NxSensor

Advanced Solar Power System With Module-Level Insight

A key challenge of improving solar power system's lifetime performance is the lack of real understanding of how PV modules deteriorate over time and the lack of detailed insight into their impairments.

Module Monitoring

Monitors the voltage and temperature data of each module, giving insight into module-level performance with unprecedented granularity.

Rapid Shutdown

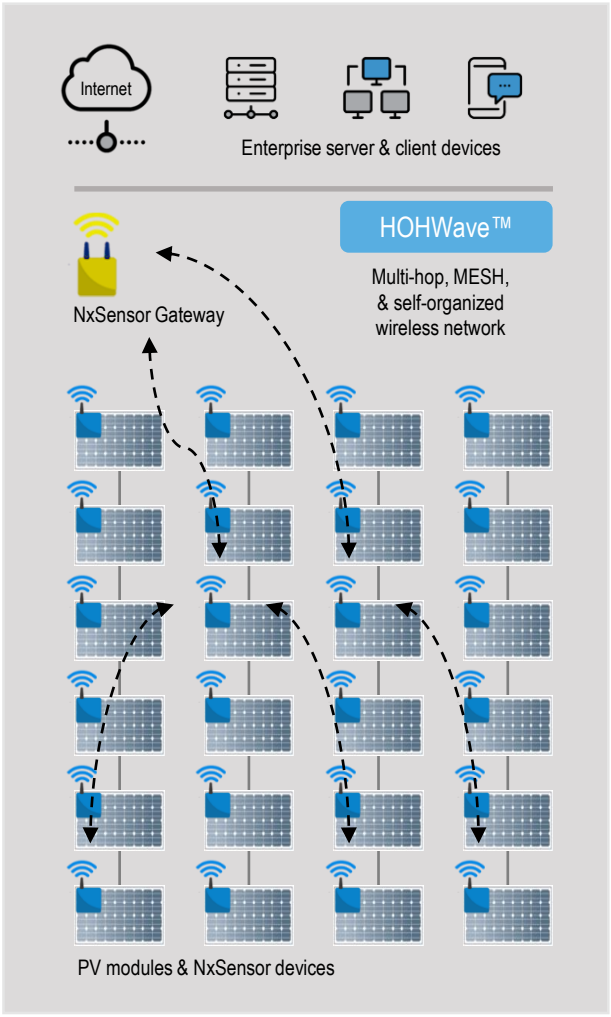
Complies with rapid shutdown requirements of 2017 NEC 690.12, ensuring the safety of system installers, operators and emergency responders.

Reliability & Safety

Identifies erroneous connection and associated electrical arcs in the junction box, which helps to improve the reliability and safety of a system.

Wireless MESH Network

Modules send data to a gateway using a wireless mesh network architecture - HOHWave™, it is a low-cost and extensible communication system.



How the NxSensor system works

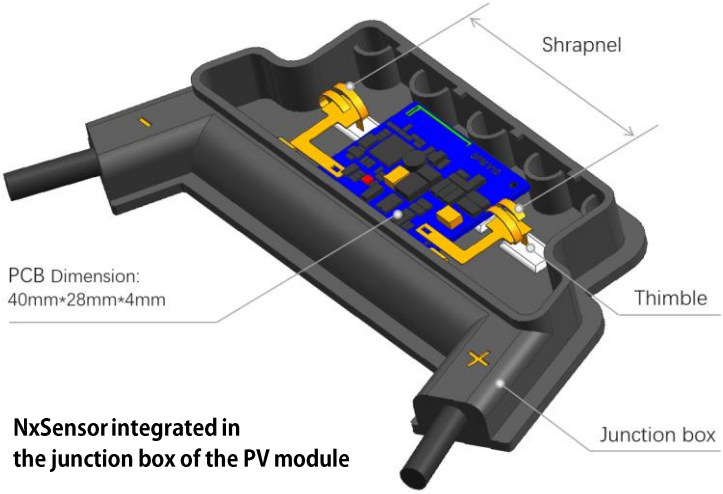
The conventional way of module-level communication is ether by PLC or ZigBee. For PLC, it needs data reader on each PV string, thus increasing the overall costs. For ZigBee, the number of accessing sensors in a network is usually less than 300, so it is limited by the difficulty to expand its capacity.

The NxSensor system adopts a mesh architecture - HOHWave™ . It is explicitly designed for wireless sensor network of high density and large area, just like the case of module monitoring in PV plant. It offers advantages like self-organization, multi-hop, flexibility, ease of use and reliability, making it capable for extensive PV system measurements and event alerts.

