter (RMA-1) - Yes
- PC MeterBus Adapter (MSC) - Yes
- Relay Driver (RD-1) - Yes
- EIA-485 Adapter (RSC-1)* - Yes
- Ethernet Meterbus Converter (EMC-1) - Yes

* The EIA-485/RS-232 Adapter can be used in conjunction with the PC MeterBus Adapter to enable the SureSine to communicate over a 485 network.

### Specifications
- **Ambient Operating Temperature**
  - -40 °C to +45 °C
  - -40 °F to +113 °F
- **Terminal**
  - 35 mm² / 2 AWG
- **Product Weight**
  - 4.5 kg / 10 lbs
  - 5.2 kg / 11.5 lbs
- **Unit Shipping Weight**
  - 4.5 kg / 10 lbs
  - 5.2 kg / 11.5 lbs
- **Dimensions**
  - 21.3 x 15.2 x 10.5 cm
  - 8.4 x 6.0 x 4.1 in
- **Warranty**
  - 2 years

### Performance
- **Continuous Power Rating**
  - SI-300-115V-UL: 300W @ 25 °C
  - SI-300-220V: 300W @ 25 °C
- **Peak Power Rating (10 minutes)**
  - SI-300-115V-UL: 600W @ 25 °C
  - SI-300-220V: 600W @ 25 °C
- **DC Input System Voltage**
  - 10.0 - 15.5V
- **Waveform**
  - Pure Sine Wave
- **AC Output Voltage (RMS)**
  - 115 Vac +/- 10%
  - 220 Vac +/- 10%
- **AC Output Frequency**
  - 60 Hz +/- 0.1%
  - 50 Hz +/- 0.1%

Maximum Power Point Tracking (MPPT) optimally matches the solar array to the battery—no wasted solar electricity. Morningstar MPPT Controllers feature Trakstar™ technology, an advanced control algorithmic function which harvests the maximum power possible from a solar array. Trakstar better maintains battery health by optimizing state of charge and protecting against overcharging and undercharging. All models incorporate advanced thermal design requiring no cooling fans, which ensures long-term reliability with no moving parts to fail. This is a unique feature among higher-powered controllers.
The TriStar MPPT 600V (TS-MPPT-600V) is a breakthrough in charge controller design. By accepting PV array input up to 600 V, it enables installers to design systems with longer, fewer strings, reducing cabling and hardware which make installation and wiring easier and faster. Morningstar’s advanced digital engineering combined with superior thermal management make the TS-MPPT 600V with TrakStar technology the only charge controller in its class that doesn’t require a cooling fan or fans, making it both extremely reliable and efficient (with 97.9% peak efficiency). Ideal for DC-coupled energy storage applications. Available in four versions:

- **TS-MPPT-60-600V-48: Standard**
- **TS-MPPT-60-600V-48-DB: with Disconnect Box**
- **TS-MPPT-60-600V-48-DB-TR: with DC Transfer Switch**
- **TS-MPPT-60-600V-48-DB-TR-GFPD: pre-wired with Ground Fault Protection Device**

Noteworthy features:

- Accommodates PV systems > 150 Vdc with long wire runs from the array to the controller.
- Uses Morningstar’s patented 4-stage charging algorithm to optimize battery health.
- Features extensive system networking, monitoring, and communications.
- Optimized for harsh environments and equipped with electronic protections.
- Enables battery back-up for grid-tied systems using more efficient DC-coupling system topology (as opposed to AC-coupling).

**Ambient Operating Temperature**

- **40 °C to +45 °C**
- **-40 °F to +113 °F**

**Power terminals**

- **Product Weight**
  - TS-MPPT-60-600V-48: 8.98 kg / 19.8 lbs
  - TS-MPPT-60-600V-48-DB: 12.3 kg / 27.1 lbs
  - TS-MPPT-60-600V-48-DB-TR: 12.75 kg / 28 lbs
  - TS-MPPT-60-600V-48-DB-TR-GFPD: 16.79 kg / 37 lbs

**Dimensions**

- **Standard Box**
  - 39.2 x 22.1 x 14.9 cm / 15.4 x 8.7 x 5.9 in
- **DC Disconnect Box**
  - 24.4 x 48.6 Vdc
- **Nominal System Voltage**
  - Battery Voltage: 525V

**Maximum Battery Current**

- **60A**

**Maximum Solar Input**

- **2400Wp**
- **= 3200Wp**

**Battery Operating Voltage Range**

- **16 - 72 Vdc**

**Nominal System Voltage**

- **24V Battery Bank**
  - 1200Wp
  - 1800Wp
  - 2400Wp
- **48V Battery Bank**
  - 1600Wp
  - 2400Wp
  - 3200Wp

**TriStar MPPT™ 600V Controller**

**60A at up to 600Voc**

<table>
<thead>
<tr>
<th>Option</th>
<th>30A</th>
<th>45A</th>
<th>60A</th>
<th>80A</th>
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</thead>
<tbody>
<tr>
<td>Ethernet Port</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>EIA-485 Adapter (RS-485)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Remote Temperature Sensor (RTS)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ground Fault Protection Device (GFPD-150V and GFPD-600V)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ethernet MeterBus Converter (EMC-1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
ProStar™ MPPT Controller

