SUNPOWER™

SUNPOWER TMAC™

ADVANCED TRACKER CONTROLLER

BENEFITS

Remote System Control
Trackers can be stowed remotely, and system status monitored via the Web

Maximized Energy
Offers advanced backtracking and precise control for greatest energy collection

Predictive Maintenance
Self-detects tracker performance deviations and automatically sends alerts with diagnosis before energy output is affected

Reliable and Robust
Designed and tested to ensure long life even in harsh environments

Simplified Installation
Avoids the complexity of wired communications

TMAC

The SunPower TMAC Advanced Tracker Controller is the most advanced product of its kind. It is specifically designed to improve solar energy collection while ensuring the high reliability SunPower Trackers are known for. Advanced features (patents pending) include monitoring and operation over the TMAC operator interface and remote stow capabilities via wireless mesh network.

Mesh Networking for Tracker Control: Simple, Reliable & Secure. Mesh networking is a type of wireless communications ideally suited for solar trackers. Mesh networks allow hopping of information from node to node along multiple paths, facilitating "self-healing". This highly reliable configuration is also inherently simple, minimizing network configuration tasks and eliminating the cost and complication of maintaining wired data connections in a field environment. SunPower TMAC communication is encrypted per 128-bit AES standards, the same used to protect most US Government data.

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TMAC OPERATOR INTERFACE

TMAC units connect to a remotely hosted server via Internet connection to the site. With a secure connection to this server, the solar power plant operator can easily access the TMAC operator interface from anywhere, to execute the following:

- View tracker status and data, including the last 30 days of history
- Set up email alert notification preferences
- Issue manual stow command
- Configure automated stowing based on measured wind speeds
  (Requires compatible anemometer installed on-site and networked to TMAC system)
- Configure automated stowing based on weather forecast
  (Requires source of meteorological forecast data)

SunPower Energy Management Services also offers service packages and, if you choose, will act as the operator and sole user of the interface on your behalf.

COMMUNICATIONS ARCHITECTURE

TMAC units are configured into networks of approximately 10 TMAC units, in which one TMAC unit functions as a "coordinator" and manages the flow of communications for its associated network. Coordinator units are hard-wired with Ethernet cable to a site network access point, typically located at the closest inverter station. Communications between the coordinator and the other TMAC units occurs via wireless mesh.

PRODUCT SPECIFICATIONS

Control System	
Tracking Algorithm	Astrological (time and location), with closed-loop feedback
Shade Avoidance	Configurable backtracking
Manual Wind Stowing	Remote control over TMAC operator interface
Automatic Wind Stowing	Configurable per local anemometers or weather forecast
Sensors and I/O	
Tracker Tilt Angle Feedback	X,Y axis inclinometer
Actuation	
Motor Type	3 phase AC
Motor Current	Up to 9 Amp

Electrical Power	
Input Voltage	3 phase, 380-480 VAC
Energy Consumption	100 Watt-hours/day typical
Lightning Strike / Surge Proctection	Included on all field connections
Code Compliance	UL 508A, CSA, CE, NEC 2008, FCC Part 15 class B
Monitoring Network	
Wireless Array Network	Zigbee Mesh Network, 2.4 GHz, 128-bits AES encryption
TMAC Operator Interface	Remote-hosted, accessed via Ethernet/Internet protocol
Operating Environment	
Ambient Temperature Range	-20°C to 58°C
Protection & Durability	Fully sealed NEMA 4X enclosure

About SunPower

Founded in 1985, SunPower Corp. (Nasdaq: SPWRA, SPWRB) designs, manufactures and delivers the planet's most powerful solar technology broadly available today. Residential, business, government and utility customers rely on the company's experience and proven results to maximize return on investment. Visit us at sunpowercorp.com.

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