Solar Module-Level Power Electronics

August 2018

Product Catalog

NxSensor

Smart Junction Box
(PN: NX-SXT-SJB-001)

An innovative value-added junction box with integrated NxSensor MLPE device brings smart functionalities to a solar panel. It supports following features:

- Solar PV module-level monitoring
- Solar PV module-level rapid shutdown
- Wireless communication via HOHWave™
- Wireless-tag based asset management

NxSensor MLPE

17.40

98.76

78.46
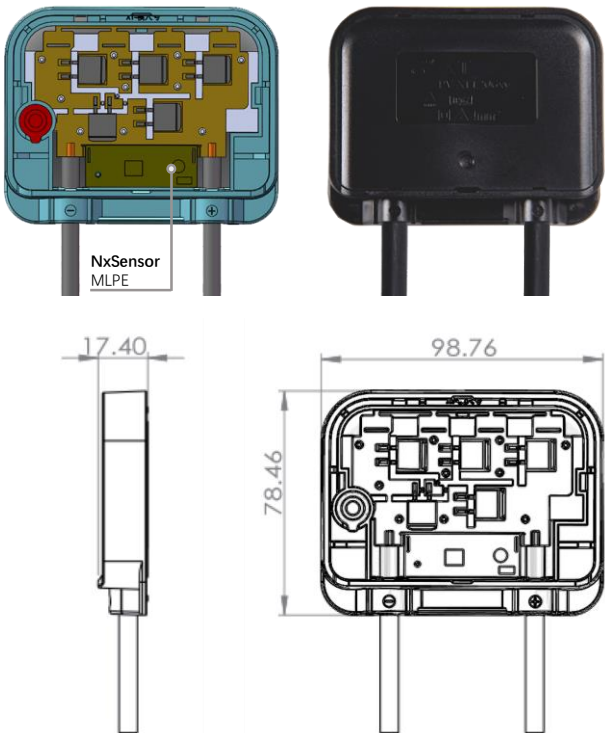
Specifications

Mechanical & Environmental

Size (without cables)	98.8mm*17.4mm*78.5mm
Operating Temp.	-30°C to +75°C
Storage Temp.	-40°C to +85°C
IP Rating	IP68
Sealing Type	Potting

Electrical

Rated Voltage	1000V / 1500V
Rated Current	15A
Connectors	MC4 / MC4 compatible
Max. Input Voltage	90V

Monitoring

Voltage Range	7V to 60V, $\pm$0.2V
Temperature Range	-30°C to +75°C, $\pm$0.5°C
Sampling Rate	1 min. to 5 min.

Safety

Rapid Shutdown	NEC 2017 690.12

Wireless Radio

Radio	2.4GHz ISM band
Wireless Protocol	HOHWave™ MESH Network

Power

Power Consumption	< 50mW

HOHWave™

2.4GHz
HOHWave™

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NxSensor Gateway
The data collector

4G / Ethernet /
ModBus / RS-485

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NxSensor Cloud
The data analysis platform

Ethernet
WiFi
2G/3G/4G

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Mobiles & PCs
The user terminals

Solar Module
with Smart J-Box

Add-on / Retrofit Box - X
(PN: NX-SXT-ABX-001)

The Box-X is an add-on junction box that contains NxSensor MLPE device. It is a retrofit approach to upgrade existing solar power systems with smart functionalities:

