IGEN

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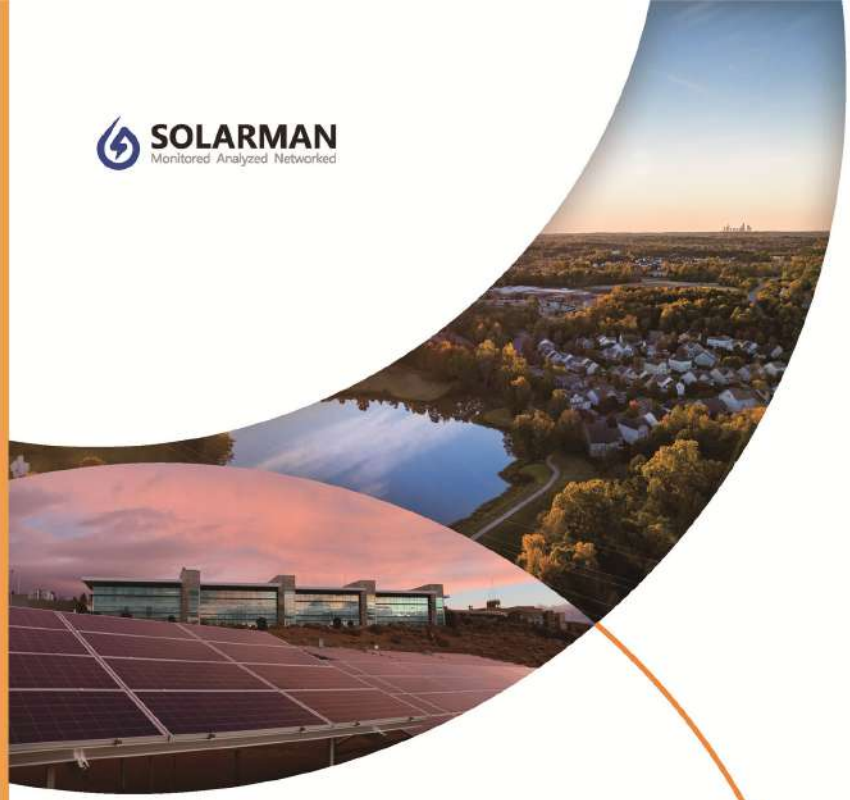
SOLARMAN
Monitored Analyzed Networked



Monitor and manage your smart energy for a better world

INTRODUCTION

IGEN Tech Co., Ltd., founded in 2009, a high-tech enterprise, is professional in innovative applications based on technologies of IoTs, cloud computing and big data. Being focus on energy field for 15 years, the company is committed to constructuring sustainable solutions and services into energy system, and has developed a complete solution including hardware, software and data analysis to offer smart energy for global customers.

Adhereing to green vision and better future, IGEN Tech will keep close to customer needs in energy field of the globe.

SOLARMAN is a brand of IGEN Tech, specialized in intelligent PV solutions. SOLARMAN product has been a global leading PV monitoring and management platform, which covers the whole life cycle of PV station and provides differentiated solutions for distinct users.




Products and Services

Different types of external data loggers
Embedded monitoring module for inverters
Smart meters and sockets
Weather stations

Web-based monitoring portal
Monitoring app and dashboard
Customerized software platform

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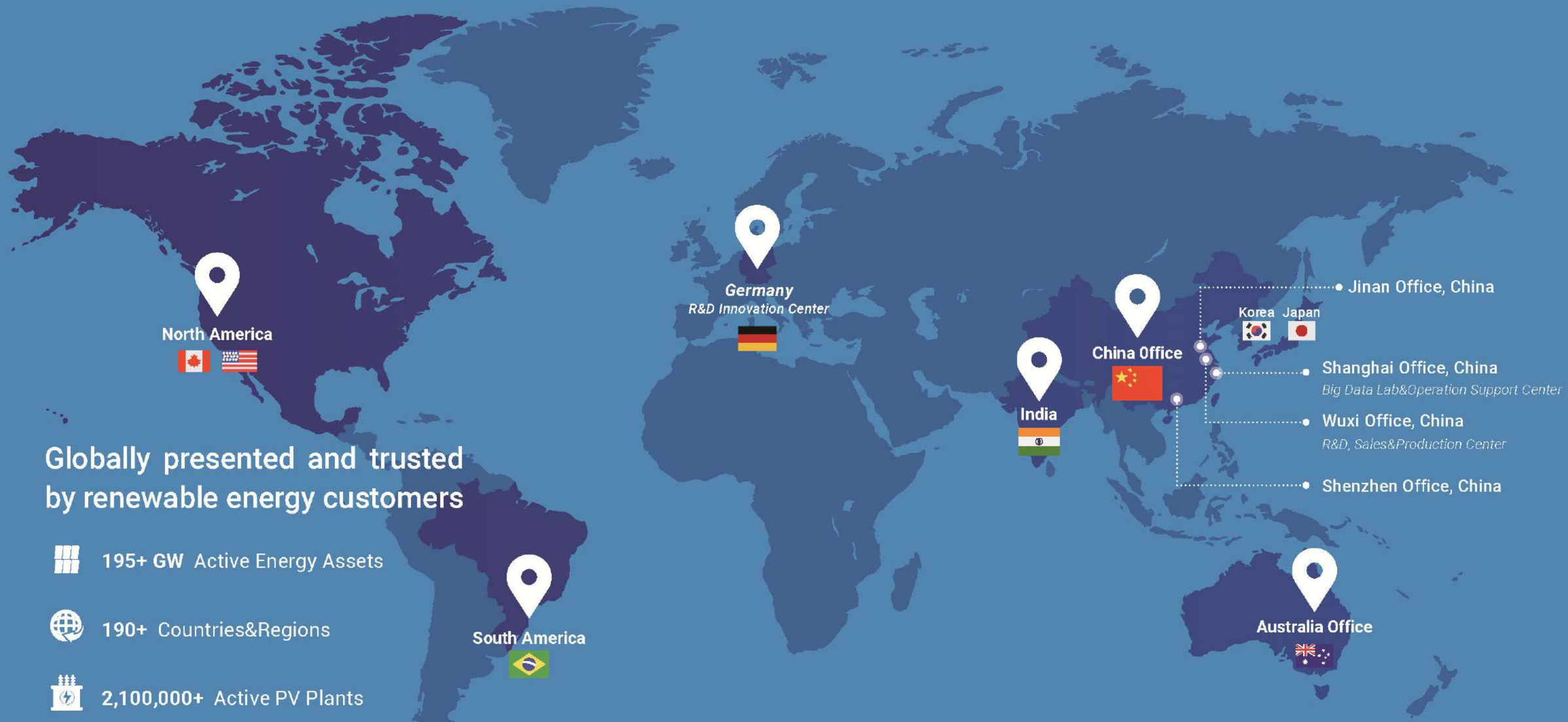
SOLARMAN Smart Energy Management System around the world



