

Traceur solaire 1 axe 2 panneaux 0,5 kWp @ 15% pan. eff.

- 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, CPV and lighter thermal panels
- 7 hours of automatic tracking at perpendicular angle
- User friendly web interface for monitoring, setting and upgrading
- USB communication port, optionally CAN BUS, RS485
- For surface area up to 4,0m² and max 60 kg
- Made in Europe

with backstructure for 2 panels, 0.5kWp@15% eff.



GREEN ENERGY



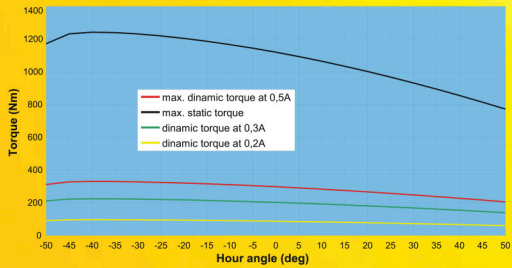
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SOLAR SYSTEM

www.blacksolarsystem.com

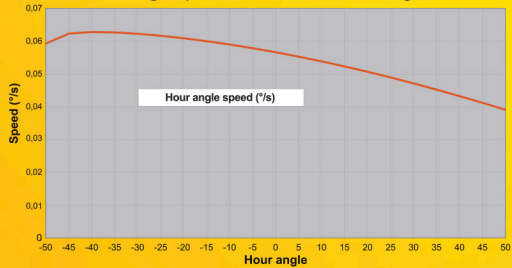
+61%
more energy



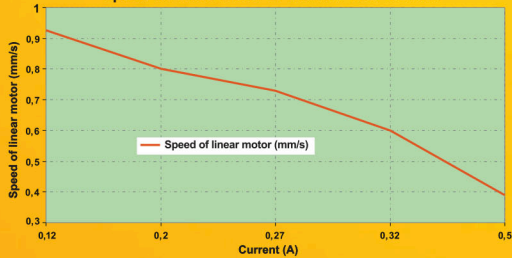
Max. torque graph of hour angle axis motor



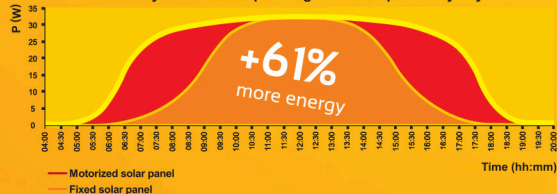
Angle speed in relation with hour angle



Speed of linear motor in relation with current



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): 0.5 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: 2508 Wh, Average energy of motorized: 4062 Wh,
Note: sum of motor energy consumption through all day at full load is 17.52Wh or 0.43%
 of all collected energy, Efficiency of the motorized panel: 161,3%

Mechanical Capabilities

Number of turning axis	Single-Axis
Hour Angle Limit	100°, software and hardware limit
Elevation angle	15 - 90°, adjustable start
Type of hour-angle motor	Linear Motor 5M44520M2 with stroke of 520 mm
Type of elevation-angle motor	/
Hour-angle shaft diameter and length	Ø48 mm, L=1450 mm (steel)
Turning speed of hour angle shaft	0,039 - 0,063 °/s at no load, see graph
Turning speed of elevation shaft	/
Max. dynamic torque of the hour-angle shaft	200 Nm - 330 Nm depend from HA, see graph
Max. dynamic torque of elevation shaft	/
Destructive torque of the hour-angle shaft	750 Nm - 1250 Nm, depend from HA, see graph
Destructive torque of elevation shaft	/
Backstructure size	2 pcs of 1000 (H) mm & 2 pcs of 2000 (V) mm
Type of backstructure clamp	Toothed scissors grippers - 8 pcs
Tube diameter for mounting	Ø60 - 68 mm (not included with kit)
Max. dimensions of a solar panel	2 pieces of 0,99 m x 1,95 m in total 3,9 m2
Max. weight of a solar panel	2 pcs per 30 kg
Estimated service life	5.000 rotations of 200° or 10 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, It can be setup 1000 parameters
Monitoring possibility via PC	Yes, It can be monitored 1000 parameters
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	1min. - 15min.

Communication Data

Type of communication interface	USB interface
Networking solution for control from centre	CAN BUS, RS485

Firmware - Software

Upgrading possibility via PC	Yes, firmware via PC with help of web wizard
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Electrical Data

Motor Power Supply	24 VDC ± 10% (2A current capacity)
Backup battery	CR 2512 coin
Max. consumption during the operation of the hour-angle shaft	500 mA @ 330Nm, see graph
Max. Current of elevation shaft	500 mA @ 400Nm, see graph
Standby consumption (when is not moving)	20 mA ± 25% @ 24V
Power supply connection	1 piece of 2 Wire Cable with an Internal Cu Conductor of 1.0mm2 (not included with kit)
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. 144km/h

Corrosion, weather and chemical resistance

Neutral Salt Spray (3000 h, EN ISO 9227 NSS)	/
Hot-dip galvanizing (HDG, EN ISO 1461)	75-100 µm (equivalent of 50 years)

Packaging

Dimensions of a packed product	1 box of 166 (L) x 22 (W) x 27 (H) cm
Product weight	37 kg

Quality Certificates

International Protection Rating (IEC 60529)	IP33
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	Nol