- Solar PV module-level monitoring
- Solar PV module-level rapid shutdown
- Wireless communication via HOHWave™
- Wireless-tag based asset management
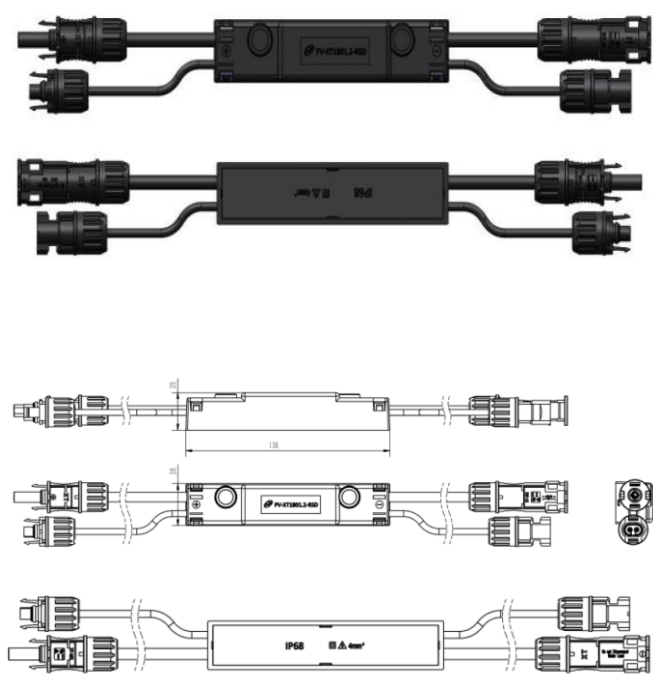
Specifications

Mechanical & Environmental	
Size (without cables)	138mm*28mm*25mm
Operating Temp.	-30°C to +75°C
Storage Temp.	-40°C to +85°C
IP Rating	IP68
Sealing Type	Potting / Rubber
Electrical	
Rated Voltage	1000V / 1500V
Rated Current	15A
Connectors	MC4 / MC4 compatible
Max. Input Voltage	90V
Wiring	Parallel connection (replace original +/- cable output)
Monitoring	
Voltage Range	7V to 60V, $\pm$0.2V
Temperature Range	-30°C to +75°C, $\pm$0.5°C
Sampling Rate	1 min. to 5 min.
Safety	
Rapid Shutdown	NEC 2017 690.12
Wireless Radio	
Radio	2.4GHz ISM band
Wireless Protocol	HOHWave™ MESH Network
Power	
Power Consumption	< 50mW

HOHWave™

2.4GHz
HOHWave™

NxSensor Gateway
The data collector

4G / Ethernet /
ModBus / RS-485

NxSensor Cloud
The data analysis platform

Ethernet
WiFi
2G/3G/4G

Mobiles & PCs
The user terminals

Solar Module
with Add-on Box - X

Add-on / Retrofit Box - M
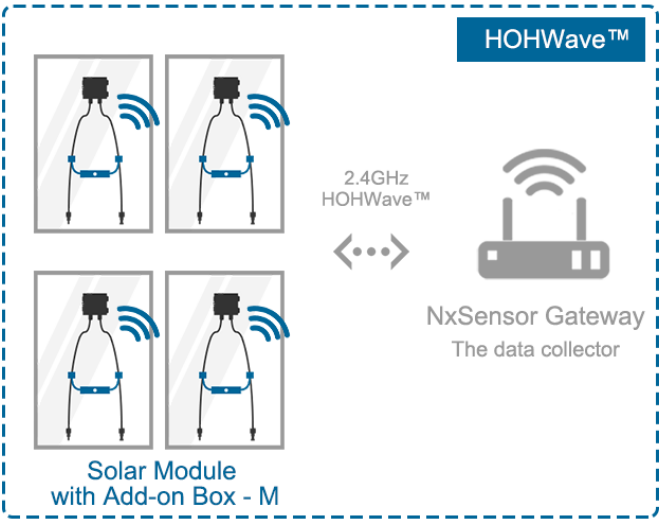## (PN: NX-SXT-ABM-001)

The Box-M has a pair of piercing clips that could be easily attached to any solar panels. It is a fast and cost effective way to upgrade existing solar power systems with NxSensor MLPE functionalities. It supports:

- Solar PV module-level monitoring
- Wireless communication via HOHWave™
- Wireless-tag based asset management
- Fast & easy wiring & connection

