

**+61%**  
more energy

- With time-derived astronomical positioning for the automatic sun-tracking
- Dual-axis solar tracker with embedded positioner
- Time controlled astronomical algorithm for sun tracking
- Simple installation and synchronization of sun time
- Usable for PV, CPV and lighter thermal panels and Heliostats
- 7 hours of automatic tracking at perpendicular angle
- User friendly web interface for monitoring, setting and upgrading
- USB communication port, optionally RS485
- For surface area up to 6,5 m<sup>2</sup> and max. 80 kg
- Made in Europe

**GREEN ENERGY**

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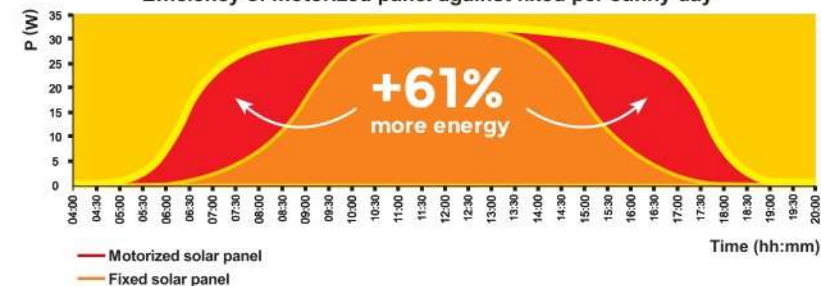


# Dual-Axis SOLAR TRACKER for 4 panels ECO-ST44M1V6P

Mechanical Capabilities	
Number of turning axis	Dual-Axis
Hour Angle Limit	100°, software and hardware limit 50°E to 50°W
Elevation angle	15-90°, adjustable start
Type of hour-angle motor	Linear Motor SM4S510M2 with stroke of 510 mm
Type of elevation-angle motor	Linear Motor SM4S510M2 with stroke of 510 mm
Hour-angle shaft diameter and length	∅48 mm, L=1400 mm (steel)
Backstructure size	2 pcs of 1000 (H) mm & 4 pcs of 1500 (V) mm & 4 pcs of 2000 (V) mm
Type of backstructure clamp	Toothed scissors grippers - 16 pcs
Tube diameter for mounting	∅76,1 x 3,6 mm with reduced tube to ∅68 mm (not included with kit)
Max. dimensions of a solar panel	4 pieces of 0,99 m x 1,65 m in total 6,5 m <sup>2</sup>
Max. weight of a solar panel	4 pcs per 20 kg
Estimated service life	800-1000h of motor operation (DC motor replace on 8 years if each day one cycle), backup battery replace on 3-5 years if battery in, all other 25 years
Positioning System Data	
Tracking accuracy	< 0.5° (optionally < 0.1° - for additional payment )
Operating Protocol	TdAPS (Time derived Astronomical Positioning System)
Type of Positioning System	Servo driver positioner with TdAPS arc logic function calc.
Type of positioner	Din Rail positioner MICRO and externor cables
Type of timer	GMT clock with EOT and calendar
Type of application program for supervision and setting	Solar tracking system monitor via web site
Setting and changing data via PC	Yes
Monitoring possibility via PC	Yes
Turned on the position sent from PC	Yes, it turn on position sent from PC, also all other setting can be commanded with string sent from PC
Turning time interval	1-15 min.
Communication Data	
Type of communication interface	USB interface
Networking solution for control from centre	RS485
Firmware - Software	
Upgrading possibility via PC	Yes, firmware via PC with help of Helios Analytics
Electrical Data	
Motor Power Supply	24 VDC +5% / -15% (2.5A current capacity) SMPS must have 150% inrush current
Backup battery	CR 2512 coin
Standby consumption (when is not moving)	20 mA ± 25% @ 24VDC
Power supply connection	1 piece of 2 Wire Cable with an Internal Cu Conductor of 2,5 mm <sup>2</sup> (for lenghts up to 30 m), (not included with kit)
Junction Box	190 (L) x 140 (W) x 70 (H) mm with connection harness
Environmental Data	
Operating temperature	- 25°C to +70°C (optionally with artic grease for teperatures from -40°C up to +70°C)
Operation at humidity	0% to 100% relative humidity
Max. safe wind speed	max. 120 km/h
Corrosion, weather and chemical resistance	
Hot-dip galvanizing (HDG, EN ISO 1461)	75-100 µm (equivalent of 50 years)
Packaging	
Dimensions of a packed product	1 box of 205 (L) x 32 (W) x 25 (H) cm
Product weight	57 kg
Quality Certificates	
International Protection Rating (IEC 60529)	IP63
Electromagnetic Compatibility (EMC Directive 89/336/EEC)	Yes
Low Voltage Equipment Directive (EEC Council Directive 73/23/EEC)	Yes
Optional Properties	
Anti-Shadowing Function	Yes, included
Heliostat usage	Yes, for additional payment



Efficiency of motorized panel against fixed per sunny day



**Real energy measurement of two equal solar panels (fixed and motorized)**  
Three equal solar panels were exposed to the sun and the converted electrical power was measured.

**Test conditions:** Solar panels (all): 1.0 kWp (producer spec.at AM 1.5), Date: July 2010  
Time: 4:00 to 20:00 (sun time), Geo. latitude: 46°N, Weather conditions: sunny

**Results:** Average energy of fixed: 5016 Wh, Average energy of motorized: 8124 Wh.  
Note: sum of motor energy consumption through all day at full load is 17.52Wh or 0.22% of all collected energy, Efficiency of the motorized panel: 161,6%

