

Sun Trackers

for solar-tracking and PC-based positioning operations

The sun tracker provides a stable mounting for the pyrheliometer and moves horizontally (azimuth) and vertically (zenith) to follow the solar arc. Stepping motors controlled by a microprocessor drive through belts or gears to provide movement with the desired torque and accuracy. An on-board programme requires accurate longitude, latitude, altitude, date, and time information for the measurement site. It then calculates the current position of the sun and points the pyrheliometer and shading assembly towards it.



Accuracy suitable for any requirement



All-weather construction



Unattended operation



Virtually maintenance free



Wide range of mounting configurations

Applications

Sun trackers are widely used in networks of solar monitoring stations that measure direct, diffuse and global solar radiation, for inputs to weather forecasting and climate models. Other applications include atmospheric chemistry research, pollution forecasting and materials testing.

With growing interest in renewable energy good quality solar radiation data is becoming increasingly important, particularly the direct component, with regard to photovoltaic systems and thermal energy solar collectors. Activities include research and development, production quality control, determination of optimal power plant locations, monitoring the efficiency of installed systems and predicting the output under various sky conditions.

SOLYS 2 is a versatile sun tracking solution. A wide range of radiometers can be mounted. The integrated GPS automatically configures location and time. Solar position and status monitoring information are available via the communication ports.

SOLYS Gear Drive is a high-end sun tracker for all weather conditions and locations. It builds on the features of the SOLYS2 and has enhanced capabilities that make it suitable for use with heavy loads and in the harshest climates, such as polar conditions.

Specifications

	SOLYS 2	SOLYS Gear Drive
Pointing accuracy	< 0.1° passive tracking < 0.02° active tracking (with optional sun sensor)	< 0.1° passive tracking < 0.02° active tracking (with optional sun sensor)
Torque	> 20 Nm all conditions (30 nm max. as special)	> 60 Nm all conditions
Payload (balanced)	20 kg	80 kg
Angular velocity	up to 5 °/s	up to 5 °/s
Angular acceleration	up to 3.6 °/s ²	up to 3.6 °/s ²

Conditions and dimensions

Supply voltage	24 V DC (18 to 30 V DC) 90 to 264 V AC (50/60 Hz)	24 V DC (18 to 30 V DC) 90 to 264 V AC (50/60Hz)
Power sun tracker	21 W day 13 W night	25 W day 13 W night
Power heater	100 W for heater (AC)	150 W (switches on below - 20 °C on AC power)
Operating temperature range	-20 °C to +50 °C (DC power) -40 °C to +50 °C (AC power) to max. +55 °C with sun shield	-20 °C to +55 °C (DC power) -50 °C to +55 °C (AC power) -50 °C up to 20 m/s wind speed with cold cover to max. +60 °C with sun shield
Weight	28 kg (23 kg tracker, 5kg tripod)	26 kg (sun tracker)
Dimensions (w x d x h)	50 x 34 x 38 cm	50 x 34 x 38 cm

Features

Transmission system	inverted tooth belts	high precision reduction gear
Location, Time, Date	integrated GPS	integrated GPS
Sun sensor kit for active tracking	optional	included
Mounting base	Tripod stand	Flat base plate (2 types of tripods available)
Zenith axis fittings	Double zenith arm	Double zenith arm
Communication	RS-485 Ethernet and web interface	RS-485 Ethernet and web interface
Indicators	power, internal temperature and status	power, internal temperature and status
Maintenance	none	none
Pyrheliometer mounting	included	included

Options

Second side mounting plate	for fitting to zenith axis sha on opposite side to standard Pyrheliometer mounting	for fitting to zenith axis sha on opposite side to standard pyrheliometer mounting
Large top mounting plate	3 positions for Kipp & Zonen radiometers (with or without CVF4 ventilation units) or Eppley PSP / PIR (with or without VEN ventilation units)	3 positions for Kipp & Zonen, Eppley PSP or PIR radiometers (with or without ventilation units)
Small top mounting plate	1 position for Kipp & Zonen radiometer (with or without ventilation unit)	1 position for Kipp & Zonen radiometer (with or without ventilation unit)
Shading ball assembly	optional, with 2 balls (3 balls possible)	optional, with 2 balls (3 balls possible)
Radiometer mounting kits	for absolute cavities, pyrheliometers, PGS-100 sun photometer and other instruments	