- **25A or 40A at up to 120 Voc MPPT Controllers**
- **Certifications**
  - Manufactured in a Certified ISO 9001 Facility
  - FCC Class B Part 15 Compliant
  - ETL Listed [UL-1741 and Canadian CSA C22.2 No. 107.1.01]
  - CE, RoHS and REACH Compliant
- **Options**
  - Remote Meter (RM-1)
  - Remote Temperature Sensor (RTS)
  - MeterHub (HUB-1)
  - Wire Box (PS-MPPT-WB)
  - PC MeterBus Adapter (MSC)
  - USB MeterBus Adapter (UMC-1)
  - Relay Driver (RD-1)
  - Ethernet MeterBus Converter (EMC-1)

**ProStar MPPT**

- **Nominal Maximum Operating Power**
  - 12 volt battery
  - 24 volt battery
- **Maximum Open Circuit Voltage (Voc)**
- **Nominal Battery Voltage**
- **Dimensions**
  - 20 x 17 x 7 cm
  - 7.9 x 6.7 x 2.8 in
- **Warranty**
  - 5 years

**SunSaver MPPT Controller**

- **15A at up to 75Voc**
- **Certifications**
  - CE and RoHS Compliant
  - IEC 62109
  - ETL Listed [UL-1741 and Canadian CSA C22.2 No. 107.1.01]
  - FCC Class B Part 15 Compliant
  - Manufactured in a Certified ISO 9001 Facility
- **Options**
  - Remote Meter (RM-1)
  - Remote Temperature Sensor (RTS)
  - MeterHub (HUB-1)
  - DIN Rail Clips (DIN-1)
  - PC MeterBus Adapter (MSC)
  - Ground Fault Protection Device (GFPD-150V and GFPD-600V)
  - Ethernet MeterBus Converter (EMC-1)

**SunSaver MPPT**

- **Maximum Battery Current**
  - 15A
- **Nominal Solar Input**
- **Maximum Open Circuit Voltage**
- **Nominal System Voltage**
- **Dimensions**
  - 16.9 x 6.4 x 7.3 cm
  - 6.6 x 2.5 x 2.9 in
- **Warranty**
  - 5 years

**SunSaver MPPT**

- **Maximum Battery Current**
  - 25A
- **Nominal Solar Input**
- **Maximum Open Circuit Voltage**
- **Nominal System Voltage**
- **Dimensions**
  - 20 x 17 x 7 cm
  - 7.9 x 6.7 x 2.8 in
- **Warranty**
  - 5 years

**SunSaver MPPT**

- **Maximum Battery Current**
  - 40A
- **Nominal Solar Input**
- **Maximum Open Circuit Voltage**
- **Nominal System Voltage**
- **Dimensions**
  - 20 x 17 x 7 cm
  - 7.9 x 6.7 x 2.8 in
- **Warranty**
  - 5 years

**SunSaver MPPT**

- **Maximum Battery Current**
  - 25A
- **Nominal Solar Input**
- **Maximum Open Circuit Voltage**
- **Nominal System Voltage**
- **Dimensions**
  - 20 x 17 x 7 cm
  - 7.9 x 6.7 x 2.8 in
- **Warranty**
  - 5 years

**SunSaver MPPT**

- **Maximum Battery Current**
  - 40A
- **Nominal Solar Input**
- **Maximum Open Circuit Voltage**
- **Nominal System Voltage**
- **Dimensions**
  - 20 x 17 x 7 cm
  - 7.9 x 6.7 x 2.8 in
- **Warranty**
  - 5 years
Pulse-Width Modulation (PWM) technology controllers are ideal for use in solar energy situations where 36 or 72 cell PV modules are available and the site is unshaded with no physical space limitations. All models incorporate advanced thermal design requiring no cooling fans, which ensures long-term reliability with no moving parts to fail—a unique feature among higher-powered controllers.

**PWM Controllers**

**TriStar™ Controller**

45A or 60A at 12-48V

Three-function PWM controller for larger systems, providing reliable PWM solar battery charging or load control or diversion regulation.

- **Built for reliability and performance,** with an oversized heatsink and over-specified components. Fully-rated for operation at temperatures up to 45°C.
- **More information with LED indicators.** Optional meter displays extensive system and controller information in five languages, automatic self-test and reset.
- **Communications capability** with RS-232 port, connects to a PC for custom settings, data logging, remote monitoring and control.
- **Fully adjustable** with DIP switches for seven digital presets. Additional custom setting via RS-232.
- **Extensive electronic protection** against reverse polarity, short circuits, overcurrent and excessive temperature.
- **Fanless design** for long-term reliability.