Key Features:

- 2.4-GHz ISM Multi-hop wireless networks;
- Number of accessing nodes: 500 per gateway;
- 100 uplink messages per minute per gateway;
- Max length of a message: up to 64 bytes;

Product Technical data



NxSensor integrated in the junction box of the PV module

NxSensor Device	
Voltage measuring	7~60 V, ±0.2V
Temperature measuring	-25~75°C, ±0.5°C
Radio band	2.4GHz ISM
Wireless network	HOHWave™, 500 pcs/gateway
Power consumption	< 50 mW
Rapid shutdown	2017 NEC 690.12
PCB size	40 x 28 x 4 (mm)
Operating voltage	7 V (Min.)
Operating temperature	-25~75°C

Innovative approach to PV O&M and plant management

Find defective ones in large scale arrays

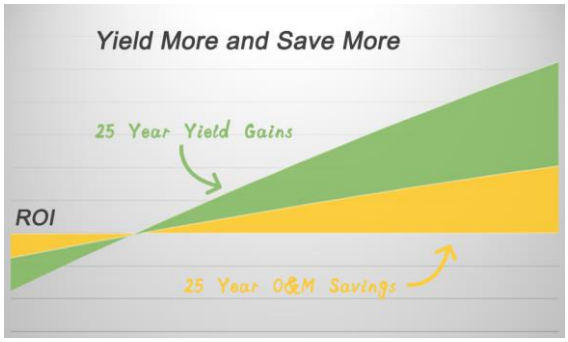
The collected data from NxSensor enables intelligent software to identify defective modules and localizes their positions through the web portal. The benefit of the system is to diagnose the root cause, like whether it's caused by soiling or wiring faults. By comparison, inverter monitoring systems lack accuracy, they are not able to help troubleshooting or find root cause.

Efficient PV installation and maintenance

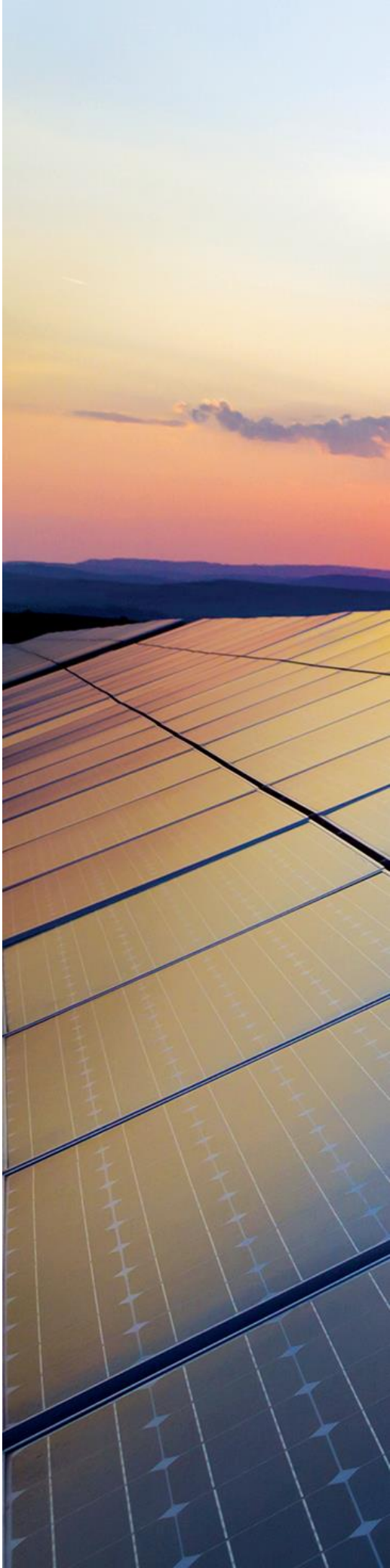
NxSensor system assigns unique ID to each module. Through monitoring, it provides deep analysis of a plant installation, avoiding off-line tests to check if modules setup incorrectly or plugs forgotten. O&Ms are able to find failed panels with great certainty. It is possible to prevent problems before a system down. Such integration leads to advanced O&M strategies.

Improve Financial Return & Reduce Risk

NxSensor system detects hidden failures of modules that lead to losses, evaluates accurate performance, enables the taking of immediate O&M action, thus avoiding the revenue losses. It is a new and valuable weapon for PV owners and O&M companies to improve financial performance and reduce risk in owning and operating solar power systems.



NxSensor



NxSensor Headquarters

URWork, Floor B1, Jumeirah Building, No.1188 Fangdian Rd, Pudong District, Shanghai, China.

Tel: +86 021 6198 4167
Web: www.nxsensor.com
E-mail: jiayan@wiihey.com

NxSensor Engineering Office

Room 309, Jin Li Hua Building, No.1133 Gongyuan Rd, Baoan District, Shenzhen, China.

NxSensor Manufacturing Base

Floor 6, No.3 Building, HuiHua Yuan Industrial Park, DongHuan 2nd Rd, LongHua District, Shenzhen, China

June 2018