

For immediate release

## **TAIYO YUDEN Facilitates the Efficient Operation of Mega Solar Power Plants with a Wireless Monitoring System**

*The Elimination of the Need for an External Power Source Enables Installation at a Later Stage and Reduces the Installation Cost*



TOKYO, July 29, 2014 – TAIYO YUDEN CO., LTD. announced today the development and commercialization of a wireless string monitoring system for industrial solar power plants. This is a system for measuring and monitoring the status of power generation in each string, and is configured by a management unit, which is the base unit, and string sensor units, which are terminal units.

This system detects both the current flow through each string and the voltage of the installed solar panels. If there is a decline in output due to the failure of a panel or an improper wiring connection, it is possible to identify the string in which the problem has occurred. We have also been able to construct a wireless sensor network by combining together our power supply circuit technology and wireless module technology. Our wireless communication solution is performed by using only a slight amount of power generated by solar panels and we have eliminated the need for batteries and related wiring installations which results in a significant cost savings.

We have conducted several successful demonstration experiments at solar power plants and plan to commence production at our subsidiary Akagi Electronics Co., Ltd. (Takasaki City, Gunma Prefecture) from August 2014.

### **Technology Background**

Tens of thousands of solar panels are installed in large-scale solar power plants and mega solar power plants. Solar panels generate D.C. power for commercial power sources. “Strings” that connect as many as ten solar panels in series are aggregated by a power conditioner, and D.C. power is converted to A.C. power. Therefore, even if a single solar panel develops a fault, the output of the entire string drops, resulting in a loss of power generation for the entire power plant. Although the use of a power conditioner for power monitoring provides an understanding of the status of power generation of the entire power plant, the details of the failure and the location of occurrence of the problem cannot be detected without expending a large amount of effort and costs to identify the problem.

To resolve this issue, TAIYO YUDEN has used its innovative technical expertise and has combined its power supply circuit technology and wireless module technology, and commercialized a

wireless string monitoring system. By installing a sensor unit in each string, a huge number of panels can be monitored on a string-by-string basis.

The wireless module helps realize power saving through the multi-hop communication function. By combining the wireless module with our power supply circuit technology, the wireless module can be operated by using only a slight amount of power generated by the solar panels. The result from this solution is the elimination of the need for both power supply cables and communication cables. This system can be installed on a later stage without performing additional processing in already-installed solar panels and rental panels and offers a significant reduction in construction cost.

Production will commence from August 2014 after we conduct demonstration experiments at several EPC<sup>\*1</sup> and customers' solar power plants. TAIYO YUDEN views the environment and energy markets as markets we will focus on. We will continue our work on improvement in the efficiency of solar power plants through various solutions including our wireless monitoring system and micro-converter that makes use of MPPT<sup>\*2</sup> control.

This announcement and the new innovative way TAIYO YUDEN brings solutions to the market is further proof of our commitment to propose solutions to address market needs.

\*1 EPC: Engineering, Procurement and Construction

\*2 MPPT: Maximum Power Point Tracking

#### ■ Application

Wireless string monitoring system for industrial solar power plants

#### ■ Main characteristics

- Management unit

Profile: 175 x 247.5 x 142mm (including the projecting part)

Part number	JS MU-01
Max. number of connected terminal units	350
Operating voltage range	10 to 60 V
Power consumption (max.)	2000 mW
Water-proofing and dust protection grade	IP65
Wireless specifications	Frequency: 2.4 GHz band (2405-2480 MHz) Transmission output: +2.5 dBm

- String sensor unit

Profile: 112 x 127 x 41mm (including the projecting part)

Part number	JS SSU-01
Max. system voltage (DC)	1000V
Detection current range	0.5 to 12.0 A
Detection voltage range	12 to 60 V
Measuring accuracy	±2%
Power consumption (max.)	500 mW
Water-proofing and dust protection grade	IP65
Wireless specifications	Frequency: 2.4 GHz band (2405-2480 MHz) Transmission output: +2.5 dBm