---

**Certifications**

- CE, RoHS and REACH Compliant
- IEC 62109
- ETL Listed [UL-1741 and Canadian CSA C22.2 No. 107.1.01]
- EMC Compliance
- FCC Title 47 (CFR), Part 15 Subpart B for Class B Device
- Manufactured in a Certified ISO 9001 Facility

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**Options**

- **TriStar Meter-2 (TS-M-2)**
- **TriStar Remote Meter-2 (TS-RM-2)**
- **MeterHub (HUB-1)**
- **EIA-485 Adapter (RSC-1)**
- **Remote Temperature Sensor (RTS)***
- **Ground Fault Protection Device (GF-PD-150V and GFPD-600V)**

---

**Rated Solar, Load or Diversion Current**

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<tr>
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<th>TS-45</th>
<th>TS-60</th>
<th>TS-60M</th>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>60A</td>
<td>Yes</td>
<td>Yes</td>
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**Nominal System Voltage**

12, 24 or 48 Vdc

**Dimensions**

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<th>TS-45</th>
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<td><strong>Ambient Operating Temperature</strong></td>
<td>40 °C to +45 °C</td>
<td>40 °F to +113 °F</td>
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<tr>
<td><strong>Product Weight</strong></td>
<td>1.6 kg / 3.5 lbs</td>
<td>1.6 kg / 3.5 lbs</td>
<td>1.8 kg / 4 lbs</td>
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<td><strong>Unit Shipping Weight</strong></td>
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<td>2.0 kg / 4.4 lbs</td>
<td>2.2 kg / 4.8 lbs</td>
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<td><strong>Dimensions</strong></td>
<td>26.0 x 12.7 x 7.1 cm</td>
<td>10.3 x 5.0 x 2.8 in</td>
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<tr>
<td><strong>Warranty</strong></td>
<td>5 years</td>
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**Certifications**

- CE, RoHS and REACH Compliant
- IEC 62109
- ETL Listed [UL-1741 and Canadian CSA C22.2 No. 107.1.01]
- EMC Compliance
- FCC Title 47 (CFR), Part 15 Subpart B for Class B Device
- Manufactured in a Certified ISO 9001 Facility

---

**Portable LED lighting towers providing 24/7 illumination for safer, more efficient mining operations throughout Brazil and Latin America.**

“I like to use Morningstar because it’s really robust and reliable”

Ricardo Righi Reis
**PWM Controllers**

ProStar™ Controller

15A or 30A at 12/24V

Mid-range PWM solar charge controller for both professional and consumer applications, incorporating legendary ProStar design and performance.

- **Longer battery life** through 4-stage charging and temperature compensation. Constant voltage PWM series regulation. Choice of three battery types. Voltage-sense terminals for more accurate battery monitoring.
- **More information** with three battery-level LED indicators. Optional meter includes safety disconnect and displays amps, volts, temperature and self-test.
- **Extensive electronic protection** against reverse polarity, reverse current at night, short circuits, overcurrent and excessive temperature. No mechanical fuses.
- **Fanless design** for long-term reliability.

Certifications

- CE, RoHS and REACH Compliant
- IEC 62109
- Manufactured in a Certified ISO 9001 Facility
- FCC Part-15 Class B Compliant

Options

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<td>15A</td>
<td>30A</td>
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<tr>
<td>Rated Load Current *</td>
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<tr>
<td>Nominal System Voltage</td>
<td>12/24 Vdc</td>
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*Low voltage disconnect included on all ProStar controllers.

SunSaver™ Controller

6A, 10A or 20A at 12V or 24V

The world’s leading small solar controller for industrial and consumer markets. Proven in demanding locations, including mines and oilfields.

- **Ideal for oil/gas applications.** Approved for use in hazardous locations: Class 1, Division 2, Groups A-D.
- **Longer battery life** through PWM, 4-stage charging and temperature compensation. Sealed or flooded battery select.
- **Tropicalization** - hardened for field use with anodized aluminum enclosure, epoxy encapsulation, marine-rated terminals.
- **Additional features** include full electronic protections, 3-state battery LED indicators, terminal cover, dead battery recovery, high voltage load protection for sensitive loads.
- **L-versions** include low-voltage load disconnect.

Certifications

- Hazardous Locations - Class 1, Div. 2 Groups A-D
- CE, RoHS and REACH Compliant
- UL 1604/ANSI/ISA 12.12.01-2000 (USA) and CSA C22.2 No. 213-M1987 (Canada) Listed
- ETL Listed: UL 1741 (with terminal cover)*
- FCC Title 47 (CFR), Part 15 Subpart B for Class B Device
- Manufactured in a Certified ISO 9001 Facility

Options

- DIN Rail Clips (DIN-1)
- Ground Fault Protection Device (GFPD-150V and GFPD-600V)

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<td>10A</td>
<td>20A</td>
<td>20A</td>
</tr>
<tr>
<td>Rated Load Current</td>
<td>10A</td>
<td>10A</td>
<td>20A</td>
<td>20A</td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12 Vdc</td>
<td>24 Vdc</td>
<td>12 Vdc</td>
<td>24 Vdc</td>
</tr>
<tr>
<td>Low Voltage Disconnect</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* Wire terminal cover included with every SunSaver controller.
SunSaver Duo™ Controller

25A at 12V

A two-battery solar charge controller with optional remote meter, designed for RV/caravan and marine use.

- **Rugged design** - epoxy encapsulation protects against dust and high humidity. Extensive electronic protections include short-circuit, over-current and reverse polarity to ensure the controller will not be damaged by wiring mistakes or overloads.
- **User adjustable** - set parameters with on-board DIP switches or further customize with a PC using Morningstar MSView software.
- **Dual battery charging capability**; house and vehicle for example.