The Piercing Clip
The Box-M
Solar Panel Cable
Inside of the Piercing Clip
The Probe
The Piercing Clip's Inside
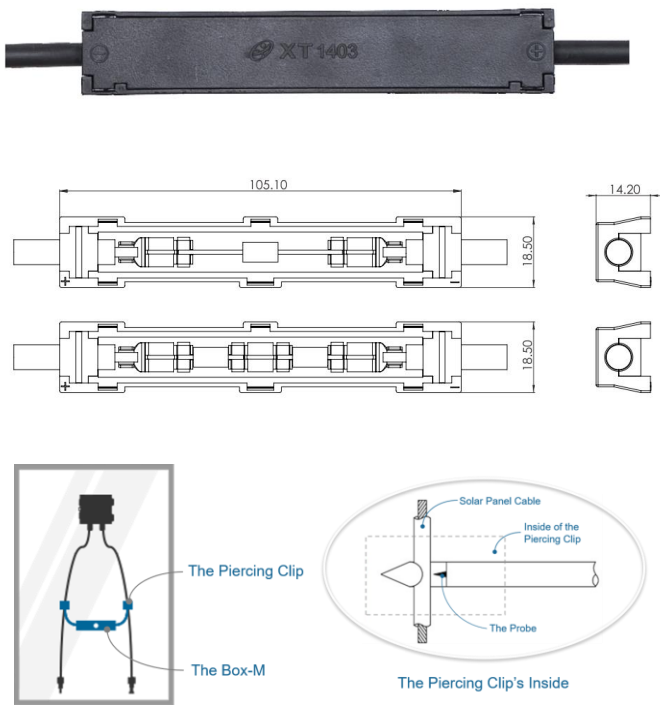
Specifications

Mechanical & Environmental

Size (Box-M without cables or clips)	105.1mm*18.5mm*18.5mm
Operating Temp.	-30°C to +75°C
Storage Temp.	-40°C to +85°C
IP Rating	IP68
Sealing Type	Potting / Rubber

Electrical

Rated Voltage	1000V / 1500V
Rated Current	15A
Connectors	MC4 / MC4 compatible
Max. Input Voltage	90V
Wiring	Parallel connection (standalone monitor, no RSD)

Monitoring

Voltage Range	7V to 60V, $\pm$0.2V
Temperature Range	-30°C to +75°C, $\pm$0.5°C
Sampling Rate	1 min. to 5 min.

