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 ETL Listed (UL1741) and TUV (IEC62109-1), and is designed for home systems and professional applications.

**Key Features and Benefits**

- **High Reliability** – Large heat sink 1 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 2 connects to a personal computer for custom settings, data logging and remote monitoring and control.

- **Fully Adjustable** – DIP switch 3 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 4 and conduit knockouts 5. Extra space for wire turns. Fits on power panels.

- **Better Battery Charging** – Connecting battery sense wires 6 and optional remote temperature sensor 7 will improve control accuracy. Constant voltage series PWM algorithm increases battery capacity and life.

- **More Information** – 3 LED’s 8 to indicate status, faults and alarms. Optional meter 9 displays extensive system and controller information, automatic self-test and reset capabilities. Meter connection via RJ-11 phone jack 10.

- **Easy to Reset** – Pushbutton 11 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.

**TECHNICAL SPECIFICATIONS**

**Electrical**
- 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
- Minimum voltage to operate: 9V
- Maximum solar voltage (Voc): 125V
- Self-consumption
  - Controller: <20mA
  - Meter: 7.5mA

**Environmental**
- 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

**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

**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
- ETL Listed (UL 1741)
- cETL (CSA-C22.2 No.107.1-95)
- TUV (IEC 62109-1)
- Complies with U.S. National Electric Code
- Manufactured in a certified ISO 9001 facility
- MET Labs (EN 60335-1, EN 60335-2-29)

**Mechanical**
- Dimensions
  - Height: 26.0cm/10.3 in
  - Width: 12.7cm/5.0 in
  - Depth: 7.1cm/2.8 in
- Weight: 1.6 kg/3.5 lb
- Largest Wire: 35mm²/2 AWG
- Conduit knockouts: Eccentric 2.5/3.2 cm (1.0/1.25 in)
- Enclosure: Type 1, indoor rated

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