**Certifications**

- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility

| Ambient Operating Temperature | -40 °C to +45 °C  
| Terminal | 40 °F to +113 °F |
| Product Weight | SSD-25 25A  
SSD-25RM 25A |
| Unit Shipping Weight | SSD-25 25A  
SSD-25RM 25A |
| Dimensions | without meter  
17.0 x 5.6 x 4.1 cm  
6.7 x 2.2 x 1.6 in |
| Warranty | 5 years |

**Options**

- Remote Meter (RM-1)
- Remote Temperature Sensor (RTS)
- PC MeterBus Adapter (MSC)
- DIN Rail Clips (DIN-1)
- EIA-485 Adapter (RSC-1)**
- Ground Fault Protection Device (GFPD-150V and GFPD-600V)
- Ethernet MeterBus Converter (EMC-1)

**Certifications**

- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility

* There is no load connection on the SunSaver Duo.
** The EIA-485 / RS-232 Adapter can be used in conjunction with the PC MeterBus Adapter to enable these devices to communicate over a 485 network.

SunKeeper™ Controller

6A or 12A at 12V

Compact “point of use” design mounts directly to the solar module junction box or module frame and eliminates the need for an additional controller housing.

- **High temperature rated** - to 70° for operation in high temperatures at the solar module; no need to de-rate.
- **Rugged design** - approved for outdoor use without an additional enclosure. IP65 rated with UV-resistant case; epoxy encapsulated electronics and watertight connection to junction box.
- **Ideal for oil/gas applications.** Approved for use in hazardous locations: Class 1, Division 2, Groups A-D.

**Certifications**

- Hazardous Locations - Class 1, Div. 2 Groups A-D
- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility

| Rated Solar Current | SK-6 6A  
SK-12 12A |
| Rated Load Current* | None  
None |
| Nominal System Voltage | 12Vdc  
12Vdc |
| Ambient Operating Temperature | -40 °C to +70 °C  
-40 °F to +158 °F |
| Terminal | 2.0mm² / 14 AWG |
| Product Weight | Unit Shipping Weight  
0.11 kg / 0.25 lbs  
0.2 kg / 0.4 lbs |
| Dimensions | 9.9 x 5.1 x 1.3 cm  
3.9 x 2.0 x 0.5 in |
| Warranty | 5 years |

**Options**

- Remote Temperature Sensor (RTS)**

**All Versions**

- Yes

* There is no load connection on the SunKeeper.
** Installation of the RTS to the SunKeeper requires some soldering.
SunLight™ Controller
10A or 20A at 12V or 24V

World’s leading solar lighting controller for street and pathway lighting, parking areas, bus stations, signage, and much more.

- **Provides 10 lighting options** with accurate on-board timer. User adjustable for 2 to 10 hours ON or for ON all night. Unique ON/OFF/ON settings conserve energy and turn lights on again for 1 or 2 hours before sunrise. Timer accuracy is within 2 seconds.
- **Easy to set-up**, with test-button feature and LED indicator. To confirm correct installation, test button turns light on during the day and LED indicates selected lighting option.
- **Rugged design** with anodized aluminum enclosure, epoxy encapsulation, corrosion-resistant terminals.

<table>
<thead>
<tr>
<th>SunLight</th>
<th>SL-10L-12</th>
<th>SL-10L-24</th>
<th>SL-20L-12</th>
<th>SL-20L-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Solar Current</td>
<td>10A</td>
<td>10A</td>
<td>20A</td>
<td>20A</td>
</tr>
<tr>
<td>Rated Load Current*</td>
<td>10A</td>
<td>10A</td>
<td>20A</td>
<td>20A</td>
</tr>
<tr>
<td>Ambient Operating Temperature</td>
<td>-40 °C to +60 °C</td>
<td>-40 °F to +140 °F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>16.8 x 5.5 x 3.4 cm</td>
<td>6.6 x 2.2 x 1.3 in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>All Versions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN Rail Clips (DIN-1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ground Fault Protection Device (GFPD-150V and GFPD-600V)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Certifications
- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility

SunGuard™ Controller
4.5A at 12V

Single module, compact solar charge controller for small systems, ideal for both professional and consumer use.

- **Rugged design** - 100% solid state, epoxy encapsulated; rated for 25% overloads (no need to de-rate)
- **Longer battery life** - series design PWM charging (instead of shunt) with temperature compensation, low self-consumption.
- **Easy to install** - outdoor rated connecting wires make a waterproof connection to the solar module and battery.

<table>
<thead>
<tr>
<th>SunGuard</th>
<th>SG-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Solar Current</td>
<td>4.5A</td>
</tr>
<tr>
<td>Rated Load Current*</td>
<td>None</td>
</tr>
<tr>
<td>Ambient Operating Temperature</td>
<td>-40 °C to +60 °C</td>
</tr>
<tr>
<td>Product Weight Unit Shipping Weight</td>
<td>0.1 kg / 0.2 lbs</td>
</tr>
<tr>
<td>Dimensions</td>
<td>6.4 x 5.1 x 3.8 cm</td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12Vdc</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 years</td>
</tr>
</tbody>
</table>

Certifications
- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility

* There is no load connection on the SunGuard.