Globally presented and trusted by renewable energy customers

- **195+ GW** Active Energy Assets
- **190+** Countries&Regions
- **2,100,000+** Active PV Plants
- **10,000,000+** Devices

Residential Solution - Home Energy Management

Wisely managing energy use has been the 1st priority when households decide to pursue a smart life with sustainable energy, improved efficiency and reduced bills.

By applying advanced technologies of IoTs (Internet of Things) and wireless communication, etc., SOLARMAN products are able to connect a variety of devices at your home, to make your daily operation in a more convenient, comfortable and eco-friendly manner.

- PV Monitoring System
- PV Optimizer
- Battery Storage Management
- Smart Energy Management
- Power Consumption Monitoring System
- Charging Pile Monitoring System

Commercial&Industrial Solution - Plant Energy Management

More and more corporates are going green by utilizing carbon neutral energy-especially solar power generated from their plants' and buildings' rooftops, and at the same time, battery storage is ready to leverage renewable energy to the upmost efficiency. SOLARMAN helps the companies to get insights on power transaction and hence make smart decisions.

- PV Monitoring System
- Backup Power
- I&C Energy Storage Management
- Power Consumption Monitoring System
- Feed-In Management
- Charging Pile Monitoring System

Overview of SOLARMAN Software

With the most reliable hardware devices, functional software and outstanding service, SOLARMAN is the right choice for everyone. It meets requirements of device manufacturer, investor, project developer, EPC and plant owner, etc. Moreover, the tailor-made needs can be easily covered under SOLARMAN modular design.

SOLARMAN software consists of two different products–SOLARMAN Business and SOLARMAN Smart. Both products are available in web-based portal and APPs.

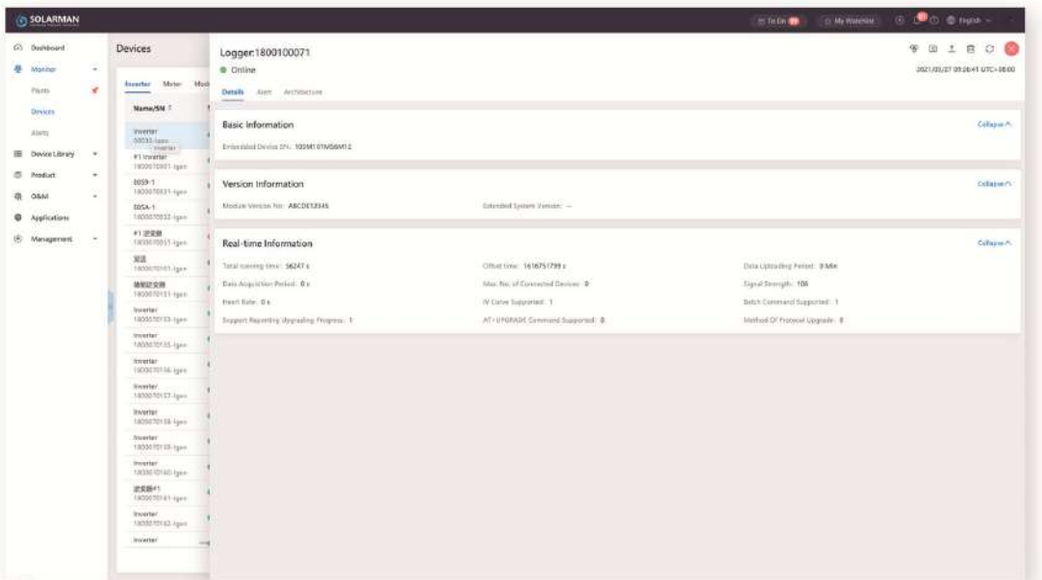
SOLARMAN Business is developed to support professional service providers, covering the full life-cycle of PV plants:

- Project Evaluation - PV resource analysis, plant simulation, production/yield forecast, etc.
- Plant O&M - Data monitoring and visualizing, fault detecting and troubleshooting, performance rating, etc.
- Asset Trade - Financial evaluation, cash flow forecast, ROI analysis, etc.

