

**+61%**  
more energy

- With time-derived astronomical positioning for the automatic sun-tracking
- Single-Axis solar tracker with embedded positioner
- Time controlled astronomical algorithm for sun tracking
- Simple installation and synchronization of sun time
- Usable for PV and lighter thermal panels
- 100° correspond to 6,7 hours of automatic tracking at perpendicular angle
- User friendly web interface for monitoring, setting and upgrading
- Communication port RS485
- For surface area up to 2m<sup>2</sup> and max. 25 kg
- Made in Europe

## GREEN ENERGY

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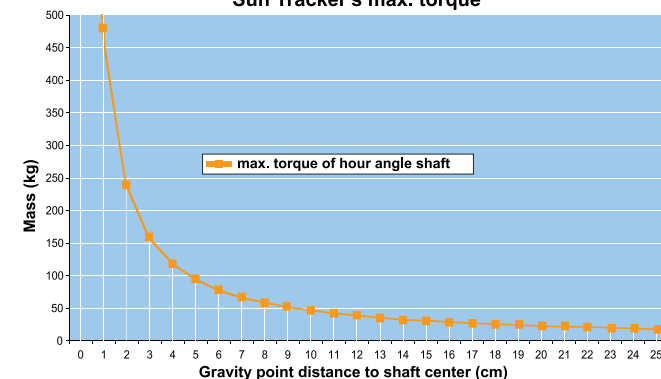
Made in Europe

**SAT CONTROL**  
Want to get more?

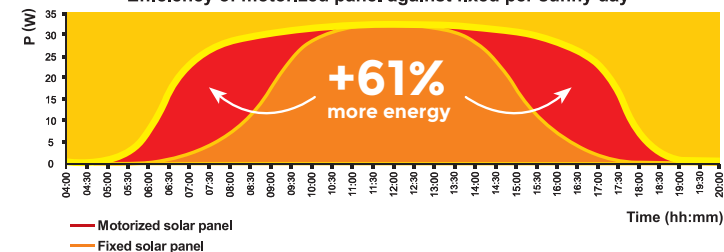
# Single-Axis SOLAR TRACKER for 1 panel SM3SPMOG+

Mechanical Capabilities	
Number of turning axis	Single-Axis
Hour Angle Limit	92° typical / 100° max., software and hardware limit (46°E to 46°W)
Elevation angle	75° manual fixation
Type of hour-angle motor	Brush DC motor with position encoder on cogwheel
Hour-angle shaft diameter and length	Ø 40 mm, L=1150 mm (steel)
Turning speed of hour-angle shaft	0,3°/s +/- 25% @ 12 V at no load
Max. dynamic torque of elevation shaft	65 Nm
Gear Destructive torque of the hour-angle shaft	>200 Nm
Backstructure arm size	2 pcs of 1000 (H) mm
Type of backstructure clamp	Toothed scissors grippers - 4 pcs
Tube diameter for mounting	Ø 50-60 mm
Max. dimensions of a solar panel	1 piece of 2,0 m x 1,0 m in total 2,0 m <sup>2</sup>
Max. weight of a solar panel	1 pc per 25 kg
Estimated service life	800 - 1000 hours of motor operation
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	Solar Positioner POZ SOL 27E
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 a Yes, it turn on position sent from PC (Helios Analytics program), also all other setting can be commanded with string sent from PC
Turning time interval	1 minute (0,25°)
Communication Data	
Type of communication interface	USB interface since beginning of the January 2010, before RS232
Networking solution for control from centre or remote distance monitoring	RS485
Firmware - Software	
Upgrading possibility via PC	Yes, firmware via PC with help of Helios Analytics program
Electrical Data	
Motor Power Supply	Recommended constant 12 VDC (working from 10 to 15 VDC), (1 A current capacity @ 12V)
Backup battery	CR 1225 coin, need to be replaced each 3-5 years
Standby consumption (when is not moving)	35 mA ± 25% @ 12V
Power supply connection	1 piece of 2 Wire Cable with an Internal Cu Conductor of 1.0 mm <sup>2</sup> (not included with kit)
Environmental Data	
Operating temperature	- 25°C to +70°C
Operation at humidity	0% to 100%, relative humidity
Max. safe wind speed	max. 130 km/h
Corrosion, weather and chemical resistance	
Neutral Salt Spray (3000 h, EN ISO 9227 NSS)	Epoxy powder coating
Hot-dip galvanizing (HDG, EN ISO 1461)	Arms
Packaging	
Dimensions of a packed product	1 box of 1200(L) x 115(W) x 200(H) mm
Product weight	11.5 kg when steel arms, 8.8 kg when Alu arms
Quality Certificates	
International Protection Rating (IEC 60529)	IP33, water resistant
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	No

Sun Tracker's max. torque



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): 200 Wp (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: 836 Wh, Average energy of motorized: 1354 Wh,

Note: sum of motor energy consumption through all day at full load is 20Wh or 1.45% of all collected energy, Efficiency of the motorized panel: 160%



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