Morningstar SunKeeper and SunSaver controllers are standard operating equipment for solar-powered applications on remote oil and gas extraction sites.
Envision™
A Cloud-Based Web Service

System Monitoring

Collect Data from All The Sites You Need to Manage

- Easy to set-up with Morningstar's Ethernet MeterBus Converter
- Highly scalable for simultaneous monitoring of thousands of sites
- Organize remote sites, systems, and devices
- Server-based notifications of faults and alarms
- Receive site metrics in real-time
- Highly secure encrypted data transport

Wire Diagram - Morningstar Envision Cloud-Based Web Service

The Ethernet MeterBus Converter (model: EMC-1) enables IP based network and internet connectivity to any Morningstar product that features an existing MeterBus port (RJ-11) including:

- PWM Controllers: TriStar, ProStar and SunSaver Duo
- MPPT Controllers: TriStar MPPT, ProStar MPPT and SunSaver MPPT
- Inverters: MultiWave and SureSine

Rural residential electrification program - the world's largest single off-grid project - supplying electricity to over 175,000 homes and 3,000 community buildings in Peru. Systems provided by Tozzi Green of Italy in partnership with Morningstar Corporation.

“Installation of these systems will increase electrification in rural areas to 96% in little more than five years. It is an extraordinary result at very low cost.” Tozzi Green, Italy

Morningstar Essential Series

Renowned Morningstar technology and reliability is now available to consumers for a wide range of applications. Built on Professional Series' quality, Essential products have the basic features required for small residential and other consumer projects.

Essential Series achieves a lower price point by eliminating some advanced features found in Professional Series, and is available in selected global markets. Contact your authorized Morningstar distributor for more information.

“Morningstar provides quality products that we need in remote places,”

“I selected Morningstar controllers because they don't need cooling fans and the MPPT algorithm is superior to others.”
EcoBoost MPPT™ Controller
20A, 30A or 40A at 12/24V at up to 120 Voc

An affordable Maximum Power Point Tracking (MPPT) solar charge controller for residential and other consumer applications. Metered and non-metered versions available at 20, 30, and 40-amp charge ratings for 12 and 24-volt battery systems.

- Four stage battery charging
- Two USB ports for directly charging mobile phones and other consumer electronics devices
- Lighting and load control
- 30 days of data logging
- Rugged, weatherized design with electronic protections

<table>
<thead>
<tr>
<th>Option</th>
<th>EcoBoost MPPT-20</th>
<th>EcoBoost MPPT-20M</th>
<th>EcoBoost MPPT-30</th>
<th>EcoBoost MPPT-30M</th>
<th>EcoBoost MPPT-40</th>
<th>EcoBoost MPPT-40M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Meter</td>
<td>No</td>
<td>Included</td>
<td>No</td>
<td>Included</td>
<td>No</td>
<td>Included</td>
</tr>
<tr>
<td>Remote Temperature Sensor (RTS)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mobile phone holder (one included)</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Certifications
- CE, TUV Listed
- IEC 62109-1
- Emissions 55014-1
- Immunity 55014-2
- Manufactured in a Certified ISO 9001 facility
- FCC Class B compliant
- EN 62109-1

EcoPulse™ Controller
10A, 20A or 30A at 12/24V

A Pulse Width Modulation (PWM) solar charge controller delivering essential off-grid battery regulation functions in an easy-to-use package. Available in metered and non-metered versions.

- Four-stage battery charging
- Dusk-to-dawn lighting control
- Load control
- Rugged, weatherized design with electronic protections

<table>
<thead>
<tr>
<th>Option</th>
<th>EcoPulse-10</th>
<th>EcoPulse-10M</th>
<th>EcoPulse-20</th>
<th>EcoPulse-20M</th>
<th>EcoPulse-30</th>
<th>EcoPulse-30M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Meter</td>
<td>No</td>
<td>Included</td>
<td>No</td>
<td>Included</td>
<td>No</td>
<td>Included</td>
</tr>
<tr>
<td>Remote Temperature Sensor (RTS)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Certifications
- CE, TUV Listed
- IEC 62109
- Manufactured in a Certified ISO 9001 facility
SHS™ and SHS Night Light™ Controllers
6A or 10A at 12V

Essential Series

Low cost, affordable solar charge controllers featuring advanced electronic technology, for rural electrification solar home systems. Includes low-voltage disconnect for residential use.

- **High reliability** - built-in electronic fuse protection ensures wiring mistakes during installation will not damage the controller. Conformal coating for protection against harsh environments.
- **Lighting control built-in for dawn-to-dusk operation** (Night Light version)
- **Easy to set-up and use** - control functions are automatic, requiring no user adjustments. LED indicators monitor battery and system status.

<table>
<thead>
<tr>
<th>SHS</th>
<th>SHS-6</th>
<th>SHS-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Solar Current</td>
<td>6A</td>
<td>10A</td>
</tr>
<tr>
<td>Rated Load Current*</td>
<td>6A</td>
<td>10A</td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12Vdc</td>
<td>12Vdc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHS Night Light</th>
<th>SHS-NL-6</th>
<th>SHS-NL-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Solar Current</td>
<td>6A</td>
<td>10A</td>
</tr>
<tr>
<td>Automatic Lighting Control</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12Vdc</td>
<td>12Vdc</td>
</tr>
</tbody>
</table>

On Board Advanced Digital Display for the TriStar MPPT 600V Controller.
Displays extensive system and controller information, logged data, bar graph metering, as well as alarms and faults for easy troubleshooting.