SOLARMAN Smart offers excellent experience to individual users, who can get all important data/information at a glance. The product is designed in simple style, ease of use, perfect for end-users.

SOLARMAN Business - Device Access, Control and Data Processing

SOLARMAN solution is compatible with the inverter models from all major manufacturers and with numerous components, i.e. energy meter, gas meter, weather station, heat pump and smart plug, etc.



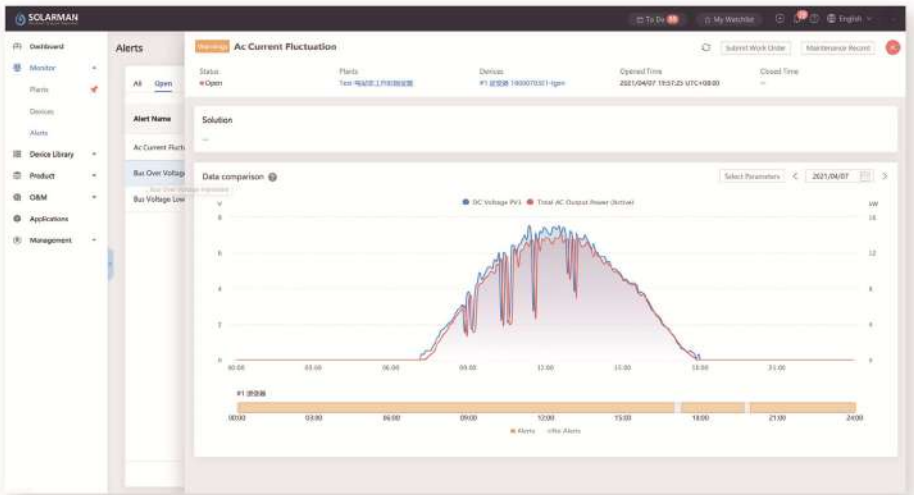
Key features of SOLARMAN Business – Device Sector:

- Fast adaption with new devices and protocols;
- Remote upgrade device firmware in batches;
- Intelligent device controls under local/remote mode, fast response within seconds;
- Customization for warnings and alerts;
- Great flexibility for real-time data processing and authorization.

SOLARMAN Business - PV Plant Management

SOLARMAN Business perfectly fulfills the needs of technical professionals, making PV plant management easy, effective and efficient.

Besides visualizing real-time data and analyzing performance indexes, i.e. PR, the product enables comparison among different plants, and comparison between plant's actual generation and weather-based simulation. The expanded performance analysis gives extra meaningful messages for plant management.

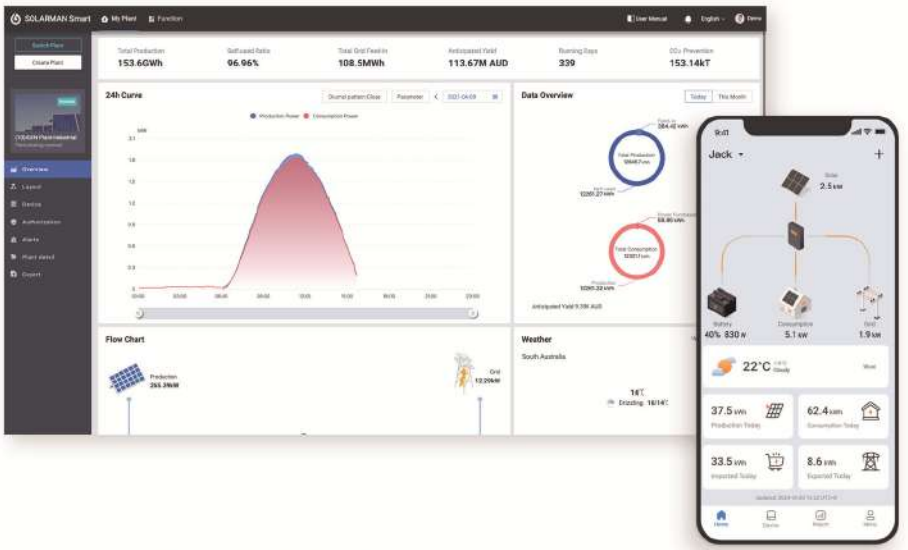


Furthermore, 'Intelligent and Intuitive Alerts' allows O&M staff to spot fault information you care about at a glance.

To get rid of tons of alerts, SOLARMAN system merges the same type of alerts, and plots them on a distribution graph with intuitive trending display. As a specific device alert is linked to key parameter curves, you can easily find out impacts, such as yield loss, etc.

SOLARMAN Smart - An Energy Expert Around You

SOLARMAN Smart monitors and visualizes all conditions of smart devices at end- user's home, the household energy management has never been easier.



Key features of SOLARMAN Smart:

- Fast Setup - completes a plant setup after a few steps and adds smart devices as you need;
- Graphic Display - understands power production&consumption status from a glimpse of energy flow chart;
- Accurate Analysis - calculates and reports energy usage pattern and give reasonable advice;
- Device Management - adds, deletes, changes, controls any devices at any time, any place;
- Plant Management - shares a plant to a service provider or any friends within SOLARMAN platform, creating great convenience.

Stick Logger

4G/GPRS/WiFi/Ethernet

SOLARMAN stick logger supports GPRS, WiFi, 4G, Ethernet and other communication method. Furthermore, stick logger supports RS485/RS232/TTL/USB and other serial communication. With the design of multi-cover, it adapts to a vast majority of inverters. By collecting operating status and power generation of inverter, stick logger can run a long-term and efficient monitoring of PV system, which increases work efficiency and reduces management cost significantly.