Wireless Radio

Radio	2.4GHz ISM band
Wireless Protocol	HOHWave™ MESH Network

Power

Power Consumption	< 50mW

HOHWave™

2.4GHz HOHWave™

NxSensor Gateway
The data collector

4G / Ethernet / ModBus / RS-485

NxSensor Cloud
The data analysis platform

Ethernet WiFi 2G/3G/4G

Mobiles & PCs
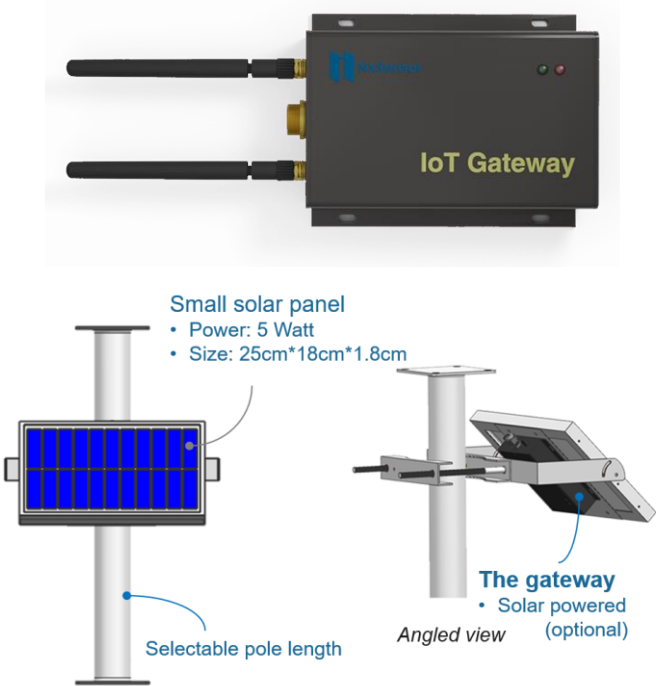The user terminals

Solar Module with Add-on Box - M
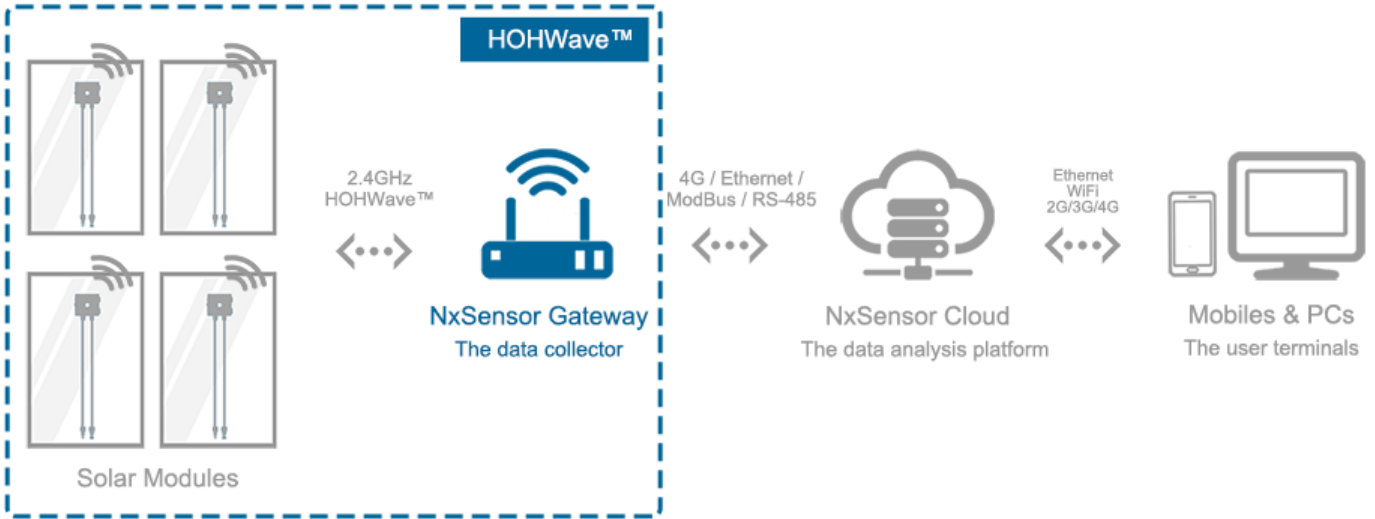
Gateway
(PN: NX-G24-SP-001)

The gateway manages the data transmission and logging of your solar assets by wirelessly communicating with NxSensor smart junction boxes and add-on / retrofit boxes.

- Internet connection via cellular network
- Wireless mesh network via HOHWave™
- Access 500+ nodes of NxSensor MLPEs
- External interfaces for RSD controlling
- Plug & play, easy of setup and installation

IoT Gateway

Small solar panel
- Power: 5 Watt
- Size: 25cm*18cm*1.8cm

The gateway
- Solar powered (optional)

Angled view

Selectable pole length

Specifications

Mechanical & Environmental

Size (main body)	105mm*130mm*28mm
Operating Temp.	-30°C to +70°C
IP Rating	IP65
Weight (main body)	0.45 kg

Wireless Connectivity

Radio	• 2.4GHz ISM band • Cellular LTE
2.4GHz Wireless	HOHWave™ MESH Network
Antenna	2.4-2.5GHz SMA Male * 2
Network Capacity	500+ nodes per gateway
Message Length	Max. 64-byte length
Throughput	100 uplink messages / 1 min.
Multi-Hop	30m per hop, typ. 10 hops
Protocol	MQTTS, HOHWave™

Interface

RS485 / Modbus	Connect with inverters
ON / OFF signal	Rapid shutdown controlling

Power

Power Consumption	< 1W
Power Source	9-24VDC or 110-240VAC (e.g. a small solar panel.)