**Compatible with:**
- 2 x 16 character LCD display
- Mounts to the controller*
- Displays extensive system and controller information, logged data, bar graph metering as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

* Replaces stock front faceplate

Accessories

<table>
<thead>
<tr>
<th>SHS &amp; SHS NL</th>
<th>15.1 x 6.6 x 3.6 cm</th>
<th>5.9 x 2.5 x 1.4 in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>0.2 kg / 0.4 lbs</td>
<td></td>
</tr>
</tbody>
</table>

Certifications
- CE, RoHS and REACH Compliant
- Manufactured in a Certified ISO 9001 Facility
- World Bank compliant

**SHS Night Light SHS-NL-6 SHS-NL-10**

- Low Voltage Disconnect included on all SHS controllers.

**TriStar Meter-2-600V (TS-M-2-600V)**

On-Board Advanced Digital Display for the TriStar MPPT 600V Controller.
Displays extensive system and controller information, logged data, bar graph metering, as well as alarms and faults for easy troubleshooting.

**Compatible with:**
- 2 x 16 character LCD display
- Mounts to the controller*
- Displays extensive system and controller information, logged data, bar graph metering as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

* Replaces stock front faceplate on TriStar and TriStar MPPT controllers.

**TriStar Meter-2 (TS-M-2)**

On-Board Advanced Digital Display for the TriStar and TriStar MPPT Controllers.
The meter will display a great deal of information about your TriStar controller and the operation of your system. In addition, the meter enables manual functions and controller diagnostics. These capabilities will increase your confidence that the system is working properly and will help you to improve reliability, battery life and system performance.

**Compatible with:**
- 2 x 16 character LCD display
- Mounts to the controller*
- Displays extensive system and controller information, logged data, bar graph metering as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

* Replaces stock front faceplate on TriStar and TriStar MPPT controllers.
TriStar Remote Meter-2 (TS-RM-2)

Remote Digital Display for the TriStar Family Controllers. The TS-RM-2 provides the same data display as the TS-M-2, except that it ships with 30 meters of cable and a flat faceplate. These features enable convenient mounting away from the controller.

Compatible with:
- TriStar MPPT 600V Controller
- TriStar MPPT Controller
- TriStar Controller
- MeterHub
  - 2 x 16 character LCD display
  - Displays extensive system and controller information, logged data, bar graph metering, as well as alarms and faults for easy troubleshooting
  - Choice of 5 languages (English, French, German, Portuguese or Spanish)

Remote Digital Display for viewing a controller or inverter in a separate location. This meter provides comprehensive system information for easy monitoring including voltage, current and temperature.

Compatible with:
- ProStar MPPT Controller
- SunSaver MPPT Controller
- SunSaver Duo Controller
- SureSine Inverter
  - Easy to install and use
  - Low self-consumption
  - 4 digit display with custom icons
  - Displays systems information, logged data*, alarms and errors
  - May be mounted in the wall or on the wall with included frame
  - Includes 10 meters of cable

PC MeterBus Adapter (MSC)

Converts RJ-11 MeterBus to RS-232 Connector

Compatible with:
- ProStar MPPT Controller
- SunSaver MPPT Controller
- SunSaver Duo Controller
- SureSine Inverter
  - Used to connect a Morningstar controller or inverter to a PC or other third party serial enabled device
  - Communications link enables monitoring and logging of data as well as customizing of set points

MeterHub (HUB-1)

This product electrically isolates devices that supply power to the network, preventing damage to the network in the event of grounding problems.

Compatible with:
- TriStar MPPT 600V Controller
- TriStar MPPT Controller
- ProStar MPPT Controller
- SunSaver MPPT Controller
- TriStar Controller
- TriStar Meter 2
- TriStar Remote Meter 2
- Relay Driver
  - Allows several Morningstar products to communicate over a MeterBus network (maximum 15 devices)
  - In multi-controller systems the TS-M-2, TS-M-2-600V and TS-RM-2 are networkable using Morningstar's MeterHub to allow individual controller data and aggregate system data to be displayed together on a single meter.
  - Enables multiple controllers to share a TriStar Meter or Relay Driver
  - Provides electrical isolation
**EIA-485 / RS-232 Adapter (RSC-1)**

Converts RS-232 to EIA-485 Connector

Compatible with:
- TriStar MPPT Controller
- SunSaver MPPT Controller
- TriStar Controller
- Relay Driver

- Allows up to 128 Morningstar products to communicate on the same communications bus and over much greater distances than with RS-232
- All data is transmitted via MODBUS™ protocol
- Removable four (4) position EIA-485 terminal
- 9-pin RS-232 connector (male)
- Status LED for monitoring and diagnostics
- Molded tabs for attachment to 35mm standard DIN rail
- RS-232 ribbon cable (not shown) with low-profile connectors