- External indicator lights, ensuring collection status at a glance;
- Plug and play, no extra power supply is required;
- Independent module, protecting internal parts of inverter;
- Waterproof design, resistant to bad weather;
- External design, easy to replace faulty equipment.

Product Model	LS4G-6-G	LSW-6	LSW-3	LSG-3	LSE-3	LSE-4W
Remote Communication Interface	WiFi6 2.4GHz 4G CAT1	WiFi6 2.4GHz	2.4G WiFi	GPRS	LAN	2.4G WiFi+LAN
Antenna	External Antenna	Internal Antenna	External Antenna	External Antenna	—	—
Data Interface	RS485/RS232/TTL/USB					
Working Voltage	DC 5-12V					
Working Power	4W	1.5W	1.5W	3W	1W	1.5W
SIM Card	Chip Card/MicroSIM	—	—	Chip Card/MicroSIM	—	—
Memory	8M Flash	8M Flash	2M Flash	2M Flash	2M Flash	4M Flash
Working Temperature	-30°C~+70°C					
Working Humidity	<90% (No Condensation)					
No. of Connections	One					
Serial Communication Rate	9600bps (1200—115200bps Configurable)					
Data Uploading Interval	Default: 5 mins (1-15 mins Configurable)					
User Configuration	BT/APP/Remote	BT/APP/Web/Remote	Remote/Web	Remote	Remote/Web	BT/Web/Remote
Firmware Upgrade	Remote/Web	Remote/Web	Remote/Web	Remote	Remote/Web	Remote/Web
Real-time Control	√					
Data Resuming	√					

DIN-Rail Logger

4G/GPRS/WiFi/Ethernet

By collecting operating status and power generation of inverter, meter and other devices, DIN-Rail logger can run a long-term and efficient monitoring of PV system.

Logger can connect to multiple devices via RS485/RS422/RS232 and other interfaces. Meanwhile, SOLARMAN provides powerful data support for the logger. Logger sends the data to the monitoring platform via WiFi/ Ethernet/GPRS. The real-time status and historical data can be displayed with graphs, enabling intuitive and clear understanding of PV system.

Standard DIN-Rail Mount

Suitable for 35mm DIN-Rail mount;

Data Resuming

Ensure data integrity;

Remote Upgrade

Remote upgrade and system debugging, easy for O&M;

Alert Notification

Real-time alerts with timely notification, ensuring fast troubleshoot;

Timely alert report, helping users under-stand risks and problems about their plants in time;

Review data via APP/Web at anytime and anywhere;

Integrated with DIN-Rail power supply device, LD4G-3B has a more simple and practical appearance.

Product Model	LD4G-2	LDW-1	LD4G-3B
Product Picture			
Remote Communication	4G	WiFi/Ethernet	4G(Cat.1) BLE MESH
No. of Connections	1-16	1-10	1-20
Working Voltage	DC 5-15V	DC 5-15V	AC 150-380V
Working Power	4W	1.5W	5W(Max.)
Local Communication	RS485/RS422/RS232		RS485/RS232 Configurable
Data Uploading Interval	Default: 5 mins (1-15 mins Configurable)		
Memory	2M Flash (512K-16M Optional)		Default: 32M Byte Flash
User Configuration	AT+Instruction Set/Remote Server		BT/APP
SIM Card	MicroSIM	-	MicroSIM(Plug-in)
Antenna	4G Small Antenna (Sucker Antenna Optional)	GPRS Small Antenna (Sucker Antenna Optional)	4G Sucker Antenna BLE Sucker Antenna
Working Temperature	-30°C~+70°C (Battery Version: -20°C~+60°C)	-30°C~+70°C	-30°C~+70°C
Working Humidity	<90% (No Condensation)		
Dimension	91mm×76mm×18mm		91×68×54mm
Installation Method	35mm DIN-Rail		

DIN-Rail Power Supply Device

DIN-Rail power supply device is used to provide DC 5V input for DIN-Rail logger or other equipment at site. According to real situation, it would turn AC 85-265V or DC 24V power input to DC 5V as output. In addition, an embedded capacitor will power DIN-Rail logger for another 20s in case of power outage, enabling data logger to send out a warning alert.

Wide Voltage Design

AC Voltage Input Range: AC 85V-265V
DC Voltage Input Range: DC 5V-24V

High Power Output

Support DC 5V, 2000mA output

Power-off Reminder

Equipped with an embedded capacitor, easy for O&M

Easy Installation

Standard 35mm DIN-Rail mount

DIN-Rail Power Supply Device (Capacitive)		
Hardware Parameters	Input Voltage	AC 85~265V/DC 5~24V
	Output Current&Voltage	DC 5V, 2000mA
	Indicator Lights	AC IN: AC Power Input
		DC IN: DC Power Input
	Working Temperature	-40°C~+75°C
	Storage Temperature	-45°C~+90°C
	Dimension	91mm×76mm×18mm
	Installation Method	35mm DIN-Rail

RF Gateway Stick Logger (RF)

Ethernet

SOLARMAN RF series include RF gateway and stick logger (RF). RF gateway supports local networking, no communication wiring is required. Furthermore, it features in long communication distance and strong through-wall ability.
Single RF gateway can connect to multiple stick logger (RF)s.

- No communication wiring is required, reducing construction;
- Long communication distance, reaching 200m in case no shelter exists;
- Strong through-wall ability, 2 reinforced concrete walls at max;
- Support multi-device network, high efficiency in data acquisition.

