

Application Note: Solar Panel Monitoring

Product Range: **Wireless Equipment List (Per Freezer):**

- A1-01a Sensor Pod
- A1-10 Sensor Pod
- A1-2b Sensor Pod
- A1-08 Sensor Pod

Per wireless system:

- B1-06 Gateway

Application: **Detecting Problems in Solar Panel Installations**

Continuous Monitoring of solar panel installations to detect if / when problems occur.

Background:

Photovoltaic solar panels are increasing in popularity and are increasingly being used to power remote locations. Often these solar power facilities require battery or generator backups as well.

The Problem:

While solar power may seem simple to use, they are not completely trouble free or even very well understood. With the solar panels in a remote location, it is not easy to gather the data if / when a problem occurs.

The Solution:

The Grant monitor system can be an invaluable tool in managing solar facilities and/or the devices they power. The wide range of inputs offered by the Grant system and the ability to spread out the sensing point with Grant's wireless mesh technology allows customers to tailor a solution to their exact requirements.

Various sensor pods can be used to measure the following:

- Power Production: A1-01a Sensor Pod
- Isolation: A1-10 Sensor Pod
- Temperature: A1-02b Sensor Pod
 A1-08 Sensor Pod

The ability to view all data remotely is perfectly facilitated by Grant's remote access – data can be viewed from any web browser – important as many solar facilities are remote and un-attended.

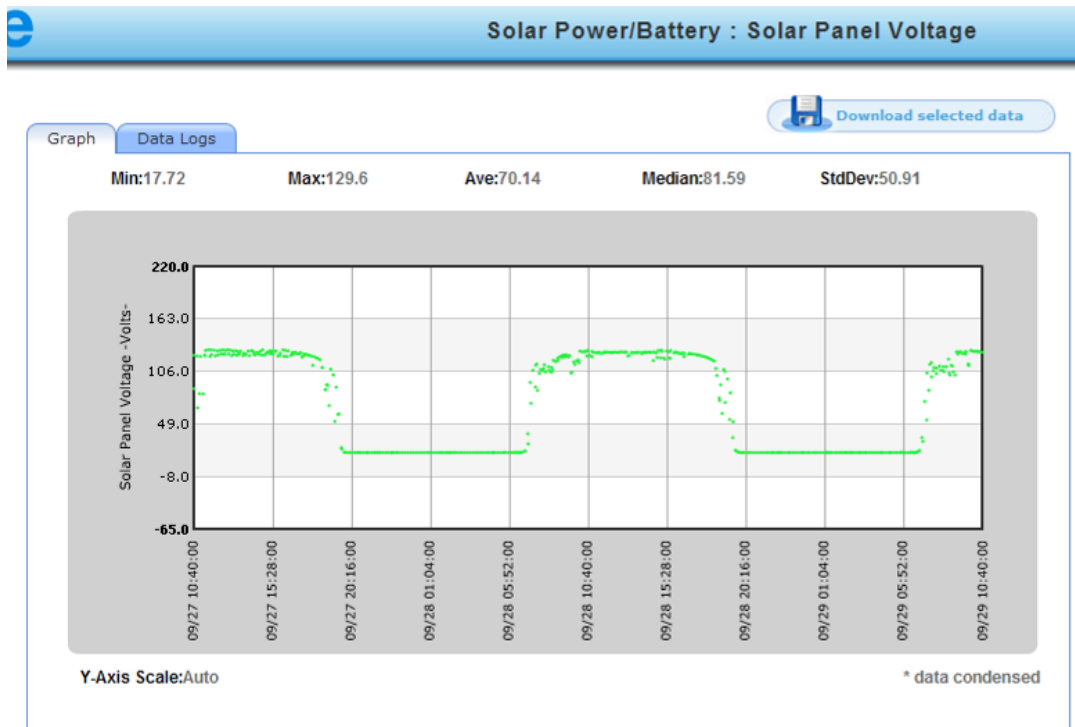


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The above is a typical solar panel facility. Sunlight level, current, voltage, panel temperature, generator duty cycle, and other parameters can be measured, viewed remotely and alarmed on if necessary.



Voltage produced by a remote solar facility powering complex machinery.



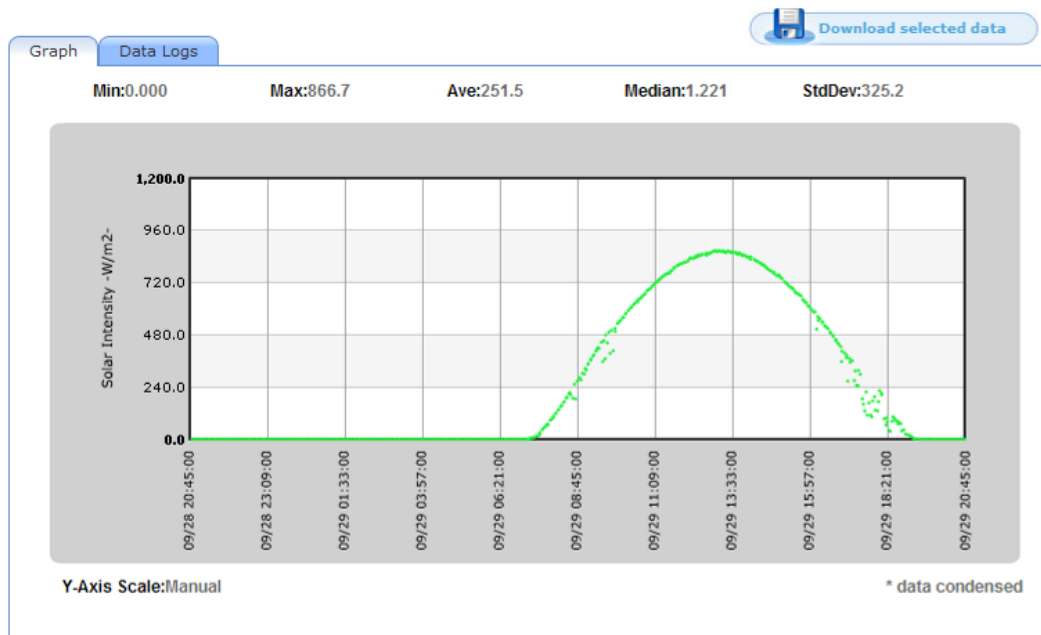
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Remote solar facility.

Solar Radiation Sensor : Solar Intensity



Shown above is actual solar intensity data for a one-day cycle. Data can be exported to excel if required for more sophisticated analysis, such as integration under the curve.

Temperature of the solar panels can be monitored at multiple points to develop a map of the temperature across the panel. Up to six points at distances of up to 40 feet across can be covered with a single Sensor Pod.



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Generator noise and vibration can be monitored to determine the duty cycle of the generator, as well as the condition of the starter battery.

The Grant Internet Gateway can be connected to a cell phone or GPRS modem for remote communication.

The Benefits:

The Grant system has the benefit of being able to see the data from any PC connection via the internet; from this the customer is able to see the data of the parameters being monitor instantaneously.

The system also has the ability to send alarms via text and voice message, so the customer can be warned of potential failures.



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