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BSQ Sun Tracking Control Unit 2.0 Abridged Data Sheet

Dimensions

Using ephemeris based open loop tracking plus a proprietary Auto-calibrated model, the BSQ Sun Tracking Control Unit achieves 0.1-degree pointing accuracy and triggers wind and night stow positions for safety and reliability.

The controller is supplied with a software interface that manages system performance and calibrates the pointing accuracy of the array for maximum power generation.

The BSQ Sun Tracking Control Unit has been tested for electronic safety, electromagnet compatibility standards as well as climate tests to ensure its reliable operation under harsh weather conditions.

Specifications

Accuracy

Tracking Error - Percentile 97th	P_{97} 0.1 º(1)
Position resolution	0.018 º (2)
Solar Ephemeris Mean Accuracy	0.01 º
Internal Clock Accuracy	Built-in GPS syncs RTC

Electric features

Supply voltage	100-240 V_{AC} (60/50Hz)
Power consumption in idle mode	38 W
DC motor voltage..	24 V_{DC}
Max. motor DC current	10 A_{DC}

Operating conditions

Operating temperature	0 ºC to 50 ºC
Storage temperature	-20 ºC to 75 ºC
Humidity (operation & storage)	0 % to 100 %RH@40 ºC
Ingress protection	IP65

Mechanical features

Weight (main unit)	8 kg
Dimensions (main unit)	50(H)x40(W)x22(D) cm
Connectivity	RS232-485, Modbus
Peripheral sensors (std. package)	Limit switches, anemometer, optical encoders, global irradiance, array current

EMC/EMI Standards

EN 61000-6-2 , EN 55011 , EN 61000-3-2 (Harmonics), EN 61000-3-3 (Flicker noise), EN 55014 (Discontinuous conducted emission)

Climatic Testing Standards

> Cyclic humid heat test based on IEC 600068-2-30
> IP-65 tightness tests based on EN-60529
> Cyclic salt mist test based on IEC 600068-2-52

Electrical Safety Standards EN 61000-6-4

Tracking Error

From the mechanical point of view, tracking accuracy is limited by the backlash and positioning resolution of the sun tracking drive employed. With sun tracking drives especially designed or properly chosen for accuracy applications, the BSQ STCU can achieve a 2σ (percentile 97) accuracy of 0.1º.
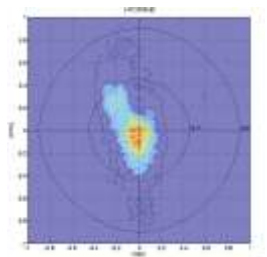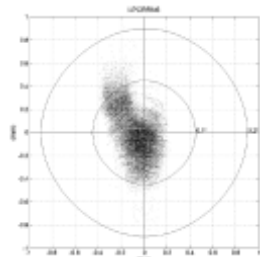
Position Resolution

The resolution in the position sensing along with the ephemeris equations accuracy determine the ultimate limit to the tracking accuracy that can be achieved. Position resolution will depend on the sensors employed to determine axes orientation and their installation on the tracking drive. The value here refers to a main axis mount of the optical incremental encoders of 5000 pulses/rev. supplied with the BSQ Sun STCU.

Historic Log

The BSQ Sun Tracking Control Unit continuously compiles an historic log in where all the significant events that take place during tracking control are recorded (movements, alarms, maintenance operations, etc.) which will aid the operation monitoring and will be of help on the diagnosis of any possible failure or exception. This historic log is stored in the unit's non-volatile internal memories, which will maintain its content even when powered off or subjected to power cuts.

Virtual User Interface

The BSQ Sun Tracking Control Unit is supplied with a software application that permits the unit's remote management from a PC connected to one of its serial ports (RS232-485). It is a Windows® application required for downloading, decoding, viewing, and managing the stored historic log, which greatly eases the detailed monitoring of the unit, as well as installation and calibration tasks.

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