RF Gateway		Stick Logger (RF)	
Product Model	RF-100	Product Model	LSR-4
Remote Communication	Ethernet	Local Communication	RF
Local Communication	RF	Serial Communication	RS485/RS232/TTL
No. of Connections	10	No. of Connections	1
Local Networking Distance	200m (Without shelter) Through-wall Ability: 2 reinforced concrete walls (15cm) (Networking distance reaches 20m when going through 2 walls.)	Working Voltage	DC 5V~12V
Working Voltage	DC 5V	Memory	8M Flash
Memory	8M Flash	Working Temperature	-30°C~+70°C
Configuration	APP/Web	Working Humidity	10%-90% (No Condensation)
Working Temperature	-30°C~+70°C		
Working Humidity	10%-90% (No Condensation)		

Smart Meter

SOLARMAN smart meter is applied for energy management purpose, and it works to measure and control electricity consumption of PV plant, power system, communication station, intelligent building and etc,. It features in high reliability, high accuracy, compact size and easy to install, etc.

Single-Phase Meters

- Compact size, 2P width;
- Protection functions in case of overvoltage, undervoltage, overcurrent, overload;
- Embedded communication module, support GPRS, WiFi, etc;
- Measuring range: 0~60A, 0~13200w;
- Embedded high-capacity capacitor, able to trigger power-off alert;

Three-Phase Meters

- 2P width, less space occupied in distribution panel;
- Embedded communication module, support GPRS, WiFi, etc;
- Max. measurement: 6 circuits with single - phase CT, or 2 circuits with three-phase CTs;
- Open-type CT, easy for installation;
- Protection functions in case of overvoltage, undervoltage, overcurrent, overload;

	Single-Phase		Three-Phase	
Product Name	DIN-Rail Single-Phase Meter	Single-Phase Remote Control Meter	DIN-Rail Three-Phase Meter	Six-circuit Multi-function Meter
Product Picture				
Product Model	DDS122-D	DDZY422-D2	DTSD422-D	DTSD422-D3
Dimension (mm)	92*76*18mm	110*77*36mm	91.5*76*36mm	91.5*85*36mm
Remote Communication	NA	WiFi/GPRS	NA	WiFi/GPRS
Rated Voltage	220V		3x220/380V	
Rated Frequency	50/60Hz		50/60Hz	
Rated Current	5（40）A	5（60）A	3x6A/100A	6x6A/100A
Rated Power	8.8kW	13.2kW	66kW	
Accuracy	1		1	
Two-way Metering	√		√	
Working Temperature	-25°C-+60°C	-30°C-+70°C	-25°C-+60°C	-30°C-+70°C
Power Supply	1 circuit with single-phase CT		1 circuit with three-phase CTs/ 3 circuits with single-phase CT	6 circuit with single-phase CT/ 2 circuits with three-phase CTs
Measurement	Direct Access		Clip-On CT	
No. of CTs	NA		3	6
Electrical Parameters	Voltage, Current, Active Power, Active Energy, Frequency, Power Factors	Voltage, Current, Active Power, Active Energy, Time-sharing Power, Frequency, Power Factors	Voltage, Current, Active Power, Apparent Power, Active Energy, Apparent Power, Split-phase Energy, Time-sharing Power, Reactive Power, Reactive Energy, Frequency, Power Factors	
Remote Switch	×	√	×	
Automatic Settlement	×	√	√	
Data-frozen	×	Point-frozen, Daily-frozen, Scheduled-frozen	Point-frozen	
Power-off Reminder	×	√	×	
Protection	×	Overvoltage/Undervoltage, Overcurrent, Overload (break-off)	×	Overvoltage/Undervoltage, Overcurrent, Overload (Alert)
Data Acquisition (Inverter)	×	√	×	√
Installation Method	35mm DIN-Rail		35mm DIN-Rail	

Weather Station

SOLARMAN weather station is specifically designed for PV system. It provides a comprehensive environmental monitoring solution for users including irradiance, ambient temperature and humidity, wind direction and speed, and module temperature. With the combination of accurate real-time data, durable products and powerful online platform, SOLARMAN helps users evaluate yield efficiency in a more comprehensive and convenient way.

Accurate real-time and historical data, enabling a comprehensive evaluation of system performance;

SOLARMAN platform provides visualized meteorological data;

Standard sensors for general demands (High accuracy sensor for project with high demands);

Compatible with SOLARMAN data logger, ensuring simple configuration and lower O&M cost;

Real-time alerts with timely notification, ensuring fast troubleshoot;

