Morningstar’s TriStar Controller is a three-function controller that provides reliable solar battery charging, load control or diversion regulation. The controller operates in one of these modes at a time and two or more controllers may be used to provide multiple functions.

The TriStar uses advanced technology and automated production to provide exciting new features at a competitive cost. The optional TriStar meter is the most sophisticated and informative controller meter on the market. The controller is UL listed and is designed for both solar home systems and professional applications.

Key Features and Benefits

**Highest Reliability**
Large heat sink and conservative design enables operating at full ratings to 60°C. No need to de-rate.

**More Power**
Ratings to 60A at 48VDC will handle solar arrays up to 4kW.

**Communications Capability**
RS-232 connects to a personal computer for custom settings, data logging and remote monitoring and control.

**Fully Adjustable**
DIP switch provides user with a choice of 7 different digital presets and custom settings via RS-232.

**Extensive Electronic Protections**
Fully protected against reverse polarity, short circuit, overcurrent, high temperature and overvoltage.

**Simple Mechanical Interface**
Larger power terminals and conduit knockouts. Extra space for wire turns. Fits on power panels.

**Better Battery Charging**
Connecting battery sense wires and optional remote temperature sensor will improve control accuracy. Constant voltage series PWM algorithm increases battery capacity and life.

**More Information**
3 LED's to indicate status, faults and alarms. Optional meter displays extensive system and controller information, automatic self-test and reset capabilities. Meter connection via RJ-11 phone jack.

**Easy to Reset**
Pushbutton provides manual reset and stop/start battery equalization or load disconnect.

**Low Telecom Noise**
DIP switch setting will change PWM to “On-Off” battery charging.
**WARRANTY:** Five year warranty period. Contact Morningstar or your authorized distributor for complete terms.

**AUTHORIZED MORNINGSTAR DISTRIBUTOR:**

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### Electrical Specifications
- **Rated solar, load or diversion current:**
  - TriStar-45: 45A
  - TriStar-60: 60A
- **System Voltage:** 12-48V
- **Accuracy 12/24V:** ±0.1% ±50mV
  - 48V: ±0.1% ±100mV
- **Min. voltage to operate:** 9V
- **Max. solar voltage (Voc):** 125V
- **Self-consumption:**
  - Controller: <20mA
  - Meter: 7.5mA

### Environmental Specifications
- **Operating ambient temperature:**
  - Controller: -40°C to +60°C
  - Meter: -40°C to +60°C
- **Storage temperature:** -55°C to +85°C
- **Humidity:** 100% (non-condensing)
- **Tropicalization:** Conformal coating on both sides of all printed circuit boards

### Mechanical Specifications
- **Dimensions:**
  - Height: 26.0cm/10.3 inch
  - Width: 12.7cm/5.0 inch
  - Depth: 7.1cm/2.8 inch
- **Weight:** 1.6 kg/3.5 lb
- **Largest Wire:** 35mm²/2 AWG
- **Conduit knockouts:** (1.0/1.25 inch)
- **Enclosure:** Type 1, indoor rated

### Electronic Protections
- **Reverse polarity protection (any combination)**
- **Short-circuit protection**
- **Overcurrent protection**
- **Lightning and transient surge protection using 4500W transient voltage suppressors**
- **High temperature protection via automatic current reduction or complete shut down**
- **Prevents reverse current from battery at night**

### TriStar Options:
- **TriStar Meter** — 2 x 16 display mounts to controller and provides system and controller information, data logging, bar graphs and choice of 5 languages
- **TriStar Remote Meter** — Includes 30 meters of cable for mounting meter away from the controller
- **Remote Temperature Sensor** — Provides temperature compensated charging by measuring temperature at the battery (10 meter cable)

### Certifications
- **CE Compliant**
- **UL Listed (UL 1741)**
- **cUL (CSA-C22.2 No.107.1-95)**
- **Complies with U.S. National Electric Code**
- **Manufactured in a certified ISO 9001 facility**

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