Typical configurations include:
- Networking several TriStar and/or TriStar MPPT controllers
- Adding Morningstar PC Meterbus Adapters (MSC) for use with an RJ-11 port in multi-device networks
- Adding Morningstar’s Relay Driver (RD-1) to a network
- Integrating any compatible Morningstar product into an existing EIA-485 network, such as those used by industrial control or SCADA systems

**USB MeterBus Adapter (UMC-1)**

Converts the MeterBus RJ-11 to a standard USB 2.0 interface

Compatible with:
- ProStar MPPT Controller
- SunSaver MPPT Controller
- SunSaver Duo Controller
- SureSine Inverter
- ProStar Controller

- Allows communication between a computer and compatible Morningstar products
- Can be used for:
  - Programming custom charging set-points
  - Logging live data
- Communication with third party hardware that supports MODBUS™ communication

**Ethernet MeterBus Converter (EMC-1)**

Allows data transfer to the internet

Compatible with:
- TriStar MPPT Controller
- SunSaver MPPT Controller
- TriStar Controller
- ProStar Controller
- SureSine Inverter

- Connects to any meterbus enabled controller to provide enhanced data and network features
- Adds IP based MODBUS connectivity for remote communication and control
- Live View displays system status and log data directly from the EMC in an easy to view webpage
- Adds SNMP and email notifications for system status changes
- Powered via meterbus port on controller, PoE or DC Input for 12, 24 or 48V systems
- Gateway to EnVision™, a cloud-based site manager

Remote telecommunications repeater installations in the Canadian Arctic using TriStar high-voltage controllers.
Morningstar’s Ground Fault Protection Device (GFPD) prevents current from following any unintended paths during a ground fault. Other ground fault detection/interruption products break the bond to the grounded conductor. When this occurs, not only is the earth bond compromised, but the battery and DC loads can also be left ungrounded and floating. For a negatively grounded system this means that the negative side of the battery and loads can float to negative Voc in relation to ground and the positive side can float to (negative Voc + Vbat). Morningstar’s GFPD better isolates the array from the battery and loads, while maintaining the bond to ground.

### Certifications

- CE, RoHS and REACH Compliant
- ETL Listed UL 1741
- CSA C22.2 No. 107.1-01 Listed
- GFPD-150V is UL-489 Compliant
- GFPD-600V is UL-1077 Compliant
- FCC Class B Part 15 Compliant
- U.S. National Electrical Code (NEC) 690.5 Compliant for use as a GFPD device
- Meets EMC Directives (Immunity, Emissions and Safety)
- Manufactured in a Certified ISO 9001 Facility

### Ambient Operating Temperature

- 40 °C to +60 °C
- 40 °F to +140 °F

### Terminal

- 25 mm² / 4 AWG
- 35 mm² / 2 AWG

### Weight

- GFPD-150V: 2.0 kg / 4.4 lbs
- GFPD-600V: 4.4 kg / 9.9 lbs

### Dimensions

- GFPD-150V: 26.9 x 12.8 x 11.2 cm, 10.6 x 5.1 x 4.4 in
- GFPD-600V: 35.7 x 22.1 x 10.6 cm, 14.1 x 8.7 x 4.2 in

### Warranty

5 years

### Ground Fault Protection Device

<table>
<thead>
<tr>
<th></th>
<th>GFPD-150V</th>
<th>GFPD-600V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Poles</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Maximum Solar Voltage</td>
<td>150V</td>
<td>600V</td>
</tr>
<tr>
<td>Maximum Solar Current</td>
<td>60A</td>
<td>50A</td>
</tr>
<tr>
<td>Trip Method</td>
<td>Relay</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN-rail or Panel-Mount</td>
<td></td>
</tr>
<tr>
<td>Input Voltage</td>
<td>8-72 Vdc</td>
<td></td>
</tr>
<tr>
<td>Self-Consumption</td>
<td>&lt;0.5W</td>
<td></td>
</tr>
<tr>
<td>Ground Fault Threshold Current</td>
<td>300 mA +/- 10%</td>
<td></td>
</tr>
<tr>
<td>Output Trip Signal</td>
<td>12V</td>
<td></td>
</tr>
<tr>
<td>Nominal System Voltage</td>
<td>12, 24, 36 or 48 Vdc</td>
<td></td>
</tr>
</tbody>
</table>

### Wire Box (PS-MPPT-WB)

An optional two-piece enclosure accessory for ProStar MPPT. Provides effective cover for wires and conduit leading to and from the ProStar MPPT controller. This Wire Box may be required or recommended by authorities having jurisdiction to reduce hazards associated with exposed wires, conduits and connections.

### Accessories

- **Relay Driver (RD-1)**: Logic Module for system control functions. The Relay Driver provides high level system control functions such as high/low voltage alarms, load control and generator start.