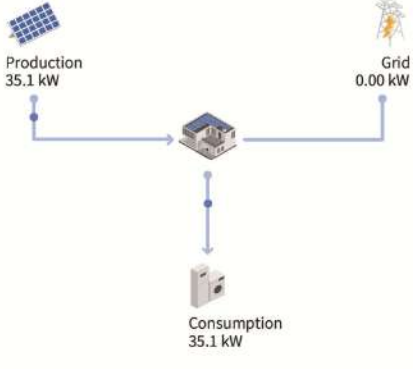
Product Model	WP-2S
Irradiance (Sub-reference Level)	ISO 9060:1990 (Sub-reference Level) Sensitivity: 7~14μV/W/m2 Instability (Year): <0.5% Measuring Range: 0~4000W/m2 Spectral Range: 270~3000μm Zero Offset (No ventilation) (a) Thermal Irradiance (200W/m2): <7W/m2 (b) Temperature Variation (5K/h): <2W/m2 Nonlinear: <0.2% Directional Response (80°, 1000W/m2 at max.): <10W/m2 Spectral Selectivity (350~1500nm): <1% Tilt Response (0°-90°, 1000W/m2): <0.2% Temperature Response (-10°C~+40°C): <1% Visual Angle: 180°
Irradiance (Level 1)	Sensitivity: 7~14μV/W/m2 Instability (Year): ±2% Measuring Range: 0~2000W/m2 Cosine (Deviation between solar altitude angle 10° in sunny day and ideal value): ≤±2% Spectral Range: 0.28~3.0μm Temperature Characteristic (-20°C~+40°C): ±2% Nonlinear: ±2% Visual Angle: 180° Measurement Accuracy: 2%
Irradiance (Level 2)	Sensitivity: 7~14μV/W/m2 Instability (Year): <2% Measuring Range: 0~2000W/m2 Cosine (Deviation between solar altitude angle 10° in sunny day and ideal value): ≤±5% Spectral Range: 0.28~3.0μm Temperature Characteristic (-20°C~+40°C): ±5% Nonlinear: ±5% Visual Angle: 180° Measurement Accuracy: 5%
Ambient Temperature	Measuring Range: -50°C~+80°C Resolution: 0.1°C Accuracy: ±0.1°C Working Environment: Temperature -40°C~+80°C Humidity ≤100%RH
Ambient Humidity	Measuring Range: 0.0~100.0%RH Resolution: 0.1%RH Accuracy: ±2% (≤80%), ±5% (>80%) Working Environment: Temperature -40°C~+80°C Humidity ≤100%RH
Wind Direction	Measuring Range: 0~360° Resolution: 3° Accuracy: ±3° Startup Wind Speed: <0.5m/s Working Environment: Temperature -40°C~+80°C Humidity ≤100%RH
Wind Speed	Measuring Range: 0~70m/s Resolution: 0.1m/s Accuracy: ±(0.3+0.03V)m/s Startup Wind Speed: ≤0.5m/s Working Environment: Temperature -40°C~+80°C Humidity ≤100%RH
Module Temperature	Measuring Range: -50°C~+80°C Resolution: 0.1°C Accuracy: ±0.1°C Working Environment: Temperature -40°C~+80°C Humidity ≤100%RH
Height	1.5m
Power Supply&Communication Junction Box	Power: AC 230V, COM: RS485
IP Grade	IP65

Smart Power Controller

WiFi/Ethernet

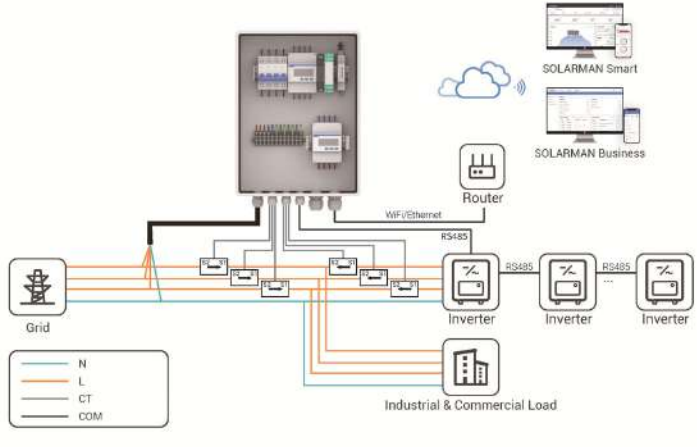
SOLARMAN Smart Power Controller manages real-time situation of grid-tied PV plant by analyzing data from three-phase meter, logger, circuit breaker, DIN-Rail power supply device and RS485 repeater, and adjusting inverter outputs accordingly to make sure no power injection to the local Grid.
Supported data transmission mode: WiFi&Ethernet.

- Real-time monitoring of power production&consumption situation in case of power injection;
- Waterproof design, resistant to bad weather;
- Connection terminal, easy for installation;
- Standard air switch, ensuring the safe use;
- Compatible with all inverters, conducting the comprehensive management.



Product Model	SAR-100-10	SAR-100-5
Remote Communication	2.4G WiFi+Ethernet	
Local Communication	RS 485	
No. of Connections	10	5
Power Regulation Period	2s	
Accessing Method	Three-Phase Four-Wire	
Working Voltage	3x230/400V 50/60Hz	
Working Current	3x1.5(6)A	
Size	400*300*170mm	
IP Grade	IP65	
Working Temperature	-30℃~+70℃	
Working Humidity	5%-95% (No Condensation)	
Installation Method	Wall-Hanging	

Power Control Solution (Three-Phase Four-Wire)



Module PV Optimizer

By utilizing component-level power optimization technology, SOLARMAN module PV optimizer can recover the electricity loss caused by component mismatch, and increase the system power generation by 5% to 30%.

Additionally, SOLARMAN optimizer is equipped with rapid shutdown function compliant with safety regulations of various countries, ensuring fire safety and O&M security.

Through component-level data monitoring, SOLARMAN optimizer realizes fine-tuned management, which is able to identify inefficient components promptly.