HOHWave™

2.4GHz HOHWave™

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The data collector

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NxSensor Cloud
The data analysis platform

Ethernet WiFi 2G/3G/4G

Mobiles & PCs
The user terminals
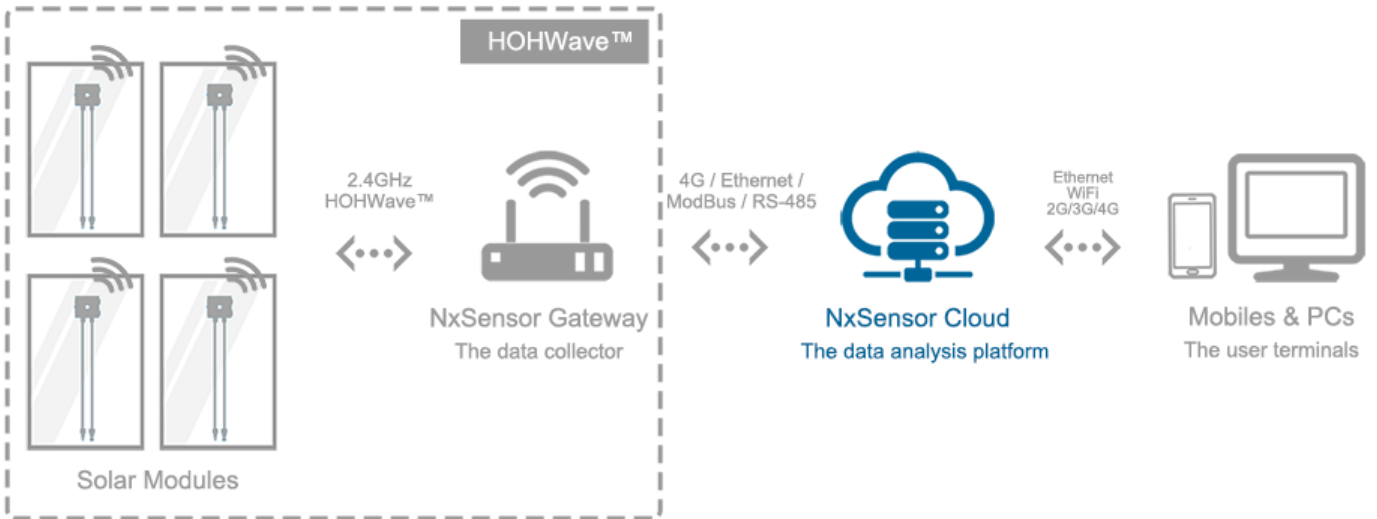
Solar Modules

Monitoring Software

By monitoring each individual solar panel's performance, NxSensor software provides the most accurate digitized information of your solar power system. You can identify hidden issues and schedule O&M activities.

- Real-time data & remote monitoring
- Data visualization for your solar plant
- Powerful alert notification capability
- Periodic performance report / analyst
- Wireless-tag based asset management

Specifications

Supported Web Browsers	• Google Chrome • Mozilla Firefox • Apple Safari • Opera 11.0 above • Internet Explorer 9.0 above
System Configuration	Logical (electrical connection) and physical locations of solar panels in a PV system
User Access	Selective permission levels for users and administrators
Data Storage	Storage of every complete time series data set collected from a sensor since system startup
Data Visualization	• Viewing of individual time series and trend charts • Viewing of customizable PV system heat maps • Intelligent single-point or time-averaged baselining
Data types	• Module voltage • Module temperature • Module power • String Current (coming soon)
Alarms and Notifications	• On-screen health icons with warnings and alarms for low performance or exceedances • Email notification of warnings and alarms
Performance Report	Daily, weekly, monthly
Safety and Rapid shutdown	• Indicator • Controlling (coming soon)

HOHWave™

2.4GHz
HOHWave™

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The data collector

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ModBus / RS-485

NxSensor Cloud
The data analysis platform

Ethernet
WiFi
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Mobiles & PCs
The user terminals

Solar Modules

About NxSensor

NxSensor is a technology start-up company making intelligent MLPEs, sensors, controllers and providing digital transformation solutions for solar power systems.

Contact

NxSensor Head Office

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

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