  - Compatible with:
    - TriStar MPPT 600V Controller
    - TriStar MPPT Controller
    - ProStar MPPT Controller
    - SunSaver MPPT Controller
    - SureSine Inverter
    - Tristar Controller

  - Cost-effective and Highly reliable
  - Fully Programmable
  - Advanced Generator Control
  - Industrial Design
  - LED Indicators
  - 4 independent relay driver outputs (relays not included)
  - Used for high/low voltage alarms, load control, and generator start
  - Reads digital data inputs from ‘compatible’ controllers and inverters
  - Reads battery voltage in systems with other controllers

- **ProStar MPPT Controller**

  - Material: High strength polycarbonate Lexan
  - Enclosure space: accommodates 35mm² wire
  - Meets NEC standards for conduits and wire bending

- **Wire Box (PS-MPPT-WB)**

  - Installed two-piece enclosure accessory for ProStar MPPT.
  - Provides effective cover for wires and conduit leading to and from the ProStar MPPT controller.
  - Necessary or recommended by authorities for reducing hazards from exposed wires, conduits and connections.

- **Compatible with**:
  - ProStar Controller
  - SunSaver Duo Controller
  - SureSine Inverter
  - MeterHub

---

**Ground Fault Protection Device**

Off-grid and on-grid PV safety device

Morningstar's Ground Fault Protection Device (GFPD) prevents current from following any unintended paths during a ground fault.

Other ground fault detection/interruption products break the bond to the grounded conductor. When this occurs, not only is the earth bond compromised, but the battery and DC loads can also be left ungrounded and floating. For a negatively grounded system this means that the negative side of the battery and loads can float to negative Voc in relation to ground and the positive side can float to (negative Voc + Vbat). Morningstar’s GFPD better isolates the array from the battery and loads, while maintaining the bond to ground.
Accessories

Remote Temperature Sensor (RTS)

Sends battery temperature data to controllers

Compatible with:

<table>
<thead>
<tr>
<th>TriStar MPPT 600V Controller*</th>
<th>TriStar Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>TriStar MPPT Controller*</td>
<td>ProStar Controller</td>
</tr>
<tr>
<td>ProStar MPPT Controller</td>
<td>SunSaver Controller</td>
</tr>
<tr>
<td>SunSaver MPPT Controller</td>
<td>EcoPulse Controller</td>
</tr>
<tr>
<td>TriStar Controller</td>
<td>EcoBoost MPPT Controller</td>
</tr>
</tbody>
</table>

- Improves battery charging by using temperature at the battery for very accurate temperature compensation
- Recommended for solar systems that experience temperature variations during the year or whenever the temperature at the battery will be more than 5 °C (9 °F) different than the temperature at the controller

*Remote Temperature Sensors included with all TriStar MPPT units.

DIN Rail Clips (DIN-1)

For installing controllers and accessories to DIN Rails

Compatible with:

<table>
<thead>
<tr>
<th>SunSaver MPPT Controller</th>
<th>ProStar Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>SunSaver Controller</td>
<td>SunSaver Duo Controller</td>
</tr>
<tr>
<td>SunLight Controller</td>
<td>EcoPulse Controller</td>
</tr>
</tbody>
</table>

- Rugged plastic clips match SunSaver and SunLight mounting holes
- Provides a simple way to install controllers to DIN rails
- Enables removal of controllers from DIN rails without removing the clips
- Polypropylene clips
- Fits all 35mm standard DIN rails
- Includes mounting screws

How Mission-Critical Solar Becomes Mission ACCOMPLISHED

With a track record that goes back further than most solar brands, Morningstar’s ProStar and TriStar charge controllers are more than industry standards. They’re icons, recognized by designers the world over as the first choice for systems where failure isn’t an option.

TriStar & ProStar Controllers

In fact, Morningstar is a choice that’s been made by professionals well over three million times during the past several decades. In installations spanning from middle-east oil fields to Antarctic research stations. Morningstar products earned their place not just by surviving harsh conditions but by thriving in them, through best-in-class engineering, advanced thermal design for fanless operation, and using components rated well above industry-standard specs.

We design our products as over-achievers because, as an employee-owned company, our own reputations go out on the line along with every Morningstar product shipped. That’s why the industry’s leading installers keep betting their reputations on Morningstar. You can, too, with our comprehensive line ranging from the new game-changing 600V TriStar controller to the single-module SunGuard. Whatever your need, there’s a Morningstar powering solution perfect for your next project.
Alaska
“My sunsaver has been working perfectly since 1998”

Canada
“Morningstar’s technical service is the best in the industry”

United Kingdom
“My customers swear by Morningstar”

Romania
“Morningstar allows me to remotely monitor my house”

Nepal
“SunSaver controllers were very reliable at our camp during our record breaking climb to Mt. Annapurna”

Australia
“Morningstar’s TRAKSTAR technology provides more power to batteries than other brands”

Taiwan
“Morningstar provides quality products that we need in remote places”

Antarctica
“The TriStar MPPT is the best battery charger for our applications”

Greenland
“I chose Morningstar because of its datalogging and communication capabilities”

New Mexico
“Thanks for a great product, Morningstar is the best”

Costa Rica
“Morningstar’s performance and support has always been excellent”

Colombia
“I selected Morningstar controllers because they don’t need cooling fans and the MPPT algorithm is superior to others”

Chile
“The SunSaver I installed for an R.E. project still works well after 20 years”

Africa
“I know which manufacturers’ products tend to last and which ones fail. Morningstar lasts”

Saudi Arabia
“Morningstar provides reliable power in the harshest conditions”