Shading


Soiling

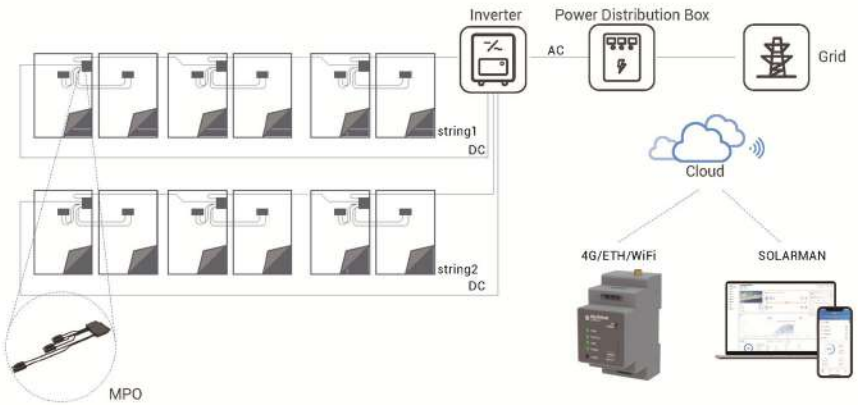

Snow Remnant


Degradation


Orientation


Bifacial Application

Applicable Scenario



Product Model		MPO 650	MPO 850
Input Parameter	Peak Conversion Efficiency	99.50%	
	Rate Input Power	650 Wp	850 Wp
	Max. Input Voltage	70 V	
	Max. Input Current	16A	20A
	MPPT Voltage Range	10-70 V	
Output Parameter	Max. Output Power	650 Wp	850 Wp
	Max. Output Voltage	65V	
	Max. Output Current	16A	20A
COM Parameter	Communication Type	BLE Mesh	
	Max. Distance	300m	
	No. of Single Network Connection	300	
Others	Dimension (mm)	130*102*23	
	Weight (with cable)	700g	735g
	Installation		
	Cable	4mm²/10-12AWG	
	Connector	QC/MC4	
	IP Grade	IP68	
	Working Temperature	-40°C~+85°C	
	Certification Standard	CE/RoHs/REACH/TUV	

Smart Gateway

SOLARMAN smart gateway EMH-2 is specially designed for residential PV plants. It can connect devices such as inverters, energy storage batteries, SG Ready heat pumps, charging piles, smart sockets and other devices. It realizes household energy management, optimizes energy use, and saves electricity expenses.

- Support unified scheduling and management of household energy;
- Support refined management of solar, storage, charging, and consumption;
- Support local LoRa transmission, no need for wiring;
- Standard WiFi&Ethernet communication (4G configurable);
- Standard BT, optimizing network setup and simplifying local configuration.

Product Model	EMH-2-W	EMH-2-L
Applicable Scenario	Residential PV Plant	
No. of Connections	10	
Working Voltage	DC 5V	
Power Dissipation	5W	
Remote Communication	WiFi（2.4GHz）	
	10/100M Ethernet x2	
	-	4G
	-	Micro SIM
	BT (BLE5)	
Local Communication	LoRa（Configurable）	
Data Acquisition Interface	RS485 x3	
	P1 x1	
Control Interface	DO x2（Configurable）	
	DC12V OUT x1（Configurable）	
	D1 x2（Configurable）	
Configuration	APP/Remote	
Memory	512M	
Extended Function	Data Resuming	
	Real-time Control	
Dimension (mm)	148x88x25mm	
Case Material	PC	
Installation	Flat-laid/Wall-Hanging	
IP Grade	IP20	
Working Temperature	-30°C~+70°C	
Working Humidity	10%-90% (No Condensation)	

WiFi P1 Reader

- Specially designed for P1 interface meter in Netherlands&Belgium;
- Applicable to remote monitoring of household electricity consumption;
- Support third-party management system for local data forwarding.

Product Model	P1-2W
No. of Connection	One-way P1 connects meter (RJ12 interface for Netherlands/P1 interface for Belgium)
Networking	BT
IP Grade	IP20
Working Temperature	- 20°C~ + 50°C
Working Humidity	≤70%RH (25°C) (No Condensation)
Storage Temperature	- 40°C~ + 90°C
Storage Humidity	≤40%RH (25°C) (No Condensation)
Case Material	Flame Retardant (UL 94 V0)
Altitude	0-4000m
Interface Protocol	P1 DSMR v5.0 and below
Installation	RJ12 Interface
Max. Power Dissipation	1.25w
Power Adapter	European Standard Socket: 5V 1A Output Line: USB-TypeC length (1.5m)
Remote Communication	2.4G WiFi (150m in open space)
Power Supply	P1 interface power 5.0 meter Type-C interface power meter below 5.0
Data Acquisition Interface (Local P1)	P1x1, RJ12 interface
Clock Calibration	Soft Watch
BT One-way	BT 5.0 or above (10m in open space)
Web+APP	√
Data Uploading Interval	Default: 300s (2-600s Configurable)
Plug&Play	√
Local API	√
Supported Protocol	DSMR 5.0 and below
Dimension (mm)	45*45*15mm
Lead Length	40mm
Press	Hidden Button for Reset Function
Applicable Scenario	Compatible with SOLARMAN Smart Socket and EMH-2
Applicable Region	Netherlands/Belgium
Certification Standard	CE/ROHS/EN303645/Reach
Safety	Unique encryption for each machine

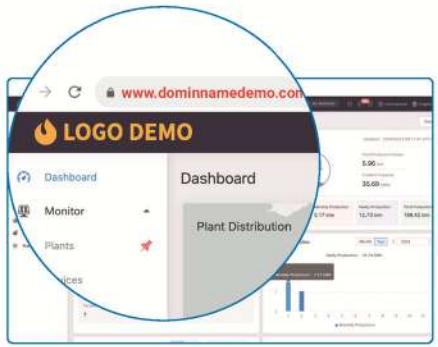
Smart Socket

- Power&electricity aNalysis, easy for energy consumption tracing;
- Standard bluetooth, increasing networking efficiency;
- Bidirectional measurement, applicable to household electrical appliances and microinverters;
- Remote control, SOLARMAN protects the system security at anytime and any where;
- Support overload protection and automatic shutdown functions.

