

Trac-Stat SL1



A diagnostic instrument for measuring tracker accuracy

- Characterize tracker error
- Calibrate and align trackers
- Measure tracker controller performance
- Monitor tracker accuracy over time
- Align CPV test fixtures to the sun
- Verify system performance in preparation for IEC 62108 testing

Optimize System Performance By Understanding Your Tracker

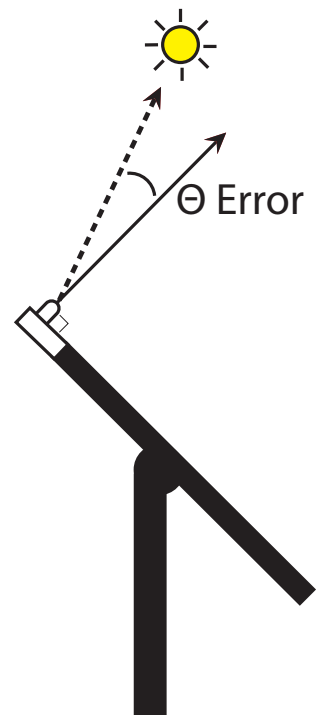
The Trac-Stat SL1 is the first commercially available diagnostic instrument for measuring tracker performance. The SL1 is a high-resolution datalogging sensor that mounts on a solar tracker. It records the angle of error between the sun and the tracker for use in the development of tracking, concentrating photovoltaics (CPV) and solar thermal systems.

There are many possible sources of error in a solar tracking system, from tracker installation to wind loading to thermal expansion to subtle algorithm errors. Identifying and mitigating these issues is key to maximizing system performance and driving the cost-competitiveness of technologies like CPV that rely on accurate tracking.

The Trac-Stat SL1 is typically mounted on a solar tracker to provide data on azimuth and elevation “pointing error.”

The SL1 provides two sensing systems: wide-angle and narrow-angle. These two sensors, in combination with the optics, filtration, and algorithms, provide flexible and robust performance under a range of operating conditions.

Users can interface with the SL1 via a well-documented USB/serial interface (allowing easy connection to a laptop or customized end-user integration), or via a set of analog voltages (for integration with existing dataloggers.) It can also log data internally for later download over the USB connection.



Features and Specifications

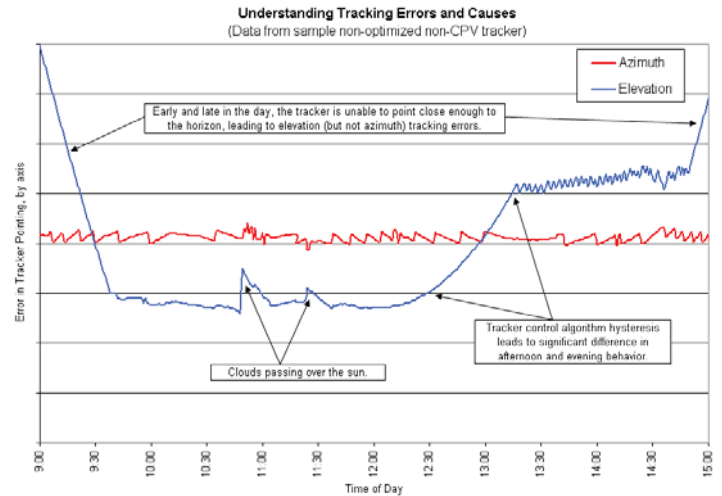
Features
0.02° accuracy over 5° field of view
0.5° accuracy over 60° field of view
Designed for extended outdoor operation
Datalogging to internal memory with USB interface
Analog voltage output proportional to error
Units individually calibrated for improved performance
Functions under a range of irradiance conditions

Trac-Stat SL1 - Technical Specifications <i>(specifications subject to change)</i>				
	Units	Min	Typical	Max
Narrow FOV Measurement				
Field of View	degrees	4.2	5	
Resolution	degrees		0.01	
Relative Accuracy ¹	degrees		0.02	0.03
Absolute Accuracy ²	degrees		0.04	0.05
Wide FOV Measurement				
Field of View	degrees	50	60	
Resolution	degrees		0.2	
Relative Accuracy ¹	degrees		0.5	1.0
Absolute Accuracy ²	degrees		0.5	1.0
Timekeeping Accuracy	ppm		2	10
Sampling Interval	seconds	15	60	
Datalog Size³	days		30	
Voltage Input	V	5		24
Power Draw	mW		200	900
Temperature Error Coefficient	μrad / °C		5	

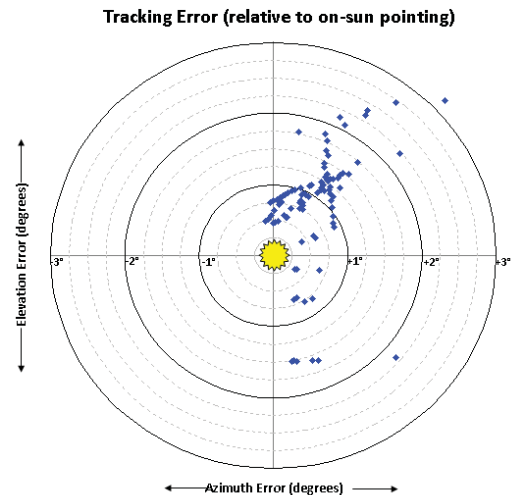
Footnotes:

- 1 - Accuracy in difference between two measurements, or relative to user-calibrated "zero"
- 2 - Accuracy Relative to Case Datums
- 3 - Depends on sampling interval and datalog "verbosity" setting

The data collected with the Trac-Stat SL1 can be used in a variety of different ways to validate the performance of a tracking system, measure the performance of a tracker over the course of days or weeks, or map a tracker's performance to irradiance and weather conditions.



In the example below, the center of the graph represents on-sun pointing, while the polar axes indicate degrees off-target in azimuth and elevation.



For additional technical questions, pricing information or to place an order contact:

GreenMountain Engineering
+1 (415) 979-9794
tracstat@greengmountainengineering.com

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