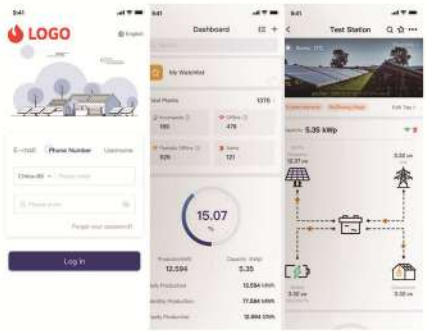
Product Model	SP-2W-EU
Standard	European Standard
Dimension (mm)	55mm*55mm*61mm (Pins excluded)
Case Material	UL 94 V0
Working Temperature	-20°C~+50°C
Working Humidity	10%~70%RH（25°C）
Altitude	0-4000m
IP Grade	IP20
Storage Temperature	-40°C~+90°C
Storage Humidity	≤40%RH（25°C）
Power Supply	Voltage AC 110~250V/50/60Hz
Rated Current	16A
Power	<3680W
Max. Power Dissipation	2w
Metering	Active Energy Bidirectional Metering (Accuracy: 3%)
Networking	Success rate of first network distribution>95%/Success rate of second network distribution>99%/Network distribution time<15s
Installation	Plug&Play
Northbound Communication	WiFi (150m in open space) Embedded Antenna
BT	BT 5.0 or above (100m in open space)
Storage	2MB Flash
Anti Electric Shock	Anti Electric Shock Protection Door
Clock	Local Clock/Deviation≤1 min
Data Acquisition	Active power acquisition interval: 1s/time
Data Uploading	1s/time
Remote Control	√
OpenAPI	√
Applicable Scenario	Compatible with SOLARMAN EMH-2
Troubleshooting	Add universal data burial points
Certification Standard	CE/ROHS/EN303645/Reach
Safety	Unique encryption for each machine

Reference

SOLARMAN ODM Web



SOLARMAN ODM APP



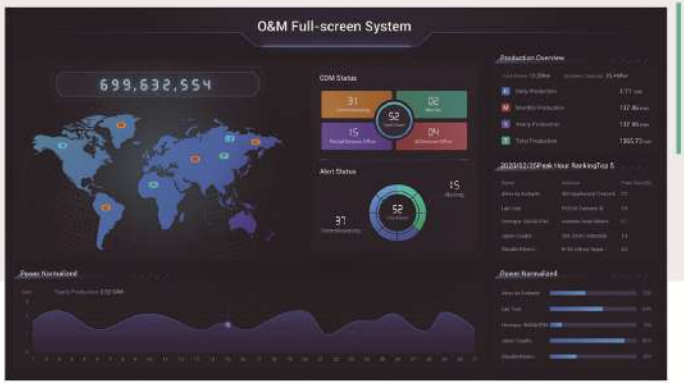
▸ SOLARMAN ODM Project

SOLARMAN ODM service is sharpened by MANOS PaaS platform, which is independently developed by IGEN Tech.

By experiencing a unique software system, SOLARMAN promotes brand identities and enhances user stickiness for professional renewable energy companies.

SOLARMAN ODM service supports web and app customization, providing differentiated services including customized domain name, exclusive logo, language (supporting English, Portuguese, Spanish, Polish, Dutch, etc.), customized colors, E-mail signature, customized privacy agreements and etc. What's more, by adopting comprehensive security design for data processing, storage and transmission, SOLARMAN is capable of protecting enterprise data security.

Currently, SOLARMAN ODM customization service has served customers in more than 20 countries and regions, including China, France, the United States, Italy, South Africa, India, Australia, Slovenia and etc. SOLARMAN aims to empower customers to highlight personalized brand identities while fully embodying the value proposition of "win-win."



▸ Exclusive Hardware and Software Custom-Project

Exclusive Hardware and Software Custom-Project is a tailored project for a large-sized PV distributor, who establishes partnerships with many device manufacturers of inverter and battery, e.g. Solis, Growatt, SMA, Huawei, Sofar, GoodWe, SolaX, SolarEdge, Deye, BYD and LG, etc.

SOLARMAN, as a powerful PV monitoring platform, has provided an exclusive and high-quality solution and a tailored general-purpose data logger for the distributor, which enables the monitoring of production/consumption/grid/energy storage data on SOLARMAN platform at anytime and anywhere. By end of 2020, the distributor has established thousands of PV systems on platform, penetrating European market at a much faster pace.

▸ SOLARMAN Presence in Middle East

At INTERSOLAR EUROPE 2022, an EPC from Middle East area visited SOLARMAN booth. As for security reason of data transmission, the communication mode in Middle East could only be transmitted through the satellite LAN and the monitoring software could only be deployed on the government-owned server.

After learning well about the demands of the EPC, SOLARMAN team developed a tailored data logger with dual network ports to connect inverter and weather station at the same time. Meantime, customized features including UI design, offline map and etc were realized at SOLARMAN platform, which improved O&M efficiency significantly.

Adhereing to the vision of zero-carbon future, SOLARMAN is willing to work together with global partners in PV field to achieve the zero-carbon goal in 2060.

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